



Tech Info Library

Contents of the AppleLink Tech Info Library (7/94)

Revised: 7/13/94
Security: Everyone

Contents of the AppleLink Tech Info Library (7/94)

Article Created: 4 February 1985
Article Last Reviewed: 11 April 1994

TOPIC -----

This article describes the information that can be found in the Tech Info Library.

DISCUSSION -----

The Tech Info Library (TIL) contains over 10,000 technical articles related to Apple products and their issues. The articles are continuously reviewed and updated with new and revised product and technical information. The TIL is the same database used by the Apple technical support teams. The TIL contains valuable information that will help you sell, support, and use Apple products.

The TIL contains specific articles that describe:

- Technical product specifications
- Product compatibility information
- How to setup and interface products
- Answers to commonly asked questions
- Clarifications and updates to manuals
- Descriptions of known problems and, in many cases, workarounds

Specific information on searching the TIL is available in the "Help: How to Search the AppleLink Tech Info Library" article or by pressing the "Library Help" button in the Tech Info Library window of AppleLink.

If you have comments about any of the Tech Info Library articles, please send a memo to the AppleLink address TECH.DB.

Support Information Services

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Tech Info Library Article Number:1



Tech Info Library

Library Help: How to Search the AppleLink Tech Info Library

Revised: 8/12/94
Security: Everyone

Library Help: How to Search the AppleLink Tech Info Library

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Article Created: 4 February 1985
Article Reviewed/Updated: 5 April 1994

TOPIC -----

This article gives helpful search information for the Tech Info Library (TIL).

DISCUSSION -----

The purpose of this document is to help you, the AppleLink customer, make best use of Apple's technical support database: The Tech Info Library.

The Tech Info Library (TIL) contains over 14,000 articles written in a topic and discussion format on Apple products, past and present. It is constantly updated with new and revised product information. It is the same database used by Apple's technical support teams.

There are two ways to search the Tech Info Library:

1) To type a text query, enter the desired search topic and click the Search Library button. The number of documents found will appear in the Results window. To view the titles of these documents click on the Display Selections button. This will display a list of all TIL documents that contain your search criteria. Double-click on the title of the document you wish to view, to open the article.

2) To locate articles by topic, click the Library Index button. You will then see articles grouped in subject folders. This is an easy way to browse through articles on a specific subject area.

CORRECT SPELLING -----

To insure a complete search, it is important to spell correctly. Products are indexed into the TIL by their full name. Capitalization and trademark symbols are not necessary.

USE FULL PRODUCT NAMES -----

When making searches, it is important to use the full product name. In the past, we implemented a feature of the TIL to allow for typing errors and abbreviations. For example, you could search for "mac" instead of "macintosh." This feature produced less than desirable results. It is no longer being used.

For a complete listing of all Apple product names, see the Apple Computer, Inc. Trademark List. This can be located by searching for "trademark list" in the TIL Search window.

KEYWORD SEARCHES: -----

The following keywords can help you easily narrow a search in the Tech Info Library. For best results, use a keyword and a product name. For example, the search string:

EXAMPLE "SPECSHT and Quadra 840AV"

This will find the "Quadra 840AV: Specifications" article.

The current list of all keywords follows:

Topic	Description	Keyword
Cable Info	Cable, port pinouts, info	CABINFO
Compatibility	Hardware, Software Compatibility info	KCOMPAT
Emerging Issues	Emerging Support issues	KISSUE
Internet Related Information		KINTER
Hardware Troubleshooting	Hardware problem Q and A articles	HTS
Matrix/Table Support	Charts detailing RAM, VRAM support for specific computers	KTABLE
Network Troubleshooting	Network problem Q and A articles	KNTS
On Line Information		KOL
Newton MessagePad	Newton topics, including HW & SW	KNMP
PowerBook	PowerBook articles	KPBOOK
PowerPC	Technical, support info on PowerPC	KPPC
Software Troubleshooting	Software problem Q and A articles	KSTS
Specification Sheets	Spec Sheets for all Apple products	SPECSHT
Support Issues	Support issues for specific products	SUPT
System 7 Articles	Q and A articles on System 7 family	SYS7
System 7.5 Articles	Q and A articles on System 7.5	SYS7.5
Third Party Compatibililty Lists		PCOMPAT
Third Party Info	Third party developer directory	3PTY
Windows/DOS	Technical, support info on Windows and DOS products, working with Apple products.	KWINDOW

FULL SEARCH PHRASE -----

It is possible to use a full search phrase when searching the TIL.

EXAMPLE: search for "color stylewriter pro"

This will find all articles that contain the exact phrase "Color Stylewriter Pro."

SEARCHING TIP: -----

Use "AND" between search terms:

EXAMPLE: If you're looking for information on toner cartridges for a LaserWriter, type the search string "laserwriter and toner" This query will find every occurrence of both these words in a single document. You can also use "OR" and "NOT," as well.

HELPFUL INFORMATION: -----

Limits

- A query may not have more than 25 operators.
- A query phrase may not exceed 30 words (or 200 characters).
- A query may not exceed a combination of 50 words and operators.

Lexical Trimming

The Library search mechanism automatically does something called "lexical trimming" with your search words. This means that it removes any common suffix you've used in your search word before it looks for matching words. If you type the word PRINTER as a search word, the search retrieves articles that contain the words PRINT, PRINTER, PRINTING, PRINTED, and so on.

The following characters give you an error message if you try to use them alone. You can use them mixed with real terms.

-
:
"
\$

.
!

You cannot embed these characters in a term, since they will separate the terms:

&
,

Please direct any comments or requests for assistance to Support Information Services at the AppleLink address TECH.DB.

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Tech Info Library Article Number:2



Tech Info Library

Apple II and IIf: Power Supply Input Frequency Limitations

Revised: 5/3/88
Security: Everyone

Apple II and IIf: Power Supply Input Frequency Limitations

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This article last reviewed: 18 September 1987

The Apple II and IIf power supply is a switching power supply. It is designed to accept 107 to 135 volts from DC to 60 Hz. It will also work at up to 400 Hz but this endangers a circuit which protects the supply from shorting to the point that the protecting circuit will not work.

Tech Info Library Article Number:3



Tech Info Library

Apple II, IIe and IIC: Mini-Assembler

Revised: 5/3/88
Security: Everyone

Apple II, IIe and IIC: Mini-Assembler

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This article last reviewed: 21 September 1984

This note covers use of the Apple II, IIe and IIC mini-assembler only, not the II+. This is not a course in assembly language programming. For a reference on programming the 6502 microprocessor, refer to the Synertek Programming manual or any of the tutorials available. This note assumes the user has a working knowledge of 6502 programming and mnemonics.

The Apple II mini-assembler is a programming aid aimed at reducing the amount of time required to convert a handwritten program to object code. The mini-assembler is basically a look-up table for opcodes. With it, you can type mnemonics with their absolute addresses, and the assembler will convert it to the correct object code and store it in memory.

Typing "F666G" will puts you in mini-assembler mode. While in this mode, any line typed in will be interpreted as an assembly language instruction, assembled, and stored in binary form unless the first character on the command line is a "\$".

If the first character of a command line is a "\$", the remainder of the line will be interpreted as a normal monitor command, executed, and control returned to the mini-assembler. To get out of the mini-assembler, press RESET.

If the first character on the line is blank, the assembled instruction will be stored starting at the address immediately following the previously assembled instruction. If the first character is not a blank nor a "\$", the line is assumed to contain an assembly language instruction preceded by the instruction address (a hex number followed by a ":"). In either case, the instruction will be retyped over the line just entered in dis-assembler format to provide a visual check of what has been assembled.

The counter that keeps track of where the next instruction will be stored is the pseudo PC (Program Counter) and it can be changed by many monitor commands (eg. 'L', 'T', . . .). Therefore, it is advisable to use the explicit

instruction address mode after every monitor command and, of course, when the mini-assembler is first entered.

Errors (unrecognized mnemonic, illegal format, etc.) are signalled by a "beep" and a caret ("^") will be printed beneath the last character read from the input line by the mini-assembler.

The mnemonics and formats accepted by the mini-assembler are the same as those listed by the 6502 Programmers Manual, with the following exceptions and differences:

1. All imbedded blanks are ignored, except inside addresses.
2. All addresses entered are assumed to be in hex (rather than decimal or symbolic). A preceding "\$" (indicating hex rather than decimal or symbolic) is therefore optional, except that it should not precede the instruction address).
3. Instructions that operate on the accumulator have a blank operand field instead of "A".
4. When entering a branch instruction, the argument of the branch mnemonic should be the address of the target of the branch. If the destination address is not known at the time the instruction is entered, simply enter an address that is in the neighborhood, and later re-enter the branch instruction with the correct target address. NOTE: If a branch target is specified that is out of range, the mini-assembler will flag the address as being in error.
5. The operand field of an instruction can only be followed by a comment field, which starts with a semicolon (";"). Obviously, the mini-assembler ignores the field and in fact will type over it when the line is typed over in disassembler format.
6. Any page zero references will generate page zero instruction formats if such a mode exists. There is no way to force a page zero address to be two bytes, even if the address has leading zeroes.

In general, to specify an addressing type, simply enter it as it would be listed in the disassembly. For information on the disassembler, see page 49 of the Apple II Reference Manual.



Tech Info Library

Apple II+ Mini-Assembler (1 of 4)

Revised: 3/2/88
Security: Everyone

Apple II+ Mini-Assembler (1 of 4)

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This article last reviewed: 21 September 1984

The attached listing is a relocated version of the mini-assembler for the Apple II+ with instructions for the Apple II version. This version can be BRUN from the disk or BLOAded and start with CALL 2048 from Applesoft. To restart use CALL 2051. From machine language the start is 800G and the restart is 803G. Users who have Integer Basic available need only enter that language and use the instructions in part one of this note.

Please note that the mini-assembler performs a NEW command, so it will wipe out any resident Applesoft program. Also note that the mini-assembler loads from \$800 to \$947. Don't try to assemble anything into those locations.

This note covers the operation of the mini-assembler only. It is not a course in assembly language programming. For a reference on programming the 6502 microprocessor, refer to the Synertek Programming manual or any of the tutorials available. This note assumes the user has a working knowledge of 6502 programming and mnemonics.

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If the first character of a command line is a "\$", the remainder of the line will be interpreted as a normal monitor command, executed, and control returned to the mini-assembler. To get out of the mini-assembler, press RESET.

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The counter that keeps track of where the next instruction will be stored is the pseudo PC (Program Counter) and it can be changed by many monitor commands (eg. 'L', 'T', . . .). Therefore, it is advisable to use the explicit instruction address mode after every monitor command and, of course, when the mini-assembler is first entered.

Errors (unrecognized mnemonic, illegal format, etc.) are signalled by a "beep" and a caret ("^") will be printed beneath the last character read from the input line by the mini-assembler.

Tech Info Library Article Number:5



Tech Info Library

Apple II+ Mini-Assembler (2 of 4)

Revised: 3/2/88
Security: Everyone

Apple II+ Mini-Assembler (2 of 4)

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This article last reviewed: 21 September 1984

The mnemonics and formats accepted by the mini assembler are the same as those listed by the 6502 Programmers Manual, with the following exceptions and differences:

1. All imbedded blanks are ignored, except inside addresses.
2. All addresses typed in are assumed to be in hex (rather than decimal or symbolic). A preceding "\$" (indicating hex rather than decimal or symbolic) is therefore optional, except that it should not precede the instruction address).
3. Instructions that operate on the accumulator have a blank operand field instead of "A".
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5. The operand field of an instruction can only be followed by a comment field, which starts with a semicolon (";"). Obviously, the mini-assembler ignores the field and in fact will type over it when the line is typed over in disassembler format.
6. Any page zero references will generate page zero instruction formats if such a mode exists. There is no way to force a page zero address to be two bytes, even if the address has leading zeroes.

In general, to specify an addressing type, simply enter it as it would be listed in the disassembly. For information on the disassembler, see page 49

of the Apple II Reference Manual.

```
0000: *****
0000: *
0000: *      APPLE II      *
0000: *  MINI-ASSEMBLER  *
0000: *
0000: *****
002E:      FORMAT  EQU  $2E
002F:      LENGTH  EQU  $2F
0031:      MODE     EQU  $31
0033:      PROMPT   EQU  $33
0034:      YSAV     EQU  $34
0035:      L         EQU  $35
003A:      PCL     EQU  $3A
003B:      PLH     EQU  $3B
003D:      A1H    EQU  $3D
003E:      A2L     EQU  $3E
003F:      A2H     EQU  $3F
0042:      A4L     EQU  $42
0043:      A4H     EQU  $43
0044:      FMT     EQU  $44
0200:      IN      EQU  $200
D64B:      NEW   EQU  $D64B
F88E:      INSDS2 EQU  $F88E
F8D0:      INSTDSP EQU  $F8D0
F94A:      PRBL2  EQU  $F94A
F953:      PCADJ  EQU  $F953
F9B4:      CHAR1  EQU  $F9B4
F9BA:      CHAR2  EQU  $F9BA
F9C0:      MNEML  EQU  $F9C0
FA00:      MNEMR  EQU  $FA00
FC1A:      CURSUP EQU  $FC1A
FD67:      GETLNZ EQU  $FD67
FDED:      COUT   EQU  $FDED
FE00:      BL1    EQU  $FE00
FE78:      A1PCLP EQU  $FE78
FF3A:      BELL   EQU  $FF3A
FFA7:      GETNUM EQU  $FFA7
FFBE:      TOSUB  EQU  $FFBE
FFC7:      ZMODE  EQU  $FFC7
FFCC:      CHRTBL EQU  $FFCC
```

Tech Info Library Article Number:6



Tech Info Library

Apple II+ Mini-Assembler (3 of 4)

Revised: 7/20/95
Security: Everyone

Apple II+ Mini-Assembler (3 of 4)

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This article last reviewed: 21 September 1984

```
0800:                                ORG $800
0800: 20 4B D6                        JSR NEW          ;SCRATCH ANY BASIC PROGRAM
0803: A9 00                          LDA #$00
0805: 8D 00 08                       STA #$0800
0808: 4C 9D 08                       JMP RESETZ       ;BRANCH MINI/ASSEM'S START
080B: E9 81      REL                SBC #$81          ;IS FMT COMPATIBLE
080D: 4A                          LSR A           ;WITH RELATIVE MODE?
080E: DO 14                        BNE ERR3        ;NO.
0810: A4 3F                        LDY A2H
0812: A6 3E                        LDX A2L          ;DOUBLE DECREMENT
0814: DO 01                        BNE REL2
0816: 88                          DEY
0817: CA      REL2                DEX
0818: 8A                          TXA
0819: 18                          CLC
081A: E5 3A                        SBC PCL          ;FORM ADDRESS PC-2
081C: 85 3E                        STA A2L
081E: 10 01                        BPL REL3
0820: C8                          INY
0821: 98      REL3                TYA
0822: E5 3B                        SBC PCH
0824: D0 6B      ERR3            BNE ERR          ;TOO FAR TO BRANCH ERROR
0826:                                *
0826: A4 2F      FINDOP          LDY LENGTH
0828: B9 3D 00  FNDOP2          LDA A1H,Y        ;MOVE INST TO (PC)
082B: 91 3A                          STA (PCL),Y
082D: 88                          DEY
082E: 10 F8                        BPL FNDOP2
0830: 20 1A FC                       JSR CURSUP
0833: 20 1A FC                       JSR CURSUP      ;RESTORE CURSOR
0836: 20 DO F8                       JSR INSTDSP     ;TYPE FORMATTED LINE
0839: 20 53 F9                       JSR PCADJ       ;UPDATE PC
083C: 84 3B                        STY PCH
```

```

083E: 85 3A          STA PCL
0840: 4C A0 08        JMP NXTLINE      ;GET NEXT LINE
0843: 20 BE FF  FKMON3 JSR TOSVB        ;GO TO DELIM HANDLER
0846: A4 34          LDY YSAV        ;RESTORE Y-INDEX
0848: 20 A7 FF  FKMON JSR GETNUM      ;READ PARAM
084B: 84 34          STY YSAV        ;SAVE Y-INDEX
084D: A0 17          LDY #$17        ;INIT DELIM INDEX
084F: 88          FKMON2 DEY          ;CHECK NEXT DELIM
0850: 30 4B          BMI RESETZ      ;ERR IF UNRECOGNIZED DELIM
0852: D9 CC FF        CMP CHRTBL,Y    ;COMPARE WITH DELIM TABLE
0855: D0 F8          BNE FKMON2      ;NO MATCH
0857: C0 15          CPY #$15        ;MATCH, IS IT CR?
0859: D0 E8          BNE FKMON3      ;NO HANDLE IT IN MONITOR
085B: A5 31          LDA MODE
085D: A0 00          LDY #$00
085F: C6 34          DEC YSAV
0861: 20 00 FE        JSR BL1          ;HANDLE CR OUTSIDE MONITOR
0864: 4C A0 08        JMP NXTLINE
0867:                *
0867: A5 3D  TRYNEXT LDA A1H          ;GET TRIAL OPCODE
0869: 20 8E F8        JSR INSDS2      ;GET FMT + LENGTH FOR
086C: AA            TAX          ;OPCODE
086D: BD 00 FA        LDA MNEMR,X    ;GET LOWER MNEMONIC BYTE
0870: C5 42          CMP A4L          ;MATCH?
0872: D0 13          BNE NEXTOP      ;NO, TRY NEXT OPCODE
0874: BD C0 F9        LDA MNEML, X  ;GET UPPER MNEMONIC BYTE
0877: C5 43          CMP A4H          ;MATCH ?
0879: D0 0C          BNE NEXTOP      ;NO, TRY NEXT OPCODE
087B: A5 44          LDA FMT
087D: A4 2E          LDY FORMAT      ;GET TRIAL FORMAT
087F: C0 9D          CPY #$9D        ;IS TRIAL FORMAT RELATIVE?
0881: F0 88          BEQ REL          ;YES
0883: C5 2E          CMP FORMAT      ;SAME FORMAT?
0885: F0 9F          BEQ FINDOP      ;YES
0887: C6 3D  NEXTOP DEC A1H          ;NO, TRY NEXT OPCODE
0889: D0 DC          BNE TRYNEXT
088B: E6 44          INC FMT          ;NO MORE, TRY WITH LEN=2
088D: C6 35          DEC L          ;WAS L=2 ALREADY?
088F: F0 D6          BEQ TRYNEXT      ;NO
0891:
0891: A4 34  ERR      LDY YSAV          ;YES, UNRECOGNIZED INST.
0893: 98  ERR2      TYA
0894: AA            TAX
0895: 20 4A F9        JSR PRBL2      ;PRINT ^ UNDER LAST READ
0898: A9 DE          LDA #$DE        ;CHAR TO INDICATE ERROR
089A: 20 ED FD        JSR COUT        ;POSITION
089D: 20 EA FF  RESETZ JSR BELL
08A0: A9 A1  NXTLINE LDA #$A1        ; '!'
08A2: 85 33          STA PROMPT      ;INITIALIZE PROMPT
08A4: 20 67 FD        JSR GETLNZ      ;GET LINE
08A7: 20 C7 FF        JSR ZMODE        ;INIT SCREEN STUFF

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Tech Info Library

Apple II+ Mini-Assembler (4 of 4)

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Security: Everyone

Apple II+ Mini-Assembler (4 of 4)

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This article last reviewed: 21 September 1984

```
08AA: AD 00 02      LDA IN      ;GET CHAR
08AD: C9 AO          CMP #$AO      ;ASCII SPACE?
08AF: FO 13          BEQ SPACE     ;YES
08B1: C8             INY
08B2: C9 A4          CMP #$A4      ;ASCII '$' IN COL 1?
08B4: FO 92          BEQ FKMON     ;YES,SIMULATE MONITOR
08B6: 88             DEY           ;NO, BACKUP A CHAR
08B7: 20 A7 FF       JSR GETNUM    ;GET A NUMBER
08BA: C9 93          CMP #$93      ;':' TERMINATOR?
08BC: DO D5          ERR4 BNE ERR2  ;NO, ERR
08BE: 8A             TXA
08BF: FO D2          BEQ ERR2      ;NO ADDR PRECEDING COLON
08C1: 20 78 FE       JSR A1PCLP    ;MOVE ADDR TO PCL, PCH
08C4: A9 03          SPACE LDA #$03 ;COUNT OF CHAR IN MNEMONIC
08C6: 85 3D          STA A1H
08C8: 20 EF 09       NXTMN JSR GETNSP ;GET 1ST MNEMONIC CHARACTER
08CB: OA             ASL A
08CC: E9 BE          SBC #$BE      ;SUBTRACT OFFSET
08CE: C9 C2          CMP #$C2      ;LEGAL CHARACTER?
08DO: 90 C1          BCC ERR2      ;NO
08D2: OA             ASL A          ;COMPRESS-LEFT JUSTIFY
08D3: OA             ASL A
08D4: A2 04          LDX #$04
08D6: OA             NXTM2 ASL A      ;DO 5 TRIPLE WORD SHIFTS
08D7: 26 42          ROL A4L
08D9: 26 43          ROL A4H
08DB: CA             DEX
08DC: 10 F8          BPL NXTM2
08DE: C6 3D          DEC A1H        ;DONE WITH 3 CHAR?
08EO: FO F4          BEQ NXTM2      ;YES BUT DO 1 MORE SHIFT
08E2: 10 E4          BPL NXTMN      ;NO
08E4:                *
08E4: A2 05          LDX #$05        ;5-CHAR ADDRESSING MODE
```

```

0836: 20 3F 09  FORM2  JSR GETNSP    ;GET 1ST CHAR OF ADDRESS
08E9: 84 34                STY YSAV
08EB: DD B4 F9                CMP CHAR1,X  ;1ST CHAR MATCH PATTERN?
08EE: DO 13                BNE FORM3    ;NO
08FO: 20 3F 09                JSR GETNSP    ;YES, GET 2ND CHAR
08F3: DD BA F9                CMP CHAR2,X  ;MATCHES SECOND HALF?
08F6: FO ON                BEQ FORM5    ;YES
08F8: BD BA F9                LDA CHAR2,X  ;NO, IS 2ND HALF ZERO?
08FB: FO 07                BEQ FORM4    ;YES
08FD: C9 A4                CMP #$A4    ;NO 2ND HAL OPTIONAL?
08FF: FO 03                BEQ FORM4    ;YES
0901: A4 34                LDY YSAV
0903: 18                FORM3  CLC            ;CLEAR CARRY NO MATCH
0904: 88                FORM4  DEY            ;BACK UP ONE CHARACTER
0905: 26 44                FORM5  ROL FMT        ;FORM FORMAT BYTE
0907: EO 03                CPX #$03    ;TIME TO CHECK FOR ADDRESS
0909: DO OD                BNE FORM7    ;NO
090B: 20 A7 FF                JSR GETNUM   ;YES
090E: A5 3F                LDA A2H
0910: FO 01                BEQ FORM6    ;HIGH ORDER BYTE ZERO
0912: E8                INX            ;NO, INCR FOR 2-BYTE
0913: 86 35                FORM6  STX L        ;STORE LENGTH
0915: A2 03                LDX #$03    ;RELOAD FORMAT INDEX
0917: 88                DEY            ;BACKUP A CHARACTER
0918: 86 3D                FORM7  STX A1H       ;SAVE INDEX
091A: CA                DEX            ;DONE WITH FORMAT CHECK?
091B: 10 C9                BPL FORM2    ;NO
091D: A5 44                LDA FMT      ;YES PUT LENGTH
091F: OA                ASL A        ;IN LOW BITS
0920: OA                ASL A
0921: 05 35                ORA L
0923: C9 20                CMP #$20
0925: BO 06                BCS FORM8    ;ADD $ IF NONZERO LENGTH
0927: A6 35                LDX L        ;AND DON'T ALREADY HAVE IT
0929: FO 02                BEQ FORM8
092B: 09 80                ORA #$80
092D: 85 44                FORM8  STA FMT
092F: 84 34                STY YSAV
0931: B9 00 02                LDA IN,Y    ;GET NEXT NONBLANK
0934: C9 BB                CMP #$BB    ;' ' START OF COMMENT
0936: FO 04                BEQ FORM9    ;YES
0938: C9 8D                CMP #$8D    ;A CARRIAGE RETURN ?
093A: DO 80                BNE ERR4    ;NO, ERR
093C: 4C 67 08  FORM9  JMP TRYNEXT
093F:                *
093F: B9 00 02  GETNSP  LDA IN,Y
0942: C8                INY
0943: C9 AO                CMP #$AO    ;GET NEXT NON BLANK CHAR
0945: FO F8                BEQ GETNSP
0947: 60                RTS

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Tech Info Library

Apple II, IIe and II+: Auto-Run Apple w/o DOS (1 of 2)

Revised: 3/2/88
Security: Everyone

Apple II, IIe and II+: Auto-Run Apple w/o DOS (1 of 2)

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This article last reviewed: 21 September 1984

Some applications require that an Apple start running an Applesoft program from power-up without human interaction. This is easy with the disk and Auto-Start ROM. Simply initialize the diskette with the desired program in memory and the disk will boot and run it when the power comes on. But sometimes a disk drive is undesirable, especially where there is only one program to run and the cost must be kept low. So here is a way to have a card that will load and run an Applesoft program automatically on power-up in any Apple II+.

I will assume the use of a card like the Mountain Computer ROM+ that has a 256 byte "control ROM" and room for some larger ROMs to store the Applesoft program. On the ROM+ this is a bank of up to six 2716 type EPROMs. Using EPROMs has the advantage that you can change your Applesoft program later by erasing the EPROMs and reprogramming and the disadvantages of higher cost and using more power from the Apple's power supply. The power consumption of the EPROMs won't be a problem if the Apple isn't filled with cards.

The software in the control ROM is required to do five things:

1. Pretend that it's a disk controller card so that the Auto-Start ROM will execute its code.
2. Initialize Applesoft.
3. Move an image of the Applesoft program down from the ROMs into the proper area of RAM.
4. Set up the required Applesoft pointers for the end of the program.
5. RUN the program.

All that's needed to convince the Auto-Start that there's a disk controller card out there is to have a ROM whose first four odd bytes match the Apple P5

or P5A PROM. If the monitor finds a ROM that matches it in slot N, it will do a jump to \$CN00. The routine that does this starts at \$FAA6 and is listed on page 144 of the Apple II reference manual. The first eight bytes in the control ROM will be

24 20 24 00 24 03 24 3C

Note that by having the even numbered bytes equal to \$24, (BIT Page zero) when the code is executed starting at \$CN00 nothing will happen until the byte after the \$3C.

The proper way to initialize Applesoft is to jump to \$E000. Unfortunately this entry into Applesoft falls into the normal command level routine. To regain control so that the control ROM can load a program we can use the same trick that DOS uses. As soon as Applesoft reaches its command level it prints a prompt, ("]") and waits for the user to type in a command. Since all input and output in the Apple is handled through two pointers in RAM, we can divert the input routine to point back into the control ROM. This will leave several levels of subroutine on the 6502 stack but Applesoft will re-initialize the stack when we RUN the program so it doesn't matter.

Now the question becomes what address to put into the pointer. The control ROM's address will change depending on which peripheral slot it's plugged into.

The low byte is just the offset from the start of the ROM since the address always starts on a 256 byte boundary but the high byte could be anything from \$C1 to \$C7. When the Auto-Start ROM looks for a disk controller card it saves the high order byte in \$7F8. So the contents of \$38 and \$39, the input pointer, becomes the offset which is stored at location \$7F8. Then we can jump to \$E000 to initialize Applesoft confident that we will regain control when it's done.



Tech Info Library

Apple II, IIe and II+: Auto-Run Apple w/o DOS (2 of 2)

Revised: 3/6/92
Security: Everyone

Apple II, IIe and II+: Auto-Run Apple w/o DOS (2 of 2)

=====

Article Created: 21 September 1984
Article Last Reviewed: 3 May 1988
Article Last Updated: 3 May 1988

For the next step a copy of the image of the application program needs to be programmed into the EPROMs. The program starts at the address pointed to by \$67 and \$68 and ends at the address pointed to by \$AF and \$B0. The contents of the end address pointer, \$AF and \$B0, will be inserted in the control ROM at locations \$1F and \$23. When control comes back through the input routine pointer, Applesoft has already initialized \$67 and \$68. So the next step is to move the image of the Applesoft program down to where it originally came from. How this is done will depend on the hardware of the ROM card and the length of the Applesoft program. If you use the Apple firmware card you will have to address the soft switch to select the firmware card and then address the switch again to re-select the Applesoft ROMs. With the ROMPLUS it could be as simple as using the monitor move routine, \$FE2C, to move a program of less than 2 kilobytes long.

There is a little more initialization to be done before the Applesoft program can be RUN. The end of program pointer mentioned earlier must be put into \$69 and \$6A and one more Applesoft routine must be called. Unfortunately this one also drops into Applesoft's command mode so we have to modify the input pointer again to point to a third part of the control ROM. Once this is done the final initialization can be done with a jump to \$D4F2.

And now the final part, we need to reset the input pointer so that the program can input normally from the keyboard and actually RUN the program. To make things easier there is a routine set by the Auto-Start ROM that will set the input pointers to the keyboard at location \$FE89. Then all that's left to do is jump to \$D566 which will run the program.

For a bit of finesse, if we put a \$80 into location \$D6, the user will not be able to list the program. In fact any attempt to do any Applesoft command except LOAD from cassette will cause the program to RUN. Also, by changing the reset vectors in the Auto-Start ROM to point to the RUN routine, the

program will become very difficult to stop or modify. (To change the reset vector, load memory starting at \$3F2 with 66 D5 70. See page 36 and 37 of the Apple II Reference manual for more details)

THE LISTING

This listing is all done relative to the start of the ROM so all address are given as one byte. If you use an assembler, simply origin the code in RAM and when it is programmed into the control ROM it will work just fine. The routines are not arranged in order of execution so that the move routine will be at the end since the length of the move routine will vary with the hardware requirements. Just be sure that the three byte jump is inserted behind the move routine.

```
* THE FIRST 4 INSTRUCTIONS LOOK LIKE A DISK BUT DON'T
* DO ANYTHING
*
00: 24 20      BIT $20
02: 24 00      BIT $00
04: 24 03      BIT $03
06: 24 3C      BIT $3C
*
* THIS PART INITIALIZES APPLESOFT AND GETS CONTROL BACK
* AT ENTRY2
*
08: A9 1A      ENTRY1  LDA # ENTRY2
0A: 85 38              STA KSWL
0C: A5 F8 07      LDA $07F8
0F: 85 39              STA KSWH
11: 4C 00 E0      JMP COLDSTART
*
* RESET INPUT TO THE KEYBOARD AND RUN THE PROGRAM
*
14: 20 8 1a      ENRTY3  JSR SETKBD
17: 4C 66 D5      JMP RUN
*
* FINISH INITIALIZATION & MOVE THE PROGRAM TEXT DOWN
* FROM THE ROMS
*
1A: A9 14      ENTRY2  LDA # ENTRY3
1C: 85 38              STA KSWL
1E: A9 LL      LDA # LENGTH-L
20: 85 69              STA LOMEML
22: A9 HH      LDA # LENGTH-H
24: 85 6A              STA LOMEMH

INSERT YOUR MOVE ROUTINE HERE FOLLOWED BY

: 4C F2 D4      JMP INIT PART 2
```

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Tech Info Library

Apple II and ILe: Interface I/O Signal Timing (2/97)

Revised: 3/3/97
Security: Everyone

Apple II and ILe: Interface I/O Signal Timing (2/97)

=====

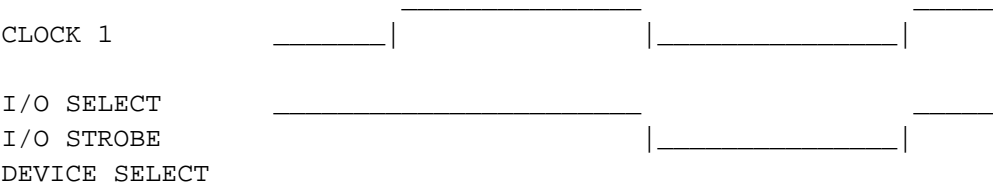
Article Created: 21 September 1984
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes how the I/O strobe signals on the Apple II peripheral connector are handled.

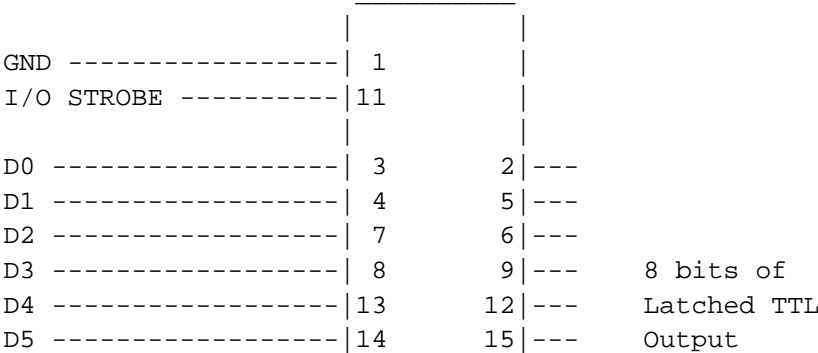
DISCUSSION -----

The I/O strobe signals on the Apple II peripheral connector are decoded from the appropriate address lines and combined with the phase one clock. This is to reduce the TTL circuitry required to build a simple I/O port.



A simple 8 bit output port would be a positive edge triggered latch with the clock tied to I/O select.

74LS374



D6	-----|	17		16	|---
D7	-----|	18		19	|---

Assumming that this interface is plugged into slot 1, any write operation to \$C090..\$C09F will transfer the data to the output lines. This is a very simple interface, so any read to \$C090..\$C09F will transfer random data to the output latch and to the Apple.

Article Change History:

28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:11



Tech Info Library

Apple III: Game Paddles

Revised: 6/22/94
Security: Everyone

Apple III: Game Paddles

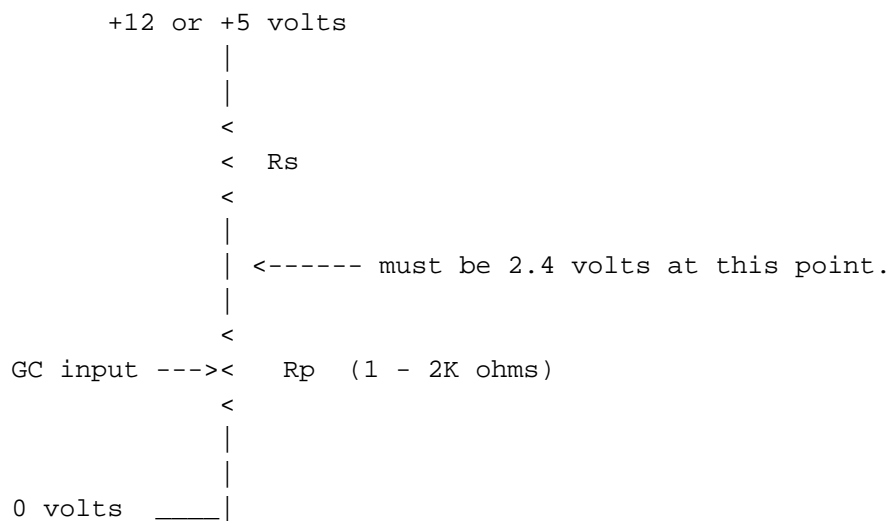
=====

This article last reviewed: 21 September 1984

Standard Apple II 150K game paddles cannot be used with the Apple III. A high impedance potentiometer like the Apple II paddle will not work properly connected to an Apple III port.

The analog inputs on Port A and Port B of the Apple III are designed to read a voltage between 0 and 2.4 volts and convert it to a number between 0 and 255. The schematic on page 82 of the Apple III Owner's Guide is drawn for a joystick with 5,000 ohm potentiometers. Only the bottom 20% of the potentiometer's range is used. Using the +12 volt power supply will result in the most stable readings.

The following circuit can be used if the entire range of the potentiometer is desired.



The voltage range at the GC inputs should go from 0v to 2.4v. The value of Rs can be calculated for +5 volt systems with this formula:

$$R_s = R_p * 2.6 / 2.4$$

For +12 volt systems use

$$R_s = R_p * 9.6 / 2.4$$

1988

Tech Info Library Article Number:13



Tech Info Library

Apple III: Joystick Input--Apple II Game Incompatibility

Revised: 10/5/92
Security: Everyone

Apple III: Joystick Input--Apple II Game Incompatibility

=====

This article last reviewed: 21 September 1984

Some machine language games that use the paddle inputs will not work on the Apple III. The hardware for reading the analog inputs is different, and some software will not be able to take this into account.

Also, the joystick ports on the back of the Apple III are arranged such that some games won't work properly in Emulation mode. Most joystick oriented games will use PDL (0) and PDL (1) for X-Y control. The ports on the Apple III put these signals on different connectors. Here are the Apple II Emulation Mode equivalents of the signals available on ports A and B.

pin	Port A	Port B
4	PDL (0)	PDL (1)
5	PB1	PB2
8	PDL (2)	PDL (3)
9	PB3	

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Tech Info Library Article Number:14



Tech Info Library

MPW: Problem with replace command in shell

Revised: 6/22/94
Security: Everyone

MPW: Problem with replace command in shell

=====

In the shell of MPW 1.0, 1.0.1, and 1.0.2, there's a problem using the replace command to change the tag operator (option-r). The error message '### replace - Invalid Option-r statement.' results from using either of two commands,

```
replace /'Option-r'/ 'Option-r'
or
replace /Option-dOption-r/ 'Option-r',
```

where the first Option-r in each line is the tag operator and the Option-d is the shell escape character.

To work around the situation, use two commands,

```
Find /'option-r'/
and
Replace option-6 option-r
```

where the first option-r is really the tag symbol, option-6 is really the selection symbol, and the second option-r is really option-r.

1988

Tech Info Library Article Number:15



Tech Info Library

Apple III: System Failure Errors

Revised: 10/29/84
Security: Everyone

Apple III: System Failure Errors

=====

The following table attempts to explain the numbers that are displayed following a SYSTEM FAILURE. A system failure is generally a hardware problem. Try recreating the same error with the same software on another Apple III to confirm if it is software or hardware that is causing the failure.

Copying certain protected diskettes will cause an error \$06 when the copy is booted. This is a normal effect of the protection scheme.

\$01	BADBRK	Break instruction from within SOS
\$02	BADINT1	Interrupting device not found
\$03	BADINT2	Bad zero page allocation
\$04	NMIHANG	Unable to lock NMI
\$05	EVQOVFL	Event queue overflow
\$06	STKOVFL	6502 stack overflow
\$07	BADSYSCALL	DMGR detected invalid request code
\$08	MCTOVFLOW	DMGR - too many device handlers
\$09	MEM2SML	Memory size less than 64K
\$0A	VCBERR	BFMGR - volume control block not useable
\$0B	FCBERR	File control block crashed
\$0C	ALCERR	Allocation blocks invalid
\$0D	DIRERR	Directory is not correct
\$0E	TOOLONG	Pathname buffer overflow
\$0F	BADUFNUM	Invalid buffer number
\$010	BADBUFSIZ	Invalid buffer size (=0 or >16K)

BFMGR Block file manager
DMGR Device Manager

Apple Tech Notes

Tech Info Library Article Number:16



Tech Info Library

Apple III: Apple Disk Drives and Emulation Mode

Revised: 10/29/84
Security: Everyone

Apple III: Apple Disk Drives and Emulation Mode

=====

The Apple II emulation mode on the Apple III is configured so that the internal drive looks like Slot 6, Drive 1 and the first external drive looks like Slot 6, Drive 2. Emulation mode can't access the third or the fourth external drive.

Apple Tech Notes

Tech Info Library Article Number:18



Tech Info Library

Apple III: Emulation Mode--Controlling Bit 8 of the RS-232 Port

Revised: 10/29/84
Security: Everyone

Apple III: Emulation Mode--Controlling Bit 8 of the RS-232 Port

=====

This driver allows the user to control bit 8 of the built-in RS-232 port in Emulation Mode. Bit 8 is used by some printers to select expanded or normal print mode or to enable alternate or graphics character sets. DOS 3.2 or DOS 3.3 is required to use this routine. Both the Serial Card Emulation and the Communications Card Emulation are supported.

SOFTWARE ENTRY

Boot a DOS diskette and enter the monitor with CALL -155 and type

```
3B0:A9 07
:20 95 FE
:A9 80
:20 ED FD
:A9 C5
:85 36
:A9 03
:85 37
:4C EA 03
:29 7F
:0D CD 03
:4C 07 C7
:80
```

To check your typing, type

```
3B0L
```

and compare your listing to the one below.

03B0-	A9 07	LDA	#\$07
03B2-	20 95 FE	JSR	\$FE95
03B5-	A9 80	LDA	#\$80
03B7-	20 ED FD	JSR	\$FDED
03BA-	A9 C5	LDA	#\$C5
03BC-	85 36	STA	\$36

03BE-	A9 03	LDA	#\$03
03C0-	85 37	STA	\$37
03C2-	4C EA 03	JMP	\$03EA
03C5-	29 7F	AND	#\$7F
03C7-	0D CD 03	ORA	\$03CD
03CA-	4C 07 C7	JMP	\$C707
03CD-	80	???	

Now return to Basic with 3D0G

SAVING THE PROGRAM TO DISK:

Save the driver to disk by typing

```
BSAVE SERIAL DRIVER, A$3B0, L$1E
```

USING THE PRINTER:

The driver should be in memory before you want to use the printer. You must load the driver and initialize the interface.

From command mode type

```
BLOAD SERIAL DRIVER
CALL 944
```

This may be done from a program by entering

```
100 PRINT D$;"BLOAD SERIAL DRIVER" : CALL 944
```

assuming that D\$ contains a CTRL-D.

If you want to switch back to the video monitor for output type

```
PR#0
```

or in a program enter

```
200 PRINT D$;"PR#0"
```

Then to reconnect the printer, all that is required is

```
CALL 954
```

or from a program

```
300 CALL 954
```

SETTING THE PRINT MODES:

To set normal print mode POKE 973,0

To set expanded print mode POKE 973,128

..TIL00019-Apple_III-Emulation_Mode-Controlling_Bit_8_of_the_RS-232_Port_(TA34781).pdf

Apple Tech Notes

Tech Info Library Article Number:19



Tech Info Library

Apple III: Interrupts and Reset on Peripheral Slots

Revised: 10/29/84
Security: Everyone

Apple III: Interrupts and Reset on Peripheral Slots

=====

The Apple III slots can not respond to IRQ or RESET from the peripheral cards in emulation mode. There is no way around it because the hardware is different. NMI is not on the same pin as in the Apple II and will act like RESET on the Apple II.

Apple Tech Notes

Tech Info Library Article Number:20



Tech Info Library

Apple III: Using the Super Serial Card

Revised: 10/29/84
Security: Everyone

Apple III: Using the Super Serial Card

=====

The Super Serial Card can be used in the Apple III with the appropriate driver. But, since the Apple III is an interrupt driven system, switches S2-6 and S2-7 must be ON to enable interrupts from the card. The Apple III will hang when the driver is opened if this is not done.

Apple Tech Notes

Tech Info Library Article Number:21



Tech Info Library

Apple III: .RS232--Number of Stop Bits

Revised: 10/29/84
Security: Everyone

Apple III: .RS232--Number of Stop Bits

=====

There is no way to control the number of stop bits sent out by the .RS232 driver. It will send out one stop bit except at 110 baud when it sends out two.

Apple Tech Notes

Tech Info Library Article Number:22



Tech Info Library

Apple III: Console Driver--Screen Mode Switching Program

Revised: 10/29/84
Security: Everyone

Apple III: Console Driver--Screen Mode Switching Program

=====

The following program is a demonstration of how to change the Apple III screen mode.

```
PROGRAM SCREENTEST;
```

```
PROCEDURE SCREENMODE (NUMBER: INTEGER);
```

```
VAR CH: CHAR;
```

```
BEGIN
```

```
  IF NUMBER IN [0..2] THEN BEGIN {If the given number is valid}
    WRITE (CHR (14));              {turn off the screen and}
    CH := CHR (16);
    UNITWRITE (1, CH, 1, , 12);    {send the prefix character}
    CH := CHR (NUMBER);
    UNITWRITE (1, CH, 1, , 12);    {and the mode character.}
    IF NUMBER = 2 THEN WRITE (CHR (1)); {If 80 column, restore}
                                   {viewport.}
    WRITE (CHR (28), CHR (15)); {Clear screen and turn it on.}
  END ELSE WRITELN (CHR (7), 'SCREENMODE ERROR '); {else OOPS!}
```

```
END;
```

```
PROCEDURE TESTERROR;
```

```
BEGIN
```

```
  WRITE (CHR (28));                {Clear the screen.}
  GOTOXY (0,11);
  WRITE ('This will generate an error. '); {Write some text.}
  SCREENMODE (5);                  {Set an invalid mode.}
  WRITELN;
  WRITE ('Press RETURN to continue: ');
  READLN;
```

```
END;
```

```
PROCEDURE TEST40;
```

```
BEGIN
```

```
  SCREENMODE (0);                  {Set 40 column B/W mode.}
  GOTOXY (0,11);
  WRITELN ('This is 40 column text mode.');
```



```
        WRITELN;
        WRITE  ('Press RETURN to continue: ');
        READLN;
END;

PROCEDURE TESTCOLOR;
BEGIN
    SCREENMODE (1);                {Set 40 column color mode.}
    WRITE (CHR (20), CHR (4));      {Set background to Dark Green.}
    WRITE (CHR (28));               {Clear the screen.}
    WRITE (CHR (19), CHR (13));     {Set foreground to Yellow.}
    GOTOXY (0,11);
    WRITELN ('This is 40 column COLOR mode. ');
    WRITELN;
    WRITE  ('Press RETURN to quit: ');
    READLN;
END;

BEGIN
    TESTERROR;
    TEST40;
    TESTCOLOR;
    SCREENMODE (2);
END.
```

Apple Tech Notes

Tech Info Library Article Number:23



Tech Info Library

Apple III: Console Driver--Changing the Character Set

Revised: 10/29/84
Security: Everyone

Apple III: Console Driver--Changing the Character Set

=====

The console driver has a control call that will load up to eight new character definitions for the video display. Here is a Pascal program that will change one character.

```
PROGRAM SWAP;
VAR
  UNITNUM      : INTEGER;

  REQUESTCODE  : PACKED RECORD
    CHANNEL      : 0..1;
    STAT_OR_CTRL : 0..1;
    REQUEST_NUM  : 0..255;
    RESERVED     : 0..63;
  END;

  DATA        : PACKED RECORD
    NUMBER       : 0..255;
    CHARACTER    : CHAR;
    INFO         : PACKED ARRAY [1..8] OF 0..255;
  END;

BEGIN
  WITH REQUESTCODE DO BEGIN
    CHANNEL:=0;
    STAT_OR_CTRL:=1;
    RESERVED:=0;
    REQUEST_NUM:=17; { character replace code }
  END;

  WITH DATA DO BEGIN
    NUMBER := 1;      { How many characters to change }
    CH := ' ';        { which character to change }
    INFO [1] := 255; { character definition }
    INFO [2] := 255; { See page 166 of the }
    INFO [3] := 255; { STANDARD DEVICE DRIVER MANUAL }
    INFO [4] := 255;
```

```
        INFO [5] := 255;  
        INFO [6] := 255;  
        INFO [7] := 255;  
        INFO [8] := 255;  
    END;  
  
    UNITNUM:=1;  
    UNITSTATUS (UNITNUM, DATA, REQUESTCODE);  
    WRITELN ('ALL_SPACES_WILL_NOW_DISPLAY_AS_" " !');  
END.
```

Apple Tech Notes

Tech Info Library Article Number:24



Tech Info Library

Apple III: Manual Errata--Standard Device Drivers Manual

Revised: 10/29/84
Security: Everyone

Apple III: Manual Errata--Standard Device Drivers Manual

=====

Page 35

There is an error in the listing at the top of the page. It reads:

```
var:
  g_array:array[0..20] of 0..255;
begin
  g_array[0]:=19; g_array[1]:=2;
  unitwrite(1,g_array,2,,12);
end;
```

It should read:

```
var:
  g_array:packed array[0..20] of 0..255;
begin
  g_array[0]:=19; g_array[1]:=2;
  unitwrite(1,g_array,2,,12);
end;
```

Page 135

All of the reference numbers on the keys need to have one added to them to match the table on page 136.

Apple Tech Notes

Tech Info Library Article Number:25



Tech Info Library

Apple Access III: Business Basic Bootable Diskette

Revised: 10/29/84
Security: Everyone

Apple Access III: Business Basic Bootable Diskette

=====

The instructions on page 36 for creating a Business Basic bootable diskette are misleading. Here is another way:

1. Use System Utilities to format disk with name APPLCOM.
2. Copy the files SOS.KERNAL, SOS.INTERP, and SOS.DRIVER from the Business Basic disk to APPLCOM.
3. Copy the files ACCESS3, ACCESS3.INV, ACS3FONT from the Apple Access III disk to APPLCOM.
4. Use the System Configuration Program to add RS232.DRIVER to /APPLCOM/SOS.DRIVER.
5. RENAME ACCESS3, HELLO
6. Type the following commands to restore the cursor wrap-around feature when you exit Access3:

```
LOAD HELLO
45 PRINT CHR$(4)
SAVE HELLO
```

7. Re-boot the system with /APPLCOM in the built-in drive.

Please refer to chapter 4 of the Apple III Owner's Guide for instructions on formatting diskettes, copying files, and using the System Configuration Program.

Apple Tech Notes

Tech Info Library Article Number:26



Tech Info Library

Apple Access III: Dow Jones News and Quotes Access

Revised: 10/29/84
Security: Everyone

Apple Access III: Dow Jones News and Quotes Access

=====

The Dow Jones News and Quotes service, when accessed through Tymnet, will not respond to your password or prompt you further if Access III has it's X-ON handshaking protocol enabled. The X-ON protocol can be controlled in the open-apple-S menu. See page 28 of the Access III manual for details.

Apple Tech Notes

Tech Info Library Article Number:27



Tech Info Library

Apple Writer II: DOS Version--Printing With Parallel Printers

Revised: 10/29/84
Security: Everyone

Apple Writer II: DOS Version--Printing With Parallel Printers

=====

Apple Writer may not work properly with some parallel interface cards. Often the interface requires a CTRL-I sequence if it is to print wider than 40 columns. This is easy in Apple Writer II. All you need to do is insert the

<CTRL-V><CTRL-I><CTRL-V> 132N

at the start of each file. You will have to use the CTRL-V before and after the CTRL-I to enter it into the file. Please refer to page 51 of the Apple Writer manual for more details.

Apple Tech Notes

Tech Info Library Article Number:28



Tech Info Library

Apple Writer IIe under ProDOS: Printer codes from all Apples

Revised: 4/30/86
Security: Everyone

Apple Writer IIe under ProDOS: Printer codes from all Apples

=====

Many printers have special features that the computer signals by sending command codes. To send codes to a printer from Apple Writer IIe (version 2.1) under ProDOS, you must insert the codes into the Apple Writer file you want printed. The manual of the printer may list the codes by several names: decimal, hexadecimal, teletype abbreviations (SOH, ETX, DC1, DC3, etc.), standard keys, and combinations of the above.

Using the chart "ASCII characters, values, and keystrokes", you have to translate from the name of the code in the printer manual into the name of the corresponding keystroke or keystrokes on the keyboards of the Apple IIe, Enhanced Apple IIe, or Apple IIc.

Some keystrokes put so-called control characters into the Apple Writer file. These control characters are not part of the conventional English character set; while screen shows them, the printer intercepts and does not print them, instead recognizing them as signals to turn special functions on and off or to change printer settings.

NOTE: In the descriptions of the keystrokes, the characters greater than and less than, < and >, are used to contain one keystroke, which can mean that:

1. You must simultaneously hold down the control key, the shift key, or both as you press the other key, or
2. You must press a special key, such as ESC or RETURN.

With these considerations in mind, here is a list of codes and methods for inserting them in an Apple Writer file.

Null (ASCII value 0):

Because Apple Writer IIe (version 2.1) under ProDOS uses the null character to mark the end of a file, Apple Writer does not allow a null to be inserted into the file. The inserted null would effectively delete any text after it.

Apple Writer does send a null in the place of a Control-Underline character:

<CTRL-V><CTRL-UNDERLINE><CTRL-V>

Control-A through Control-Z (ASCII decimal values 01 through 26):

Example: Control-Z (ASCII decimal value 26): <CTRL-V><CTRL-Z><CTRL-V>

Exception: Control-V (ASCII decimal value 22) can't be entered.
See "Missing Characters" below.

Escape (ASCII value 27): <CTRL-V><ESC><CTRL-V>

Other Control characters: These can be entered in the manner of Control-A through Control-Z.

Missing Characters:

In typing a file, there is no way to put a Control-V into the text.
During printing, Apple Writer doesn't send a Control-Underline as such.

Applesoft BASIC can be used to send a Control-V or Control-Underline to your printer.

1. Create your Apple Writer document as usual, but substitute unique characters in each place that you want a Control-V or Control-Underline character.
2. Type <CTRL-P> to display the Print/Programs Command menu.
3. Type PD8, Apple Writer's code for Print to Disk on an Apple II.
4. Type NP to begin printing.
5. To the Apple Writer prompt for a file name, do not enter the same name with which the file is already saved. Enter a unique name, and note it down.
6. After the printing to disk is finished, exit Apple Writer and boot up a ProDOS diskette.
7. Run the following program, using the following forms of line 330:

Control-V

```
330 IF C$=X$ THEN C$=CHR$(22)
```

Control-Underline

```
330 IF C$=X$ THEN C$=CHR$(31)
```

```
100 HOME
```

```
110 PRINT TAB(10);APPLE WRITER TO PRINTER"
```

```
120 VTAB 5
```

```
130 INPUT "NAME OF APPLE WRITER FILE PRINTED TO DISK: ";F$
```

```
140 IF F$="" THEN 900
```

```
145 VTAB 12
```

```
146 INPUT "CHARACTER TO REPLACE: ";X$
```

```
147 IF X$="" THEN 145
```

```
150 VTAB 10
160 INPUT "PRINTER SLOT #: ";S$
170 IF S$="" THEN 900
180 S=VAL$(S$); IF S < 1 OR S > 7 OR INT(S) <> S THEN 150
190 D$=CHR$(4)
200 ONERR GOTO 800
210 PRINT D$;"UNLOCK";F$
220 POKE 216,0
230 VTAB 12: PRINT SPC(75)
240 PRINT
250 PRINT D$;"PR#";S
260 PRINT CHR$(9);"132N"
270 PRINT D$;"OPEN";F$280 ONERR GOTO 400
290 PRINT D$;"READ";F$
300 A$=""
310 GET C$
315 IF C$=CHR$(12) THEN 310
320 IF C$=CHR$(13) THEN 350
330 IF C$=X$ THEN C$=CHR$( ): REM Substitute ASCII value for unique character
340 A$=A$+C$:GOTO 310
350 PRINT A$
390 GOTO 300
400 POKE 216,0
410 PRINT D$;"CLOSE"
420 PRINT D$;"PR#0"
430 VTAB 15
440 PRINT TAB(5);"FILE ";F$;" HAS BEEN PRINTED."
450 GOTO 900
800 POKE 216,0
810 VTAB 12
820 PRINT CHR$(7);"I CAN'T FIND THE FILE ";F$;"."
830 INPUT "";Z$
840 GOTO 100
900 END
```

Apple Technical Communications

Tech Info Library Article Number:29



Tech Info Library

Apple Writer II: DOS Version--Sup-R-Term and Super Serial Card

Revised: 10/29/84
Security: Everyone

Apple Writer II: DOS Version--Sup-R-Term and Super Serial Card

=====

Apple Writer may not print with these cards unless you set the following switches on the Super Serial Card to:

SW2-3 off
SW2-4 off

This sets the line width to 132 columns and disables the echo to the 40 column Apple video output.

Apple Tech Notes

Tech Info Library Article Number:30



Tech Info Library

Apple Writer III: Footnotes

Revised: 10/29/84
Security: Everyone

Apple Writer III: Footnotes

=====

Footnotes longer than 132 characters will stop Apple Writer III (versions 1.0 and 1.1) while printing with a WPL "FOOTNOTE OVERFLOW" error. There is no fix available at this time.

When a footnote is inserted in the text, the character immediately following the note is omitted. Example:

The text:

....Apple User's Groups (<For more info, see page 16>)are a good....

How it prints:

....Apple User's Groups re a good....

This problem can be worked around by adding an extra space after the footnote. Example:

....Apple User's Groups (<For more info, see page 16>) are a good....

Footnotes don't obey the Right margin. There is no fix available at this time.

Footnotes won't be printed if there isn't enough text on the page.

Apple Tech Notes

Tech Info Library Article Number:31



Tech Info Library

Apple Writer III: Available Space

Revised: 10/29/84
Security: Everyone

Apple Writer III: Available Space

=====

Apple Writer III (versions 1.0, 1.1 and 2.0) can edit files up to 65021 characters long at a time. This figure applies to both 128K and 256K Apple IIIs. Please note that as the file gets larger, the computer takes longer to process the typed characters. It isn't unusual for good typists to lose characters as the file grows.

Apple Tech Notes

Tech Info Library Article Number:32



Tech Info Library

Apple Writer III (versions 1.0 and 1.1): Top Line

Revised: 10/29/84
Security: Everyone

Apple Writer III (versions 1.0 and 1.1): Top Line

=====

The TopLine command changes the default top line, but page 1 may still have a top line. The reason for this is that the default top line gets printed before Apple Writer starts reading text and has a chance to see any .TL commands.

You must insure that the TL parameter in the print options menu is a blank line and that there isn't a .TL command in your file to supress printing of a top line on page 1.

You can also use the default top line to print on page 1 and insert a .TL<CR> in the text to supress printing of the top line on subsequent pages.

The TL command is described on page 66 of the Apple Writer III manual.

Apple Tech Notes

Tech Info Library Article Number:33



Tech Info Library

Apple Access III: Addendum (1 of 7)

Revised: 10/29/84
Security: Everyone

Apple Access III: Addendum (1 of 7)

=====

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INTRODUCTION

ACCESS III Version 1.1 includes numerous new features. This addendum describes these features. It also outlines differences between versions 1.0 and 1.1 and lists problems with version 1.0 and how these problems have been resolved.

This document will be part of the Access III package. The Apple part number for the addendum will be 031-0243-B.

NEW FEATURES SUMMARY

Two new selections have been added to the Set-Up Menu, "Set the answerback" and "Change the recording file name." When you save the Set-Up settings, both the answerback text and the recording file name are saved and restored the next time you run ACCESS III.

You can now prepare a file for transmission and have transmission begin unattended after ACCESS III receives a password that you specify.

And, several new escape sequences have been added that permit a remote computer to completely control the recording capability.

ANSWERBACK

The answerback is a series of up to sixteen characters that is automatically transmitted when ACCESS III receives a CTRL-E (ASCII 5). The answerback can be transmitted by operator command by holding down the open-apple key and pressing E. Selecting "Set the answerback" on the Set-Up menu lets you enter the text that will be transmitted. The answerback is saved along with the other Set-Up characteristics.

REMOTE CONTROL OF THE RECORDING FILE

ACCESS III Version 1.1 has a series of unique escape sequences that allow a remote computer to control the recording file. Sequences are provided to turn the filter on and off, turn recording on and off, and change the name of the recording file. These sequences are available ONLY when ACCESS III is in ANSI mode.

QUEUING FILE TRANSMISSION

You can now prepare a file for transmission and when ACCESS III asks "Are you ready to start transmitting?" you can instruct ACCESS III to queue the file. ACCESS III then asks for a password of up to sixteen characters and displays a "Waiting..." message. ACCESS III waits for the password to be received over

the RS232 line. When the complete password has been received, file transmission begins.

ACCESS III cannot be used while it is waiting for the password, but the wait can be aborted by pressing the ESCAPE key. Pressing ESCAPE also completely aborts file transmission.

When ACCESS III has finished transmitting the file, it automatically returns to terminal mode.

Apple Tech Notes

Tech Info Library Article Number:35



Tech Info Library

Apple Access III: Addendum (2 of 7)

Revised: 10/29/84
Security: Everyone

Apple Access III: Addendum (2 of 7)

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SUMMARY OF CHANGES FROM VERSION 1.0

Changing the name of the recording file is now done from the Set-Up menu rather than from the main menu. The name of the recording file is saved whenever Set-Up characteristics are saved. This makes it possible to name the default recording file anything you want.

The recording filter now defaults to ON. Use the STATUS display to make sure that it is set the way you want.

ACCESS III version 1.1 lets you transmit Pascal text files. The header block is not transmitted, and all DLE sequences are correctly expanded to the corresponding number of blanks. This means that a Pascal text file will appear to the receiving computer exactly the same as keys pressed on the keyboard. Or, to put it another way, characters transmitted will be exactly the same as if you had converted the Pascal text file to an ASCII file using the Pascal Editor, and then transmitted the ASCII file.

WHAT'S ON THE MASTER DISKETTE

If you catalog (or list the directory) of the ACCESS III master diskette you will find the following files:

/APPLCOM	Size	File type
*ACCESS3.CODE	61	Codefile
*ACCESS3.INV	62	Codefile
*RS232.DRIVER	7	Codefile
*ACS3FONT	2	Datafile
*ACCESS3	1	Basicprog
*SPSUB.CODE	3	Codefile
*SOS.DRIVER	27	Sosfile
*SETPREFIX.TEXT	4	Textfile
*SETPREFIX.CODE	2	Codefile
*ACCESS3.PROFILE	1	Basicprog

This is a brief explanation of what each of those files is and why it is on

the ACCESS III master diskette.

ACCESS3.CODE is the Pascal executable version of ACCESS III. ACCESS III is written entirely in assembly language. The assembly module is linked to a small Pascal host program to form this code file.

ACCESS3.INV is a Business BASIC invocable module. This is the codefile that runs when you use Business BASIC.

RS232.DRIVER is the device driver that manages the Apple III built-in RS232 interface. This driver must be part of the SOS.DRIVER file on your boot diskette in order for ACCESS III to function correctly. This driver is exactly the same as the RS232 driver included on the Utilities Data diskette that accompanied your SOS system software.

ACS3FONT is a character set font file in which line graphics characters replace the control character designations in the standard Apple III character set. If your application requires the line graphic characters, then ACS3FONT must be configured into the SOS.DRIVER file on your boot diskette. If you do not use the graphics mode of ACCESS III, then the standard Apple III font may be used.

ACCESS3 is a very short Business BASIC program that invokes the ACCESS III invocable module. When you type "run access3" in Business BASIC, this is the program that is loaded and executed. It also temporarily sets a null prefix so that SOS will look for a diskette named /APPLCOM for ACCESS III files like the recording file and the configuration file. If you want to run ACCESS III from a ProFile, you should not use this program. Instead, see the section, "Using ACCESS III With a ProFile."

SPSUB.CODE is a short assembly language subroutine that sets the SOS prefix in the Pascal environment. It is supplied as a separate subroutine so that together with SETPREFIX.TEXT, you can customize your own prefix setting program if you have special requirements. Only users familiar with Pascal and linking assembly language modules should use this file.

Apple Tech Notes

Tech Info Library Article Number:36



Tech Info Library

Apple Access III: Addendum (3 of 7)

Revised: 11/7/84
Security: Everyone

Apple Access III: Addendum (3 of 7)

=====

DESCRIPTION OF ACCESS III FILES (CONTINUED)

SOS.DRIVER is a device driver file configured specifically for use with Access III. Simply copy this file onto your boot diskette; alternatively, create you own SOS.DRIVER file using the individual drivers supplied on the System Utilities Data diskette. The SOS.DRIVER includes:

- .CONSOLE
- .SILENTYPE
- .RS232
- .ACS3FONT: is the system font

Furthurmore, four disk drives are configured.

SETPREFIX.CODE is a small Pascal program linked to an assembly language subroutine that allows you to set the SOS prefix. As explained in "Using Access III with a ProFile", setting the prefix with the Pascal filer does not change the SOS prefix, meaning that if you execute Access III from a ProFile without executing the SETPREFIX program, Access III will not be able to successfully save and load the Set-Up selections.

The source listing for the program SETPREFIX.TEST is included, so the prefix setting can be customized for unusual situations.

To successfully run Access III stored on a ProFile in a Pascal environment, you must first execute SETPREFIX, which is described in "Using Access III With a ProFile".

ACCESS3.PROFILE is a Business BASIC program enabling you to run Access III from a ProFile in a Business BASIC environment. The only difference between this program and the Access III Business BASIC program is the way the the prefix is set: Access III sets a null prefix to force SOS to look for a diskette, while ACCESS3.PROFILE sets the prefix to /PROFILE, instructing SOS to look there for a subdirectory. See "ProFile and Business BASIC" under "Using Access III with a ProFile" for additional information.

CHANGES AND NEW FEATURES

CHANGES TO THE MAIN MENU

Changing the name of the recording file is not performed from the main menu: it's now an entry on the Set-Up menu. It's therefore saved along with the rest of the Set-Up settings.

ADDITIONS TO SET-UP MODE

Two new selections to the Set-Up menu are: "Set the Answerback" and "Change the recording file name."

When you save the Set-Up settings, both the answerback text and the recording file name are saved. These Set-Up settings are restored the next time you run Access III.

SET THE ANSWERBACK

Selecting this choice causes the screen to clear and the following message to display:

Answerback text?

Respond by entering your answerback message containing up to sixteen characters followed by a RETURN. The RETURN is NOT stored as part of the answerback text.

The characters that you enter will be transmitted by Access III whenever a CTRL-E (ASCII 5) is received.

To enter control characters in your answerback text, hold down the open-apple key and the CONTROL key while pressing the key you wish to enter. Your control character is displayed as one of the line graphic characters, though it's both transmitted and saved correctly.

See Appendix B of the Access III manual for each key's ASCII code.

You can also cause the answerback text to be transmitted without receiving the CTRL-E: hold down the open-apple key and press the E key.

CHANGE THE RECORDING FILE NAME

Selecting this option clears the screen and closes the old recording file. Access III then prompts you to open a new recording file name:

New recording file name?

A legal answer may be a block file pathname or a character device name such as .SILENTYPE.

ADDITIONS TO THE STATUS SCREEN

The STATUS screen displays the current answerback text as well as all the previously displayed information.

Apple Tech Notes

Tech Info Library Article Number:37



Tech Info Library

Apple Access III: Addendum (4 of 7)

Revised: 11/7/84
Security: Everyone

Apple Access III: Addendum (4 of 7)

=====

NEW FILE TRANSMISSION FEATURES

Version 1.1 of Access III recognizes Pascal text files. It doesn't transmit the header, though it correctly expands the DLE sequences to the proper number of blanks.

You can also queue any file for transmission at a later time: merely enter a "Q" when asked if your ready to transmit. The system prompts you to:

Queue password (ESC-RET to abort)?

Enter your password containing up to 16 characters for the password. After you enter the password and press RETURN, Access III displays:

Waiting...

Access III then compares every word it receives with the password you entered. Upon receiving the exact password from the RS232 port, the system immediately begins transmitting the file you queued. While Access III is waiting for the password to be sent, you're unable to use Access III.

If necessary, abort the wait (or transmisson) by pressing the ESCAPE key.

NEW ESCAPE SEQUENCES

Access III has its own private escape sequences that are not part of the VT100 ANSI escape sequence set. These sequences are active ONLY when Access III is in ANSI mode.

Access III private escape sequences follow the ANSI escape character format: they're followed by a special lead-in character and end with a unique terminator. The format is:

ESC * Pn Ps @

Where ESC is the introductory escape character. The asterisk (*)

represents special character lead-in that identifies the sequence as an Access III private escape sequence. Pn is a single digit parameter number, while Ps is a parameter string appears in the sequence solely to change the recording file name. The unique terminator is the "at sign" @ which is ASCII 64.

In most of the examples of escape sequences, the characters in the sequence are separated by spaces for easier reading. No real escape sequence should ever contain embedded blanks. Doing so will have unpredictable consequences.

The valid values for Pn are:

Pn	Meaning
--	-----
0	Turn recording off
1	Turn recording on
2	Turn the filter off
3	Turn the filter on
4	Change the recording file name

TURN RECORDING OFF

It is possible to have a remote computer turn recording on and off by sending Access III a special escape sequence. To turn recording off, simply have the remote computer send Access III the following characters, in the order shown:

ESC * 0 @

ESC is the escape character (ASCII 27).

TURN RECORDING ON

To turn recording on, send Access III the following characters, in the order shown:

ESC * 1 @

ESC is the escape character (ASCII 27).

TURN THE FILTER OFF

Upon receipt of the following characters, Access III turns the recording filter off:

ESC * 2 @

ESC is the escape character (ASCII 27).

TURN THE FILTER ON

The following characters will cause Access III to turn the recording filter on:

ESC * 3 @

ESC is the escape character (ASCII 27).

CHANGE THE RECORDING FILE NAME

This sequence causes Access III to close the old recording file and open a new one. The name of the new file is included in the sequence. It can be a block file pathname or a character device name.

When Access III is done processing the sequence, it transmits a reply that indicates the success of the operation, or gives an error code that describes the difficulty.

The sequence to change the recording file name is:

ESC * 4 filename @

where ESC is the escape character (ASCII 27), and "filename" is a valid SOS pathname 30 characters in length or less. The sequence must contain NO embedded spaces and it must end with "@".

Some sample sequences:

ESC*4.SILENTTYPE@

ESC*4/APPLCOM/TERMREC@

ESC*4/PROFILE/MYFILE.DATA@

Apple Tech Notes

Tech Info Library Article Number:38



Tech Info Library

Apple Access III: Addendum (5 of 7)

Revised: 11/7/84
Security: Everyone

Apple Access III: Addendum (5 of 7)

=====

The Reply Sequence

Access III returns an escape sequence in acknowledgment ONLY to a request to change the recording file name. This escape sequence is:

ESC * Pe

where ESC is the escape character (ASCII 27) and Pe is the SOS error code plus 32 (decimal). The offset of 32 is added to the error code so that the reply sequence will not include any control characters which might adversely affect some remote computers.

If the recording file name change is successful, then Pe is the blank character (ASCII 32 plus the SOS OK code of zero). If the new recording file already exists, Pe is 32 (decimal) plus the SOS error code 47 (hex) for a total of 103 (decimal) which is a lower case "g".

When Access III receives the escape sequence commanding the name change, it first checks the new recording file name for validity. If any problems are found, the SOS error code (+32) is returned in the reply sequence. If no problems are found, the old recording file is closed, the new one is opened, and the operation successful reply sequence is sent.

The reply sequence is NOT followed by a carriage return.

If the new recording file cannot be successfully opened, the previous recording file is reinstated. If the previous recording file was a disk file, the file pointer is moved to the end of the file so that any additional recorded information will be added to the end.

A NEW COMMAND KEY

It is possible to force transmission of the answerback text by holding down the open-apple key and pressing the "E" key. The complete answerback text is transmitted every time the "E" key is pressed with the open-apple key held down.

USING ACCESS III WITH A PROFILE

Access III can be used from a ProFile. The procedure differs slightly depending on whether you usually use Pascal or Business BASIC.

No matter what language you are using, you must have a correctly configured SOS.DRIVER file to use the ProFile. The SOS.DRIVER file included on the Access III master diskette does not have a ProFile driver in it. You can use the system configuration feature of the Utility program to add the ProFile driver to the SOS.DRIVER file from the Access III master diskette, or you can construct a new SOS.DRIVER file. Just be sure that your new driver file contains both the RS232 driver and the ACS3FONT character font from the Access III master diskette.

Consult the Standard Device Drivers Manual for instructions on how to configure a SOS.DRIVER file.

In the following discussions it is assumed that the root volume name of your ProFile is /PROFILE. The root volume name is the one that is displayed at the top of any directory listing of the device. If your ProFile has a different volume name, substitute it for /PROFILE in all commands given below.

It is also assumed that you have already configured your system diskette to include the ProFile driver, and you have read and followed the instructions for setting up and using your ProFile.

PROFILE AND PASCAL

If you use Pascal, use the Pascal Filer to create a subdirectory on the ProFile called APPLCOM. This is done with the Make command as follows:

```
M
Make what file? applcom![4]
```

The exclamation point after the subdirectory name tells the Filer that you're creating a subdirectory. The four in square brackets is the amount of space you're allocating for the subdirectory.

After the subdirectory has been created, transfer ACCESS3.CODE to that subdirectory.

```
T
Transfer what file? /APPLCOM/ACCESS3.CODE
To where? /PROFILE/APPLCOM/ACCESS3.CODE
```

Then transfer SETPREFIX.CODE to the root volume of your ProFile.

```
T
Transfer what file? /APPLCOM/SETPREFIX.CODE
To where? /PROFILE/SETPREFIX.CODE
```

..TIL00039-Apple_Access_III-Addendum_5_of_7_(TA39978).pdf

Apple Tech Notes

Tech Info Library Article Number:39



Tech Info Library

Apple Access III: Addendum (6 of 7)

Revised: 8/5/85
Security: Everyone

Apple Access III: Addendum (6 of 7)

=====

BEFORE you execute Access III, you must execute SETPREFIX to set the prefix--for example, if the volume name of your ProFile is /PROFILE, then you must set the prefix to:

/PROFILE

You MUST set the prefix with the SETPREFIX program. If you set the prefix with the Filer, only the Pascal prefix remains set, not the SOS prefix, so Access III will not be able to find the files it needs.

The prefix set with the SETPREFIX program does not interfere with the Pascal prefix; in fact, a different prefix may be set by each. But for the sake of consistency, we suggest that you always set the Pascal and SOS prefixes the same. To do so, set the Pascal prefix from the Filer, then set the same prefix with the SETPREFIX program.

When done, type:

X
Execute what file? APPLCOM/ACCESS3

Access III will now be run from the subdirectory. If you receive an error message, you probably haven't set your prefixes properly.

If the prefixes are correctly set, save the Set-Up settings: they will be loaded automatically the next time you execute Access III.

-->PROFILE AND BUSINESS BASIC

Use the Utility program to make a subdirectory on the ProFile called APPLCOM: select "Make a new subdirectory" from the File Handling Commands. Call this new subdirectory:

/PROFILE/APPLCOM

This directory should have room for 25 files.

Press ESCAPE to return to the File Handling Commands menu, and then select "Copy files" from the File Handling Commands. Put the Access III master diskette into one of the Apple III disk drives, then type:

```
/APPLCOM
```

and press the up-arrow. You will see displayed a list of the files on the Access III diskette on the right hand side of your screen. Press the up and down arrow keys to line up the selection arrow with the name of the file to be selected, and select it by pressing the right arrow. Select the following files from the diskette:

```
ACCESS3.PROFILE
ACCESS3.INV
```

After you have selected both files, press RETURN to accept the selection. For the destination ("To the files:") type:

```
/PROFILE/APPLCOM/=
```

and press RETURN. The files you have selected will be transferred to the subdirectory on the ProFile.

The file ACCESS3.PROFILE is a small Business BASIC program that sets the prefix and invokes Access III. You may need to change it if, for any reason, you have a differently-named subdirectory. To change ACCESS3.PROFILE, type:

```
)load /profile/applcom/access3.profile
)list
```

You will then see the following listing:

```
10 a$=PREFIX$
20 PREFIX$="/PROFILE"
30 INVOKE "APPLCOM/ACCESS3.INV"
40 PERFORM ACCESS3
50 PREFIX$=a$
60 END
```

If you want to shorten the typing required to run Access III, type:

```
)save /profile/applcom/access3
```

Doing so saves a new Business BASIC program called Access III in the subdirectory on your ProFile. It changes the name from ACCESS3.PROFILE to just ACCESS3.

The program works as follows:

```
Line 10 saves the old prefix.
Line 20 sets the prefix to the volume that contains the Access III
        subdirectory.
```

Line 30 brings Access III into memory, and
Line 40 starts it up. When you exit Access III,
Line 50 restores the prefix to its original value.

With this program, you don't have to worry about setting the prefix with the
SETPREFIX program; just type:

```
)run /profile/applcom/access3
```

and everything will work correctly.

NOTE: If the volume name of your ProFile is different from "/PROFILE", you
must change this Business BASIC program so that it sets the correct
prefix. Just substitute the volume name of your ProFile in line 20
before saving the program with the new name.

Apple Tech Notes

Tech Info Library Article Number:40



Tech Info Library

Apple Access III: Addendum (7 of 7)

Revised: 11/7/84
Security: Everyone

Apple Access III: Addendum (7 of 7)

=====

REPORTED PROBLEM AND THEIR RESOLUTIONS

The following Access III Version 1.0 problems are fixed in version 1.1.

- 1) Access III V1.0 used from Business Basic does not abort the entry of the name of the file to transmit by pressing the ESCAPE key.

Resolution in Version 1.1: fixed.

- 2) When used from Business BASIC, Access III prevents your system from running many programs, including the VOLUMES program.

Resolution in Version 1.1: Fixed.

- 3) Pathnames for non-block files or devices were accepted as valid files to transmit.

Resolution in Version 1.1: Only block file pathnames are accepted. The criteria used is: if there is a leading period, there MUST be an embedded slash.

- 4) Access III displays the open-apple character upon receiving the ASCII 127 character, a character used by many systems as a pad character.

Resolution in Version 1.1: ASCII 127 is eliminated by the recording filter.

- 5) When prompted for the name of your file to be transmitted, the system indicated that pressing ESCAPE would abort--RETURN must also be pressed after pressing ESCAPE.

Resolution in Version 1.1: The message states ESCAPE - RETURN is required.

- 6) It is easy to forget to turn on the recording filter, the typical way files are recorded.

Resolution in Version 1.1: The recording filter is ON by default.

- 7) The recording file name couldn't be changed in version 1.0

Resolution in Version 1.1: The Set-Up menu gives you the option to change the recording file name.

- 8) Access III does not decipher Pascal text files.

Resolution in Version 1.1: Pascal text files are now recognized by their SOS file type code. The header is NOT transmitted, though all DLE sequences are correctly expanded.

- 9) The Version 1.0 manual states a backup disk is included in the package. One diskette, the master diskette is included in this package.

Resolution in Version 1.1: Inclusion of a backup diskette is unnecessary as users are able to make their own backups.

Apple Tech Notes

Tech Info Library Article Number:41



Tech Info Library

Applesoft: High-Res Collision Counter

Revised: 11/7/84
Security: Everyone

Applesoft: High-Res Collision Counter

=====

Applesoft's High-Res collision counter is a byte that is incremented whenever an object drawn crosses a non-black dot on the screen. Applesoft does not initialize or use this byte.

The collision counter could be used in a game: such as, to detect when a lunar lander hits a mountain. Set the counter to zero, draw the lander, then check for non-zero values indicating the collision. It is up to the you to initialize and check this byte.

Apple Tech Notes

Tech Info Library Article Number:43



Tech Info Library

Applesoft: HPLOT TO After a Draw

Revised: 11/7/84
Security: Everyone

Applesoft: HPLOT TO After a Draw

=====

The Applesoft DRAW command doesn't set an internal pointer referring to the last plotted point, which a HPLOT TO command could use. Instead HPLOT TO X,Y draws a line from some random point to X,Y.

The following program contains a machine language routine which decodes the position of the last plotted point, thus allowing HPLOT TO X,Y to draw from this location.

```
10 FOR J=768 TO 780
20 READ A
30 POKE J,A
40 NEXT J
50 DATA 32,203,245,166,224,164,225
60 DATA 165,226,76,17,244
100 SHLOAD
110 HGR
120 HCOLOR=3
130 SCALE=1
140 DRAW 1 AT 100,100
150 CALL 768: REM      THIS IS IT!
160 HPLOT TO 10,10
170 END
```

Apple Tech Notes

Tech Info Library Article Number:44



Tech Info Library

TSSnet: DECnet for the Macintosh

Revised: 7/1/88
Security: Everyone

TSSnet: DECnet for the Macintosh

=====

This article last reviewed: 1 September 1987

Overview

TSSnet is DECnet for the Macintosh. The documentation is fairly straightforward, but installation is somewhat complex. The package includes three applications (NCP, NET Copy, and NET Mail) and a DECnet driver. The driver is copied into the System Folder, and the the Macintosh is reset to load the driver. DECnet is alive in background even when the Macintosh is in another application, permitting access from other systems at any time.

The documentation includes the source calls to implement DECnet in programs to allow true peer-to-peer program use.

NCP

The first time you run NCP, you must know the DECnet node number being assigned to the Macintosh. You must then contact Thursby Software to get a key for the system. The key sets the node number and is the copy protection for the software. On DECnet, the node number is assigned by the Network Manager when the system is first put onto DECnet. DECnet does not automatically assign nodes or broadcast node information. NCP is where you set up the line and circuit information and establish the node table for other DECnet nodes. The user can also restrict access to your node through a user name and password and toggle the network on and off.

NET Copy

NET Copy provide the basic functionality of DECnet End Nodes. The user can view remote directories, type remote files, or print files to a local printer. File transfer is supported for text files or image files. Image files are stored in MacBinary format and will transport to another Mac with full resouce and data forks.

NET Mail

NET mail, compatible with VMS Mail, lets the user create, read, and send mail. A new mail folder may also be created from within the program. Up to 32K can be written into a single memo, with larger documents converted automatically to text files on the disk.

Conclusion

TSSnet makes DECnet available to the Macintosh. Its shortcomings are really the shortcomings of DECnet (such as having to define all the nodes to use them), and it will solve any objections large VAX sites might have to supporting additional protocols.

Thursby Software Systems
5840 Interstate 20 West, Suite # 145
Arlington, Texas 76017
Phone: (817) 478-5070

Thursby recently announced support of the Kinetics EtherSC and EtherPort SE as well as terminal emulation through the DECnet connection.

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Tech Info Library Article Number:45



Tech Info Library

Applesoft: Dotted Vertical Lines in High-Res

Revised: 11/7/84
Security: Everyone

Applesoft: Dotted Vertical Lines in High-Res

=====

The Apple HIRES screen, unable to display all colors at all locations, displays colored vertical or near vertical lines as dashed lines, or not at all. Refer to your Apple II Reference Manual for a more thorough explanation.

Apple Tech Notes

Tech Info Library Article Number:46



Tech Info Library

AppleWorks: Settings and codes for Star Daisy Wheel Printer

Revised: 5/1/87
Security: Everyone

AppleWorks: Settings and codes for Star Daisy Wheel Printer

=====

Do not change the default settings of the Custom printer except for Platen Width, which should be changed to 11 inches.

Menu Item	Value	Entry
1. Characters per inch	10	[ESC]B[CTRL-A]^
1. Characters per inch	12	[ESC]B[CTRL-B]^
1. Characters per inch	17	[ESC]B[CTRL-C]^
2. Lines per inch	6	[ESC]1^
2. Lines per inch	8	[ESC]0^
3. Boldface	begin	[ESC]G^
3. Boldface	end	[ESC]H^
3. Subscript	begin	[ESC]S[CTRL-A]^
3. Subscript	end	[ESC]T^
3. Superscript	begin	[ESC]S[CTRL-@]^
3. Superscript	end	[ESC]T^
3. Underlining	begin	[ESC]-[CTRL-A]^
3. Underlining	end	[ESC]-[CTRL-@]^

Tech Info Library Article Number:47



Tech Info Library

Applesoft: High-Res Screen Swapping

Revised: 11/7/84
Security: Everyone

Applesoft: High-Res Screen Swapping

=====

The POKes listed in the Applesoft Reference manual allow you to plot data on one High-Res screen while displaying the other. The POKes control which screen is displayed, while location 230 (decimal) controls which screen is plotted by the HIR =>ommands. For example, POKE 230,32 causes Applesoft to draw on screen 1 (HGR), while POKE 230,64 will draw to screen 2 (HGR2).

Apple Tech Notes

Tech Info Library Article Number:48



Tech Info Library

Applesoft: Using Applesoft Shape Tables from Disk

Revised: 11/7/84
Security: Everyone

Applesoft: Using Applesoft Shape Tables from Disk

=====

The following programs were written to make Applesoft shape tables easier to use.

SHAPE LOADER

The Applesoft SHLOAD statement loads shape tables from a cassette tape and sets up the proper pointer for Applesoft to use. The following program loads the shape table from diskettes as a binary file and sets up the proper pointer for Applesoft. This program assumes the shape table has been entered into the systems memory using the same format, but not necessarily the same addresses, as the example in the Applesoft reference manual. Name the program anything you choose, but be sure to place this routine in the first part of your program, since it destroys string variables while loading the shape table.

```
100 INPUT "WHICH SHAPE TABLE TO LOAD ? ";F$
110 PRINT CHR$(4);"BLOAD ";F$;" ,A$D000"
120 DS = PEEK (977) + PEEK (978) * 256 + 3233
130 HM = PEEK (115) + PEEK (116) * 256 - PEEK (DS) -
      PEEK (DS + 1) * 256
140 PRINT CHR$(4);"BLOAD ";F$;" ,A";HM
150 HIMEM: HM
160 POKE 232,HM - INT (HM / 256) * 256: POKE 233,HM / 256
```

SHAPE SAVER

This program saves your shape table to the disk as a binary file for the SHAPE LOADER routine to use. Load this program before entering the monitor and typing in your shape table. The best place to start your shape table is at \$2000: this leaves alot of room for the shape saver and the table. (Refer to chapter 9 of the Applesoft Reference manual.) After typing in your shape table and checking it, type 3D0G to re-enter Applesoft and to RUN the program.

```
1000 REM SHAPE SAVER
1005 H$ = "0123456789ABCDEF"
```

```
1010 TEXT : HOME : VTAB 5
1020 INPUT "WHAT IS THE STARTING ADDRESS (HEX)?";A$
1030 IF LEN (A$) = 0 THEN END
1040 GOSUB 5000
1050 IF F < 0 THEN 1000
1060 S = X
1070 PRINT
1080 INPUT "WHAT IS THE ENDING ADDRESS (HEX)?";A$
1090 IF LEN (A$) = 0 THEN 1000
1100 GOSUB 5000
1110 IF F < 0 THEN 1000
1120 LET E = X
1130 IF E < = S THEN PRINT CHR$(7);"THE END IS LESS THAN
    THE START!": GOSUB 5100: GOTO 1000
1140 PRINT
1150 PRINT "WHAT NAME DO YOU WANT TO USE ?"
1160 INPUT " ";A$
1170 PRINT CHR$(4);"BSAVE ";A$;" ,A";S;" ,L";E - S + 1
1180 END
5000 PRINT : PRINT "CONVERTING TO DECIMAL"
5010 LET F = 0:X = F
5020 FOR J = 1 TO LEN (A$)
5030 FOR I = 1 TO 16
5040 IF MID$ (A$,J,1) = MID$ (H$,I,1) THEN
    X = X * 16 + I - 1: F = F + 1
5050 NEXT I,J
5060 IF F < > LEN (A$) THEN F = - 1:"THAT'S NOT HEX!!!";
    CHR$(7): GOSUB 5100
5070 IF X > 2 ^ 16 THEN F = - 1: PRINT "THAT'S TOO BIG!!!";
    CHR$(7): GOSUB 5100
5080 RETURN
5100 FOR J = 1 TO 1000: NEXT J: RETURN
```

Apple Tech Notes

Tech Info Library Article Number:49



Tech Info Library

Applesoft: Mixing DOS and High-Res

Revised: 11/7/84
Security: Everyone

Applesoft: Mixing DOS and High-Res

=====

DOS uses two memory locations, \$26 and \$27, which are also used by Applesoft's High-Res routines during the HLOT TO X,Y statement. DOS commands mixed in with HLOT TO X,Y statements prevent the X,Y from plotting properly.

To enable mixing DOS with High-Res, you must save and restore the pointer. Statements 25 and 35 demonstrate how to maintain the pointer values.

This will not work

```
10 D$ = CHR$(4)
20 HLOT 1,2

30 PRINT D$;"CATALOG"

40 HLOT TO 33,44
```

This does work

```
10 D$ = CHR$(4)
20 HLOT 1,2
=> 25 A = PEEK(38): B = PEEK(39)
30 PRINT D$;"CATALOG"
=> 35 POKE 38,A: POKE 39,B
40 HLOT TO 33,44
```

Apple Tech Notes

Tech Info Library Article Number:50



Tech Info Library

Applesoft: HCOLOR= and HPLOT TO

Revised: 11/7/84
Security: Everyone

Applesoft: HCOLOR= and HPLOT TO

=====

HCOLOR immediately followed by a HPLOT TO X,Y draws a line using the previous color: HPLOT TO assumes that the internal color mask has already been set up by HPLOT. A HPLOT is required to plot with the new color.

Apple Tech Notes

Tech Info Library Article Number:51



Tech Info Library

Applesoft: Using TRACE with DOS Commands

Revised: 11/7/84
Security: Everyone

Applesoft: Using TRACE with DOS Commands

=====

TRACE doesn't work with DOS commands unless you define D\$= CHR\$(13) +
CHR\$(4): DOS expects that the control-D to be the first character on a line
of output, while TRACE does not send out a RETURN.

Apple Tech Notes

Tech Info Library Article Number:52



Tech Info Library

Applesoft: Problems with user-defined functions and CHAIN

Revised: 11/7/84
Security: Everyone

Applesoft: Problems with user-defined functions and CHAIN

=====

User defined functions in Applesoft may cause problems when the CHAIN command is used. When Applesoft encounters a DEF FN statement, an entry is made in the simple variable table which points to the rest of the function in the text of the program. Strange and perhaps fatal things can happen if you use this function defined in the previous program without having the same image of the function at the same memory locations.

The easy way around this problem is avoid using defined functions, or re-define all of your defined functions in each of the chained modules.

First program:

```
5 REM PROGRAM 1
10 DEF FN A(X)=X*X
20 PRINT FN A(2)
30 PRINT CHR$(4);"BLOAD CHAIN,A520"
40 CALL 520"PROGRAM 2"
```

Second program:

```
5 REM PROGRAM 2
10 DEF FN A(X)=X*X
20 PRINT FN A(2)
30 END
```

Apple Tech Notes

Tech Info Library Article Number:53



Tech Info Library

Applesoft: Printing the 40-column text screen to a printer

Revised: 11/7/84
Security: Everyone

Applesoft: Printing the 40-column text screen to a printer

=====

Print the contents of the text screen with the following program. It uses the VTAB command to find the starting address of each line, then adds a character counter to index across the screen. This routine is easily included as a subroutine in an application program. (NOTE: This program will work for 40 columns only!)

```
10 FOR V = 1 TO 24
20  VTAB V
30  P = PEEK (40) + PEEK (41) * 256
40  FOR H = 0 TO 39
50    PRINT CHR$( PEEK (P+H));
60  NEXT H
70  PRINT
80 NEXT V
90 END
```

Decreasing the limits of V and H in lines 10 and 40 limits the program to send only part of the screen.

Apple Tech Notes

Tech Info Library Article Number:54



Tech Info Library

Applesoft: Documentation aids

Revised: 11/7/84
Security: Everyone

Applesoft: Documentation aids

=====

Finding subroutines easily helps you to modify and debug your programs. The following tricks may help you to see what's going on in your software.

The use of linefeeds (CTRL-J) as the first and last character in the text of your REMs (see example below) makes the text of the remark stand out. Some printers even place the remark at the left margin with the line numbers.

Using colons to indent FOR-NEXT loops makes them stand out, making it easier to identify those needing closing.

```
10 REM
    THIS STANDS OUT

20  FOR J = 1 TO 10
30  : FOR K = 1 TO 10
40  :: PRINT J * K
50  : NEXT K
60  NEXT J
```

Apple Tech Notes

Tech Info Library Article Number:55



Tech Info Library

Applesoft: PEEKs, POKEs, and CALLs

Revised: 1/20/87
Security: Everyone

Applesoft: PEEKs, POKEs, and CALLs

=====

To make Applesoft programs read data from memory, write data to memory, or pass control to machine language programs, programmers use Applesoft's PEEK, POKE, and CALL statements. Here is an explanation of each statement's function.

PEEK makes a program read a memory location. The format of the statement is PEEK (<memory location>) where <memory location> is a positive integer from 0 to 65535. Programmers use PEEK most commonly with a variable: X% = PEEK (2048) assigns the value located at 2048 to the integer variable X%.

POKE makes a program write a value to a memory location. The format of the statement is POKE <memory location>,<value> where <memory location> is a positive integer from 0 to 65535 and <value> is a positive integer from 0 to 255. Programmers use POKE most commonly to write data directly to memory: POKE 2048,128 assigns the value 128 to the memory location 2048.

CALL makes a program pass control to a machine language routine at some memory location. The format of the statement is CALL <memory location> where <memory location> is a positive or negative integer from -32768 to 32767 or a positive integer from 0 to 65535 (note that the signed integers from -32768 to 32767 represent exactly the same memory locations as the positive integers from 0 to 65535). Programmers use CALL most commonly used to invoke routines built into the Apple II's ROM. For example, the statement CALL -936 invokes the routine which clears the screen and homes the cursor (just like using Applesoft's HOME statement).

To change the screen display or make sounds and other special effects on the Apple II, Apple II Plus, Apple IIe, Apple IIc and Apple IIGS, Applesoft accesses various memory locations. Each particular CPU's reference manual includes a memory map where you can find the segments of memory used by text, graphics, Applesoft, the monitor and peripheral cards.

Apple-published memory locations remain the same for most members of the Apple II family; other internal locations may change. Therefore, to assure that your programs will work properly on all Apple II family computers, do not use entry points other than those printed in the Apple manuals.

Locations used to communicate with interface cards may be found in the manuals for those devices. For example, memory locations used by the Apple 80-column card are found in the 80-Column Text Card Manual and the Extended 80-Column Text Card Supplement.

Many computer and book stores sell books with listings of Applesoft, monitor ROM, DOS 3.3 and ProDOS memory locations. You may find the following publications useful:

- What's Where in the Apple by William Luebbert; Micro Ink.
- Beneath Apple DOS by Don Wirth and Pieter Lechner; Quality Software.
- Beneath Apple ProDOS by Don Wirth and Pieter Lechner; Quality Software.
- The Apple Almanac by Eric Goetz and Williams Sanders; Datamost, Inc.

Apple Technical Communications

Tech Info Library Article Number:56



Tech Info Library

Applesoft: Internal program storage format

Revised: 11/7/84
Security: Everyone

Applesoft: Internal program storage format

=====

Applesoft programs are stored one line at a time starting at memory location \$801 and ascending in order by line number. Each line is stored in this format:

\$8xx															
00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	
00	0D	08	0A	00	97	3A	BA	22	48	49	22	00	00	00	
E	LINK	LINE #	H	:	P	"	H	I	"	E	LINK				
O					O		R					O			
L					M		I					L			
					E		N								
							T								

The first two bytes are pointers to the absolute address of the beginning of the next line. The first byte is the least significant.

The next two bytes are integers representing the line number of that line. Again, the first byte is the least significant.

The next byte, a token, stands for the first Applesoft keyword. When the lines starts with "A = 1", the variable name (in ASCII) is first. The remaining command consists of keywords and symbols reduced to one byte tokens and unmodified ASCII text.

A list of Applesoft's tokens appears on page 121 of the Applesoft Reference manual.

The subsequent bytes are either "\$00"s signifying the end of this line, or "\$3A"s, indicating multi-statement lines, followed by a "\$00.

If the link field for a line is 00 00, then Applesoft considers it the last line in the program while running or listing. The SAVE command uses a different pointer for the end of the program. \$AF,B0 normally points to the high byte in the line number of the line beyond the last line.

..TIL00057-Applesoft-Internal_program_storage_format_(TA43571).pdf

Apple Tech Notes

Tech Info Library Article Number:57



Tech Info Library

AppleWorks: Settings and Codes for Star Dot Matrix Printer

Revised: 12/17/87
Security: Everyone

AppleWorks: Settings and Codes for Star Dot Matrix Printer

=====

This article last reviewed: 11 December 1987

Do not change the default settings of the Custom printer except -- for Platen Width, which should be changed to 13.2 inches in case the printer has a wide carriage.

Menu Item	Value	Entry
-----	-----	-----
1. Characters per inch	5	[ESC]B[CTRL-A][ESC]W[CTRL-A]^
1. Characters per inch	6	[ESC]B[CTRL-B][ESC]W[CTRL-A]^
1. Characters per inch	10	[ESC]B[CTRL-A][ESC]W[CTRL-@]^
1. Characters per inch	12	[ESC]B[CTRL-B][ESC]W[CTRL-@]^
1. Characters per inch	17	[ESC]B[CTRL-C][ESC]W[CTRL-@]^
2. Lines per inch	6	[ESC]2^
2. Lines per inch	8	[ESC]0^
3. Boldface	begin	[ESC]G^
3. Boldface	end	[ESC]H^
3. Subscript	begin	[ESC]S[CTRL-A]^
3. Subscript	end	[ESC]T^
3. Superscript	begin	[ESC]S[CTRL-@]^
3. Superscript	end	[ESC]T^
4. Underlining	begin	[ESC]-[CTRL-A]^
4. Underlining	end	[ESC]-[CTRL-@]^

Tech Info Library Article Number:58



Tech Info Library

Applesoft: Syntax error when the program is run

Revised: 11/7/84
Security: Everyone

Applesoft: Syntax error when the program is run

=====

Applesoft requires the first byte in the program storage area be zero. Some machine language programs don't leave a zero, causing Applesoft to react strangely.

Initialize that byte, even if the program memory pointer has been changed by:

```
POKE PEEK (103) + PEEK (104) * 256,0
```

Apple Tech Notes

Tech Info Library Article Number:59



Tech Info Library

Applesoft: Variable conflicts

Revised: 11/7/84
Security: Everyone

Applesoft: Variable conflicts

=====

Only the first two characters of an Applesoft variable name are significant; thus, the variables BACK and BALL are considered to be the same variable BA. Keep track of your variable names to avoid such conflicts.

Apple Tech Notes

Tech Info Library Article Number:60



Tech Info Library

Applesoft: Numeric comparison problems

Revised: 2/18/86
Security: Everyone

Applesoft: Numeric comparison problems

=====

When two numbers print as equal, though an IF statement indicates they're not, the least significant bits in the internal binary storage format of those numbers are different. Applesoft's PRINT statement truncates a number that is extremely close to being an integer. For example, 3^2 and $3*3$ will both print as 9 but won't compare as equal. Printing $3^2 - 3*3$ will result in 3.7252903E09, while the expression $3^2 = 3*3$ is false.

Round Applesoft real numbers to a specific number of decimal places to avoid comparison problems. Use the formula:

$$X = \text{INT}(X * P + .5) / P$$

where $P=10$ for 1 decimal place, $P=100$ for 2 decimal places and $P=1000$ for 3 decimal places, etc.

Apple Tech Notes

Tech Info Library Article Number:61



Tech Info Library

MousePaint Does Not Support Double High-Res Graphics

Revised: 2/11/88
Security: Everyone

MousePaint Does Not Support Double High-Res Graphics

=====

This article last reviewed: 27 January 1988

The application MousePaint does NOT support the use or printing of Double Hi-Res graphics.

Tech Info Library Article Number:62



Tech Info Library

Applesoft: OVERFLOW ERROR in first line of program

Revised: 11/7/84
Security: Everyone

Applesoft: OVERFLOW ERROR in first line of program

=====

Applesoft returns an OVERFLOW ERROR when the first number it encounters after booting is a negative one. Typically, the negative number is a 'CALL -936', which is easily substituted with "HOME"

Apple Tech Notes

Tech Info Library Article Number:63



Tech Info Library

Applesoft: Understanding FRE(0)

Revised: 11/7/84
Security: Everyone

Applesoft: Understanding FRE(0)

=====

PRINT FRE(0) displays the amount of memory available for Applesoft variables. This value may be negative due to the way Applesoft handles integer numbers on 48K systems. Numbers greater than 32767 appear to have 65536 subtracted from them; in such a case, add 65536 to the value returned in order to get the number of free bytes. For example:

```
1000 PRINT FRE (0) - 65536 * (FRE (0) < 0)
```

PRINT FRE(0) can cause the Apple to hang when it's executed in command mode immediately after loading your program from a diskette or using Applesoft RENUMBER. This hang is due to the variable pointers not resetting properly. Type CLEAR before entering PRINT FRE(0) to return the expected results.

The following program checks the memory for string variables; however, it doesn't give the expected results.

```
10 DIM A$(100)
20 B$ = "ABC"
30 FOR I = 1 TO 100
40 A$(I) = B$
50 PRINT FRE (0) + 65536
60 NEXT I
```

Since B\$ is assigned to a string constant in line 20, and the pointer for A\$(I) is assigned B\$ (line 40), the PRINT statement in line 50 prints the same number. If we change line 40 to read:

```
40 A$(I) = B$ + "D"
```

the program uses memory for each assignment, because concatenation creates a new string in the free memory space each time the new line 40 is executed.

Apple Tech Notes

Tech Info Library Article Number:64



Tech Info Library

Applesoft: OUT OF MEMORY errors

Revised: 11/7/84
Security: Everyone

Applesoft: OUT OF MEMORY errors

=====

There are only two ways to run out of memory in Applesoft. The most common reason for this error is either that your program is too large or it's using too many variables. The solution: trim down your program, keep the data on a disk, or chain your program in from the disk in segments.

The less common cause of this error is stack overflow. This problem is easily spotted, since after you receive the OUT OF MEMORY error, PRINT FRE(0) will tell you that there is still free memory. The 6502 stack, though, which Applesoft uses to save its recursive subroutine calls, is a limited resource; it's this stack that your program is overloading. Your program is overloading this stack in one or more of the following ways:

1. Too many FOR-NEXT loops
2. Too many GOSUBs
3. Excessively complex mathematical or string functions
4. GOSUBs with no RETURN
5. Improper recovery in ONERR GOTO routines
6. CALLs or interrupts that don't restore the stack properly

The effects of these functions are cumulative, so a combination of them could be causing your error.

Items one through four commonly occur in very complex programs. If one or more of these items is the cause of your problem, you can implement a program-controlled restart by executing the Applesoft routine CALL 54915; this routine clears the stack without clearing the variables by eliminating all pending FOR-NEXT loops, GOSUBs and formulas. Items one through four, though, have to do with your program structure, so when your program is cleanly structured you shouldn't have problems overloading the 6502 stack.

If a stack overflow is caused by running a cleanly-structured program, then that implies that the overflow is being caused by items five and/or six.

If you're using ONERR GOTO, carefully read pages 81, 82 and 136 of the (green and white) Applesoft BASIC Programming Reference Manual. There are two correct ways to leave the ONERR GOTO routine: (1) use a RESUME so Applesoft can take

care of the stack and re-execute the statement that caused the error, or (2) use the stack recovery routine on page 82 or 136 before any GOTO statement. (The example on page 136 is easier to implement.) If you're using Applesoft in ROM, replace the routine on page 136 with CALL -3288 and no POKEs.

When Applesoft executes a CALL, it does a 6502 JSR to the specified address. Other routines, such as those that handle interrupts from a peripheral card, also involve the 6502 stack. It's up to you to leave the stack the way you found it--so if you use any of these routines, make sure that you remove any bytes the pushed onto the stack so that the 6502's internal registers are maintained.

Apple Tech Notes

Tech Info Library Article Number:65



Tech Info Library

Applesoft: Rounding and truncating floating-point numbers

Revised: 2/18/86
Security: Everyone

Applesoft: Rounding and truncating floating-point numbers

=====

Sometimes Applesoft's math package doesn't give the answer you expect because Applesoft calculations are done in a 32 bit binary floating point format, which have no exact equivalents to most numbers. Furthermore, Applesoft uses natural logarithms to calculate many of its transcendental functions, which adds small errors to the results.

To avoid comparison problems, round Applesoft real numbers to a specific number of decimal places. Use the formula:

$$X = \text{INT}(X * P + .5) / P$$

where P=10 for 1 decimal place, P=100 for 2 decimal places and P=1000 for 3 decimal places, etc.

Apple Tech Notes

Tech Info Library Article Number:66



Tech Info Library

Applesoft: VTAB notes

Revised: 11/7/84
Security: Everyone

Applesoft: VTAB notes

=====

VTAB statements move the cursor to a specific vertical position ignoring the current text window. A VTAB to a line above the text window starts writing as if the window were the whole screen until it scrolls into the window where it stays. This prevents the information above the window from scrolling. A VTAB below the window causes writing only on the line where the cursor is located, allowing normal scrolling within the window from carriage returns.

Apple Tech Notes

Tech Info Library Article Number:67



Tech Info Library

Applesoft: Obtaining Base-10 Logs

Revised: 11/7/84
Security: Everyone

Applesoft: Obtaining Base-10 Logs

=====

Applesoft's LOG (X) returns the natural logarithm of X. The logarithm base ten of a number can be calculated by:

$$\text{Logarithm base 10} = \text{LOG (X)} / \text{LOG (10)}$$

Apple Tech Notes

Tech Info Library Article Number:68



Tech Info Library

Applesoft: Errors while loading programs from a cassette tape

Revised: 11/7/84
Security: Everyone

Applesoft: Errors while loading programs from a cassette tape

=====

Due to Applesoft interaction with the Auto Start ROM, an ERROR message generated while loading a program from cassette hangs the system. There are two ways to regain control: turn the Apple off and back on, or else rewind the cassette and then replay it into the Apple until the system enters the command mode.

Apple Tech Notes

Tech Info Library Article Number:69



Tech Info Library

Applesoft: Random numbers

Revised: 11/7/84
Security: Everyone

Applesoft: Random numbers

=====

All numbers produced by running Applesoft's random number generator follow the same sequence as the first RUN, since the Applesoft's random number seed is not reinitialized. This seed number, stored in locations \$C9 to \$CD, is initialized when your system is first booted.

The Applesoft random number generator is only a pseudo-random generator (as are most generators); thus, non-random patterns eventually occur. The frequency these patterns repeat varies from program to program, though proper re-seeding of the random number generator helps prevent small repeating sequences. Here are two suggestions:

1. Use the monitor's random seed at locations 78 and 79 to initialize Applesoft's random number seed. Since the monitor's seed is constantly incrementing while waiting for a key to be pressed, you'll start on one of 65536 different sequences.

```
10 X = RND (-PEEK (78) - PEEK (79) * 256)
```

2. This random sequence can be lengthened by re-seeding the generator occasionally within the application program by adding the statement `X = RND (-RND (1))`.

No method completely eliminates patterns in the random numbers generated, but you can lengthen the sequences until they're difficult to detect.

Applesoft's algorithm is:

Multiply the random seed by 11879546.4.
Add the result to 3.92767778 E-08.
Swap the most and least significant bytes of the result.
Force the exponent into the 0..1 range.

The example below shows the effect of the algorithm on a number. The most and least significant two decimal digits are swapped instead of bytes in this example:

```
0.500000000
* 11879546.4
-----
5929773.2
+      0.0000000392767778
-----
5929773.2      (the rest is lost)
--   ---      swap "bytes"
3229775.9

0.32297759      force value between 0 and 1
```

Apple Tech Notes

Tech Info Library Article Number:70



Tech Info Library

Applesoft: VAL(A\$) problems

Revised: 11/7/84
Security: Everyone

Applesoft: VAL(A\$) problems

=====

Applesoft running in a non-disk drive system won't initialize its memory properly, resulting in the following program not giving the desired results.

```
100 GET A$  
110 PRINT A$, VAL(A$)
```

If you input "1" the answer will be "1, 1.111111E16". A "HIMEM:" statement resets the pointer:

```
16K      HIMEM: 16384  
32K      HIMEM: 32768  
48K      HIMEM: 49152
```

Apple Tech Notes

Tech Info Library Article Number:71



Tech Info Library

Applesoft: Internals--Introduction (1 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Introduction (1 of 2)

=====

The following six notes, first published in The Apple Orchard (March 1980) are written for experienced 6502 machine language programmers who wish to use the Applesoft ROM subroutines. The addresses given are for an Apple II+ with an Applesoft firmware card, or Applesoft loaded into a Language Card. Consult your Applesoft Reference manual for more information.

Take special note of CHRGET, the heart of Applesoft. When Applesoft wants the next character of an instruction, it points TXTPTR at the program or input buffer, and JSRs to CHRGET. TXTPTR is temporarily set to the last used DATA statement when Applesoft READS DATA.

ABBREVIATIONS

msb: most significant bit or byte
lsb: least significant bit or byte
eol: end of line token (\$00)

A: the 6502 accumulator
X: the 6502 X register
Y: the 6502 Y register
Z: the zero flag of the 6502 status register
C: the carry flag of the 6502 status register

A,X is a 16 bit number where A has the msb and X the lsb.

(Y,A) is the number or string whose address is in Y and A, with the msb in Y and lsb in A.

FAC the floating point accumulator
ARG the ARGument register

Apple Tech Notes

Tech Info Library Article Number:72



Tech Info Library

Applesoft: Internals--TXTPTR routines (2 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--TXTPTR routines (2 of 2)

=====

CHRGET 00B1

CHRGET increments TXTPTR. Use CHRGOT to get the character. TXTPTR now points at:

CHRGOT 00B7

CHRGOT loads A from TXTPTR and sets certain 6502 status flags. X and Y are not changed. On exit:

A = the character currently pointed at by TXTPTR
Z is set if A is ":" or eol (\$3A or \$00)
C is clear if A is an ASCII number("0" to "9").

LINGET DA0C

LINGET read a line number (integer 0 to 63999) from TXTPTR into LINNUM. LINGET assumes the 6502 registers and A have been set up by the JSR to CHRGET that fetched the first digit. LINGET normally exits through CHRGOT, which fetches the character after the last digit. When the number is greater than 63999, LINGET exits via SYNTAX ERROR. LINNUM is zero when there is no number at TXTPTR.

GTBYTC E6F5

GTBYTC causes JSR to CHRGET to gobble a character, then evaluates the formula at TXTPTR, and then it returns a single byte integer in X and FACLO. On entry TXTPTR points to the first character of the formula. GTBYTC normally exits through CHRGET. If FAC is greater than 255 or less than 0, it exits through ILLEGAL QUANTITY ERROR.

GETBYT E6F8

GETBYT evaluates the formula at TXTPTR besides returning a single byte integer in X and FACLO. On entry, TXTPTR points to the first character of the formula. GETBYT normally exits through CHRGET. When FAC is greater than

255 or less than 0, it exits through ILLEGAL QUANTITY ERROR.

PLOTFNS F1EC

PLOTFNS gets two LORES plotting coordinates separated by a comma from TXTPTR (0-47,0-47). TXTPTR when entered, points to the first number of the formula. PLOTFNS puts the first number in FIRST and the second number in H2 and V2.

HFNS F6B9

HGNS gets HIRES plotting coordinates (0-279,0-191) from TXTPTR. TXTPTR points to the first character of the formula for the first number upon entry. HFNS leaves the 6502 registers set up for HPOSN. When exiting:

A = vertical coordinate
X = lsb of horizontal coordinate
Y = msb of vertical coordinate

Apple Tech Notes

Tech Info Library Article Number:73



Tech Info Library

Applesoft: Internals--Floating Point Math Package (1 of 3)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Floating Point Math Package (1 of 3)

=====

Applesoft's floating point package provides a 9 digit scientific package for evaluating numeric equations. It supports trigonometric functions with arguments in radians, exponents and logarithms to base e.

ABBREVIATIONS

msb: most significant bit or byte
lsb: least significant bit or byte
eol: end of line token (\$00)

A: the 6502 accumulator
X: the 6502 X register
Y: the 6502 Y register
Z: the zero flag of the 6502 status register
C: the carry flag of the 6502 status register

A,X is a 16 bit number where A has the msb and X the lsb.

(Y,A) is the number or string whose address is in Y and A, with the msb in Y and the lsb in A.

FAC: the floating point accumulator
ARG: the ARGument register

REAL NUMBER FORMAT

The real number format used throughout Applesoft is: the exponent is a single byte signed number (EXP) in excess of \$80 form (the signed value has \$80 added to it); the mantissa is 4 bytes (HO,MOH,MO,LO); the binary point is to the right of the most significant bit. Since in binary floating point notation the msb is always 1, the number's sign replaces the msb when the number is stored in memory in packed form. The sign, though, is kept in a separate byte (SGN) when only bit 7 is significant. If the exponent is zero, the number is zero, although the mantissa isn't necessarily zero.

Examples:

	EXP	HO	MOH	MO	LO	SGN
--	-----	----	-----	----	----	-----

Packed format

-10	84	A0	00	00	00
10	84	20	00	00	00

FAC format

-10	84	A0	00	00	00	FF
10	84	A0	00	00	00	00

Arithmetic routine calling conventions for single argument functions (e.g., SGN, ABS or INT):

On entry the argument is in the FAC.

On exit the result is in the FAC.

Arithmetic routine calling conventions for two argument functions (e.g., FADD and FSUB):

On entry the first argument is in the ARG.

On entry the second argument is in the FAC.

On exit the result is in the FAC.

FLOATING POINT REGISTERS

NOTE: The TEMP locations may be used for other things when not used by the floating point math package.

	FAC	ARG	TEMP1	TEMP2	TEMP3	RND
EXP	9D	A5	93	98	8A	C9
HO	9E	A6	94	99	8B	CA
MOH	9F	A7	95	9A	8C	CB
MO	A0	A8	96	9B	8D	CC
LO	A1	A9	97	9C	8E	CD
SGN	A2	AA	(packed format)			

FLOATING POINT CONSTANTS

The following addresses point to useful numbers; they're packed and suitable for use by most of the arithmetic routines including CONUPK and MOVMF.

RND	00C9
-32768	E0FE
1	E913
SQR (1/2)	E92D
SQR (2)	E932
-1/2	E937
LN (2)	E93C
10	EA50
1000000000	ED14
1/2	EE64
LOG (2) base e	EEDB

$\pi/2$	F063
$\pi*2$	F06B
$1/4$	F070

Apple Tech Notes

Tech Info Library Article Number:74



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Applesoft: Internals--Floating Point Math Package (2 of 3)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Floating Point Math Package (2 of 3)

=====

FLOATING POINT REGISTER MOVE ROUTINES

MOVFM EAF9

Moves the number in memory Y,A points to into FAC. On exit A and Z reflect FACEXP.

MOV2F EB1E

Pack FAC and temporarily moves it into register 2. On exit A and Z reflect FACEXP.

MOV1F EB21

Pack FAC and moves it temporarily into register 1. On exit A and Z reflect FACEXP.

MOVML EB23

Pack FAC and move it into zero page area starting at X. On exit A and Z reflect FACEXP.

MOVMF EB2B

Pack FAC and move it into memory pointed to by Y,X. On exit A and Z reflect FACEXP.

MOVFA EB53

Move ARG into FAC. On exit A and Z reflect FACEXP.

MOVAF EB63

Move FAC into ARG. On exit A and Z reflect FACEXP.

CONUPK E9E3

Load ARG from memory pointed to by Y,A. On exit A and Z reflect FACEXP.

SUMMARY OF MOVES:

FAC	=>	(Y,A)	EB2B	MOVFM
FAC	=>	(0,X)	EB23	MOVML

FAC	=>	TEMP1	EB21	MOV1F
FAC	=>	TEMP2	EB1E	MOV2F
FAC	=>	ARG	EB63	MOVAF
ARG	=>	FAC	EB53	MOVFA
(Y,A)	=>	FAC	EAF9	MOVFM
(Y,A)	=>	ARG	E9E3	CONUPK

FLOATING POINT OPERATORS

The following routines require that A and Z reflect FACEXP. Even though FAC move routines set up A and Z, a LDA \$9D will insure their proper values.

FMULT E97F

Multiply the FAC by the number in memory pointed to by Y,A.

FMULTT E982

Multiply FAC and ARG. On entry A and Z must reflect FACEXP.

FDIV EA66

Divide the number in memory pointed to by Y,A by FAC.

FDIVT EA69

Divide ARG by FAC. On entry A and Z must reflect FACEXP.

FADD E7BE

Add the number Y,A points to in memory to FAC.

FADDT E7C1

Add FAC and ARG. On entry A and Z must reflect FACEXP.

FSUB E7A7

Subtract FAC from the number Y,A points to in memory.

FSUBT E7AA

Subtract FAC from ARG. On entry A and Z must reflect FACEXP.

TRANSCENDENTAL OPERATORS

FPWRT EE97

Raise ARG to the FAC power. On entry A and Z must reflect the value of FACEXP.

SQR EE8D

Takes the square root of FAC

LOG E941

Log base e of FAC

EXP EF09

Raise e to the FAC power

COS EFEA
Returns the cosine of the FAC in radians.

SIN EFF1
Returns the sine of the FAC in radians.

TAN F03A
Returns the tangent of the FAC in radians.

ATN F09E
Returns the inverse-tangent of the FAC in radians.

OTHER OPERATORS

SGN EB90
Modifies the value of the FAC depending on its value on entry. On exit:

FAC = 1 if FAC was greater than 0
FAC = 0 if FAC was equal to 0
FAC = -1 if FAC was less than 0

ABS EBAF
Absolute value of FAC. If FAC is less than 0 then FAC = -FAC.

INT EC23
Greatest integer value of FAC. Uses QINT and floats the result.

RND EFAE
Form a pseudo-random number in FAC and update RND at 00C9.

SIGN EB82
Set A according to the value of FAC. On exit:

A = 1 if FAC is positive
A = 0 if FAC = 0
A = FF if FAC is negative

FCOMP EBB2
Compare FAC and a packed number in memory pointed to by Y,A. On exit:

A = 1 if (Y,A) < FAC
A = 0 if (Y,A) = FAC
A = FF if (Y,A) > FAC

NEGOP EED0
FAC = -FAC

FADDH E7A0
Add 1/2 to FAC

DIV10 EA55
Divide FAC by 10. Returns positive numbers only.

MUL10 EA39

Multiply FAC by 10. Works for both positive and negative numbers.

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Tech Info Library Article Number:75



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Applesoft: Internals--Floating Point Math Package (3 of 3)

Revised: 11/7/84
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Applesoft: Internals--Floating Point Math Package (3 of 3)

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LOWER LEVEL INTERFACE ROUTINES

FOUT ED34

FOUT creates an ASCII string in FBUFFR equivalent to the value of FAC. On exit Y,A points to the string, which ends with an ASCII null. FAC is scrambled. Use STROUT to print the number.

SNGFLT E301

SNGFLT converts the unsigned number in Y to a floating point number in FAC.

GIVAYF E2F2

GIVAYF converts the unsigned number in Y,A to a floating point number in FAC.

FLOAT EB93

FLOAT converts the signed number in A to a floating point number in FAC.

CONINT E6FB

CONINT converts FAC into a single byte integer in X and FACLO. CONINT normally exits through CHRGET unless FAC is greater than 255 or less than 0, when it exits via ILLEGAL QUANTITY ERROR.

AYINT E10C

If FAC is less than +32767 and greater than -32767, then execute QINT. Otherwise AYINT exits via ILLEGAL QUANTITY ERROR.

QINT EBF2

Quick greatest integer function. Leaves INT(FAC) in FACHO,MO,LO signed. QINT assumes that the absolute value of the FAC is less than 8388608 (2^{23} rd power).

GETADR E752

GETADR converts the number in FAC to a 2 byte, unsigned integer in LINNUM. When FAC is greater than 65535 or less than -65535, GETADR exits via ILLEGAL QUANTITY ERROR.

GETNUM E746

GETNUM fetches a 2 byte number, a comma and an unsigned, single byte number from TXTPTR. The first number is stored in LINNUM, while the second is returned to the X register. On entry TXTPTR points to the first character of the formula for the first number. GETNUM uses FRNUM, GETADR, CHKCOM and GETBYT.

COMBYTE E74C

COMBYTE checks for a comma, then fetches an unsigned, single byte number returned in X. On entry TXTPTR points to the comma. COMBYTE uses CHKCOM and GETBYT.

FRMEVL DD7B

FRMEVL evaluates the formula at TXTPTR using CHRGET, then leaves the result in FAC. On entry, TXTPTR points to the first character of the formula, while on exit points to the terminator. "A" does not contain the terminator. The format of the temporary result on the stack is:

 The address of the operator routine.

 The floating point temporary result.

 The precedence of the operator.

FRMEVL, the main subroutine for the commands that use formulas, works for both strings and numbers. If the formula is a string literal, FRMEVL gobbles the opening quote, then executes STRLIT and ST2TXT.

FRMNUM DD67

FRMNUM evaluates the formula at TXTPTR, puts it in FAC, then makes sure the result is numeric. On entry TXTPTR points to the first character of the formula. FRMNUM exits through TYPE MISMATCH ERROR if the result is a string.

FIN EC4A

FIN inputs a floating point number into FAC from CHRGET. FIN assumes the 6502 registers and A were set up by the CHRGET that fetched the first digit. FIN only operates on numeric constants, not formulas.

Apple Tech Notes

Tech Info Library Article Number:76



Tech Info Library

Applesoft: Internals--String Utilities (1 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--String Utilities (1 of 2)

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Applesoft strings have two parts: the descriptor and the ASCII string. Your string descriptor contains the length of the string along with the address of the string's first character. Refer to page 137 of the Applesoft Reference Manual for additional information on the string components. During most Applesoft routines the descriptor is left in memory, while a two byte pointer to the descriptor is kept in the FAC. The pointer is the address of the descriptor; therefore, the actual string could be anywhere in memory. The statement 10 A\$ = "HI" leaves a descriptor pointing to the program text.

STRINI E3D5

STRINI obtains space for creating a string whose descriptor is pointed to by FACMO/FACLO; it also creates a descriptor for it in DSCTMP. On entry A = length of the string, while FACMO/FACLO point to the string descriptor. STRINI uses GETSPA to force garbage collection when there isn't sufficient room; GETSPA exits with an "OUT OF MEMORY ERROR" when garbage collection free up enough room. GETSPA moves FRESPC and FRETOP down, making room to store the string. STRINI returns with the descriptor of the new string in DSCTMP and the original pointer in DSCPNT.

STRSPA E3DD

STRSPA obtains space for the creation of a string A bytes long, then creates a descriptor for it in DSCTMP. STRSPA uses GETSPA to force garbage collection when there isn't enough room. If garbage collection is unable to make sufficient room, GETSPA exits with an "OUT OF MEMORY" error. GETSPA moves FRESPC and FRETOP down enough to store the string, then returns A unchanged with the new descriptor in DCSTMP.

GETSPT DA7B

GETSPT moves the descriptor pointed to by FACMO/FACLO into the memory pointed to by FORPNT. GETSPT also moves the string's text up to FRETOP if it isn't in the program's text. GETSPT frees up the string if it was a temporary string. GETSPT uses GETSPA to initiate garbage collection, or alternatively "OUT OF MEMORY" error when the garbage collection doesn't free up sufficient

room.

MOVINS E5D4

Moves the string whose descriptor is pointed to by STRNG1 to memory pointed to by FRESPA.

MOVSTR E5E2

MOVSTR moves the string pointed to by Y,X with a length of A to memory pointed to by FRESPA.

Apple Tech Notes

Tech Info Library Article Number:77



Tech Info Library

Applesoft: Internals--String Utilities (2 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--String Utilities (2 of 2)

=====

STRTXT DE81

Build a temporary descriptor for a string literal of which the first character is pointed to by TXTPTR plus C and which ends with a quote. FACMO,FACLO points to the resulting temporary descriptor. Skip leading quotes before calling STRLIT. On exit, STRNG2 points to the character after the string literal.

STRLIT E3E7

Build a temporary descriptor for a string literal of which the first character is pointed to by Y,A and which ends with a quote. FACMO,FACLO points to the resulting temporary descriptor.

Skip leading quotes before calling STRLIT. On exit, STRNG2 points to the character after the string literal.

STRLT2 E3ED

Take a string literal of which the first character is pointed to by Y,A and build a temporary descriptor for it pointed to by FACMO,FACLO. Save in CHARAC and ENDCR the characters other than zero that terminate the string. Skip leading quotes before calling STRLIT2. On exit, STRNG2 points to the character after the string literal.

PUTNEW E42A

Move the descriptor in DSCTMP to a temporary descriptor, put a pointer to the descriptor in FACMO,FACLO, and flag the result as a string.

GETSPA E452

Get A bytes of memory below HIMEM for a string.

GETSPA forces garbage collection to make room in memory when necessary and exits with an "OUT OF MEMORY ERROR" if garbage collection can't make enough room.

GETSPA moves FRESPC and FRETOP down enough to store the string. On entry, A equals the number of characters. GETSPA returns with A unchanged and pointer to the space in FRESPC, FRETOP, and Y,X.

FRESTR E5FD

Make sure that the last FAC result was a string and free up the temporary string result. Check the descriptor for a temporary status allocated by

PUTNEW. On exit, the address of the string is in INDEX and Y,X. The length of the string is in A. Uses FRETMP.

FREFAC E600

Free up the temporary string pointed to by FACMO,FACLO. Check the descriptor for a temporary status allocated by PUTNEW. On exit the address of the string is in INDEX and Y,X. The length of the string is in A. Uses FRETMP.

FRETMP E604

Free up a temporary string. On entry the pointer to the descriptor is in Y,A. Checks the descriptor for a temporary status allocated by PUTNEW. If so, the temporary is freed up by updating TEMPPT. If a temp is freed up, a further check tests the string's location for the lowest in memory. If so, that area of memory is freed up by updating FRETOP. On exit the address of the string is in INDEX and Y,X. The length of the string is in A.

FRETMS E635

Free the temporary descriptor without freeing up the string. On entry Y,A point to the descriptor to be freed. On exit Z is set if anything was freed.

Apple Tech Notes

Tech Info Library Article Number:78



Tech Info Library

Applesoft: Internals--Device I/O Routines

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Device I/O Routines

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INLIN D52C

Input a line of text without sending out a prompt from the current input device into the input buffer, BUF. INLIN uses GDBUF to strip off the most significant bit on all input characters.

INLIN+2 D52E

Input a line of text prompting with the character in X from the current input device into the input buffer, BUF. INLIN uses GDBUF to strip off the most significant bit on all input characters.

GDBUFS D539

Puts a zero at the end of the input buffer, BUF, and masks off the msb on all bytes. On entry: X = the end of the input line.
On exit:

A = 0
X = FF
Y = 1

INCHR D553

Get one character from the current input device in A and mask off the MSB. INCHR uses the main Apple input routines and supports normal handshaking.

STROUT DB3A

Print string pointed to by Y,A. The string must end with a null or a quote.

STRPRT DB3D

Print a string whose descriptor is pointed to by FACMO,FACLO.

OUTDO DB5C

Print the character in A. INVERSE, FLASH, and NORMAL in effect.

CRDO DAFB

Print a carriage return.

OUTSPC DB57

Print a space.

OUTQST DB5A

Print a question mark.

INPRT ED19

Print " IN " and the current line number from CURLIN. Uses LNPRT.

LNPRT ED24

Prints the 2 byte unsigned number in X,A.

PRNTFAC ED2E

Prints the current value of FAC. FAC is destroyed. Uses FOUT and STROUT.

Apple Tech Notes

Tech Info Library Article Number:79



Tech Info Library

Applesoft: Internals--Miscellaneous Routines

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Miscellaneous Routines

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PTRGET DFE3

Read a variable name from CHRGET and find it in memory. On entry TXTPTR points to the first character of the variable name. On exit the address to the value of the variable is in VARPNT and Y,A. If PTRGET can't find a simple variable it creates one. If it can't find an array it creates one dimensioned from 0 to 10 and sets all elements equal to zero.

GETARYPT F7D9

Read a variable name from CHRGET and find it in memory. On entry TXTPTR points to the first character of the variable name. This routine leaves LOWTR pointing to the name of the variable array. If the array can't be found the result is an OUT OF DATA ERROR.

FNDLIN D61A

Searches the program for the line whose number is in LINNUM.

On exit:

C set LOWTR points to the link field of the desired line.

C clear then not found. LOWTR points to the next higher line.

DATA D995

Move TXTPTR to the end of the statement. Looks for the ":" or eol (0).

DATAN D9A3

Calculate the offset in Y from TXTPTR to the next ":" or eol (0).

REMN D9A6

Calculate the offset in Y from TXTPTR to the next eol (0).

ADDON D998

Add Y to TXTPTR.

SCRTCH D64B

The "NEW" command. Clears the program, variables, and stack.

CLEARC D66C

The "CLEAR" command. Clears the variables and stack.

STKINI D683

Clears the stack.

RESTOR D849

Sets the DATA pointer, DATPTR, to the beginning of the program.

STXTPT D697

Set TXTPTR to the beginning of the program.

BLTU D393

Block transfer makes room by moving everything forward.

On entry:

Y,A and HIGHDS = destination of high address + 1

 LOWTR = lowest address to be moved

 HIGHTR = highest address to be moved + 1

On exit:

LOWTR is unchanged

HIGHTR = LOWTR - \$100

HIGHDS = lowest address transfered - \$100

REASON D3E3

Makes sure there's enough room in memory for another variable. Checks to be sure that the address Y,A is less than FRETOP. May cause garbage collection. Causes "OUT OF MEMORY ERROR" if there's no room.

GARBAG E484

Move all currently used strings up in memory as far as possible. This maximizes the free memory area for more strings or numeric variables.

CONT D898

Moves OLDTEXT and OLDLIN into TXTPTR and CURLIN.

NEWSTT D7D2

Execute a new statement. On entry TXTPTR points to the ":" preceding the statement or the zero at the end of the previous line. Use NEWSTT to restart the program with CONT. THIS ROUTINE DOES NOT RETURN.

RUN D566

Run the program in memory. THIS ROUTINE DOES NOT RETURN.

GOTO D93E

Uses LINGET and FNDLIN to update TXTPTR. GOTO assumes that the 6502 registers and A have been set up by the CHRGET that fetched the first digit.

LET DA46

Uses CHRGET to get address of the variable, "=", evaluate the formula, and store it. On entry TXTPTR points to the first character of the variable name.

Apple Tech Notes



Tech Info Library

Applesoft: Internals--High resolution graphics routines

Revised: 11/12/85
Security: Everyone

Applesoft: Internals--High resolution graphics routines

=====

NOTE: Regardless of which screen is being displayed, HPAG (location \$E6) determines onto which screen the software draws graphics. (\$20 for HGR, \$40 for HGR2)

HGR2 F3D8
Initialize and clear page 2 High-Res.

HGR F3E2
Initialize and clear page 1 High-Res.

HCLR F3F2
Clear the current High-Res screen to black.

BKGND F3F6
Clear the current High-Res screen to last plotted color.

HPOSN F411
Positions the High-Res cursor without plotting. HPAG determines which page the cursor is pointed at.
On entry:
Horizontal = Y,X
Vertical = A

HPLLOT F457
Call HPOSN then try to plot a dot at the High-Res cursor's position. The dot may not be plotted if plotting non-white at a complementary color X coordinate.

HLIN F53A
Draws a line from the last plotted point or line destination to the coordinate in the 6502 registers.
On entry:
Horizontal = X,A
Vertical = Y

HFIND F5CB

Convert the High-Res cursor's position to X-Y coordinates. HFIND allows the user to tell where on the screen the a shape table left the cursor.

On exit:

\$E0 = horizontal lsb

\$E1 = horizontal msb

\$E2 = vertical

DRAW F601

Draw the shape pointed to by Y,X using the current HCOLOR starting at the current High-Res cursor position. On entry A = rotation factor.

XDRAW F65D

Draw the shape pointed to by Y,X by starting at the current High-Res cursor position inverting the existing color of the dots the shape draws over. On entry A = rotation factor.

SETHCOL F6EC

Set the High-Res color to X. X must be less than 8.

SHLOAD F775

Loads a shape table into memory from tape above MEMSIZ (HIMEM) and sets the pointer at \$E8.

Apple Tech Notes

Tech Info Library Article Number:81



Tech Info Library

Applesoft: Internals--Error Processor Routines

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Error Processor Routines

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ERROR D412

Checks ERRFLG and jumps to HNDLERR if ONERR is active. Otherwise it prints
<cr> "?" <error message pointed to by X> "ERROR". If this is during program
execution then it also prints " IN " and the CURLIN.

HANDLERR F2E9

Saves CURLIN in ERRLIN, TXTPTR in ERRPOS, X in ERRNUM, and REMSTK in ERRSTK.
X contains the error code. See the Applesoft Reference Manual page 136 for
the value of X for a given error.

RESUME F317

Restores CURLIN from ERRLIN and TXTPTR from ERRPOS and transfers ERRSTK into
the 6502 stack pointer.

ISCNTC D858

Checks the Apple keyboard for a CTRL-C (\$83). Executes the BREAK routine
if there is a CTRL-C.

CHKNUM DD6A

Make sure FAC is numeric. See CHKVAL.

CHKSTR DD6C

Make sure FAC is a string. See CHKVAL.

CHKVAL DD6D

Takes the result of the most recent FAC operation and check this result for a
string or numeric variable. A TYPE MISMATCH ERROR results if FAC and C don't
agree.

On entry:

C set checks for strings

C clear checks for numerics.

ERRDIR E306

Causes ILLEGAL DIRECT ERROR if the program isn't running. X is modified.

ISLETC E07D

Checks A for an ASCII letter ("A" to "Z"). On exit C set if A is a letter.

PARCHK DEB2

Checks for "(", evaluates a formula, and checks for ")". Uses CHKOPN and FRMEVL then falls into CHKCLS.

CHKCLS DEB8

Checks at TXTPTR for ")". Uses SYNCHR.

CHKOPN DEBB

Checks at TXTPTR for "(" . Uses SYNCHR.

CHKCOM DEBE

Checks at TXTPTR for ", ". Uses SYNCHR.

SYNCHR DECO

Checks at TXTPTR for the character in A. TXTPTR is not modified. Normally exits through CHRGET. Exits with SYNTAX ERROR if they don't match.

Apple Tech Notes

Tech Info Library Article Number:82



Tech Info Library

Applesoft: Internals--Index to Routines (1 of 4)

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Applesoft: Internals--Index to Routines (1 of 4)

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The following two lists combine all the routines in the INTERNALS series of Apple Tech Notes. The first list is arranged alphabetically by the name of the routine. The second list is arranged in order of increasing address.

ALPHABETIC LIST

Name	Address
------	---------

-----	-----
-------	-------

ABS	EBAF
ADDON	D998
ARG	A5-AA
ATN	F09E
AYINT	E10C
BKGND	F3F6
BLTU	D393
CHKCLS	DEB8
CHKCOM	DEBE
CHKNUM	DD6A
CHKOPN	DEBB
CHKSTR	DD6C
CHKVAL	DD6D
CHRGET	00B1
CHRGOT	00B7
CLEARC	D66C
COMBYTE	E74C
CONINT	E6FB
CONT	D898
CONUPK	E9E3
COS	EFEA
CRDO	DAFB
DATA	D995
DATAN	D9A3
DIV10	EA55
DRAW	F601
ERRDIR	E306
ERROR	D412
EXP	EF09

FAC	9D-A2
FADD	E7BE
FADDH	E7A0
FADDT	E7C1
FCOMP	EBB2
FDIV	EA66
FIDVT	EA69
FIN	EC4A
FLOAT	EB93
FMULT	E97F
FMULTT	E982
FNDLIN	D61A
FOUT	ED34
FPWRT	EE97
FREFAC	E600
FRESTR	E5FD
FRETMP	E604
FRETMS	E635
FRMEVL	DD7B
FRMNUM	DD67
FSUB	E7A7
FSUBT	E7AA
GARBAG	E484
GDBUFS	D539
GETADR	E752
GETARYPT	F7D9
GETBYT	E6F8
GETNUM	E746
GETSPA	E452
GETSPT	DA7B
GIVAYF	E2F2

Apple Tech Notes

Tech Info Library Article Number:83



Tech Info Library

Applesoft: Internals--Index to Routines (2 of 4)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Index to Routines (2 of 4)

=====

ALPHABETIC LIST (continued)

Name	Address
------	---------

-----	-----
-------	-------

GOTO	D93E
GTBYTC	E6F5
HANDLERR	F2E9
HCLR	F3F2
HFIND	F5CB
HFNS	F6B9
HGR	F3E2
HGR2	F3D8
HLIN	F53A
HLOT	F457
HPOSN	F411
INCHR	D553
INLIN	D52C
INLIN+2	D52E
INPRT	ED19
INT	EC23
ISCNTC	D858
ISLETC	E07D
LET	DA46
LINGET	DA0C
LINPRT	ED24
LOG	E941
MOV1F	EB21
MOV2F	EB1E
MOVAF	EB63
MOVFA	EB53
MOVFM	EAF9
MOVINS	E5D4
MOVMF	EB2B
MOVML	EB23
MOVSTR	E5E2
MUL10	EA39
NEGOP	EED0

NEWSTT	D7D2
OUTDO	DB5C
OUTQST	DB5A
OUTSPC	DB57
PARCHK	DEB2
PLOTFNS	F1EC
PRNTFAC	ED2E
PTRGET	DFE3
PUTNEW	E42A
QINT	EBF2
REASON	D3E3
REMN	D9A6
RESTOR	D849
RESUME	F317
RND	C9-CD
RND	EFAE
RUN	D566
SCRTCH	D64B
SETHCOL	F6EC
SGN	EB90
SHLOAD	F775
SIGN	EB82
SIN	EFF1
SNGFLT	E301
SQR	EE8D
STKINI	D683
STRINI	E3D5
STRLIT	E3E7
STRLT2	E3ED
STROUT	DB3A
STRPRT	DB3D
STRSPA	E3DD
STRTXT	DE81
STXTPT	D697
SYNCHR	DEC0
TAN	F03A
TEMP1	93-97
TEMP2	98-9C
TEMP3	8A-8E
XDRAW	F65D

Apple Tech Notes

Tech Info Library Article Number:84



Tech Info Library

Applesoft: Internals--Index to Routines (3 of 4)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Index to Routines (3 of 4)

=====

Numeric list by Address

Addr. Name

00B1	CHRGET
00B7	CHRGOT
8A-8E	TEMP3
98-9C	TEMP2
9D-A2	FAC
A5-AA	ARG
C9-CD	RND
D393	BLTU
D3E3	REASON
D412	ERROR
D52C	INLIN
D52E	INLIN+2
D539	GDBUFS
D553	INCHR
D566	RUN
D61A	FNDLIN
D64B	SCRTCH
D66C	CLEARC
D683	STKINI
D697	STXTPT
D7D2	NEWSTT
D849	RESTOR
D858	ISCNTC
D898	CONT
D93E	GOTO
D995	DATA
D998	ADDON
D9A3	DATAN
D9A6	REMN
DA0C	LINGET
DA46	LET
DA7B	GETSPT
DAFB	CRDO

DB3A	STROUT
DB3D	STRPRT
DB57	OUTSPC
DB5A	OUTQST
DB5C	OUTDO
DD67	FRMNUM
DD6A	CHKNUM
DD6C	CHKSTR
DD6D	CHKVAL
DD7B	FRMEVL
DE81	STRTXT
DEB2	PARCHK
DEB8	CHKCLS
DEBB	CHKOPN
DEBE	CHKCOM
DEC0	SYNCHR
DFE3	PTRGET
E07D	ISLETC
E10C	AYINT
E2F2	GIVAYF
E301	SNGFLT
E306	ERRDIR
E3D5	STRINI
E3DD	STRSPA
E3E7	STRLIT
E3ED	STRLT2
E42A	PUTNEW
E452	GETSPA
E484	GARBAG
E5D4	MOVINS
E5E2	MOVSTR
E5FD	FRESTR

Apple Tech Notes

Tech Info Library Article Number:85



Tech Info Library

Applesoft: Internals--Index to routines (4 of 4)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Index to routines (4 of 4)

=====

Numeric list by Address (continued)

Addr.	Name
-----	-----
E600	FREFAC
E604	FRETMP
E635	FRETMS
E6F5	GTBYTC
E6F8	GETBYT
E6FB	CONINT
E746	GETNUM
E74C	COMBYTE
E752	GETADR
E7A0	FADDH
E7A7	FSUB
E7AA	FSUBT
E7BE	FADD
E7C1	FADDT
E941	LOG
E97F	FMULT
E982	FMULTT
E9E3	CONUPK
EA39	MUL10
EA55	DIV10
EA66	FDIV
EA69	FIDVT
EAf9	MOVFM
EB1E	MOV2F
EB21	MOV1F
EB23	MOVML
EB2B	MOVMF
EB53	MOVFA
EB63	MOVAF
EB82	SIGN
EB90	SGN
EB93	FLOAT

EBAF	ABS
EBB2	FCOMP
EBF2	QINT
EC23	INT
EC4A	FIN
ED19	INPRT
ED24	LINPRT
ED2E	PRNTFAC
ED34	FOUT
EE8D	SQR
EE97	FPWRT
EED0	NEGOP
EF09	EXP
EFAE	RND
EFEA	COS
EFF1	SIN
F03A	TAN
F09E	ATN
F1EC	PLOTFNS
F2E9	HANDLERR
F317	RESUME
F3D8	HGR2
F3E2	HGR
F3F2	HCLR
F3F6	BKGND
F411	HPOSN
F457	HPLLOT
F53A	HLIN
F5CB	HFIND
F601	DRAW
F65D	XDRAW
F6B9	HFNS
F6EC	SETHCOL
F775	SHLOAD
F7D9	GETARYPT
93-97	TEMP1

Apple Tech Notes

Tech Info Library Article Number:86



Tech Info Library

Applesoft Reference Manual: Errata (1 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft Reference Manual: Errata (1 of 2)

=====

Page 5

Paragraph 4, the last line should read: However, only the first 9 digits are usually significant, and the tenth digit is rounded off.

Page 15

Line 90 should read:

```
90 DIM A(8): REM DIMENSION ARRAY WITH MAX. 9 ELEMENTS
```

Page 15

Line 180 should read:

```
180 IF A(I) <= A(I+1) THEN GOTO 240
```

Page 21

The line about mid-page that reads

C\$ = RIGHT\$(B\$,3) + "-" + LEFT\$(B\$,4) + "-" + MID\$(B\$,6,7) should read

C\$ = RIGHT\$(B\$,4) + "-" + LEFT\$(B\$,4) + "-" + MID\$(B\$,6,7)

Page 23

Line 180 should read:

```
180 I = I+1: IF I < 15 THEN GOTO 130
```

Page 51

If TAB(X) is the last item in a PRINT statement Applesoft will act as if there is a semi-colon after it.

Page 52

If SPC(X) is the last item in a PRINT statement Applesoft will act as if there is a semi-colon after it.

Page 53

FRE returns the amount of memory ... Applesoft sometimes stores duplicate strings separately.

Page 53

PRINT FRE (0) sometimes returns a negative number because of the way integers are handled in Applesoft. Adding 65536 to the negative number will give the

positive representation.

Page 63

Rule 2 should read "The total number of elements RECALled must be at least equal to" instead of "...equal th".

Page 66

Similarly, a response... If an ASCII NUL character, CTRL-SHIFT-P, is included in a line of input, the input will be truncated at the character before the NUL. A NUL as the first character in response to INPUT A\$ will result in a null string. A NUL as the first character in response to INPUT A will result in ?REENTER.

Page 66-67

A line of input longer than 255 characters will be cancelled by the monitor and the user is left in the input statement. A line greater than 239 but less than 255 will be truncated to 239 characters.

Page 81

ONERR GOTO, "When an error occurs..." should read "After executing an ONERR GOTO command, when an error occurs...".

Page 96

Paragraph 1, line 6, the sentence that starts "Press the RESET key..." should read "Type CALL -151" because Apple IIs with the Auto-Start ROM will not go into the monitor when the RESET key is pressed.

Page 102

The function for LOG of X base 10 is $\text{LOG}(X) / \text{LOG}(10)$.

Page 118

"1) Use multiple statements" states that the maximum line number is 65529 when the actual maximum line number is 63999.

Page 131

Second paragraph, line 7, replace "POKE 22,W" with "POKE 33,W".

Apple Tech Notes

Tech Info Library Article Number:87



Tech Info Library

Applesoft Reference Manual: Errata (2 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft Reference Manual: Errata (2 of 2)

=====

Page 135

Replace the top part with

260 POKE -16296,0

Clear game control "annunicator" output #0 (Game I/O connector, pin 15) to TTL low (0.3 volts). This is the "off" condition: maximum current 8 milliamperes.

270 POKE -16295,0

Set game control "annunicator" output #0 (Game I/O connector, pin 15) to TTL high (3.5 volts). This is the "on" condition: maximum current 0.4 milliamperes.

280 POKE -16294,0

Clear game control "annunicator" output #1 (Game I/O connector, pin 14) to TTL low (0.3 volts). This is the "off" condition: maximum current 8 milliamperes.

290 POKE -16293,0

Set game control "annunicator" output #1 (Game I/O connector, pin 14) to TTL high (3.5 volts). This is the "on" condition: maximum current 0.4 milliamperes.

300 POKE -16292,0

Clear game control "annunicator" output #2 (Game I/O connector, pin 13) to TTL low (0.3 volts). This is the "off" condition: maximum current 8 milliamperes.

310 POKE -16291,0

Set game control "annunicator" output #2 (Game I/O connector, pin 13) to TTL high (3.5 volts). This is the "on" condition: maximum current 0.4 milliamperes.

320 POKE -16290,0

Clear game control "annunicator" output #3 (Game I/O connector, pin 12) to TTL low (0.3 volts). This is the "off" condition: maximum current 8 milliamperes.

330 POKE -16289,0
Set game control "annunicator" output #3 (Game I/O connector, pin 12) to TTL high (3.5 volts). This is the "on" condition: maximum current 0.4 milliamperes.

Page 137
The table for string pointers is wrong.

STRING POINTERS			
-+	+-----+		
|	| NAME	(pos) 1st byte	|
|	|	(neg) 2nd byte	|
-+	+-----+		
|	| length	1 byte	|
|	| address	low byte	|
|	| address	high byte	|
|	|	0	|
|	|	0	|
-+	+-----+		

STRING POINTERS			
-+	+-----+		
|	| NAME	(pos) 1st byte	|
|	|	(neg) 2nd byte	|
-+	+-----+		



Tech Info Library

Applesoft Tutorial: Errata

Revised: 11/7/84
Security: Everyone

Applesoft Tutorial: Errata

=====

Page 6

References to the RESET key need to refer to CTRL-RESET for newer Apples.

Page 17

"STOPPING THE COMPUTER"; Pressing RETURN after a CTRL-C may be required if the Apple is waiting for input from the keyboard.

Page 23-24

There are only five different elementary arithmetic operations. They are:

- + Addition
- * Multiplication
- Subtraction
- / Division
- ^ Exponentiation

Page 37

GAMEPOINTS = 45 won't work because it contains the key word, INT. It will be parsed as GAMEPO INT S and it will return a SYNTAX ERROR. GAMEPTS = 45 should be OK.

Page 38

The line before the last listing should say "Try the statements below in order:" instead of "Try the statements on the next page in order:"

Page 59

Line 230 at the bottom of the page should read:
230 IF N < = 10 THEN GOTO 210

Page 63

Line 270 should read:
270 X = X / 7

Page 65

Line 3220 should read:
3020 COLOR = N

Page 69

The last line on the page reads:

```
120 PRINT "THE STRIKES AND BALLS ARE ";STRIKES;" ";BALLS
```

It is difficult to tell this because the space after STRIKES;" comes at the end of the line of listing.

Page 71

Lines 650 and 660 are reversed. They should read:

```
650 NEXT Y
```

```
660 NEXT X
```

Page 79

The two example line 780s are incorrect. The word "BACKGROUND" will be parsed as "BACK GR OUND" because GR is a key word and because there is already a variable BALL which would share the same Applesoft variable name, BA. Try using "FIELD" instead.

Page 81

Paragraph 3, "One possible solution is given on the next page," should read "One possible solution is given below,"

Page 85

Line 220 has an extra "). It should read:

```
220 COLOR= INT (16 * RND(1))
```

Page 95

The program will give incorrect values for the Y variable unless a time delay is installed. Add this line: 1005 FOR J = 1 TO 10: NEXT J

Page 96

Line 360 should read:

```
360 FOR S = 0 TO 1: REM 2 LINES, FROM Y AND Y + 1
```

Page 105

Replace line 120 with

```
120 WHOLE$ = HALF$ + " " + OTHERHALF$
```

Page 108

According to page 99 and iii, the title on this page should read "INTRODUCING ARRAYS: DIM".

Page 109

The last sentence in the last paragraph should read "The program below accomplishes this."

Page 109

Line 340 should read:

```
340 TEMP = GLASS(WINE):GLASS(WINE) = GLASS(MILK):GLASS(MILK)
    = TEMP
```

Page 110

Starting in the middle of the 9th line, the text should read; "Then line 320 makes sure that the value of WINE is not equal to the value of MILK at any

given time. The contents of variables GLASS(WINE) and GLASS(MILK) are switched in line 340. Finally the array is printed with lines 370 through 390."

Page 130

Clear the entire screen should be press <ESC> then <SHIFT> and <P@> instead of <CTRL> and <P@>.

Page 148-149

The green keys should have slashed zeros to differentiate them from capital O.

Apple Tech Notes

Tech Info Library Article Number:89



Tech Info Library

Applesoft: A program to simulate PRINT USING

Revised: 9/5/85
Security: Everyone

Applesoft: A program to simulate PRINT USING

=====

The listing below demonstrates how Applesoft can simulate the BASIC statement PRINT USING.

This particular example shows a subroutine that formats numeric output into a "Dollars and Cents" format. It's simple and fairly fast. It assumes that the calling program has initialized the following:

X, containing the number to be printed,
N, containing the number of digits to the right of the decimal, and
S, containing the width of the right justified printing field

The subroutine starting at line 1000 does all the work.

```
100 REM PRINT USING SIMULATOR
130 REM
140 LET N = 2: REM SET NUMBER OF DECIMALS
160 LET S = 5: REM SET FIELD WIDTH
180 HOME
190 FOR X = - 5 TO 5 STEP .501
200 PRINT X,"$";
210 GOSUB 1000
220 NEXT X
230 PRINT
240 PRINT "UNFORMATTED      FORMATTED"
250 END
1000 LET X$ = " " + STR$(INT(X * 10^N +.5))
1010 LET Q = LEN(X$) - (VAL(X$) < 0)
1020 PRINT SPC(S - Q * (Q > N+1) - (N+2) * (Q <= N+1));
1030 PRINT MID$(X$,1 + (VAL(X$) < 0), (Q <= N) + (Q-N) * (Q > N));
1040 PRINT MID$( "0.00", 1 + ((N+1) < Q), 1 + (N-Q+2) * (Q < N+2));
1050 PRINT RIGHT$(X$, N * (Q > N) + (Q-1) * (Q <= N));
1060 RETURN
```

Apple Tech Notes

Tech Info Library Article Number:91



Tech Info Library

Applesoft: Internals--Page Zero Memory Map (1 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Page Zero Memory Map (1 of 2)

```
=====

00-02  START  Initialize low RAM memory
03-05  RDYJSR  Jumps to STROUT
06,07  ADRAYI  Address of AYINT subroutine
08,09  ADRGAY  Address of GIVAYF subroutine
0A-0C  USRPOK  Vector for USR() function
0D     CHARAC  String delimiter
0E     ENDCHR  String delimiter
0F     COUNT  General purpose counter
10     DIMFLG  Flag to permit arrays
11     VALTYP  Variable type indicator. 0=numeric, 1=string
12     INTFLG  Variable type indicator. 1=integer, 0=real
13     GARBFL  Flag to signal the need for garbage collection
14     SUBFLG  Flag to permit array variables.
15     INPFLG  Determines if this is INPUT or READ
16     TANSGN  Used for the sign during TAN() function
1A,1B  SHAPE   High-Res shape pointer
1C     HCOLOR1 High-Res running color mask
1D     COUNTH  High-Res counter
26,27  HBAS    High-Res base address pointer
2C     H2
2D     V2
45     ERROV
50,51  LINNUM  16 bit integer work area
53,54  LASTPT  Pointer to last used string temporary
55-5D  TEMPST  Temporary string descriptor storage area
5E,5F  INDEX   General purpose index
60,61  INDEX2  General purpose index
62-66  RES     Multiply or divide result (HO,MOH,MO,LO)
67,68  TEXTAB  Pointer to start of the program text
69,6A  VARTAB  Pointer to start of simple variable space
6B,6C  ARYTAB  Pointer to start of array variable space
6D,6E  STREND  Pointer to end of storage in use
6F,70  FRETOP  Pointer to top of string free space
71,72  FRESPC  Pointer to new string
73,74  MEMSIZ  Pointer to top of memory
75,76  CURLIN  Current line number
```

77,78	OLDLIN	Old line number, set up by ctrl-C, STOP, or END
79,7A	OLDTXT	Old text pointer
7B,7C	DATLIN	Line number where data for next READ comes from
7D,7E	DATPTR	Pointer to data for next READ
7F,80	INPPTR	Pointer to where input is coming from
81,82	VARNAM	Storage area for a variable's name
83,84	VARPNT	Pointer to a variable in memory
85,86	FORPNT	Variable pointer for FOR and LET
87,88	OPPTR	Pointer to current formula operation in OPTAB
89	OPMASK	Mask created by current operator
8A,8B	DEFPNT	Pointer used in function definition
8C,8D	DSCPNT	Pointer to a string descriptor
8E	TEMPF3	Temporary pointer
8F	FOUR6	Constant for garbage collection
90-92	JMPER	Internal vector
93	TEMPF1	Temporary pointer
94,95	ARRYPT	Pointer into an array
94,95	HIGHDS	Destination of highest element in BLT.
96,97	HIGHTR	Source of highest element to move in BLT.
98	TEMPF2	
99,9A	LOWDS	Location of last byte transferred into in BLT.
9B,9C	LOWTR	Last thing to move in BLT. See BLTU.
9D-9F	DSCTMP	Temporary string descriptor
9D-A2	FAC	Floating point accumulator. (EXP,HO,MOH,MO,LO,SGN)

Apple Tech Notes

Tech Info Library Article Number:92



Tech Info Library

Applesoft: Internals--Page Zero Memory Map (2 of 2)

Revised: 11/7/84
Security: Everyone

Applesoft: Internals--Page Zero Memory Map (2 of 2)

```
=====

A3      SNGFLG  Sign of FAC.  Set up by FIN.
A4      BITS
A5-AA   ARG     Floating point argument (EXP,HO,MOH,MO,LO,SGN)
AB,AC   STRNG1  Pointer to a string or descriptor
AD,AE   FBUFFPT Pointer into FBUFFER for FOUT
AF,B0   PRGEND  Pointer to the end of the program text
B1-C8   CHRGET  Character fetcher
C9-CD   RNDX    Random number seed
D0,D1   DX      High-Res delta-X for shape and HLIN
D2      DY      High-Res delta-Y for shape and HLIN
D3      QDRNT   High-Res rotation quadrant
D4,D5   E       High-Res error for HLIN
D6      RNONLY  Run only flag
D8      ERRFLG  Flag set by ONERR GOTO
DA,DB   ERRLIN  The line number where the error occurred
DC,DD   ERRPOS  Where in memory did the error occur
DE      ERRNUM  Which error occurred
DF      ERRSTK  6502 stack pointer from REMSTK after an error
E0,E1   XO      High-Res prior X coordinate save
E2      YO      High-Res prior Y coordinate save
E4      HCOLOR  High-Res color byte for HPLOT, HPOSN
E5      HNDX    High-Res horizontal offset save
E6      HPAG    High-Res page ($20 = HGR1, $40 = HGR2)
E7      SCALE   High-Res scale for SHAPE
E8,E9   SHAPX   High-Res start of shape table
EA      COLLSN  High-Res collision counter
F0      FIRST
F1      SPDBYT  Controls delay between printed characters
F2      TRFLAG  Controls TRACE mode.
F3      ORMASK  Controls masking for INVERSE on video output.
F4-F7   ERRTO   Points to the GOTO part of ONERR statement
F8      REMSTK  6502 Stack pointer save area.
F9      ROTBYT  High-Res rotation factor for SHAPE
100-10F FBUFFR  Buffer for FOUT
200-2F0 BUF    Input buffer
```

Apple Tech Notes

Tech Info Library Article Number:93



Tech Info Library

Applesoft: Auto RUN byte and protecting programs

Revised: 11/7/84
Security: Everyone

Applesoft: Auto RUN byte and protecting programs

=====

A byte in memory causes any Applesoft command entered from command mode to be interpreted as a RUN command.

POKE 82,213
SAVE

causes this automatic RUN byte to be set when the program is loaded from tape. This "protection" scheme is very easy to defeat, and is not widely used. It does not protect the program from DOS commands.

POKE 214,128

sets the auto-run byte from command mode or from within a program. Take care with this POKE because there is no way to reverse it from command mode because the next POKE will RUN the program.

POKE 214,0

from within a program will return the auto-run byte to normal.

Apple Tech Notes

Tech Info Library Article Number:94



Tech Info Library

Applesoft: Commas and printing

Revised: 11/7/84
Security: Everyone

Applesoft: Commas and printing

=====

The following information applies to the Apple II Plus with a 40-column screen.

The third comma tab field is only available if there is nothing beyond column 23. The first character in the third comma field can print outside the text window.

HTAB can force the cursor outside the text window which can kill a program on the next PRINT statement.

VTAB ignores the text window. VTABbing below the text window will cause all output to be on one line. VTABbing above the text window will scroll into the window but the area above the window won't scroll.

Apple Tech Notes

Tech Info Library Article Number:95



Tech Info Library

AppleWorks: Converting PFS:File & PFS:Write Files to AppleWorks

Revised: 9/1/87
Security: Everyone

AppleWorks: Converting PFS:File & PFS:Write Files to AppleWorks

=====

This article last reviewed: 9/1/87

Here are several ways to convert Pascal-based PFS:Write and PFS:File files to AppleWorks.

PFS:Write

The ProDOS version of PFS:Write includes a conversion program called PFS:Convert, which lets you convert Pascal-based PFS files to the new ProDOS PFS:Write format. Once you've made this conversion, start the ProDOS version of PFS:Write and load the file you want to transfer to AppleWorks. From the PFS:Write Main Menu, save the file using the suffix ".TXT." PFS:Write will now save the file as a standard ASCII file stripped of formatting commands except line breaks. Now you can start AppleWorks, and use the "Make a new document for the Word Processor" function and type in the file's pathname. You will have to reformat the document.

The Pascal PFS Conversion Disk also converts Pascal PFS:Write and PFS:File documents to ProDOS (ASCII) files. Jim Luther, 5716 Forest, Kansas City MO 64110.

The March 1986 issue of Call-A.P.P.L.E. contains a conversion program that you can either type yourself, or download from the A.P.P.L.E. Crate Bulletin Board (206) 251-0543. Call-A.P.P.L.E., 290 S. W. 43rd Street, Renton WA 98055, 206/251-5222.

PFS:File

If your PFS:File records fit within AppleWorks' limits (number of categories and fields) no special preparation is necessary. If you have more categories, than AppleWorks allows, you'll have to decide which are not vital and delete them. If you have fields longer than 76 characters, AppleWorks should truncate the additional characters, but AppleWorks versions earlier than 1.3 don't always do so.

After using the PFS:Convert program that comes with the ProDOS version of

PFS:File, use the "Copy Selected Forms to An ASCII File" in the ProDOS PFS:File program, enter the prefix and file name for the new ASCII text file. When the ASCII options menu is displayed, choose a number between 1 and 30 for the "End of item code" and a different number for your "End of form code." PFS:File will convert the file, although somewhat slowly. Now you can start AppleWorks, Make a New file for the Data Base, and Make a new file from a text (ASCII) file. Enter the path name for the file you are about to import. At the prompt, tell AppleWorks how many categories were in each PFS:File record. Give the file you are creating a name and Press Return; AppleWorks will create a database. A word of caution: if you are working with 5.25" disks, you must split PFS files larger than 30K into smaller files.

Jim Luther's Pascal PFS Conversion Disk performs the conversion, but it has some limitations: it takes data only from the first page of PFS:File form, drops any categories after the 30th, and truncates any entries in a category in excess of 78 characters.

The June 1986 issue of Call-A.P.P.L.E. contains another program by Wes Felty, PFS:File to ProDOS ASCII Converter, which you can type yourself or download from the A.P.P.L.E. Crate Bulletin Board.

A commercial program called Bridge converts Pascal PFS:File documents to a DOS 3.3 DIF sequential text file, or to one formatted for DOS 3.3 AppleWriter II. It converts entire PFS:File forms without limitations by the page or the form or the number or length of the categories. Once the file is converted to standard DOS 3.3, you must bring it over to ProDOS with Apple's ProDOS Utilities, System Utilities, or other conversion program. Sun Microsystems, Inc., P. O. Box 1388, Fort Lauderdale, FL 33302, 305/486-6115.

Another Pascal PFS:File to ProDOS conversion method involves the ProFiler program. There are two ProFiler utility programs used to convert PFS:File records to ProFiler records. One program works with Pascal PFS:File records, the other with ProDOS PFS:File records. You can batch process the conversion from PFS by using an Exec file adapted for your own use from a public domain diskette (No. 34) available from TAWUG, The AppleWorks Users Group, P. O. Box 24789, Denver, CO 80224-0869, or you can write to Don Lancaster c/o Computer Shopper for a hardcopy of the program (include a self-addressed stamped envelope). ProFiler is from PM Software, P. O. Box 1788, 17610 Beach Boulevard, Suite 29, Huntington Beach CA 92647, 714/963-2221.

Tech Info Library Article Number:96



Tech Info Library

Applesoft: Using the monitor MOVE Routine

Revised: 11/7/84
Security: Everyone

Applesoft: Using the monitor MOVE Routine

=====

The MOVE subroutine in the monitor will not work directly from an Applesoft CALL because Applesoft doesn't assure the presence of a zero in the 6502's Y register and the MOVE subroutine must have the zero there to work. Here is a program that shows a way around this problem:

```
10 DEF FN M(X) = X - INT (X/256) * 256
20 POKE 768,160                      (LDY #0 )
30 POKE 769,0
40 POKE 770,76                      (JMP MOVE)
50 POKE 771,44
60 POKE 772,254
100 REM DO THE MOVE
110 START = 20000                    Start of memory to be moved
120 QUIT = 21000                     End of memory to be moved
130 DEST = 30000                     Start of destination
140 POKE 60,FN M(START)
150 POKE 61,START / 256
160 POKE 62,FN M(QUIT)
170 POKE 63,END / 256
180 POKE 66,FN M(DEST)
190 POKE 67,DEST / 256
200 CALL 768
```

Apple Tech Notes

Tech Info Library Article Number:97



Tech Info Library

Applesoft: Shape Tables

Revised: 11/7/84
Security: Everyone

Applesoft: Shape Tables

=====

Applesoft allows you to draw shape number zero with unexpected results. It ends up interpreting part of the shape table as the address of the desired shape and tries to draw what it finds there. Since this isn't a shape table, Applesoft produces a random assortment of lines.

Apple Tech Notes

Tech Info Library Article Number:98



Tech Info Library

Applesoft: Tips on error handling

Revised: 8/29/86
Security: Everyone

Applesoft: Tips on error handling

=====

When using ONERR GOTO, you have two correct ways to leave your ONERR routine:

1. You can use RESUME; with this, Applesoft re-executes the statement that caused the error, or
2. you may use a GOTO after executing a CALL -3288. For details on this call and on error handling in general, please refer to pages 66 and 67 of the Applesoft BASIC Programmer's Reference Manual, Vol. 2 (p/n A2L4031).

Apple Tech Notes

Tech Info Library Article Number:99



Tech Info Library

LaserWriter: Creating a Prep File

Revised: 7/26/89
Security: Everyone

LaserWriter: Creating a Prep File

=====

This article last reviewed: 5 July 1989

This article describes how to create a LaserPrep file. You can put this file at the beginning of any Macintosh-generated Postscript file (one created with a Command-F after clicking the OK button on the print dialog box). This technique includes an option which allows printing in fonts other than Courier. Follow these steps:

1. Capture the LaserPrep header by pressing Command-K after clicking the OK button on the print dialog box.
2. To use the header from another computer, edit it as follows:
 - a. Search for the first Control-d and delete everything that follows (that's the PostScript description of the document you printed).
 - b. Comment out (%)
 1. The line near the beginning of the file that contains a "setscinteractive" command
 2. The line starting with the "waittimeout" command
 3. The note command
 4. The long hex string near the end of the file
 5. The line before the "eexec" command
 - c. To keep everything from being printed in Courier, add the following lines:

```
%!  
% fontprep.ps
```



```
md begin
/scratch 100 string def
FontDirectory {
  pop scratch cvs dup 0 get dup 65 lt exch 90 gt or {
    pop %% ignore any font name that doesn't start with a letter
  }{
    %% set up and call the /rf routine in md dictionary:
    dup length string copy /#nm exch def
    #nm length 7 add string
    dup 0 (|_____) putinterval
    dup 7 #nm putinterval cvn
    dup FontDirectory exch known {
      clear
    }{
      #nm cvn dup
      fondfont /Encoding get StandardEncoding eq
      {true} {false}ifelse
      rf %stack /_____Fontname /Fontname <boolean>
    }ifelse
  }ifelse
}bind forall
end %md
```

d. If you don't want LaserPrep permanently loaded each time you ship it to the printer, comment out

1. The "exitserver" line
2. The first line of the file (probably all zeros, the exitserver password).

If you want to print in a variety of fonts, see the font code addendum in the article "LaserWriter: How to Print all Fonts".

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Tech Info Library Article Number:100



Tech Info Library

Applesoft: Array Eraser Program

Revised: 11/7/84
Security: Everyone

Applesoft: Array Eraser Program

=====

The following program demonstrates a subroutine that eliminates arrays from memory. Use it in programs to erase the array so that it can be re-dimensioned or where it would help you to reclaim memory if an array takes up scarce memory.

```
100 HOME : VTAB 5
120 PRINT TAB (14);"ARRAY ERASER"
130 GOSUB 10000 : GOSUB 1050
150 PRINT "HERE ARE THE ARRAYS"
160 LIST 180 : GOSUB 1000
180 DIM A(100),B(100)
190 PRINT "AND HERE'S WHAT WE PUT IN THEM"
200 LIST 220 - 230
210 GOSUB 1000
220 LET A(100) = 100 : LET B(100) = 100
240 PRINT "OK, LET'S PRINT THEM OUT"
250 LIST 260 - 270
260 PRINT A(100) : PRINT B(100)
280 GOSUB 1000
290 PRINT "NOW TO ERASE ARRAY 'A'"
300 LIST 310
310 CALL 768,A : GOSUB 1000
330 PRINT "OK, NOW LET'S PRINT B(100) TO SHOW"
340 PRINT : PRINT "THAT IT'S STILL THERE"
350 LIST 360
360 PRINT B(100) : GOSUB 1000
380 PRINT "NOW LET'S TRY TO PRINT A(100). THE"
390 PRINT : PRINT "ERROR WE GET PROVES THAT THE"
400 PRINT : PRINT "ARRAY IS GONE."
410 LIST 420
420 PRINT A(100)
430 END
1000 REM 'PRESS ANY...' ROUTINE
1010 VTAB 23 : PRINT TAB (9);"PRESS ANY KEY FOR MORE"
1030 HTAB 20 : GET A$
1050 VTAB 10 : HTAB 1
```

..TIL00101-Applesoft-Array_Eraser_Program.pdf

```
1070  CALL - 958 : REM CLEAR SCREEN
1080  RETURN
10000 REM THE 'ERASE' POKER
10010 FOR J = 768 TO 823: READ K: POKE J,K: NEXT J
10020 RETURN
10030 DATA 32,177,0,32,217,247
10040 DATA 24,160,2,165,155
10050 DATA 133,66,113,155,133
10060 DATA 60,200,165,156,133
10070 DATA 67,113,155,133,61
10080 DATA 136,56,165,109,133
10090 DATA 62,241,155,133,109
10100 DATA 200,165,110,133,63
10110 DATA 241,155,133,110,160
10120 DATA 0,32,44,254,32,163
10130 DATA 217,76,152,217
```

Apple Tech Notes

Tech Info Library Article Number:101



Tech Info Library

Applesoft: Literal Input Routine

Revised: 5/12/86
Security: Everyone

Applesoft: Literal Input Routine

=====

This program demonstrates a routine that takes anything you type and enters it into a string. It's very important that IN\$ = "X" is the first line of the program.

```
100 LET IN$ = "X"
110 TEXT : HOME
120 REM ** THE FIRST VARIABLE DEFINED MUST BE A STRING
130 REM ** THIS STRING WILL RECEIVE INPUT FROM THE CALL
140 REM ** THIS POKES THE INPUT SIMULATOR ROUTINE INTO MEMORY
200 FOR J = 768 TO 790
210 READ I : POKE J,I
220 NEXT J
230 DATA 162,0,32,117,253,160,2
240 DATA 138,145,105,200,169,0
250 DATA 145,105,200,169,2,145
260 DATA 105,76,57,213
300 REM ** NOW TO USE IT!
310 PRINT "TYPE IN ANY CHARACTERS YOU WISH:" : PRINT
320 CALL 768:IN$ = MID$ (IN$,1)
330 REM ** THIS IS AN "INPUT IN$" BUT IGNORES "," AND ":"
400 PRINT : PRINT "AND HERE'S WHAT YOU TYPED IN:"
420 PRINT : PRINT IN$
430 PRINT : PRINT "NOTE THAT EVEN QUOTES, COMMAS AND"
450 PRINT "COLONS GET THROUGH UNSCATHED."
460 PRINT : PRINT "NOW LET'S WRITE IT TO THE DISK"
470 PRINT CHR$(4);"OPEN TEMP"
480 PRINT CHR$(4);"WRITE TEMP"
490 PRINT IN$
500 PRINT CHR$(4);"CLOSE"
510 PRINT : PRINT "AND READ IT BACK IN..."
520 LET IN$ = " "
530 PRINT CHR$(4);"OPEN TEMP"
540 PRINT CHR$(4);"READ TEMP"
550 CALL 768:IN$ = MID$ (IN$,1)
560 PRINT CHR$(4);"CLOSE"
570 PRINT : PRINT IN$
```

```
580  PRINT : PRINT "TA-DAA!!": END
```

Apple Tech Notes

Tech Info Library Article Number:102



Tech Info Library

Applesoft: About the LOMEM command

Revised: 11/7/84
Security: Everyone

Applesoft: About the LOMEM command

=====

The LOMEM command in Applesoft can be used to relocate the addresses where Applesoft stores its variables in memory. LOMEM is automatically set to the top of the program when the LOAD command is executed.

After LOAD				
	|	Program text	High-Res & Variables	DOS
	|	-LOMEM		|
	|	-TEXTAB		-HIMEM
	|		-LOMEM	|
After LOMEM				
	|	Program text	High-Res	Variables | DOS
		2048	8192	16384
			or 16384	24576

Most commonly, users employ LOMEM when a short program's variables collide with the High-Res screen memory. Employ the statements below depending on which page of High-Res you use, HGR or HGR2:

For HGR
10 LOMEM: 16384

For HGR2
10 LOMEM: 24576

LOMEM executes a CLEAR, so you must call it before any variables are defined.

WARNING: the CHAIN program that comes with DOS 3.3 will reset LOMEM to the end of the program.

Take note that LOMEM moves the addresses of the variables but it does not move

the address of the program. Another pointer, TEXTAB, tells Applesoft where to start loading the program. The following programs relocate the program and variables above the High-Res buffers by changing TEXTAB. DOS and CHAIN will continue to load programs there until the system is re-booted or the FP command is executed.

For HGR

```
10 POKE 103,1           : REM THIS CHANGES
20 POKE 104,64          : REM TEXTAB TO 16385
30 POKE 16384,0         : REM (NEEDED BY APPLESOFT)
40 PRINT CHR$(4);"RUN PROGRAM"
```

For HGR2 or both pages

```
10 POKE 103,1           : REM THIS CHANGES
20 POKE 104,96          : REM TEXTAB TO 24577
30 POKE 24576,0         : REM (NEEDED BY APPLESOFT)
40 PRINT CHR$(4);"RUN PROGRAM"
```

Note: Modifying TEXTAB can be dangerous. The DOS RUN command employs an Applesoft NEW to re-initialize the rest of Applesoft's pointers. Cassette users will have to type "NEW" from the keyboard before loading their programs. Failure to do a NEW will cause unpredictable results.

Apple Tech Notes

Tech Info Library Article Number:103



Tech Info Library

Applesoft: Determining if a dot on the Hi-Res screen is on

Revised: 11/7/84
Security: Everyone

Applesoft: Determining if a dot on the Hi-Res screen is on

=====

The following program demonstrates how to determine if a certain dot on the High-Res screen is on or off.

```
1000 REM      HIRES SCRIN FUNCTION DEMO
1010 REM
1020 REM LOAD IN THE BINARY STUFF
1030 REM
1050 FOR J = 768 TO 806: READ K: POKE J,K: NEXT J
1060 DATA 32,227,223,133,133
1070 DATA 132,134,169,208,32
1080 DATA 192,222,165,18,72
1090 DATA 165,17,72,32,185
1100 DATA 246,32,17,244,165
1110 DATA 48,49,38,240,2
1120 DATA 169,1,168,32,1
1130 DATA 227,76,91,218
1140 POKE 1013,76: POKE 1014,0: POKE 1015,3
1150 REM -----
1160 REM      DRAW SOMETHING
1170 REM -----
1180 LET HO = 120:VO = 60
1190 HGR
1200 HCOLOR= 3
1210 HPLOT HO,VO
1220 FOR J = 1 TO 10
1230 HPLOT TO RND (9) * 40 + HO, RND (9) * 40 + VO
1240 NEXT
1250 HOME
1260 VTAB 22
1270 FOR J = 0 TO 3000: NEXT
1280 REM -----
1290 REM  CONVERT IT TO LORES
1300 REM -----
1310 GR
1320 COLOR= 2: FOR V = 0 TO 39: HLIN 0,39 AT V: NEXT
1330 FOR V = 0 TO 39
```



```
1340  FOR H = 0 TO 39
1350  COLOR= 12: PLOT H,V
1360  REM -----
1370  REM      THIS IS IT!!
1380  REM THE SYNTAX IS: &A=B,C   WHERE
1400  REM A WILL GET THE 1 OR 0 - B,C ARE
1410  REM THE HIRES COORDINATES  AS IN H PLOT
1440  REM -----
1450  & A = H + HO,V + VO
1460  COLOR= A * 15
1470  PLOT H,V
1480  NEXT H,V
```

Apple Tech Notes

Tech Info Library Article Number:104



Tech Info Library

Apple II and Apple II Plus: Hardware Specs (Discontinued 6/83)

Revised: 9/10/93
Security: Everyone

Apple II and Apple II Plus: Hardware Specs (Discontinued 6/83)

=====

Electrical

AC power: 107-132 VAC 60Hz
DC power at I/O ports
(48K RAM)
+ 5v @ 1.0 amp
- 5v @ 0.25 amps
+12v @ 1.1 amps (Can supply 2.1 amps for 20 minutes with rest of 10 minutes
-12v @ 0.23 amps
Power Dissipation: 60 Watts

Environmental

Temperature Range
Operating 0C to 45C (disk media is limited to 35C)
Storage -35C to 140C
Relative Humidity
20% to 90% non-condensing
Altitude
Operating - 1,000 to 15,000 ft
Non-operating 50,000 ft
(derate maximum ambient temp. by 1 degree C per 1000 feet over 5,000 ft)

Physical Characteristics

Height	4.5 in
Width	15.1 in
Length	18.0 in
Weight	12.0 lbs

Safety and RFI Qualifications

The Apple II meets the following agency regulations.
FCC Part 15, Class B Personal Computers
CSA 22.2, No. 154-1979
UL 114 - Office Machines

VDE 0871/6.28"A"Limit

Apple Tech Notes

Tech Info Library Article Number:105



Tech Info Library

Apple II Hardware: Direct Memory Access (2/97)

Revised: 3/3/97
Security: Everyone

Apple II Hardware: Direct Memory Access (2/97)

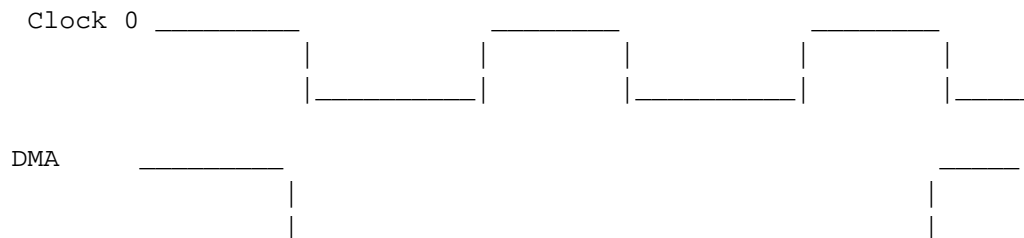
Article Created: 21 September 1984
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes DMA (Direct Memory Access) and how it can be used to control the Apple's memory and I/O.

DISCUSSION -----

DMA (Direct Memory Access), is designed to allow the hardware on an interface card to completely take over the Apple's memory and I/O. The DMA pin on the Apple II interface bus disconnects the Apple's 6502 from the Apple's address bus, data bus, R/-W signal, and clock. The DMA pin should be pulled low immediately after phase 0 goes low and should be released when phase 0 again goes low. The 6502 is a dynamic device that will lose its registers' memory if DMA is held low for more than 40 microseconds. Here is an example where the DMA lasts for two microseconds.



The 6502 normally sets up its addresses, control, and data while clock 0 is low. The memory or I/O device decodes and readies the data while clock 0 is high. The actual transfer occurs when clock 0 goes from high back to low. During cycles when DMA is low, the user must supply the address, control, and data information for that memory cycle in synchronization with the Apple's clocks.

Enabling Unlimited DMA

- * Point the reset vector to a restart routine, assuming the Apple has the Auto-Start ROM.
- * Have the peripheral card generate a RESET when the 6502 is to have control of the bus. The Apple II Reference Manual explains the RESET vector starting on page 36.

Article Change History:

28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:106



Tech Info Library

Apple II: Interrupt Handling (2/97)

Revised: 3/3/97
Security: Everyone

Apple II: Interrupt Handling (2/97)

Article Created: 21 September 1984
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes interrupt handling routines in the Apple II.

DISCUSSION -----

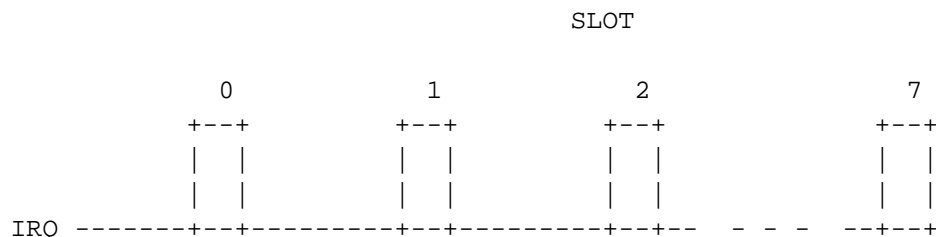
The user should be familiar with the 6502 interrupt requirements as defined in the Synertek Programming and Hardware manuals. This article applies to the interrupt request (IRQ). The use of the non-maskable interrupt (NMI) in a disk system is not recommended. The data and programs on the disk may be destroyed if an NMI occurs while the Apple is writing data to the disk. The DOS disables IRQ during critical code making it relatively safe to use.

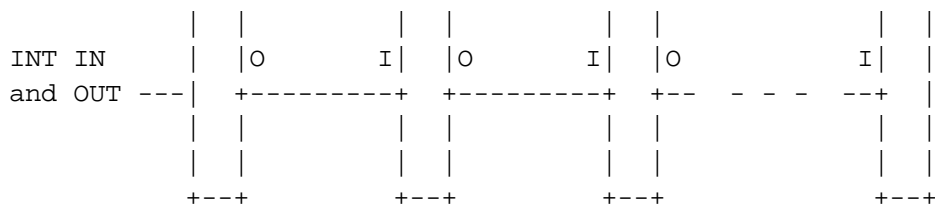
HARDWARE

For interrupts, the Apple peripheral slots have defined three pins:

IRQ, Interrupt ReQuest	pin 30
INT IN, daisy chain in	pin 28
INT OUT, daisy chain out	pin 23

The daisy chain structure allows an interface card to disable the next higher number card from requesting an interrupt. Slot 0 has the highest priority and slot 7 has the least.





The system was designed so that if INT IN for a slot is low then that slot may not generate an interrupt. Each slot should pull INT OUT low when it is requesting an interrupt to disable lower priority slots. Cards that don't use IRQ should wire INT IN and INT OUT together so that any higher priority slots can still disable cards in lower priority slots. This priority system fails if there is an empty slot between any two interrupting cards.

The hardware logic required to generate INT OUT is INT IN anded with the active low interrupt signal from the peripheral device. IRQ is INT IN anded with the active high interrupt signal from the peripheral device.

SOFTWARE

There are two ways to cause the 6502 to follow the IRQ vector. A logical zero on the IRQ pin of the 6502 while the IRQ flag of the processor is cleared, or executing a BREAK instruction in a program:

First, the Apple monitor determines whether a BREAK or an IRQ has occurred. In the Auto start ROM, this routine is at \$FA40 and in the old monitor it's at \$FA86. This routine stores the 6502 accumulator at location \$45 and retrieves the processor status flags. A BREAK drops into the monitor with the address of the BREAK operation code + 2 and a dump of the 6502 registers. The Auto-Start ROM has the option of jumping to a user's routine after a break. Both monitor ROMs jump to the address contained in memory at \$3FE and \$3FF after an IRQ.

Interrupt Request

The user must have the address of his interrupt handler stored in \$3FE and \$3FF before the first interrupt is generated.

Caution: The accumulator does not contain valid data when it is vectored to \$3fe and \$3FF.

The accumulator must be restored from location \$45 before the return from interrupt instruction, (RTI) is executed. The user must also be careful to leave the other registers as they were when an interrupt occurred.

Interrupts and BASIC

If the user is careful to restore all the 6502 registers and not disturb BASIC's memory locations in the interrupt handling routine, the interrupt will be transparent to BASIC. Be very careful of page 0 locations. Save and restore any information on the stack when you're not sure.

Applesoft and Integer BASIC both use the 6502 stack extensively in keeping track of GOSUBs and FOR-NEXT loops. This makes it difficult to have an interrupt modify BASIC program execution. To do this the easiest way, program the interrupt routine to set a flag byte when an event occurs and then program the BASIC program to PEEK that flag byte's address and respond when the flag byte is set.

You may use the Applesoft ONERR GOTO statement to modify the execution of an Applesoft program when the interrupt occurs. The following machine language routine causes an 'error' condition in Applesoft.

```
10 POKE 800,162: POKE 801,100: POKE 802,104: POKE 803,104
20 POKE 804,104: POKE 805,76 : POKE 806,233: POKE 807,242
30 POKE 1022,0 : POKE 1023,8
40 ONERR GOTO 1000
50 PRINT "NO INTERRUPT"
60 GOTO 50
1000 IF PEEK (222) <> 100 THEN END
1010 PRINT "INTERRUPT!!!"
1020 RESUME
```

The POKES set the IRQ vector to generate an error number 100 when an interrupt occurs. The Applesoft onerr routine can check decimal location 222 and if it doesn't equal 100 then you have a normal Applesoft or DOS error. Treat the IRQ generated error like any other Applesoft error. RESUME and the routine on page 82 of the Applesoft reference manual will work normally. Please do a search on ON ERR GOTO for more information.

Interrupts and DOS

The interrupt checking routine in the monitor saves the 6502 accumulator at location \$45 while it checks for a break. Unfortunately, DOS also uses location \$45 as temporary storage while DOS parses the numeric parts of its commands. This can result in range errors or reading the wrong record, slot, or drive if an interrupt occurs during parsing. There is no way around this problem at this time. To use interrupts with DOS in the safest way, disable IRQ when doing any disk access.

Article Change History:

28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:107



Tech Info Library

LaserWriter: Retention of the image on the printing drum

Revised: 5/1/87
Security: Everyone

LaserWriter: Retention of the image on the printing drum

=====

There is no image left on the drum between printings as indicated by signals to the hardware from the microcomputer on the DC controller board.

When the printer is ready to print, it is in standby mode. Upon receipt of a Print command from the interface board, the DC controller initiates an Initial Rotation (INTR) sequence powering up the corona assemblies and starting the main and scanner motors, the preconditioning exposure lamps, and the main motor, which rotates the drum. The printer then goes through all the motions necessary to print.

Then the DC controller initiates a Last Rotation (LSTR) sequence. This rotates the drum once after printing to prepare the drum for the next printing. If a Print command is received during LSTR, the printer cycles back into INTR. If a Print command is not received during LSTR, the drum continues rotating, delivering the paper and removing any residual charge from the drum.

Tech Info Library Article Number:109



Tech Info Library

System 4.1: Incompatible With Adobe Fonts

Revised: 2/23/89
Security: Everyone

System 4.1: Incompatible With Adobe Fonts

=====

This article last reviewed: 8 November 1988

The Font Initializer software that keys Adobe's downloadable fonts to a particular printer is incompatible with the Universal System (4.1) release. Font Initializer bombs with various ID='s during launch.

For those who have already upgraded to the Universal System (4.1/5.5), and need to install new Adobe downloadable fonts, there is a workaround. Start up with the System file on the initializer disk, which is 3.2/5.3, and proceed with the initialization. Then restart with the newer System, and the font will be there, ready to use.

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Tech Info Library Article Number:110



Tech Info Library

Macintosh: Specifications on Network Voltages and DTR

Revised: 8/7/92
Security: Everyone

Macintosh: Specifications on Network Voltages and DTR

=====

Article Created: 1 May 1987
Article Last Reviewed: 19 June 1992
Article Last Updated:

Some networks, such as an Ungerman Bass Net One network, require approximately 12 volts for the DTR signal (pin 20). In some configurations, the Macintosh Plus only supplies 2.25 volts.

It is possible the application in the configuration is not handling DTR properly. The removal of the +5 and +12 volt lines from the serial port on the Macintosh Plus means that a Macintosh application may have to control a peripheral's DTR line, which may be the problem. The program holding DTR low could contribute to this particular low voltage condition.

Consider also the more likely possibility that the IC that drives the handshake lines (a 9636 Line Driver) may not be able to source - or sink - enough current for the network. The IC will only supply or accept 150mA of current. If the existing hardware configuration of the network requires more than that, the IC will go into current limit, and the output voltage will drop to a level acceptable for the IC. This short circuit output voltage may very well be 2.5V. If this is the case, then a current booster of some sort may be necessary.

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Tech Info Library Article Number:111



Tech Info Library

Apple Extended Keyboard: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Extended Keyboard: Specifications (Discontinued)

=====

Article Created: 4 December 1989
Article Reviewed/Updated: 25 June 1992

TOPIC -----

Here are the specifications for the Apple Extended Keyboard II.

DISCUSSION -----

Description:

The "Apple Extended Keyboard II" is the replacement for the existing Apple Extended Keyboard (M0115). In addition to the features of the existing keyboard, the Apple Extended Keyboard II provides a foot to adjust the height of the keyboard and a double-sided template to label the function keys.

Packing List (M0312):

- Apple Extended Keyboard II
- 1.0 m (3 ft.) ADB cable
- Double-sided template to place over function keys
- Owner's guide
- Warranty statement

System Requirements:

Any Apple personal computer with an Apple Desktop bus interface

Technical Specifications:

- Total 105 keys, including
 - 18-key numeric pad
 - 15 function keys
 - 4 arrow cursor-control keys in inverted T-style layout
 - 6 cursor-control keys (Home, Page Up, Page Down, Forward Delete, End,

and Help)

Size and Weight:

Front Height:	0.75 in. (19 mm)
Rear Height:	1.6 in. (41 mm)
Keyboard angle:	14 degree maximum 6 degree minimum
Width:	18.7 in. (475 mm)
Depth:	7.7 in. (195 mm)
Weight:	4.8 lbs (1.8 kg)

Product Details:

The keyboard has 15 function keys (F1-F15) and 6 cursor-control keys (home, Page Up, Page Down, Forward Delete, End, and Help).

F1-F4 are labeled on the housing under the keys F1=undo, F2=cut, F3=copy, and F4=paste. These are not predefined default values; however, developers are being encouraged to use these definitions as appropriate. The remaining 11 function keys can also be defined by the user. A template is provide for users to mark the key's function.

The remapping facility is available for a specific application or globally for all applications.

The function keys are operative by using a macro utility program or by using an MS-DOS application with the appropriate coprocessor card.

The Caps Lock LED is operative in the Macintosh environment. The Num Lock and Scroll Lock are not operative except by using an MS-DOS application with appropriate coprocessor card. Developers are being encouraged to support these LED's in their applications.

The keyboard has an adjustable foot in the rear of the keyboard. The height of the keyboard is adjusted with a lever in the rear of the keyboard. It can be adjusted with a tilt from the unextended 6 degree to a maximum of 14 degrees from horizontal.

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Tech Info Library Article Number:112



Tech Info Library

Printing from the IBM PC Using LaserWriter PostScript

Revised: 3/4/90
Security: Everyone

Printing from the IBM PC Using LaserWriter PostScript

=====

This article last reviewed: 7 August 1989

If you are attempting to print to a LaserWriter from an IBM PC, you may have accomplished this in the past through the serial port with a buffer or spooler that allows XON/XOFF handshaking to your LaserWriter in Diablo 630 mode.

But if you want to take advantage of downloadable and optional fonts, scaling, and graphics, you need something that uses the LaserWriter's native PostScript commands. Here are some software packages that support LaserWriter PostScript:

- Microsoft Chart, Microsoft Windows, Microsoft Word
- Word Perfect
- Personal Publisher
- XY Write III

For multiple systems in a network, PC MacBridge from Tangent Technologies and TOPS by Centram are networks that supply a converter to allow IBM PC document files to print to LaserWriters on the network in PostScript format. An added feature of PC MacBridge is the network's ability to transfer specific application files between systems on the network.

You can also get your IBM PC document to print by using MacLink Plus from DataViz running on a Macintosh connected to your IBM PC. It will convert specific files for you and place them on the Macintosh for printing to a LaserWriter.

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Tech Info Library Article Number:113



Tech Info Library

Macintosh: Font Sizes

Revised: 5/10/89
Security: Everyone

Macintosh: Font Sizes

=====

When using the Font D/A Mover, you may notice that some fonts show a different memory size, depending on what version of system file you're accessing. The fonts distributed by Apple have not actually changed in size; rather, a FOND resource was added to the System file with the introduction of the LaserWriter Plus. When the Font D/A Mover calculates the size of a font in bytes, the FOND resource for that font is also included. If you need to know a font's actual size, use ResEdit and do a Get Info for the font.

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Tech Info Library Article Number:114



Tech Info Library

Apple ADB Keyboard: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple ADB Keyboard: Specifications (Discontinued)

=====

Article Created: 4 December 1989
Article Reviewed/Updated: 25 June 1992

TOPIC -----

This article provides specifications for the Apple ADB Keyboard.

DISCUSSION -----

System Requirements:

Any Apple personal computer with an Apple Desktop bus interface

Technical Specifications:

81 keys
10-key numeric pad
4 cursor-control keys

Size and Weight:

Height: 1.75 in. (44.5 mm)
Width: 16.5 in. (418 mm)
Depth: 5.6 in. (142 mm)
Weight: 2.25 lbs (1 kg)

The Apple ADB Keyboard has an 8-event buffer, and the Apple Extended Keyboard has a 16-event buffer. Events include key-down and key-up events.

NOTE: The Apple ADB Keyboard has been replaced by the Apple Keyboard II.

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Tech Info Library Article Number:115



Tech Info Library

Apple Writer 1.0 and 1.1: Paymar lower case adapter

Revised: 11/21/84
Security: Everyone

Apple Writer 1.0 and 1.1: Paymar lower case adapter

=====

The following information enables you to use Apple Writer with the Paymar Lower Case Adapter. The few ASCII codes not available on the Apple keyboard are also supported. This modification still uses normal Apple Writer files; only the display routines were changed.

```
UNLOCK TEDITOR
BLOAD TEDITOR
CALL -155
811:8D 10 C0 4C 48 18
AE6:20 64
AE8:18
1549:20 6B 18
1848:C9 81 F0 01 60 AD 00 C0
1850:10 FB C9 AF D0 06 A9 DC
1858:8D 10 C0 60 C9 AD D0 F8
1860:A9 DF D0 F4 20 78 18 91
1868:28 C8 60 C9 A0 90 06 20
1870:01 15 20 78 18 4C F6 FD
1878:C9 E0 90 02 49 40 C9 C0
1880:90 02 09 20 C9 40 B0 08
1888:C9 20 B0 02 09 40 09 80
1890:60
```

Then, to check your typing, enter

```
811.816 AE6.AE8 1549.154B 1848.1890
```

which should duplicate the above information.

Now save the editor with:

```
BSAVE TEDITOR, A$803, L$10F8
LOCK TEDITOR
```

The extra character are "_", "\", and "|" and can be entered into a file with:

" | "	<CTRL-A>	/
" \ "	<ESC>	<CTRL-A> /
" _ "	<ESC>	<CTRL-A> -

<CTRL-A> - will display a small white block on the screen, but nothing will be printed.

The total available character set is now:

!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	^	_
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

NOTE: With some printers, some of the characters may be defined differently.

Apple Tech Notes

Tech Info Library Article Number:116



Tech Info Library

AppleWorks: Time-saving tips

Revised: 1/19/93
Security: Everyone

AppleWorks: Time-saving tips

=====

Article Created: 1 May, 1987

Article Change History

01/19/93 -Updated Vendor information
•Beagle Brothers now Word Perfect Corporation

1. A quick way to duplicate fields is the use an Open-Apple-" (quotation mark). Select the multi-record layout, position the cursor directly underneath the field with the information that you want to duplicate and press Open-Apple ". Hold the keys down to automatically update several fields.

Remember that you can also use the Open-Apple V (Standard Value) function to automatically fill in fields with input that you specify.

2. Open-Apple Q: This command will display all files that are currently on the desktop and allows you to choose any file quickly with the cursor or the keyboard. (Hint: This is also a excellent method of avoiding having to press Escape several times when you wish to change Printer Options from several folder levels down.)
3. Plan Ahead: Whenever you create a new DataBase file, create several "dummy" fields and label them 1,2,3, etc. Then, if you decide later to add a category, you won't lose all your report formats.
4. Open-Apple Tab backs up one field.
5. Open-Apple Y: Deletes from the cursor to the end of the current line or field.
6. Transferring "values only" from one spreadsheet to another is tricky. One way is to print to a DIF file the section that you want to transfer. Create a new spreadsheet from the DIF file and then cut and paste the values into your final spreadsheet from the one created

with the DIF file.

7. "Some Cells were Lost.....": Have you ever seen this message? You'll generally run into this message when you are copying cells in the far right hand section of an AppleWorks spreadsheet. AppleWorks versions 1.1 thru 1.3 allocate 2K of RAM for formulas and formatting information per row; the error message indicates that you have run out of the memory reserved for this purpose. There are two workarounds:
 - a. you can re-organize the spreadsheet in a vertical fashion, making it "taller" instead of "wider", or
 - b. you can upgrade to AppleWorks 2.0. The new version of AppleWorks reserves 10K of RAM for formulas and formatting information.
8. Label Printing: If AppleWorks isn't recognizing your form size, follow these steps:
 - a. From the main menu, select number 5, "Other Activities".
 - b. Select number 7, "Specify information about your printer(s)". You should now see a menu entitled "Printer Information".
 - c. Under the heading "Change printer specifications", select the name of the printer you want to use.
 - d. Change item number 2, "Accepts top-of-page commands", to NO.
9. Need to print two or three up labels? Try MacroWorks from Beagle Brothers (now WordPerfect Corporation). MacroWorks also adds Macro capability to AppleWorks.
10. Want to learn more about AppleWorks? "The Main Menu" is a specialty Newsletter exclusively for AppleWorks users. For more information call (800) 258-5473. A subscription is \$49.97 per year.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:117



Tech Info Library

Apple Modem: Testing the connection to the system

Revised: 8/3/89
Security: Everyone

Apple Modem: Testing the connection to the system

=====

There are two simple ways to test the connection between the Apple Modem and an Apple II, Apple II Plus, or Apple IIe system:

--To test the connection between the modem and an Apple Super Serial Card: From BASIC, type IN#(slot number) Return, Control AT Return, ATZ Return. The modem should send back the characters OK to the monitor. To test the modem, you can type ATL Return to set the modem in loop back test mode.

--To test the connection between the modem and a non-Apple Serial card: From Basic, type PR#(slot number) IN#(slot number) ATL Return. The modem should now be in loop back test mode.

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Tech Info Library Article Number:118



Tech Info Library

Mail List Manager: Converting data files to Apple Writer III

Revised: 11/21/84
Security: Everyone

Mail List Manager: Converting data files to Apple Writer III

=====

Mail List Manager (Apple Writer III, versions 1.0 and 1.1) doesn't physically remove 'deleted' records from the MLMDATA file--it simply stops 'seeing' them. For instance, say you have seven records in your MLMDATA file:

1
2
3
4
5
6
7

Then, you delete records 3 and 5; those records are still there, but they can no longer be seen. The list now looks like this:

1
2
3 (invisible)
4
5 (invisible)
6
7

A problem arises, however, if you try to convert this MLMDATA file to an Apple Writer III file using the Apple Writer III Utilities conversion program. Since Mail List Manager knows about five remaining records, it tells Utilities to convert five records--and so Utilities converts the first five records, including the two 'deleted' ones. Records 6 and 7 are ignored.

A way around the problem:

When ready to convert to Apple Writer III

1. Merge Mailing List to another diskette (this will get rid of the deleted records).

2. Convert to Apple Writer III file with Apple Writer III Utilities.

Apple Tech Notes

Tech Info Library Article Number:119



Tech Info Library

Apple Writer III: Problems with underlining

Revised: 3/4/85
Security: Everyone

Apple Writer III: Problems with underlining

=====

Whenever a word to be underlined is the first word in a line, a problem occurs if the previous line ends exactly at the rightmost margin: the backslash to start underlining is ignored, and underlining begins instead at the next backslash--the one that should mark the END of the underline. To work around this problem, alter the text before the first backslash to prevent the previous line from ending exactly at the right margin.

A problem also occurs if the word or phrase to be underlined has a period or comma right after it. Remember that the backslash that toggles underlining generates a space--so if you type

\Underline this phrase\, but not this one...

you'll end up with a space before the comma. The only way to prevent this problem is to type

\Underline this phrase,\ but not this one...

which, unfortunately, underlines the comma too.

Apple Tech Notes

Tech Info Library Article Number:120



Tech Info Library

Apple Writer III: Installing Under Catalyst 2.0

Revised: 10/8/84
Security: Everyone

Apple Writer III: Installing Under Catalyst 2.0

=====

To get Catalyst 2.0 to access either Apple Writer III 2.0 or Apple Speller III on a ProFile, you must install them using a special data disk obtained from Quark. This disk comes with instructions on installing these Apple packages correctly.

Apple Technical Communications

Tech Info Library Article Number:121



Tech Info Library

AppleWorks: Installing it on a ProFile or UniDisk 3.5

Revised: 2/5/86
Security: Everyone

AppleWorks: Installing it on a ProFile or UniDisk 3.5

=====

Briefly, these procedures require you to:

1. Install PRODOS and BASIC.SYSTEM on the ProFile or UniDisk 3.5.

This can be done using the ProDOS User's Disk and instructions in the ProDOS User's Manual.

2. Copy all the files on the AppleWorks Startup and Program disk into a subdirectory named AppleWorks on the ProFile or UniDisk 3.5.

After this you will be able to boot and run AppleWorks from the ProFile or UniDisk 3.5.

I. Equipment Needed:

A. Apple IIe or Enhanced IIe

B. ProFile Hard Disk (5 or 10 Meg) with Apple II ProFile interface card or UniDisk 3.5 with UniDisk 3.5 interface card

-- Put the ProFile or UniDisk 3.5 interface card in slot 7 of an Enhanced IIe if, when you turn on the Enhanced IIe, you want it to boot from the ProFile or UniDisk 3.5 instead of the floppy disk drive

C. ProDOS User's Disk

D. AppleWorks Startup and Program disk

II. Installation Procedure:

A. Boot the ProDOS User's Disk.

B. Format the ProFile with the volume name /PROFILE or Format the UniDisk 3.5 with the volume name /UNI.

C. Use the File handling commands on the ProDOS User's disk to:

1. Copy the files PRODOS and BASIC.SYSTEM to the ProFile or UniDisk 3.5.
2. Create a subdirectory called APPLEWORKS on the ProFile or UniDisk 3.5
3. Copy all the files on the AppleWorks Startup and Program disks into the APPLEWORKS subdirectory you just created.
4. Remove the files PRODOS and BASIC.SYSTEM only from the subdirectory named APPLEWORKS.

-- You already put PRODOS and BASIC.SYSTEM on the root directory of the ProFile or UniDisk 3.5 in step C1.

D. Exit the ProDOS User's disk into Applesoft BASIC.

You need to create a program called STARTUP on the ProFile or UniDisk 3.5. This program will command AppleWorks to run from the ProFile or UniDisk 3.5 when you boot from the ProFile or UniDisk 3.5.

E. Type PR#n, where n is the number of the slot of the ProFile or UniDisk 3.5 interface card, e. g., PR#7 in the case of the Enhanced IIe in item IB above.

F. You should now have the] symbol on the screen. Type in the following program for the ProFile:

```
10 TEXT : HOME
20 PRINT CHR$(4);"PREFIX /PROFILE/APPLEWORKS"
30 PRINT CHR$(4);"-APL.WORKS.SYSTEM"
40 END
```

For a UniDisk 3.5, type in the following program:

```
10 TEXT : HOME
20 PRINT CHR$(4);"PREFIX /UNI/APPLEWORKS"
30 PRINT CHR$(4);"-APL.WORKS.SYSTEM"
40 END
```

G. Save this program on the ProFile or UniDisk 3.5 as STARTUP, i.e. SAVE /PROFILE/STARTUP or SAVE /UNI/STARTUP.

H. Type PR#n using the same number for n as you did in step E above.

-- AppleWorks should now boot from the ProFile or UniDisk 3.5.

I. To set up AppleWorks for use with the ProFile or UniDisk 3.5:

..TIL00122-AppleWorks-Installing_it_on_a_ProFile_or_UniDisk_3-5.pdf

1. In AppleWorks, choose 5. "Other Activities."
2. Then choose 1. "Select standard location of data disk."
3. Type /PROFILE/APPLEWORKS or /UNI/APPLEWORKS.

Apple Technical Communications

Tech Info Library Article Number:122



Tech Info Library

Pascal: Sending Output to the Printer

Revised: 10/8/84
Security: Everyone

Pascal: Sending Output to the Printer

=====

Here is an example of printing to both screen and printer from a Pascal program. Without the delay procedure, everything would appear to happen at once, so we have it in the program only to improve the sense of sequence during execution.

```
program PRINT_OUTPUT;
  var OutFile: text;

  procedure DELAY;
    var Count: integer;
  begin
    for Count := 1 to 2000 do
      end; {Delay}

begin
  rewrite (OutFile, 'printer:'); {Declare the printer}
                                {as a file.}
  writeln ('This is a test.');
```

{Output goes to the screen.}

```
  DELAY;
  writeln (OutFile, 'This is a test.');
```

{Output goes to}

{the printer.}

```
  DELAY;
  writeln ('This goes to the screen.');
```

```
  DELAY;
  writeln (OutFile, 'This goes to the printer.');
```

```
  close (Outfile) {Close the file ".printer" and end.}
end. {Print_Output}
```

To change devices, simply change the "PRINTER:" in the REWRITE statement to the name of the output device. The program APPLE3:DISKIO is an example of writing to a disk file.

Apple Pascal can have as many as ten files open for input and output at one time; "OutFile" is only one. Additional files can be declared with additional REWRITE statements.

..TIL00123-Pascal-Sending_Output_to_the_Printer.pdf

Because Pascal treats output as a file, both of these examples work with Apple II and Apple III Pascal.

To transfer a text file to the printer, use the Filer "T" function. For example, to print the contents of GRAFDEMO.TEXT (found on APPLE3:), type "T", followed by "APPLE3:GRAFDEMO.TEXT,PRINTER:". (Don't include the quotation marks.) The directory of APPLE3: can be printed out by typing "E", followed by "APPLE3:,PRINTER:".

Apple Technical Communications

Tech Info Library Article Number:123



Tech Info Library

Apple IIC: Description of Video Expansion Port

Revised: 10/8/84
Security: Everyone

Apple IIC: Description of Video Expansion Port

=====

The back panel of the Apple IIC has a DB-15 connector for sophisticated video interfaces external to the computer. See the table below for a description of signals.

In the table, the column labeled Deriv indicates from which clock signals the video signals are derived. LDPS, CREF and PRAS have a maximum delay of 30ns from the appropriate 14MHz rising edge. SEROUT is clocked out of a 74LS166 by the rising edge of 14M and has a maximum delay of 35ns. VIDD7 is driven from a 74LS374 and has a maximum delay of 28ns from the rising and (if 80 column) falling edges of phase1.

To align CREF so it is in the same phase at the beginning of every line, certain clock signals must be stretched. This stretch is for one 7M cycle (140ns), and occurs at the end of each video line. All timing signals except 14M, 7M and CREF are stretched.

WARNING!!! The signals at the DB-15 on the Apple IIC are not the same as those on the Apple III. Do not attempt to plug a cable intended for one into the other.

WARNING!!! Several of these signals, such as 14MHz, must be buffered within about four inches (10 cm) of the back panel connector - preferably inside a container directly connected to the back panel.

The Video Expansion Connector Pinouts

Pin	Deriv	Name	Description
1	phase1	TEXT	Video text signal from TMG; set to inverse of GR, except in double high-resolution mode
2		14M	14M master timing signal from the system oscillator
3	Q3	SYNC*	Display horizontal and vertical synchronization signal

from IOU pin 39

4	PRAS	SEGB	Display vertical counter bit from IOU pin 4; in text mode indicates second low-order vertical counter; in graphics mode indicates low-resolution
5		1VSOUND	One-volt sound signal from pin 5 the audio hybrid circuit (AUD)
6	14M	LDPS*	Video shift-register load enable from pin 12 of TMG
7	PRAS	WNDW*	Active display area blanking; includes both horizontal and vertical blanking
8		+12 V	Regulated +12 volts DC.; can drive 350mA
9	14M	PRAS*	RAM row-address strobe from TMG pin 19
10	PRAS	GR	Graphics mode enable from IOU pin 2
11	14M	SEROUT*	Serialized character-generator output from pin 1 of the 74LS166 shift register
12		NTSC	Composit NTSC video signal from VID hybrid chip
13		GND	Ground reference and supply
14	phase0	VIDD7	From 74LS374 video latch; causes half-dot shift if high
15	14M	CREF	Color reference signal from TMG pin 3; 3.58MHz

WARNING!!! Use caution. The maximum allowable current drain of +12V regulated power at the video expansion connector is 300 milliamps. If the external device draws more than this it can damage the computer or cause the power supply to shut down.

Apple Technical Communications

Tech Info Library Article Number:125



Tech Info Library

Apple Writer II: DOS Version--Recovering Lost Text Files

Revised: 10/8/84
Security: Everyone

Apple Writer II: DOS Version--Recovering "Lost" Text Files

=====

At times you run the risk of saving a short text file over a text file of greater length. You might, for instance, save the empty Apple Writer editor workspace with the same name of a valuable document. This prevents the system accessing the original contents of the file. While the data is still on the diskette, you have made it unaccessable to the system. This program accesses the data so that the system may recover your original file. This program has been tested on Apple Writer II and Apple Writer IIe files. It works with standard DOS Text files, signified by a T in the left margin of a catalog listing. This program does not operate with the ProDOS version of Apple Writer.

```
10 TEXT : NORMAL : HOME
20 INPUT "ENTER THE FILE NAME TO BE READ ";F$
30 INPUT "FIRST BYTE TO READ ";C
40 ONERR GOTO 200
50 D$ = CHR$(4)
60 PRINT D$;"OPEN "F$","L1"
70 PRINT D$;"OPEN NEW";F$
80 B$ = ""
90 PRINT D$;"READ "F$,"R";C
100 GET A$
110 C = C + 1
120 IF (ASC (A$) = 13) GOTO 170
130 B$ = B$ + A$
140 PRINT
150 IF (LEN (B$) > 254) GOTO 170
160 GOTO 90
170 PRINT : PRINT D$;"WRITE NEW";F$
180 PRINT B$
190 GOTO 80
200 PRINT : PRINT D$;"CLOSE ";F$
210 PRINT D$;"CLOSE NEW";F$
220 END
```

1. Type in the program and save it on your DOS disk. Run it.

2. After the program requests the name of the file that is to be recovered, type in the name giving slot and drive specifications in necessary--e.g., MYFILE, S6, D2.
3. Next the program prompts you for the first byte that you want to read from the file. You type in a number which should be:
 - a. an integer between 1 and 32768
 - b. the size, in bytes, of the file that was accidentally saved plus 1.

To find the size of this accidentally saved file, [L]oad it under Apple Writer. The size of the file is displayed on the data line after the length entry Len:. Add one to this count and type in the result.

4. Once you have typed in your information, give the program time to run and write the entire file. To read part of the file and then write the new file, the program may go back to the drive several times, so please be patient. The cursor will come back to the screen when the program is finished.

Apple Technical Communications

Tech Info Library Article Number:126



Tech Info Library

AppleWorks 2.0: Spreadsheet functions @AND and @OR

Revised: 10/20/86
Security: Everyone

AppleWorks 2.0: Spreadsheet functions "@AND" and "@OR"

=====
"@AND" and "@OR" test each value specified as an argument. They require a list of 2 or more arguments. While not necessarily, they usually are used with @IF: "@IF(@OR(A17>56,A18=0),.25,.333333)".

@AND takes any number of arguments, each of which must be a logical value or a range of logical values. Its value is 1 if all of the arguments are not 0; its value is 0 if any of the arguments are 0.

Syntax:

@AND(value:operand:value, value:operand:value)

Example:

@AND(A3>4,C5<4)

@OR takes any number of arguments, each of which must be a logical value or a range of logical values. Its value is 1 if any of the values is not 0; its value is 0 if all of the values are 0.

Syntax:

@OR(value:operand:value, value:operand:value)

Example:

@OR(A3>4,C5<4)

Apple Technical Communications

Tech Info Library Article Number:128



Tech Info Library

Using U.S. Apple Equipment Internationally (10/96)

Revised: 10/10/96
Security: Everyone

Using U.S. Apple Equipment Internationally (10/96)

Article Created: 21 September 1984
Article Reviewed/Updated: 10 October 1996

TOPIC -----

This article contains information on using U.S. Apple products outside the United States.

In the following context, using a product "internationally" means using it in a country with electrical power different from that of the country of manufacture. In determining whether a particular product can be used internationally, there are three classes, depending on whether a product accepts a range in voltage, frequency or both:

1) Universal

These products can be used internationally out of the box. Some of Apple's products are self-configuring devices or "universal" within a certain range. They can accept a range in both voltage and frequency, and only require a plug adapter for the specific locale.

Example: The Quadra 800 accepts 100-240 volts, 47-63 Hz.

2) Frequency Independent

These products can be used internationally with a voltage transformer. Generally they are geared for U.S. 120 volt power, but are flexible as to the frequency they accept (for example, 47-63 Hz), and are known as "frequency independent." These products need a stepdown isolation transformer to adapt the voltage, and will handle the different frequency on their own.

Examples:

The U.S. Performa 200 accepts 120 volts, 47-63 Hz.

Performa Displays use a switching power supply which works independent of the input frequency. The European input frequency standard of 50 hz will not adversely affect these monitors. You can use the Performa

Displays overseas with a voltage converter (isolation transformer.)

3) Frequency Dependent

These products generally cannot be used internationally. These are products that can work only within a narrow range in frequency; they are "frequency dependent." Transformers only transform voltage, so if the product requires a certain frequency, there's no practical way to convert both voltage and frequency.

These products can ONLY be used internationally in countries with the same frequency as the country for which the product was manufactured. Further, a voltage transformer will be required if the destination country has a voltage different from the home country.

Example:

The U.S. Apple Color OneScanner accepts 108-132 volts, 58-62 Hz.

****IMPORTANT NOTE**** Computers with power outlets for peripherals do not condition the voltage as it passes through. So, for example, a monitor requiring 120v-60Hz power could not be used in a 220v-50Hz environment even if the computer from which it gets its power is able to accept the local power.

This article also includes transportation, service, repair, and warranty tips.

Contents

- 1) Universal Devices
- 2) Voltage-dependent Devices
- 3) Frequency-dependent Devices
- 4) Service and Repair Tips
- 5) Traveling Tips

DISCUSSION -----

This article provides general information on using products outside the United States. If you want to find the electrical specifications of any specific piece of Apple hardware, refer to the Tech Info Library articles:

Electrical Specifications: Apple Computers (1 of 2) TECHINFO-0000267

Electrical Specifications: Apple Peripherals (2 of 2) TECHINFO-0020361

1) UNIVERSAL DEVICES

The majority of Apple products manufactured after the Macintosh SE are self-configuring or "universal" between 100v and 240v, 50-60Hz. To use them in countries within the range, a plug adapter should be all that is needed. Note that some Apple products have a voltage selector to select between 110 or 220 volts.

To verify if a specific product is universal, check the FCC ID label for the voltage requirements or the previously mentioned Electrical Specifications

articles.

2) VOLTAGE-DEPENDENT DEVICES

The Apple products designed to operate at a line voltage ranging from 107V to 137V at 50 or 60Hz (cycles per second) are considered to be voltage-dependant. If the destination country uses a line voltage of 220v, and the product only accepts 120v, you'll need a 220v to 110v stepdown isolation transformer. This type of transformer is the only one known to give a clean signal. Although converters are available in the U.S., there are reports that these devices have damaged some Apple products.

The transformer's wattage should be 150% of the total wattage of the system (computer, monitor, hard disk, printer, and so on). For example, if the system pulls 250 watts of power, use a transformer rated for a minimum of 375 watts. A 500-watt unit should be sufficient for an entire Apple system (CPU, monitor, and printer). The unit must have a third prong for a grounded outlet. Electrical shock to you or damage to the hardware may occur if the units are not grounded.

Non-universal Apple power supplies function correctly with voltages between 107V and 132V. If line voltage fluctuates outside these specifications, you'll need to use a power conditioner to ensure uninterrupted operation of your Apple equipment. Operating without the conditioner will probably not result in damage to the hardware, although the voltage fluctuation may cause your system to crash. In such an event, you'll lose any data in memory and may even lose data stored on the disk.

3) FREQUENCY-DEPENDENT DEVICES

If the country uses a line frequency other than 60Hz, then all AC-powered devices attached to your computer system (monitors, printers, plotters, hard disks, and so on) must be "frequency independent." That is, they must be able to operate on a line frequency of either 50 and 60Hz. A majority of Apple products are frequency independent, but check the specifications of all equipment prior to using them.

4) SERVICE AND REPAIR TIPS

As of April 5, 1993, an Apple warranty is valid in any country in which Apple sells products. A defective unit may be returned to any Authorized Apple Service Provider worldwide for service under warranty.

There are advantages to buying the products where they'll be used. Although mouse devices, external drives, digital boards, and similar modules are the same as distributed in the U.S., the software and keyboards are different for each country. Further, having the entire workstation dependent on a single transformer is risky. If it fails and passes native current through to voltage and/or frequency dependent products, serious damage will result.

If you intend to take your Apple product with you, it is advisable that you buy

and use the product well before your departure. Heavy use often turns up any problems that would have come up at more inconvenient times while traveling.

5) TRAVELING TIPS

When traveling with a computer in the U.S. or overseas, protect it from shock, heat, moisture, radiation, and theft. Special hard-shell shipping cases are advertised for most Apple systems and these protect the machines from environmental abuse. They often do not look like computer cases, and as such usually escape the notice of thieves.

X-rays and other magnetic radiation associated with X-ray machines only pose a slight potential danger; there have been no reports of ROM damage and only isolated reports of software media damage from these causes. Some airports X-ray all luggage; if the risk in losing software is too high, plan your travel logistics after you find out which airports will hand-check the computer.

Due to concern about computers and floppy disks going through security scanners at airports, the American Society for Testing and Materials (ASTM) conducted a study on X-ray induced damage to memory devices, including audio and video tapes and floppy disks, and found that the devices usually have enough shielding to protect the media.

The study found that the magnetic field was actually strongest around the scanner's monitor. They taped a disk to the monitor for several hours without damage. A committee member suggested that it would take at least 1000 million passes through the machine before any damage would be evident.

Article Change History:

10 Oct 1996 - Updated with additional TIL articles.

21 Mar 1996 - Added results from and information about ASTM testing study.

03 Jan 1995 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:129



Tech Info Library

Applesoft: High-Res Memory Conflicts

Revised: 10/8/84
Security: Everyone

Applesoft: High-Res Memory Conflicts

=====

Use High-Res graphics with a long Applesoft program in the easiest way: relocate the program. You thus avoid all the problems of program text and variables storing in the High-Res buffers. The following programs initialize the Apple's memory and RUN your application program. After the program is loaded above the High-Res buffer, DOS and CHAIN continue to load programs there until you re-boot the system or execute a FP command.

For HGR

```
10 POKE 103,1
20 POKE 104,64
30 POKE 16384,0
40 PRINT CHR$(4); "RUN PROGRAM"
```

For HGR2 or both pages

```
10 POKE 103,1
20 POKE 104,96
30 POKE 24576,0
40 PRINT CHR$(4); "RUN PROGRAM"
```

Apple Technical Communications

Tech Info Library Article Number:131



Tech Info Library

FORTRAN: Pascal External Functions and Procedures

Revised: 9/21/84
Security: Everyone

FORTRAN: Pascal External Functions and Procedures

=====

When you use assembly language functions and procedures from FORTRAN, all parameters are passed to these functions and procedures as formal parameters. This means that when a function requires an integer, real number, boolean or character, it is the address of the variable being passed that resides on the stack, not the contents of the variable. Therefore, assembly language functions and procedures should load the address of the variable from the stack and use this address to retrieve the data in the variable.

Because of this small detail, it may not be possible to use some assembly language functions and procedures developed in Pascal from FORTRAN, since Pascal will pass data that requires two to four bytes of space on the stack. Data types requiring more space than two words (such as long integers, arrays, strings, and so on) are sent as formal parameters; therefore, the address in memory where the variable resides is passed on the stack, and the data is accessed through that address. When an external function or procedure in Pascal uses formal parameters, it can easily be used in FORTRAN; otherwise, it will have to be rewritten to handle the formal parameter stack format of FORTRAN.

If you wish to see a specific example of this difference, compare the assembly language listings of the paddle functions on page 120-121 of the Apple FORTRAN reference manual with the same listing on page 143-144 of the Apple Pascal Operating System Reference Manual.

NOTE: A FORTRAN host program calling a Pascal REAL subroutine with a VAR parameter may cause a "Stack Overflow".

Apple Technical Communications

Tech Info Library Article Number:133



Tech Info Library

Business Basic III: Custom characters on a DMP

Revised: 9/21/84
Security: Everyone

Business Basic III: Custom characters on a DMP

=====

The following sample program defines a custom character on the Apple Dot Matrix Printer, using Apple Business BASIC and a parallel driver named ".DMP".

```

                $30_$78_$FC_$FC_$FE_$FD_$49_$00
wire #1 |___|___|___|___|___|_*_|_*_|___| (LSB no descenders)
wire #2 |___|___|___|___|_*_|___|___|___| (LSB with descenders)
wire #3 |___|___|_*_|_*_|_*_|_*_|___|___|
wire #4 |___|_*_|_*_|_*_|_*_|_*_|_*_|___|
wire #5 |_*_|_*_|_*_|_*_|_*_|_*_|___|___|
wire #6 |_*_|_*_|_*_|_*_|_*_|_*_|___|___|
wire #7 |___|_*_|_*_|_*_|_*_|_*_|_*_|___|
wire #8 |___|___|_*_|_*_|_*_|_*_|___|___| (MSB no descenders)
wire #9 |___|___|___|___|___|___|___|___| (MSB with descenders)

10  esc$=CHR$(27):REM Escape
12  OPEN#1, ".dmp":OUTPUT#1
14  PRINT esc$;"Z";CHR$(0);CHR$(32):
    REM Set 8 bit format on printer
16  PRINT esc$;"-":REM Declare as 8x8 character
18  PRINT esc$;"I";:REM Load Character Generator command
20  PRINT "!";:REM Assign new character to "!"
22  PRINT CHR$(8)::REM No descender in character
24  PRINT CHR$(TEN("0030"));CHR$(TEN("0078"));CHR$(TEN("00FC"));
    CHR$(TEN("00FC"));CHR$(TEN("00FE"));CHR$(TEN("00FD"));
    CHR$(TEN("0049"));CHR$(TEN("0000"));
26  PRINT CHR$(4):REM End of character
28  PRINT esc$;"D";CHR$(0);CHR$(32):
    REM Reset 7 bit format on printer
30  PRINT esc$;"'":REM Select alternate character set
32  PRINT "!";:REM Try new character
34  PRINT esc$;"$":REM Return to pre-set character set
36  CLOSE:END
38  REM By Grover Nunnery - Apple Computer - Charlotte, NC
```

Apple Technical Communications

Tech Info Library Article Number:135



Tech Info Library

Apple IIC Hardware: Port Pin assignments

Revised: 10/8/84
Security: Everyone

Apple IIC Hardware: Port Pin assignments

=====

HAND CONTROL

Connector Pin Number	Signal Name	Description
1	GAMESW1	Switch input (paddle #1)
2	+5	+5 VDC (Do not exceed 100 MA)
3	GND	System Ground
4,9	-	Not used for hand controllers
5,8	PDL0 & PDL1	Hand control inputs. Each of these must be connected to a 1K pot connected to +5
6	N.C.	Not connected
7	GAMESW0	Switch input 0 (paddle #0)

MOUSE CONNECTOR

Connector Pin number	Signal Name	Description
1	MOUSEID	Mouse Identifier
2	+5V	+5VDC (Do not exceed 100 ma.)
3	GND	System Ground
4	X1	Mouse X-direction Indicator
5	X0	Mouse X-movement interrupt
6		Mouse button
7	MSW	Mouse button
8	Y1	Mouse Y-direction indicator
9	Y0	Mouse Y-movement interrupt

EXTERNAL POWER

Connector Pin Number	Signal Name	Description
-------------------------	----------------	-------------

1,7		Not Connected
2,3	Ground	Common electrical ground
4	Chassis	Chassis ground
5,6	+15V	+15VDC input to converter

Apple Technical Communications

Tech Info Library Article Number:136



Tech Info Library

AppleWorks: Justified indented paragraphs

Revised: 5/1/87
Security: Everyone

AppleWorks: Justified indented paragraphs

=====

In a Word Processor document, if you format a paragraph with left justification and tabs for the paragraph indentation and then rejustify the paragraph with full justification, the left and right margins stay the same, but the paragraph indentation may change or vary. AppleWorks appears to justify the spaces in the paragraph indentation.

The only workaround is a long process that should be performed only when the document is completed. If a paragraph shows the problem:

1. Separate the first line of that paragraph: move the cursor to the end of the line and press RETURN.
2. Format the line with spaces: place spaces in between words, bringing the line's margins in line with the paragraph's margins.

Tech Info Library Article Number:138



Tech Info Library

LaserWriter: How to Print all Fonts

Revised: 7/26/89
Security: Everyone

LaserWriter: How to Print all Fonts

=====

This article last reviewed: 5 July 1989

The LaserWriter or LaserWriter Plus prints documents in Courier from files generated with the Command-K option. To get other fonts to appear on the printed document, insert the font re-mapping code below between the LaserPrep text and PostScript document so that the order is:

1. LaserPrep (the Command-K file without the PostScript document)
2. Font re-mapping code addendum
3. PostScript document (the Command-F file)

Note: The LaserWriter driver assigns the name PostScript to this file. The file is placed into the folder where the application's printing resources reside. The assignment of the name and the placement of the file cannot be changed.

LaserPrep and the following addendum can be combined into one file.

```
% This code initializes all fonts on a LaserWriter Plus
% after the Laser Prep has been installed.  The number of fonts
% should be reduced for the original LaserWriter
```

```
% The query
md begin
%?fontList
lsf
%?end
end
```

```
% Sample of dynamically generated PostScript to initialize
% all fonts in above list.  The LaserPrep file must have
% already been down-loaded at this point (otherwise there would
% be no font list either).
% Make it stick
serverdict begin 0 exitserver
```

```
md begin
% General format is...
% /Coordinated-Name /Previous-Name MacEncoding-Vector-flag rf
/|_____Times-Roman /Times-Roman T rf
/|_____Times-Bold /Times-Bold T rf
/|_____Times-Italic /Times-Italic T rf
/|_____Times-BoldItalic /Times-BoldItalic T rf
/|_____Helvetica /Helvetica T rf
/|_____Helvetica-Bold /Helvetica-Bold T rf
/|_____Helvetica-Oblique /Helvetica-Oblique T rf
/|_____Helvetica-BoldOblique /Helvetica-BoldOblique T rf
/|_____Courier-Bold /Courier-Bold T rf
/|_____Courier-Oblique /Courier-Oblique T rf
/|_____Courier-BoldOblique /Courier-BoldOblique T rf
/|_____Symbol /Symbol F rf
/|_____AvantGarde-DemiOblique /AvantGarde-DemiOblique T rf
/|_____AvantGarde-BookOblique /AvantGarde-BookOblique T rf
/|_____AvantGarde-Demi /AvantGarde-Demi T rf
/|_____AvantGarde-Book /AvantGarde-Book T rf
/|_____Bookman-DemiItalic /Bookman-DemiItalic T rf
/|_____Bookman-LightItalic /Bookman-LightItalic T rf
/|_____Bookman-Demi /Bookman-Demi T rf
/|_____Bookman-Light /Bookman-Light T rf
/|_____Helvetica-Narrow-BoldOblique /Helvetica-Narrow-BoldOblique T rf
/|_____Helvetica-Narrow-Oblique /Helvetica-Narrow-Oblique T rf
/|_____Helvetica-Narrow-Bold /Helvetica-Narrow-Bold T rf
/|_____Helvetica-Narrow /Helvetica-Narrow T rf
/|_____NewCenturySchlbk-BoldItalic /NewCenturySchlbk-BoldItalic T rf
/|_____NewCenturySchlbk-Italic /NewCenturySchlbk-Italic T rf
/|_____NewCenturySchlbk-Bold /NewCenturySchlbk-Bold T rf
/|_____NewCenturySchlbk-Roman /NewCenturySchlbk-Roman T rf
/|_____Palatino-BoldItalic /Palatino-BoldItalic T rf
/|_____Palatino-Italic /Palatino-Italic T rf
/|_____Palatino-Bold /Palatino-Bold T rf
/|_____Palatino-Roman /Palatino-Roman T rf
/|_____ZapfChancery-MediumItalic /ZapfChancery-MediumItalic T rf
/|_____ZapfDingbats /ZapfDingbats du fe
% Redefine encoding vector for above font.
% encoding-position, name, operand.
128 /a89 ce
129 /a90 ce
130 /a93 ce
131 /a94 ce
132 /a91 ce
133 /a92 ce
134 /a205 ce
135 /a85 ce
136 /a206 ce
137 /a86 ce
138 /a87 ce
139 /a88 ce
140 /a95 ce
141 /a96 ce
```

nf

A message--"The number of fonts/% should be reduced for the original LaserWriter"--appears about editing this LaserWriter Plus code for standard LaserWriters. Some users have such little success with this suggestion that they don't edit the code at all and just send the code to the LaserWriter regardless. This has the side effect of mapping the additional LaserWriter Plus fonts to Courier in the LaserWriter.

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Tech Info Library Article Number:139



Tech Info Library

LOGO: Printing Graphics

Revised: 10/8/84
Security: Everyone

LOGO: Printing Graphics

=====

Printing out the graphics screen from LOGO is awkward. The following steps will get the job done. Brackets indicate the text you enter from the keyboard.

1. Draw the graphics on the LOGO screen.
2. Insert an intialized diskette in slot #6, drive #1. This should be a blank diskette that has been intialized with the [INIT HELLO] command from Apple DOS 3.3. It should not contain a HELLO program, though.
3. Enter [.PRINTER 6]; this causes the system to boot DOS.
4. If you have a Silentype printer, you can simply enter [CTRL-Q] to print.
5. Enter [BSAVE filename, A8192, L8192]; this will save high res page #1 as binary file filename.
6. Now you must use whatever is appropriate to your system to print out graphics from a binary file.
7. To do more LOGO graphics, you need to reboot LOGO and start again.

Apple Technical Communications

Tech Info Library Article Number:140



Tech Info Library

Apple II and II Plus: Shift-Key Modification

Revised: 9/30/88
Security: Everyone

Apple II and II Plus: Shift-Key Modification

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This article last reviewed: 26 September 1984

Probably all Apple II owners have heard of a mysterious "Shift-Key Mod". To many it has remained nothing more than a rumor, possibly because most modifications are thought to be costly additions. Not so the "Shift-Key Mod", the most simple and least expensive addition anyone could do for their Apple II. Of software recognizing this modification, there is a wide variety: Apple Writer, most other word processing software packages, and the firmware of most 80-column cards.

Software must recognize this alphabetic modification; the Apple alone does not do it automatically. After modification, the shift key allows you to enter uppercase characters as you do on a typewriter, without the need to precede them with a press of the Escape key or some other control character. You can still use the shift key to type the regular "shift" non-alphabetic characters, such as !, @, #, \$, %, ^, &, *, (,), and so on.

With the "Shift-Key Mod", you use the shift key to signal the software from an unused part of the Apple II Game port. The Port can address four separate hand controls and three hand-control pushbuttons of which only two of each are used by the standard game paddles and joysticks. This leaves unused two hand control inputs and a hand-control pushbutton input. The "Shift-Key Mod" exploits the address of this remaining pushbutton input. In practice, software supporting the modification first reads the character value at the address of the keyboard. Then, since joysticks use pushbuttons #0 and #1, the software reads the state of the address of pushbutton #2 (PB2). If the PB2 address is operated then the software simply makes the keyboard value represent uppercase.

To keep things in perspective, please note that this does not modify the Apple II to display lowercase nor enter lowercase characters into your programs when the II is in its native 40-column mode. To read the shift key's new address, the Apple II must have special software; without it, the II stays in 40-column mode. Most 80-column cards have firmware to read the address and display lowercase when in 80-column mode. When coding, you can easily enter lowercase

characters into your own program's output strings with 80-column cards supporting the modification. However, when the program runs in 40-column mode, lowercase characters will appear as "garbage" characters. Adding the reasonably-priced "Lowercase Character Generator" on the motherboard allows proper display of lowercase characters in 40-column mode. Apple Writer also supports lowercase character generators.

Now to make the modification. Connect two micro test clips together with 8 inches of 28 AWG wire and solder the connections. Use micro test clips to match the size of Radio Shack #270-370 clips. 28 AWG wire-wrap will do. Clip size is most important; wire size and brands are less important. Once the jumper cools, install it this way:

1. Clip one end to pin 1 of the IC located at motherboard location H14, a 74LS251.
2. Clip the other end to pin 24 of the molex connector that connects the keyboard electronics to the keyboard. Pin 25 of this connector is at the end away from the Apple's power supply. Pin 24 is to the left of pin 25.

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Tech Info Library Article Number:141



Tech Info Library

Computer Vision

Revised: 4/3/97
Security: Everyone

Computer Vision

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Article Created: 1 May 1987
Article Reviewed/Updated: 16 July 1993

Computer Vision

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Company Profile:
Formerly PRIME Computer, Inc., software, specializing in communications packages.

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Tech Info Library Article Number:142



Tech Info Library

LaserWriter Indicates A Paper Jam

Revised: 11/8/88
Security: Everyone

LaserWriter Indicates A Paper Jam

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This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: The LaserWriter I/O Board has been removed for troubleshooting purposes. The LaserWriter is powered on and the green light blinks. The LaserWriter then tries to generate a test print (as if the I/O board was still installed). After a short time the LaserWriter indicates that a paper jam exists when, in fact, there is no paper jam.

CURE: Remove and replace the scanner unit. Review the LaserWriter General Troubleshooting Procedures if the LaserWriter still indicates a paper jam.

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Tech Info Library Article Number:143



Tech Info Library

COMMAND.COM: A General Description

Revised: 3/28/94
Security: Everyone

COMMAND.COM: A General Description

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This article last reviewed: 9/1/87

COMMAND.COM is a command interpreter for the ProDOS operating system. When used in place of BASIC.SYSTEM, it gives an Enhanced Apple IIe, Apple IIc, or Apple IIgs some of the power of the MS-DOS operating system.

- You can refer to disks by simple abbreviations such as A: or B:, rather than having to use ProDOS pathnames (you can still use pathnames if you prefer).
- You can run application software by simply typing the name of the program, without using RUN, BRUN, or "-" (you can still use "-" if you like). To change directories (setting the PREFIX under BASIC.SYSTEM), you can type PREFIX pathname, PRE pathname, CHDIR pathname, CD pathname, or just the pathname.
- COMMAND.COM adds the MS-DOS pathing concept to ProDOS. A path is the name of a directory that COMMAND.COM will search when you type the command to run a file. Normally, only the PREFIX directory is searched, but with COMMAND.COM, you can specify up to four additional directories. This allows you to run programs stored on other directories, such as a general utility directory.

COMMAND.COM lets you set up four environments: CP/M, MS-DOS, ProDOS, and UNIX. You can configure for the environment that you are most comfortable with.

COMMAND.COM includes 100 commands. Some are internal, such as the DELETE and COPY commands. Others are external files that are read in from disk before execution. COMMAND.COM, like MS-DOS allows a virtually unlimited number of commands stored as files on disk.

You can use wild cards with commands: for example, typing Copy * B: would copy all files on the current directory to disk B:. You don't need to know the name of the current disk or the disk to be copied to; COMMAND.COM handles that automatically.

COMMAND.COM supports both I/O re-direction and piping. I/O re-direction sends the output of a command to a device other than the one normally used. The TYPE command normally displays the contents of a text file on the screen. With I/O re-direction, the text could be sent to a printer or to another file.

Piping is used to make the output of one command the input to another. For example, the CATALOG command could 'pipe' the catalog of disk files to the SORT command, which would alphabetize the catalog before displaying it.

COMMAND.COM even lets you create commands that don't exist in your operating system -- for example, a command that MOVES a file from one location to another: not just copying it, but also deleting the original. The MOVE command would be created by combining the COPY, UNLOCK, and DELETE commands. Variables can also be used to assign short (one or two character) names that when typed will run an application program. An example might be typing AW to prefix to the AppleWorks directory and run the file APLWORKS.SYSTEM.

COMMAND.COM includes the following commands:

- Convert any type of file, including AppleWorks Word Processor files, into plain text files.
- Search all directories on a 3.5" disk or hard disk for any file.
- Display all files on a specific disk.
- Search and replace in a variety of formats.
- A picture display command that automatically recognizes all Apple II picture types, including GS pictures.

COMMAND.COM. also supports MS-DOS-style BATCH files. BATCH files are the perfect solution for handling many complex tasks easily and automatically. Running a system application does not effect the BATCH file. One example cited in the manual: a BATCH file can be used to run an application and track elapsed time. At the end of the month, the user can print the text file created by this BATCH file to generate billing information for work done for clients.

COMMAND.COM also includes a full-featured line-oriented text editor.

COMMAND.COM will be available in September 1987 from PinPoint Publishing.

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Tech Info Library Article Number:144



Tech Info Library

Apple III Hardware: Motherboard Identification & Hints

Revised: 9/30/88
Security: Everyone

Apple III Hardware: Motherboard Identification & Hints

=====

This article last reviewed: 26 September 1984

There are two types of Apple III main logic and memory board combinations. They are typically referred to as either being "5-volt" or "12-volt".

Since there are two types of boards in the field, the first step in servicing an Apple III is to identify whether the system contains 5 or 12-volt boards. Apple III systems above serial number 100,000 are 5-volt systems. When the Apple III was first introduced, 64K random-access memory (RAM) chips were too expensive to incorporate into the Apple III design. Approximately a year later they became economically feasible and began to replace the mixture of 16K and 32K RAM chips used until then. An additional advantage was that a 256K system would actually draw less power than the original "mixed" 128K system.

The first and best way is to look at the part numbers of the ROM chips at locations C11 and C13. Here is what to look for:

12-volt

Location	Part #
C11	341-0044
C13	341-0042

5-volt

Location	Part #
C11	341-0061
C13	341-0062 (128K) or
C13	341-0063 (256K)

The 342-0063 part number works for either a 128K or 256K configuration. The second method of verifying which main logic you are working with is to look at R58, which is located just above location C13. On a 12-volt logic board a 27 ohm, 1/4 watt resistor will be present. On a 5-volt logic board R58 will be missing and a solder bridge will connect the small solder pads on the logic board under R58's mounting position on the board.

There are also two different types of Apple III memory boards. The 12-volt board has three rows of RAM on it. Two rows are filled with 16K RAM (Apple part # 334-0002) and one row with 32K RAM (part # 333-0002). A 256K 5-volt board has two rows of 64K RAM (part # 334-0003) mounted on it. A 128K 5-volt board has one row filled with RAM and one row empty. Five-volt boards are also marked "5-Volt Memory Board" on the top center of the card.

The two memory boards and the two logic boards are not totally interchangeable. Always remember that logic and memory boards of the same voltage must be used together. Main logic boards can be modified to work with either type of memory board, but memory boards cannot.

256K Upgrade Kits are available from Apple for both types of systems.

Additional Service Hints:

The keyboard encoder chip on the Apple III main logic board is a static-sensitive device. Before a replacement board is sent out from Apple, a piece of conductive foam is secured on the solder-side of the board covering the pins of the encoder. Before you install a replacement main logic board, be sure to remove this foam. If this is not done, either there will be no keyboard response or the Apple III will lock up and do nothing at all. Running the Apple III internal RAM test (F6E6G) with a ProFile interface card installed may cause the RAM test to fail. It is best to remove the ProFile card before running the internal RAM test.

New Apple III Diagnostic Diskette

There is a new Apple III Dealer Diagnostic diskette available from Apple Service. This single diskette offers both 12-volt and 5-volt memory board tests. The part number is 077-0013-A.

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Tech Info Library Article Number:145



Tech Info Library

Apple Writer II under DOS 3.3: Printer codes from all Apples

Revised: 4/30/86
Security: Everyone

Apple Writer II under DOS 3.3: Printer codes from all Apples

=====

Many printers have special features that the computer signals by sending command codes. To send codes to a printer from Apple Writer II (DOS 3.3), you must insert the codes into the Apple Writer file you want printed. The manual of the printer may list the codes by several names: decimal, hexadecimal, teletype abbreviations (SOH, ETX, DC1, DC3, etc.), standard keys, and combinations of the above.

Using the chart "ASCII characters, values, and keystrokes", you have to translate from the name of the code in the printer manual into the name of the corresponding keystroke or keystrokes on the keyboards of the Apple II, Apple II Plus, Apple IIe, Enhanced Apple IIe, or Apple IIc.

Some keystrokes put so-called control characters into the Apple Writer file. These control characters are not part of the conventional English character set; while screen shows them, the printer intercepts and does not print them, instead recognizing them as signals to turn special functions on and off or to change printer settings.

NOTE: In the descriptions of the keystrokes, the characters greater than and less than, < and >, are used to contain one keystroke, which can mean that you must simultaneously hold down the control key, the shift key, or both as you press the other key.

With these considerations in mind, here is a list of codes and methods for inserting them in an Apple Writer II file.

Null (ASCII value 0):

II and II Plus: <CTRL-V><CTRL-SHIFT-P><CTRL-V>

All other Apples: <CTRL-SHIFT-2>

Control-A through Control-Z (ASCII decimal values 01 through 26):

Example: Control-Z (ASCII decimal value 26): <CTRL-V><CTRL-Z><CTRL-V>

Exception: Control-V (ASCII decimal value 22) can't be entered.
See "Missing Keys" below.

Escape (ASCII value 27):

Some keystroke sequences start with or include the ESCAPE character.

On Apple II without shift key modification:

If the printer manual shows the code as an escape followed by an upper case letter: <CTRL-V><ESC><ESC><ESC><CTRL-V>

If the printer manual shows the code as an escape followed by a non-alphabetic character or lowercase letter: <CTRL-V><ESC><ESC><CTRL-V>

On Apple II with shift key modification: <CTRL-V><ESC><CTRL-V>

Missing keys:

To produce uppercase a-z, press the ESC key first, otherwise Apple Writer II under DOS 3.3 enters the a-z keystroke as lowercase.

The Apple II and Apple II Plus don't have some keys: underline, backward slash, brackets, braces, vertical line, open single quote, tilde, or delete. You can't enter a Control-V in Apple Writer. To use these and other characters in Apple Writer, it is necessary to create an Apple Writer glossary file from a BASIC program.

For example, to insert the ASCII value 22 (Control-V) into an Apple Writer file, follow these steps:

1. Start up the DOS System Master.
2. Write and save the following program:

```
1  REM APPLE WRITER II GLOSSARY CREATION
10  D$=CHR$(4)
20  PRINT D$;"OPEN CVGLOSS"
30  PRINT D$;"WRITE CVGLOSS"
40  PRINT "V";CHR$(22)
41  REM USE LINE 40 AS A TEMPLATE FOR OTHER NEEDED CODES
42  REM CHOOSE A DIFFERENT GLOSSARY ENTRY FOR EACH CODE
43  REM PRINT "V";CHR$(22) V=ASCII 22 (CONTROL-V)
44  REM PRINT "W";CHR$(31) W=ASCII 31 (CONTROL-UNDERLINE)
45  REM PRINT "X";CHR$(128) X=ASCII 128 (CONTROL-@ WITH THE HIGH BIT SET)
46  REM PRINT "Y";CHR$( ) Y=AND SO ON
50  PRINT D$;"CLOSE CVGLOSS"
```

3. Run the program, thus creating a file called CVGLOSS.
4. Start up the Apple Writer diskette.
5. Press CTRL-Q and select the option to Load a Glossary File.

6. Remove the Apple Writer diskette and insert the diskette containing CVGLOSS.
7. Enter the name CVGLOSS at the "Enter File Name" prompt.
8. Return to Apple Writer and enter your text.
9. At any point where you need to enter a Control-V, type CTRL-G for the glossary function and enter V (uppercase).
10. This procedure should imbed the ASCII 22 in your text. Once CVGLOSS has been created, you can reuse it whenever necessary by following steps 5 through 9 each time you start up Apple Writer.

There's already a glossary file on the Apple Writer II diskette. This file is named SPECIAL and contains key definitions for the keys \, ^, ~, _, |, [,], {, }, ESC-D, and ESC-U.

Apple Technical Communications

Tech Info Library Article Number:146



Tech Info Library

Apple Writer III: Sending printer codes

Revised: 4/30/86
Security: Everyone

Apple Writer III: Sending printer codes

=====

Many printers have special features that the computer signals by sending command codes. To send codes to a printer from an Apple III with Apple Writer, you must insert the codes into the Apple Writer file you want printed. The manual of the printer may list the codes by several names: decimal, hexadecimal, teletype abbreviations (SOH, ETX, DC1, DC3, etc.), standard keys, and combinations of the above.

Using the chart "ASCII characters, values, and keystrokes", you have to translate from the name of the code in the printer manual into the name of the corresponding keystroke or keystrokes on the keyboard of the Apple III.

Some keystrokes put so-called control characters into the Apple Writer file. These control characters are not part of the conventional English character set; while screen shows them, the printer intercepts and does not print them, instead recognizing them as signals to turn special functions on and off or to change printer settings.

With these considerations in mind, here is a list of codes and methods for inserting them in an Apple Writer file on an Apple III.

NOTE: In the descriptions of the keystrokes, the characters greater than and less than, < and >, are used to contain one keystroke, which can mean that:

1. You must simultaneously hold down the control key, the shift key, or both as you press the other key, or
2. You must press a special key, such as ESC or RETURN.

Null (ASCII value 0):

Because Apple Writer III uses the null character to mark the end of a file, Apple Writer does not allow a null to be inserted into the file. The inserted null would effectively delete any text after it.

Apple Writer does send a null in the place of a Control-Underline character:

<CTRL-V><CTRL-UNDERLINE><CTRL-V>

Control-A through Control-Z (ASCII decimal values 01 through 26):

Example: Control-Z (ASCII decimal value 26): <CTRL-V><CTRL-Z><CTRL-V>

Exception: Control-V (ASCII decimal value 22) can't be entered.
See "Missing Characters" below.

Escape (ASCII value 27): <CTRL-V><ESC><CTRL-V>

Other Control characters: These can be entered in the manner of Control-A through Control-Z.

Missing Characters:

You can't directly enter a Control-V in Apple Writer. To use this character in Apple Writer, it is necessary to use an Apple Writer glossary file. You will find such a file on the Apple Writer III master diskette.

Apple Writer doesn't send a Control-Underline as such.

Business BASIC can be used to send a Control-Underline to your printer.

1. Create your Apple Writer document as usual, but substitute a unique character in each place that you want a Control-Underline character.
2. Type <CTRL-P> to display the Print/Programs Command menu.
3. Type PD.Volume/Filename, Apple Writer's setup for printing to disk on an Apple III.
4. Type NP to begin printing.
6. After the printing to disk is finished, exit Apple Writer and start up Business BASIC.
7. Run the following program:

```
100 HOME
110 PRINT TAB(10);"APPLE WRITER TO PRINTER"
120 VTAB=5
130 INPUT"PATHNAME OF APPLE WRITER FILE PRINTED TO DISK: ";F$
140 IF F$="" THEN 900
145 VTAB=12
146 INPUT"CHARACTER TO REPLACE: ";X$
147 IF X$="" THEN 145
150 VTAB=10
160 INPUT"Driver Name: (e.g. .PRINTER) ";S$
170 IF S$="" THEN 900
200 ON ERR GOTO 800
210 UNLOCK F$
220 OFF ERR
```

```
230   VTAB=12:PRINT SPC(75)
240   PRINT
265   OPEN#1 AS OUTPUT,S$
270   OPEN#2 AS INPUT,F$
280   ON ERR GOTO 400
290   INPUT#2;LINE$
300   A$=""
302   L=LEN(LINE$)
304   FOR Q=1 TO L
306     C$=MID$(LINE$,Q,1)
315     IF C$=CHR$(12) THEN 310
320     IF C$=CHR$(13) THEN 350
330     IF C$=X$ THEN C$=CHR$(31)
340     A$=A$+C$
345     NEXT Q
350   OUTPUT#1
355   PRINT A$
390   GOTO 290
400   OFF ERR
410   CLOSE
430   VTAB=15
440   PRINT TAB(5);"FILE ";F$;" HAS BEEN PRINTED."
450   GOTO 900
800   OFF ERR
810   VTAB=12
820   PRINT CHR$(7);"I CAN'T FIND THE FILE ";F$;". "
830   INPUT"";Z$
840   GOTO 100
900   END
```

Apple Technical Communications

Tech Info Library Article Number:147



Tech Info Library

Apple II and ILe: Controlling the Reset key

Revised: 4/30/86
Security: Everyone

Apple II and ILe: Controlling the Reset key

=====

On an Apple II or Apple ILe computer, the programmer can control how a BASIC program will react when reset or control-reset is pressed. DOS uses three special locations which it consults whenever reset or control-reset is pressed. Based on the values contained in these memory locations, DOS may halt a program, rerun the program, reboot a disk, or take another action you specify.

Changing these values changes the results of typing reset or control-reset from the keyboard.

To discourage users from breaking into a Basic program, some programmers change the reset vector to restart a running program whenever reset is pressed. Put the following line at the beginning of your program to get this effect:

```
10 POKE 1010, 102 : POKE 1011, 213 : CALL -1169
```

A value is not POKed into location 1012 because the CALL statement sets location 1012 to the correct value for the current situation. When you wish to return reset to its normal action, include this Basic line:

```
20 POKE 1010, 191 : POKE 1011, 157 : CALL -1169
```

You can also force a disk boot to occur whenever reset is pressed. Simply change the value of one of the three reset vector locations. An example is:

```
30 POKE 1012,1
```

You may instruct the reset vector to call one of your own machine language routines by placing the address of this routine in locations 1010 and 1011, and CALLing the ROM routine at location -1169 to set location 1012. Your routine may process information, display a warning message, or do anything else you wish.

Apple Technical Communications

Tech Info Library Article Number:148



Tech Info Library

Apple Color Plotter: Product Description (Discontinued)

Revised: 10/7/93
Security: Everyone

Apple Color Plotter: Product Description (Discontinued)

=====

This article last reviewed: 8 November 1988

The Apple Color Plotter will work with the Apple II family (through a Super Serial Card, not supplied with plotter) and the Apple III (through the RS-232 port). It uses a standard RS-232 interface so anyone who can send out ASCII and meet the handshake specifications will be able to use this plotter. The plotter offers a 255 byte buffer and is provided with switches to allow it to be matched to many computers. Options available with the switches are:

Baud Rate:	75 to 9600
Stop Bit:	1 Bit
	1 1/2 Bit
	2 Bit
Parity:	Odd
	Even
	None
Data Length:	7 Bit
	8 Bit

The Apple Color Plotter accepts several different sizes and thicknesses of paper and can draw on transparency materials as well as paper. There are 8 different colors of pins and two thicknesses (.3mm or .7mm). The colors come in both water base and oil base (quick drying) inks.

A company called Sun Remarketing specializes in obsolete Apple products. For more information, search on "Sun Remarketing".

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Tech Info Library Article Number:149



Tech Info Library

Floppy Disk Drives: Apple III Plus External Drive Adapter

Revised: 8/10/87
Security: Everyone

Floppy Disk Drives: Apple III Plus External Drive Adapter

=====

The Apple III Plus has a DB25 connector for the external disk drive I/O port. The standard Disk III has a 26-DIP flat connector on the cable. To use the standard Disk III with an Apple III+, you must acquire a Disk III Cable Adapter. The service part number for this cable adapter is 655-6101.

Future Disk III drive cables will have a DB25 connector and will need no adapter.

CAUTION: Before connecting a Disk III to an Apple III+, be sure that pin 13 has been removed from the adapter. The pin can either be clipped off or pulled out. Later versions of the adapters may have this pin removed for you.

Tech Info Library Article Number:150



Tech Info Library

Lisa: Copy-protected Tools

Revised: 11/8/88
Security: Everyone

Lisa: Copy-protected Tools

=====

This article last reviewed: 8 November 1988

Master tool diskettes are copy protected. The method still seems to confuse people to a fair degree. This article should cover any question you may have about Lisa's protection scheme.

The first time you duplicate a tool master diskette, that diskette AND its copy are tied to the specific Lisa you're using to perform the duplication: both diskettes are imprinted with that Lisa's serial number. This imprinting occurs almost immediately, so even if you abort the copy, both diskettes will probably already be tied to that Lisa. You may make as many copies of that master diskette as you like, but those copies will run only on the Lisa that made the first copy. Users can make as many back-ups as they feel necessary, while we are able to protect ourselves from unauthorized dissemination of Lisa software.

The original tool master diskette may be used on any Lisa, but you will not be able to copy the tool onto the ProFile.

The serial number that the diskettes are imprinted with is the one burned into the PROM located at position C6 on the CPU board. If the CPU board is replaced for any reason, it's very important that this PROM is transferred to the new board; otherwise, that Lisa's user will no longer be able to use applications stored on his or her hard disk. If that particular PROM itself is bad, request a new one from your Technical Support Center.

Files that are protected by this scheme will have the file attribute P when listed by the Workshop. This attribute cannot be changed.

Protected Lisa software distributed by Apple includes:

- All Lisa tools, except for LisaWrite and LisaProject 3.1. (Stationary pads, Office System diskettes and LisaGuide are not protected.)
- Pascal 1.0 and 2.0: PASCAL.OBJ, CODE.OBJ and EDITOR.OBJ are protected.

..TIL00151-Lisa-Copy-protected_Tools_(TA31513).pdf

(Pascal 3.0 is not protected.)

- COBOL 1.0, 2.0, and 3.0: overlay files are protected, as well as EDITOR.OBJ.
- BASIC-PLUS 1.0, 2.0, and 3.0: BASIC.OBJ and EDITOR.OBJ are protected.

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Tech Info Library Article Number:151



Tech Info Library

LisaProject: Applications of LisaProject

Revised: 10/8/84
Security: Everyone

LisaProject: Applications of LisaProject

=====

While the Lisa applications library offers many attractive features, LisaProject draws the attention of many executive decision makers. Apple presents LisaProject as a powerful instrument to efficiently and effectively accomplish resource scheduling. But as one explores the subject beyond this point, many questions arise. What is PERT, and how does LisaProject use PERT to achieve its schedule? What is a critical path and what are its implications? How does one apply LisaProject in the real world? Although the complete answers to these questions go beyond the scope of this publication, we will briefly discuss some of the issues and provide further research avenues for the reader.

What is PERT? PERT (Program Evaluation and Review Technique) is a scheduling algorithm, developed and utilized extensively by the Air Force during the Second World War. It identifies the tasks, resources, and their associated time-frames needed to complete an objective. Simply put, PERT is a network model which determines the significance and timing of the tasks involved in completing a project. As opposed to the majority of linear programming models that seek to maximize/minimize an objective function, PERT's algorithm uses Lisa's date arithmetic to arrive at the estimated sums of elapsed time to complete a "leg" of the project. The individual times associated with each "leg" are then compared to determine the longest route. This longest "leg", then, is the "critical path". Each task along the "critical path" is identified as a mandatory activity which is essential to timely completion of the project, and therefore, is defined by the system as having no spare ("slack") time. Again, as opposed to linear programming tools, PERT neatly avoids "superoptimization" (scheduling of two or more resources during the same time period), while arriving at an optimal solution to the problem.

Management scheduling staffs can bring the project generation phase to a rapid finish. During the progress of the project, the "what if" capabilities offer myriad uses. Specifically, the "critical path" identification feature not only indicates the relevant priorities of tasks, but its corollary argument tells the manager which tasks he can relatively ignore. If task A, to give an example, is not on the "critical path", then one should not expend labor, money or other scarce resources to try to expedite it. Devoting further resources to task A just will not abbreviate the length of the entire project.

Also, the planner may take the completed project and use it to clearly develop budgets by tagging dollar values to resource and task "classes" and using LisaCalc to crunch the numbers.

For readers who desire further information on these topics, see:

1. "PERT ORGANIZATION: A Technique for Evaluating Schedules", Publications, Inc., October 1981, pgs. 407-412. A six page discourse on the Boolean Matrix involved in PERT.
2. Elementary Systems Mathematics: Linear Programming for Business , Robert E. Machol, McGraw-Hill Book Co., NewYork, 1976. An exhaustive examination of mathematical programming techniques which are matrix oriented.
3. "Computerizing PERT for Business", Dun and Bradstreet , January, 1979, pgs. 87-95. How to apply computer generated PERT charts to everyday business situations.

Apple Technical Communications

Tech Info Library Article Number:152



Tech Info Library

Logo Computer Systems, Inc.

Revised: 4/3/97
Security: Everyone

Logo Computer Systems, Inc.

=====

Article Created: 09/21/84
Article Reviewed: 07/12/93
Article Updated: 11/03/92

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Company Profile:

Specializing in the manufacture and support of, and instruction in, Logo language and educational products.

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Tech Info Library Article Number:153



Tech Info Library

Monitor II: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Monitor II: Specifications (Discontinued)

=====

I. Technical Specifications

A. Electrical

1. CRT type: 12 inch (30.5 cm) diagonal
 - nonglare
 - high-contrast screen
 - 90 degree diagonal reflection
2. Phosphor: P31 (Green)
 - Decay time of 70usec from 100% to 10%
3. Scanning: EIA standard
 - 525 lines
 - 30 frames
 - 60 fields/second
 - Overscan
4. Data input signal: 0.5 to 2.0 volt p-p composite
 - Negative synchronous into 75 ohms (RS-170 compatible)
5. Drive or scan rates:
 - a. Horizontal: 15.699 KHz
 - b. Vertical: 60 Hz
6. Video bandwidth: 18 MHz
7. Horizontal Resolution:
 - a. At center: 900 TV lines
 - b. At corners: 800 TV lines
8. Horizontal Linearity: Less than 10%
9. Power requirements: 101.2 to 120.75 VAC (115VAC +5%, -12%)
 - 50/60 HZ, frequency independent

10. Power consumption: 30 W under normal viewing conditions

11. Display capability: 80 characters/row, 24 rows

12. Input connector: RCA type, 75 ohms terminated

B. Environment

1. Operating temperature range:

degrees

F

C

41 to 104 5 to 40

C. Physical

in

cm

1. Width: 14.5 37

2. Height: 10.6 27

3. Depth: 12.5 31.8

lbs

kg

4. Weight: 18.7 8.5

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Tech Info Library Article Number:154



Tech Info Library

Monitor III: Repair Tips

Revised: 5/25/89
Security: Everyone

Monitor III: Repair Tips

=====

This article last reviewed: 7 November 1988

A typical problem reported on the Monitor III is "no video". In these cases, adjusting either the contrast or brightness controls on the monitor solves the problem. With an Apple II or II+, the problem lies in the computer's video adjustment potentiometer, K14 on the main logic board. It is often adjusted too low.

Before you send a Monitor III in for exchange, make sure that the monitor has the problem and not:

1. the video cable or
2. too low of an adjustment of the video signal by the video adjustment potentiometer, K14 on the main logic board.

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Tech Info Library Article Number:155



Tech Info Library

Apple IIGS: Changing settings of the serial ports

Revised: 5/31/89
Security: Everyone

Apple IIGS: Changing settings of the serial ports

=====

This article last reviewed: 9/14/87

Changing the software settings of the serial ports for either data format or parity disables buffering, often used during access of bulletin boards. If a program changes the settings for Data Format (bits per character) or Parity, the program should re-enable buffering.

To change through software the baud rate from 1200 to 300 on the serial port, use nnB, the command in the Technical Introduction to the Apple IIGS, Page 35. The baud rate change will not show up in the control panel. The control panel displays the settings that are saved in firmware.

If you are using the Printer port, the control character is a Control-I. If you are using the modem port, the control character is a Control-A. Use the following numbers for the baud rates.

n Baud Rate

0 Default (as set in Control Panel)	
1	50
2	75
3	110
4	134.5
5	150
6	300
7	600
8	1200
9	1800
10	2400
11	3600
12	4800
13	7200
14	9600
15	19,200

For example, the following program changes the baud rate from 1200 to 300 under software control.

```
10 D$=CHR$(4):I$=CHR$(1)
20 PRINT D$;"PR#2"
30 PRINT I$;"8B": REM ENSURE 1200 BAUD
40 PRINT"This is a test of 1200 Baud"
50 PRINT I$;"6B": REM SET UP 300 BAUD
60 PRINT" This is a test of 300 Baud"
70 PRINT D$;"PR#0"
80 END
```

To verify that the baud rate is changing, run this program after connecting another system to the modem port. Depending on the baud rate for that receiving system, one of the sentences sent will not be legible.

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Tech Info Library Article Number:156



Tech Info Library

Pascal III: Description of the Pascal Technical Reference Manual

Revised: 10/8/84
Security: Everyone

Pascal III: Description of the Pascal Technical Reference Manual

=====

You can get an overview of the internal workings of Apple III Pascal from the Apple III Pascal Technical Reference Manual. It covers the format of code files and, including data structures and p-code instruction, describes the P-Machine that actually runs Pascal programs. To aid efficient Pascal programming, the manual also discusses writing helpful assembly-language routines, e.g., a routine to allow a Pascal program to access more than 64K of data.

The Supplement describes routines that allow access to all SOS calls directly from Pascal. An accompanying diskette contains this set of SOSIO routines in both source and object. With the source, you can learn about the routines or modify them for your applications; with the object, you can use the routines as they are.

Apple Technical Communications

Tech Info Library Article Number:157



Tech Info Library

Apple IIC: Connecting it to a Smith-Corona TP1 printer

Revised: 2/6/86
Security: Everyone

Apple IIC: Connecting it to a Smith-Corona TP1 printer

=====

On the Smith-Corona TP1 interface circuit board, set the jumpers to match these specifications:

1. 9600 Baud
2. 8 Data Bits
3. No Parity
4. 1 Stop Bit

On the Apple IIC, set the "PIN" configuration using the Apple IIC utilities program. The "PIN" configuration should be set to the same specifications that are listed above.

Cable Pinout

Apple IIC	TP1
2 -----	3
3 -----	7
5 -----	20
4 -----	2

Apple Technical Communications

Tech Info Library Article Number:158



Tech Info Library

QuickFile IIe and QuickFile III File Sharing

Revised: 10/8/84
Security: Everyone

QuickFile IIe and QuickFile III File Sharing

=====

QuickFile III and QuickFile IIe can share the same files if you format your data diskettes with QuickFile IIe or the Apple II Pascal system. Both QuickFile IIe at home and QuickFile III at the office will recognize the disk.

Apple Technical Communications

Tech Info Library Article Number:159



Tech Info Library

Apple III: Printing from BASIC and Pascal

Revised: 8/15/86
Security: Everyone

Apple III: Printing from BASIC and Pascal

=====

Many times it is desirable to have a program send selective, processed output to the printer. Both Business BASIC and Pascal have the commands to handle this chore; however, none of the language reference manuals provide an example for printing to a printer where the syntax of the commands is illustrated.

When directing output to the printer, it is important to remember that Apple III's Sophisticated Operating System (SOS) treats everything as a file. In this sense, any output, whether to a printer or diskette, is handled identically:

1. Programs pass data to SOS as files.
2. In SOS, the SOS File Manager passes the file to the appropriate device driver.
3. The device driver passes the output to the selected device.

The device driver does the job of transmitting the output in the fashion that the device requires it. Input data follows the same path, only in reverse. Understand these passes of files through the operating system. SOS and the device drivers can handle the details; you must handle the concept.

Here is an example of printing to both screen and printer from a Business BASIC program. Without the delay subroutine in line 100, everything would appear to happen at once, so we have it in the program only to improve the sense of sequence during execution.

```
10 OPEN#1, ".printer": REM Declare the printer as a file.
20 PRINT "This is a test.": GOSUB 100
30 REM Output goes to the screen.
40 PRINT#1 "This is a test.": GOSUB 100
50 REM Output goes to File #1, the printer.
60 PRINT "This goes to the screen.": GOSUB 100
70 REM Without file specification
80 PRINT#1 "This goes to the printer."
90 CLOSE#1: END: REM Close the file ".printer" and end.
```



```
100  FOR delay = 1 to 2000: NEXT delay: RETURN
```

The program could also use ".silentype" for the printer device driver.

The separate statements OUTPUT#x and PRINT can be used in succession to direct output to device x.

For instance, to simply list a program to the printer, the following commands can be entered at the keyboard in direct mode.

```
OPEN#1, .printer  (Notice, no quotes are needed in direct mode.
OUTPUT#1          (Routes all subsequent output to File #1)
LIST
CLOSE             (CLOSE in place of CLOSE#1 will close all
                  files instead of ".printer" -- with no other
                  files open it's just easier to type.)
```

There are other useful commands using this concept which are variations of other familiar BASIC commands besides PRINT. They are GET#1, INPUT#1, READ#1, and WRITE#1. The Apple III can have as many as ten files open for input and output at one time, so, where "#1" is used in the examples, it could be "#7", and so on.

The following is an example of how to print both to the screen and printer from a Pascal program. Again, the delay procedure is not necessary.

```
program PRINT_OUTPUT;
  var OutFile: text;

  procedure DELAY;
    var Count: integer;
  begin
    for Count := 1 to 2000 do
      end; {Delay}

begin
  rewrite (OutFile, '.printer'); {Declare the printer}
                                {as a file.}
  writeln ('This is a test.');
```

{Output goes to the screen.}

```
  DELAY;
  writeln (OutFile, 'This is a test.');
```

{Output goes to}

{the printer.}

```
  DELAY;
  writeln ('This goes to the screen.');
```

{Output goes to}

{the printer.}

```
  close (Outfile) {Close the file ".printer" and end.}
end. {Print_Output}
```

The Apple III can have as many as ten files open for input and output at one time; "OutFile" is only one. Additional files can be declared with additional REWRITE statements.

..TIL00160-Apple_III-Printing_from_BASIC_and_Pascal_(TA32242).pdf

To simply list a program to the printer, go to the Filer and transfer the text file to .PRINTER (for the Apple III) or to PRINTER: (for the Apple II and Apple IIe).

Since Pascal treats output as a file, both of these examples work with both Apple II and Apple III Pascal.

Apple Technical Communications

Tech Info Library Article Number:160



Tech Info Library

AppleSoft: Routine to Read a DOS Catalog

Revised: 10/8/84
Security: Everyone

AppleSoft: Routine to Read a DOS Catalog

```
=====

100 TEXT : NORMAL : HOME
102 INP$ = ""
104 VS = ( PEEK (106) * 256) + PEEK (105)
106 POKE (VS + 2),240: POKE (VS + 3),14: POKE (VS + 4),150
108 FOR A = 768 TO 793: REM RWTS IOB; A$300, L$20
110 READ D: POKE A,D: NEXT
112 DATA 169,3,160,9,32,217,3,96,0,1,96,1,0,17,15,:
        251,183,0,150,0,0,1,0,254,96,1
114 BL$ = ""
116 FOR I = 1 TO 40
118 BL$ = BL$ + CHR$ (160): NEXT I
120 DIM N$(105),S$(105),T$(105),L$(105)
122 IOB = 777:PL = 15
124 RB = - 27136: REM READ BUFFER
126 CS = IOB + 1:CD = IOB + 2:TRK = IOB + 4:SEC = IOB + 5
128 F1 = RB + 11:F7 = RB + 221
130 S = PEEK ( - 18455) / 16:D = PEEK ( - 18454)
132 POKE CS,(S * 16): POKE CD,D
134 POKE TRK,17
136 F = 496:C = 0
138 FOR X = 15 TO 1 STEP - 1
140 POKE SEC,X: CALL 768
142 ZZ = - 34
144 FOR Y = F1 TO F7 STEP 35
146 ZZ = ZZ + 35
148 Z = PEEK (Y + 33): IF (Z = 0) GOTO 178
150 C = C + 1
152 IF ( PEEK (Y) = 255) THEN N$(C) = "1": GOTO 176
154 F = F - Z
156 S$(C) = STR$ (Z)
158 IF ( LEN (S$(C)) = 1) THEN S$(C) = "00" + S$(C)
160 IF ( LEN (S$(C)) = 2) THEN S$(C) = "0" + S$(C)
162 Z = PEEK (Y + 2):L$(C) = " ":
    IF (Z > 16) THEN L$(C) = "*":Z = Z - 128
164 IF (Z = 0) THEN T$(C) = "T"
166 IF (Z = 1) THEN T$(C) = "I"
```

```
168 IF (Z = 2) THEN T$(C) = "A"
170 IF (Z = 4) THEN T$(C) = "B"
172 IF (Z = 16) THEN T$(C) = "R"
174 N$(C) = MID$(INP$,ZZ,30)
176 NEXT Y: NEXT X
178 F$ = STR$(F): IF (LEN(F$) = 1) THEN F$ = "00" + F$
180 IF (LEN(F$) = 2) THEN F$ = "0" + F$
182 FOR I = 1 TO C
184 C$ = STR$(I)
186 IF (LEN(C$) < 3) THEN C$ = " " + C$: GOTO 186
188 IF (N$(J * PL + I) = "1") THEN PRINT C$;" ";;
    INVERSE: PRINT "DELETED FILE";: NORMAL : PRINT
190 IF (N$(J * PL + I) <> "1") THEN
    PRINT C$;" ";L$(J * PL + I);T$(J * PL + I);" ";:
    S$(J * PL + I);" ";N$(J * PL + I)
192 NEXT
```

Apple Technical Communications

Tech Info Library Article Number:161



Tech Info Library

ImageWriter: Superscripting, Subscripting, and Underlining

Revised: 7/30/90
Security: Everyone

ImageWriter: Superscripting, Subscripting, and Underlining

=====

This article last reviewed: 21 September 1984

A set of superscripted and subscripted characters resides as an alternate font in a file on the "Imagewriter Tool Kit" diskette, which is included in the accessory kit. An option of the Tool Kit menu downloads the super/sub-scripted character font. After the download, you can invoke the alternate font with "ESC '"; "ESC \$" restores the standard (switch selected) character font. In this font, symbols generate superscripted numerals, and numbers generate subscripted numerals.

Applewriter accomplishes superscripts and subscripts on Imagewriters with serial numbers 250001 or greater. If the serial number is less, the Imagewriter must be upgraded.

NOTES:

1. The word Escape in the following instructions refers to hitting the Escape key.
2. The blanks should not be keyed in; they are there to make the strings readable.
3. The command strings take up room in the line and are counted as characters when printing takes place, even though the commands themselves are not printed.

In an Applewriter file:

1. Type in [V] Escape l [V]. This enables the optional line feed function.
2. To do a superscript:
 - a. Type: [V] Escape T 12 Escape r [J] [V]
 - b. Enter the superscript text.
 - c. Type: [V] Escape f [J] Escape T 24 [V]

3. To do a subscript:

- a. Type: [V] Escape T 12 [J] [V]
- b. Enter the subscript text.
- c. Type: [V] Escape r [J] Escape f Escape T 24 [V]

Underlining requires no printer modification. Just send "ESC X" to start underlining and "ESC Y" to stop it. Apple Writer users will probably not use this method to underline; however, if they do, note that X and Y are uppercase.

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Tech Info Library Article Number:162



Tech Info Library

Apple IIGS: Reading and setting the Clock (1 of 2)

Revised: 5/1/87
Security: Everyone

Apple IIGS: Reading and setting the Clock (1 of 2)

=====

Reading and writing the clock register and the clock control register is not necessarily the easiest or most proper way of accessing the time. However, there are tool calls that can perform this function for you. Included in the Miscellaneous Toolset are 3 routines, two to read and write the time in hex format and one to read the time in ASCII format. The program below shows how to use all three.

Here is a summary of the three calls:

`_ReadASCIITime` reads the IIGS clock and fills a specified buffer with a string that shows the time and date according to the format described in the control panel. Before the call, push the long address (4 bytes) of a buffer on the stack. Place the string in this buffer, a location in memory; the buffer can vary in size (because of the possible string formats), but it should be about 22 bytes.

`_ReadTimeHex` reads the IIGS clock and leaves the time and date on the stack. Before the call, push 4 words (8 bytes) of space for the result. After the call, the stack will contain the following information (specified in bytes):

| previous contents	|
| weekday	| day of the week (0..6, with 0=Sunday, etc.)
| null	| unused
| month	| 0..11, with Jan=0
| day	| 0..30
| year	| current year minus 1900
| hour	| 0..23
| minute	| 0..59
| second	| 0..59
|	| <--- Stack Pointer

`_WriteTimeHex` sets the time according to information on the stack. The information pushed onto the stack should be bytes: month, day, year, hour, minute, and second - pushed on in that order (after the data is pushed on the stack, the stack will look similar that returned by `_ReadTimeHex`). After the call is completed, the stack will have those parameters removed.



Tech Info Library

Apple IIe Hardware: Reference Manual Errata

Revised: 9/21/84
Security: Everyone

Apple IIe Hardware: Reference Manual Errata

=====

Page 133 in Chapter 6: Switching I/O Memory, Table 6-5

READS:

SLOT CXROM	Slot ROM at \$3x00	\$C007	49159	-16377	Write
	Internal ROM at \$Cx00	\$C006	49158	-16378	Write

SHOULD READ:

SLOT CXROM	Slot ROM at \$3x00	\$C006	49158	-16378	Write
	Internal ROM at \$Cx00	\$C007	49159	-16377	Write

Apple Technical Communications

Tech Info Library Article Number:164



Tech Info Library

Apple Logo II: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple Logo II: Specifications (Discontinued)

=====

Order #: D2D0100

--Technical Specifications

Operating System: DOS; for use with Logo II, Logo DOS files can be converted to ProDOS files with the CONVERT program on the ProDOS User's Disk or the II System Utilities Disk

--Package

1. Disk: Apple Logo Master
2. Disk: Apple Logo Backup
3. Manual: An Introduction to Programming through Turtle Graphics
4. Manual: Apple Logo Reference

--System Configuration

1. Apple II Plus, IIe or IIc personal computer
2. Apple II disk drive with controller
3. Apple Language Card
4. Video Display: television or monitor
5. Recommended: ImageWriter or other compatible printer; color display; AppleMouse

Apple Technical Communications

Tech Info Library Article Number:165



Tech Info Library

Apple IIGS: Reading and setting the Clock (2 of 2)

Revised: 5/1/87
Security: Everyone

Apple IIGS: Reading and setting the Clock (2 of 2)

=====

This is a simple program that will display the time and allow the user to enter 3 keys:

1. Escape - Exit the program
2. Up arrow - Increment seconds
3. Down arrow - Decrement seconds

There is a feature limitation in that the program doesn't update the minutes when the seconds become less than zero or greater than 60. It turns out that this is no problem when incrementing the time, but leads to interesting side effects when decrementing it.

The 'macros' short and long should be replaced by the following instructions:

short:	long:
-----	-----
sec	clc
xce	xce
sep #30	rep #30

They simply put the computer in either 8- (short) or 16- (long) bit mode, whichever is necessary at the time.

Start

```
        short                ; put the computer in 8-bit mode
        lda c010             ; clear the keyboard
loop     jsr ShowTime         ; show the time and date
        jsr ReadKey          ; see if a char was typed, and act on it
        bcc loop             ; carry set if ESCAPE is hit
        rts
```

ShowTime

```
        long
        pea 0000              ; point output buffer to screen
        pea 0400
        ldx #0f03             ; _ReadAsciiTime (put ASCII time onto screen)
```

```
        jsr $e10000
        short
        rts

ReadKey
        lda c000                ; was a key hit?
        bmi KeyHit              ; yes, do something about it.
        clc                     ; no - return to main loop
        rts

KeyHit
        lda c000                ; get the key (high bit set)
        sta c010                ; clear keyboard strobe
        cmp #9b                 ; Escape?
        bne NotESC
        sec                     ; Escape was hit - set Quit flag
        rts

NotESC
        cmp #9a                 ; down arrow?
        beq Arrow
        cmp #9b                 ; up arrow?
        beq Arrow
        clc                     ; neither, return with no error
        rts

Arrow
        sta temp                ; remember which arrow was chosen
        long
        pha                     ; push room on stack for time in hex format
        pha
        pha
        pha
        ldx #0d03               ; _ReadTimeHex (leave everything on the stack
        jsr e10000              ; for _WriteTimeHex later)
        short
        ldx 01,s                ; get the seconds
        ldx temp                ; recall which arrow was hit
        cpx #9a
        beq dnArrow
        inc a                   ; increment time on up arrow
        bra cont

dnArrow
        dec a                   ; decrement time on down arrow

cont
        sta 01,s                ; put it back on the stack
        long
        ldx #0e03               ; _WriteTimeHex
        jsr e10000
        pla                     ; get rid of extra stuff from _GetTimeHex
        short
        jsr ShowTime            ; update the screen
        bra ReadKey             ; see if another key was hit

Temp    ds 1                   ; temporary storage
```

The calls and usage shown in the program are described in "The Apple IIGS
Toolbox Reference Manual: Parts 1 and 2" available from Addison-Wesley.

Tech Info Library Article Number:166



Tech Info Library

Lisa Pascal: Mounting and Reading Disk Directories

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Mounting and Reading Disk Directories

=====

From a Pascal program, you can indeed read the directory information of a diskette. Once you have detected the insertion of a diskette into the drive by using KeybdEvent (cf. Pascal Language Reference Manual, Appendix C), perform the following commands in order to mount and read the directory:

```
mount (error, volname, passwd, device)
reset_Catalog (error, pathname)
```

Then read the file names until done (error 848) by performing the command:

```
get_next_entry (error, prefix, filename)
```

Chapter 2 of the Operating System Reference Manual documents these and other file system calls that allow you to get information about the file: name, date, size, etc.

Tech Info Library Article Number:167



Tech Info Library

ImageWriter LQ: Things To Be Aware Of

Revised: 1/30/92
Security: Everyone

ImageWriter LQ: Things To Be Aware Of

=====

This article last reviewed: 1 December 1987

There are several things one should be aware of when using an ImageWriter LQ.

- Paper Handling Concerns -

Refer Chapter 2 pages 16 and 17 of the ImageWriter LQ Owner's Guide for proper paper loading techniques. For complete information on paper handling refer to Chapter 7: Working With Paper.

Paper Loading - The paper must be loaded correctly or there may be paper jams.

Don't use paper with staples or paper clips attached.

Do not move the paper bail manually. This will interrupt a form feed and proper paper placement. The ImageWriter LQ is designed to manipulate the paper bail automatically. Refer to Chapter 7 of the ImageWriter LQ Owners Manual for more information.

Do not back paper or labels out of the printer.

The push/pull tractors can cause many problems if not used correctly. Be sure to refer to the push/pull tractor sections in the manual for correct paper loading techniques.

Paper thickness - Never use a form, label, or envelope that is thicker than 4 sheets of 16 pound bond paper. Too much paper may cause lines to register incorrectly or may jam the printer.

Do not try to print closer than 1/4 inch to the edges of the paper. It is possible to damage the print head or the printer.

- Cut Sheet Feeder -

Refer to Appendix A on installing the Cut Sheet Feeder for complete instructions.

Do not use 4 part carbonless forms thicker than .55 mm. Thicker forms may cause the print head to lose position and lead to possible damage to the printer.

The Cut Sheet Feeder works best with 20-pound paper and up to 100 sheets loaded. For optimal results, use uncoated paper like Antique, Laid, English, Linen, Cockle, Woven, Policy, Vellum, or Smooth.

The Cut Sheet Feeder and two expansion bins won't work unless the configuration plug is removed from the third bin. See page 163 of the ImageWriter LQ Owners Manual for complete information.

- Cut Sheet Feeder and Envelopes -

See pages 173 to 176 of the ImageWriter LQ Owners Manual for complete information on loading and using envelopes.

When loading envelopes the edge of the envelope must align with the cut sheet icon on bin 1 behind the forward collator and with the vertical red mark on the paper bail so that printing will begin no further to the left edge than the black mark on the paper bail, at least 1/4 inch in from the edge. Proper alignment prevents print head damage.

It is very important that no attempt is made to print on the top line in the envelope's upper left corner or on the first 1/4 inch in from the envelope's left edge. Serious print head daamage can result, and the paper feed mechanism may jam. Printing one line down from the top, and in line with the black mark on the paper bail is fine and causes no problems.

- Miscellaneous Concerns -

When connecting an ImageWriter LQ to a Macintosh be sure to read Chapter 3 on connecting the printer to a Macintosh. Pay special attention to the adding of the fonts to you disks.

If using pin feed paper make sure the paper is properly aligned in the tractors.

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Tech Info Library Article Number:168



Tech Info Library

Macintosh 128K and 512K: Modem cable pinouts

Revised: 7/16/92
Security: Everyone

Macintosh 128K and 512K: Modem cable pinouts

Article Created: 21 September 1984
Article Last Reviewed: 30 June 1992
Article Last Updated:

Below is the wiring diagram of the connection between a Macintosh 128K/512K and an Apple Modem.

Macintosh Modem Cable 590-0197

Macintosh			Apple Modem		
Connector			Connector		
(DB-9)			(DB-9)		
Comments	Signal Name	Pin	Pin	Signal Name	Comments
Chassis/frame Ground	GND	*1	<---> 8	GND	Chassis/Frame Ground
Signal Ground	SGND	*3	<---> 3	SGND	Signal Ground
		*8	<---> 1		
NOTE: There are many variations on connecting pins 1, 3 and 8, but the basic intent is to bring all three of those pins to ground on the Macintosh side. Connect Signal Ground to Chassis Ground if you want a slightly better noise margin.					
Output; Transmit Data	TXD-	5	<---> 9	RCD	Input; Receive Data
+12-Volt Line		6	<---> 6	DTR	Input; Data Terminal Ready
Input; Handshake	HSK	7	<---> 7	DCD	Output; Data Carrier Detect
Input; Receive Data	RCD-	9	<---> 5	TXD	Output; Transmit Data

If you wish to connect the DB-9 Modem port connector on the Macintosh 128K/512K to a DB-25 connector on a non-Apple modem, a Macintosh Imagewriter cable connected to the Modem Eliminator cable works in most cases. Here are the pinouts for that configuration:

	DB-9		DB-25	
	Macintosh		Modem	
	DTE		DCE	
Chassis Ground	1	<--->	1	Chassis Ground
Signal Ground	3	<--->	7	Signal Ground
Output; Transmit Data	5	<--->	2	Input; Transmit Data
Input; Handshake	7	<--->	6	Output; Data Set Ready
Input; Receive Data	9	<--->	3	Output; Receive Data

If this configuration doesn't work, try these additional cable connections:

+12-Volt Line	6	<--->	20	Input; Data Terminal Ready
Output; Handshake	2	<--->	20	Input; Data Terminal Ready
Output; Handshake	2	<--->	4	Input; Request to Send
Input; Handshake	7	<--->	8	Output; Data Carrier Detect

You will have to make a cable to try these additional connections one by one or in combination. If you have the pinouts of your modem, make a cable that matches up the Apple Modem signals with the appropriate pins on the other modem's connector, e.g., connect pin 1 on the DB-9 connector to pin for Chassis/Frame Ground on the modem's DB-25 connector, and so on.

Refer to the RS-232 standard for the connection signals and corresponding pin numbers.

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Tech Info Library Article Number:170



Tech Info Library

Macintosh Software: Microsoft BASIC support of the Toolbox

Revised: 11/26/85
Security: Everyone

Macintosh Software: Microsoft BASIC support of the Toolbox

=====

Microsoft BASIC, prior to release 2.0, supported a mouse in a very limited manner, with limited use of windows and menu bars. Because it uses MBASIC commands, Microsoft BASIC (pre-2.0) does not support QuickDraw. If you wish access to QuickDraw and Toolbox routines such as windows and menu bars, upgrade your Microsoft BASIC to the latest release.

Apple Technical Communications

Tech Info Library Article Number:171



Tech Info Library

SoftCard III (CP/M): Microsoft BASIC Reference Manual Errata

Revised: 10/8/84
Security: Everyone

SoftCard III (CP/M): Microsoft BASIC Reference Manual Errata

=====

In Appendix D: Disk Errors, page 174 reads:

67	Too many files	An attempt is made to create a new file (using SAVE or OPEN) when all 255 directory entries are full.
----	----------------	---

It should read:

67	Too many files	An attempt is made to create a new file (using SAVE or OPEN) when all directory entries are full. The CP/M limitation for a diskette is 48 files; the hard disk limitation is 512.
----	----------------	--

However, if you use files larger than 16K you will have two directory entries for the file. If the file happens to be over 32K there will be three entries. This 16K is a file boundary for CP/M, irregardless of block size.

Apple Technical Communications

Tech Info Library Article Number:172



Tech Info Library

Applesoft: Stopping the Apple IIe cursor from blinking

Revised: 10/8/84
Security: Everyone

Applesoft: Stopping the Apple IIe cursor from blinking

=====

You prefer a solid non-flashing cursor over the flashing "checkerboard" that the Apple IIe normally provides? If you have Apple's 80-column Text Card just type PR#3, then ESC-4. The system will have the eighty column cursor (a solid non-flashing blank) and will be in 40-column mode.

If you do not have a Text Card, fear not; just type

```
POKE 49162,0: PRINT CHR$(4);"PR#3"
```

and you can get the same effect.

You can use this next sample routine as the startup program on a diskette or the startup routine in an Applesoft program. Line 14 determines whether it is on an Apple IIe or an Apple II. If, by the time Line 16 executes, no Apple Text Card is detected in the system, then Line 18 enables the 80-column firmware.

[NOTE: The firmware is enabled by the monitor during Cold Boot (i.e., power-on startup or OPEN-APPLE-CTRL-RESET) if there is a Text Card installed].

Line 18 activates the firmware now that it is enabled. The 80-column firmware maintains a mode status byte in RAM at location 1275 (\$04FB). Bit 7 of this byte determines whether Lowercase Restrict mode is active or not. Line 28 guarantees that this bit is set to enable the mode. Lowercase Restrict mode is normally only available in direct mode typing Escape-R and cannot be done otherwise in a program.

```
10 TEXT : SPEED= 255
12 D$ = CHR$(4): REM CTRL-D
14 IF NOT ( PEEK (64435) = 6) GOTO 30: REM NOT APPLE IIE
16 IF NOT ( PEEK (49162) < 128) GOTO 20:
    REM TEXT CARD INSTALLED
18 POKE 49162,0: REM ENABLE 80-COLUMN FIRMWARE
20 PRINT D$;"PR#3": PRINT : REM ACTIVATE FIRMWARE
22 PRINT CHR$(17): REM SWITCH TO 40-COLUMN MODE
```

```
24  MB = 1275: REM 80-COLUMN FIRMWARE MODE BYTE ($04FB)
26  MS = PEEK (MB): REM READ CURRENT MODE STATUS
28  IF (MS < 128) THEN POKE MB,MS + 128:
    REM SET BIT-7 TO ENABLE LOWER CASE RESTRICT MODE
30  NORMAL : HOME
```

Apple Technical Communications

Tech Info Library Article Number:173



Tech Info Library

AppleWorks 2.0: Booting it on the Apple IIe

Revised: 5/1/87
Security: Everyone

AppleWorks 2.0: Booting it on the Apple IIe

=====

You MUST have an Extended-80 Column card installed in the Apple IIe to boot AppleWorks 2.0, even if you have a 1 Megabyte Memory Expansion Card installed. AppleWorks 2.0 requires a 128K Apple IIe or Apple IIc to boot and does not recognize the IIe unless you have the Extended-80 Column Card.

Tech Info Library Article Number:174



Tech Info Library

Macintosh 128K and 512K: Data transfer and processing rates

Revised: 6/22/92
Security: Everyone

Macintosh 128K and 512K: Data transfer and processing rates

=====

Article Created: 10 June 1985
Article Last Reviewed: 19 June 1992
Article Last Updated:

TOPIC -----

The following article provides information on data transfer and processing rates for the Macintosh 128K and Macintosh 512K.

DISCUSSION -----

Following are the data transfer rates for the Macintosh:

Serial Port (external):

AppleTalk:	230.4K baud
Asynchronous:	57.6K baud (maximum rate)
Synchronous:	920K baud (maximum rate with external clock)

Disk Drive Port: 500K baud

68000 Processor Access Rates (internal):

ROM at:	8 MHz
RAM at:	6 MHz

NOTE: The BlockMove Routine in ROM allows you to move blocks of data from one location of memory to another at ROM speed (8 MHz). Otherwise, the normal RAM transfer rate is 6 MHz.

Processing Data Rate

13.3 megabits per second

NOTE: This rate is calculated using the definition in Federal Register,

Volume 49 Number 252, page 50619.

Refer to the Motorola 68000 User's Manual for address calculation times as well as for processing and instruction execution times.

Copyright 1985, Apple Computer, Inc.

Tech Info Library Article Number:175



Tech Info Library

Macintosh 128K and 512K: Using the Calculator and Keypad

Revised: 6/12/92
Security: Everyone

Macintosh 128K and 512K: Using the Calculator and Keypad

=====

Article Created: 8 October 1984
Article Last Reviewed: 27 May 1992
Article Last Updated: 22 December 1989

On the original Macintosh Numeric Keypad, the keys ENTER, comma, plus, and minus do not seem to correspond with the keys on the Calculator desk accessory. However, although the keycap graphics do not match the Calculator keys, there is a calculator function for each keycap. For instance, the ENTER key on the keypad corresponds to the plus key on the Calculator. So, if your fingers are accustomed to a 10-key numeric keypad, you can use the Macintosh keypad and look at the screen and not the keys. Otherwise, please bear in mind the differences between the keys on the Calculator and those printed on the keycaps.

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Tech Info Library Article Number:176



Tech Info Library

Business BASIC III: RENUMBER 1.01

Revised: 7/1/85
Security: Everyone

Business BASIC III: RENUMBER 1.01

=====

Here is a corrected version of the Business BASIC Renumber program. Just EXEC this file and save it on the Business BASIC Master Diskette.

```
10  INVOKE"Renumber.INV"
20  HOME
30  PRINT USING"76c";"--  RENUMBER 1.01  --"
50  PRINT:PRINT TAB(8);"Your options are:":PRINT
60  PRINT TAB(26);"1    Line References"
70  PRINT TAB(26);"2    Append/Merge Programs"
80  PRINT TAB(26);"3    Renumber a Program"
90  PRINT TAB(26);"4    Quit"
100 PRINT
110 PRINT TAB(8);:INPUT"Which option? ";a$:x=ASC(a$)-48
120 ON x GOTO 150,250,360,140
130 PRINT TAB(8);"Please enter 1, 2, 3, or 4":
    VPOS= VPOS-2:GOTO 110
140 TEXT:HOME:END
150 REM --- XREF
160 TEXT:HOME:PRINT USING"76c";"--  XREF  --":PRINT
170 INPUT"Name of Source File: ";i$:IF LEN(i$)=0 THEN 20
180 INPUT"Output file name?
    (Press RETURN for output to .CONSOLE) ";o$
190 IF LEN(o$)=0 THEN o$="temp.xref"
200 INPUT"Should unreferenced lines be displayed?";r$:
    IF ASC(r$)=ASC("y") OR ASC(r$)=ASC("Y") THEN 230
210 PERFORM xref(@i$,@o$)
211 IF o$<>"temp.xref" THEN 20
212 ON ERR GOTO 218
213 OPEN#1,"temp.xref"
214 INPUT#1;a$
215 GOSUB 620
216 IF l=20 THEN GOSUB 670
217 GOTO 214
218 OFF ERR:CLOSE#1:DELETE"temp.xref":GOSUB 670
220 GOTO 20
230 PERFORM xlist(@i$,@o$)
```

```
240 GOTO 211
250 REM --- MERGE
260 TEXT:HOME:PRINT USING"76c";"-- APPEND/MERGE --":PRINT
270 INPUT"Name of the first Program? ";i$:
IF LEN(i$)=0 THEN 20
280 INPUT"Which Program should be merged with it? ";i2$:
IF LEN(i2$)=0 THEN VPOS= VPOS-2:PRINT CHR$(29);:GOTO 270
290 INPUT"Output file name? ";o$:
IF LEN(o$)=0 THEN VPOS= VPOS-3:PRINT CHR$(29);:GOTO 270
300 INPUT"Should I allow interleaving of program lines? ";a$
310 IF ASC(a$)=ASC("Y") OR ASC(a$)=ASC("y") THEN 340
320 PERFORM append(@i$,@i2$,@o$)
330 GOTO 20
340 PERFORM merge(@i$,@i2$,@o$)
350 GOTO 20
360 REM --- RENUMBER
370 TEXT:HOME:PRINT USING"76c";"-- RENUMBER --":PRINT
380 INPUT"Name of Program to be Renumbered? ";i$:
IF LEN(i$)=0 THEN 20
390 INPUT"Save with what file name? ";o$:
IF LEN(o$)=0 THEN VPOS= VPOS-2:PRINT CHR$(29);:GOTO 380
400 INPUT"What line number should I start renumbering at?
(Default=0) ";low$:
IF LEN(low$)=0 THEN low=0:GOTO 420
410 IF ASC(low$)<48 OR ASC(low$)>57 THEN VPOS= VPOS-1:
GOTO 400:ELSE low=VAL(low$)
420 INPUT"What line number should I renumber up to?
(Default=63999) ";high$:
IF LEN(high$)=0 THEN high=63999:GOTO 440
430 IF ASC(high$)<48 OR ASC(high$)>57 THEN VPOS= VPOS-1:
GOTO 420:ELSE high=VAL(high$)
440 INPUT"Starting value for the renumbered lines?
(Default=10) ";start$:
IF LEN(start$)=0 THEN start=10:GOTO 460
450 IF ASC(start$)<48 OR ASC(start$)>57 THEN VPOS= VPOS-1:
GOTO 440:ELSE start=VAL(start$)
460 INPUT"What increment between each line? (Default=10) ";
bump$:IF LEN(bump$)=0 THEN bump=10:GOTO 480
470 IF ASC(bump$)<48 OR ASC(bump$)>57 THEN VPOS= VPOS-1:
GOTO 460:
ELSE bump=VAL(bump$)
480 REM Map numbers larger than 32767 into standard
two's complement form.
490 low=TEN(HEX$(low)):
high=TEN(HEX$(high)):
start=TEN(HEX$(start))
500 INPUT"Should I allow lines to be moved? ";a$:
IF ASC(a$)=ASC("Y") OR ASC(a$)=ASC("y") THEN 530
510 PERFORM renum(@i$,@o$,%low,%high,%start,%bump)
520 GOTO 20
530 PERFORM reseqnce(@i$,@o$,%low,%high,%start,%bump)
540 GOTO 20
620 IF LEN(a$)<80 THEN PRINT a$:l=l+1:RETURN
```

```
630  PRINT MID$(a$,1,80):s=80:e=74:l=l+1:
      IF l=20 THEN GOSUB 670
640  IF LEN(a$)-80=>74 THEN HPOS=6:
      PRINT MID$(a$,s,e):s=s+74:l=l+1:
      IF l=20 THEN GOSUB 670:GOTO 640
650  IF LEN(a$)-s>0 THEN HPOS=6:PRINT MID$(a$,s)
660  RETURN
670  VPOS=23:
      PRINT USING"76c";"-- press RETURN to continue --";
680  GET a$
690  IF ASC(a$)<>13 THEN 690
700  HOME:PRINT USING"76c";"-- XREF --":PRINT:l=0:RETURN
```

Apple Technical Communications

Tech Info Library Article Number:178



Tech Info Library

ProDOS: Using /RAM and Double High-Resolution Graphics

Revised: 9/21/84
Security: Everyone

ProDOS: Using /RAM and Double High-Resolution Graphics

=====

Whenever ProDOS is booted, it checks the environment; if ProDOS finds a 128K Apple II system, it configures the auxiliary 64K memory bank as a RAM disk named /RAM. This "disk" is catalogued as slot 3, drive 2, since it's comprised of memory on the 80-column card in slot 3.

If you plan to use this auxiliary memory for high-res graphics, you must protect yourself from /RAM. To construct a space for protecting high-res pages in auxiliary memory while maintaining /RAM as an online storage device, perform the following two steps:

1. Save a "dummy" 8K file as the first entry in /RAM; this file will always be saved at \$2000 to \$3FFF.
2. Immediately afterwards, save a second "dummy" 8K file to /RAM; this file will be saved at \$4000 to \$5FFF.

--> IMPORTANT NOTES:

1. There is no formula for determining where the blocks of /RAM physically reside in memory.
2. The logical blocks in /RAM are not physically contiguous.
3. There is no guaranteed way to protect any other fixed portions of auxiliary memory by means of the "dummy" file method.

If you wish to protect all auxiliary memory not reserved for use by Apple, you must disconnect /RAM. The following three areas of the system global page are of interest to anyone who wishes to disconnect /RAM:

\$BF10-\$BF2F contains the disk device driver addresses.
\$BF31 contains the number of devices minus one.
\$BF32-\$BF3F contains the list of disk device numbers.



Tech Info Library

ProDOS: Product Overview

Revised: 10/8/84
Security: Everyone

ProDOS: Product Overview

=====

ProDOS is Apple's new disk operating system for the Apple IIe and II+. It is now included with Apple's Disk II drives with controller and the DuoDisk.

Apple designed ProDOS as a transition from DOS 3.3 and for the greater sophistication and enhanced capabilities demanded by more professional applications. ProDOS provides compatibility between the Apple III and the Apple II line of computers, since ProDOS and SOS share similar file naming conventions and file formats.

ProDOS requires a 64K Apple II+ or IIe, with Applesoft in ROM. Integer BASIC is not supported. Listed below are some of the features of ProDOS.

- Hierarchical file system similar to SOS.
- Up to 51 files in a volume directory; the number of files in subdirectories is limited only by the space on the disk.
- 20 different file types; 10 are user-defineable.
- Up to 8 files may be open at one time.
- A defined, usable machine language interface.
- Interrupts up to 4 levels are supported and processed sequentially.
- Compatibility between files created on an Apple III.
- Fast transfer speed to and from disk; about 8K per second from Disk II.
- All disk devices supported by Apple will work automatically.
- Direct block access.
- Enhanced BASIC command structure.
- Easier Assembly Language program development and maintenance.

--Up to 32 megabytes per volume, 16 megabytes per file.

--Multiple logical volumes per physical volume.

--Pseudo disk emulator using the Apple Extended Text Card, enabling fast file access and graphics screen switching.

Apple Technical Communications

Tech Info Library Article Number:180



Tech Info Library

Apple Color Plotter: Configuring it to an Apple IIe

Revised: 12/16/85
Security: Everyone

Apple Color Plotter: Configuring it to an Apple IIe

=====

The following describes the connection between the Apple IIe and the Apple Color Plotter. DO NOT USE the High Speed Serial Card with the IIe.

I. Apple IIe

1. Super Serial Card (SSC)

A. Circuit Configuration

Near the internal cable (Part 590-0021) of the SSC there is a removable block of pins with a triangle on its top face. Make sure this jumper block is plugged into its socket so that the triangle points to the word TERMINAL printed on the card.

This configuration, called modem elimination, compensates for the standard RS-232-C pin assignments so that the internal cable of the SSC can transmit signals to the Imagewriter through the appropriate pins.

B. IIe Motherboard Slot

- a. Preferred: Slot 1
- b. Range: Any slot EXCEPT AUX

C. SSC Switch Settings

SW1:	1	2	3	4	5	6	7	SW2:	1	2	3	4	5	6	7
	|	|	|	|X|	|X|X|			|X|	|	|X|	|	|	|		(ON)
	|X|X|X|	|X|	|	|				|	|X|X|	|X|X|X|					(OFF)

These switch settings are for: 9600 baud (SW1: 1-4), Printer Mode (5-6), Normal Clear To Send (7), 8 data bits and 1 stop bit (SW2: 1), no delay after CR (2), video off with an 80 character line (3-4), no LF after CR (5), Disabled ACIA-CPU interrupts (6), and Normal Clear To Send (7).

No parity is set automatically in the Printer Mode.

II. The Connection

1. Cable

Serial and Communications Cable (Part 590-0037)

From				To	
Super Serial Card IIf Back panel DB-25 connector				Apple Color Plotter DB-25 connector	
signal	-	pin	wiring	pin	- signal
Frame Ground		1	<->	1	Frame Ground
Tx		2	<->	2	Tx
Rx		3	<->	3	Rx
RTS		4	<->	4	RTS
Signal Ground		7	<->	7	Signal Ground
DTR		20	<->	20	DTR

2. Signal

1. Levels from Super Serial Card:

- a. True (asserted): 0 volts
- b. False: +5 volts

III. Apple Color Plotter

1. Switch settings

1	2	3	4	5	6	7	8	
|	|	|	|	|X|	|X|	|X|	|X|	(ON)
|X|	|X|	|X|	|	|	|	|	|	(OFF)

These switch settings are for: 8 data bits (SW 1), no parity (SW 2),
1 stop bit (SW 4-5), 9600 baud (SW 6).

2. Test

- A. Set paper width to 8.5 inches or larger.
- B. Assemble and install pen head.
- C. Turn on Plotter and insert paper to paper set mark.

D. Press pen up/down (test) button.

Plotter will run automatic test routine.

Some applications may not give you all the features of the Apple Color Plotter.

Apple Technical Communications

Tech Info Library Article Number:181



Tech Info Library

Apple II: Understanding the Apple II

Revised: 12/13/91
Security: Everyone

Apple II: "Understanding the Apple II"

=====

"Understanding Your Apple II", an in-depth Apple II and II+ hardware manual, is now available from Quality Software or from your local dealer. The book, by Jim Sather, has a foreword by Steve Wozniak. Some of the book's features:

- Documents all motherboard circuits, including some discussed nowhere else.
- Describes disk controller operation, including previously undocumented details of the logic state sequencer.
- Explains RAM and ROM card operation.
- Reveals previously unnoticed features of Apple graphics.
- Contains 23 software and hardware Application Notes including the shift key mod, disk write protect mod, and EPROM mods.
- Includes a chapter on simple user troubleshooting and maintenance.
- Contains over 100 figures and illustrations, including more than 20 schematics, ten appendices, a glossary and index.

This book runs 352 pages in all! A companion text, "Understanding Your Apple IIe", is also available from:

Quality Software
21601 Marilla Street
Chatsworth, CA - 91311
(818) 709-1721

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Tech Info Library Article Number:182



Tech Info Library

MPW/MacApp: Versions, availability, compatibility

Revised: 10/5/92
Security: Everyone

MPW/MacApp: Versions, availability, compatibility

=====

MacApp 1.0B2 is compatible with MPW 1.0. In order to use the resource files interchangeably, though, the user must modify resource files as discussed in the paragraphs below.

Using MacApp Release 1.0B2 with MPW Release 1.0

The resource files for MapApp 1.0B2 are not compatible with the standard MPW 1.0 Rez include file Types.r. To compile MacApp, you can either use the MPW 1.0B2 Types.r file or change the MacApp resource files. To change the sample resource files, first replace all occurrences of zoomProc with zoomDocProc, then modify the 'ALRT' resources so that the stages lists have the following format:

```
{  
OK, Visible, Silent;  
OK, Visible, Silent;  
OK, Visible, Silent;  
OK, Visible, Silent  
}
```

MacApp release 1.0 resource files will have the correct format.

The released version of MPW software, which APDA is now shipping, is 1.0. The manuals included with APDA shipments are not final at this point; they are missing the graphics, an index, etc. Final manuals are scheduled to be available this spring; they will be made available through APDA at that time.

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Tech Info Library Article Number:183



Tech Info Library

DOS 3.3: BSAVEing a High Resolution screen economically in DOS

Revised: 9/21/84
Security: Everyone

DOS 3.3: BSAVEing a High Resolution screen economically in DOS

=====

Since the starting address and length of a binary file are stored as the first four bytes of the file, saving a file with a length of \$2000 actually stores \$2004 bytes and therefore requires one more sector than \$2000 bytes would. You can avoid using that extra sector when you save a High-Res screen by saving it with a length of \$1FF8 instead of \$2000. To do so, use the following syntax when you save a High-Res screen:

```
10 D$ = CHR$(4)
20 PRINT D$;"BSAVE HIRES-1, A$2000,L$1FF8"
30 PRINT D$;"BSAVE HIRES-2, A$4000,L$1FF8"
```

Apple Technical Communications

Tech Info Library Article Number:185



Tech Info Library

UniDisk 3.5: Two Drives Activate

Revised: 8/20/92
Security: Everyone

UniDisk 3.5: Two Drives Activate

=====

This article last reviewed: 23 November 1987

PROBLEM DESCRIPTION: Two drives activate when booting the Apple IIGS.

BEFORE YOU START: Reverse the positions of the drives so that the second drive is in the first position and vice versa. Proceed to "CURE" if the drives operate normally after reversing the drive positions. Otherwise troubleshoot the problem using the "Symptom Cure Chart" in "UniDisk Technical Procedures".

CURE: Change the Daisy Chain Interface Board in the drive that was originally in the "Drive One" position.

Copyright 1987 Apple Computer, Inc.

Tech Info Library Article Number:186



Tech Info Library

Lisa: Backing Up Large Files With a ProFile

Revised: 3/25/92
Security: Everyone

Lisa: Backing Up Large Files With a ProFile

=====

Article Created: 21 September 1984
Article Last Reviewed: 25 March 1992
Article Last Updated: 25 March 1992

TOPIC -----

When backing up a ProFile file to a disk I keep getting errors asking for new disks. Why is this happening?

DISCUSSION -----

When you attempt to back up a ProFile file to a disk with a pre-version 3.0 Lisa, you'll have problems if the file is larger than the disk (i.e., >400K): the Lisa continuously asks for new disks in an attempt to find a disk large enough to hold the entire file--which, of course, it never finds. We're told that the problem has been fixed in Version 3.0.

Copyright 1984, 1992 Apple Computer, Inc.

Tech Info Library Article Number:187



Tech Info Library

Lisa Peripheral Cards: Responding to error #1222

Revised: 9/21/84
Security: Everyone

Lisa Peripheral Cards: Responding to error #1222

=====

If you have a printer attached to a parallel expansion card in your Lisa and are planning to move that card to another slot (or remove it entirely), you must be sure to open the Preferences window and set the "Device Connection" for the old slot to "No Device" BEFORE you remove the card from that slot. If you move or remove the card without first reconfiguring Preferences appropriately, you'll leave behind a "phantom device connection"--that is, the Lisa will continue to think that there is a printer connected through the old slot. The next time you ask your Lisa to print a document, the Lisa will try to print the document on the "phantom" printer, fail, and end up giving you an "Error #1222" message. If you've received such an error message, your problem may be a phantom device connection. You won't be able to tell for sure, though, simply by opening the Preferences window: Preferences will only list slots that actually have cards in them. Instead, take these steps to discover whether you have a phantom device connection:

- Open any document.
- Pull down File/Print and choose "Format for Printer".
- Select settings for Print Method and Paper Size that don't match any printer you have ever had, such as Daisy Wheel with 14" x 11" paper.
- At the bottom of the dialog box, choose "Tell Me" (or, in Office System 2.0, "Ask Me")
- Click the OK button. A new dialog box will appear labeled "Intended Printer Unavailable" (or, in 2.0, "Intended Printer not in Preferences"). In the middle of the box will be a list of printers next to checkboxes. This list of printers will include any phantom device connections.

To fix the problem, re-install a parallel card in the slot with the phantom connection, open Preferences, set that slot's Device Connection to "No Device", and then remove the card.

Apple Technical Communications

Tech Info Library Article Number:188



Tech Info Library

FORTRAN: Using FORTRAN 1.0 with Pascal 1.2

Revised: 10/8/84
Security: Everyone

FORTRAN: Using FORTRAN 1.0 with Pascal 1.2

=====

Many Apple II FORTRAN programers have purchased or upgraded their operating system. They have discovered that the new system, the current version of Pascal 1.2, rejects the FORTRAN compiler because it has the wrong version number.

Change the version ID in the FORTRAN Compiler the easy way. Use this program, FORTRANFIX, to modify an Apple II FORTRAN Compiler so that it can be run under Apple II Pascal 1.2 without getting a version error.

Load this entire file into the Pascal Editor. These paragraphs will substitute for the 1K header the editor expects to see at the beginning of a text file. Make NO changes. Quit the editor by choosing "U(pdate the work file and leave". Select "R(un" from the main command line. FORTRAN users, be sure to do this using your Pascal system and not your FORTRAN system.

When the program prompts you, place your FORT2: diskette in drive 1. Upon completion, the FORTRAN compiler will be accepted by the Pascal 1.2 system.

```
program FORTRAN_FIX;
  type Byte      = 0..255;
      Seg_Info = packed record
          Mach_Type: 0..9;
          Filler: 0..1;
          Major_Revision: 0..7;
      end;

  var  Num      : integer;
      ch       : char;
      Buffer: packed array [0..511] of byte;
      F        : file;
      Trix     : record case boolean of
          true : (Temp: packed array [0..0] of Byte);
          false: (SI  : Seg_Info);
      end;

  procedure RESET_FILE (File_Name: string);
```

```
begin
  {$I-}
  reset (F, File_Name);
  {$I+}
  if (IORESULT <> 0) then begin
    Num:= IORESULT;
    writeln (chr (7));
    writeln ('I/O ERROR #', Num, ' in opening ', File_Name);
    exit (program)
  end
end; {Reset_File}

procedure READ_BLOCK (Block_Num: integer);
var Block_Xfer: integer;
begin
  {$I-}
  Block_Xfer:= BLOCKREAD (F, Buffer, 1, Block_Num);
  {$I+}
  if (IORESULT <> 0) then begin
    Num:= IORESULT;
    writeln (chr (7));
    writeln ('I/O ERROR #', Num, ' in reading from file.');
```

```
    exit (program)
  end
end; {Read_Block}

procedure WRITE_BLOCK (Block_Num: integer);
var Block_Xfer: integer;
begin
  {$I-}
  Block_Xfer:= BLOCKWRITE (F, Buffer, 1, Block_Num);
  {$I+}
  if (IORESULT <> 0) then begin
    Num:= IORESULT;
    writeln (chr (7));
    writeln ('I/O ERROR #', Num, ' in writing to file.');
```

```
    exit (program)
  end
end; {Write_Block}

begin {Main Program}
  writeln (chr(12)); {Erase screen}
  writeln ('FORTRANFIX');
  writeln;
  writeln ('Copyright 1984 Apple Computer, Inc.');
```

```
  writeln;
  writeln;
  write ('This program will modify an Apple II');
  writeln (' FORTRAN compiler so that it can');
  write ('be run under Apple II Pascal 1.2');
  writeln (' without getting a version error.');
```

```
  write ('This program expects the FORTRAN compiler');
  writeln (' to be named SYSTEM.COMPILER.');
```

```
repeat
  gotoxy (0,10);
  write (chr(11)); {Erase to end of screen}
  writeln ('Put the disk with SYSTEM.COMPILER in drive 1. ');
  write ('Press RETURN when ready, ESC to exit program. ');
  read (ch);
  if (ch = chr(27)) then begin
    write (chr(12)); {Erase screen}
    exit (program)
  end;
  readln;
  RESET_FILE ('#4:SYSTEM.COMPILER');
  READ_BLOCK (0);

  Trix.Temp [0]:= Buffer [259];
  Trix.SI.Major_Revision:= 5;
  Buffer [259]:= Trix.Temp [0];

  WRITE_BLOCK (0);
  close (F, lock);
  writeln;
  writeln;
  writeln;
  write ('MODIFICATION COMPLETE - Press RETURN to continue. ');
  readln
until false
end. {FORTRAN_Fix}
```

Apple Technical Communications

Tech Info Library Article Number:189



Tech Info Library

QuickFile: Formatting QuickFile Disks on the IIf

Revised: 9/21/84
Security: Everyone

QuickFile: Formatting QuickFile Disks on the IIf

=====

The IIf Compatibility List says to use the Utility Formatter for QuickFile disks; unfortunately, using the Utility Formatter doesn't put the QuickFile catalog file on the disk. To work around this problem, copy any QuickFile data disk (such as the Sample Files disk) and then, using QuickFile, remove all the files from the catalog.

Apple Technical Communications

Tech Info Library Article Number:190



Tech Info Library

Apple 5.25: Drive Diagnostics

Revised: 1/30/92
Security: Everyone

Apple 5.25": Drive Diagnostics

=====

This article last reviewed: 23 November 1987

PROBLEM DESCRIPTION: Diagnostic will not execute after the system is booted.

CURE: Make sure that the "disk test" is set to default to drive one and NOT to drive two.

Copyright 1987 Apple Computer, Inc.

Tech Info Library Article Number:191



Tech Info Library

QuickFile III: Merging Files

Revised: 1/20/86
Security: Everyone

QuickFile III: Merging Files

=====

Even though QuickFile doesn't offer you the option of merging files, it does give you a foot in the door by letting you print reports to diskette. To merge files in QuickFile:

First, design a "labels" format that prints each field of a record one below the other, with no blank lines between labels. Even if a field is blank, choose to print lines on continuous paper with no top or bottom margins and no headers. This will result in a file of contiguous, identically-structured records. Be sure that the files have the same number of fields in each record; control this number with the report format. The names of the fields are irrelevant. After the files you want to combine are printed to diskette, use AppleWriter, Pascal Editor, or a similar text editor to combine the files and re-save them to diskette as one file.

Apple III users with Pascal can then make an EXEC file that starts up QuickFile and creates a new file. You must create a new file, though: you can't jump right into an existing file, since the EXEC mechanism cannot recognize and record the OA-I you need in order to go into Insert Mode. Don't terminate (%%) the EXEC file until QuickFile is waiting for input of the first field of the first record of the new file. After terminating the EXEC file, quit QuickFile. Don't save this new file, though. Using your text editor again, load the EXEC file, and then load your combined file (see above) into the position just before the "%%". Again save the file. Executing this file will cause a new QuickFile file to be created, and all of your data will be "typed" in by the disk drive.

Apple Technical Communications

Tech Info Library Article Number:192



Tech Info Library

Apple Writer Iie: DOS version--Patch for the Ilc

Revised: 2/18/86
Security: Everyone

Apple Writer Iie: DOS version--Patch for the Ilc

=====

Following is the Apple Writer II Utility Program which updates, for running on an Apple Ilc, the DOS 3.3 version of Apple Writer for the Iie only.

To use this patch on your system, start by capturing the BASIC code listed below, using MacTerminal and Access II (DOS 3.3).

Remember to capture ONLY the BASIC code portion of this message. As an alternative, you could capture the entire message and then edit out the unwanted portions with a text editor. Save the file as a standard DOS 3.3 text file with the name PATCH.TEXT. Type the following from the keyboard:

```
EXEC PATCH.TEXT
```

You will see several "]"s scroll by at this point. When this stops and the cursor returns, type:

```
SAVE PATCH APPLEWRITER IIE
```

```
RUN PATCH APPLEWRITER IIE
```

Insert your Apple Writer II master disk and press the Return key. You only need to update your Apple Writer disk once.

After updating your Apple Writer Iie disk, mouse characters will appear on the screen, but only when capital letters are shown in inverse--for example, a capitalized file name appearing on the data line, or when the blinking cursor moves over a capital letter.

NOTE: The utility program does not convert Apple Writer to run under ProDOS.

```
100 TEXT : SPEED= 255
105 ONERR GOTO 500
110 D$ = CHR$(4): REMCTRL-D
115 BEL$ = CHR$(7): REMBELL
120 CR$ = CHR$(13): REMRETURN
125 ESC$ = CHR$(27): REMESCAPE
```

```
130  NORMAL : HOME
135  PRINT "APPLEWRITER II UTILITY PROGRAM"
140  VTAB 4: PRINT "USE THIS PROGRAM TO UPDATE YOUR"
145  PRINT "DOS 3.3 APPLEWRITER II FOR USE"
150  PRINT "ON AN APPLE IIC COMPUTER."
155  VTAB 10: PRINT "INSERT YOUR APPLEWRITER II MASTER DISK"
160  PRINT "INTO THE DISK DRIVE AND PRESS 'RETURN' ";
165  GET A$: IF (A$ < > CR$) AND (A$ < > ESC$) GOTO 165
170  IF (A$ = ESC$) THEN HOME : END
175  PRINT
200  HOME : VTAB 12: PRINT "CAREFULLY UPDATING YOUR DISK....."
205  PRINT D$;"UNLOCK OBJ.APWRTIIE"
210  PRINT D$;"BLOAD OBJ.APWRTIIE"
215  GOSUB 300
220  HOME : VTAB 12: PRINT "CAREFULLY UPDATING YOUR DISK....."
225  PRINT D$;"BSAVE OBJ.APWRTIIE, A$1900, L$2F58"
230  PRINT D$;"LOCK OBJ.APWRTIIE"
235  PRINT D$;"UNLOCK OBJ.APWRTIIF"
240  PRINT D$;"BLOAD OBJ.APWRTIIF"
245  GOSUB 300
250  PRINT D$;"BSAVE OBJ.APWRTIIF, A$1900, L$30D1"
255  PRINT D$;"LOCK OBJ.APWRTIIF"
260  HOME : VTAB 12: PRINT "YOUR DISK IS NOW UPDATED."
265  NEW
300  HTAB 11
305  FOR I = 1 TO 10
310  READ AD$,VA$
315  A$ = AD$: GOSUB 400:DA = C
320  A$ = VA$: GOSUB 400:DV = C
325  PRINT ".";
330  POKE DA,DV
335  NEXT I: PRINT
340  RETURN
400  C = 0
405  FOR X = LEN (A$) TO 1 STEP - 1
410  B$ = MID$ (A$,X,1)
415  IF B$ = "A" THEN K = 10: GOTO 450
420  IF B$ = "B" THEN K = 11: GOTO 450
425  IF B$ = "C" THEN K = 12: GOTO 450
430  IF B$ = "D" THEN K = 13: GOTO 450
435  IF B$ = "E" THEN K = 14: GOTO 450
440  IF B$ = "F" THEN K = 15: GOTO 450
445  K = VAL (B$)
450  C = C + 16 ^ ( LEN (A$) - X) * K
455  NEXT X
460  RETURN
500  HOME : VTAB 11: PRINT BEL$
505  IF ( PEEK (222) < > 4) GOTO 515
510  PRINT "YOUR DISK MUST NOT": PRINT "BE WRITE PROTECTED!":
    GOTO 520
515  PRINT "I/O ERROR!": RESTORE
520  FOR D = 0 TO 1000: NEXT : REMDELAY
520  GOTO 130
```

```
600  REMDATA IS IN FORMAT OF HEX ADDRESS FOLLOWED
601  REMBY THE NEW VALUE
605  DATA2EC0,F2,2ED4,FA,2EB7,F6,2E98,EC,2E94,F5
610  DATA417F,ED,4185,EC,418B,F0,4191,F4,4197,E6
615  DATA3017,F2,302B,FA,300E,F6,2FEF,EC,2FEB,F5
620  DATA42F8,ED,42FE,EC,4304,F0,430A,F4,4310,E6
```

Apple Technical Communications

Tech Info Library Article Number:193



Revised: 4/25/94
Security: Everyone

=====

TOPIC -----

DISCUSSION -----

Interface:

		1	2	3	4	5	6	7			1	2	3	4	5	6	7
	ON				X		X	X		ON	X				X		
SW1										SW2							
	OFF	X	X	X		X				OFF		X	X	X		X	X
		1	2	3	4	5	6	7			1	2	3	4	5	6	7

Cables:

Printer Settings*:

```

      8 7 6 5 4 3 2 1
SW 1:      X X
      X X      X X X X
                      OPEN

```

```
SW 2:      4 3 2 1
           X X
           X X
           OPEN
```

Apple III and III+:

Interface:

Use .Printer Driver and set first byte in Device Configuration Block to 0E and use printer switch settings A.(9600 Baud) Or leave the settings in the Device Configuration Block at the Default values and use printer settings B. (1200 Baud)

Cables:

Modem Eliminator 590-0029
Straight Through Cable 590-0037

Printer Settings*:

A & B SETTING

```
      8 7 6 5 4 3 2 1
SW 1:      X X
      X X      X X X X
           OPEN
```

A SETTING

```
SW 2:      4 3 2 1
           X X
           X X
           OPEN
```

B SETTING:

```
SW 2:      4 3 2 1
           X
           X X X
           OPEN
```

Macintosh:

Cables:

Accessory Kit Cable 590-0169

Printer Settings*:

```
      8 7 6 5 4 3 2 1
SW 1:      X
      X X      X X X X X
           OPEN
```

```
SW 2:      4 3 2 1
           X X
```

X X
OPEN

To Build your own cable:

Mac	1	3	5	7	9
Printer	1	7	3	20	2

Lisa:

Cables:

Modem Eliminator 590-0029
Straight Through Cable 590-0037

Printer Settings*:

	8	7	6	5	4	3	2	1
SW 1:			X	X				
	X	X			X	X	X	X
								OPEN
SW 2:				4	3	2	1	
						X	X	
				X	X			
								OPEN

Make sure the preferences are set. Power off the Lisa so they are saved.

* The diagrams of these switches are presented as seen from the front of the Imagewriter I printer. The switches are toggle switches; X marks the toggle.

Article Change History:

25 April 1994 - Corrected Macintosh settings.

Support Information Services

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Tech Info Library Article Number:194



Tech Info Library

Macintosh and Macintosh SE Video Alignment Aid

Revised: 5/5/87
Security: Everyone

Macintosh and Macintosh SE Video Alignment Aid

=====

Using MacDraw and a LaserWriter, one can make an easy to use alignment aid for doing Macintosh video alignments. Make a rectangle using MacDraw that is 7 inches by 4.7 inches. Print this on a LaserWriter using overhead transparency material. Trim the excess material so that the template fits on the Macintosh screen. It will usually stick to the screen because of static electricity, but it can also be secured by using double-sided tape. Just be sure to use overhead transparencies that are made for use in a laser printer.

Tech Info Library Article Number:195



Tech Info Library

WPL: How to make AUTOLETTER use surnames

Revised: 4/23/86
Security: Everyone

WPL: How to make AUTOLETTER use surnames

=====

Make these modifications to the WPL program Autoletter on page 96 of the AppleWriter III manual as follows:

```
BEFORE
-----
L .D1/ADDRS!<(X)>!<!N
PGO FOUND
PGO QUIT
FOUND PLS .D1/ADDRS!<(X)>! !N=$A
```

```
AFTER
-----
L .D1/ADDRS!<(X)>!@!N
PGO FOUND
PGO QUIT
FOUND PLS .D1/ADDRS!@(X)@!<!N=$A
```

Then modify your address file as below:

BEFORE	AFTER
-----	-----
<1>John Smith	<1>John Smith
1234 Elm Street	1234 Elm Street
Anytown, USA 12345	Anytown, USA 12345
<2>Jane Doe	@1@Mr. Smith<2>Jane Doe
5678 Main Ave.	5678 Main Ave.
Nowhere, Indiana 98765	Nowhere, Indiana 98765
<	@2@Ms Doe<

There are other methods of achieving the desired result, but this one is easy and it affords the flexibility of using a different "dear" name than the first line of the address (i.e., Company Name on the first line of the address).

This method also works quite well with Apple Writer II & IIe. For the file name path .D1/ADDRS, substitute ADDRS,D1 for DOS or simply ADDRS for ProDOS.

..TIL00196-WPL-How_to_make_AUTOLETTER_use_surnames_(TA35305).pdf

Apple Technical Communications

Tech Info Library Article Number:196



Tech Info Library

Applesoft: Simple Ways To Protect Programs

Revised: 10/4/89
Security: Everyone

Applesoft: Simple Ways To Protect Programs

=====

This article last reviewed: 26 September 1989

Some programmers prefer to conceal their code from inquisitive users. Keep in mind that if users are determined to LIST a program, they will. Be that as it may, here are a few obstacles to deter less tenacious users.

To prevent a user from LOADING your program in the first place, type control characters in the name of the program when you save it. These characters cannot be seen in a CATALOG. However, users may know of a program in the DOS manual that they can use to find control characters in your program's name and modify it.

By the techniques below, you will discourage most attempts by preventing Applesoft from executing a LIST command properly.

Disable the LIST command by placing POKE 214,128 in the first statement line of the the startup program HELLO. Once this command is executed, any Applesoft command is interpreted as RUN. When the user types LIST, the program RUNs. If NEW is entered, the program RUNs. Whenever the value of memory location 214 is greater than 128, your program will do nothing but execute.

NOTE: On some systems, a CTRL-RESET keystroke may disable the POKE 214,128 that is essential to this technique. To disable the RESET key, use POKE 1010,102: POKE 1011,213: CALL -1169 in your startup program, preferably on the second statement line.

With this arrangement, the program re-runs itself every time the user presses a CTRL-RESET.

CAUTION: These POKES disable DOS; therefore, after the startup program runs, your program is unable to execute DOS commands such as "LOAD", "SAVE", and so on, unless your program enables the RESET key with the statements POKE 1010,191: POKE 1011,157: CALL -1169.

While this technique prevents a LOAD and LIST on a single drive system, someone

with a multi-drive system could boot DOS and then LOAD and LIST the program from a second drive. There is still another protection the program can contain. You can program a DOS command to execute when your program is LISTed without affecting a RUN of the program. Within the listing, you program a DOS command to CATALOG the disk, reboot, or lock or delete files, just as though the command had been typed at the keyboard. Following the execution of the DOS command, the listing will disappear.

Here is a sample of this technique. Be sure to save any program you modify before using this method.

1. Load a Basic program into memory.
2. Add a remark as the new first line of the program. After the word REM, type 3 spaces and a DOS command, such as CATALOG, PR#6, DELETE filename, and so on.

Example: 10 REM CATALOG (three spaces between REM and CATALOG)

3. From the keyboard, enter: POKE 2055,13 : POKE 2056,4
4. Save this revised version of your program with a unique name.
5. Now type LIST.

The Apple will begin to list your program, but will stop the listing to execute the DOS command and CATALOG the disk. No further program statements will be seen. Experiment with various DOS commands to get the desired effect.

NOTE: Anyone distributing software for sale running on an Apple computer should become licensed through Apple Software Licensing. Search on Software Licensing for address information.

Boston Tech Support Newsletter, July '83

Tech Info Library Article Number:197



Tech Info Library

LaserWriter: Faulty Registration

Revised: 1/30/92
Security: Everyone

LaserWriter: Faulty Registration

=====

This article last reviewed: 23 November 1987

Problem: The LaserWriter shows a registration problem.

Cure: After trying the suggestions in the LaserWriter troubleshooting table for faulty registration (Table Q14), try the motor driver/DC power supply assembly.

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Tech Info Library Article Number:198



Tech Info Library

ColorMonitor IIE and ColorMonitor IIC: Emission specifications

Revised: 5/25/89
Security: Everyone

ColorMonitor IIE and ColorMonitor IIC: Emission specifications

Here are the RFI/EMI specifications of the ColorMonitor IIE and ColorMonitor IIC. Also included, for convenience, are the limit amplitudes less 6 db.

Tabulated limits are Apple Computer EMI limits; FCC and VDE limits are 6 db Higher. However, the in-effect version of FCC part 15 or VDE 0871 are the binding documents.

RADIATED

	Frequency Range (MHz)	Field (V/m)	Strengths (db V)	Distance (meters)
1. FCC PART 15				
	30-88	50	34	3
	88-216	75	38	3
	216-1,000	100	40	3
2. VDE 0871				
	0.01-30	20	26	30
	30-470	20	26	10
	470-1,000	80	38	10

CONDUCTED

	Frequency Range (MHz)	Voltage (V/m)	(db V)	LISN Impedance
1. FCC PART 15				
	0.45-60	125	42	50
2. VDE 0871/6.78				
	0.01-0.15	X		150
	0.15-0.50	200	46	
	0.50-60	100	40	

X straight line from 10 kHz (3.5mV, 71 dbV) to 150 kHz (300V, 50 dbV)

Apple Technical Communications

Tech Info Library Article Number:199



Tech Info Library

AppleWriter WPL: Multi-Copy Printout Program

Revised: 3/2/88
Security: Everyone

AppleWriter WPL: Multi-Copy Printout Program

=====

This article last reviewed: 21 September 1984

```
START      NY
           PND
           PPR
           PPR
           PPR
           MULTI-COPY  PRINTOUT  PROGRAM
           PPR
           PPR      When you use continuous pin-feed paper, your
           PPR      document must end with ".ff". Be certain
           PPR      the ".ff" is not followed by a RETURN.
           PPR
           PPR
           PPR      When you use single sheet paper, select the
           PPR      Single Page option (SP1) in the  Print/Program
           PPR      Commands menu.
           PPR
           PPR
CHECK      PIN      Are you certain this has been done? =$A
           PCS/$A/y/
           PGO MORE
           PCS/$A/Y/
           PGO MORE
           PCS/$A/n/
           PQT
           PCS/$A/N/
           PQT
           PGO CHECK
MORE       PPR
           PPR      Enter the device or volume location of your
           PPR      document and the file name. (ie ".D2/CONTRACT",
           PIN      or "/AWFILES/CONTRACT"): =$B
           L $B
FOUND     PPR
```



```

        PIN      How many copies would you like? =$C
        PSX $C
        PAS (X) =$C
        PAS 0 =$A
        PCS/$C/$A/
        PGO END
PRINT   PGO PRINT
        PPR
        PNP
        PSX -1
        PGO PRINT
END     PPR
        PPR
        PPR
        PPR
        PIN      Would you like another multiple printout? =$A
        PCS/$A/Y/
        PGO START
        PCS/$A/Y/
        PGO START
        PCS/$A/n/
        PQT
        PCS/$A/N/
        PQT
        PGO END
```

Tech Info Library Article Number:200



Tech Info Library

Apple Speller: Installing under Catalyst 2.0

Revised: 3/2/88
Security: Everyone

Apple Speller: Installing under Catalyst 2.0

=====

This article last reviewed: 21 September 1984

To access either Apple Writer III (version 2.0) or Apple Speller III on a ProFile using Catalyst 2.0, you must obtain a special data disk from Quark (the distributors of Catalyst).

Tech Info Library Article Number:201



Tech Info Library

AppleWorks 1.3 & 2.0: Won't Correctly Skip Pages When Printing

Revised: 12/17/87
Security: Everyone

AppleWorks 1.3 & 2.0: Won't Correctly Skip Pages When Printing

=====

This article last reviewed: 3 December 1987

In AppleWorks' word processor, there are occasional printing problems when there is a page break in the middle of an indented paragraph. If you use the options menu (Open-Apple-O) to specify a paragraph indent of more than nine characters, AppleWorks may fail to skip to a new page when it should.

Two workarounds:

- For paragraph indents greater than nine characters, insert nine spaces instead of using the Indent command in the Options menu.
- Insert a carriage return on the line before the desired page break, creating two paragraphs, one before and one after the page break. (Indent the first line of the new second paragraph so it will line up with the rest of the text.

Tech Info Library Article Number:202



Tech Info Library

Apple Iic, Iic Plus And Iie: Interfacing To An RGB Monitor

Revised: 5/25/89
Security: Everyone

Apple Iic, Iic Plus And Iie: Interfacing To An RGB Monitor

=====

This article last reviewed: 8 November 1988

To interface an Apple Iie, Apple Iic, or Apple Iic Plus to a digital RGB color monitor, you must get an interface card, as well as a device called a Peacock, model CM2C. This device is available from Telex Inc.

For more information, search under: "Telex Inc."

To interface an Apple Iie to an analog RGB color monitor, you'll need something like the RamWorks memory card and the ColorLink RGB card, both available from Applied Engineering.

For more information, search on "Applied Engineering".

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Tech Info Library Article Number:204



Tech Info Library

Pascal III: RPS File Space Allocation

Revised: 3/2/88
Security: Everyone

Pascal III: RPS File Space Allocation

=====

This article last reviewed: 21 September 1984

The Apple III Pascal RPS unit usually creates two SOS files for each RPS file; moreover, your SOS file with the .I (index) may be listed as having too many blocks compared to the disk space available. This file functions well, except that you're unable to copy this file to another disk regardless of the amount of room on the destination disk. Attempts to copy this file will give you a "NO ROOM ON VOLUME" error.

RPS uses "sparse files", files that are logically larger than the actual number of blocks required to store the information. Since early versions of SOS (pre SOS 1.3) did not know about sparse files, they will copy the files without errors.

Another example of a sparse file is a Business BASIC random access file having a record length of 1024, but only using record 1 and record 1000. Logically, this file requires 2002 blocks; actually, only 6 blocks are used. Again, an early version of SOS will copy the file.

Tech Info Library Article Number:205



Tech Info Library

Apple IIC: Pinouts for External Disk Port

Revised: 10/23/84
Security: Everyone

Apple IIC: Pinouts for External Disk Port

=====

The Apple IIC external disk drive port is a DB-19 connector. The signals available at the port are as follows:

	10 - WRPROT
1 - GND	11 - SEEKPH0
2 - GND	12 - SEEKPH1
3 - GND	13 - SEEKPH2
4 - GND	14 - SEEKPH3
5 - +12V	15 - /WRREQ
6 - + 5V	16 - NC
7 - +12V	17 - /DR2
8 - +12V	18 - RDDATA
9 - /EXTINT	19 - WRDATA

CAUTION: Connecting anything other than an Apple Disk IIC to this connector may invalidate your warranty

Apple Technical Communications

Tech Info Library Article Number:206



Tech Info Library

LisaTerminal: Manual Errata, Versions 1.0 - 2.0

Revised: 10/23/84
Security: Everyone

LisaTerminal: Manual Errata, Versions 1.0 - 2.0

=====

Page 81 in Appendix 4: VT52 Compatible Mode, (Table)

READS:

Direct cursor address ESC PI Pc*

IT SHOULD READ:

Direct cursor address ESC Ylc* [NOTE: "ell" not "one"]

Apple Technical Communications

Tech Info Library Article Number:207



Tech Info Library

Softcard III (CP/M): Terminal Emulator Program

Revised: 10/23/84
Security: Everyone

Softcard III (CP/M): Terminal Emulator Program

=====

A terminal emulator program for Apple III CP/M users called "The Micro-link II" is available from:

Digital Marketing
2363 Boulevard Circle
Walnut Creek, Ca. 94505
(415) 938-2880

This program allows the Apple III CP/M user to call THE SOURCE, CompuServe, along with other Electronic mail systems; additionally, it's capable of a transporting CP/M files from one micro to another. Contact Digital Marketing for the specifics!

Apple Technical Communications

Tech Info Library Article Number:208



Tech Info Library

LaserWriter: RS-232 Direct Cable Pinouts To The Macintosh Plus

Revised: 7/16/92
Security: Everyone

LaserWriter: RS-232 Direct Cable Pinouts To The Macintosh Plus

=====

Article Created: 19 October 1988
Article Last Reviewed: 1 July 1992
Article Last Updated:

Macintosh			Laserwriter			
Signal Mini-Circular 8			(DB-25)	Signal		
Name	pin		pin	Name	Comments	
No connection			1	GND	Chassis Ground	
GND	4	<->	7	GND	Signal Ground	
RxD+	8	<->	7	GND	Signal Ground	
TxD-	3	<->	3	Rx	Macintosh data output: Transmit data, negative going Laserwriter data input: Receive data	
Hsk Out	1	<->	5,6,8		Power detection; ready signal	
RxD-	5	<->	2	Tx	Laserwriter signal output: Transmit data Macintosh signal input: Receive data, negative going	

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Tech Info Library Article Number:209



Tech Info Library

Business BASIC III: Routine to read a SOS directory

Revised: 10/23/84
Security: Everyone

Business BASIC III: Routine to read a SOS directory

=====

```
10 TEXT:NORMAL:HOME
15 Directory$= PREFIX$
20 OPEN#1 AS INPUT,Directory$
25 DIM Title$(54):REM May require increase for sub-directories.
30 ON EOF#1 OFF EOF#1:CLOSE#1:GOTO 45
35 Count=0:REM Initialize variable
40 INPUT#1;Title$(Count):Count=Count+1:GOTO 40
45 FOR Line=0 TO Count:PRINT Title$(Line):NEXT
```

Apple Technical Communications

Tech Info Library Article Number:210



Tech Info Library

LaserWriter: Upper Fuser Roller Melting

Revised: 4/7/93
Security: Everyone

LaserWriter: Upper Fuser Roller Melting

=====

Problem: Due to excessive heat from the fuser heater bulb, the upper fuser roller is damaged or partially melted.

Cause #1: The problem can be caused by a defective thermistor.

Cause #2: There could be a defective fuser thermal protector, or a dirty thermistor.

Cure: First, replace the damaged upper and lower fuser rollers, along with the cleaner felt, then go on to the steps listed below. Be sure to pay close attention to the heat of the fuser assembly to avoid damage to the new parts.

#1: Replace or clean the thermistor.

#2: Replace the fuser thermal protector.

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Tech Info Library Article Number:211



Tech Info Library

Changing I/O Vectors in DOS and ProDOS

Revised: 10/23/84
Security: Everyone

Changing I/O Vectors in DOS and ProDOS

=====

To change your I/O hooks when programming under DOS, install your I/O routine addresses in the character-out vector (\$36-\$37) and/or key-in vector (\$38-\$39); then, notify DOS (JSR \$3EA) to take your addresses and swap its intercept routine addresses in.

When programming under ProDOS, leave the ProDOS BASIC Command Interpreter's intercept addresses installed in \$36-\$39; install your I/O addresses in the global page at \$BE30-\$BE33. \$BE30-\$BE31 should contain the output address (normally \$FDF0: the monitor COUT1 routine), whereas \$BE32-\$BE33 should contain the input address (normally \$FD1B: the monitor KEYIN routine).

Keep those vectors in a global page so the special routine (JSR \$3EA) for moving the vectors won't be needed; just install your addresses at their destination yourself.

Apple Technical Communications

Tech Info Library Article Number:212



Tech Info Library

Apple II Peripheral Cards: Sending TABs to your Printer

Revised: 11/12/85
Security: Everyone

Apple II Peripheral Cards: Sending TABs to your Printer

=====

Problems you may have sending TAB commands to your printer may stem from the interface cards "trapping" the <CTRL-I> before it goes to the printer.

To send a TAB to a DMP from an Apple IIe using a Parallel Interface Card:

Change the I/F card command character to something other than <CTRL-I>.

```
10 I$ = CHR$(9): Q$ = CHR$(17)
15 PRINT I$; Q$: REM command char for card is now CTRL-Q
20 PRINT I$: REM this sends the TAB
```

Reference: Parallel Interface Card Manual, p.12

To send a TAB to an Imagewriter from an Apple IIc:

First send <CTRL-I>Z to "zap" future commands. The I/F card will ignore following <CTRL-I>'s.

```
10 I$ = CHR$(9)
15 PRINT I$;"Z": REM zap
20 PRINT I$: REM this sends the TAB
```

Reference: Apple IIc Reference Manual, section 7.1

To send a TAB to an Imagewriter from an Apple IIe using a Super Serial Card:

Send the TAB character twice or "zap" as with the Apple IIc.

```
10 I$ = CHR$(9)
15 PRINT I$;I$: REM this sends the TAB
```

Reference: Super Serial Card Manual, page 12

BASIC's TAB command doesn't work properly with either the (old) High Speed Serial Interface or the Apple Silentype. Integer BASIC it is limited to 40 columns, while a TAB(20) in Applesoft will sometimes output 20 spaces

instead of going to column 20. An example that gets around this is:

```
10 PRINT "HI";:POKE 36,55: PRINT "THERE"
```

POKE 36,55 will put the "THERE" in the 56th column (remember, Apple counts columns from 0 to 79) while still printing "HI" in column 0.

Following is a sample program that dealers can show to customers:

```
10 PRINT CHR$(4);"PR#1" :REM TURN THE PRINTER ON WITHOUT DISCONNECTING PRODOS
20 PRINT CHR$(9);CHR$(1) :REM SWITCH THE CONTROL CODE FROM CTL-I TO CTL-A
30 PRINT CHR$(27);"(010,020,030.":REM SET UP THE TAB LOCATIONS
40 I$=CHR$(9)
50 PRINT I$;"TEN";I$;"TWENTY";I$;"THIRTY":REM SEND THE LINE WITH TAB'S
60 PRINT CHR$(4);"PR#0":REM TURN OFF THE PRINTER
```

Apple Technical Communications

Tech Info Library Article Number:213



Tech Info Library

Apple Iic: Battery packs

Revised: 3/4/85
Security: Everyone

Apple Iic: Battery packs

=====

Two battery packs available for the Apple Iic are listed below. Both battery packs support many hours of continuous use and will also act automatically as an auxiliary power source in the event of a power failure.

The Cari Portable Work Station by Discwasher measures 19 x 12 x 8 inches, is made out of cordura nylon and provides up to 6 hours of continuous power. It's big enough to carry an Apple Iic with the Flat Panel Display attached, as well as the Apple Iic Power Supply, a mouse, manuals, software and additional papers. The suggested retail price is \$249.95. For further information, contact:

Maurice Evans
Discwasher Products Inc.
1407 North Providence Road
P.O. box 6021
Columbia, MD 65205
(314) 449-0941

The Prairie Power battery case is 17 x 13.5 x 5.25 inches and is also made of cordura nylon. The removable battery pack and built-in charger provide up to 8 hours of power without recharging. Separate padded compartments are provided for the battery pack, software and the Flat Panel Display. The suggested retail price is \$269.95. For further information, contact:

Maureen Olson
Prairie Power Systems, Inc.
(612) 475-1793

Both products have a briefcase-type handle as well as a removable shoulder strap. The combined weight of a battery pack, Apple Iic and Flat Panel display is about 20 lbs.

Apple Technical Communications

Tech Info Library Article Number:214



Tech Info Library

Apple III: 12-volt 128K Internal Diagnostic

Revised: 11/8/88
Security: Everyone

Apple III: 12-volt 128K Internal Diagnostic

=====

This article last reviewed: 7 November 1988

There is a RAM diagnostic built into the monitor ROMs of all Apple IIIs that's useful for testing the memory of a 12-volt 128K Apple III (typically, Apple IIIs with serial numbers less than 100,000).

NOTE: Before running this test, remove all peripheral cards from the Apple III, especially any ProFile interface cards and Grappler printer cards.

To run the diagnostic:

1. Hold down the CTRL and OA keys, and then press and release RESET key. The MONITOR prompt, a right arrow and a flashing underline, should then appear in the upper left corner of the screen.
2. Type F6E6G and then press the RETURN key.
3. The test should now begin to cycle: in the upper left hand corner of the screen you'll see, about every 20 seconds, a pattern of dots like this:

```
DIAGNOSTIC RAM
. . . . .
. . . . .
. . . . .
. . . . .
. . . . .
. . . . .
. . . . .
. . . . .
```

If the test runs for 20 minutes and displays only dots, the RAM isn't defective. If characters or inverse blocks show up in the matrix, however, the diagnostic has found defective memory chips.

The position of the non-dot character in the display (usually an inverse "1")

above corresponds with the chart below, which lists the chip location on the 12-volt memory board.

B9	B8	B7	B6	B5	B4	B3	B2
B17	B16	B15	B14	B13	B12	B11	B10
B9	B8	B7	B6	B5	B4	B3	B2
B17	B16	B15	B14	B13	B12	B11	B10
C17	C16	C15	C14	C13	C12	C11	C10
D9	D8	D7	D6	D5	D4	D3	D2
D17	D16	D15	D14	D13	D12	D11	D10
C9	C8	C7	C6	C5	C4	C3	C2

Replace the bad memory chip(s) and run the test again. If the system once again fails the memory board test, replace the memory board itself. If that doesn't help, replace the main logic board. (Error messages displayed below the DIAGNOSTIC RAM grid, by the way--such as "ACIA", "ROM", or "VIA"--indicate a problem with the logic board.)

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Tech Info Library Article Number:215



Tech Info Library

Apple Access II version 1.2: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple Access II version 1.2: Specifications (Discontinued)

=====

Order #: A2D4503

--Technical Specifications

Connections:

1. RS-232 port with modem
2. direct connection with another computer

Baud rates: up to 9600

Terminal Emulations:

1. TTY
2. ANSI (VT100)
3. VT52

Protocols: Christensen

--System Configuration

1. Apple IIc, Apple II GS or Apple IIe with Super Serial Card in Slot 2 and one disk drive
2. Modem
3. Another computer or terminal
4. Options: 80-column Text Card, Extended Memory, Printer, ProFile

NOTE: Apple Access II will NOT work with the following equipment:

1. Apple II or II Plus
2. Apple III in Apple II emulation mode.
3. A modem for the Apple IIe which has its own interface card.

--Features

- Sends or receives any type of ProDOS file
- Incorporates AppleWorks user interface
- Automatic communications and full disk support, including file transfer
- Supports all features of the Apple Modems including automatic dialing

..TIL00216-Apple_Access_II_version_1-2-Specifications_Discontinued.pdf

--Supports automatic log on for remote computers and services including:

1. Dow Jones
2. CompuServe
3. The Source

--Does NOT support split speed transmissions (sending at one rate and receiving at another)

Apple Technical Communications

Tech Info Library Article Number:216



Tech Info Library

FORTRAN: Understanding Code Write Error

Revised: 10/23/84
Security: Everyone

FORTRAN: Understanding "Code Write Error"

=====

Insufficient room on a diskette to save a file is the most common cause of a "Code Write Error." A file name having more than ten characters (not including the prefix or suffix) also causes this error; this error is easy to detect, though, since the error message is displayed before the drive is accessed. A third cause is the disk directory having more than 51 file names.

When A)ssembling, C)ompiling or L)inking, the largest consecutive disk blocks are allocated for the code file. If the disk is new or recently Krunched, the system creates a temporary Linker.Info file while running; upon attempts to open the Linker.Info file, you'll get a code write error.

To avoid this error, enter the F)iler to check your disk space. If your disk shows plenty of space, M)ake two files: the first file you create should be 8 blocks in size, while the second should be 1 block in size. Next, delete the first file. These steps segment the disk file space leaving 8 blocks open for the Linker.Info file.

If an error occurs when using the "include" file option, M)ake a 4 block file named SYSTEM.SWAPDISK on the volume where the compiler resides, allowing the compiler to swap out some information in order to read in the new directory for the include.

Apple Technical Communications

Tech Info Library Article Number:217



Tech Info Library

FORTRAN: Sending Compiler Listings to the Console

Revised: 10/23/84
Security: Everyone

FORTRAN: Sending Compiler Listings to the Console

=====

While an asterisk (*) specifies the console under Apple FORTRAN, FORTRAN I/O operations take place within the Pascal operating system, where the asterisk has an entirely different use.

DO NOT TYPE AN ASTERISK (*) in response to the "LISTING?" prompt when using the FORTRAN compiler. Otherwise, the system will appear to compile, then damage your FORTRAN 2 diskette, severely crippling the operating system.

Type "CONSOLE" to display the listing on your video monitor.

Apple Technical Communications

Tech Info Library Article Number:219



Tech Info Library

QuickFile: Left-Justifying Labels

Revised: 10/23/84
Security: Everyone

QuickFile: Left-Justifying Labels

=====

When printing mailing labels from QuickFile, it's sometimes desirable to place an optional title (e.g., Mr., Mrs., Mr. & Mrs.) in front of the name. The following example:

```
Title  <First Name  <Last Name  
Street Address  
City/State/Zip
```

will indent the first line of every mailing label that doesn't contain a title 3 spaces. The following example solves the indenting problem.

```
<Title  <First Name  <Last Name  
<Street Address  
<City/State/Zip
```

The trick is to get the left-most field left-justified. Since QuickFile won't let you OPEN-APPLE-J the left-most field, move the left-most field to where it is not left-most, OPEN-APPLE-J it, then move the line back to its left-most position. This causes all occurrences of this line to be preceded by 3 spaces. OPEN-APPLE-J the rest of the lines you wish to straighten out.

Apple Technical Communications

Tech Info Library Article Number:222



Tech Info Library

International Versions of Lisa Software

Revised: 7/30/87
Security: Everyone

International Versions of Lisa Software

=====

International versions (beginning with release 2.0) of the Lisa Office System differed from the U.S. versions only in the language used in the alert boxes, menus, etc.

One version of the Workshop was available worldwide. For example, France did not have a "French" version of the Workshop -- available to France was the same English version distributed to all countries.

Tech Info Library Article Number:223



Tech Info Library

Apple IIe Hardware: Dvorak Keyboard Layout

Revised: 5/25/89
Security: Everyone

Apple IIe Hardware: Dvorak Keyboard Layout

=====

This article last reviewed: 8 November 1988

The Dvorak keyboard layout, an option available on the Apple IIe and Apple III, is popular with many typists.

Apple IIe:

The Dvorak keyboard layout is available on the revision "B" Apple IIe main logic boards. If the user prefers the Dvorak layout over the standard QWERTY, a minor modification can be made to the logic board.

The first--also the most versatile--method is to solder the main logic board "X3" jumper located at board coordinate B14, tying the character generator select line to the annunciator #2 address. The system follows the Dvorak layout until the QWERTY layout is invoked with POKE 49244,0 (annunciator #2 off). To revert back to the Dvorak layout, POKE 49245,0 (annunciator #2 on) or press CTRL-RESET. At power-on, the system defaults to the Dvorak layout.

Alternatively, jumper the "J19" solder pads together; this method, however, prevents you from toggling to the QWERTY layout. If, instead, you solder a two-pin Molex connector (available from electronics parts stores) at J19, a shorting block, similar to the one used on the Apple IIe Extended 80-Column Text Card, could be used to switch from the Dvorak to the QWERTY layout.

After making the modification of your choice, remove the video ROM (location F4) from the main logic board. Bend pin #18, then re-insert the ROM, with pin #18 sticking out to the side instead of into the socket..

All of these modifications may void your warranty if a problem occurs as a result of improper modification--that is, poor solder job, pins bent on the wrong chip, chip plugged in backward, etc.--so be very careful.

Apple III:

Because the Apple III is a software driven machine, the Dvorak keyboard layout is enabled by "programming" the keyboard; this is done with the System Configuration Program on the System Utilities diskette. The Dvorak layout data is on the System Utilities Data diskette included in the System Utilities package.

To enable the Dvorak layout for a particular diskette:

1. Start up the System Utilities: select "System Configuration Program" from the main menu.
2. Select "Read A Driver" from the next menu.
3. Remove the Utilities diskette: insert the diskette you wish to modify into drive 1.
4. Press RETURN to read the SOS.DRIVER file.
5. Place the Utilities diskette back into drive 1.
6. Select ESCAPE to go back to the menu: choose "Change System Parameters".
7. Remove the Utilities diskette: insert the Utilities Data diskette in drive 1.
8. Select "Keyboard Layout": Type /UTILITIES.DATA/KEYBOARD.LAYOUT/DVORAK; press RETURN.
9. Place utilities diskette back into drive 1: press ESCAPE twice to return to the menu.
10. Select "Generate New System".
11. When system validation is complete, put the diskette you wish to modify into drive 1. Type .D1/SOS.DRIVER, then press RETURN. If you get a verification question here, answer "yes". You must remove the write-protect tab at this time, and you must unlock the SOS.DRIVER file (a function of the FILE HANDLING COMMANDS submenu).

Apple IIe and Apple III:

The final step is to rearrange the keycaps. At present, Apple does not offer the Dvorak keycap set. Because the keycap contours conform to the QWERTY layout, you will find your keyboard somewhat "lumpy".

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Tech Info Library Article Number:224



Tech Info Library

Pascal III: SOS Error Codes

Revised: 10/23/84
Security: Everyone

Pascal III: SOS Error Codes

=====

Following is a list of errors codes available to the Pascal programmer from the Apple III's Sophisticated Operating System (SOS).

-----> Pascal Errors

0	No error; normal I/O completion
1	Out of filename storage space
2	Bad unit number
3	Illegal operation (e.g. read from PRINTER:)
4	Illegal directory spec
5	Lost unit; no longer on line
6	Lost file; file no longer in directory
7	Illegal pathname
8	No room; insufficient space on diskette
9	No unit; unit not on line
10	No such file in specified directory
11	Duplicate pathname
12	Attempt to open an already open file
13	Attempt to access a closed file
14	Bad input format; error in reading number
15	Wrong disk format
16	Write protect error; diskette is protected

-----> SOS Device Call Errors

32	(SOS) Invalid request code
33	(SOS) Invalid control/status code
34	(SOS) Invalid control/status parameter list
35	(SOS) Character device not open
36	(SOS) Device not available
37	(SOS) Resource not available
38	(SOS) Invalid operation
39	(SOS) I/O error
42	(SOS) Checksum error
43	(SOS) Device write protected
44	(SOS) Byte count not a multiple of 512
45	(SOS) Block number too large
46	(SOS) Diskette has been switched

48..63 (SOS) Device specific error

-----> SOS File Call Errors

64 (SOS) Invalid pathname syntax
65 (SOS) Too many character files open
66 (SOS) Too many block files open
67 (SOS) Invalid file reference number
68 (SOS) Path not found
69 (SOS) Volume not found
70 (SOS) File not found
71 (SOS) Duplicate file name
72 (SOS) Overrun on volume
73 (SOS) Directory full
74 (SOS) Incompatible file format
75 (SOS) Unsupported file storage type
76 (SOS) Attempted read past end of file
77 (SOS) File position out of range
78 (SOS) Access not allowed
79 (SOS) User supplied buffer too small
80 (SOS) File busy
81 (SOS) Volume format neither SOS nor Apple II
82 (SOS) Not a SOS volume
83 (SOS) Invalid length parameter
84 (SOS) Out of memory for SOS system buffer
85 (SOS) Buffer table full
86 (SOS) Invalid system buffer parameter
87 (SOS) Duplicate volume error
88 (SOS) Not a block device
89 (SOS) Invalid level
90 (SOS) Invalid bitmap address found on volume

-----> Utility Call Errors

112 Invalid Joy_Mode parameter

-----> System Call Errors

123..127

-----> Memory Call Errors

240 Invalid segment address
241 Segment request denied
242 Segment table full
243 Invalid segment number
244 Segment not found
245 Invalid Search_Mode parameter
246 Invalid Change_Mode parameter
247 Invalid pages parameter

Apple Technical Communications

Tech Info Library Article Number:226



Tech Info Library

ProDOS: The Machine Identification Byte

Revised: 10/23/84
Security: Everyone

ProDOS: The Machine Identification Byte

=====

The environment is checked when ProDOS is booted, constructing the machine identification (MACHID) byte stored at \$BF98 (49048). Programs operating in the ProDOS environment save time and space by referring to this byte when necessary; the MACHID byte identifies these system attributes:

Bits 7-6: 00=II; 01=II+; 10=IIe; 11=III Emulation

Bits 5-4: 00=Unused; 01=48K; 10=64K; 11=128K

Bits 3-2: Reserved for future definition

Bit 1: 1=80-column card; 0=None

Bit 0: 1=Thunderclock or equivalent; 0=None

Apple Technical Communications

Tech Info Library Article Number:227



Tech Info Library

Lisa Hardware: Video State ROM

Revised: 11/8/88
Security: Everyone

Lisa Hardware: Video State ROM

=====

This article last reviewed: 8 November 1988

If you're unable to print to a printer which previously worked with your system, the Lisa's Video State ROM, part number 341-0229, may be defective.

To check for a defective Video State ROM, follow these steps:

1. Verify the proper configuration of Preferences with the printer switches and check the connection of the cables.
2. Borrow a functioning Lisa Video State ROM and ProFile from another system, then try to print again.
3. If your system now prints, replace the borrowed ROM with the original ROM.
4. If the problem persists, check the printer switches, cables, and Preferences. once again as well as the printer itself.
5. If the problem still occurs, you will have to apply to your local Technical Support address for a new Lisa Video State ROM. There is no charge for this ROM.

The Technical Support people will need the AppleNet number and the ROM's serial number. While the Lisa's serial number may be found on the serial number sticker located underneath the left corner of the CRT, you must also get the AppleNet number. You can get both these numbers from the Lisa by placing it in service mode and using the Lisa's Service Mode to read the numbers encoded on the serialized PROM.

IMPORTANT: If the CPU board is ever replaced on a system, be sure to take the Video State ROM from the old board and install it in the replacement board.

--> Placing the Lisa in Service Mode

1. After starting up your Lisa,
 - a. press either the SPACEBAR after hearing the audible "click" and before the "double-click",
 - or else
 - b. press the spacebar during the memory board test.
2. REMOVE any diskette from your drive, then select option 2 from the displayed "STARTUP MENU". A dialog box will display on the screen informing you there is no disk (as expected) in your drive. You are starting the Lisa from an unattached device: i.e., booting from upper drive when there is no disk in that drive.
3. After the Lisa gives you this error message, hold down the Apple key while you press the "S" key. The Lisa enters the Service Mode and displays the Service Mode menu.

--> Obtaining the Serial Number and AppleNet number with Service Mode

1. Select display memory - "Display Mem"
2. When prompted for ADDRESS, type 240 <CR>.
3. When prompted for COUNT, type 20 <CR>.

The Service Mode window then looks something like this:

```
00000240    0F0F 0002 0802 0002 0000 0400 0300 0F0F
00000250    0000 0100 0004 0102 0002 0900 0000 0000
```

The serial number is embedded in the top 16-byte memory location, which the window displays as 16 hexadecimal pairs, 0F... and so on. Each hexadecimal pair is divided into two halves or "nibbles", e.g., the hex number 0F consists of nibble 0 and nibble F. The second nibble of each of the 16 hexadecimal pairs forms the basis for the serial number.

4. First remove every other nibble like this:

```
00000240    0F0F 0002 0802 0002 0000 0400 0300 0F0F
          240      F F  0 2  8 2  0 2  0 0  4 0  3 0  F F
```

5. Then group the numbers as follows:

Number of the Nibble in Hex	01	23	45	678	9ABC	D	EF
Address	240						
		FF	02	82	020	0403	0 FF
		XX	PP	YY	DDD	SSSS	X XX

Extract the serial number from this group of 16 nibbles as follows:

- a. Ignore nibbles 0,1,D,E and F, marked as XX or X above.

- b. Nibbles 2 and 3 are the two digit plant code (PP).
- c. Nibbles 4 and 5 are the two digit year code (YY).
- d. Nibbles 6, 7 and 8 are the day of the year code (DDD).
- e. Nibbles 9 thru C are the 4 digit serial number (SSSS).

You would submit this serial number, 02820200403, to Technical Support in the Lisa form B02B820200403, where the letter B merely 1) separates the plant and year codes and 2) precedes the entire number.

6. The Applenet Number is similarly embedded in the first 8 bytes of the next line of the memory dump. So, using the same method as step 4 above, we get:

```
00000250    0000 0100 0004 0102 0002 0900 0000 0000
      250      0 0  1 0  0 4  1 2  0 2  9 0  0 0  0 0
```

Number of the Nibble in Hex 012 34567 89ABCDEF

```
Address          250                001 00412 02900000
                                   PPP NNNNN XXXXXXXXX
```

7. To extract the Applenet Number:

- a. Ignore nibbles 8 through F, marked as XXXXXXXXX above.
- b. Nibbles 0, 1 and 2 are the AppleNet prefix (PPP).
- c. Nibbles 3 thru 7 are the AppleNet number (NNNNN).

You would submit this AppleNet number, 00100412, to Technical Support with the Lisa Video State ROM serial number to obtain a new ROM at no charge.

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Tech Info Library Article Number:228



Tech Info Library

Apple Speller: Product Description

Revised: 10/23/84
Security: Everyone

Apple Speller: Product Description

=====

The Apple Speller III program provides quick, reliable spelling verification and vocabulary analysis of documents produced by any word processing software compatible with the Apple III system (except CP/M or emulation-mode software), including Apple Writer III and the Pascal III Text Editor. It verifies the spelling of every word in your document with an up-to-date Random House dictionary containing more than 78,000 words. Auxiliary dictionaries contain an additional 3400 words categorized as geography, names, abbreviations and figures. There are a variety of ways to customize these dictionaries to simplify your dictionary maintenance. You may add your own words to a new or existing dictionary, add or subtract one dictionary from another, or delete a dictionary you no longer need.

Apple Speller can be used with a 128K Apple III single disk drive system, but two drives are recommended to minimize diskette-swapping. The program's speed and performance is further enhanced on a 256K system or by using a ProFile. The Apple Speller manual doubles as a tutorial and is informative and useful.

Apple Technical Communications

Tech Info Library Article Number:230



Tech Info Library

ProDOS: Using CONVERT with one drive

Revised: 10/23/84
Security: Everyone

ProDOS: Using CONVERT with one drive

=====

Converting from ProDOS to DOS 3.3 is easy with one drive; however, you'll most likely want to convert DOS 3.3 files to ProDOS.

When converting your file from DOS to ProDOS using a single drive, the Convert program reads the DOS file, displays the error message "cannot find the ProDOS volume", flags the file with an error and quits.

The work-around is: first, convert any file, even a short "dummy" file, from ProDOS to DOS; upon completion of the ProDOS to DOS transfer, change the direction of conversion, then follow the prompts for when to exchange the diskettes.

Don't use your ProDOS User's Disk as your destination disk; otherwise, you'll receive a Disk Full error message, due to the lack of room on the ProDOS User's Disk. Also, don't forget to change the ProDOS prefix to the new volume name. After all the files are transferred to ProDOS, delete the dummy file.

Below are the specific steps:

1. Startup ProDOS with "/USERS.DISK".
2. Select "C": DOS <-> PRODOS CONVERSION.
3. Select "C": Change DOS 3.3 Slot and Drive.
4. Set DOS 3.3 slot to "6", Drive to "1".
5. Place a ProDOS diskette, containing any file, into Drive. Lets assume the program name is "DUMMY".
6. Select "P": to set ProDOS Prefix.
7. Select "S": by Slot and Drive.
8. Set ProDOS Slot to "6": Drive to "1". /TRANS is the prefix used in

this example.

9. Select "R": Reverse Direction of Transfer.
10. Select "T": Transfer (or List) Files.
11. When asked What ProDOS file(s)? Type in "/TRANS/DUMMY"; press RETURN. You'll be prompted to change diskettes several times for large programs.
12. After the transfer to DOS 3.3 is complete, press Escape to return to the menu.
13. Press "R": Reverse Direction of Transfer.
14. Select "T": Transfer (or List) Files.
15. Remove ProDOS diskette; insert your DOS 3.3 diskette
16. Type in name of DOS 3.3 file to transfer; press RETURN
17. You will get "Error: Volume Not Found". Insert ProDOS diskette; press RETURN.
18. Remove DOS 3.3 diskette. Insert ProDOS diskette; press RETURN
19. The file now transfers. To transfer other files: repeat steps 14 - 19.

Apple Technical Communications

Tech Info Library Article Number:233



Tech Info Library

SoftCard III (CP/M): Moving Files from Apple II CP/M

Revised: 10/23/84
Security: Everyone

SoftCard III (CP/M): Moving Files from Apple II CP/M

=====

Application software often uses direct cursor addressing, enabling you to access specific portions of your display screen. Since a variety of computers use CP/M software, the program diskette itself, or an accompanying utility diskette, often contains a menu allowing to you conveniently configure the software for your system. The item you select from the menu informs the system to send the appropriate command to your system to achieve the desired screen effect.

Many CP/M programs for sale work with the Apple II CP/M systems; however, since the Apple III is relative newcomer to the CP/M world, applications may have to be formatted to operate with it. To format an Apple II CP/M program onto an Apple III diskette:

1. Boot with the Apple III "CP/M Master" Diskette.
2. When you see the prompt A>: type "COPY".
3. When the copy program prompts you with a "*": remove the Master Diskette from you disk drive: insert the Apple II diskette.
4. Place a blank diskette into drive 2.
5. Next type: "B:=A:/S/V".
6. When advised that the operation is complete, and asked if you want another operation: insert the Apple III CP/M Master Diskette into drive 1: type "N".
7. When you see the input prompt A>: type "PIP".
8. Upon prompted with a "*": type "B:DRIVER.SOS=A:". (This will transfer a copy of the driver file to the new diskette).

The resultant copy will be an Apple III system diskette containing all the Apple II files.

Apple Technical Communications

Tech Info Library Article Number:235



Tech Info Library

Pascal III: SYSTEMP0000X files

Revised: 10/23/84
Security: Everyone

Pascal III: SYSTEMP0000X files

=====

When a Pascal program opens new files, the files are initially named SYSTEMP000X, names which are retained until the files are closed and renamed. If the system is interrupted before the system closes (e.g., if the diskette is removed from the drive before the system is finished writing to it), the file name SYSTEMP000X will remain listed in the directory.

Apple Technical Communications

Tech Info Library Article Number:236



Tech Info Library

AppleColor Monitor 100: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

AppleColor Monitor 100: Specifications (Discontinued)

=====

NOTE: This product is no longer available
--Technical Specifications

CRT:

- 12-inch diagonal nonglare screen
- high-contrast display with 90 degree deflection
- 16 different colors
- 80-column by 24-line text display

Resolution: 600 TV lines at center, 416 TV lines at corners.

Data Input Signal: RGB with negative-going synchronous

Scan Rates:

- Horizontal: 15.7 KHz
- Verticle Bandwidth 25 MHz
- Video Bandwidth: 25 MHz
- Dot Pitch: .38 mm

Temperature Range:

- Operating: 41 to 86 degrees F (5 to 30 degrees C)
- Storage: -31 to 140 degrees F (-35 to 60 degrees C)

Power Requirements: 117 V AC; 50/60 Hz; 70 watts

Physical Cabinet: ABS plastic (color coordinated with Apple IIe and Apple III Plus)

Dimensions:

- Width: 14.6 in. (37.1 cm.)
- Height: 11.3 in. (28.8 cm.)
- Depth: 14.8 in. (38.3 cm.)
- Weight (including packing materials): 33 lbs. (15kg.)

Controls/Connectors:

Front Controls:

- Power On/Off
- Brightness
- Contrast
- Green-Only Switch
- Tilt Adjust

Rear Controls:

- Vertical Size
- Vertical Hold

Input Connectors:

- Power cord connector
- video signal input (DB-15 plug)

--Package

1. AppleColor Monitor 100
2. Power cord
3. Video cable assembly
4. User's Manual
5. Warranty and product registration card

--System Configuration

1. Apple II Computer with an Apple Extended 80-Column Text/AppleColor Card, or an Apple II or Apple II Plus computer
NOTE: Motherboard 820-0064-A does not support an RGB monitor 100.
If this is your Motherboard you should have it upgraded.
2. Shielded video cable with 15-pin connectors (supplied with each Monitor 100).

NOTE: The Apple III, Apple III Plus, and the Apple Extended 80-Column Text/AppleColor Card for the Apple IIe are all supplied with a color demonstration disk.

Apple Technical Communications

Tech Info Library Article Number:237



Tech Info Library

LisaWrite Version 2.0: Underlining and Printing in Landscape

Revised: 8/31/87
Security: Everyone

LisaWrite Version 2.0: Underlining and Printing in Landscape

=====

Underlining doesn't work when you print a document in landscape mode in LisaWrite version 2.0. Versions 3.0 and 3.1 corrects this omission.

Tech Info Library Article Number:238



Tech Info Library

Calculator: You Can Paste In Formulas From Any Text Source

Revised: 6/12/92
Security: Everyone

Calculator: You Can Paste In Formulas From Any Text Source

=====

Article Created: 21 September
Article Last Reviewed: 27 May 1992
Article Last Updated:

A little-known feature of the Calculator desk accessory is that you can make it programmable by copying numerical formulas from other text sources into it. For example, using a word processor, type the formula, $9*8-12/24$. Now copy, then paste this formula into the calculator; the answer will appear.

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Tech Info Library Article Number:240



Tech Info Library

Applesoft Tutorial: Display problems on the Apple IIc

Revised: 10/8/84
Security: Everyone

Applesoft Tutorial: Display problems on the Apple IIc

=====
Customers are finding that some of the programs on the Applesoft Sampler diskette (included with the Applesoft Tutorial), when used on an Apple IIc, do not function as expected. Menus generated by these programs operate correctly when used on an Apple IIe, but there is a vertical displacement of one line between menu selection numbers and menu item descriptions when executed on an Apple IIc.

The problem resides in three programs (CONVERTER, MAGIC.MENU and DISK.MENU) located on the Applesoft Sampler diskette. Load the "CONVERTER" program and list line number 625. This line should currently read;

```
625 VTAB PEEK(37): IF COL80 THEN VTAB PEEK(1531)
```

Change this line to read:

```
625 IF COL80 THEN VTAB PEEK(1531) : GOTO 630
```

and then add the following line:

```
627 VTAB PEEK(37)
```

SAVE the file "CONVERTER".

Make the same changes to the files "DISK.MENU" and "MAGIC.MENU"

These changes will fix the problem.

We have been informed that these changes will soon be included in final product. However, the problem exists in product that is already shipping, so you can and should expect to hear from customers about this. Our suggestion is to perform the above changes to the CONVERTER MAGIC.MENU and DISK.MENU programs and give the fixed version of the program to those customers that need it. We expect to be informed when the change takes place in final (shipped) product.

As an added attraction we have found that two programs mentioned in the

manual are noyt included on the disk. The listings for MOUSE.MOVE and MOUSE.DRAW follow. Please distribute them to customers who did not recieve copies on their disks.

MOUSE.MOVE

```
10 HOME
20 PRINT "THIS IS A DEMONSTRATION OF THE MOUSE"
30 PRINT CHR$(4);"PR#4": PRINT CHR$(1)
40 PRINT CHR$(4);"PR#0
50 PRINT CHR$(4);"IN#4"
60 INPUT " ";X,Y,S
70 VTAB 10: PRINT X;" ",Y;" ",S" "
80 IF S > 0 THEN 60
90 PRINT CHR$(4);"IN#0"
100 PRINT CHR$(4);"PR#4": PRINT CHR$(0)
110 PRINT CHR$(4);"PR#0"
120 POKE - 16368,0: REM CLEAR KEYBOARD STROBE
130 END
```

MOUSE.DRAW

```
10 REM USES MOUSE TO DRAW LOW-RES GRAPHICS
100 GOSUB 1000: REM TURN ON THE MOUSE
110 PRINT CHR$(4);"IN#4"
120 INPUT " ";X,Y,S: REM READ MOUSE POSITION
130 IF S = 1 THEN 100: REM CLEAR THE SCREEN
140 IF S < 0 THEN 300: REM TIME TO QUIT?
150 REM SCALE THE POSITION
160 X = INT (X / 25.575)
170 Y = INT (Y / 25.575)
180 PLOT X,Y
190 GOTO 120
300 REM CHECK IF TIME TO QUIT
310 POKE - 16368,0: REM CLEAR KEYBOARD STROBE
320 PRINT CHR$(4);"IN#0"
330 VTAB 22: PRINT "PRESS RETURN TO CONT OR ESC TO QUIT"
340 VTAB 22: HTAB 39: GET A$: PRINT
350 IF A$ = CHR$(13) THEN HOME : GOTO 110
360 IF A$ < > CHR$(27) THEN 340
370 REM CLEAR SCREEN AND TURN OFF MOUSE
380 TEXT : HOME
390 PRINT CHR$(4);"PR#4": PRINT CHR$(0)
400 PRINT CHR$(4);"PR#0"
410 END
1000 REM CLEAR SCREEN AND INITIALIZE MOUSE
1010 HOME : GR
1020 COLOR= 15
1030 PRINT CHR$(4);"PR#4": PRINT CHR$(1)
1040 PRINT CHR$(4);"PR#0"
1050 RETURN
```




Tech Info Library

Macintosh System Software 6.0.2: Labeled Incorrectly As 6.0.1

Revised: 5/31/89
Security: Everyone

Macintosh System Software 6.0.2: Labeled Incorrectly As 6.0.1

=====

This article last reviewed: 17 October 1988

Since the end of September 1988, the Macintosh has been shipping with system software 6.0.2 labelled as version 6.0.1. These incorrectly labelled floppy disks are accompanied by an errata sheet to alert users of the discrepancy. Apple apologizes for the confusion, but a label change at this late date would have caused an excessive delay in shipping out the latest system software.

In summary, system software 6.0.1 was not and is not being shipped to customers, regardless of what appears on any labels.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:242



Tech Info Library

Carriage Returns and Linefeeds in AppleSoft

Revised: 10/8/84
Security: Everyone

Carriage Returns and Linefeeds in AppleSoft

=====

After the printer comes to the end of a line and before it prints the next line of text, it takes care of two signals, the carriage return and the line feed. The carriage return, ASCII CR (decimal 13), signals the printer to send the print head to home position if necessary. The line feed, ASCII LF (decimal 10), signals the printer to feed the paper past the print head by one line space.

Most printers, printer interface cards, and application software programs offer options in ignoring or accepting these printer signals. These options help when printed output has too many or too few line spaces to your liking. With the following procedure, you select the options which produce the proper printing format.

1. Determine how many line feeds you want to add or subtract.
2. Turn off, then turn on the printer. Print a Basic program. If the program lists line after line then go to step 4.
3. Check the printer manual and/or the interface card manual for instructions on changing the linefeed option on each device. Change one of the devices to add or subtract the number of linefeeds you determined.
4. Print from your application software package(s). If the output is still not to your liking, check the application program's manual for instructions on changing the linefeed option in the program.

Apple Technical Communications

Tech Info Library Article Number:244



Tech Info Library

Passing strings to and from functions in Pascal III

Revised: 10/8/84
Security: Everyone

Passing strings to and from functions in Pascal III

=====

Functions cannot return a string per se because functions cannot return a non-scalar variable, such as a string. Functions can however return the address of a string with the VARIABLE (VAR) parameter. The pass-by-reference VAR parameter can pass the address of a string to and from functions and assembly language routines.

In contrast, when a value parameter is used, the value of the parameter is passed (See pp.87-90, Apple III Pascal Programmer's Manual, Volume 1). Listed below is an example of passing a string to and from a function. A procedure could have been used similarly since parameter-passing rules are the same for procedures as for functions. The value returned by the function is also used to check the success of the function. This check is a good programming convention for functions.

```
PROGRAM PASS;
```

```
VAR I: INTEGER;
```

```
ST1: STRING;
```

```
TABLE: ARRAY [0..50] OF STRING (* For this program to run, *)  
                                (* TABLE must be initialized*)  
                                (* prior to calling DOIT.  *)
```

```
FUNCTION DOIT (VAR ST2: STRING; INDEX: INTEGER):BOOLEAN;  
    (* VAR designates ST2 as a VARIABLE parameter.*)
```

```
BEGIN
```

```
    DOIT := TRUE;
```

```
    IF LENGTH(TABLE [INDEX]) = 0 THEN (*DOIT returns false if *)  
        DOIT := FALSE                (*the given entry(INDEX)*)
```

```
    ELSE ST2 := TABLE [INDEX]        (*in the table is null. *)
```

```
END;                                (*ELSE, IT RETURNS TRUE.*)
```

```
BEGIN
```

```
    FOR I := 0 TO 50 DO
```

```
        BEGIN                                (* ST1 should be null unless *)
```

```
            ST1:= '';                        (* DOIT alters it.                *)
```

```
            IF DOIT(ST1,I) THEN              (* If the array entry is not *)
```

```
        WRITELN(ST1)                (* null, print the string.  *)  
    END;  (* FOR *)  
END.
```

Notes.

1. An individual element of a packed variable cannot be supplied as the actual parameter. See page 90 of the Apple III Pascal Programmer's Manual, Volume 1.

2. The addresses of strings are ALWAYS passed to the procedure or function, whether the string is a VARIABLE parameter or a value parameter. Declaring the string parameter to be a VARIABLE parameter avoids coping the entire value of the string to the function and attendant lowering of memory and performance. Bear in mind that, it is generally good programming technique to use value parameters wherever possible for maximum "decoupling" of function and calling program.

Apple Technical Communications

Tech Info Library Article Number:245



Tech Info Library

Apple Writer: Keeping a printout's first line at the page's top

Revised: 4/2/91
Security: Everyone

Apple Writer: Keeping a printout's first line at the page's top

=====

If the Page Interval (PI) option of Apple Writer's Print/Program Commands doesn't reflect the exact number of lines long your paper is, the first line of each page will be printed either slightly higher or slightly lower than the first line of the previous page; if the document is long enough, the text may actually begin to spill over the page boundary. To correct the problem, raise the value of PI if the first line printed is creeping upwards; lower it if the first line is creeping downwards.

Apple Technical Communications

Tech Info Library Article Number:246



Tech Info Library

AppleWorks 2.0: Memory Management on the Apple IIGS

Revised: 9/1/87
Security: Everyone

AppleWorks 2.0: Memory Management on the Apple IIGS

=====

This article last reviewed: 9/1/87

After recognizing that it is running on an Apple IIGS, AppleWorks 2.0 uses the built-in memory manager to allocate all memory use. If the Apple IIGS is cold started, several of the tools in ROM are initialized and given small portions of memory for their own use. These tools include the Tool Locator, Memory Manager, and Desktop Manager. Also, the RAMDisk is defined, either as the number specified as the 'Minimum RAMDisk size' or 10K, whichever is larger.

When AppleWorks runs, it starts by allocating most of the first 64K bank and portions of the second 64K for itself. The rest of the memory remains free, available for expansion by the AppleWorks desktop and the RAMDisk.

Therefore, the amount stated by AppleWorks as 'nK free' is the sum of:

- the memory not allocated by the memory manager
- plus the memory already owned by AppleWorks
- less the memory owned by AppleWorks but occupied by documents currently on the desktop.

As AppleWorks runs, this nK of free space gets consumed either by AppleWorks, by the RAMDisk, or by add-on accessory programs.

AppleWorks allocates memory to:

- files that appear on the desktop
- portions, or all, of the AppleWorks program
- free space

As in all earlier versions, AppleWorks removes portions of itself from its portion of RAM if the memory is needed to store data files.

Tech Info Library Article Number:248



Tech Info Library

ProDOS: Displaying LoRes Graphics in a Startup Program

Revised: 3/2/88
Security: Everyone

ProDOS: Displaying LoRes Graphics in a Startup Program

=====

This article last reviewed: 11 May 1987

With DOS, it is possible to create a graphics picture in LoRes that can be displayed as part of the startup program. To do this, first save the picture to disk (using BSAVE 'filename',A1024,L1024), then (under program control, and after the LoRes screen has been turned on with the GR command) load the picture using BLOAD 'filename'.

With ProDOS, however, the area allocated for LoRes screen memory is protected, so the above procedure used for DOS will not work with ProDOS. To get around this, undo the protection byte, load the screen the reset the protection byte back to the original value. Below is a short program that will allow the ProDOS user to BLOAD a previously saved LoRes screen.

```
10 A= PEEK (48984)
20 POKE 48984,0
30 GR
40 PRINT CHR$(4);"BLOAD FILENAME"
50 POKE 48984,A
60 END
```

Tech Info Library Article Number:249



Tech Info Library

High Speed Serial Interface Card: Initializing with POKEs 11/96

Revised: 11/19/96
Security: Everyone

High Speed Serial Interface Card: Initializing with POKEs 11/96

=====

Article Created: 21 September 84
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article discusses how to use POKEs instead of PR# or IN# commands to initialize the High Speed Serial Interface. This information applies to the Apple II, II+, and IIfx computers.

DISCUSSION -----

Neither the PR# nor IN# commands in Applesoft and Integer Basic initialize the High Speed Serial Interface. This situation can cause problems for you if you need to modify the parameters of the interface for your application.

What happens is that the ROM on the High Speed Serial Interface card, upon receiving the first character, sets all parameters to their default settings; so, after you've POKEd the parameter you want, the first character you send will cause the ROM to overwrite all the parameter locations you just set up.

The remedy is to send a character through the card and then change the parameter locations by means of the following POKEs. Please refer to the High Speed Serial Interface Card manual for additional information about what each POKE does.

Replace all occurrences of "s" below with the number of the slot that the High Speed Serial Interface Card is plugged into.

10 POKE 1144+s,64	BRATE, page 21
20 POKE 1272+s,2	STBITS, page 21
30 POKE 1400+s,7	STATUS, page 22
40 POKE 1528+s,0	Character counter
50 POKE 1784+s,80	PWDTH, page 23
60 POKE 1912+s,9	NBITS, page 23
70 POKE 2040+s,129	FLAGS, page 24

To benefit from these POKEs, you will need to use the additional list of POKEs

below; these POKEs replace the PR# and IN# commands. Use CALL 1002 if you will be doing DOS commands while the interface is enabled. Since DOS does slow down I/O, you can opt to delay using the CALL 1002 until after the data transfer has been made if you need maximum I/O speed..

These POKEs must all be on one command line separated by colons to work in command mode:

```
POKE 54,5: POKE 55,192+s: POKE 65,7: POKE 57,192+s: CALL 1002
```

They can have separate line numbers in a program:

```
80 POKE 54,5           PR#s
90 POKE 55,192+s
100 POKE 65,7          IN#s
110 POKE 57,192+s
120 CALL 1002
```

The normal way to reset the I/O to the Apple video and keyboard is:

```
900 D$ = CHR$(4): REM CTRL-D
910 PRINT D$; "PR#0"
920 PRINT D$; "IN#0"
```

However, this will only work after a PRINT and will be ignored after a GET or PRINT terminated with a comma or semicolon. To avoid having to do an extra PRINT you can use:

```
900 CALL -375 : REM THIS IS IN#0
910 CALL -365 : REM THIS IS PR#0
920 CALL 1002 : REM THIS RECONNECTS DOS
```

Video Echo

Do not allow echoing to video while printing. Your program or variables will suffer if video output is not disabled while printing lines more than 40 characters long. Refer to the High Speed Serial Interface Card manual, which came with your card, for additional information on disabling video echo.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:250



Tech Info Library

Pascal II: Using Library Name Files

Revised: 5/11/87
Security: Everyone

Pascal II: Using Library Name Files

=====

Many people have trouble using Library Name Files in Apple II Pascal (v.1.2 and 1.3). Here is a short explanation on what library name files are, and how they are used in Pascal.

Library Name files, which contain the names of libraries to be used when running a program, are designed for very large applications, or for multiple program applications that need to use the same libraries.

With small applications, when you want to use a library other than the system library, you can link your libraries (as regular units) directly into your program. For larger applications, however, this is impracticable, since each re-compilation makes linking more difficult and cumbersome. The solution for larger applications is to create Program Libraries which allow you to build your own set of intrinsic units without having to place them in the system library. (Intrinsic units have the same root name as the program, but have the suffix '.LIB' on the end; e.g., a program named TRYIT.CODE becomes TRYIT.LIB). What Library Name files do is allow you to handle up to five Program Library files for each program.

To use Library Name files, write your library code and program code in the standard way. Each library unit MUST be an intrinsic unit. When writing your program you must remember to use the "\$U ..." option to tell the compiler where to find your libraries interface (program library names are used only at execution time.). After compiling your library units, don't forget to use the LIBRARY program to place a library header in the file. Now, just compile your program and create your library name file. When you execute, your program will find its units even though you did not have to link them in.

Here are three sample files that illustrate the process:

Main program source code [TRYIT.TEXT]:

```
PROGRAM USEWALLY;
```

```
USES      {$U WALLY.LIB} WALLY;
```

```
BEGIN
```

```
    DOWALLY;
```

```
END.
```

Wally, library unit source code [WALLY.TEXT]:

```
UNIT WALLY;
```

```
INTRINSIC CODE 17 DATA 18
```

```
INTERFACE
```

```
VAR      WALLSTR:STRING[80];
```

```
PROCEDURE DOWALLY;
```

```
IMPLEMENTATION
```

```
PROCEDURE DOWALLY;
```

```
BEGIN
```

```
    WRITELN('WELL WALLY WORKS WELL I THINK');
```

```
END;
```

```
BEGIN
```

```
END.
```

Library name file [TRYIT.LIB]:

```
LIBRARY FILES:
```

```
WALLY.LIB
```

```
$$
```

To build this program, you must compile the library unit first, then use LIBRARY to turn it into a library (with the proper header). Finally,

compile the main program (TRYIT.TEXT) and then run it to be sure that it works.

Tech Info Library Article Number:251



Tech Info Library

LaserWriter Plus: ROM Error Gives Wrong Version Number

Revised: 12/17/87
Security: Everyone

LaserWriter Plus: ROM Error Gives Wrong Version Number

=====

This article last reviewed: 4 December 1987

An error in the LaserWriter Plus ROMs gives the version number 42.2 if read from PostScript -- even though the ROMs contain Version 47 of PostScript.

Tech Info Library Article Number:252



Tech Info Library

AppleShare: Documentation Error About Server's RAM Cache Setting

Revised: 10/4/89
Security: Everyone

AppleShare: Documentation Error About Server's RAM Cache Setting

=====

This article last reviewed: 11 May 1987

In the AppleShare Administrator's Guide (copyright 1987, Chapter 1, page 16) there is the statement: "You must also check the RAM Cache. Then when you start up the server, frequently used info will be stored in the cache. This can improve the server's performance."

It goes on to state that you should set this only to the current recommended amount of 64K, and that this amount may increase in future releases of AppleShare.

This documentation is incorrect. AppleShare on the Server ignores the Control Panel RAM cache setting. AppleShare automatically allocates RAM for the foreground application, the stack, and itself, then turns all the rest of available memory into RAM cache. This correction will be documented in AppleShare 1.1 with a release note.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:253



Tech Info Library

AppleMouse II: Printing From MousePaint

Revised: 8/31/87
Security: Everyone

AppleMouse II: Printing From MousePaint

=====

MousePaint can print directly only to Apple printers. Here's how to print MousePaint pictures to other printers:

1. Save your picture to a disk file. Chapter 3 of the AppleMouse II User's Manual tells how.
2. Use a program that prints screen images on your type of printer. Many printer manufacturers furnish such a "graphics dump" program with their printer.

Tech Info Library Article Number:255



Tech Info Library

High Speed Serial Interface Card: Settings (11/96)

Revised: 11/19/96
Security: Everyone

High Speed Serial Interface Card: Settings (11/96)

Article Created: 21 September 84
Article Reviewed/Updated: 19 November 1996

TOPIC -----

The Apple II Serial Interface Card (A2B0008), also known as the High Speed Serial Interface Card, is primarily used with serial letter-quality printers like the Qume, Diablo, and NEC Spinwriter series.

The following explains the functions of the various DIP switches and PROMs on the High Speed Serial Interface Card. This card has been discontinued and is no longer available from Apple.

DISCUSSION -----

Baud Rate - Switches 1,2 and 3

DIP Switch			Baud Rate
1	2	3	
ON	ON	ON	110
OFF	ON	ON	134.5
ON	OFF	ON	300
OFF	OFF	ON	1200
ON	ON	OFF	2400
OFF	ON	OFF	4800
ON	OFF	OFF	9600
OFF	OFF	OFF	19200

The settings of DIP switch levers 1, 2, and 3 determine the rate at which bits may be transmitted to the external device: 300 baud is 300 bits per second.

Carriage Return Delay - Switch 4

DIP Switch	Carriage Return Delay
4	
ON	Enabled
OFF	Disabled

If switch 4 is Off (Delay Enabled), the Serial Interface waits briefly (approximately 1/4 second) after transmitting a carriage return before resuming transmission of further characters, allowing the printer's carriage to return. If you are transmitting to an external TV screen, this delay is probably unnecessary, so lever 4 may be turned On (Delay Disabled).

Line Width plus Apple Video - Switches 5 and 6

DIP Switch	Line Width (characters	Apple Video
5 6	per Line)	
ON ON	40	Enabled
OFF ON	72	Disabled
ON OFF	80	Disabled
OFF OFF	132	Disabled

After a carriage return, the settings of switches 5 and 6 determine the maximum number of characters that can be transmitted before the Serial Interface forces another carriage return to be sent. Characters are displayed on the screen only if line width is set to 40 characters per line (levers 5 and 6 On). After initialization, the line width can be changed from 40 characters per line, but the display on the screen will not correspond to the display on the external device, since transmitted carriage returns are not accompanied on the screen by line feeds.

Line Feed - Switch 7

DIP Switch	Line Feed
7	
ON	Disabled
OFF	Enabled

If switch 7 is Off (Line Feed Enabled), the Serial Interface transmits a line feed after each carriage return. If the external device automatically supplies its own line feed after each carriage return received, you can set lever seven to On (Line Feed Disabled) to avoid unwanted double-spacing.

Important Information

=====

Permanent Defaults

During each initialization, five remaining operating parameters are set to permanent default values:

1. Parity defaults to disabled (no parity bit).
2. Checksum defaults to disabled (no checksum character).
3. Lower-Case defaults to disabled (converts all incoming lower-case characters to upper-case).
4. Number of Data Bits defaults to 9 (8 data bits plus one start bit).
5. Number of Stop Bits defaults to 2.

After initialization, these five parameters can only be changed by software commands.

Hardware Handshaking Flow Control

This card does not have any hardware handshaking flow control. It can therefore only be used at slow baud rates. Additional information on flow control can be found in the Tech Info Library article titled "Flow Control Protocols (XOn/XOff or DTR)".

P7-04 PROM

Early versions of the High Speed Serial Card would not work with certain cards in the next higher numbered peripheral slot. The P7-04 PROM solves this problem.

P8A PROM

After a program sends output to a printer, and before the P8A PROM allows the Apple to continue executing the program, the P8A sends an ASCII ETX (CTRL-C) to the printer at the end of each line and waits for the printer to send back an ASCII ACK (CTRL-F). So the P8A can send the ASCII ETX, make sure pins 2 & 3 on the interface connector are connected straight across; also make sure the printer can send the ACK. If the pins and the printer do not meet these conditions, then the computer stops running the program after the first line sent to the printer. Neither the original PROM, called the P8 (Apple part# 341-0018), or the basic card provided handshaking capabilities.

The PROM P8A should be installed in place of the existing PROM P8 when using Qume compatible printers. Be aware that switch 4 has a different function with this setup and must be in the OFF position.

The P8A prom uses location \$3C as a temporary memory register. Many of the monitor commands cannot be used with any printer because of this conflict.

PROM 8A Printer Support

Printers that support the P8A are:

Anderson Jacobson 832 (send <ESC>!W to set the AJ's mode, page 3-30)

Qume Sprint 5

NEC Spinwriter

DB-25 Connector Pinout

DB-25 Connector	Signal Name
-----------------	-------------

2.....	Receive Data (Rx)
3.....	Transmit Data (Tx)
7.....	Signal Ground
12.....	Current Loop Data In (Return)
13.....	Current Loop Data In
23.....	Current Loop Data Out

Current Loop

The High Speed Serial Interface has a 20ma current loop. It has an active send loop and a passive receive loop.

Page 8 of the card's manual tells how to connect to an 33ASR teletype. This may not work with other 20ma devices. It assumes that the device has a passive send and receive loop.

If the other device has its own active send loop then connect it as follows:

Connect pin 23 to Printer +
Connect pin 7 to Printer -
Connect pin 12 to Keyboard +
Connect pin 13 to Keyboard -

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:258



Tech Info Library

Apple Color Plotter: Using it with a IIC

Revised: 7/9/85
Security: Everyone

Apple Color Plotter: Using it with a IIC

=====

To use an Apple Color Plotter with a IIC, attach the plotter to Port #1 and set its switches as follows:

1	2	3	4	5	6	7	8
OFF	ON	ON	OFF	OFF	ON	ON	ON

These switch settings correspond to: 9600 baud, 8 data bits, no parity, and 2 stop bits.

Apple Technical Communications

Tech Info Library Article Number:259



Tech Info Library

Applesoft BASIC: Right-justifying columns of numbers

Revised: 10/8/84
Security: Everyone

Applesoft BASIC: Right-justifying columns of numbers

=====

Many users want their Applesoft BASIC codes to print a right-justified column of numerals with the same number of decimal places, usually two. Beginning at line 1000, the subroutine in this sample program formats the numerals of the string variable X\$ before line 140 prints it. To specify the format, line 1020 assigns a decimal value to the numeric variable F. The value 8.2 specifies a format of 2 decimal places and 8 total characters (digits, decimal point, sign, and leading spaces). The subroutine rounds the number in X to the desired number of decimal places indicated by the number to the right of the decimal point in F. Then the subroutine pads X\$ with spaces until the string is the length indicated by the number to the left of the decimal point.

```
100 HOME: PRINT "NORMAL", "FORMATTED"
110 FOR I = 1 TO 5
120 READ X: PRINT X,
130 GOSUB 1000
140 PRINT X$
150 NEXT I
200 DATA 1, -3, .2, 17, 450
300 END
1000 REM PRINT FORMATTING
1010 REM
1020 F = 8.2: REM FORMAT CONTROL
1030 TC = INT (F): REM TOTAL CHARACTERS
1040 DP = VAL ( RIGHT$ ( STR$ (F), 1)): REM DECIMAL PLACES
1050 X = INT (10 ^ DP * X + .5) / (10 ^ DP)
1060 X$ = STR$ (X)
1070 FOR JJ = 1 TO LEN (X$)
1080 IF MID$ (X$, JJ, 1) = "." THEN 1110: REM LOOK FOR .
1090 NEXT JJ
1100 X$ = X$ + "."
1110 IF ( LEN (X$) - JJ) < DP THEN X$ = X$ + "0": GOTO 1110
1120 IF LEN (X$) < TC THEN X$ = " " + X$: GOTO 1120
1200 RETURN
```

Apple Technical Communications

Tech Info Library Article Number:260



Tech Info Library

Apple IIe Emulation on an Apple III

Revised: 10/8/84
Security: Everyone

Apple IIe Emulation on an Apple III

=====

Titan Technologies, Inc. (makers of the "Accelerator" board) have a new product called the "III PLUS II". This board allows an Apple III to emulate an Apple IIe, features standard Apple II game ports, supports Pilot, Logo, and ProDOS, and comes in 3 flavors: 16K, 64K & 128K. Scheduled release: August 15, 1984.

Titan Technologies, Inc.
P.O. Box 8050
310 W. Ann
Ann Arbor, MI 48107
(313) 662-8542

Apple Technical Communications

Tech Info Library Article Number:261



Tech Info Library

AppleColor Monitor 100: Making it compatible with the Apple IIGS

Revised: 11/9/88
Security: Everyone

AppleColor Monitor 100: Making it compatible with the Apple IIGS

=====

This article last reviewed: 9 November 1988

According to the Apple II Compatibility Guide (P/N A2F2204), the AppleColor Monitor 100 is not compatible with the Apple IIGS. For the many owners of the AppleColor Monitor 100 who are upgrading their IIe's to the Apple IIGS, but who want to avoid having to purchase a new monitor, there is a workaround.

Inside the AppleColor Monitor 100 on the main PC board, almost directly under the neck of the CRT, there is a slide switch labeled "16 color/8 color". To make the AppleColor Monitor 100 work with the Apple IIGS, set the switch to the 8 color position, and use the cable provided with the Color Monitor 100 (svc part # 590-0194-A) to connect it to the the Apple IIGS. This configuration makes all colors available.

Apple Computer, Inc. takes no responsibility for any damages incurred, real or implied, that may result from this change.

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Tech Info Library Article Number:262



Tech Info Library

Using Catalyst 2.0 with the Apple III and hard disk drives

Revised: 7/27/85
Security: Everyone

Using Catalyst 2.0 with the Apple III and hard disk drives

=====

To use Catalyst 2.0 with the Apple III and hard disk drives other than the ProFile, you need to change the driver configuration block of the .CATALYST driver as follows:

00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
(See notes just below)						00	8F	97	8A	91	93	23	17	17	F6	00	B8

Notes:

- 00 - Slot number
- 01- Unit number
- 02 - Type
- 03 - Sub Type
- 04 - Low Byte, Manufacturer's ID
- 05 - High Byte, Manufacturer's ID

For a 10 megabyte ProFile, copy the information in bytes 00 through 05 from the existing Catalyst hard disk driver configuration block (DCB) of the Catalyst driver that you are using. For a 10 MB Profile, the DCB should look like this:

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
slot	00	01	01	23	00	00	8F	97	8A	91	93	23	17	17	F6	00	B8	

For a 5 MB Profile, the DCB should look like this:

	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11
	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
slot	00	D1	01	23	00	00	8F	97	8A	DD	93	23	E8	17	F6	3B	C3	

Apple Technical Communications

Tech Info Library Article Number:264



Tech Info Library

Printing DOS Text Files

Revised: 4/2/91
Security: Everyone

Printing DOS Text Files

=====

DOS text files do not transfer directly to a printer. Use this program to print text files to any slot desired by the user. The program does not strip leading spaces or limit strings to 239 characters.

```
100 TEXT: NORMAL: HOME
110 D$ = CHR$(4)
120 KB = -16384: KS = -16368
130 INPUT "TEXT FILE NAME? ";FILE$
140 PRINT
150 INPUT "DESTINATION SLOT? ";S : REM PRINTER SLOT NUMBER
160 ON ERR GOTO 500
170 PRINT D$;"OPEN ";FILE$
180 PRINT D$;"READ ";FILE$
190 GET A$
200 PRINT D$;"PR#";S
210 PRINT A$
220 IF (PEEK (KB) <> 155) GOTO 190
230 POKE KS,0
500 PRINT D$;"PR#0"
510 PRINT
520 PRINT D$;"CLOSE ";FILE$
540 END
```

Keying ESCAPE stops the program before it reaches the end of the file.

Apple Technical Communications

Tech Info Library Article Number:265



Tech Info Library

Dow Jones News & Quotes Reporter: Specifications

Revised: 7/30/92
Security: Everyone

Dow Jones News & Quotes Reporter: Specifications

=====

Order #: A2D0030

--Technical Specifications

- Format: 16-sector disks.
- Language: Written in Pascal.
- Dow Jones Access: Minimum 15-minute tape delay; exchanges include NYSE, AMEX, Midwest, Pacific, Composite, and OTC NASDAQ.
- Dow Jones Toll-Free Information: (800) 257-5114; in New Jersey, call (609) 452-1511.

--Package

1. Dow Jones News & Quotes Reporter master disk;
2. Dow Jones News & Quotes Reporter backup disk;
3. instruction manual;
4. Dow Jones News/Retrieval operating guide and symbol directory.
5. Dow Jones News/Retrieval contract and password information sheet.
6. One free hour of connect time, to be used during nonprime-time hours, within 30 days of the date of purchase of the Dow Jones News & Quotes Reporter package.

--System Configuration

1. Apple II or Apple II Plus, with a minimum of 48K of memory, or Apple IIe
2. disk drive, such as Apple Disk II
3. video display device, such as Monitor II
4. a recommended modem, either a D.C. Hayes MicroModem or a Novation Apple Cat modem
NOTE: The Apple modems, in conjunction with the Super Serial Card, will not support the Auto-dial necessary for the Auto-Log-on feature of the Dow Jones Reporter. One of the recommended modems must be used for this feature.

5. standard working telephone;
6. printer with appropriate interface card (optional).

NOTE: This product is no longer supported by Apple Computer, Inc.

Apple Technical Communications

Tech Info Library Article Number:266



Tech Info Library

Apple IIe Keyboard: Defeating The Keyboard Auto Repeat

Revised: 7/15/91
Security: Everyone

Apple IIe Keyboard: Defeating The Keyboard Auto Repeat

=====

Article Created: 21 September 1984
Article Last Reviewed: 23 April 1991
Article Last Updated: 25 May 1989

Disabled persons want to know how to defeat the repeat function of the Apple IIe keyboard so that it's easier to use. The following procedure defeats the repeat function without changing the keyboard in any other way.

Exercise caution. The following procedure may void the warranty on the Apple IIe.

- 1) Remove the main logic board from the case.
- 2) Locate the large IC just below the keyboard connector, location D14.
- 3) Carefully remove the IC.
- 4) Locate the small dot or indentation on the corner of the IC and from there count up to pin 5.
- 5) Carefully bend pin 5 out from the IC.
- 6) Carefully reinsert the IC into the logic board. Make sure that pin 5 is the only pin not inserted and that no other pins are bent.
- 7) Reinstall the logic board into the case.

Try the repeat function. It should not operate.

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Tech Info Library Article Number:268



Tech Info Library

Apple IIc Serial Port: 8-bit vs. 7-bit data format

Revised: 10/8/84
Security: Everyone

Apple IIc Serial Port: 8-bit vs. 7-bit data format

=====

The setting of the data format for the Communications Port defaults to an 8-bit rather than a 7-bit data format. While many telecommunications systems use 8-bit, most of the popular information systems such as Dow Jones and the Source use 7-bit. Attempts to communicate with 7-bit systems lead to garbled information when the default goes unchanged. A command to the software changes the data format on some terminal packages, but others may not allow this command, rendering them useless. Of all the modems tested, only the Apple modems don't care about 8- or 7-bit data format settings.

Apple Technical Communications

Tech Info Library Article Number:269



Tech Info Library

AppleWorks 1.2 and 1.3: Specifications (Discontinued)

Revised: 9/14/93
Security: Everyone

AppleWorks 1.2 and 1.3: Specifications (Discontinued)

=====

Order #: A2D4501

--Technical Specifications

--Maximum number of files on the desktop: 12

--Word Processor: reads and writes ASCII and AppleWorks format files

--Data Base:

--Memory-based design

--Maximum number of categories: 30

--Maximum number of categories that can be calculated from other categories: 3

--Reads and writes:

1. ASCII files

2. Data Interchange Format (DIF) files

--Reads Quick File II files

--Spreadsheet:

--Maximum number of columns: 127

--Maximum number of rows: 999

--Reads and writes Data Interchange Format (DIF) files

--Reads VisiCalc files

--Package

1. Disk: AppleWorks Startup and Program

2. Disk Apple Presents AppleWorks, Sides I and II

3. Disk: AppleWorks Sample Files

4. Manual: AppleWorks Tutorial

5. Manual: AppleWorks Reference

6. Card: AppleWorks Quick Reference Card

7. Disk 3.5 version

--System Configuration

..TIL00270-AppleWorks_1-2_and_1-3-Specifications_Discontinued.pdf

1. Apple IIe or IIc personal computers
2. Monitor II
3. Disk II
4. Apple 80-Column Card
5. Extended 80-Column Card containing an additional 64K memory (recommended)
6. A compatible printer, such as Imagewriter or Dot Matrix Printer (recommended)

--Features

Word Processor

- Provides: boldface, super--and subscripts, proportional spacing, and a selection of character and line spacings.
- Includes: search and replace, page headers and footers, automatic page numbering, and full move and copy capability.

Data Base

- Produces tables and mailing labels with built-in report generator

NOTE: AppleWorks will only print a single column of labels, not 2 labels across. (Use HabaMerge to print a sheet of 2 columns of labels.)

Spreadsheet

- Allows: Fully adjustable decimal points, dollar and percent signs, individually variable column widths, and cell protection.
- Includes: Net present value, choose, and lookup.
- Arranges worksheet rows either alphabetically or numerically.

--AppleWorks version 1.2:

1. Adds the Scribe Printer to the options in the "Add a Printer" option menu. All the Scribe's features are now usable.
2. Gives you the ability to customize AppleWorks to work with non-Apple interface cards. Follow the card manufacturer's instructions.

NOTE: In Fall of 1984, an AppleWorks Interface Card Configuration Utility became available. It still can be downloaded from the "Apple Cares" Regional Bulletin Board under the topic "AppleWorks".

CAUTION should be taken with this utility because it only works with versions 1.0 and 1.1 and will destroy a 1.2 disk.

Customers will, in general, find it easier to take their original AppleWorks 1.0 or 1.1 diskettes to their dealer to get version 1.2 copied.

3. Fixes parallel interface card problems with respect to correctly sending control characters from an Apple IIe.

--AppleWorks version 1.3:

1. Supports memory expansion card
2. Supports Uni 3.5

Apple Technical Communications

Tech Info Library Article Number:270



Tech Info Library

Apple III Business BASIC: Specifications (1 of 2) (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple III Business BASIC: Specifications (1 of 2) (Discontinued)

=====

--Order #: A3D0004

--Technical Specifications:

1. Environment: SOS
2. Format: 16-sector disks
3. Variables:

--64 characters maximum, all significant

--Reserved variables:

ERR, KBD, EOF, VPOS, ERRLIN, HPOS, FRE, PREFIX\$

--Data types:

- a. 16-bit binary integers:

--Range: -32768 to 3277

- b. 64-bit binary integers:

--Range: - to + 9223372036854775807 or $2^{63}-1$

--Precision: 18 digits

- c. 32-bit binary floating-point:

--Range: - to + 10^{38}

--Precision: 6 digits

- d. Character strings:

--0 to 255 characters

--dynamic

- e. String and numeric arrays:

--indexed starting with 0

--no dimensional limits

4. Operators:

--General:

+ - * / DIV MOD

(NOTE: DIV and MOD are only for long integer operations)

--Binary logical:

AND OR = < > <> >< >= <= =< =>

--Unary logical:

NOT

--String:

+ (concatenation)

5. Statements:

(Note: No statement or statement list may exceed 254 characters, including delimiters.)

LET (optional)

REM

GOTO

IF...GOTO

IF...THEN

IF... statementlist: ELSE statementlist

FOR ctrl variable + expression TO expression STEP expression

NEXT ctrl variable (other ctrl variable)

GOSUB

RETURN

POP

ON expression GOTO

ON expression GOSUB

ON ERR

ON KBD

ON EOF #

OFF ERR

OFF KBD

OFF EOF #

RESUME

--Utility Statements:

NEW LOAD STOP CLEAR SAVE END FRE DELETE CONT

PREFIX\$ RUN CHAIN prog name, line number

--User-Defined Functions:

FN functionname (argument)

DEF FN functionname (argument) = expression

--Debugging:

TRACE NOTRACE

--Cursor and Screen:

```
LIST      VPOS      HOME      NORMAL      DEL      HPOS      TEXT      INVERSE

--String, Numeric, and File functions:
  LEN      TEN      CONV      TAN      SQR      STR$      MID$      CONV%      ATN      EXP
  VAL      LEFT$    CONV&    INT      LOG      CHR$      RIGHT$    CONV$      RND      TYP
  ASC      SUB$     SIN      SGN      REC      HEX$      INSTR     COS      ABS

--Program Resident Data Statements:
  DATA      READ      RESTORE

--Machine Language Statements and Functions:
  INVOKE      PERFORM      EXFN      EXFN%

--File I/O:
  CATALOG      DELETE      RENAME      LOCK      UNLOCK      CREATE
  (f=filenumber r=recordnumber)
  OPEN # f (AS INPUT, AS OUTPUT, AS EXTENSION)
  CLOSE# f      CLOSE
  INPUT # f,r      OUTPUT # f
  PRINT # f,r      PRINT # f,r USING
  READ # f,r      WRITE # f,r

--Console I/O:
  INPUT      GET      TAB      SPC      SCALE      PRINT      PRINT USING
  IMAGE specification(s)

--String specifications:

  Reserve a character position:
    --A left-justified
    --R right-justified

--Literal specifications:
  a. X prints a space
  b. / prints a carriage return/line feed
  c. "literal" prints whatever is in quotes.

--Digit specifications:

  1. Reserve one numeric digit:
    a. # leading zeros suppressed
    b. Z leading zeros printed.
    c. & digit or comma (comma fill every three digits)

  2. Reserve a position for the:
    a. . decimal point
    b. + positive sign
    c. - negative sign (if negative)
    d. $ dollar sign:
      1. ** asterisk fill
      2. ++ floating sign
      3. floating sign (if negative)
      4. $$ floating dollar sign
```

--Scientific notation specification:

E reserves a position for the exponent (power of 10)

--Engineering notation specification:

same as scientific, except the exponent is always a multiple of three.

Apple Technical Communications

Tech Info Library Article Number:272



Tech Info Library

Apple III Business BASIC: Specifications (2 of 2) (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple III Business BASIC: Specifications (2 of 2) (Discontinued)

=====

--Package:

1. Disk: Apple Business BASIC
2. Disk: Blank
3. Manual: Instruction

--System Configuration:

1. Apple III with 128K (minimum) of memory
2. An external disk drive:
 - Apple Disk III, or
 - Hard disk drive, such as a ProFile (optional)
3. A video display device, such as a Monitor III

--Features

1. Addressing over 70K of memory on a 128K system
2. Keeps up to 10 files open simultaneously, with virtually no size constraints

Apple Technical Communications

Tech Info Library Article Number:273



Tech Info Library

Macintosh: Honeywell Bull DPS6 Terminal Emulator

Revised: 7/28/93
Security: Everyone

Macintosh: Honeywell Bull DPS6 Terminal Emulator

=====

Article Created: 11 May 1987
Article Reviewed/Updated: 27 July 1993

There is a product, called the PC7800, that enables a Macintosh to emulate a Honeywell VIP7801/7814 so it can interface with a Honeywell Bull DPS6 computer.

PC7800 may be ordered in the U.S.A. from Bull HN Information Systems (formerly Bull HN), (800) 343-6665. To order the product for delivery in Europe, contact either Rob Anderson in the U.K. at 44 81 894 5577 or Daniel Pepin in Paris, France at 33 13 902 4211. To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:
26 July 1993 - Company title updated from Bull HN to Bull HN Information Systems.
1 April 1991 - Updated for technical accuracy.

Copyright 1987-93, Apple Computer, Inc.

Tech Info Library Article Number:274



Tech Info Library

Apple II: Digitizers

Revised: 2/11/93
Security: Everyone

Apple II: Digitizers

=====

Article Created: 21 September 1984

Article Change History

02/09/93 - UPDATED
Micron Technology acquired by Xceed Technologies.
09/21/84 - REVIEWED
• For accuracy.

Here are a few digitizers for the Apple II:

Computereyes	by	Digital Vision, Inc. 14 Oak St. #2 Needham, MA 02192 (617) 444-9040
Dithertizer II	by	Computer Station 11610 Page Service Drive Saint Louis, Mo 63146 (314) 432-7019
Digisector	by	Micro-Works P.O. Box 1110 Del Mar, CA 92014 (619) 942-2400
Micro D-Cam	by	Micro Mint 561 Willow Ave. Cedarhurst, NY 11516 (516) 374-6793
Micron-Eye	by	Micron Technology (acquired by Xceed Technologies) Xceed Technologies 37560 31 Mile Rd.

Richmond, MI 48062
313-727-4085
800-642-7661

The Dithertizer and the Digisector accept input from a standard video camera. The Micro D-Cam and Micron-Eye use a solid state camera made from a special purpose imaging chip. All have software to map the output from the camera to the High-Res Screen of the Apple II.

The Dithertizer uses a feature called contouring. This makes the processor display only those portions of an image which fall in a certain brightness (or darkness) range. With this method you could set the digitizer to display only the darkest spots on the screen. Then you could write software to scan the digitized image for spots, count them and note their position.

Micron-Technology (acquired by Xceed Technologies) makes an RS-232 version of the Micron-Eye. With the proper software, this could be your digitizer for Macintosh, Lisa or Apple III.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:275



Tech Info Library

Business BASIC III Reference Manual Errata: VAL function

Revised: 10/8/84
Security: Everyone

Business BASIC III Reference Manual Errata: VAL function

=====

Volume 1, page 58 in Chapter 2, Tools of Your Trade:

String Functions: The VAL Function

The ?TYPE MISMATCH ERROR listed for the VAL function does not occur; instead:

1. If the string begins with a non-numeric (except leading spaces) the value returned is 0.
2. If the string begins with a number but contains non-numeric characters then the value returned is the value of the beginning number.

The VAL of a null string is UNDEFINED! Because of the hard coding, Applesoft returns 0. But the RAM-based Business Basic returns whatever value happens to be in RAM memory at the time.

Apple Technical Communications

Tech Info Library Article Number:278



Tech Info Library

Apple IIe: CP/M with ProFile

Revised: 9/27/85
Security: Everyone

Apple IIe: CP/M with ProFile

=====

MicroSoft CP/M versions 2.26B or 2.28B recognize only the 5-megabyte ProFile, and even then only if the ProFile interface card has the 5-megabyte ROM chip part number 3410271A.

Advanced Logic Systems (ALS) has a version of CP/M that works with the Apple IIe and ProFile: it's called ALS CP/M version 3.01C (ProDOS version). Not only can it access the Profile, it can even be installed under Catalyst. Contact ALS (408/730-0306) for more information.

Apple Technical Communications

Tech Info Library Article Number:279



Tech Info Library

DOS 3.3 6502 editor assembler: PR slot command

Revised: 10/8/84
Security: Everyone

DOS 3.3 6502 editor assembler: PR slot command

=====

There is a .PR# slot# command in the DOS 3.3 6502 editor assembler of the DOS tool kit. If you use this command you get not a file listing, but a dump of the buffer that starts with data entered by the user or LOAded from a text file. After this part of the buffer has been printed, the dump continues with the garbage in the buffer beyond the last intelligible character to the end of the allowable buffer. This produces numerous @ signs or other characters depending on the contents of buffer memory after power-up and is a normal part of a Print or List of the assembly program to a printer using .PR# slot# from the editor.

Try it yourself.

1. Boot the DOS 3.3 6502 editor/assembler
2. LOAD a large source code file
3. List it to see what it looks like
4. Type NEW to clear the buffer
5. LOAD a smaller source code file
6. Type .PR#1 to send the DOS command to activate the printer
7. Type L to list the buffer to the printer

Notice that the last part of the first file follows the last line of the second file. Also notice that such a listing does not match the screen output when using the List or Print commands but instead follows the input format.

To obtain a listing with the same format as displayed on the screen using Print or List commands you must append ',@' to the ASM command. This assembles the file without generating an OBJect code file (see page 56 of the editor/assembler manual). To speed this process when using an Imagewriter and Super Serial Card on an Apple II+ or Apple IIe, do the following.

1. Set the Imagewriter print style to ultracondensed (17cpi)
2. Set the baud rate of printer and card to 9600
3. Send the output of the assembly to the printer using PR#

Notice that there is no period (.) preceeding the PR# command in this case. This is because you are not using the DOS command version but rather the

editor/assembler PR# command. See the editor/assembler manual for the format of the PR# command on page 60 and a discussion on pages 60 and 61.

With an Imagewriter at 9600 baud, the above three steps reduce the listing time by 41% when comparing the default type style to the ultracondensed style.

Apple Technical Communications

Tech Info Library Article Number:281



Tech Info Library

Pascal: STRING characters

Revised: 10/8/84
Security: Everyone

Pascal: STRING characters

=====

Use the routine below to create a STRING containing the CHARacters you wish to add to the STRING, then use the Pascal CONCAT to put them together.

```
PROGRAM CONCAT_CHAR;

CONST LEN = 4;                { or whatever you want }

VAR TEST_STRING : STRING;
    CH : CHAR;
    I : INTEGER;

(*$R-*)      { turn Range Checking off so you can    }
              { alter individual cells of the string }

BEGIN
    TEST_STRING[0] := CHR(LEN); { set length of string }
    FOR I := 1 TO LEN DO
        BEGIN
            READ (CH);
            TEST_STRING[I] := CH;
        END;
    WRITELN;
    WRITELN (TEST_STRING);
END.
```

Make sure that if this is done within a PROCEDURE or FUNCTION, and the STRING is passed as a parameter, that the (*\$V-*) option is used as well as declaring a TYPE to pass rather than STRING:

```
TYPE STR_TO_PASS = STRING;

PROCEDURE WHATEVER (ST : STR_TO_PASS);
BEGIN
END;
```

Apple Technical Communications

Tech Info Library Article Number:282



Tech Info Library

Lisa Workshop: Increasing available memory

Revised: 10/8/84
Security: Everyone

Lisa Workshop: Increasing available memory

=====

Approximately 550K bytes remain when Lisa runs the Workshop with all processes killed. To increase available memory over this limit, run an application as a shell by renaming PROGRAM.OBJ to SHELL.PROGRAM.

Apple Technical Communications

Tech Info Library Article Number:283



Tech Info Library

Parallel Interface Card: Jumper Block Modification (11/96)

Revised: 11/20/96
Security: Everyone

Parallel Interface Card: Jumper Block Modification (11/96)

=====

Article Created: 21 September 1984
Article Reviewed/Updated: 19 November 1996

TOPIC -----

This article details how to modify the Parallel Printer Interface card to work with different parallel printers. Refer to the card manual for more information on these modification.

DISCUSSION -----

There are two features that can be modified on the Parallel Card, the wiring of the jumper block and the PROM at location "Prom P1"

Jumper Block

The wiring of the jumper block controls the correct polarity of the strobe and acknowledge signals. Here is an example of the wiring for a "Centronics-type" printer.

Block	
4 -----16	negative strobe, negative acknowledge
6 -----14 AND 15	
7 -----10	
11 -----12 AND 13	

Notch on jumper block denotes pin 1, the count CCW

PROM 1

The location marked "Prom P1" on the card will work with two different PROMs which produce different results when installed. To change the results, just remove one PROM and install the other.

NAME	APPLE PART #	RESULTS
P1 PROM	341-0005	Automatically initializes printer to 80 column. No carriage return generated after every linefeed.
P9 PROM	341-0019	No auto initialization to 80 column mode. Generates a carriage return after every linefeed.

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:285



Tech Info Library

LocalTalk PC Card: A Description (Discontinued May 1991)

Revised: 3/10/94
Security: Everyone

LocalTalk PC Card: A Description (Discontinued May 1991)

=====

Article Created: 1 September 1987
Article Reviewed/Updated: 10 March 1994

TOPIC-----

This article describes the discontinued LocalTalk PC Card, now updated and marketed by Farallon Computing, Inc under the product name: PhoneNET PC Card. To obtain Farallon contact information, use "Farallon" as a search string.

DISCUSSION-----

The LocalTalk PC Card lets you to attach MS-DOS computers to the AppleTalkPersonal Network, the fastest-growing personal computer LAN.

You can enhance documents produced with PC-based applications by incorporating fonts, styles, and graphics that were previously unavailable. And you can print documents of near-typeset quality.

The LocalTalk PC Card translates documents into the PostScript page description language, allowing you to access PostScript features for creating your own custom graphics and layouts. The LocalTalk PC Card supports applications such as WordStar, MultiMate, and Lotus 1-2-3; and the PostScript, Diablo 630, and ASCII print file formats.

The LocalTalk PC Card establishes a standard from which developers can create MS-DOS applications for AppleTalk. Two such applications are InBox PC from Think Technologies and EtherSC from Kinetics. InBox PC features electronic mail and file transfer between a Macintosh Plus and an MS-DPS system. EtherSC is an SCSI Ethernet Interface that allows a Macintosh Plus to run AppleTalk over a directly connected Ethernet.

To use the LocalTalk PC Card you need:

- An AppleTalk Personal Network
- One LocalTalk Connector Kit

- An MS-DOS-compatible computer with:
 - a minimum of 256K
 - two double-sided floppy disk drives or one hard disk and one floppy disk drive
 - PC-DOS Version 3.1 or later
- One LaserWriter or LaserWriter Plus printer.

Technical Specifications

AppleTalk Protocol Support

ALAP,DDP,ATP,NBP,ZIP,Echo, PAP RTMP

Interfaces

RS-422 serial prot (230.4 kilobaud data transfer rate); DMA interface to host PC

Drive Interface

Accessed through software interrupt with parameter block

Configuration

Selectable Interrupt Request (IRQ),DMA Request and Acknowledge (DRQ and DACK), and I/O Address; default configuration corresponding to PC COM2 device

Processor

65C02; 1.8 MHz clock speed

Power Consumption (typical)

4 watts at 5 volts DC

Memory

8 kilobytes RAM, 8 kilobytes ROM

AppleTalk communications controller

Zilog 8530 SCC

Accessible Fonts

Courier, Helvetica, and Times Roman (directly from PC LaserWriter Plus fonts (Using PostScript commands)

PostScript Programming Access

PostScript programming additions may be made directly within the text of a file so that programming additions can be made available to all documents

Article Change History:

10 March 1994 - Updated article to include discontinued information and Farallon info.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:288



Tech Info Library

Scrapbook: Transferring Pictures on Floppy-based System

Revised: 6/17/92
Security: Everyone

Scrapbook: Transferring Pictures on Floppy-based System

=====

Article Created: 17 December 1992
Article Last Reviewed: 27 May 1992
Article Last Updated:

It's not hard to transfer pictures one at a time from one Scrapbook to another if you're careful: the secret is to know when the system is focussing its attention on a particular disk.

The system gets its fonts and desk accessories from the default drive. The default drive is (a) the drive you booted from, or (b) the last drive you ran an applicaiton from. To transfer a picture from one Scrapbook to another, then, simply do the following:

1. Boot up with the disk you want to get the picture from.
2. Open the Scrapbook, copy the picture, and close the Scrapbook.
3. Eject the disk and insert the disk you want to copy to.
4. Run an application on the newly inserted disk.
5. Open the Scrapbook and paste in the new picture.

Step 4 is the one many forget to perform. Even though the Finder is sometimes a little clumsy--asking for the old disk back at surprising times--it's not so bad once you understand that you must run an application to make the system "switch horses."

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Tech Info Library Article Number:289



Tech Info Library

MacTerminal 2.0, 2.1: Problems with System 4.1 and Finder 5.5

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0, 2.1: Problems with System 4.1 and Finder 5.5

=====

There have been compatibility problems with MacTerminal 2.0 and 2.1 using System File version 4.1 and Finder 5.5. Typical problems include system crashing while trying to print in MacTerminal or crashing when quitting the MacTerminal application. The problem is specific not to hardware but to the combination of MacTerminal version 2.1 and System 4.1. Because of this, problems may occur on any Macintosh running the new system software.

To assure full compatibility with system software and MacTerminal 2.1, MacTerminal 2.1 or earlier versions should use System 4.0 or prior system versions. You may want to continue using System 3.2 included on the Master disk of MacTerminal 2.1. Users of Macintosh 512Ke and Macintosh 512K should continue to use System 3.2 and Finder 5.3.

MacTerminal 2.2 is compatible with the new system software.

Apple guidelines prohibit use of certain low memory locations, and the new system software enforces those guidelines. A system error occurs because MacTerminal, for historical reasons, uses a memory location locked by System 4.1 to prevent the use of reserved memory.

Tech Info Library Article Number:290



Tech Info Library

Macintosh: APL terminal emulator

Revised: 5/10/89
Security: Everyone

Macintosh: APL terminal emulator

=====

This article last reviewed: 13 May 1987

STSC's APL*PLUS for the Macintosh (formerly sold as PortAPL) has a built-in APL terminal emulator for an APL workstation. In addition to having an APL terminal emulator built-in, APL*PLUS, a comprehensive APL system in its own right, also includes a LaserWriter APL font which can be used for printing documents with APL characters in them.

There is also a version that runs on the Macintosh SE.

For more information, search on "STSC".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:291



Tech Info Library

Apple III: Cables for Various Printers (1 of 4)

Revised: 8/29/86
Security: Everyone

Apple III: Cables for Various Printers (1 of 4)

Version 1.0

Special Cables:

APPLE III DRIVERS AID CABLE "A"
(This is the diagram for the "standard" Apple Distributed Modem Eliminator cable; Apple Part Number A3M0019).

Device Manufacturer and Models:

Apple	Daisy Wheel Printer (Apple P/N A3M0025)
Apple	Sprint 5/45 (Apple P/N D2M0060)
C. Itoh	F-10
MPI	88G
MPI	99G
Comrex	CR-1
Brother	HR-1
Hewlett Packard	7725
Hewlett Packard	7470A
Anderson Jacobson	832
Anderson Jacobson	833
Anderson Jacobson	841
Qume	Sprint 11

Pin-to-Pin Connections:

Apple II (Male) Serial Device (usually Female)

1	o-----o	1
7	o-----o	7
2	o-----o	3
3	o-----o	2
4	o---+-----o	8
5	o---+ +---o	4
8	o-----+---o	5
6	o-----o	20
20	o-----o	6

Wiring Comments:

Tie Apple III pins	Tie device pins
4 + 5 together	4 + 5 together

Apple III pins 4 + 5	Device pins 4 + 5
tie to device pin 8	tie to Apple III pin 8

NOTE: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "B"

Device Manufacturer and Models:

NEC	3500R
NEC	3510
NEC	3515
NEC	3520
NEC	3525
NEC	7710
NEC	7715
NEC	7720
NEC	7725

Pin-to-Pin Connections:

Apple III (Male)	N.E.C. Spinwriter (usually Female)
------------------	------------------------------------

1 o-----o	1
2 o-----o	3
3 o-----o	2
4 o---+	+---o 4
5 o---+	+---o 5
7 o-----o	7
8 o-----o	19
	+---o 6
	|---o 8
	+---o 20

Wiring Comments:

Tie Apple III pins	Tie device pins
4 + 5 together; they do	4 + 5 together; they do
not connect to the device	not connect to the Apple III

Tie device pins
6 + 8 + 20 together; they do
not connect to the Apple III

Do NOT tie all five:

4, 5, 6, 8 + 20 together!

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position. Apple III Drivers Aid Cable "C" description on next record.

Apple Technical Communications

Tech Info Library Article Number:292



Tech Info Library

Apple III: Cables for Various Printers (2 of 4)

Revised: 11/19/86
Security: Everyone

Apple III: Cables for Various Printers (2 of 4)

=====

Apple III Drivers Aid Cable "C"

Device Manufacturer and Models:

Diablo	620
Diablo	630 (Use as shown; DO NOT change pin 20!)
Diablo	1630
Diablo	1640
Diablo	1650
Xerox	630 (See change; this model ONLY; re: pin 20)
Xerox	1710
Xerox	1720
Xerox	1730
Xerox	1741
Xerox	1750

Pin-to-Pin Connections:

Apple III (Male) Diablo or Xerox (usually Female)

1	o-----o	1
2	o-----o	3
4	o-----+---o	6
		+---o 8
6	o-----o	20 (on Xerox 630 ONLY
		go to pin 11
		instead of pin 20)
7	o-----o	7
		+---o 4
		+---o 5

Wiring Comments:

Apple III pin 4	Tie device pins
tie to device pins	6 + 8 together
6 + 8	
	Tie device pins

4 + 5 together; they do
not connect to the Apple III

Change pin 20 to pin 11
ONLY for the Xerox 630!

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "D"

Device Manufacturer and Model:

Texas Instruments 810
Centronics 737

Pin-to-Pin Connections:

Apple III (Male) Texas Instruments (usually Female)

1	o-----o	1
2	o-----o	3
4	o-----+---o	6
		+---o 8
6	o-----o	11
7	o-----o	7

Wiring Comments:

Apple III pin 4	Tie device pins
tie to device pins	6 + 8 together
6 + 8	

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "E"

Device Manufacturer and Models:

Okidata 82A
Okidata 83A

Pin-to-Pin Connections:

Apple III (Male) Okidata (usually Female)

1	o-----o	1
---	---------	---

```
2  o-----o 3
7  o-----o 7
20 o-----o 11
      +---o 6
      +---o 20
```

Wiring Comments:

Tie device pins
6 + 20 together; they do
not connect to the Apple III

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position. Apple III Drivers Aid Cable "F" description on next record.

Apple Technical Communications

Tech Info Library Article Number:293



Tech Info Library

Apple III: Cables for Various Printers (3 of 4)

Revised: 7/1/85
Security: Everyone

Apple III: Cables for Various Printers (3 of 4)

=====

Apple III Drivers Aid Cable "F"

Device Manufacturer and Model:
Okidata 84

Pin-to-Pin Connections:

Apple III (Male)	Okidata (usually Female)
------------------	--------------------------

1 o-----	o 1
2 o-----	o 3
7 o-----	o 7
6 o-----	o 11
	+---o 4
	+---o 5

	+---o 6
	+---o 20

Wiring Comments:

Tie device pins
4 + 5 together; they do
not connect to the Apple III

Tie device pins
6 + 20 together; they do
not connect to the Apple III

Do NOT tie all four:
4, 5, 6 + 20 together!

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the

"TERMINAL" Position.

Apple III Drivers Aid Cable "G"

Device Manufacturer and Model:
Heathkit H-14

Pin-to-Pin Connections:

Apple III (Male) Heatkit (usually Female)

```
1 o-----o 1
2 o-----o 3
6 o-----o 4
7 o-----o 7
```

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "H"

Device Manufacturer and Model:
Epson MX-70
Epson MX-80

Pin-to-Pin Connections:

Apple III (Male) Epson (usually Female)

```
1 o-----o 1
2 o-----o 3
6 o-----o 11
7 o-----o 7
```

Notes:

Set at 9600 Baud

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "I"

Device Manufacturer and Model:
Anadex DP-9500
Anadex DP-9501

Pin-to-Pin Connections:

Apple III (Male) Anadex (usually Female)

```
1 o-----o 1
2 o-----o 3
6 o-----o 19
7 o-----o 7
```

Notes:

Check parity, baud, stop bits, etc.

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "J"

Device Manufacturer and Model:

NEC 5510

NEC 5515

NEC 5520

NEC 5525

Pin-to-Pin Connections

Apple III (Male) NEC (usually Female)

```
1 o-----o 1
2 o-----o 3
4 o-----o 5
6 o-----o 19
7 o-----o 7
20 o-----+----o 6
              +----o 8
```

Wiring Comments:

Tie device pins
6 + 8 together

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position. Apple III Drivers Aid Cable "K" description on next record.

Apple Technical Communications

Tech Info Library Article Number:294



Tech Info Library

Apple III: Cables for Various Printers (4 of 4)

Revised: 11/19/86
Security: Everyone

Apple III: Cables for Various Printers (4 of 4)

=====

Apple III Drivers Aid Cable "K"

Device Manufacturer and Model:

IDS 125
IDS 225
IDS 440
IDS 445
IDS 460
IDS 560

Pin-to-Pin Connections

Apple III (Male) IDS (usually Female)

2 o-----o 3
6 o-----o 20
7 o-----o 7

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple III Drivers Aid Cable "L"

Device Manufacturer and Model:

Axiom EX-801
Axiom EX-820
Comprint 912
DEC LA34
Teletype 43

Pin-to-Pin Connections:

Apple III (Male) Printer (usually Female)

1 o-----o 1

2 o-----o 3
6 o-----o 20
7 o-----o 7

Note: For proper operation when using the Apple III Super Serial Card (Apple P/N A2B0044) in an Apple III make sure that switch SW 2-6 (on the card) is in the "ON" position and that the jumper block (also on the card) is in the "TERMINAL" Position.

Apple Technical Communications

Tech Info Library Article Number:295



Tech Info Library

Apple IIe: Component diagnostics (1 of 2)

Revised: 7/2/87
Security: Everyone

Apple IIe: Component diagnostics (1 of 2)

=====

Apple IIe computers have built-in diagnostics used during manufacturing. You may invoke the diagnostics by holding down the solid-Apple key while powering the system on, or by unplugging the keyboard and turning the Apple IIe on.

If you depress both the solid and open-Apple keys while powering the system on, the same diagnostics will be run along with a high-pitched tone.

The tone or beep, included in a machine language loop that tests the computers IOU and MMU, merely indicates that the speaker I/O location does indeed work. Because the Apple II performs the IOU/MMU test a random number of times, the beep sounds a random number of times. In addition, the diagnostic routine varies between the Apple IIe, Apple IIe enhanced, and Apple IIC.

The diagnostics test the motherboard's RAM as well as a number of unique LSI components (MMU, IOU, and other ROMs) on the board. If the keyboard is connected, the diagnostic will run through the series of individual tests once. If the keyboard is not connected, the test runs continuously until the system is powered off.

The ICs are tested in the following order: MMU, IOU, E8 ROM, E10 ROM, the eight RAM chips. "Kernel OK" appears on the screen if everything passes the diagnostic.

Note: The diagnostic stops and hangs the processor with the first error detected. There may be subsequent problems in the system; they will go undetected until the first problem is fixed.

Here are some error messages and what they mean:

```
MMU   FLAG E4:0  The Read Lang Card Bank0 switch didn't
                initialize properly during reset.
          1  The Read Lang Card RAM switch didn't
                initialize properly during reset.
          2  The RAMRD switch didn't initialize
                properly during reset.
```

- 3 The RAMWRT switch didn't initialize properly during reset.
- 4 The ALTZP switch didn't initialize properly during reset.
- 5 The C3ROM switch didn't initialize properly during reset.
- 6 The 80STORE switch didn't initialize properly during reset.
- 7 The Read Lang Card Bank0 switch won't change.
- 8 The Read Lang Card RAM switch won't change.
- 9 The RAMRD switch won't change.
- A The RAMWRT switch won't change.
- B The ALTZP switch won't change.
- C The C3ROM switch won't change.
- D The 80STORE switch won't change.

If you receive an MMU FLAG E4 error number, suspect the MMU at location E4.

- IOU FLAG E5:0 The 80VID switch didn't initialize properly during reset.
- 1 The ALTCHAR switch didn't initialize properly during reset.
 - 2 The TEXT switch didn't initialize properly during reset.
 - 3 The PAGE2 switch didn't initialize properly during reset.
 - 4 The MIXMODE switch didn't initialize properly during reset.
 - 5 The HIRES switch didn't initialize properly during reset.
 - 6 The 80VID switch won't change.
 - 7 The ALTCHAR switch won't change.
 - 8 The TEXT switch won't change.
 - 9 The PAGE2 switch won't change.
 - A The MIXMODE switch won't change.
 - B The HIRES switch won't change.

If you receive an IOU FLAG E5 error, suspect the IOU at location E5.



Tech Info Library

Apple IIe: Component diagnostics (2 of 2)

Revised: 7/2/87
Security: Everyone

Apple IIe: Component diagnostics (2 of 2)

=====
ROMs E8 and E10 are tested individually. Since the processor will hang as soon as a failure is detected, and if the failure is in ROM 8, the subsequent test of E10 won't be made. Its possible that if E8 is bad, the diagnostics won't run at all, since they're located in the E8 ROM.

ROM:E8 The ROM at location E8 failed the checksum test.

ROM:E10 The ROM at location E10 failed the checksum test.

The RAM test is a two pass, up and down, write then read test. Any failure is logged and then decoded to provide you with the location of the failed chip.

RAM:F6 A failure detected in the RAM at location F6.
F7 A failure detected in the RAM at location F7.
F8 A failure detected in the RAM at location F8.
F9 A failure detected in the RAM at location F9.
F10 A failure detected in the RAM at location F10.
F11 A failure detected in the RAM at location F11.
F12 A failure detected in the RAM at location F12.
F13 A failure detected in the RAM at location F13.

"KERNEL OK" will appear on the screen when the Apple IIe passes.

Tech Info Library Article Number:298



Tech Info Library

HyperCard: Types of Visual Effects

Revised: 7/17/92
Security: Everyone

HyperCard: Types of Visual Effects

=====

Article Created: 1 September 1987
Article Last Reviewed: 10 July 1992
Article Last Updated: 10 July 1992

Here's a list of HyperCard's varied visual effects which may be used in HyperTalk scripts:

- barn doors open/close
- checkerboard
- iris open/close
- dissolve
- scroll right/left/up/down
- shrink to top/center/bottom
- stretch from top/center/bottom
- venetian blinds
- wipe right/left/up/down
- zoom open/close/in/out

For example, the following script zooms opens the Help stack when you click the Help icon in the Home stack.

```
on mouseUp
    visual effect zoom open
    go to stack "Help"
end mouseUp
```

You can also control a visual's speed: very fast, fast, slow, or very slow.

For example:

```
on mouseUp
    visual effect zoom open very fast
    go to stack "Help"
end mouseUp
```

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Tech Info Library Article Number:301



Tech Info Library

HyperCard: Protect Stack option

Revised: 7/17/92
Security: Everyone

HyperCard: Protect Stack option

=====

Article Created: 1 September 1987
Article Last Reviewed: 10 July 1992
Article Last Updated: 10 July 1992

HyperCard's Protect Stack feature protects stacks from modification or access. Protect Stack appears in the File menu when your User Preference is set to Painting or higher, and gives a number of options for what level of protection you want.

Beware: if you select Private Access in the dialog box, embed a password in the stack, and then forget the password, you won't be able to decipher the password from HyperCard.

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Tech Info Library Article Number:302



Tech Info Library

Macintosh: Sound Generator Demonstration (1 of 4)

Revised: 10/23/84
Security: Everyone

Macintosh: Sound Generator Demonstration (1 of 4)

=====

The following is another MicroSoft BASIC program by Dennis Brothers. It demonstrates the Macintosh's sound generator.

```
1000 CLS: PRINT
1010 PRINT "Macintosh Four-Tone Synthesizer Music Demonstration"
1020 PRINT "           Theme from the New World"
1030 PRINT "           Version 1.00 - 7 May, 1984 -"
1031 PRINT "           Written for A+ Magazine (Issue ?)"
1040 PRINT "           Dennis F. Brothers - Compuserve 70065,172 -"
1041 PRINT "           MCI Mail DBROTHERS"
1050 PRINT
1060 PRINT "           Copyright (c) 1984 -"
1061 PRINT "           Brothers Associates, Wayland MA"
1070 PRINT "Permission is hereby granted for personal, non-"
1071 PRINT "commercial reproduction and use of this program,"
1072 PRINT "provided that this notice is included in any copy."
1100 PRINT
1110 PRINT "Initializing - Please wait....."
1120 CLEAR ,20000
1130 DEFINT A-Z ' Default to integers for speed and space
1140 DIM PARAMLIST(49\2, 1)
1141 REM ' Standard ROM Write parameter lists
1150 DIM SYNTHREC(2, 1) ' Mode word and pointer to sound record
1160 DIM SOUNDREC(24,1)
1161 REM Duration wrd, 4 long-wrd triplets (tone, phase, wave)
1170 DIM DURLIST(99), TONELIST(1,3,99)
1171 REM ' lists of durations and tones to play
1180 GOSUB 8000
1181 REM ' Go initialize the machine-language subroutines
1190 REM
2000 REM Build the tone frequency table
2010 REM
2020 PRINT: PRINT "           Building tone tables....."
2030 DIM NOTEFREQ$(87) ' Simulate a piano keyboard (88 keys)
2040 HALFSTEP#=2#^(1#/12#) ' ratio of musical half-step
2050 NOTEFREQ$(0)=440#/16#
```

```
2052 REM ' 4th A below middle C (A above middle C = 440 Hz)
2060 FOR I=1 TO 11
2070 NOTEFREQ#(I)=NOTEFREQ#(I-1)*HALFSTEP#
2071 REM ' fill in base octave
2080 NEXT I
2090 FOR I=12 TO 87
2100 NOTEFREQ#(I)=NOTEFREQ#(I-12)*2# ' fill in rest of array
2110 NEXT I
2120 REM
2130 REM Set up table of synthesizer step rates corresponding
2131 REM to frequencies
2140 DIM NOTERATE(1,87)
2150 STEPSPERHZ#=(256#*(704#/15667200#))
2160 FOR I=0 TO 87
2170 RATE#=NOTEFREQ#(I)*STEPSPERHZ#*65536#
2180 LPOKE!=FNCODE!(LPOKE):
      CALL LPOKE!(VARPTR(NOTERATE(0,I)),RATE#)
2190 NEXT I
2200 REM
3000 REM Build various waveform tables
3010 REM
3020 PRINT: PRINT "      Building waveform tables....."
3030 REM
3040 REM Set up a square-wave waveform table
3050 DIM WAVESQUARE(127)
3060 FOR I=0 TO 127
3070 POKE VARPTR(WAVESQUARE(0))+I,255
3080 NEXT I
3090 FOR I=128 TO 255
3100 POKE VARPTR(WAVESQUARE(0))+I,0
3110 NEXT I
3120 REM
3130 REM Set up a triangle-wave waveform table
3140 REM
3150 DIM WAVETRIANG(127)
3160 FOR I=0 TO 63
3170 POKE VARPTR(WAVETRIANG(0))+I,128+(I*2)
3180 NEXT I
3190 FOR I=64 TO 191
3200 POKE VARPTR(WAVETRIANG(0))+I,255-((I-64)*2)
3210 NEXT I
3220 FOR I=192 TO 255
3230 POKE VARPTR(WAVETRIANG(0))+I,(I-192)*2
3240 NEXT I
3250 REM
3260 REM Set up a sine-wave waveform table
3270 REM
3280 DIM WAVESINE(127)
3290 PI#=3.14159265#
3300 FOR I=0 TO 255
3310 AMPLITUDE#=SIN((I/256#)*2#*PI#)
3320 POKE VARPTR(WAVESINE(0))+I,FIX(127.5#+AMPLITUDE#*127#)
3330 NEXT I
```

```
3340 REM
3350 REM  Set up a fundamental plus third-harmonic waveform
3351 REM  table
3360 REM
3370 DIM WAVETHIRD(127)
3380 FOR I=0 TO 255
3390 AMPLITUDE#=(SIN((I/256#)*2#*PI#)+SIN(((I*3)/256#)*2#*PI#))
3391 AMPLITUDE#=AMPLITUDE#/2#
3400 POKE VARPTR(WAVETHIRD(0))+I, FIX(127.5#+AMPLITUDE#*127#)
3410 NEXT I
```

Apple Technical Communications

Tech Info Library Article Number:303



Tech Info Library

Macintosh: Sound Generator Demonstration (2 of 4)

Revised: 10/23/84
Security: Everyone

Macintosh: Sound Generator Demonstration (2 of 4)

```
=====

3420 REM
4000 REM  Build the note translation table
4010 REM
4020 PRINT: PRINT "    Building translation tables....."
4030 DATA "CDEFGAB012345678#%"
4040 DATA 0,2,4,5,7,9,11
4050 DATA -9,3,15,27,39,51,63,75,87
4060 DATA +1,-1
4070 RESTORE 4000
4080 READ NOTENAMES$
4090 DIM NOTEINDEX(LEN(NOTENAMES$))
4100 FOR I=1 TO LEN(NOTENAMES$)
4110 READ NOTEINDEX(I)
4120 NEXT I
4130 REM
4140 REM  Build duration table
4150 DURNAME$="SEQHW"
4160 DIM DURVALUE(LEN(DURNAME$))
4170 DURVALUE(1)=1
4180 FOR I=2 TO LEN(DURNAME$)
4190 DURVALUE(I)=DURVALUE(I-1)*2
4200 NEXT I
4210 REM
5000 REM  Compile the music into duration and tone lists
5010 REM
5020 PRINT: PRINT "Compiling music....."
5030 RESTORE 9000
5040 READ TEMPO
5050 TICKSPER16TH=900/TEMPO
5060 LISTPTR=0
5070 DURLIST(LISTPTR)=0  '  zero will terminate list
5080 READ DURATION$:
    IF DURATION$="X" THEN GOTO 6000
5090 DURLIST(LISTPTR)=DURVALUE(INSTR(DURNAME$,DURATION$))
5091 DURLIST(LISTPTR)=DURLIST(LISTPTR)*TICKSPER16TH
5100 FOR I=0 TO 3  '  loop to process four tones
```

```
5110 READ NOTE$: IF NOTE$<>"R" THEN GOTO 5140
5120 LPOKE!=FNCODE!(LPOKE)
5130 CALL LPOKE!(VARPTR(TONELIST(0,I,LISTPTR)), 0!): GOTO 5200
5140 INDEX=0
5150 FOR J=1 TO LEN(NOTE$)
5160 INDEX=INDEX+NOTEINDEX(INSTR(NOTENAMES$,MID$(NOTE$,J,1)))
5170 NEXT J
5180 LPEEK!=FNCODE!(LPEEK)
5190 CALL LPEEK!(VARPTR(TONELIST(0,I,LISTPTR)),VARPTR(NOTERATE(0,INDEX)))
5200 NEXT I
5210 LISTPTR=LISTPTR+1
5220 GOTO 5070
5230 REM
6000 REM Set up four-tone sound data structures
6010 REM
6020 PRINT: PRINT " Setting up sound data structures....."
6030 REM
6040 FOR BUFNUM=0 TO 1
6050 REM Set up four-tone sound Write parameter list
6060 LPOKE!=FNCODE!(LPOKE): LPEEK!=FNCODE!(LPEEK):
        IOWRITE!=FNCODE!(IOWRITE)
6070 REM IMPORTANT!NO NEW VARIABLES MAY BE USED AFTER THIS POINT
6080 REM
6090 FOR I=0 TO 49\2: PARAMLIST(I, BUFNUM)=0: NEXT I
6100 PARAMLIST(24\2, BUFNUM)=-4 ' Sound reference number
6110 CALL LPOKE!(VARPTR(PARAMLIST(0, BUFNUM))+32,VARPTR(SYNTHREC(0, BUFNUM)))
6120 CALL LPOKE!(VARPTR(PARAMLIST(0, BUFNUM))+36, 6!)
6130 REM
6140 REM Set up four-tone synthesizer record
6150 SYNTHREC(0, BUFNUM)=1
6151 REM ' Positive number (>0) indicates four-tone
6160 CALL LPOKE!(VARPTR(SYNTHREC(1, BUFNUM)),VARPTR(SOUNDREC(0,BUFNUM)))
6170 REM
6180 REM Set up four-tone sound record
6190 FOR I=0 TO 24: SOUNDREC(I, BUFNUM)=0: NEXT I
6200 CALL LPOKE!(VARPTR(SOUNDREC(17, BUFNUM)),VARPTR(WAVETHIRD(0)))
6210 CALL LPOKE!(VARPTR(SOUNDREC(19, BUFNUM)),VARPTR(WAVETRIANG(0)))
6220 CALL LPOKE!(VARPTR(SOUNDREC(21, BUFNUM)),VARPTR(WAVETRIANG(0)))
6230 CALL LPOKE!(VARPTR(SOUNDREC(23,BUFNUM)),VARPTR(WAVETRIANG(0)))
6240 NEXT BUFNUM
6250 REM
7000 REM Play the music from the lists
7010 REM
7020 IOWRITEASYNC!=FNCODE!(IOWRITEASYNC)
7030 PRINT: PRINT "Playing music."
7040 LISTPTR=0: BUFNUM=0
7050 WHILE DURLIST(LISTPTR)<>0: BUFNUM=1-BUFNUM
7060 WHILE PARAMLIST(16\2, BUFNUM)<>0: WEND
7061 REM ' Wait for next buffer available
7070 SOUNDREC(0, BUFNUM)=DURLIST(LISTPTR)
7080 FOR I=0 TO 3
7090 CALL LPEEK!(VARPTR(SOUNDREC(1+I*4,BUFNUM)),VARPTR(TONELIST(0,I,LISTPTR)))
7100 NEXT I
```

```
7110 CALL IOWRITEASYNC!(VARPTR(PARAMLIST(0, BUFNUM)))
7120 LISTPTR=LISTPTR+1: WEND
7130 WHILE PARAMLIST(16\2, BUFNUM)<>0: WEND
7131 REM ' Wait for final note to end
7140 REM
7150 PRINT: PRINT "Press a key to play again..."
7160 WHILE INKEY$="": WEND
7170 GOTO 7000
```

Apple Technical Communications

Tech Info Library Article Number:304



Tech Info Library

Macintosh: Sound Generator Demonstration (3 of 4)

Revised: 10/23/84
Security: Everyone

Macintosh: Sound Generator Demonstration (3 of 4)

```
=====

7180 REM
8000 REM Initialize the machine language subroutines
8010 REM
8020 REM HEX Intel format data for machine-language subroutines
8030 DATA "1C000000000C002000300044005400624E560000206E00083010206E000C3080CA"
8040 DATA "1C001C004E5E4E754E560000206E000A30AE00084E5E4E754E560000206E00088E"
8050 DATA "1C0038002010206E000C20804E5E4E754E560000206E000C20AE00084E5E4E7550"
8060 DATA "1C0054004E560000206E0008A0034E5E4E754E560000206E0008A4034E5E4E75F4"
8070 DATA "000000000000"
8080 REM
8090 DIM CODEARRAY(200)
8100 DEF FNCODE!(OFFSET)=VARPTR(CODEARRAY(0))+OFFSET
8110 RESTORE 8030
8111 REM ' Restore to machine-language HEX data statements
8120 MLLINE=8030 ' First DATA statement line number
8130 READ ML$ ' Read next line of HEX data
8140 MLCHK=0 ' Initialize checksum
8150 FOR I=1 TO LEN(ML$)-1 STEP 2
8151 REM ' Scan by bytes (pairs of hex digits)
8160 MLCHK=(MLCHK+VAL("&H"+MID$(ML$,I,2))) MOD &H100
8161 REM' Compute checksum
8170 NEXT I
8180 IF MLCHK<>0 THEN CLS:
PRINT CHR$(7);"Error in ML line";MLLINE: STOP
8190 MLL=VAL("&H"+MID$(ML$,3,2)+MID$(ML$,1,2))
8191 REM ' Get byte count of ML string
8200 MLS=VAL("&H"+MID$(ML$,7,2)+MID$(ML$,5,2))
8201 REM ' Get start addr of ML string
8210 IF MLL=0 THEN GOTO 8280 ' Zero byte count ends ML data
8220 FOR I=0 TO MLL-1
8230 POKE FNCODE!(MLS+I),VAL("&H"+MID$(ML$,9+I*2,2))
8231 REM ' Put ML data in array
8240 NEXT I
8250 MLLINE=MLLINE+10
8251 REM ' Keep track of DATA line number, in case of error
8260 GOTO 8130
```



```
8270 REM  Set up CALL address pointers - offsets are at
8271 REM  beginning of array
8280 WPEEK=CODEARRAY(0): WPEEK!=0   '   Two-byte peek
8290 WPOKE=CODEARRAY(1): WPOKE!=0   '   Two-byte poke
8300 LPEEK=CODEARRAY(2): LPEEK!=0   '   Four-byte peek
8310 LPOKE=CODEARRAY(3): LPOKE!=0   '   Four-byte poke
8320 IOWRITE=CODEARRAY(4): IOWRITE!=0
8321 REM   '   Synchronous Write ROM call
8330 IOWRITEASYNC=CODEARRAY(5): IOWRITEASYNC!=0
8331 REM   '   Asynchronous Write ROM call
8340 RETURN
```

Apple Technical Communications

Tech Info Library Article Number:305



Tech Info Library

Macintosh: Sound Generator Demonstration (4 of 4)

Revised: 10/23/84
Security: Everyone

Macintosh: Sound Generator Demonstration (4 of 4)

```
=====

8350 REM
8400 REM This is the music to be played.
8410 REM
8420 REM First data item is tempo in standard metronome units
8430 REM (quarter-note beats per minute).
8440 REM Subsequent data items are quintuplets of duration and
8441 REM four notes:
8450 REM Duration is single letter
8460 REM (S[ixteenth], E[ighth], Q[uarter], H[alf], or W[hole]).
8470 REM Note is note letter (C, D, E, F, G, A, or B),
8480 REM followed by octave digit
8490 REM (octave 4 starts with Middle C),
8500 REM optionally followed by # for Sharp or % for Flat.
8510 REM Note may be single letter R to indicate Rest.
8520 REM Final data item is single letter X.
8530 REM
9000 DATA 100
9010 REM Theme from the New World - Anton Dvorak
9020 REM Adapted by Joe Gagnon, 72065,267
9030 DATA Q,C3,G3,E4,E4
9040 DATA E,C3,G3,G4,G4
9050 DATA H,C3,G3,G4,G4
9060 DATA Q,C3,G3,E4,E4
9070 DATA E,C3,G3,D4,D4
9080 DATA H,C3,G3,C4,C4
9090 DATA Q,C3,F3,D4,D4
9100 DATA E,C3,F3,E4,E4
9110 DATA Q,C3,F3,G4,G4
9120 DATA E,C3,F3,E4,E4
9130 DATA W,C3,F3,D4,D4
9140 DATA Q,C3,G3,E4,E4
9150 DATA E,C3,G3,G4,G4
9160 DATA H,C3,G3,G4,G4
9170 DATA Q,E3,G3#,E4,E4
9180 DATA E,E3,G3#,D4,D4
9190 DATA H,E3,G3#,C4,C4
```

9200 DATA Q,F3,A3,D4,D4
9210 DATA E,F3,A3,E4,E4
9220 DATA Q,G3,G3,D4,D4
9230 DATA E,G3,G3,C4,C4
9240 DATA W,C3,E3,C4,C4
9250 DATA Q,F3,C3,A4,A4
9260 DATA E,F3,C4,C5,C5
9270 DATA H,F3,C4,C5,C5
9280 DATA Q,G3,G3,B4,B4
9290 DATA Q,E3,E3,G4,G4
9300 DATA H,F3,F3,A4,A4
9310 DATA Q,F3,C4,A4,A4
9320 DATA Q,F3,C4,C5,C5
9330 DATA Q,G3,G3,B4,B4
9340 DATA Q,E3,E3,G4,G4
9350 DATA W,F3,F3,A4,A4
9360 DATA Q,F3,C4,A4,A4
9370 DATA E,F3,C4,C5,C5
9380 DATA H,F3,C4,C5,C5
9390 DATA Q,A3,A3,B4,B4
9400 DATA Q,E3,E3,G4,G4
9410 DATA H,F3,F3,A4,A4
9420 DATA Q,F3,C4,A4,A4
9430 DATA Q,F3,C4,C5,C5
9440 DATA Q,G3,G3,B4,B4
9450 DATA Q,E3,E3,G4,G4
9460 DATA W,F3,F3,A4,A4
9470 DATA Q,C3,G3,E4,E4
9480 DATA E,C3,G3,G4,G4
9490 DATA H,C3,G3,G4,G4
9500 DATA Q,C3,G3,E4,E4
9510 DATA E,C3,G3,D4,D4
9520 DATA H,C3,G3,C4,C4
9530 DATA Q,C3,F3,D4,D4
9540 DATA E,C3,F3,E4,E4
9550 DATA Q,C3,F3,G4,G4
9560 DATA E,C3,F3,E4,E4
9570 DATA W,C3,F3,D4,D4
9580 DATA Q,C4,C4,E4,E4
9590 DATA E,C4,C4,G4,G4
9600 DATA H,B3,B3,G4,G4
9610 DATA Q,A3,A3,C5,C5
9620 DATA E,A3,A3,D5,D5
9630 DATA H,G3,G3,E5,E5
9640 DATA Q,F3,A3,D5,D5
9650 DATA E,F3,A3,C5,C5
9660 DATA Q,F3,A3,D5,D5
9670 DATA Q,F3,A3,A4,A4
9680 DATA W,C3,G3,C5,C5
9690 DATA Q,F3,A3,D5,D5
9700 DATA E,F3,A3,C5,C5
9710 DATA Q,F3,A3,D5,D5
9720 DATA Q,F3,A3,A4,A4

9730 DATA W,C3,G3,C5,C5
9740 DATA H,F3,A3,D5,D5
9750 DATA Q,F3,A3,C5,C5
9760 DATA H,F3,C4,D5,D5
9770 DATA H,D4,D4,A4,A4
9780 DATA W,C4,E4,C5,C5
9790 DATA H,C4,E4,C5,C5
9800 DATA W,R,R,R,R
9810 DATA X
9820 END

Apple Technical Communications

Tech Info Library Article Number:306



Tech Info Library

HyperCard: How to Modify Built-In Sound Effects

Revised: 6/24/90
Security: Everyone

HyperCard: How to Modify Built-In Sound Effects

=====

This article last reviewed: 1 September 1987

The two sounds built into HyperCard, boing and harpsichord, can be easily implemented in your HyperTalk scripts.

For example, here's a button script that plays boing when clicked on:

```
on mouseUp
    play "boing"
end mouseUp
```

By default, sounds are played as a quarter note at middle C, but they can be followed by notes (c, d, e, f, g, a, b) and times for each note (w=whole, h=half, q=quarter, e=eighth, s=sixteenth, t=thirty-second; period=dotted). Notes are separated by spaces.

For example:

```
play boing gs gs de ge cw.
```

This line plays boing in two sixteenth-note Gs, an eighth-note D, an eighth G, and a dotted whole C.

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Tech Info Library Article Number:307



Tech Info Library

HyperCard: Various Search Scripts

Revised: 6/24/90
Security: Everyone

HyperCard: Various Search Scripts

=====

This article last reviewed: 9/1/87

You'll often use HyperCard to search for specific information. The usual way to do this is with the Find command in the message box, but sometimes a button that searches only specific fields is more appropriate.

The standard Find command searches all text fields on all backgrounds of the current stack. If you want searches to include more than one stack, you need to include a stack script in each stack to extend the Find command to search all relevant stacks.

The following button script searches for the selection in stacks "A" and "B":

```
on mouseUp
  set lockScreen to true      - so you don't see the stacks change
  get selection
  go to stack A
  find it
  if the result is empty then
    go to stack B
    find it
    if the result is empty then
      go back
      answer "Sorry, no more information on that topic."
    end if
  end if
  set lockScreen to false
end mouseUp
```

Sometimes, however, you may not want a search to occur because of an explicit Find Command: you'll want a script to search for text in your stacks as a result of an action.

For example, in a phone message stack, when you enter the name of the caller, you want to look up the caller's phone number in the Address stack. Include

the following in the background script:

```
on closeField                                - on Tab or Return key or mouse click
  set lockScreen to true
  get field "Name"                          - from this stack
  go to stack "address"
  find it
  get field "Phone"                        - from Address stack
  go back                                  - to first card of Address stack
  go back                                  - to original card
  put it into field "Phone"                - on the stack
  set lockScreen to false
end closeField
```

If you know what you are searching for, such as a name, you can limit the search to certain fields, using the form:

```
find it in field "Name"
```

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Tech Info Library Article Number:308



Tech Info Library

HyperCard: Displaying on a large screen

Revised: 6/17/92
Security: Everyone

HyperCard: Displaying on a large screen

=====

Article Created: 1 September 1987
Article Last Reviewed: 3 June 1992
Article Last Updated: 3 June 1992

TOPIC -----

How do I make my HyperCard window fill my large screen? The window stays at the 9-inch size, the size of the displays on compact Macintoshes. I have tried this using both version 1.X and 2.X of HyperCard.

DISCUSSION -----

Versions of HyperCard previous to 2.0 do not support cards of different sizes, only the size of a compact Macintosh display, 9 inches.

Version 2.X and later does allow custom sizing of HyperCard windows however. But you can't resize a window "on the fly" to fit a large monitor. A card shows up as a window with no grow box or scroll bars and remains the same size as originally defined when the stack was created unless you specifically select "Stack Info..." and resize the window.

You can, however, put the card anywhere on a large screen. You can also make it easier to get to the tear-off tools menu or the message box by putting them outside the window.

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Tech Info Library Article Number:309



Tech Info Library

Apple IIC: Serial port interfacing (1 of 2)

Revised: 4/27/88
Security: Everyone

Apple IIC: Serial port interfacing (1 of 2)

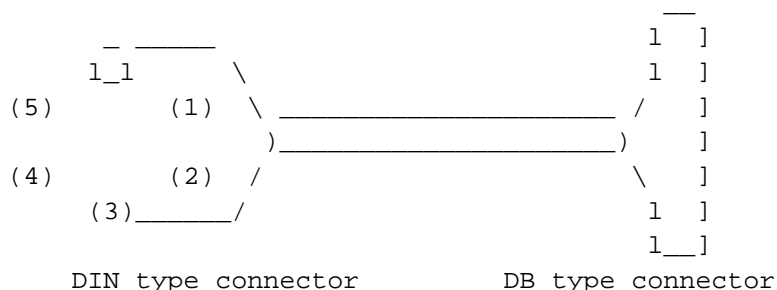
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This article last reviewed: 21 April 1988

The Apple IIC serial ports are 5-pin DIN connectors. Both Port 1 (Printer) and Port 2 (Modem) have the same pin-out and signal description. Here are the cable descriptions for connecting them to the Imagewriter and the Apple Modem.

Apple IIC Serial Port - Imagewriter - Apple Modem

DTR (1)	6 - DSR	6 - DTR
TXD (2)	3 - RCD	9 - TXD
GND (3)	7 - GND	3 - GND
RCD (4)	2 - TXD	5 - RCD
DSR (5)	20 - DTR	2 - DSR



Setting up the printer port from within a program on the IIC is essentially the same as changing the settings on previous interface cards: after first directing output to the serial port (using PR#1 and PR#2 for Ports 1 and 2, respectively), the commands can then be sent to the serial port. Each command for Port 1 must be preceded by CTRL-I. The commands for Port 1 are:

Cmd Description

nnn Set line width(from 001 through 255): This command must be followed by an 'N' or a <CR>.

nnB Set baud rate to value corresponding to nn.

nn	Rate	nn	Rate
01	- 50	09	- 1800
02	- 75	10	- 2400
03	- 110	11	- 3600
04	- 135	12	- 4800
05	- 150	13	- 7200
06	- 300	14	- 9600
07	- 600	15	- 19200
08	- 1200		

nB Set Data Format to values corresponding to n.

n - Format

0	8 data 1 stop
1	7 data 1 stop
2	6 data 1 stop
3	5 data 1 stop
4	8 data 2 stop
5	7 data 2 stop
6	6 data 2 stop
7	5 data 2 stop

I Echo output to screen.

K Disable <LF> after <CR>.

L Generate <LF> after <CR>.

nP Set Parity corresponding to n.

n - Parity

0	none
1	odd
2	none
3	even
4	none
5	mark (1)
6	none
7	space (0)

R Reset Port 1 and exit from serial port 1 firmware.

S Send a 233 millisecond Break character

Z Zap (ignore) further command characters (until CTRL-Reset or PR#1). Do not format output or insert carriage returns into output stream.



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Apple IIC: Serial port interfacing (2 of 2)

Revised: 9/21/84
Security: Everyone

Apple IIC: Serial port interfacing (2 of 2)

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Port 2 uses the same commands, with the differences and additions listed below. Each command for Port 2 must be preceded by a CTRL-A.

nnn	same
nnB	same
nD	same
I	same
K	same
L	same
nP	same
Q	Quit Terminal Mode
R	same
S	same
T	Enter Terminal Mode. Use this command after IN#2 only. If you follow this command by PR#2, the IIC will echo input to output. (NOTE: If the other device is also echoing input to output, entering the first character will cause an infinite loop. Use CTRL-RESET to get out.
Z	same

CTRL-T When issued from a remote device, this command puts the IIC in terminal mode if IN#2 is already in effect. The command is the same as CTRL-T typed locally.

CTRL-R When issued from a remote device, this command undoes the terminal mode command. If IN#2 and PR#2 are in effect, the remote keyboard and display become the input and output devices of the local IIfc. The command is the same as CTRL-A Q typed locally.

Apple Technical Communications

Tech Info Library Article Number:311



Tech Info Library

Apple IIC: Specifications (1 of 2) (Discontinued 9/88)

Revised: 9/10/93
Security: Everyone

Apple IIC: Specifications (1 of 2) (Discontinued 9/88)

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--Order #: A2S4000

--Technical Specifications

1. Central Processing Unit (CPU):

--65C02 microprocessor; supports 27 more internal instructions than the 6502

--16-bit address bus; access range: 65,536 (64K) bytes

--8-bit data bus

--8-bit registers:

1. accumulator
2. index register
3. index register
4. stack pointer
5. processor status register

--Clock speed: 1.02 MHz

2. Video:

--Text display modes:

1. 40-column text, 24 lines, 5 x 7 dot matrix (suitable for television or monitor)
2. 80-column text, 24 lines, 5 x 7 dot matrix (80-column card and monitor required)

--Graphics display modes:

1. Low-resolution 16-color graphics:
 - a. 40h x 48v color blocks
 - b. 40h x 40v with four lines of text
2. High-resolution 6-color graphics:
 - a. 280h x 192v dots

- b. 280h x 160v with four lines of text.
- 3. Double high-resolution 16-color graphics:
 - 560h x 192 v dots; extended 80-Column Card required

--All graphics modes may be displayed on a television or monitor

--Color output signal:

- 1. NTSC
- 2. RGB (red, green, blue) with adapter

--Character set:

--Full 128 ASCII characters
96 printable in both upper and lower case
32 graphics characters, called Mousetext

--Display formats:
5 by 7 dot matrix
Normal, inverse, flashing, or Mousetext

3. Memory:

--128K RAM; expandable to 128K with Apple Extended 80-Column Card

--32K ROM, including:

- 1. Applesoft BASIC interpreter
- 2. System monitor routine for machine-language programming
 - a. Disassembler
 - b. Automatic I/O device assignment
 - c. Keyboard and screen-editing features
 - d. Register examine and modify routines
 - e. 80-column-display firmware
 - f. Mini assembler

--The Apple IIC has a total of 39 integrated circuits.

4. Disk Drive:

--Built-in

--For 5 1/4-inch disks:

- 1. Recording surface: 1
- 2. Tracks per surface: 35
- 3. Sectors per track: 16
- 4. Capacity: 140K
- 5. Access:
 - a. ProDOS and Pascal: 137K
 - b. DOS: 124K

5. Inputs/Outputs:

--Typewriter-style keyboard

1. Contoured, full-travel keys for easy touch-typing
2. Generates all 128 ASCII character codes and:
3. Two programmable function keys
 - a. Open Apple
 - b. Solid Apple
4. Four directional arrow (cursor-movement) keys
5. Special-purpose keys
 - Escape, Control, Caps Lock, Delete, Tab, Shift, and Reset
6. Automatic repeat
7. Two-key rollover
8. Configuration:
 - a. Standard
 - b. DVORAK

--Speaker and sound-generation capability

1. Speaker built-in
2. Volume control knob
3. External output jack with switch

Apple Technical Communications

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Tech Info Library

Apple IIc: Specifications (2 of 2) (Discontinued 9/88)

Revised: 9/10/93
Security: Everyone

Apple IIc: Specifications (2 of 2) (Discontinued 9/88)

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--Back panel:

1. Power switch
2. Connectors (left to right):
 - a. 9-pin D-type miniature for mouse, joystick or hand controller
 - b. 5-pin DIN serial input and output for a modem
 - c. 15-pin D-type for video expansion
 - d. RCA-type jack for a video monitor
 - e. 19-pin D-type for a second disk drive
 - f. 5-pin DIN serial input and output for a printer or plotter
 - g. 7-pin DIN for the 9 to 20 V DC power unit

6. Electrical:

--External Power Supply: The Apple IIc comes with an external power supply that should be plugged into a regular three-hole grounded outlet. Power enters the machine through the 7-pin connector on the back panel.

- Line voltage: 105V to 129 V AC
- Maximum power consumption: 25W continuous
- Nominal supply voltage: +15 V DC
- Maximum supply current: 1.2 A continuous

--Internal converter:

1. Supply voltages
 - a. +5V (+/- 5%)
 - b. +12V (+/- 6%)
 - c. -12V (+/- 10%)
2. Maximum supply currents
 - a. +5V: 1.5A
 - b. +12V: 0.9A continuous; 1.5A intermittent
 - c. -12V: 100mA
3. Safety and EMC qualifications
 - a. FCC Part 15, Class B Computing Devices
 - b. CSA 22.2, No. 154-1979

c. UL 126Z-Office Machines

7. Environmental:

- External ambient operating temperature: 50 to 104 degrees F
(10 to 40 C)
- Line voltage: 105V to 129 V AC (Normal USA range)
- Relative humidity: 20 to 95%

8. Physical:

- Height: 2.5 in. (6.35 cm)
- Width: 12.0 in. (30.48 cm)
- Depth: 11.5 in. (29.21 cm)
- Weight: 7.5 lbs. (3.40 kg)

--Package

1. 64K Apple IIc system
2. Installation Guide: Setting Up Your Apple IIc"
3. Disk: Apple Presents the Apple IIc Part 1
4. Disk: Apple Presents the Apple IIc Part 2
5. Disk: Apple Presents the Apple IIc Part 3
6. Disk: Apple Presents the Apple IIc Part 4
7. Manual: Apple IIc Owner's
8. External Power Supply
9. Power cord
10. Monitor cable
11. Disk: System Utilities
12. RF modulator to connect IIc to a television
13. Warranty and product registration card

Apple Technical Communications

Tech Info Library Article Number:313



Tech Info Library

Apple Color Plotter: Business BASIC Chart Maker III (1 of 5)

Revised: 11/7/84
Security: Everyone

Apple Color Plotter: Business BASIC Chart Maker III (1 of 5)

=====

Following is the Business BASIC source code for an Apple Color Plotter demonstration program named "Chart Maker III". Chart Maker III allows you to creates charts and signs that may be plotted. To get started: just startup your system off your Business BASIC diskette, EXEC this file, then save this program to disk. The sample file created by Chart Maker named "C.DESCRPTION" should be saved as a text file.

```
10 ON ERR GOTO 91
20 DIM txt$(10),center$(10),dent(10),size(10),bold$(10):
   DIM color(10),sl$(10)
30 GOSUB 7300
35 plr$=".RS232"
40 UCA=128:LCA=UCA+32:APPLE$=CHR$(127)
50 GOTO 1000
51 P1=E1*PI/180:P2=E2*PI/180:FOR phi=(p1-dphi) TO p2 STEP
dphi:GOSUB 55:xp=x:yp=y:GOSUB 51111:NEXT
52 IF i<>gr2 THEN PERFORM moveto(%x0,%y0):
   PERFORM lineto(%x,%y)
53 RETURN
55 xp=INT(x0)+((rad*COS(phi))):
   yp=INT(y0)+((rad*SIN(phi))):RETURN
56 XP=INT((XLEFT+(XINCREMENT/2))):
   PERFORM dotat(%xp,%yp):
   KOL=1:FOR K=GC1+1 TO GC2:KOL=KOL+1:
   XP=INT((KOL*XINCREMENT)+(XLEFT-(XINCREMENT/2))):
   PERFORM dotat(%xp,%yp):NEXT:RETURN
58 PERFORM moveto(%xp,%yp):RETURN
59 PERFORM lineto(%xp,%yp):RETURN
65 COLOR15,0:IF CMO%=0 THEN COLOR4,0
66 RETURN
69 GOSUB 65:M$=BOT$:PV=23:GOSUB 350:RETURN
70 WINDOW 2,2 TO 79,13:GOSUB 90:RETURN
71 WINDOW 2,15 TO 79,15:GOSUB 90:pv=15:RETURN
72 WINDOW 2,17 TO 79,23:GOSUB 90:M$=BOT$:pv=23:GOSUB 350:RETURN
73 WINDOW 2,17 TO 79,23:GOSUB 90:RETURN
75 PV=18:GOSUB 80:GOSUB 350:RETURN
```

```
76 PV=21:GOSUB 80:GOSUB 350:RETURN
77 WINDOW 2,18 TO 79,23:GOSUB 90:RETURN
80 WINDOW 2,PV TO 79,PV:GOSUB 90:RETURN
81 WINDOW PH,PV TO 79,PV:GOSUB 90:RETURN
82 WINDOW PH,PV TO 79,PV:GOSUB 90:RETURN
83 WINDOW 2,22 TO 79,22:GOSUB 90:RETURN
84 WINDOW 2,21 TO 79,23:GOSUB 90:RETURN
85 WINDOW 2,23 TO 79,23:GOSUB 90:RETURN
86 WINDOW 2,19 TO 79,23:GOSUB 90:RETURN
87 WINDOW 2,23 TO 79,2:GOSUB 90:RETURN
88 GOSUB 85:RETURN
89 Z=1:GOSUB 86:GOSUB 84:RETURN
90 HOME:WINDOW 1,1 TO 80,24:RETURN
91 REM
97 TEXT:HOME:
  PRINT"Apple Business BASIC -- Type 'RUN HELLO' to Restart":
  PRINT"or, 'GOTO 50' to Restart with Last Chart.":END
98 PRINT ERR, ERRLIN:END
99 VPOS=PV:HPOS=PH:RETURN
101 b$=""
102 phh=ph:i=1:a$="":GOSUB 190
103 HPOS=phh+i-1:PRINT CHR$(5);:GET a$:PRINT CHR$(6);:
  chra=ASC(a$)
104 IF chra=8 AND i>1 THEN i=i-1:GOTO 103
105 IF chra=21 AND i<=LEN(b$) THEN i=i+1:GOTO 103
106 IF chra=127 OR chra=136 OR chra=92
  THEN IF i>1 THEN b$=MID$(b$,1,i-2)+MID$(b$,i):
  GOSUB 190:i=i-1:GOTO 103:ELSE GOTO 103
107 IF(chra=201 OR chra=233) AND LEN(b$)<=s1
  THEN b$=MID$(b$,1,i-1)+" "+MID$(b$,i):
  GOSUB 190:GOTO 103
108 IF chra=13 THEN RETURN
109 IF chra=27 THEN RETURN
110 IF chra<32 OR chra>127 THEN PRINT CHR$(7);:GOTO 103
112 b$=MID$(b$,1,i-1)+a$+MID$(b$,i+1):IF i<s1 THEN i=i+1
113 PRINT a$;
115 GOTO 103
190 ph=phh:GOSUB 99:
191 PRINT b$;
195 FOR j=LEN(b$)+1 TO s1:PRINT". ";:NEXT
199 RETURN
201 X9=0:X8=0:H9=0:GOSUB 101:IF A$=CHR$(27) THEN RETURN:
  ELSE:IF B$="" THEN B$=CONV$(11):PRINT b$;
202 N$=Z$+B$:FOR H=1 TO LEN(N$)
203 IF LEN(N$)=0 THEN X9=1:RETURN
204 IF ASC(MID$(N$,H,1))=46 THEN H9=H9+1:GOTO 212
205 IF ASC(MID$(N$,H,1))=45 THEN H8=H:GOTO 209
206 IF ASC(MID$(N$,H,1))<48 THEN X9=1:RETURN
207 IF ASC(MID$(N$,H,1))>57 THEN X9=1:RETURN
208 GOTO 212
209 IF H8=1 THEN 212
210 X9=1:RETURN
212 NEXT
```

```
213 X8=VAL(N$)
214 IF X8>UL THEN X9=1:RETURN
215 IF X8<LL THEN X9=1:RETURN
216 X9=2:RETURN
345 GOSUB 99:PRINT"";:RETURN
350 PH=INT(40-(LEN(M$)/2)):GOSUB 99:PRINT M$;:RETURN:
    REM print centered line
351 GOSUB 82:RETURN:REM clear a line
352 GOSUB 99:PRINT M$;:RETURN
353 PH=INT(40-(LEN(M$)/2)):GOSUB 99:PRINT M$;:RETURN:
    REM print centered linehigh
354 PV=15:PH=3:GOSUB 345:PH=5:GOSUB 99:PRINT M$;:RETURN:REM cmd
355 HOLD=PH:PH=2:GOSUB 345:PH=HOLD:RETURN
356 PH=HOLD:PV=16:GOSUB 99:PRINT"?";:RETURN
357 PV=15:PH=INT(40-(LEN(M$)/2)):GOSUB 99:
    PRINT M$;:NORMAL:RETURN:REM print centered line
358 PV=15:PH=2:GOSUB 99:PRINT" ";:RETURN
359 PV=15:PH=3:GOSUB 345:RETURN
```

Apple Technical Communications

Tech Info Library Article Number:314



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Apple Color Plotter: Business BASIC Chart Maker III (2 of 5)

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Security: Everyone

Apple Color Plotter: Business BASIC Chart Maker III (2 of 5)

=====

```
369 PRINT CHR$(7);:RETURN
370 PRINT CHR$(7);:
    IF LEN(Z1$)<>0 AND Z$<>" THEN Z$="":
    SL=SL+1:PHH=PHH-1
374 PH=PHH:GOSUB 99:FOR i%=1 TO sl+1:PRINT " ";:NEXT
379 RETURN
400 OA%=0:CMD=0
410 GET a$:cmd=ASC(a$)
420 IF CMD>96 AND CMD<123 THEN CMD=CMD-32:RETURN
425 IF CMD>64 AND CMD<91 THEN RETURN
435 IF CMD=27 THEN RETURN
440 IF CMD=32 THEN RETURN
450 IF cmd=13 THEN RETURN
460 IF cmd>47 AND cmd<58 THEN RETURN
470 IF CMD=(81+UCA) OR CMD=(81+LCA) THEN OA%=1:CMD=16:RETURN:
    REM Quit
475 PRINT CHR$(7);:GOTO 400
480 IF cmd>48 OR cmd<58 THEN RETURN
1000 TEXT:INVERSE:HOME:NORMAL
1010 GOSUB 70:GOSUB 71:GOSUB 72
1020 INVERSE:M$="Chart Maker III":pv=1:GOSUB 350:NORMAL
1030 INVERSE:
    M$="Press ESCAPE to 'Back Out' of Any Function":
    pv=14:GOSUB 350:NORMAL
1040 INVERSE:
    m$="Public Domain Software courtesy Apple Computer, Inc.":
    pv=24:GOSUB 350:NORMAL
1090 GOSUB 7000
1200 Z=0:Z$="":GOSUB 71:a= FRE
1201 pv=24:ph=70:INVERSE:NORMAL
1205 M$="FUNCTIONS-New Enter Move Clear Save Load Draw OA-Quit":
    GOSUB 354
1210 ON ERROR GOTO 91
1220 GOSUB 400
1230 IF OA%=1 AND CMD=16 THEN 91
1235 IF OA%=1 THEN 1299
```

```
1240 IF CMD=78 THEN GOSUB 8000:GOTO 1200:REM Start New Chart
1250 IF CMD=69 THEN x9=0:x8=0:GOSUB 6000:GOTO 1200:
    REM Enter a Line
1260 IF CMD=68 THEN GOSUB 9000:GOTO 1200:REM Draw the Chart
1270 IF cmd=67 THEN GOSUB 8500:GOTO 1200:REM Clear Line
1272 IF cmd=77 THEN GOSUB 10000:GOTO 1200:REM Move a line
1274 IF cmd=83 THEN GOSUB 2000:GOTO 1200:REM Save a Chart
1275 IF cmd=76 THEN GOSUB 3000:GOTO 1200:REM Load a Chart
1276 IF cmd>47 AND cmd<58 THEN x9=2:
    x8=VAL(CHR$(cmd)):cmd=69:GOSUB 6000:GOTO 1200
1299 PRINT CHR$(7);:GOTO 1220
2000 GOSUB 71:m$="Save a Chart Specification":GOSUB 357
2100 pv=20:m$="Name to Save Chart : ":GOSUB 353
2110 pv=20:ph=54:sl=13:GOSUB 101:
    IF a$=CHR$(27) THEN GOSUB 72:RETURN
2120 name$="C."+b$
2130 ON ERR GOTO 2200
2140 DELETE name$
2200 ON ERR GOTO 2300
2205 OPEN#1 AS OUTPUT,name$
2210 FOR i=1 TO 10
2220 PRINT#1;txt$(i):PRINT#1:center$(i):PRINT#1;dent(i):
    PRINT#1;size(i):PRINT#1:bold$(i):PRINT#1;color(i):
    PRINT#1;sl$(i)
2230 NEXT
2240 CLOSE
2250 GOSUB 72:RETURN
2300 GOSUB 72:PRINT CHR$(7);:CLOSE
2320 m$="There is no room on the disk":pv=18:GOSUB 353
2330 m$="You'll have to delete files or use a different disk":
    pv=20:GOSUB 353
2340 m$="Press Any Key to Continue":pv=22:GOSUB 353
2350 GOSUB 400
2360 ON ERR GOTO 2380
2370 DELETE name$
2380 GOTO 2250
2400 PRINT ERR, ERRLIN:END
3000 GOSUB 71:m$="Load a Chart Specification":GOSUB 357
3100 pv=20:m$="Name of Chart to Load : ":GOSUB 353
3110 pv=20:ph=54:sl=13:GOSUB 101:
    IF a$=CHR$(27) THEN GOSUB 72:RETURN
3120 name$="C."+b$
3130 ON ERR GOTO 3300
3200 OPEN#1 AS INPUT,name$
3210 FOR i=1 TO 10
3220 INPUT#1;txt$(i):INPUT#1:center$(i):INPUT#1;dent(i):
    INPUT#1;size(i):INPUT#1:bold$(i):INPUT#1;color(i):
    INPUT#1;sl$(i)
3230 NEXT:CLOSE
3240 GOSUB 7005
3250 GOSUB 72:RETURN
3300 GOSUB 72:m$="Could NOT find Chart named "+name$:
    pv=20:GOSUB 353
```

```
3310 m$="Press Any Key to Continue":
      pv=22:GOSUB 353:PRINT CHR$(7);
3320 GOSUB 400:GOSUB 72:GOTO 3250
4000 m$="This Function Not Implemented, Yet":pv=20:GOSUB 353
4010 m$="Press Any Key to Continue":pv=22:GOSUB 353
4015 PRINT CHR$(7);
4020 GOSUB 400
4030 RETURN
6000 GOSUB 71:m$="Enter/Change a Line":GOSUB 357
6010 m$="Line (1-10) :   Size (1-3) :   Color (1-4):":
      pv=18:ph=5:GOSUB 352
6020 m$="Center (y/n): Bold (y/n): Slant (y/n): Indent Spaces:" :
      pv=20:ph=5:GOSUB 352
6030 m$="Text :   ":pv=22:ph=5:GOSUB 352
6100 pv=18:ph=18:sl=2:ll=1:ul=10
6102 IF x8=0 AND x9=2 THEN x8=10
6103 IF x8<>0 THEN GOSUB 99:PRINT x8;:GOTO 6130
6105 GOSUB 201:IF a$=CHR$(27) THEN GOTO 6990
6110 ON x9 GOTO 6120,6130
6120 GOSUB 369:x8=0:GOTO 6100
6130 n=x8
6200 pv=18:ph=39:sl=1:ll=1:ul=3:GOSUB 201:IF a$=CHR$(27) THEN
GOTO 6990
6210 ON x9 GOTO 6220,6230
6220 GOSUB 369:GOTO 6200
6230 size=x8
```

Apple Technical Communications

Tech Info Library Article Number:315



Tech Info Library

Apple Color Plotter: Business BASIC Chart Maker III (3 of 5)

Revised: 11/7/84
Security: Everyone

Apple Color Plotter: Business BASIC Chart Maker III (3 of 5)

=====

```
6300 ph=58:sl=1:ll=1:ul=4:GOSUB 201:
      IF a$=CHR$(27) THEN GOTO 6990
6310 ON x9 GOTO 6320,6330
6320 GOSUB 369:GOTO 6300
6330 color=x8
6400 pv=20:ph=18:sl=1:GOSUB 101:IF a$=CHR$(27) THEN GOTO 6990
6405 IF a$=CHR$(13) AND LEN(b$)=0 THEN center$="N":
      m$=center$:GOSUB 352:GOTO 6500
6410 IF b$="Y" OR b$="y" THEN center$="Y":GOTO 6500
6420 IF b$="N" OR b$="n" THEN center$="N":GOTO 6500
6430 GOTO 6400
6500 pv=20:ph=39:sl=1:GOSUB 101:IF a$=CHR$(27) THEN GOTO 6990
6505 IF a$=CHR$(13) AND LEN(b$)=0 THEN bold$="N":m$=bold$:
      GOSUB 352:GOTO 6550
6510 IF b$="Y" OR b$="y" THEN bold$="Y":GOTO 6550
6520 IF b$="N" OR b$="n" THEN bold$="N":GOTO 6550
6530 GOTO 6500
6550 pv=20:ph=58:sl=1:GOSUB 101:IF a$=CHR$(27) THEN GOTO 6990
6555 IF a$=CHR$(13) AND LEN(b$)=0 THEN sl$="N":
      m$=sl$:GOSUB 352:GOTO 6600
6560 IF b$="Y" OR b$="y" THEN sl$="Y":GOTO 6600
6570 IF b$="N" OR b$="n" THEN sl$="N":GOTO 6600
6580 GOTO 6550
6600 IF center$="Y" THEN dent=0:GOTO 6640
6605 pv=20:ph=77:sl=2:ll=0:ul=15:GOSUB 201:
      IF a$=CHR$(27) THEN GOTO 6990
6610 ON x9 GOTO 6620,6630
6620 GOSUB 369:GOTO 6600
6630 dent=x8
6640 IF SIZE=1 THEN SL=40:GOTO 6650
6641 IF SIZE=2 THEN SL=30:GOTO 6650
6642 IF SIZE=3 THEN SL=20:GOTO 6650
6650 SL=SL-DENT
6700 pv=22:ph=12:b$=txt$(n):GOSUB 102:
      IF a$=CHR$(27) THEN GOTO 6990
6710 txt$=b$
```

```
6750 txt$(n)=txt$
6751 color(n)=color
6752 size(n)=size
6753 dent(n)=dent
6754 center$(n)=center$
6755 bold$(n)=bold$
6760 sl$(n)=sl$
6800 WINDOW 5,N+3 TO 79,N+3:GOSUB 90
6810 i=n:GOSUB 7010
6990 REM *** GOSUB 7000
6995 GOSUB 72
6999 RETURN
7000 GOSUB 70:GOSUB 7200
7005 FOR i=1 TO 10:GOSUB 7010:NEXT:RETURN
7010 PV=I+3
7020 PH=3:GOSUB 99:PRINT I;
7030 PH=7:m$=".....":
      GOSUB 352:M$=TXT$(I)
7045 IF center$(i)="Y" THEN ph=27-(LEN(m$)/2)
7046 IF dent(i)>0 THEN ph=ph+dent(i)
7050 GOSUB 352
7055 IF size(i)>0 THEN m$=STR$(size(i)):ph=49:GOSUB 352
7058 IF txt$(i)="" THEN RETURN
7060 IF color(i)>0 THEN m$=STR$(color(i)):ph=54:GOSUB 352
7070 m$=center$(i):ph=60:GOSUB 7150
7080 IF dent(i)>0 THEN m$=STR$(dent(i)):ph=77:GOSUB 352
7100 m$=bold$(i):ph=65:GOSUB 7150
7105 m$=sl$(i):ph=71:GOSUB 7150
7110 RETURN
7150 IF m$="Y" THEN m$="*":GOSUB 352
7156 RETURN
7200 pv=2:ph=3:m$="Line":GOSUB 352
7205 ph=20:M$="Text to be Drawn":GOSUB 352
7210 ph=52:m$="Color":GOSUB 352
7220 ph=58:m$="Cntr":GOSUB 352
7230 ph=75:m$="Indnt":GOSUB 352
7240 ph=47:m$="Size":GOSUB 352
7250 ph=63:m$="Bold":GOSUB 352
7260 ph=69:m$="Slnt":GOSUB 352
7299 RETURN
7300 FOR i=1 TO 10
7310 txt$(i)="" : center$(i)="" : dent(i)=0 : size(i)=0 :
      bold$(i)="" : color(i)=0 : sl$(i)=""
7320 NEXT:RETURN
8000 GOSUB 71:
      M$="Clear out the 'Old Chart' and Start a New One":
      GOSUB 357
8010 pv=23:GOSUB 80:m$="Are You Sure, (Y or N)":pv=20:ph=5:
      GOSUB 353
8020 GOSUB 400:IF cmd=27 THEN GOTO 8999
8030 IF cmd=89 THEN GOSUB 7300:GOSUB 7000:GOTO 8999
8031 IF cmd=78 THEN GOTO 8999
8035 PRINT CHR$(7);:GOTO 8020
```

```
8099 GOSUB 72:RETURN
8500 GOSUB 71:M$="Clear Out A Line":GOSUB 357
8501 m$="Line to Clear (1-10) :   ":pv=18:ph=5:GOSUB 353
8502 pv=18:ph=50:sl=2:ll=1:ul=10:GOSUB 201:
      IF a$=CHR$(27) THEN GOTO 8599
8503 ON x9 GOTO 8504,8505
8504 GOSUB 369:GOTO 8502
8505 i=x8
8510 pv=23:GOSUB 80:m$="Are You Sure, (Y or N)":
      pv=20:ph=5:GOSUB 353
8520 GOSUB 400:IF cmd=27 THEN GOTO 8599
8530 IF cmd=89 THEN GOTO 8540
8531 IF cmd=78 THEN GOTO 8599
8535 PRINT CHR$(7);:GOTO 8520
8540 txt$(i)="":center$(i)="":dent(i)=0:size(i)=0:
      bold$(i)="":color(i)=0:sl$(i)=" "
8550 WINDOW 5,i+3 TO 79,i+3:GOSUB 90:GOSUB 7010
8599 GOSUB 72:RETURN
8999 GOSUB 72:RETURN
9000 GOSUB 9001:GOTO 9002
9001 m$="Draw The Chart on Device Named '"+plr$+"':
      pv=15:GOSUB 71:GOSUB 353:RETURN
9002 pv=19:m$="Name of Chart":GOSUB 353:pv=21:
      m$="Do You Want a Border on the Chart ?   (Y or N) :":
      GOSUB 353
9003 pv=19:ph=50:sl=8:GOSUB 101:
      IF a$=CHR$(27) THEN GOSUB 72:RETURN
9004 chart$=b$
```

Apple Technical Communications

Tech Info Library Article Number:316



Tech Info Library

Apple Color Plotter: Business BASIC Chart Maker III (4 of 5)

Revised: 11/7/84
Security: Everyone

Apple Color Plotter: Business BASIC Chart Maker III (4 of 5)

=====

```
9007 pv=21:ph=64:sl=1:GOSUB 101:
      IF a$=CHR$(27) THEN GOSUB 72:RETURN
9008 IF b$="Y" OR b$="y" THEN border$="Y":GOTO 9017
9009 IF b$="N" OR b$="n" THEN border$="N":GOTO 9017
9010 GOTO 9007
9017 GOSUB 50000:IF cmd=27 THEN GOSUB 72:RETURN
9018 ON KBD GOTO 9900
9019 pv=20:m$="Press ESCAPE to Terminate Plotting":GOSUB 353
9020 IF border$="Y" THEN xp=0:
      yp=0:GOSUB 51110:yp=1759:GOSUB 51111:xp=2394:GOSUB 51111:
      yp=0:GOSUB 51111:xp=0:GOSUB 51111
9030 FOR i=1 TO 10
9040 IF LEN(txt$(i))=0 THEN 9400
9050 IF size(i)=1 THEN si=54:si1=54:GOTO 9060
9051 IF size(i)=2 THEN si=72:si1=36:GOTO 9060
9052 IF size(i)=3 THEN si=108:si1=27
9060 GOSUB 51150
9070 pn=color(i):GOSUB 51100
9072 hpgl$="SL0":IF sl$(i)="Y" THEN hpgl$="SL20"
9076 GOSUB 51000
9080 REM *** xp=100:yp=1759-(i*175.9):yp=yp+(si/2):GOSUB 51110
9085 xp=100:yp=1659-(i*155.9):yp=yp+si1:GOSUB 51110
9090 IF center$(i)="Y" THEN xp=1197:GOSUB 51110:GOSUB 9500:
      GOTO 9110
9100 IF dent(i)>0 THEN GOSUB 9600
9110 ms$=txt$(i):GOSUB 51140
9120 IF bold$(i)<>"Y" THEN GOTO 9400
9130 IF center$(i)="Y" THEN xp=1197:GOSUB 51110:GOSUB 9500:
      GOTO 9300
9200 xp=100:GOSUB 51110
9210 IF dent(i)>0 THEN GOSUB 9600
9300 hpgl$="MR4,4":GOSUB 51000
9310 ms$=txt$(i):GOSUB 51140
9400 NEXT
9410 pn=1:GOSUB 51100
9415 IF LEN(chart$)>0 THEN si=40:GOSUB 51150:xp=2050:yp=10:
```

```

        GOSUB 51110:ms$=chart$:GOSUB 51140
9420 si=30:GOSUB 51150
9430 hpgl$="CH":GOSUB 51000:pn=1:GOSUB 51100
9440 CLOSE:GOSUB 72
9450 IF exit=1 THEN exit=0:GOTO 1200
9499 RETURN
9500 BACKUP=((INT(LEN(txt$(i))/2)))
9510 IF backup<.5 THEN GOTO 9550
9515 hpgl$="PL ":GOSUB 51000:hpgl$="PL"+CHR$(8):GOSUB 51000
9520 FOR j9=1 TO backup
9530 hpgl$="PL"+CHR$(8):GOSUB 51000
9540 NEXT
9550 RETURN
9600 FOR j9=1 TO dent(i)
9610 hpgl$="PL ":GOSUB 51000
9620 NEXT:RETURN
9900 OFF KBD
9910 IF KBD=27 THEN 9940
9920 ON KBD GOTO 9900
9930 RETURN
9940 ON ERR GOTO 9960
9950 POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:
      POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:POP:
      POP:POP:POP:POP
9960 exit=1
9999 GOTO 9410
10000 GOSUB 71:m$="Move a Line":GOSUB 357
10010 pv=20:ph=5:m$="Move from line # : Move to line ":
      GOSUB 353
10020 ph=39:sl=2:ll=1:ul=10:GOSUB 201:IF a$=CHR$(27) THEN 10199
10030 ON x9 GOTO 10040,10050
10040 GOSUB 369:GOTO 10020
10050 n2=x8
10060 ph=59:sl=2:ll=1:ul=10:GOSUB 201:IF a$=CHR$(27) THEN 10199
10070 ON x9 GOTO 10080,10090
10080 GOSUB 369:GOTO 10060
10090 n3=x8
10100 Txt$(n3)=Txt$(n2):center$(n3)=center$(n2):
      dent(n3)=dent(n2):size(n3)=size(n2):bold$(n3)=bold$(n2):
      color(n3)=color(n2):sl$(n3)=sl$(n2):i=n3:GOSUB 10800
10110 i=n2:GOSUB 10900:GOSUB 10800
10199 GOSUB 72:RETURN
10800 WINDOW 5,i+3 TO 79,i+3:GOSUB 90:GOSUB 7010:RETURN
10900 txt$(i)="" :center$(i)="" :dent(i)=0:size(i)=0:
      bold$(i)="" :color(i)=0:sl$(i)="" :RETURN
50000 PRINT CHR$(7);
50010 PV=17:PH=2:GOSUB 99:M$="Prepare the Plotter":GOSUB 350
50015 m$="(Insert Paper, turn it on, and press 'LOCAL' button)":
      pv=18:GOSUB 350
50020 PV=19:GOSUB 99:
      M$="Keyboard 'RETURN' When Ready to Start Plotting":
      GOSUB 350
50025 pv=21:

```

```
        m$="ESCAPE cancels Plot; 'C' Changes Driver Device Name":
        GOSUB 350
50030 GOSUB 400:IF cmd=27 THEN GOSUB 72:RETURN
50032 IF cmd=67 THEN GOSUB 57000:GOTO 50000
50033 IF a$<>CHR$(13) THEN 50030
50035 ON ERR GOTO 50050
50040 OPEN#1,plr$:hppl$="SP0":GOSUB 51000:PN=1:GOSUB 51100
50041 GOSUB 73:pv=20:m$="Drawing Graph":GOSUB 350:GOSUB 72
50045 ON ERR GOTO 97
50047 RETURN
50049 PRINT ERR, ERRLIN:END
50050 PRINT CHR$(7);:GOSUB 73:GOSUB 71
50060 m$="Graph'n'Calc tried to Open '"+plr$+"'" which is not":
        pv=17:GOSUB 350
50070 m$="configured into SOS.DRIVER on the 'Boot' Diskette.":
        pv=19:ph=5:GOSUB 352
50080 m$="If this driver is configured for the Plotter, give":
        pv=20:GOSUB 352
50090 m$="its Device Name in the 'C' option in the Draw":
        pv=21:GOSUB 352
```

Apple Technical Communications

Tech Info Library Article Number:317



Tech Info Library

Apple Color Plotter: Business BASIC Chart Maker III (5 of 5)

Revised: 11/7/84
Security: Everyone

Apple Color Plotter: Business BASIC Chart Maker III (5 of 5)

```
=====

50091 m$="command to use it as the Plotter.":pv=22:GOSUB 352
50092 m$="(Press Any Key to Continue)":pv=23:GOSUB 350
50098 GET a$
50099 GOSUB 72:GOTO 50000
50100 XP=XLEFT:YP=YBOT:GOSUB 51110:YP=YTOP-50:GOSUB 51111:
      XP=XLEFT+XLEN+1:GOSUB 51111:YP=YBOT:GOSUB 51111:XP=XLEFT:
      GOSUB 51111:RETURN:REM The Box
50200 REM Graph Title
50201 IF LEN(GRTIT$)=0 THEN RETURN
50202 ms$=grtit$
50205 si=30:IF LEN(ms$)<29 THEN si=50:GOTO 50209
50206 IF LEN(ms$)<36 THEN si=45:GOTO 50209
50207 IF LEN(ms$)<41 THEN si=37:GOTO 50209
50209 GOSUB 51150
50210 XP=XLEFT+(INT(XLEN/2)):YP=YTOP-25
50215 hppl$="PL ":GOSUB 51000:hppl$="PL"+CHR$(8):GOSUB 51000
50220 GOSUB 51110:GOSUB 53420:GOSUB 51140:RETURN
51000 PRINT#1;HPGL$+CHR$(3):RETURN
51001 PRINT#1;HPGL$:RETURN
51100 HPGL$="PS"+STR$(PN)+";":GOSUB 51000:RETURN:REM Get pen
51110 HPGL$="MA"+STR$(XP)+", "+STR$(YP):GOSUB 51000:RETURN:
      REM Move X-Y
51111 HPGL$="DA"+STR$(XP)+", "+STR$(YP):GOSUB 51000:RETURN:
      REM Draw to XY
51112 hppl$="PM"+STR$(X):GOSUB 51000:RETURN:REM Plot symbol
51120 HPGL$="PU;":GOSUB 51000:RETURN:REM Pen Up
51130 HPGL$="PD;":GOSUB 51000:RETURN:REM Pen Down
51140 HPGL$="PL"+MS$:GOSUB 51000:RETURN
51150 HPGL$="LS"+STR$(SI):GOSUB 51000:RETURN
51160 GOSUB 51110:HPGL$="PL":GOSUB 51001
51161 IF N=INT(N) THEN PRINT#1; USING"#####";N;:GOTO 51169
51165 PRINT#1; USING"####.#";n;
51169 hppl$=CHR$(3):GOSUB 51001:RETURN
51170 GOSUB 51110:HPGL$="XT;":GOSUB 51000:HPGL$="YT;":
      GOSUB 51000:RETURN
51175 HPGL$="XT;":GOSUB 51000:RETURN
```

```
51176 HPGL$="YT;":GOSUB 51000:RETURN
51180 HPGL$="TL.15,.15;":GOSUB 51000:RETURN
51190 PRINT#1,CHR$(27)+".M:":RETURN
51195 HPGL$="SM"+RIGHT$(STR$(SYMBOL),1)+";":GOSUB 51000:
      GOSUB 51130:RETURN
51200 HPGL$="sp0;":GOSUB 51000:FOR I=1 TO 5000:NEXT:RETURN:
      REM Put pen in stall
51210 HPGL$="DI1;":GOSUB 51000:RETURN
51300 PRINT#1, USING"####.#";N:RETURN
53000 YBOTT=YBOT-125:si=25:GOSUB 51150
53001 XP=INT((XLEFT+(XINCREMENT/2))):YP=YBOT-1:GOSUB 51110:
      YP=YP-40:GOSUB 51111
53002 YP=YBOTT:J=GC1:GOSUB 53340
53005 J=XRANGE:GOSUB 53390
53010 YP=YBOTT:J=GC2:GOSUB 53340
53020 IF NOKOLS=2 THEN RETURN
53025 OFFSET=0:IF GC1>1 THEN OFFSET=GC1-1:ELSE OFFSET=0
53030 NOKOLS&=CONV&(NOKOLS):IF(NOKOLS& MOD 2)=0 THEN DXR=4:
      ELSE DXR=3
53040 INCR=INT(NOKOLS/DXR)
53041 IF NOKOLS=4 THEN GOTO 53330
53042 IF NOKOLS=5 THEN GOTO 53060
53043 IF NOKOLS=3 THEN GOTO 53060
53050 IF DXR=3 THEN 53330
53060 IF NOKOL<>3 THEN J=(GC1+INCR)-OFFSET:GOSUB 53390:
      YP=YBOTT:J=J+OFFSET:GOSUB 53340
53070 IF NOKOL<>3 THEN J=(GC2-INCR)-OFFSET:GOSUB 53390:
      YP=YBOTT:J=J+OFFSET:GOSUB 53340
53080 J=GC1+(INT(NOKOLS/2)+0):J=J-OFFSET:GOSUB 53390:
      YP=YBOTT:J=J+OFFSET:GOSUB 53340
53085 IF NOKOLS=6 THEN J=3:GOSUB 53390:YP=YBOTT:J=J+OFFSET:
      GOSUB 53340
53090 RETURN
53330 J=(GC1+INCR)-OFFSET:GOSUB 53390:YP=YBOTT:J=J+OFFSET:
      GOSUB 53340
53335 J=(GC2-INCR)-OFFSET:GOSUB 53390:YP=YBOTT:J=J+OFFSET:
      GOSUB 53340
53339 RETURN
53340 GOSUB 51110:IF LEN(C$(J))=0 THEN GOSUB 53380:GOTO 53360
53341 MS$=C$(J)
53360 GOSUB 53400
53370 GOSUB 51140:RETURN
53380 MS$="+STR$(J):RETURN
53390 J=INT(J):
      XP=INT((J*XINCREMENT)+(XLEFT-(INT(XINCREMENT/2)))):
      YP=YBOT-1:GOSUB 51110:YP=YP-40:GOSUB 51111
53399 RETURN
53400 IF J=GC1 THEN RETURN
53420 BACKUP=((INT(LEN(MS$)/2)))
53425 IF backup<.5 THEN GOTO 53460
53430 FOR j9=1 TO backup
53440 hpgl$="PL"+CHR$(8):GOSUB 51000
53450 NEXT
```



```
53460 RETURN
57000 pv=23:ph=20:m$="Enter New 'Device Name' :  ":GOSUB 352
57010 ph=46:sl=15:GOSUB 101:IF a$=CHR$(27) THEN GOTO 57099
57020 IF LEN(b$)=0 THEN PRINT CHR$(7);:GOTO 57010
57030 IF LEFT$(b$,1)<>". " THEN b$=". "+b$
57040 plr$=b$
57050 GOSUB 9001
57099 GOSUB 73:RETURN
```

Apple Technical Communications

Tech Info Library Article Number:318



Tech Info Library

Pascal: Dollar amount formatter (1 of 2)

Revised: 11/7/84
Security: Everyone

Pascal: Dollar amount formatter (1 of 2)

=====

The following Pascal function allows you to format printed values as dollar amounts. The function uses the APPLESTUFF unit. GET_DOLLARS takes three integer parameters and returns a real value for possible future calculations:

GET_DOLLARS (HPOS, VPOS, LIMIT)

The whole dollar amount is restricted to "LIMIT" number of characters (4 whole numbers). Three additional characters are allowed for the decimal and cents. Character space not used by LIMIT may be used by cents; however, all entries are rounded to the closest whole cent. The resulting number is printed, right justified, on the screen on top of the input characters.

```
writeln ('Enter value:');  
Value:= GET_DOLLARS (20, 10, 4)
```

"Enter value:" is printed on the screen as normal, while the input cursor is positioned at screen location 20,10. Some possible input and corresponding outputs are:

Inputs	Outputs
9999	9999.00
9.99999	10.00
.999	1.00
.99	.99
1234.56	1234.56
123.456	123.46

```
function GET_DOLLARS (HPos, VPos, Limit: integer): real;  
  var RealStr, Space: string;  
      Count       : integer;  
      Value       : real;
```

```
procedure GET_REAL_STR (Limit: integer; var InStr: string);  
  var Entry           : string;  
      Decimal, Back_Space, Return, ch: char;  
      Count           : integer;
```

```
Real_Keys, GoodOnes      : set of char;
GotIt                    : boolean;

function KEY_IN: char;
var ch: char;
begin
  ch:= ' '; {Initialize variable}
  repeat until KEYPRESS;
  UNITREAD (2, ch, 1,, 12);
  KEY_IN:= ch
end; {Key_In}

begin
  InStr:= ''; {Beginning default}
  Count:= 0; {Beginning default}
  Entry:= ' '; {Initialize as one character}
  Decimal:= '.';
  Back_Space:= chr(8);
  Return:= chr(13);
  Real_Keys:= [Decimal, '0'..'9']; {Valid characters}
                                     {in real numbers}
  GoodOnes:= Real_Keys + [Back_Space, Return]; {Valid}
                                               {inputs}
  GotIt:= false; {Beginning default};
  repeat
    repeat ch:= KEY_IN until (ch in GoodOnes);
    if (ch = Decimal) then begin
      GoodOnes:= GoodOnes - [Decimal]; {Can't use but one}
      Limit:= Limit + 3 {OK to get cents now}
    end;
    if (ch in Real_Keys) and (Count < Limit) then begin
      Entry [1]:= ch; {Convert char to string}
      InStr:= concat (InStr, Entry);
      Count:= Count + 1;
      write (ch)
    end;
    if (ch = Back_Space) and (Count > 0) then begin
      write (Back_Space, ' ', Back_Space);
      ch:= InStr [Count]; {See what last character is}
      if (ch = Decimal) then begin
        GoodOnes:= GoodOnes + [Decimal]; {Can use decimal}
                                         {again}
        Limit:= Limit - 3
      end;
      if (Count = 1) then InStr:= '';
      if (Count > 1) then delete (InStr, Count, 1);
      Count:= Count - 1
    end;
    if (ch = Return) then GotIt:= true
  until GotIt
end; {Get_Real_Str}

procedure DOLLAR_FORMAT (var Sample: string);
```

Apple Technical Communications

Tech Info Library Article Number:319



Tech Info Library

Pascal: Dollar amount formatter (2 of 2)

Revised: 11/7/84
Security: Everyone

Pascal: Dollar amount formatter (2 of 2)

=====

```
procedure DOLLAR_FORMAT (var Sample: string);
  var DollarStr, CentStr      : string;
      Where, Dollars, Cents   : integer;

  procedure ROUND_CENTS (var Dollars, Cents: string);
    var HowLong, Count: integer;
        Sample        : string;
  begin
    Sample:= concat ('0', Dollars, Cents); {Leading zero}
                                              {for carry}

    HowLong:= length (Sample);
    if (Sample [HowLong] > '4') then
      Sample [HowLong - 1]:=
        chr(ord (Sample [HowLong - 1]) + 1);
    for Count:= HowLong downto 1 do begin
      if (Sample [Count] > '9') then begin
        Sample [Count]:= '0';
        Sample [Count - 1]:=
          chr(ord (Sample [Count - 1]) + 1)
      end;
    end;
    while (Sample [1] = '0') do begin
      delete (Sample, 1, 1); {Delete leading zeroes}
      HowLong:= HowLong - 1
    end;
    Sample:= copy (Sample, 1, (HowLong - 1));
    HowLong:= HowLong - 1; {Drop 3rd of 3 place cents}
    Dollars:= copy (Sample, 1, (HowLong - 2));
    Cents:= copy (Sample, (HowLong - 1), 2)
  end; {Round_Cents}

begin
  Where:= pos ('.', Sample); {Find decimal}
  if (Where = 0) then begin
    Sample:= concat (Sample, '.');
    Where:= length (Sample)
```

```
end;
DollarStr:= copy (Sample, 1, (Where - 1));
CentStr:=
  copy (Sample, (Where + 1), (length (Sample) - Where));
while (length (CentStr) > 3) do
  delete (CentStr, (length (CentStr)), 1);
  case (length (CentStr)) of
    0: CentStr:= concat (CentStr, '000');
    1: CentStr:= concat (CentStr, '00');
    2: CentStr:= concat (CentStr, '0')
  end; {Round_Cents needs 3 places}
ROUND_CENTS (DollarStr, CentStr);
Sample:= concat (DollarStr, '.', CentStr)
end; {Dollar_Format}

procedure VAL (RealStr: string; var RealNum: real);
var HowLong, NumDigits,
    Count, Digit, Power: integer;
    Dollars, Cents      : string;
    Number              : real;
begin
  RealNum:= 0; {Beginning default}
  HowLong:= length (RealStr);
  Dollars:= copy (RealStr, 1, (HowLong - 3));
  Cents:= copy (RealStr, (HowLong - 1), 2);
  NumDigits:= length (Dollars);
  Power:= 0; {Beginning default}
  if (NumDigits > 0) then
    for Count:= NumDigits downto 1 do begin
      Digit:= ord (Dollars [Count]) - 48; {Convert Ascii}
                                              {to Decimal}
      Number:= Digit * PwrOfTen (Power);
      RealNum:= RealNum + Number;
      Power:= Power + 1
    end;
    Number:=
      (((ord(Cents [1])-48)*10)+(ord(Cents [2])-48))/100;
    RealNum:= RealNum + Number
  end; {Val}

begin
  gotoxy (HPos, VPos);
  GET_REAL_STR (Limit, RealStr);
  DOLLAR_FORMAT (RealStr);
  Space:= ''; {Beginning default}
  Limit:= Limit + 2; {Number has cents now}
  for Count:= length (RealStr) to Limit do
    Space:= concat (Space, ' ');
  gotoxy (HPos, VPos);
  write (Space, RealStr); {Writes over input data}
  VAL (RealStr, Value);
  GET_DOLLARS:= Value
end; {Get_Dollars}
```

Apple Technical Communications

Tech Info Library Article Number:320



Tech Info Library

MacPascal: Problem with Text Window Output option

Revised: 9/1/87
Security: Everyone

MacPascal: Problem with Text Window Output option

=====

This article last reviewed: 9/1/87

With MacPascal's "TEXT WINDOW OUTPUT" option, programs outputting to a text file may put garbage in the text file when writeln's are used for output.

Here's a workaround: open text output files under program control.

The program may be printing an undefined variable, probably a string variable. Double check your program for improper variable use. If you determine that this is not the problem, it is possible that you have run across a bug reported in versions of MacPascal.

Tech Info Library Article Number:322



Tech Info Library

MicroDynamic, Ltd.

Revised: 4/3/97
Security: Everyone

MicroDynamic, Ltd.

=====

Article Created: 09/01/87
Article Reviewed: 07/13/93
Article Updated: 07/13/93

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Hardware and software, specializing in custom software and specialty hardware products related to document imagery

Article Change History: 07/13/93 Name information corrected

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Tech Info Library Article Number:324



Tech Info Library

National Semiconductor

Revised: 4/3/97
Security: Everyone

National Semiconductor

=====

Article Created: 1 September 1987
Article Reviewed/Updated: 16 July 1993

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Company Profile:
Hardware, semiconductors and connectivity products.

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Tech Info Library Article Number:325



Tech Info Library

The FreeSoft Company

Revised: 7/8/93
Security: Everyone

The FreeSoft Company

=====

Article Created: 09/01/87
Article Reviewed: 07/08/93
Article Updated: 08/21/91

The FreeSoft Company

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Software, specializing in telecommunications programs for the Macintosh.

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Tech Info Library Article Number:327



Tech Info Library

AppleColor Monitor 100: Fuzzy Display

Revised: 9/30/88
Security: Everyone

AppleColor Monitor 100: Fuzzy Display

=====

This article last reviewed: 11 September 1987

Here are some things to check when the AppleColor Monitor 100 displays a badly-focused image after components have been replaced:

1. Determine which revision of the main PCB you have, and make sure you're replacing it with the same revision. There are two revisions. On a REV 0 logic board, CN17 (blue/white wire) plugs into the small board on the CRT. If CN17 plugs into the main PCB in the upper left hand corner, you have a REV A board. If you need to replace a REV 0 with a REV A, you must also change:

- A. Contrast/brightness control panel for one with the 1.8K resistor between the pots. Make sure that the value of the resistor on the Contrast Assembly is 1.8K NOT 18K Ohms. The color code for correct resistor is Brown/Gray/Red.
- B. The short interconnect cable must be changed. Following are the pinouts for both the REV 0 and REV A cables for the AppleColor Monitor 100:

REV 0 (P/N 970-0999)	REV A (P/N 076-0196)
DB15---Molex-8	DB15---Molex-8
1---4	1---1
2---1	2---2
3---5	3---3
4---2	4---4
5---3	5---5
6---7	6---6
7---6	7---7

2. Swap the power supply. A bad power supply can also cause a fuzzy display.

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Tech Info Library Article Number:329



Tech Info Library

BASIC: APPEND fix (1 of 2)

Revised: 11/15/84
Security: Everyone

BASIC: APPEND fix (1 of 2)

=====

Yes! There is an APPEND fix! The following four short test programs illustrate the problem. The run command and a short explanation precedes each code.

1. RUN TEST1,D1

This puts a file called 'JUNK' onto the disk in drive 1 with exactly 255 bytes.

```
10 REM TEST1
20 D$ = CHR$(4)
30 PRINT D$;"OPEN JUNK"
40 PRINT D$;"WRITE JUNK"
50 FOR L = 1 TO 8
60 FOR M = 1 TO 29
70 PRINT "A";
80 NEXT M
90 PRINT "A"
100 NEXT L
110 FOR L = 1 TO 5
120 PRINT "A";
130 NEXT L
140 PRINT "A"
150 PRINT D$;"CLOSE"
160 END
```

2. RUN TEST2

This reads the file 'JUNK' and prints it onto your CRT.

```
10 REM TEST2
20 D$ = CHR$(4)
30 PRINT D$;"OPEN JUNK"
40 PRINT D$;"READ JUNK"
50 FOR L = 1 TO 9
60 INPUT ST$
70 PRINT ST$
80 NEXT L
```

```
90 PRINT D$;"CLOSE"
100 END
```

3. RUN TEST3

This attempts to APPEND to the file 'JUNK' the message "THIS IS A TEST".

```
10 REM TEST3
20 D$ = CHR$(4)
30 PRINT D$;"APPEND JUNK"
40 PRINT D$;"WRITE JUNK"
50 PRINT "THIS IS A TEST"
60 PRINT D$;"CLOSE"
70 END
```

4. RUN TEST4

This reads and displays the file 'JUNK' which should now have a last line reading "THIS IS A TEST".

```
10 REM TEST4
20 D$ = CHR$(4)
30 PRINT D$;"OPEN JUNK"
40 PRINT D$;"READ JUNK"
50 FOR L = 1 TO 10
60 INPUT ST$
70 PRINT ST$
80 NEXT L
90 PRINT D$;"CLOSE"
100 END
```

If the APPEND does not take, the display reads an END OF DATA.

Apple supplied the following fix answer to software developers in August, and they have been using it since November, 1983.

"early 1983"	after November, 1983
-----	-----
B683:4C 84 BA JMP \$BA84	B683:4C B3 B6 JMP \$B6B3
\$B6B3-B6CE:ALL ZEROS	B6B3:AD BD B5 LDA \$B5BD
	B6B6:8D E6 B5 STA \$B5E6
	B6B9:8D EA B5 STA \$B5EA
	B6BC:AD BE B5 LDA \$B5BE
	B6BF:8D E7 B5 STA \$B5E7
	B6C2:8D EB B5 STA \$B5EB
	B6C5:8D E4 B5 STA \$B5E4
	B6C8:BA TSX
	B6C9:8E 9B B3 STX \$B39B
	B6CC:4C 7F B3 JMP \$B37F
\$BA84-BA93:PATCH	BA84-BA93:ALL ZEROS

The patch put at \$BA84 has been moved down to \$B6B3, and four extra lines have been added to that patch. Initialize a new diskette after making the above

patch and reboot the system. You can then sucessfully run the test programs above.

Apple Technical Communications

Tech Info Library Article Number:330



Tech Info Library

BASIC: APPEND fix (2 of 2)

Revised: 11/15/84
Security: Everyone

BASIC: APPEND fix (2 of 2)

=====

For those who do not feel comfortable with the above machine language, use the following procedure to make new slave diskettes with the corrected DOS:

1. Boot the system with an initialized diskette. This loads the old DOS into your Apple.
2. Type in the BASIC program below and RUN it. This will change the old DOS in memory to the corrected DOS.
3. SAVE this program just in case you made a typo.
4. Without rebooting the system, run the 4 test programs above to see if APPEND works correctly.
5. Type NEW; insert a blank diskette, and type INIT HELLO. This creates a diskette with the corrected DOS.
6. Use this new diskette whenever initializing other diskettes; the corrected DOS will be carried over.

Use this BASIC program in step 2 above:

```
10 POKE -18813,76 : POKE -18812,179 : POKE -18811,182
20 FOR I = -18765 TO -18738
30 READ A: POKE I,A: NEXT
40 FOR I = -17788 TO -17773
50 POKE I,0: NEXT
60 PRINT "DONE..."
75 END
80 DATA 173,189,181,141,230,181,141,234,181,173,190,181,141,231,
      181,141,235,181,141,228,181,186,142,155,179,76,127,179
```

Apple Technical Communications

Tech Info Library Article Number:331



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (1 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (1 of 6)

=====

This is the Applesoft BASIC source for "Chart Maker II", a demonstration program for the Apple Color Plotter. It provides an easy way to create charts and signs with the plotter. Just startup Applesoft, EXEC this file, and save the program to disk.

The file named "C.DESCRPTION" should be saved as a text file. It is a sample file created by Chart Maker and is ready to plot.

```
10 D$ = CHR$(4): PRINT D$;"NOMON C,I,O"
12 FOR I = 0 TO 9: READ ZZ: POKE 768 + I,ZZ: NEXT
14 PRINT D$;"PR #3"
20 DIM TXT$(10),CENTER$(10),DENT(10),SIZE(10),BOLD$(10)
21 DIM COL(10),SL$(10)
25 GOSUB 7300
30 D$ = CHR$(4)
40 UC = 128:LC = UC + 32:APPLE$ = CHR$(127)
50 D$ = CHR$(4): GOTO 1000
60 GOSUB 99: PRINT " ";: PRINT "-----";: RETURN
61 GOSUB 99: PRINT " ";: PRINT "=====";: RETURN
71 POKE 32,2: POKE 33,77: POKE 34,1: POKE 35,13:HOME : TEXT : RETURN
72 POKE 32,2: POKE 33,77: POKE 34,14: POKE 35,14:HOME : TEXT : RETURN
73 POKE 32,2: POKE 33,77: POKE 34,16: POKE 35,23:HOME : TEXT : RETURN
75 GOSUB 73:M$ = BT$:PV = 23: GOSUB 350: RETURN
82 PV = 1:FOR PH = 23 TO 79 STEP 10:INVERSE:GOSUB 99:PRINT "  ":NEXT:NORMAL
83 POKE 32,19: POKE 33,60: POKE 34,1: POKE 35,1:HOME : TEXT : RETURN
85 POKE 32,2: POKE 33,77: POKE 34,14: POKE 35,14:HOME : TEXT : RETURN
86 POKE 32,19: POKE 33,60: POKE 34,3: POKE 35,13:HOME : TEXT : RETURN
87 POKE 32,2: POKE 33,77: POKE 34,19: POKE 35,22:HOME : TEXT : RETURN
90 REM*** ONERR GOTO 900
91 CM = PEEK (49152): IF CM < 128 THEN GOTO 90
92 CM = CM - 128: A = PEEK (49168)
93 IF PEEK ( - 16287) > 127 THEN CM = CM + 128
94 RETURN
97 NORMAL : HOME :PRINT "Applesoft BASIC -- Type 'RUN HELLO' to Restart":
PRINT "or, 'GOTO 50' to Restart with last chart": END
99 POKE 1403,PH: VTAB PV: RETURN
```

```
101 P2 = PH: GOSUB 99:A$ = "":B$ = "":IF LEN (Z$) < > 0 THEN Z1$ = "9"
102 FOR I = 1 TO SL: PRINT ".":NEXT :PH = P2: GOSUB 99: FOR I = 1 TO SL + 1
105 INVERSE : PRINT " ":NORMAL :PH = P2 + I - 1: GOSUB 99
106 GOSUB 90:A$ = CHR$(CM): IF A$ = CHR$(27) THEN RETURN
107 IF A$ = CHR$(13) THEN 120
108 IF NB=1 AND ASC(A$)=>8 AND ASC (A$) < = 21 THEN GOTO 182
113 IF A$=CHR$(127) OR A$= CHR$(8) THEN GOSUB 140: GOTO 105
114 FG = 0: GOSUB 130: IF FG=1 THEN PRINT CHR$(7);: GOTO 105
116 IF A$ = CHR$(13) GOTO 120
117 PRINT A$;:B$ = B$ + A$:A$ = "":NEXT
119 IF RIGHT$ (B$,1) < > CHR$(13) THEN GOSUB 370:PH = P2: GOTO 101
120 PH = P2 + I - 1: GOSUB 99: PRINT ".":Z1$ = "": RETURN
130 IF ASC (A$) = 13 THEN 139
131 IF NB=0 AND ASC(A$)=> 8 AND ASC(A$) <= 21 THEN FG=1: RETURN
132 IF ASC(A$)=>123 OR ASC(A$)>90 AND ASC(A$)<97 THEN FG = 1:RETURN
139 FG = 0: RETURN
140 IF I = SL + 1 THEN PRINT " ":I=I - 1:PH=(P2 + I - 1):GOSUB 99:GOTO 155
142 IF LEN (Z$) > 0 AND I=1 THEN SL=SL + 1:PH=PH - 0:GOSUB 99: PRINT ".":
    PH = PH - 1:Z$ = "":P2 = P2 - 1:B$ = "": GOSUB 99: GOTO 180
145 PRINT ".":PH = P2 - 1:I = I - 1:PH = P2 + I - 2: GOSUB 99
155 IF I = < 0 THEN I = 1:PH = P2: GOSUB 99:B$ = "": RETURN
160 IF I = 1 THEN B$ = "": GOTO 170
165 B$ = LEFT$ (B$,I - 1)
170 PH = P2 + (I - 1): GOSUB 99: RETURN
180 RETURN
182 IF A$ = CHR$(11) THEN DI = 72:A$ = CHR$(13): GOTO 120:REM U
185 IF A$ = CHR$(10) THEN DI = 80:A$ = CHR$(13): GOTO 120:REM D
188 IF A$ = CHR$(8) THEN DI = 75:A$ = CHR$(13): GOTO 120:REM L
191 IF A$ = CHR$(21) THEN DI = 77:A$ = CHR$(13): GOTO 120:REM R
194 PRINT CHR$(7);: GOTO 106
201 X9 = 0:X8 = 0:H9 = 0: GOSUB 101: IF A$=CHR$(27) THEN RETURN
202 N$ = Z$ + B$: FOR H = 1 TO LEN (N$)
203 IF LEN (N$) = 0 THEN X9 = 1: RETURN
204 IF ASC ( MID$ (N$,H,1)) = 46 THEN H9 = H9 + 1: GOTO 212
205 IF ASC ( MID$ (N$,H,1)) = 45 THEN H8 = H: GOTO 209
206 IF ASC ( MID$ (N$,H,1)) < 48 THEN X9 = 1: RETURN
207 IF ASC ( MID$ (N$,H,1)) > 57 THEN X9 = 1: RETURN
208 GOTO 212
209 IF H8 = 1 THEN 212
210 X9 = 1: RETURN
212 NEXT
```

Apple Technical Communications

Tech Info Library Article Number:332



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (2 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (2 of 6)

```
=====

213 X8 = VAL (N$)
214 IF X8 > UL THEN X9 = 1: RETURN
215 IF X8 < LL THEN X9 = 1: RETURN
216 X9 = 2: RETURN
250 IF LEN (B$) = 0 THEN B$ = "Y": GOSUB 99: PRINT B$;:
251 RETURN
260 IF A$ > CHR$(64) AND A$ < CHR$(91) THEN RETURN :REM Uppercase
261 IF A$ > CHR$(96) AND A$ < CHR$(123) THEN RETURN :REM Lowercase
262 IF A$ > CHR$(47) AND A$ < CHR$(58) THEN RETURN :REM Numbers
263 IF A$ = CHR$(45) THEN RETURN : REM - SIGN
264 IF A$ = CHR$(46) THEN RETURN : REM PERIOD
265 IF A$ = CHR$(32) THEN RETURN : REM space
269 OK = 0: RETURN
300 INVERSE :PV = 14:PH = 30:M$ = " "
    GOSUB 352:PH=20:M$="Default Names: " +DV$+MT$:GOSUB 352:NORMAL:RETURN
340 IF LEN (B$) = 0 THEN B$ = MT$: GOSUB 99: PRINT B$;: RETURN
345 GOSUB 99: INVERSE : PRINT ">";: NORMAL : RETURN
349 GOSUB 72:PV = 15:PH = 3: GOSUB 99: PRINT M$;:PH=46-INT ((LEN(MS$)/2)):
    GOSUB 99: PRINT MS$;:RETURN
350 PH = 40 - INT (( LEN (M$) / 2)): GOSUB 99: PRINT M$;:RETURN
351 GOSUB 75:GOSUB 72:PV=15:PH=3:GOSUB 99:PRINT M$;:
    PH=46-INT ((LEN(MS$)/2)): GOSUB 99: PRINT MS$;:RETURN
352 GOSUB 99: PRINT M$;: RETURN
353 PH = 40 - INT (( LEN (M$) / 2)): GOSUB 99: PRINT M$;: RETURN
357 PV = 15:PH = INT (40 - ( LEN (M$) / 2)): GOSUB 99: PRINT M$;: RETURN :
    REM Print centered line
360 GOSUB 250: IF B$ = "Y" OR B$ = "y" THEN Q = 1: GOTO 365
362 IF B$ = "N" OR B$ = "n" THEN Q = 2: GOTO 365
363 GOSUB 369: GOTO 360
365 RETURN
369 PRINT CHR$(7);: RETURN
370 PRINT CHR$(7);:IF LEN (Z1$)<> 0 AND Z$ <> "" THEN Z$="": SL = SL + 1:
    P2 = P2 - 1
374 PH = P2: GOSUB 99: FOR I = 1 TO SL + 1: PRINT " ";: NEXT :RETURN
400 OA%=0:CM=0:GOSUB 90:A$=CHR$(CM):IF CM>96 AND CM<123 THEN CM=CM - 32:
    RETURN
```

```
420 IF CM = 13 THEN RETURN
425 IF CM > 64 AND CM < 91 THEN RETURN
426 IF CM = 44 THEN GOTO 475
427 IF CM = 46 THEN GOTO 475
430 IF CM > 41 AND CM < 58 THEN RETURN
435 IF CM = 27 THEN RETURN
440 IF CM = 32 THEN RETURN
470 IF CM = (81 + UC) OR CM = (81 + LC) THEN OA% = 1: CM = 16: RETURN : REMQ
475 PRINT CHR$(7);: GOTO 400
700 IF V(K4,L1) > 999999999 THEN V(K4,L1) = 0
701 IF V(K4,L1) < - 999999999 THEN V(K4,L1) = 0
705 RETURN
710 IF V(K4,L1) > 9999999.9 THEN V(K4,L1) = 0
711 IF V(K4,L1) < - 999999.9 THEN V(K4,L1) = 0
715 RETURN
720 IF V(K4,L1) > 999999.99 THEN V(K4,L1) = 0
721 IF V(K4,L1) < - 99999.99 THEN V(K4,L1) = 0
725 RETURN
730 IF V(K4,L1) > 99999.999 THEN V(K4,L1) = 0
731 IF V(K4,L1) < - 9999.999 THEN V(K4,L1) = 0
735 RETURN
740 IF V(K4,L1) > 9999.9999 THEN V(K4,L1) = 0
741 IF V(K4,L1) < - 999.9999 THEN V(K4,L1) = 0
745 RETURN
900 EC = PEEK (222): IF EC = 255 GOTO 97
901 GOTO 90
1000 GOSUB 1001: GOTO 1200
1001 INVERSE : HOME : NORMAL
1002 REM*** GOSUB 71:GOSUB 72:GOSUB 73
1005 M$ = " ":PV = 1: INVERSE : GOSUB 350
1010 M$ = "Chart Maker IIe":PV = 1: INVERSE : GOSUB 350
1020 M$ = "Press 'ESC' to 'Back Out' of Any Function":PV = 14: GOSUB 350
1025 M$="Public Domain Software courtesy of Apple Computer Inc": PV = 24:
      GOSUB 350: NORMAL
1030 PLR$ = "2"
1090 GOSUB 7000
1099 RETURN
1200 Z = 0:Z$ = "": GOSUB 73
1205 MS$="New Enter Move Clear Save Load Draw OA-Quit":
      MA$="FUNCTIONS:": GOSUB 351
1210 ONERR GOTO 97
1220 GOSUB 400
1230 IF OA% = 1 AND CM = 16 THEN 97
1235 IF OA% = 1 THEN 1299
1240 IF CM = 78 THEN GOSUB 8000: GOTO 1200: REM Start New Chart
1250 IF CM = 69 THEN X9 = 0:X8 = 0: GOSUB 6000: GOTO 1200: REM Enter a Line
1260 IF CM = 68 THEN GOSUB 9000: GOTO 1200: REM Draw the Chart
1270 IF CM = 67 THEN GOSUB 8500: GOTO 1200: REM Clear Line
1272 IF CM = 77 THEN GOSUB 10000: GOTO 1200: REM Move a line
1274 IF CM = 83 THEN GOSUB 2000: GOTO 1200: REM Save a Chart
1275 IF CM = 76 THEN GOSUB 3000: GOTO 1200: REM Load a Chart
```

Tech Info Library Article Number:333



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (3 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (3 of 6)

```
=====

1276 IF CM > 47 AND CM < 58 THEN X9 = 2:X8 = VAL ( CHR$(CM)):CM = 69:
      GOSUB 6000: GOTO 1200
1299 PRINT CHR$(7);: GOTO 1220
2000 GOSUB 72:M$ = "Save a Chart Specification": GOSUB 357
2100 PV = 20:M$ = "Name to Save Chart : ": GOSUB 350
2110 PV = 20:PH = 54:SL = 13: GOSUB 101:IF A$ = CHR$(27) THEN GOSUB 73:
      RETURN
2120 NAME$ = "C." + B$
2130 ONERR GOTO 2400
2135 PRINT
2140 PRINT D$;"DELETE";NAME$
2200 ONERR GOTO 2300
2205 PRINT D$;"OPEN ";NAME$
2206 PRINT D$;"WRITE ";NAME$
2210 FOR I = 1 TO 10
2220 PRINT TXT$(I): PRINT CENTER$(I): PRINT DENT(I): PRINT SIZE(I):
      PRINT BOLD$(I): PRINT COL(I): PRINT SL$(I)
2230 NEXT
2240 PRINT D$;"CLOSE"
2250 GOSUB 73: RETURN
2300 CALL 768: POKE 216,0: ONERR GOTO 97
2310 GOSUB 73: PRINT CHR$(7);
2315 PRINT D$;"CLOSE"
2320 M$="There is no room on the disk, so you'll have to ":PV=18:GOSUB 350
2330 M$ = "delete some files or use a different disk":PV = 20: GOSUB 350
2340 M$ = "Press Any Key to Continue":PV = 22: GOSUB 350
2350 GOSUB 400
2360 ONERR GOTO 2380
2370 PRINT D$;"DELETE ";NAME$
2375 CALL - 3288
2380 GOTO 2250
2400 CALL 768: POKE 216,0
2410 CALL - 3288: GOTO 2200
3000 GOSUB 72:M$ = "Load a Chart Specification": GOSUB 357
3100 PV = 20:M$ = "Name of Chart to Load : ":PH = 10: GOSUB 352
3110 PV=20:PH=40:SL=13: GOSUB 101:IF A$ = CHR$(27) THEN GOSUB 73: RETURN
```

```
3120 NAME$ = "C." + B$
3125 PV = 21:PH = 20: GOSUB 99
3126 PV = 21:PH = 20: GOSUB 99: PRINT " "
3130 ONERR GOTO 3300
3200 PRINT D$;"OPEN ";NAME$
3201 PRINT D$;"READ ";NAME$
3202 PV = 24:PH = 80: GOSUB 99
3210 FOR I = 1 TO 10
3220 INPUT TXT$(I): INPUT CENTER$(I): INPUT DENT(I):
      INPUT SIZE(I): INPUT BOLD$(I): INPUT COL(I): INPUT SL$(I)
3230 NEXT
3236 PRINT D$;"CLOSE"
3240 GOSUB 7005
3250 RETURN
3300 CALL 768: POKE 216,0: ONERR GOTO 97
3305 GOSUB 73:M$ = "Could NOT find Chart named " + NAME$:PV = 20: GOSUB 350
3310 M$ = "Press Any Key to Continue":PV = 22: GOSUB 350:PRINT CHR$(7);
3315 CALL - 3288
3320 GOSUB 400: GOSUB 72: GOTO 3250
4000 m$ = "This Function Not Implemented, Yet":pv = 20: GOSUB 353
4010 m$ = "Press Any Key to Continue":pv = 22: GOSUB 353
4015 PRINT CHR$(7);
4020 GOSUB 400
4030 RETURN
6000 GOSUB 72:M$ = "Enter/Change a Line": GOSUB 357
6010 M$="Line (1-10) :          Size (1-3) :          Color (1-4) :":PV=18:PH=5:
      GOSUB 352
6020 M$="Center(y/n):  Bold(y/n):  Slant(y/n):  Indent Spaces:"
      PV = 20:PH = 5: GOSUB 352
6030 M$ = "Text : ":PV = 22:PH = 5: GOSUB 352
6100 PV = 18:PH = 18:SL = 2:LL = 1:UL = 10
6102 IF X8 = 0 AND X9 = 2 THEN X8 = 10
6103 IF X8 < > 0 THEN GOSUB 99: PRINT X8;; GOTO 6130
6105 GOSUB 201: IF A$ = CHR$(27) THEN GOTO 6995
6110 ON X9 GOTO 6120,6130
6120 GOSUB 369:X8 = 0: GOTO 6100
6130 N = X8
6200 PV=18:PH=39:SL=1:LL=1:UL=3:GOSUB 201:IF A$=CHR$(27) THEN GOTO 6995
6210 ON X9 GOTO 6220,6230
6220 GOSUB 369: GOTO 6200
6230 SIZE = X8
6300 PH = 58:SL = 1:LL = 1:UL = 4: GOSUB 201:IF A$ = CHR$(27) THEN GOTO 6990
6310 ON X9 GOTO 6320,6330
6320 GOSUB 369: GOTO 6300
6330 COL = X8
6400 PV = 20:PH = 18:SL = 1: GOSUB 101: IF A$ = CHR$(27) THEN GOTO 6990
6405 IF A$ = CHR$(13) AND LEN (B$) = 0 THEN CENTER$ = "N":
      M$ = CENTER$: GOSUB 352: GOTO 6500
6410 IF B$ = "Y" OR B$ = "y" THEN CENTER$ = "Y": GOTO 6500
6420 IF B$ = "N" OR B$ = "n" THEN CENTER$ = "N": GOTO 6500
6430 GOTO 6400
6500 PV = 20:PH = 39:SL = 1: GOSUB 101:IF A$ = CHR$(27) THEN GOTO 6990
6505 IF A$ = CHR$(13) AND LEN (B$) = 0 THEN BOLD$ = "N":
```

```
      M$ = BOLD$: GOSUB 352: GOTO 6550
6510 IF B$ = "Y" OR B$ = "y" THEN BOLD$ = "Y": GOTO 6550
6520 IF B$ = "N" OR B$ = "n" THEN BOLD$ = "N": GOTO 6550
6530 GOTO 6500
6550 PV = 20:PH = 58:SL = 1: GOSUB 101: IF A$ = CHR$(27) THEN GOTO 6990
6555 IF A$=CHR$(13) AND LEN (B$) = 0 THEN SL$="N":M$=SL$:GOSUB 352:GOTO 6600
```

Apple Technical Communications

Tech Info Library Article Number:334



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (4 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (4 of 6)

```
=====

6560 IF B$ = "Y" OR B$ = "y" THEN SL$ = "Y": GOTO 6600
6570 IF B$ = "N" OR B$ = "n" THEN SL$ = "N": GOTO 6600
6580 GOTO 6550
6600 IF CENTER$ = "Y" THEN DENT = 0: GOTO 6640
6605 PV=20:PH=75:SL=2:LL=0:UL=15:GOSUB 201:IF A$=CHR$(27) THEN GOTO 6990
6610 ON X9 GOTO 6620,6630
6620 GOSUB 369: GOTO 6600
6630 DENT = X8
6640 IF SIZE = 1 THEN SL = 40: GOTO 6650
6641 IF SIZE = 2 THEN SL = 30: GOTO 6650
6642 IF SIZE = 3 THEN SL = 20: GOTO 6650
6650 SL = SL - DENT
6700 PV=22:PH=12:B$=TXT$(N):GOSUB 101: IF A$ = CHR$(27) THEN GOTO 6990
6710 TXT$ = B$
6750 TXT$(N) = TXT$
6751 COL(N) = COL
6752 SIZE(N) = SIZE
6753 DENT(N) = DENT
6754 CENTER$(N) = CENTER$
6755 BOLD$(N) = BOLD$
6760 SL$(N) = SL$
6800 POKE 32,5: POKE 33,40: POKE 34,N + 2: POKE 35,N + 2: HOME : TEXT
6810 I = N: GOSUB 7010
6990 GOSUB 73: RETURN
6995 GOSUB 73: RETURN
7000 GOSUB 71: GOSUB 7200
7005 FOR I = 1 TO 10: GOSUB 7010: NEXT : RETURN
7010 PV = I + 3
7020 PH = 3: GOSUB 99: PRINT I;
7030 PH = 7:M$ = ".....":
      GOSUB 352:M$ = TXT$(I)
7045 IF CENTER$(I) = "Y" THEN PH = 27 - ( LEN (M$) / 2)
7046 IF DENT(I) > 0 THEN PH = PH + DENT(I)
7050 GOSUB 352
7055 IF SIZE(I) > 0 THEN M$ = STR$ (SIZE(I)):PH = 49: GOSUB 352
7058 REM*** IF TXT$(I) = "" THEN RETURN
```

```
7060 IF COL(I) > 0 THEN M$ = STR$ (COL(I)):PH = 54: GOSUB 352
7070 M$ = CENTER$(I):PH = 60: GOSUB 7150
7080 IF DENT(I) > 0 THEN M$ = STR$ (DENT(I)):PH = 77: GOSUB 352
7090 IF DENT(I) = 0 THEN M$ = "  ":PH = 77: GOSUB 352
7100 M$ = BOLD$(I):PH = 65: GOSUB 7150
7105 M$ = SL$(I):PH = 71: GOSUB 7150
7110 RETURN
7150 IF M$ = "Y" THEN M$ = "*": GOSUB 352: NORMAL
7155 IF M$ = "N" THEN M$ = " ": GOSUB 352: NORMAL
7156 RETURN
7200 PV = 2:PH = 3:M$ = "Line": GOSUB 352
7205 PH = 20:M$ = "Text to be Drawn": GOSUB 352
7210 PH = 52:M$ = "Color": GOSUB 352
7220 PH = 58:M$ = "Cntr": GOSUB 352
7230 PH = 74:M$ = "Indnt": GOSUB 352
7240 PH = 47:M$ = "Size": GOSUB 352
7250 PH = 63:M$ = "Bold": GOSUB 352
7260 PH = 69:M$ = "Slnt": GOSUB 352
7299 RETURN
7300 FOR I = 1 TO 10
7310 TXT$(I) = "":CENTER$(I) = "N":DENT(I) = 0:SIZE(I) = 0:
      BOLD$(I) = "N":COL(I) = 0:SL$(I) = "N"
7320 NEXT : RETURN
8000 GOSUB 72:M$ = "Clear out the 'Old Chart' and Start a New One":GOSUB 357
8010 PV=23:GOSUB 73:M$="Are You Sure, (Y or N)":PV = 20:PH = 28: GOSUB 352
8020 GOSUB 400: IF CM = 27 THEN GOTO 8599
8030 IF CM = 89 THEN GOSUB 7300: GOSUB 7000: RETURN
8031 IF CM = 78 THEN GOTO 8599
8035 PRINT CHR$(7);: GOTO 8020
8099 GOSUB 73: RETURN
8500 GOSUB 72:M$ = "Clear A Line": GOSUB 357
8501 M$ = "Line to Clear (1-10) : ":PV = 18:PH = 29: GOSUB 352
8502 PV=18:PH=50:SL=2:LL=1:UL=10:GOSUB 201:IF A$=CHR$(27) THEN GOTO 8599
8503 ON X9 GOTO 8504,8505
8504 GOSUB 369: GOTO 8502
8505 I = X8
8510 M$ = "Are You Sure, (Y or N)":PV = 20:PH = 28: GOSUB 352
8520 GOSUB 400: IF CM = 27 THEN GOTO 8599
8530 IF CM = 89 THEN GOTO 8540
8531 IF CM = 78 THEN GOTO 8599
8535 PRINT CHR$(7);: GOTO 8520
8540 TXT$(I)="":CENTER$(I) = "":DENT(I)=0:SIZE(I)=0:BOLD$(I)="":COL(I)=0:
      SL$(I) = ""
8550 POKE 32,6: POKE 33,73: POKE 34,I + 2: POKE 35,I + 2:HOME : TEXT
8555 GOSUB 7010
8599 GOSUB 73: RETURN
9000 GOSUB 9001: GOTO 9002
9001 M$="Draw Chart on Device on Card in Slot '" + PLR$ + "'":
      PV = 15: GOSUB 72: GOSUB 350: RETURN
9002 PV=19:M$="Name of Chart":GOSUB 350:PV=21:
      M$="Do You Want a Border on the Chart ? (Y or N) ":GOSUB 350
9003 PV=19:PH=50:SL=8:GOSUB 101:IF A$=CHR$(27) THEN GOSUB 73: RETURN
9004 CHART$ = B$
```

```
9007 PV=21:PH=64:SL=1:GOSUB 101:IF A$=CHR$(27) THEN GOSUB 73: RETURN
9008 IF B$ = "Y" OR B$ = "y" THEN BDR$ = "Y": GOTO 9012
9009 IF B$ = "N" OR B$ = "n" THEN BDR$ = "N": GOTO 9012
9010 GOTO 9007
9012 GOSUB 50000: IF CM = 27 THEN GOSUB 73: RETURN
9014 PRINT CHR$(21): HOME
```

Apple Technical Communications

Tech Info Library Article Number:335



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (5 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (5 of 6)

```
=====

9015 VTAB 12: HTAB 12: PRINT "Drawing Chart";:
      VTAB 13: HTAB 5: PRINT "Turn Off Plotter to Terminate"
9016 ONERR GOTO 9430
9017 PRINT CHR$(4);"PR# 2": REM*** PRINT CHR$(9);"2C"
9018 REM*** GL$ = "SP0": GOSUB 51000
9019 PN = 1: GOSUB 51100
9020 IF BDR$="Y" THEN XP=0:YP=0:GOSUB 51110:YP=1759:GOSUB 51111:XP=2394:
      GOSUB 51111:YP = 0: GOSUB 51111:XP = 0: GOSUB 51111
9030 FOR I = 1 TO 10
9040 IF LEN (TXT$(I)) = 0 THEN 9400
9050 IF SIZE(I) = 1 THEN SI = 54:S1 = 54: GOTO 9060
9051 IF SIZE(I) = 2 THEN SI = 72:S1 = 36: GOTO 9060
9052 IF SIZE(I) = 3 THEN SI = 108:S1 = 27
9060 GOSUB 51150
9070 PN = COL(I): GOSUB 51100
9072 GL$ = "SL0": IF SL$(I) = "Y" THEN GL$ = "SL20"
9076 GOSUB 51000
9085 XP = 100:YP = 1659 - (I * 155.9):YP = YP + S1: GOSUB 51110
9090 IF CENTER$(I) = "Y" THEN XP = 1197: GOSUB 51110: GOSUB 9500: GOTO 9110
9100 IF DENT(I) > 0 THEN GOSUB 9600
9110 MS$ = TXT$(I): GOSUB 51140
9120 IF BOLD$(I) < > "Y" THEN GOTO 9400
9130 IF CENTER$(I) = "Y" THEN XP = 1197: GOSUB 51110:GOSUB 9500: GOTO 9300
9200 XP = 100: GOSUB 51110
9210 IF DENT(I) > 0 THEN GOSUB 9600
9300 GL$ = "MR4,4": GOSUB 51000
9310 MS$ = TXT$(I): GOSUB 51140
9400 NEXT
9410 PN = 1: GOSUB 51100
9415 IF LEN (CHART$) > 0 THEN SI = 40: GOSUB 51150:XP = 2050:
      YP = 10: GOSUB 51110:MS$ = CHART$: GOSUB 51140
9420 SI = 30: GOSUB 51150
9430 GL$ = "CH": GOSUB 51000:PN = 1: GOSUB 51100
9439 PRINT CHR$(9);"R"
9440 PRINT CHR$(4);"PR#3"
9450 GOTO 50
```

```
9499 RETURN
9500 BACKUP = (( INT ( LEN (TXT$(I)) / 2)))
9510 IF BACKUP < .5 THEN GOTO 9550
9515 GL$="PL ": GOSUB 51001:GL$ = "PL" + CHR$(8): GOSUB 51001
9520 FOR J9 = 1 TO BACKUP
9530 GL$ = "PL" + CHR$(8): GOSUB 51001
9540 NEXT
9550 RETURN
9600 FOR J9 = 1 TO DENT(I)
9610 GL$ = "PL ": GOSUB 51001
9620 NEXT : RETURN
10000 GOSUB 72:M$ = "Move a Line": GOSUB 357
10010 PV = 20:PH = 5:M$ = "Move from line # : Move to line ": GOSUB 350
10020 PH = 39:SL = 2:LL = 1:UL = 10: GOSUB 201:IF A$ = CHR$(27) THEN 10199
10030 ON X9 GOTO 10040,10050
10040 GOSUB 369: GOTO 10020
10050 N2 = X8
10060 PH = 59:SL = 2:LL = 1:UL = 10: GOSUB 201: IF A$ = CHR$(27) THEN 10199
10070 ON X9 GOTO 10080,10090
10080 GOSUB 369: GOTO 10060
10090 N3 = X8
10100 TXT$(N3)=TXT$(N2):CENTER$(N3)=CENTER$(N2):DENT(N3)=DENT(N2):
      SIZE(N3)=SIZE(N2):BOLD$(N3)=BOLD$(N2):COL(N3)=COL(N2):SL$(N3)=SL$(N2):
      I = N3: GOSUB 10800
10110 I = N2: GOSUB 10900: GOSUB 10800
10199 GOSUB 72: RETURN
10800 POKE 32,5: POKE 33,74: POKE 34,I + 2: POKE 35,I + 2:
      HOME : TEXT : GOSUB 7010: RETURN
10900 TXT$(I)="" :CENTER$(I)="N":DENT(I)=0:SIZE(I)=0:
      BOLD$(I) = "N" " :COL(I) = 0:SL$(I) = "N": RETURN
12033 NED
17210 PH = 52:M$ = "Color": GOSUB 352
50000 PRINT CHR$(7);: GOSUB 73
50010 PV = 17:PH = 2: GOSUB 99:M$ = "Prepare the Plotter": GOSUB 350
50015 M$="(Insert Paper, Turn On, and Press 'LOCAL' Button)":PV=18:GOSUB 350
50020 PV=19:GOSUB 99:M$="Key 'RETURN' When Ready to Start Plot": GOSUB 350
50025 PV=21:M$="(ESCAPE stops Plot; 'C' Changes Plotter Slot)": GOSUB 350
50030 GOSUB 400: IF CM = 27 THEN GOSUB 73: RETURN
50032 IF CM = 67 THEN GOSUB 57000: GOTO 50000
50033 IF A$ < > CHR$(13) THEN 50030
50035 ONERR GOTO 50050
50041 GOSUB 72:PV = 15:M$ = "Drawing Graph": GOSUB 350
50042 GOSUB 73:PV=20:M$="Turn Plotter Off to Terminate Plotting": GOSUB 350
50045 ONERR GOTO 97
50049 RETURN
50050 PRINT CHR$(7);: GOSUB 73: GOSUB 71
50060 m$="Graph'n'Calc tried to open '"+plr$+", but it's":pv = 17: GOSUB 350
50070 m$="not in SOS.DRIVER on the 'Boot' Diskette":pv=19:ph=5:GOSUB 352
50080 m$="If '"+plr$+" is configured for the Plotter, give": pv=20:GOSUB 352
50090 m$="its Device Name in the 'C' option in the Draw": pv = 21: GOSUB 352
```

Apple Technical Communications



Tech Info Library

Apple Color Plotter: AppleSoft BASIC Chart Maker II (6 of 6)

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: AppleSoft BASIC Chart Maker II (6 of 6)

```
=====

50091 m$="command to use it as the Plotter.": pv = 22: GOSUB 352
50092 m$ = "(Press Any Key to Continue)":pv = 23: GOSUB 350
50098 GET a$
50099 GOSUB 72: GOTO 50000
50100 XP=XLEFT:YP=YBOT:GOSUB 51110:YP=Y TO P-50:GOSUB 51111:XP=XLEFT+X LEN+1:
      GOSUB 51111:YP=YBOT:GOSUB 51111:XP=XLEFT:GOSUB 51111:RETURN:REM The Box
50200 REM Graph Title
50201 IF LEN (GR TIT$)=0 THEN RETURN
50202 ms$=grtit$
50205 si=30: IF LEN (ms$) < 29 THEN si=50: GOTO 50209
50206 IF LEN (ms$) < 36 THEN si=45: GOTO 50209
50207 IF LEN (ms$) < 41 THEN si=37: GOTO 50209
50209 GOSUB 51150
50210 XP=XLEFT + ( INT (X LEN / 2)):YP=Y TO P - 25
50215 hp$="PL ": GOSUB 51000:hp$="PL" + CHR$(8): GOSUB 51000
50220 GOSUB 51110: GOSUB 53420: GOSUB 51140: RETURN
51000 PRINT GL$ + CHR$(13): RETURN
51001 PRINT GL$ + CHR$(3): RETURN
51100 GL$="PS" + STR$ (PN): GOSUB 51000: RETURN : REMGet pen
51110 GL$="MA"+STR$ (XP)+", "+STR$ (YP):GOSUB 51000:RETURN:REM Move X-Y
51111 GL$="DA"+STR$ (XP)+", "+STR$ (YP):GOSUB 51000:RETURN:REM Draw to XY
51140 GL$="PL" + MS$: GOSUB 51001: RETURN
51150 GL$="LS" + STR$ (SI): GOSUB 51000: RETURN
51160 GOSUB 51110:GL$="PL": GOSUB 51000
57000 GOSUB 73
57010 PV=21:M$="Enter new slot #": GOSUB 350
57015 GOSUB 400
57020 IF CM=27 THEN GOSUB 73: RETURN
57030 IF CM < 49 OR CM > 55 THEN PRINT CHR$(7);: GOSUB 73: RETURN
57040 PLR$= CHR$(CM): GOSUB 73
57050 GOSUB 9001
57060 RETURN
63999 DATA104,168,104,166,223,154,72,152,72,96
```

Apple Technical Communications

Tech Info Library Article Number:337



Tech Info Library

Apple III Pascal: Reading special keyboard characters (1 of 2)

Revised: 11/15/84
Security: Everyone

Apple III Pascal: Reading special keyboard characters (1 of 2)

=====

Apple III Pascal programs can distinguish:

1. the Open and Closed Apple keys in conjunction with other keys,
2. SHIFT key uppercase characters from ALPHA-LOCK key uppercase characters,
3. keypad numbers from top row numbers, and
4. RETURN, ENTER and CTRL-M from each other, even though they all have the same ASCII value.

The Apple III's console driver two-byte mode makes this all possible. When a program requests this mode, the console driver sends the program two bytes. The first byte returns the expected ASCII character while the second returns information about how the character was entered. The diagrams on pages 135 and 165 of the Standard Device Drivers manual show the format of the information that is returned.

Two successive READs will not receive both bytes because the data is actually presented as a 16-bit word rather than two 8-bit bytes. (BASIC has no provision to accept this type of input.) The following is a Pascal program to demonstrate the Apple III's ability to communicate 16-bit keyboard coding.

```
program TWO_BYTES; {Demo Apple III two-byte keyboard read}
  {By Grover F. Nunnery - Apple Computer Inc. - Charlotte, NC}
  var A, B          : integer;
      Key, Mod_Key: string;

  procedure KBD_MODE (OneTwo: integer); {Console driver request}
    {OneTwo:= 0 requests 1-byte data; OneTwo:= 128 requests two}
    var requestcode: packed record
      channel: 0..1;
      stat_or_ctrl: 0..1;
      request_num: 0..255;
      reserved: 0..63;
    end;

  begin
    requestcode.channel:= 0;
    requestcode.stat_or_ctrl:= 1; {Control request}
```

```
    requestcode.request_num:= 3; {Keyboard Mode}
    requestcode.reserved:= 0;
    UNITSTATUS (1, OneTwo, requestcode);
end; {Kbd_Mode}

procedure READ_TWO; {Reads 2 bytes}
var Two_Bytes: packed record
    A: 0..255;
    B: 0..255
end;

function KEYPRESS: boolean; {Console Status Call -
                             True upon Keypress}

var charcount : integer;
    requestcode: packed record
        channel: 0..1;
        stat_or_ctrl: 0..1;
        request_num: 0..255;
        reserved: 0..63
    end;
begin
    charcount:= 0;
    requestcode.channel:= 1;
    requestcode.stat_or_ctrl:= 0;
    requestcode.request_num:= 5;
    requestcode.reserved:= 0;
    UNITSTATUS (1, charcount, requestcode);
    KEYPRESS:= (charcount <> 0)
end; {Keypress}

begin
    repeat until KEYPRESS;
    UNITREAD (2, Two_Bytes, 2,, 12);
    A:= Two_Bytes.A;
    B:= Two_Bytes.B
end; {Read_Two}

procedure MODIFIER;
begin
    Mod_Key:= ''; {Null}
    B:= B - 65; {Bits 0 and 6 always set}
    if (B > 127) then begin
        if (A in [45..46, 48..57]) then Mod_Key:= 'Keypad-'
        else Mod_Key:= 'Special';
        B:= B - 128
    end;
    if (B > 31) then begin
        Mod_Key:= concat (Mod_Key, 'ClosedApple-');
        B:= B - 32
    end;
    if (B > 15) then begin
        Mod_Key:= concat (Mod_Key, 'OpenApple-');
        B:= B - 16
    end;
```



```
end;  
if (B > 7) then begin  
    Mod_Key:= concat (Mod_Key, 'AlphaLock-');  
    B:= B - 8  
end;  
if (B > 3) then begin  
    Mod_Key:= concat (Mod_Key, 'CTRL-');  
    B:= B - 4  
end;  
if (B > 1) then Mod_Key:= concat (Mod_Key, 'Shift-')  
end; {Modifier}
```

Apple Technical Communications

Tech Info Library Article Number:338



Tech Info Library

Apple III Pascal: Reading special keyboard characters (2 of 2)

Revised: 11/15/84
Security: Everyone

Apple III Pascal: Reading special keyboard characters (2 of 2)

```
=====

procedure KEY_NAME;
  var Its_There: integer;
  begin
    Key:= ' '; {Initialize as one character}
    if (A > 127) then A:= A - 128; {Open-Apple
                                   flagged elsewhere}
    if (A < 33) then begin
      Its_There:= pos ('Special', Mod_Key);
      if (Its_There > 0) then begin
        case (A) of
          8: Key:= 'LeftArrow';
          9: Key:= 'Tab';
          10: Key:= 'DownArrow';
          11: Key:= 'UpArrow';
          13: Key:= 'Enter';
          21: Key:= 'RightArrow';
          27: Key:= 'Escape';
          32: Key:= 'Space'
        end;
        delete (Mod_Key, 1, 7); {Delete 'Special'}
      end
    else begin
      Key [1]:= chr (A + 64); {Convert to regular character}
      if (A = 13) then begin
        Its_There:= pos ('Control', Mod_Key);
        if (Its_There = 0) then Key:= 'Return'
      end
    end
  end
else begin {Printing characters}
  Key [1]:= chr (A);
  if (A = 127) then Key:= 'Delete'
end
end; {Key_Name}

begin
```

```
write (chr (28)); {Clear viewport}
KBD_MODE (128); {Request 2-byte keyboard operation}
repeat
  write ('Enter key combination: ');
  READ_TWO;
  MODIFIER; {Interpret Byte_B}
  KEY_NAME; {Interpret Byte_A}
  writeln (Mod_Key, Key);
until (Key = 'Escape');
KBD_MODE (0) {Restore 1-byte keyboard operation}
end. {Two_Bytes}
```

Apple Technical Communications

Tech Info Library Article Number:339



Tech Info Library

LisaTerminal: Important Things to Know

Revised: 7/30/87
Security: Everyone

LisaTerminal: Important Things to Know

=====

1. You can't abort the pasting into LisaTerminal of a file to be transmitted.
2. You can't set LisaTerminal to respond automatically to a prompt from a host computer, such as an editor prompt for next line.

Tech Info Library Article Number:340



Tech Info Library

LisaTerminal: VT100 Mode

Revised: 7/30/87
Security: Everyone

LisaTerminal: VT100 Mode

=====

When you want to emulate VT100 operation with LisaTerminal, set Lisa to "forget" lines that scroll off the screen. This mode appears to emulate VT100 functions more accurately. You can then set the Lisa to "remember" and download data or text, then set Lisa back for VT100 terminal operation. During this setting and resetting, Lisa does not clear that text which has been "remembered".

Tech Info Library Article Number:341



Tech Info Library

Applesoft BASIC: # Character in When Printing a Listings

Revised: 9/11/87
Security: Everyone

Applesoft BASIC: "#" Character in When Printing a Listings

=====

This article last reviewed: 9/11/87

If, when you print out a program listing, you find unwanted "#" characters in front of the line numbers, see if you have issued the command "PR#1" in the program. You need to preface all ProDOS commands with a CHR\$(4), the Control-D character.

The correct Syntax for this command is:

```
PRINT CHR$(4); "PR#1"
```

Tech Info Library Article Number:342



Tech Info Library

LisaTerminal: Dialing up another Lisa

Revised: 11/15/84
Security: Everyone

LisaTerminal: Dialing up another Lisa

=====

To dial up another Lisa, or any other computer, you need to have a modem that has an auto answer capability, such as Hayes Smartmodem or an Apple Modem.

1. Make sure that the compatibility settings are the same for both computers.
2. To see what you're typing, set the compatibilities at half duplex.
3. Dial the other modem's phone number. This modem will answer and send back the carrier. When your modem receives the carrier it will tell you that you're connected. Anything that you type or paste will be sent.
4. To terminate the connection, just hang up from the phone menu.

Good Things to Know About Lisa

Tech Info Library Article Number:343



Tech Info Library

LisaTerminal: Copy and Paste from LisaWrite

Revised: 11/15/84
Security: Everyone

LisaTerminal: Copy and Paste from LisaWrite

=====

When you paste from LisaWrite to LisaTerminal, Terminal expects a carriage return after every line and truncates the line if it is too long. There is a way of getting around this:

1. Copy the LisaWrite document and paste into an off-line LisaTerminal document (one that isn't dialed into anything). The Lisa will put in put in carriage returns for you.
2. Copy it again, dial up, then paste.

There are two problems with this method.

1. The text breaks in the middle of words if you don't have word wrap set. To avoid this, you can set it to 132 characters. There will be less of a chance of breaking in the middle of a word. Alternatively, turn on word wrap.
2. A telecommunications service, such as The Source, may specifically require that the carriage return be within 80 characters. The problem is that LisaTerminal puts that return in the 81st position. Having LisaTerminal set for word wrap will alleviate the problem somewhat.

This information applies to versions 1.0 and 2.0 only. The problem is solved in version 3.0.

Good Things to Know About Lisa

Tech Info Library Article Number:344



Tech Info Library

LisaTerminal: Copy and Paste from LisaCalc

Revised: 11/15/84
Security: Everyone

LisaTerminal: Copy and Paste from LisaCalc

=====

Before LisaTerminal can recieve LisaCalc Copy or Paste information in the appropriate format (in columns), you need to set LisaTerminal's tabs to reflect the width of each column you want LisaTerminal to send. When you don't set the tabs, all of the information appears in one column with spaces between each entry. To set tabs in LisaTerminal, follow the procedure on pages 46-48 in the LisaTerminal manual.

Good Things to Know About Lisa

Tech Info Library Article Number:345



Tech Info Library

LisaTerminal: Hang when line is busy

Revised: 11/15/84
Security: Everyone

LisaTerminal: Hang when line is busy

=====

When LisaTerminal dials the number automatically and the line is busy or there is no answer, the system appears to hang. In fact, LisaTerminal runs a timeout loop in these situations and nothing stops that loop except cutting off the power. You must wait a minute; once the timeout loop ends, the apparent system hang is over and the Lisa behaves normally.

Good Things to Know About Lisa

Tech Info Library Article Number:346



Tech Info Library

LisaTerminal: Apple Modem cables

Revised: 11/15/84
Security: Everyone

LisaTerminal: Apple Modem cables

=====

There is a deceptive similarity of the Apple modem cable (part number 540-0197) and the Macintosh printer cable (part number 590-0146). You will have problems when you use LisaTerminal and the Apple modem with the Macintosh printer cable.

Good Things to Know About Lisa

Tech Info Library Article Number:347



Tech Info Library

LisaTerminal: Setting the baud rate for an Apple Modem

Revised: 11/15/84
Security: Everyone

LisaTerminal: Setting the baud rate for an Apple Modem

=====

The baud rate on the Apple 1200 modem is not unalterable, although how to alter the rate is not very obvious: you alter the rate by passing data to the modem at the rate you want the modem to transmit data. From whichever program you use to send data to the modem, it determines the baud rate of the data it receives and sets itself at that rate. For example, when you set the baud rate of the LisaTerminal program to 300 and instruct the program to auto-dial, LisaTerminal sends the auto-dial message to the modem at 300 baud; from the speed of this message, the modem assumes that you want to be communicate at 300 baud; the modem then alters its rate to 300 baud. Subtle, no? But here's the catch: if you change the baud rate in the program without turning off the modem first, the modem ignores the messages sent to it at the new baud rate. You must turn off the modem if you are going to change the baud rate.

Good Things to Know About Lisa

Tech Info Library Article Number:348



Tech Info Library

TIFF (Tag Image File Format): Specifications (4 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (4 of 7)

=====

This article last reviewed: 12 February 1988

5. The Fields, continued

StripByteCounts

Tag = 279 (117)

Type = LONG

N = StripsPerImage for PlanarConfiguration equal to 1.

= SamplesPerPixel * StripsPerImage for PlanarConfiguration equal to 2

For each strip, the number of bytes in that strip.

No default.

SamplesPerPixel

Tag = 277 (115)

Type = SHORT

N = 1

The number of samples per pixel. Usually 1 for monochromatic data and 3 for color data (i.e. one sample for each of the color planes.)

Default = 1.

BitsPerSample

Tag = 258 (102)

Type = SHORT

N = SamplesPerPixel

Number of bits per sample. Note that this tag allows a different number of bits per sample for each sample corresponding to a pixel. For example, RGB color data could use a different number of bits per sample for each of the three color planes.

Default = 1.

PlanarConfiguration

Tag = 284 (11C)

Type = SHORT

N = 1

- 1 = the sample values for each pixel are stored contiguously, so that there is a single image plane. See PhotometricInterpretation to determine the order of the samples within the pixel data.
- 2 = the samples are stored in separate "sample planes." The values in StripOffsets and StripByteCounts are then arranged as a 2-dimensional array, with SamplesPerPixel rows and StripsPerImage columns. (All of the columns for row 0 are stored first, followed by the columns of row 1, and so on.) PhotometricInterpretation describes the type of data that is stored in each sample plane.

If SamplesPerPixel is 1, a PlanarConfiguration value of 1 is equivalent to a value of 2.

No default.

Compression

Tag = 259 (103)

Type= SHORT

N= SamplesPerPixel for PlanarConfiguration equal to 1 or 2.

Note that a value is provided for each sample, allowing different compression schemes to be applied to different planes of data.

1 = No compression, but pack data into bytes as tightly as possible, with no unused bits except at the end of a row. See also FillOrder. The bytes are stored as an array of type BYTE, for BitsPerSample <= 8, SHORT if BitsPerSample > 8 and <= 16, and LONG if BitsPerSample > 16 and <= 32. The byte ordering of data >8 bits must be consistent with that specified in the TIFF file header (bytes 0 and 1). "Intel" format files will have the least significant bytes preceeding the most significant bytes while "Motorola" format files will have the opposite.

If the number of bits per sample is not a power of 2, and you are willing to give up some space for better performance, you may wish to use the next higher power of 2. For example, if your data can be represented in 6 bits, you may wish to specify that it is 8 bits deep. If you take this approach, you should be sure that MinSampleValue and MaxSampleValue are given correct values (probably 0 and 63 for intrinsically 6-bit data.) TIFF file readers should use MinSampleValue and MaxSampleValue to determine the range of values in the data rather than BitsPerSample.

Rows are required to begin on byte boundaries.

2 = CCITT Group 3 1-Dimensional Modified Huffman run length encoding. BitsPerSample must be 1, since this type of compression is defined only for "binary" images.

3 = Facsimile-compatible CCITT Group 3, exactly as specified in "Standardization of Group 3 facsimile apparatus for document transmission," Recommendation T.4, Volume VII, Fascicle VII.3, Terminal Equipment and Protocols for Telematic Services, The International Telegraph and Telephone Consultative Committee (CCITT), Geneva, 1985, pages 16 through 31. Each strip must begin on a byte boundary. (But recall that an image can be a single strip.) Rows that are not the first row of a strip are not required to begin on a byte boundary. The data is stored as bytes, not words -- byte-reversal is not allowed. Note that the FillOrder field still applies. See the Group3Options field for Group 3 options such as 1D vs 2D coding.

4 = Facsimile-compatible CCITT Group 4, exactly as specified in "Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus," Recommendation T.6, Volume VII, Fascicle VII.3, Terminal Equipment and Protocols for Telematic Services, The International Telegraph and Telephone Consultative Committee (CCITT), Geneva, 1985, pages 40 through 48. Each strip must begin on a byte boundary. Rows that are not the first row of a strip are not required to begin on a byte boundary. The data is stored as bytes, not words. Note that the FillOrder field still applies. See the Group4Options field for Group 4 options.

32771 = the same thing as Compression type 1 (no compression), except that each row begins on the next available word boundary, instead of byte boundary.

32773 = PackBits compression, a relatively simple byte-oriented run-length scheme.

Data compression only applies to pixel data, as pointed to by StripOffsets. All other TIFF information is unaffected.

To be determined are additional compression schemes for gray and colored images. We encourage your suggestions, especially if accompanied by full specifications and performance information. It is of course desirable to minimize the number of compression schemes that are being used, but this is clearly an area in which extremely significant time and space tradeoffs exist.

Default = 1.

Group3Options

Tag = 292 (124)

Type = LONG

N = 1

This field is made up of a set of 32 flag bits. Unused bits are expected to be 0. Bit 0 is the low-order bit. It is probably not safe to try to read the file if any bit of this field is set that you don't know the meaning of.

Bit 0 is 1 for 2-dimensional coding (else 1-dimensional is assumed). For 2-D coding, if more than one strip is specified, each strip must begin with a 1-dimensionally coded line. That is, RowsPerStrip should be a multiple

of "Parameter K" as documented in the CCITT specification.

Bit 1 is 1 if uncompressed mode is used.

Bit 2 is 1 if fill bits have been added as necessary before EOL codes such that EOL always ends on a byte boundary, thus ensuring an eol-sequence of a 1 byte preceded by a zero nibble: xxxx-0000 0000-0001.

Default is 0, for basic 1-dimensional coding.

Group4Options

Tag = 293 (125)

Type = LONG

N = 1

This field is made up of a set of 32 flag bits. Unused bits are expected to be 0. Bit 0 is the low-order bit. It is probably not safe to try to read the file if any bit of this field is set that you don't know the meaning of. Gray scale and color coding schemes are under study, and will be added when finalized.

For 2-D coding, each strip is encoded as if it were a separate image. In particular, each strip begins on a byte boundary; and the coding for the first row of a strip is encoded independently of the previous row, using horizontal codes, as if the previous row is entirely white. Each strip ends with the 24-bit end-of-facsimile block (EOFB).

Bit 0 is unused.

Bit 1 is 1 if uncompressed mode is used.

Default is 0, for basic 2-dimensional binary compression.

FillOrder

Tag = 266 (10A)

Type = SHORT

N = 1

The order of data values within a byte.

1 = most significant bits of the byte are filled first. That is, data values (or code words) are ordered from high order bit to low order bit within a byte.

2 = least significant bits are filled first.

Default is FillOrder = 1.

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Tech Info Library

LisaTerminal: Cluster Controller

Revised: 11/15/84
Security: Everyone

LisaTerminal: Cluster Controller

=====

The Apple Cluster Controller maintains an interface between an IBM host and the Apple Computer by emulating IBM 3278-2 terminal functions and 3287-1 printer functions. The Controller comes in two flavors:

1. SNA/SDLC, which emulates an IBM 3274 or IBM 3276 Control Unit/Display Station, and
2. BSC (bisynchronous), which emulates an IBM 3271 Control Unit.

The cluster controller does not support low and high intensity displays; otherwise, the terminal and printer functions are completely emulated.

Good Things to Know About Lisa

Tech Info Library Article Number:350



Tech Info Library

LisaTerminal: VT52 Errata

Revised: 7/30/87
Security: Everyone

LisaTerminal: VT52 Errata

=====

In the LisaTerminal manual (versions 1.2 and 2.0), page 81 gives the chart for cursor control characters in the VT52 mode. The command for direct cursor address is incorrect. It should read:

Direct cursor address ESC Ylc(asterisk)

Tech Info Library Article Number:351



Tech Info Library

DataPak Software

Revised: 4/3/97
Security: Everyone

DataPak Software

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 21 July 1993

DataPak Software

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Company Profile:
Hardware and software, specializing in developer tools for the Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:352



Tech Info Library

LisaTerminal:Receiving carriage return-linefeed

Revised: 4/2/91
Security: Everyone

LisaTerminal:Receiving carriage return-linefeed

=====

If you aren't receiving a line feed character from the computer that you're trying to communicate with, then you need to instruct the other computer to send them. The lack of line feeds is a problem with the other computer and not the with LisaTerminal. In the LisaTerminal manual it suggests that setting Auto New-line to On will resolve this problem. It doesn't.

Good Things to Know About Lisa

Tech Info Library Article Number:353



Tech Info Library

LisaTerminal: Clearing the Screen

Revised: 7/30/87
Security: Everyone

LisaTerminal: Clearing the Screen

=====

If you are having problems with clearing the screen, try setting the Columns Per Line from 80 to 132, then back to 80.

Tech Info Library Article Number:354



Tech Info Library

LisaTerminal: Capacity

Revised: 7/30/87
Security: Everyone

LisaTerminal: Capacity

=====

The capacity of a LisaTerminal document is 1,500 lines. When you reach that limit, LisaTerminal gives you a message telling you to save the document and start on another. If you don't another document and simply continue to receive information, Lisa begins to have memory problems and you run the risk of losing your document.

Tech Info Library Article Number:355



Tech Info Library

LisaWrite: Page marks

Revised: 11/15/84
Security: Everyone

LisaWrite: Page marks

=====

You can get rid of a page mark if it's alone on a line by pointing to the mark with the mouse and clicking the mouse 3 times; clicking 3 times on the page mark selects it for cutting it out or backspacing over it. If the mark is not alone on a line, then click on the line below and backspace over the mark. LisaWrite treats page marks just like carriage returns.

Good Things to Know About Lisa

Tech Info Library Article Number:356



Tech Info Library

LisaWrite: Letterhead

Revised: 11/15/84
Security: Everyone

LisaWrite: Letterhead

=====

If on the first page you want a larger top margin for a letterhead:

1. set your margins for the second page,
2. click at the beginning of the document,
3. use the RETURN key to space down the required amount.

If you don't want to do this with every document:

1. create a document
2. tear off a new document,
3. put in the required number of RETURNS at the top,
4. save and Put Away the document,
5. make a stationery pad out of the document.

From then on, when you tear off a piece of this stationery, click down near the bottom of the document; this skips the carriage returns for the letterhead and puts the cursor where you want to start typing.

Good Things to Know About Lisa

Tech Info Library Article Number:357



Tech Info Library

LisaWrite: How To Double Underline

Revised: 7/30/87
Security: Everyone

LisaWrite: How To Double Underline

=====

To double underline:

1. Set the format to single-spaced paragraph.
2. Go down to the next line and type equal signs (=).
3. Select the equal signs.
4. Set the selected equal signs to both superscript and bold.
- 5 Change the type style to either 15 pitch, 12 pitch Elite or PS Executive.

In these type styles, the equal signs blend together, giving the appearance of double underlining of the text in the line above.

Tech Info Library Article Number:358



Tech Info Library

LisaWrite: Tabs

Revised: 7/30/87
Security: Everyone

LisaWrite: Tabs

=====

Setting tabs is described in the Getting Started or Tutorial section of the LisaWrite manual. The method described in the book is the most trouble-free, as long as you remember two things:

1. Press the TAB key as you're entering data.
2. When you're moving a tab on the tab ruler, all the tabs to the right will move with it.

Tech Info Library Article Number:359



Tech Info Library

LisaWrite: Formatting

Revised: 7/30/87
Security: Everyone

LisaWrite: Formatting

=====

Are you having problems with formats disappearing? Keep this in mind: all formatting is retained by the carriage return. Your constant loss of formats tells you that the carriage return isn't being carried to the next paragraph, and you must have clicked in the wrong place before starting to type. Make this easy fix:

1. Select a paragraph that is formatted correctly.
2. Copy that paragraph.
3. Select the paragraph to be fixed.
4. Select "Same as on Clipboard" from the Format menu.

Tech Info Library Article Number:360



Tech Info Library

LisaWrite: Information Outside the Printable Area

Revised: 7/13/94
Security: Everyone

LisaWrite: Information Outside the Printable Area

=====

When you print a LisaWrite document on 8.5 x 11 inch paper, avoid setting the right margin past 8 inches (or past 10 inches if you're printing in landscape mode). If you set the right margin beyond these limits, when you attempt to print the document you'll get a dialog box stating that "There is information outside the printable area".

If this message appears when the right margin is set to 8" or less, ignore it: simply click OK to proceed with the printing. If the problem persists, select "All of Document" from the Edit menu. Text located past the right margin will then become visible. After you cut that text, the document will print.

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:361



Tech Info Library

MacTerminal: Problems using Xmodem

Revised: 4/2/91
Security: Everyone

MacTerminal: Problems using Xmodem

=====

Xmodem protocol in MacTerminal supports checksum error checking, and so you should set Xon/Xoff to OFF if you're using Xmodem. If an Xon/Xoff handshake occurs while if Xon/Xoff is on, the checksum received at the end of the block will not match the calculated one; this situation generates a request to resend the block, which causes the receiver to receive duplicate text.

Tech Info Library Article Number:362



Tech Info Library

LisaWrite: Blank Pages

Revised: 7/30/87
Security: Everyone

LisaWrite: Blank Pages

=====

Sometimes there are blank pages at the end of a document. To eliminate them, first click three times at the beginning of the blank page to see if anything is selected. Sometimes there are carriage returns that are carried at the end of the document. If nothing is selected, then all you need to do is save and put away the document. This will get rid of any truly unused pages.

Tech Info Library Article Number:363



Tech Info Library

LisaWrite: Preview Pages

Revised: 3/9/93
Security: Everyone

LisaWrite: Preview Pages

=====

With Preview Pages comes a variety of display problems (including showing the Page ruler and printing):

- pieces of text are displayed in the wrong place,
- the elevator disappears,
- text disappears,
- you cannot print a page in a specified range,
- LisaWrite doesn't display the document past page three.

If you are having such display problems, just avoid using Preview pages or the page ruler. If you are having problems printing a specific page, have that page displayed in the window before you print, or select a larger range. If a large portion of your document is gone, remember DON'T PANIC. That portion of your document is still there; it's just not being displayed. Select Don't Preview Pages, then Save and Put Away the document. When you open the document, it will come back whole.

Copyright 1984, Apple Computer, Inc

Tech Info Library Article Number:364



Tech Info Library

LisaCalc: Management Techniques

Revised: 11/15/84
Security: Everyone

LisaCalc: Management Techniques

=====

There are some techniques for managing the size of a spreadsheet:

1. Plan Ahead. You can enter the information more easily and, since making changes tends to increase the size of the sheet, planned entries will save you memory.
2. Structure the information to make the row and column lengths fairly even; avoid stretching your spreadsheet too oblong either way. LisaCalc keeps track of all the cells in the grid. Incidentally, this accounts for the printing of blank pages on occasion; since Lisa prints every cell in the grid, even you haven't used them, the blank cells force a page feed.
3. Use Paste Adjusted formulas; unlike regular pasted or entered formulas, they don't take up as much accounting space on a pointer table. However, there are a few things to keep in mind when using Paste Adjust. First, it works best on long formulas pasted into large ranges; Paste Adjusting a small formula to a few cells won't save you any space. Second, LisaCalc, in the process of readjusting formulas, replaces the pointers in the spreadsheet with real formulas. Bigger than the pointer they replace, these Paste Adjusted formulas increase the size of your sheet once you start copying, cutting, pasting, and inserting rows or columns. The reason for this is that the adjusted cells contain a pointer to the original formula with an increment. Plan ahead!

Tech Info Library Article Number:366



Tech Info Library

LisaCalc: Cell Selection

Revised: 11/15/84
Security: Everyone

LisaCalc: Cell Selection

=====

If you want to select a range of cells that is larger than the window (such as A1:A100), click in the Cells area at the top of your document (or press APPLE-G) and type the range. Pressing ENTER will select the range.

Good Things to Know About Lisa

Tech Info Library Article Number:367



Tech Info Library

LisaCalc: The Time It Takes to Save and Put Away

Revised: 7/30/87
Security: Everyone

LisaCalc: The Time It Takes to Save and Put Away

=====

Yes, it takes a long time to save large Calc spreadsheets. Fifteen minutes or more is neither uncommon nor abnormal. If the sheet has Lookups, Ifs, and Searches, the sheet may take even longer to save. Simply be patient.

Tech Info Library Article Number:368



Tech Info Library

LisaCalc: Cut & Paste

Revised: 7/30/87
Security: Everyone

LisaCalc: Cut & Paste

=====

NOTE: This information applies to versions 1.0 and 2.0.

Although LisaCalc lets you Cut the whole contents of a document, you can't then Paste it anywhere -- not even back into the document you Cut it from.

Instead of using Cut and Paste when the whole document is involved, use Copy and Paste.

Tech Info Library Article Number:369



Tech Info Library

LisaCalc: Cut & Paste With Formulas

Revised: 7/30/87
Security: Everyone

LisaCalc: Cut & Paste With Formulas

=====

When you cut cells, formulas that directly refer to those cells are set to ERROR. When you paste, the formulas will be adjusted to reflect the location of the new cells. If you cut a group of cells and the formulas that refer to them, then paste them to another location, the formulas are automatically adjusted.

Tech Info Library Article Number:370



Tech Info Library

LisaCalc: Find Missing Value

Revised: 7/30/87
Security: Everyone

LisaCalc: Find Missing Value

=====

Find Next Missing Value does not always work. The problem occurs when the selected cell is in a column that never had any values in it. An alert box appears to report that there are no missing values below the selection. Be sure the selected cell is in a column that has another value.

Tech Info Library Article Number:371



Tech Info Library

ImageWriter II: When It Suddenly Starts Printing in Hex

Revised: 10/21/87
Security: Everyone

ImageWriter II: When It Suddenly Starts Printing in Hex

=====

This article last reviewed: 11 September 1987

It can be distressing when your ImageWriter II unexpectedly prints a hexadecimal code dump. Hex printing is actually a feature of the ImageWriter II that can be very helpful for programmers.

Hex printing occurs when the Select button is pressed when the ImageWriter II is turned on. This can easily happen accidentally, because the Select button is so close to the power switch. If this happens:

1. Turn power off.
2. Turn the printer back on, making sure that the Select button is not pressed.

Tech Info Library Article Number:372



Tech Info Library

LisaCalc: Entering a Cell's Coordinates

Revised: 7/30/87
Security: Everyone

LisaCalc: Entering a Cell's Coordinates

=====

Here's how to enter a cell's coordinates without typing it: just point at the cell, and then press the OPTION key and the mouse button at the same time.

Tech Info Library Article Number:373



Tech Info Library

LisaCalc: Calculation Order

Revised: 7/30/87
Security: Everyone

LisaCalc: Calculation Order

=====

LisaCalc 7/7 doesn't have a specific calculation order -- it simply determines the approach that will make for the fewest possible passes. Therefore, you don't need to worry about placement of formulas in relation to the cells they involve.

LisaCalc 1.0 and 2.0, on the other hand, calculate first by rows, then by columns. They then check to see if both answers are the same. If they aren't the same, LisaCalc calculates by rows again then rechecks the answers. If Calculate Automatically is selected, this process is repeated until two successive calculations yield the same answers, or until 30 seconds has passed. If Calculate Manually is selected, the process is repeated indefinitely.

Tech Info Library Article Number:374



Tech Info Library

LisaCalc: Error Results

Revised: 7/30/87
Security: Everyone

LisaCalc: Error Results

=====

Apparently innocent formulas, like A1+B1, sometimes result in an Error if A1 or B1 is blank. The program has forgotten that blank cells are to be treated as zero in a formula. To get around this lapse of memory, just put a zero (0) in the blank cell.

Tech Info Library Article Number:375



Tech Info Library

LisaCalc: Precision Problems

Revised: 7/30/87
Security: Everyone

LisaCalc: Precision Problems

=====

When an IF test uses real numbers, problems with round off can cause incorrect evaluations. For example, say you have the formula

```
IF(A1+A2=A3,"OK","NOT OK")
```

and cell A1 contains 2.1, A2 contains 1.2, and A3 contains A1+A2. Even though the values look identical, the formula will return "NOT OK", because values in an IF statement (A1+A2) have a different precision than values in a cell (A3).

So, when the two values are compared, they are not the same ("NOT OK"), even though logically they are. To avoid this situation, use integer numbers for equality tests -- or, when you use real numbers, add an INT function to your IF statement.

Tech Info Library Article Number:376



Tech Info Library

LisaCalc: Lookup

Revised: 11/15/84
Security: Everyone

LisaCalc: Lookup

=====

Please ignore the implication, on page D32 of the LisaCalc Manual, that you can enter more than one range for Range1 in your Lookup statement. In fact, when you enter the second range, LisaCalc assumes that this is Range2.

You can get around this if your Lookup table spans more than one row or column. Consider, for example, a Lookup table to look up a number in the range of 1 to 300. Obviously, this will be more than one column or row. In Cells B1:B254 you have numbers from 1 to 254. In the column to the right (C1:C254) you have the result to return. In Cell B255, instead of entering the value 255, enter 301, a number outside the range of the Lookup table. To the right of that you have a lookup that looks like this:

```
LOOKUP(A1,D1:D46,E1:E46).
```

D1:D46 has the remaining numbers in your Lookup table, the results are to the right in column E. So in your main Lookup Statement you would have this:

```
Lookup(A1,B1:B255,C1:C255)
```

If the number you are looking for in A1 is 260, then the value returned will be the result of the Lookup in Cell C255.

Good Things to Know About Lisa

Tech Info Library Article Number:377



Tech Info Library

LisaCalc: How to check for a blank cell

Revised: 11/15/84
Security: Everyone

LisaCalc: How to check for a blank cell

=====

There are some instances which require a test for an empty or blank cell. To test for this condition, you need to compare the cell in question with another cell that you know will always be blank, such as in:

```
IF(D5=X255,'blank',G4-D5)
```

assuming that X255 is always empty.

Good Things to Know About Lisa

Tech Info Library Article Number:378



Tech Info Library

LisaCalc: New vs. Used Rows and Columns

Revised: 7/30/87
Security: Everyone

LisaCalc: New vs. Used Rows and Columns

=====

On a new Calc sheet, enter the following:

in cell A1 enter 20
in cell A3 enter 30
in cell A4 enter 50
in cell A5 enter 100
in cell A6 enter MIN(A1:A5)

The value will be 20.

Now, enter anything into any cell (other than A2) in row 2. The value in A6 changes to 0. The problem is that that LisaCalc makes a distinction between new and used rows or columns. To get around this, cut row 2 and insert another in its place.

Tech Info Library Article Number:379



Tech Info Library

LisaCalc: Using dates in formulas

Revised: 11/15/84
Security: Everyone

LisaCalc: Using dates in formulas

=====

To use a date in a formula, as for calculating cost per day, you need to transform the date part into a number. To accomplish this, use the INT function:

```
INT('12/4/84'-'1/3/84')*500
```

Good Things to Know About Lisa

Tech Info Library Article Number:380



Tech Info Library

Apple IIe: Specifications (Discontinued)

Revised: 6/1/94
Security: Everyone

Apple IIe: Specifications (Discontinued)

--Order #: A2S2064

--Technical Specifications

1. Central Processing Unit (CPU):

- 65C02 microprocessor
- 16-bit address bus; access range 65,536 (64K) bytes
- 8-bit data bus
- Clock speed: 1.02 MHz (Up to 500,000 operations per second)

2. Video:

- Text display modes:
 - a. 40-column text, 24 lines, 5 x 7 dot matrix (suitable for television or monitor)
 - b. 80-column text, 24 lines, 5 x 7 dot matrix (80-column card and monitor required)

3. Graphics display modes:

- Low-resolution 16-color graphics:
 - 1. 40h x 48v color blocks
 - 2. 40h x 40v with four lines of text
- High-resolution 6-color graphics:
 - 1. 280h x 192v dots
 - 2. 280h x 160v with four lines of text.
- Double high-resolution 16-color graphics: 560h x 192 v dots; extended 80-Column Card required)
- All graphics modes may be displayed on a television or monitor

4. Character set:

- Full 128 ASCII characters:
 - 1. 96 characters printable in both upper and lower case
 - 2. 32 control characters

5. Display formats:

- Normal, inverse, flashing, or Mousetext

6. Memory:

- 64K RAM; Apple Extended 80-column card included
- 32K ROM, including:
 1. Applesoft BASIC interpreter
 2. System monitor routine for machine-language programming
 - a. Disassembler
 - b. Automatic I/O device assignment
 - c. Keyboard and screen-editing features
 - d. Diagnostic routines
 - e. 80-column-display firmware
 - f. Mini Assembler

7. Inputs/Outputs:

- Typewriter-style keyboard
 1. Contoured, full-travel keys for easy touch-typing
 2. Generates all 128 ASCII character codes and:
 - a. Two programmable function keys:
 1. OPEN APPLE
 2. SOLID APPLE
 - b. Four directional arrow (cursor-movement) keys
 - c. Special-purpose keys:
 - ESCAPE, CONTROL, CAPS LOCK, DELETE, TAB SHIFT, and RESET
 - d. All keys repeat automatically
- Multipurpose video and memory-expansion slot
- Seven additional I/O slots; full buffered, with interrupt and DMA priority structure
- NTSC-compatible (USA) and PAL color video output
- Monochromatic video output
- Speaker and sound-generation capability
- Game I/O signals:
 1. 3 switch inputs
 2. 4 analog (hand control) inputs
 3. 4 annunciator outputs
 4. 1 strobe output
 5. Ground and +5 volts output
- Cassette input/output

8. Electrical:

- Line voltage: 108V to 132 V AC
- Typical power consumption: 11W
- Maximum power consumption: 60W
- Supply voltages:
 1. +5V (+/- 3%)
 2. +11.8V (+/- 6%)
 3. -5.2V (+/- 10%)
 4. -12V (+/- 10%)
- Maximum supply currents
 1. +5V: 2.5A
 2. +12V: 1.5A
 3. -5V: 250ma
 4. -12V: 250mA
- Safety and EMI qualifications
 1. -FCC Part 15, Class B Computing Devices

2. -CSA 22.2, No. 154-1979
3. -UL 126Z-Office Machines

9. Environmental:

- External ambient operating temperature: 32 to 113 degrees F
(0 to 45 C)
- Maximum temperature on power supply case: 130 degrees F (55 C)
- Relative humidity: 5 to 85%

10. Physical:

- Height: 4.5 in. (11.43 cm)
- Width: 15.13 in. (38.43 cm)
- Depth: 18.0 in. (45.72 cm)
- Weight: 12.0 lbs. (5.45 kg)

1994 Apple Technical Communications

Tech Info Library Article Number:382



Tech Info Library

LisaCalc: Sorting

Revised: 11/15/84
Security: Everyone

LisaCalc: Sorting

=====

There is a way of sorting in LisaCalc. Let's say, for example, that you wanted to sort a column of numbers (B1:B35) in Ascending order. To do this, you need to set up an additional column of formulas like this:

In the first cell (C1), put

```
search(B1:B35,cell<result,500,cell)
```

In the next cell (C2), put

```
search(B1:B35,cell<result and cell>C1,500,cell)
```

Now, Paste Adjust it to C3:C35, adjusting the C1. This will search the range B1:B35 and sort them in ascending order. The 500 value is any number larger than the largest number in the range. To sort in Descending order, the formulas would look like this:

In the first cell (C1), put

```
search(B1:B35,cell>result,1,cell)
```

In the next cell (C2), put

```
search(B1:B35,cell>result and cell<C1,1,cell)
```

and then Paste Adjust it to C3:C35, adjusting the C1.

Please keep a couple of things in mind when sorting:

1. This method will only sort a single row or column, NOT entire rows or columns as in LisaList.
2. If there are repeats of numbers in the range you are sorting, they will show up as NAs at the end of the list.

Good Things to Know About Lisa

Tech Info Library Article Number:383



Tech Info Library

LisaDraw: Location of Pasted Objects

Revised: 7/30/87
Security: Everyone

LisaDraw: Location of Pasted Objects

=====

When pasted into LisaDraw, objects are centered around the last mouse click.
If you haven't clicked in the document, the object is centered on the first
page.

Tech Info Library Article Number:384



Tech Info Library

LisaDraw: Centered Text

Revised: 7/30/87
Security: Everyone

LisaDraw: Centered Text

=====

When you select certain objects in LisaDraw, such as rectangles and circles, then start typing, the text aligns in that object. This means that if you have "Align Centers" selected (the default), your text is centered in the object.

Tech Info Library Article Number:385



Tech Info Library

LisaDraw: Cut & Paste from LisaWrite

Revised: 11/15/84
Security: Everyone

LisaDraw: Cut & Paste from LisaWrite

=====

Text can be cut or copied from LisaWrite and pasted into LisaDraw; however, LisaDraw doesn't understand "wraparound", so the information is pasted in one long line. For example, a paragraph consuming 5 or 6 lines copied from LisaWrite is pasted into LisaDraw as one long line (up to approximately 225 characters if there's sufficient room).

Good Things to Know About Lisa

Tech Info Library Article Number:386



Tech Info Library

LisaDraw: Even Spacing

Revised: 7/30/87
Security: Everyone

LisaDraw: Even Spacing

=====

Two methods for spacing objects evenly are:

- Select all the objects you wish to space evenly, then select Align to Autogrid from the Arrangement menu.
- Make evenly spaced copies of an object by duplicating the object and moving it the distance you want. While the duplicate is still selected, duplicate this duplicate. Each subsequent duplicate moves the same distance as the first duplicate you moved.

Tech Info Library Article Number:387



Tech Info Library

LisaDraw: Shading Arcs and Curves

Revised: 11/15/84
Security: Everyone

LisaDraw: Shading Arcs and Curves

=====

The default shade for text in LisaDraw is white, as it is for all closed objects (circles, squares, etc.). The default shade for arcs and freehand curves is "none." Consider shading arcs and freehand curves to give them a larger selectable area, making them easier to select.

Tech Info Library Article Number:388



Tech Info Library

LisaDraw: Error 3001 or 3007

Revised: 7/30/87
Security: Everyone

LisaDraw: Error 3001 or 3007

=====

When printing a document, you might receive error message 3001 or 3007 as a result of having entered some text in your document then backspacing over a portion of it.

The BACKSPACE sometimes changes the type style of the text string to the system font, the font used for displaying Lisa menus and messages. Unfortunately, LisaDraw doesn't know how to print the system font.

The text typically displays normally, though it is sometimes displayed in the system font which is easily distinguished when the text contains a "V". Just compare the "V" with the V in the option Save from the File/Print menu. The system font V, just as in the pull down menus, slants towards the right.

The easiest way to resolve this problem is to "Select All" of the document with the Edit menu, change the type style to another type style. Change the typstyle back to what you originally selected if you wish. Then print as you normally would.

The other option is to locate, select and change the font of, or re-enter, the specific offending text. Look for the "V"s as described above, or select Print While You Wait. LisaDraw stops printing when it encounters the offending text string.

Tech Info Library Article Number:389



Tech Info Library

LisaDraw: Shrinking and Stretching

Revised: 7/30/87
Security: Everyone

LisaDraw: Shrinking and Stretching

=====

Shrinking and stretching objects in LisaDraw is described

on pp. B19-B21 and C75-C76 of the LisaDraw manual

on pp. 137-138 of the Lisa 7/7 manual

To prevent distorting your objects when you stretch and shrink them, use the handles in the middle (not in the corners) of each side, moving each of the handles the same distance from the center. For example, if you have a 2 x 2 square that you wish to increase to 4 x 4, take the handle at the middle of each side and move it an inch out from the center. To stretch or shrink several objects, group them first.

Tech Info Library Article Number:390



Tech Info Library

LisaDraw: Pasting from LisaGraph

Revised: 11/15/84
Security: Everyone

LisaDraw: Pasting from LisaGraph

=====

Remember that graphs pasted from LisaGraph to LisaDraw are grouped, sometimes in many layers. Therefore, to access a specific part of the graph, ungroup the objects until the one you wish can be selected individually.

Good Things to Know About Lisa

Tech Info Library Article Number:391



Tech Info Library

LisaDraw: Printing Landscape, High Resolution

Revised: 7/30/87
Security: Everyone

LisaDraw: Printing Landscape, High Resolution

=====

When you print LisaDraw documents in landscape high resolution, horizontal lines and text may be longer on paper than they appeared on the screen. This distortion is due to the difference in the pixel size between the screen and the printer.

If you are designing a document to be printed in landscape high resolution, compensate for the line length by drawing your horizontal lines a little shorter, position text in boxes a little to the left, etc.

Alternatively, print your landscape document in normal resolution

Tech Info Library Article Number:392



Tech Info Library

LisaDraw: 2.0 Stationery

Revised: 7/30/87
Security: Everyone

LisaDraw: 2.0 Stationery

=====

Paper torn off the 2.0 LisaDraw stationery pad is 8 pages wide. To make a pad with fewer pages: select the preferred Drawing Size, draw a box, circle, line, etc, with lines white, shades none. Save your document, then select Make Stationery Pad from the File/Print menu. Throw away your old stationery pad if you wish.

Tech Info Library Article Number:394



Tech Info Library

Apple IIe: No Daisy-chaining 3.5 to 5.25 Disk Drives

Revised: 9/11/87
Security: Everyone

Apple IIe: No Daisy-chaining 3.5" to 5.25" Disk Drives

=====

This article last reviewed: 9/11/87

With an Apple IIGS or IIC, you can daisy-chain disk drives. This is not true with the Apple IIe. Two 5.25" drives can be run from one 5.25" controller card, but you need a separate 3.5" drive controller card if you add a 3.5" drive.

Tech Info Library Article Number:395



Tech Info Library

LisaList: Sorting

Revised: 7/30/87
Security: Everyone

LisaList: Sorting

=====

People frequently use a Text format rather than a Number format for columns of numbers. LisaList, when sorting number formatted fields, sorts them in ascending or descending numerical order. When these numbers are formatted as text, they are sorted via a comparison of letters. This means that all of the numbers that start with 1 (10, 15, 100, 1000, etc.) sort together, the 2's are grouped together, and so on. The only way to reformat the information is to add another column with the proper format, then transfer the information. Sort orders and comparisons are discussed further in Appendix 4 of the LisaList manual.

Tech Info Library Article Number:397



Tech Info Library

Macintosh II: Pinouts for Sony CPD-1302 Color Monitor (8/94)

Revised: 8/5/94
Security: Everyone

Macintosh II: Pinouts for Sony CPD-1302 Color Monitor (8/94)

Article Created: 11 September 1989
Article Reviewed/Updated: 05 August 1994

TOPIC -----

This article documents how to connect a Sony CPD-1302 display to a Macintosh.

DISCUSSION -----

To hook a Sony Multiscan (CPD-1302) monitor to a Macintosh II, make an adapter cable from the video card to the monitor (which has a 9-pin D connector).

Here is the pin out description for the adapter cable, using the automatic sync-on-green configuration:

Macintosh DB-15 Pin	Sony DB-9	Signal Name
-----	----	-----
1	1	Ground
2	3	Red
5	4	Green
9	5	Blue
15	8	HSync
12	9	VSync

Pins 7 & 10 can be tied together for VGA Extended Sense Code.

This allows the monitor to support 640x480 VGA and 800x600 SVGA resolutions.

Article Change History:
05 Aug 1994 - Changed pinouts to make it easier to connect to Macintosh computers which provide VGA support.

Support Information Services

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Tech Info Library

Macintosh II: Pinouts to Thomson UltraScan Monitor

Revised: 3/9/89
Security: Everyone

Macintosh II: Pinouts to Thomson UltraScan Monitor

=====

This article last reviewed: 9/11/87

Here are the pinouts for connecting a Thomson 4375M Ultra Scan monitor to the Macintosh II video card:

Macintosh II	Thomson UltraScan	signal name

1 -----	3	red video ground
2 -----	2	red video
3 -----	7	Composite TTL sync (negative going)
4 -----	1	sync ground
5 -----	4	green video+ Composite analog sync
6 -----	5	green ground
9 -----	14	blue video
13 -----	15	blue ground

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:399



Tech Info Library

Macintosh II: Pinouts To Taxan Super Vision Monitor

Revised: 3/9/89
Security: Everyone

Macintosh II: Pinouts To Taxan Super Vision Monitor

=====

This article last reviewed: 11 September 1987

Here are the pinouts for connecting a Taxan Super Vision 770 monitor to the Macintosh II video card:

Macintosh II	Vision 770	signal name

1	6	red video ground
2	1	red video
3	4	Composite TTL sync (negative going)
4	9	sync ground
5	2	green video+ Composite analog sync
6	7	green ground
9	3	blue video
13	8	blue ground

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Tech Info Library Article Number:400



Tech Info Library

LisaList: Capacity

Revised: 11/15/84
Security: Everyone

LisaList: Capacity

=====

The capacity of LisaList depends on the amount of disk storage space available. But each record (row) has a specific capacity of 990 bytes, with 100 fields (columns) per record.

Note: files that fit on the 5-1/4 disk may be too large to fit on a 3-1/2" microdisk under release 2.0; however, Lisa Operating System 3.0 splits the document among many diskettes if necessary.

Tech Info Library Article Number:401



Tech Info Library

LisaGraph: Copying From LisaCalc

Revised: 7/30/87
Security: Everyone

LisaGraph: Copying From LisaCalc

=====

To copy rows from LisaCalc to paste into columns in LisaGraph (or columns into rows), make sure you select entire rows or columns by clicking on their headers. Selecting a random range of cells doesn't work. After pasting, cut or clear any superfluous information.

Tech Info Library Article Number:402



Tech Info Library

LisaGraph: Two decimal places

Revised: 11/15/84
Security: Everyone

LisaGraph: Two decimal places

=====

If you wish to have numbers with two decimal places on the X or Y axis, be aware that LisaGraph always rounds the numbers up to the first decimal place for any increment except .05.

Good Things to Know About Lisa

Tech Info Library Article Number:403



Tech Info Library

LisaGraph: Customizing the X axis

Revised: 11/15/84
Security: Everyone

LisaGraph: Customizing the X axis

=====

To customize the X axis, you must have a line graph or a scattergram graph selected. Customizing is described on pp. C89-C93 in the LisaGraph 1.0 or 2.0 manual, or p. 83 in the LisaGraph 3.0 manual.

Good Things to Know About Lisa

Tech Info Library Article Number:404



Tech Info Library

LisaGraph: Changing Shades

Revised: 7/30/87
Security: Everyone

LisaGraph: Changing Shades

=====

To change the shading on the bars or legends in your bar charts:

1. Paste the graph into LisaDraw
2. Ungroup the objects until the object you want to modify can be selected individually.
3. Shade the bars.

Tech Info Library Article Number:405



Tech Info Library

LisaGraph: More graphs on a page

Revised: 11/15/84
Security: Everyone

LisaGraph: More graphs on a page

=====

If you want more than one graph on a page, paste the graphs into a LisaDraw document, then arrange them anyway you wish.

Good Things to Know About Lisa

Tech Info Library Article Number:406



Tech Info Library

Macintosh Pascal: Problem Copying Data to Text File

Revised: 12/17/87
Security: Everyone

Macintosh Pascal: Problem Copying Data to Text File

=====

This article last reviewed: 9 December 1987

There is a problem in Macintosh Pascal, version 2 and later. The "Output also to a file" option (the Preferences dialog in the Windows menu) allows all input and output in the TEXT window to be copied to a disk file. This option does not always work correctly. When you select this option, there is a risk of embedding garbage characters in the output file.

A workaround: create a disk file from within the program and write to it using the write procedure.

Tech Info Library Article Number:407



Tech Info Library

LisaProject: Connecting Tasks

Revised: 7/30/87
Security: Everyone

LisaProject: Connecting Tasks

=====

Be careful not to draw lines connecting task boxes in LisaProject sloppily. For example, if you have 3 tasks that are supposed to follow one another, don't draw a line directly from the first task to the third; otherwise, the middle task may incorrectly be assigned the start date of the first task. In such a case, the second task may appear connected to other tasks when it really isn't. To avoid this problem, first connect the second task to the first, then connect the third task to the second.

Tech Info Library Article Number:408



Tech Info Library

Macintosh II: Connecting to an Electrohome ECM 1310 Monitor

Revised: 7/1/92
Security: Everyone

Macintosh II: Connecting to an Electrohome ECM 1310 Monitor

=====

Article Created: 9 November 1987
Article Last Reviewed: 1 July 1992
Article Last Updated:

TOPIC -----

The Electrohome ECM 1310 has 4 inputs: Red, Green, Blue, and Composite Sync.

DISCUSSION -----

Each of the four connectors on the monitor is BNC type. A cable can be made to direct-connect the Macintosh to the Electrohome, using RG59 75-ohm cable. Because the Electrohome can use the composite sync signal available on the green video pin of the Macintosh video card port, essentially only three video cables are needed. Each cable carries each of the video signals and its accompanying ground line.

Copyright 1987, 1991 Apple Computer, Inc.

Tech Info Library Article Number:409



Tech Info Library

LisaProject: Resource Chart

Revised: 7/30/87
Security: Everyone

LisaProject: Resource Chart

=====

Resources listed on the Resource chart are sorted in the order they were entered, until you save and put away your project. They are then sorted from left to right as they appear on the chart. To sort your resources differently, create a task box at the left side of your project and enter the resources in the order you want. Save your document. When you redisplay your document, the resources are sorted in the same order as in the task box you created. Additions to the chart appear at the bottom of the resource chart.

Tech Info Library Article Number:410



Tech Info Library

LisaProject: Dates

Revised: 11/15/84
Security: Everyone

LisaProject: Dates

=====

If your task box has questions marks instead of dates, you've set a scheduled date that caused the program to push the dates outside of the calendar range.

Good Things to Know About Lisa

Tech Info Library Article Number:411



Tech Info Library

LisaProject 1.0 and 2.0: Resources

Revised: 7/30/87
Security: Everyone

LisaProject 1.0 and 2.0: Resources

=====

Releases 1.0 and 2.0 of LisaProject do not allow resources to work on different tasks simultaneously. When your tasks do not have the dates you anticipated, rename your resources so that each resource has a unique name. For example, if "Joe" is working on two parallel tasks, rename the resource Joe 1 and Joe 2, so the program treats them as two different resources. Resources also impact the scheduling of tasks later on in the project, so keep an eye on them.

LisaProject 3.0 lets you schedule resources in parallel.

Tech Info Library Article Number:412



Tech Info Library

LisaProject: Scheduled dates

Revised: 11/15/84
Security: Everyone

LisaProject: Scheduled dates

=====

When you enter a scheduled date for a task, LisaProject recalculates the dates to reflect it. However, if the date you entered is thought by the program to be illogical, LisaProject overrides it and enters its own date. The date is underlined just as if you had set it.

Good Things to Know About Lisa

Tech Info Library Article Number:413



Tech Info Library

LisaProject: Duration

Revised: 11/15/84
Security: Everyone

LisaProject: Duration

=====

Make sure that when entering resources and durations, you TAB over to the next field, NOT space over to it. Otherwise, LisaProject assumes the duration to be zero.

Good Things to Know About Lisa

Tech Info Library Article Number:414



Tech Info Library

LisaProject: Extra Pages

Revised: 7/30/87
Security: Everyone

LisaProject: Extra Pages

=====

To get rid of extra pages in LisaProject, Save and Put Away the document, then redisplay it. The extra pages should be deleted. If this doesn't work, try changing the print orientation (for example, change Portrait to Landscape), change it back, then save it and put it away. The extra pages should be gone when you reopen your document.

Tech Info Library Article Number:415



Tech Info Library

LisaProject: Start Date

Revised: 11/15/84
Security: Everyone

LisaProject: Start Date

=====

If your resource or task charts begin on a date other than the date set in your beginning milestone, then you've (most likely) created a task that has no predecessor, or you have encountered the "phantom task box" (very rare).

Large phantom task boxes have been discovered when the LisaProject document is copied and pasted into LisaDraw. The box has also been discovered in LisaProject just off the edge of the schedule. Since these task boxes are usually neither seen nor tied into the project, they take the start date as set

by the calendar. When they do occur, there seems to be no way to eliminate them from your LisaProject document.

Good Things to Know About Lisa

Tech Info Library Article Number:416



Tech Info Library

LisaProject: Capacity

Revised: 11/15/84
Security: Everyone

LisaProject: Capacity

=====

The maximum capacity of a LisaProject document is 60 pages, or more than 2,500 tasks with over 100 resources per task. LisaProject release 1 and 2.0 allow you to enter up to 20 vacation days, while release 3.0 accepts up to 40.

Good Things to Know About Lisa

Tech Info Library Article Number:417



Tech Info Library

Lisa: Monitors

Revised: 4/23/86
Security: Everyone

Lisa: Monitors

=====

Conrac: Conrac Corp.
600 N. Rimsdale Ave.
Covina, CA 91722
(213) 966-3511

What to request: 23" Black and White
Cabinet Model SNA-23/C
22.7 KHz horizontal line rate
60 Hz vertical field rate
Under scan adjusted so all 4 corners are visible
Modified for fast vertical retrace
20 MHz video amplifier

Electrohome: Electrohome (U.S.A.) Limited
250 Wales Ave.
Tonawanda, New York 14150
(716) 694-3332

What to request: EDP-57 Monochrome Projection monitor
Projects up to 15' diagonal screen
standard is green P1 phosphor, other phosphors available

Good Things to Know About Lisa

Tech Info Library Article Number:418



Tech Info Library

Lisa: Daisy Wheel Printer Settings

Revised: 7/30/87
Security: Everyone

Lisa: Daisy Wheel Printer Settings

=====

Switch 1: 11100111
Switch 2: 10010000
Numbered 8 to 1; 1 = On, 0 = Off
Space Parity
Local
EXT/ACK Handshaking
9600 Baud
Paper out on
Duplex & Auto CR/LF off
Bi directional print on
ASCII Standard

Use a "Modem Eliminator" cable, part number 590-0029, in series with the interface cable.

Tech Info Library Article Number:419



Tech Info Library

Lisa: Daisy Wheel Printer Error Numbers

Revised: 7/30/87
Security: Everyone

Lisa: Daisy Wheel Printer Error Numbers

=====

Error	Meaning
1199	DMP selected in Format for Printer
648	No modem eliminator cable or Preference not set properly
3056	Generic printer problem - check cables, paper, ribbon, etc.

Tech Info Library Article Number:420



Tech Info Library

Lisa: Error Numbers

Revised: 11/15/84
Security: Everyone

Lisa: Error Numbers

=====

The most common error numbers are described both in the Lisa 1 Owner's Guide (Appendix 3, p. I7 and Appendix 6, p. I25), and in the Lisa 2 Owner's Guide (Appendix 3, p. G59, and on pp. C49-C58). These error messages usually simply indicate a general problem.

Other more specific error messages are located in the Workshop manual. There are three types of error numbers that can be displayed:

1. A single number: xxx

This may be located in the Workshop manual. The number means the error occurred in code located in the Filer. The only exception is if the number starts with a 6 (e.g., 648), in which case the error is related to printing.

2. Two numbers: xxx/xxx

The first number refers to a location in the lower levels of the operating system; the second number is the error code. Sometimes these numbers are reversed, so it's best to look up both in the Workshop manual.

3. Three numbers: xxx/yyy/zzz

xxx: Indicates the system program that died.
yyy: The error number indicating why it died.
zzz: The actual code address where the error occurred.

If you get one of these three-number codes and the first one happens to be a 1033, the second number indicates the problem:

Error	Meaning	Solution
7	I/O problem	reinstall software
10	Parity Error	replace memory
21, 22	program error	none
26, 27	bad source, bad memory	

Here are some other errors that occur during startup. These error numbers in 10700 range are usually accompanied by a crossed out Lisa. Following is a list of these errors:

Error	Meaning
10725	Damaged file system or file contents
10726	Profile error, problem with boot tracks
10727	Memory Error
10728	Boot file is missing or damaged
10729	"
10730	"
10731	"
10732	"
10735	"
10736	"
10737	"

If you encounter one of the above errors:

1. Reinstall the startup software. Refer to p. D50 in the Lisa 1 Owner's Guide, p. C24 in the Lisa 2 Owner's Guide or p. 160 in the Lisa (7/7) Office System manual.
2. If step 1 doesn't work, repair the hard disk, then repeat step 1.
3. If step 2 doesn't work, you may have bad Office System diskettes. Obtain another set, then try steps 1 and 2 again.
4. If steps 1 thru 3 haven't worked, you'll need to reload the software. First, though, erase the information currently stored on your hard disk.

To save documents store on your hard disk:

1. Connect your Profile, if you're using one, to another Lisa and save any files if you can. If you're using a Lisa 2/10, start up your system with another ProFile, then save your documents to it.
2. Then reinstall your software on the hard disk, erasing the present software.

Good Things to Know About Lisa

Tech Info Library Article Number:422



Tech Info Library

Lisa: Dot Matrix Printer -- Error Numbers

Revised: 11/15/84
Security: Everyone

Lisa: Dot Matrix Printer -- Error Numbers

=====

Error	Meaning
0	Not configured in Preferences
1199	2 DMP's configured in Preferences
1222	More than 1 DMP in Preferences.
1885	Profile timeout error
648	Parallel DMP on Serial A or B
3056	Generic printer problem - check cables, paper, ribbon, etc.

Good Things to Know About Lisa

Tech Info Library Article Number:423



Tech Info Library

Lisa: Dot Matrix Printer -- Printing Landscape

Revised: 11/15/84
Security: Everyone

Lisa: Dot Matrix Printer -- Printing Landscape

=====

Printing landscape, normal resolution (low resolution) prints any of your documents 1/3 smaller than it appears on your screen.

Good Things to Know About Lisa

Tech Info Library Article Number:424



Tech Info Library

Lisa: Dot Matrix Printer -- Printer Buffer

Revised: 11/15/84
Security: Everyone

Lisa: Dot Matrix Printer -- Printer Buffer

=====

An in-line parallel printer buffer that works right out of the box is available from:

Practical Peripherals, Inc.
31245 La Baya Drive
Westlake Village, CA 91362
(213) 991-8200

Good Things to Know About Lisa

Tech Info Library Article Number:425



Tech Info Library

Lisa: Memory Errors

Revised: 7/30/87
Security: Everyone

Lisa: Memory Errors

=====

Error	Meaning
10590	Memory error encountered on startup
1033/10	Error encountered in Office System
System Hang	Memory error encountered - mouse hang

Most memory errors are caused by parity errors, characterized by an unresponsive system and a frozen mouse pointer. Use LisaTest or the extended memory board test to help you determine which of the two memory boards failed.

Something else to keep in mind: memory is set up so that the starting address is on memory board 2, while the data and overflow are on memory board 1. This means that if you experience memory problems on startup, it is probably a result of a bad memory board 2. If you encounter memory errors during the use of an application, it is probably memory board 1. If the system has hung only once, don't be concerned until it happens again or until you get another memory error. Nevertheless, if you get an error during startup, the memory board that is crossed out is bad.

Tech Info Library Article Number:426



Tech Info Library

Lisa Workshop: Eliminating LisaBug

Revised: 11/15/84
Security: Everyone

Lisa Workshop: Eliminating LisaBug

=====

For better or for worse, LisaBug is included in the Workshop in the form of two files: SYSTEM.DEBUG and SYSTEM.DEBUG2. In version 1.0 of the software, the mere presence of these two files enables the NMI key (non-maskable interrupt) in the Office System. In later releases of the software, the debugger may be invoked with the NMI key from the Workshop, or from the Office System if you've come directly from the Workshop without first powering down. It can be very distressing when uninitiated users press the NMI key (the minus sign on the keypad) and drop into LisaBug.

To deal with this problem with post version 1 software, power the system down when you're done working in the Workshop and before you use the Office System; alternatively, disable the debugger completely, as described below.

There are two ways to deal with this problem in version 1.0 of the Workshop: change the NMI key code or disable the debugger. The first option is very simple, but lasts only for the duration of the session. The next time you boot your system, the NMI key code is reinitialized to the minus sign on the key pad. To temporarily change the NMI key code for the session, use the following procedure:

1. Enter the debugger by pressing the NMI key (minus sign on key pad).
2. Enter the command "NM 0" RETURN in response to the debugger prompt of ">". This sets the key code from hex 21 (the minus key) to hex 0 (no key)*.
3. Type a "g" RETURN to go back to your starting point.

To respecify the NMI key, specify the key location--not the ASCII code --for the character you want. The table listing the key codes is in the Pascal Language Reference Manual.

To disable the debugger, you have three options:

- A. Delete SYSTEM.DEBUG and SYSTEM.DEBUG2.

- B. Change the names of the two files to something besides names starting with SYSTEM.xxxx. (This allows for easy restoration at a later time.)
- C. Transfer the two files to floppy, thus freeing up the disk space until you wish to restore the debugger.

Note: you must reboot the system before these changes are effective.

Good Things to Know About Lisa

Tech Info Library Article Number:427



Tech Info Library

Lisa Workshop: Program Termination

Revised: 11/15/84
Security: Everyone

Lisa Workshop: Program Termination

=====

There are a couple of ways to use LisaBug to terminate an infinite loop if your program is in one:

When you find your program in an infinite loop:

1. Press the NMI key (minus key on the keypad) to enter the debugger.
2. If the domain is greater than zero--i.e., 1, 2 or 3--type a "G"o, then RETURN. This brings you back to your program then drops you back into Lisabug.

If the domain is zero or n, Type "UBR" RETURN. If that didn't change the domain to 1, 2 or 3, type "ID PC-4" RETURN, "G" RETURN, then depress the NMI key before proceeding. (It's sometimes hard to get a non-zero domain if the program is caught up in I/O.)

3. Type: "PC o" RETURN.
4. Then type "G" RETURN.

There is another situation that you may get into with procedures such as:

```
Procedure QUIT;  
begin  
    exit(PROGRAM_NAME)  
end;
```

You must include a reference to QUIT in the main program, or the Dead Code Analysis removes QUIT from the object code. To terminate the program, invoke Lisabug with the numeric keypad minus key (NMI), then enter the following immediate commands:

```
br  
ix movem.l d0-a6,-(a7)  
quit
```

You are returned to the Workshop shell when the program terminates.

Additional information on terminating loops may be found in the debugger section of your Workshop manual,

Good Things to Know About Lisa

Tech Info Library Article Number:428



Tech Info Library

Taxan U.S.A. Corporation

Revised: 4/3/97
Security: Everyone

Taxan U.S.A. Corporation

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 20 July 1993

Taxan U.S.A. Corporation

2880 San Tomas Expressway, Suite 101
Santa Clara, CA 95051

408-748-0200

800-829-2641

Fax: 408-748-9190 (Taxan U.S.A.)

Company Profile:
Hardware, video monitors and peripherals.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:429



Tech Info Library

Lisa Pascal: Using Serial Ports

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Using Serial Ports

=====

Here are some suggestions on how to output from the serial ports using Pascal.

Even though the serial ports are not devices for file storage, they must be specified with a dummy file name. The Lisa handles all I/O devices this way. (See the Pascal Operating System Manual.)

```
reset (f, '-rs232a-xyz') where xyz is the dummy name
```

If you're writing a program to talk to some other type of device, such as a card reader or test equipment, review Chapter 2 in the System Software Manual, particularly the section named Device_Control. These procedures describe how to configure the drivers for either port in order to allow communication with other devices.

Tech Info Library Article Number:430



Tech Info Library

Lisa Pascal: Creating Shells

Revised: 11/15/84
Security: Everyone

Lisa Pascal: Creating Shells

=====

To create your own environment shell, merely rename your stand-alone Pascal program to SHELL."something". Once your program is named SHELL.xxx, it appears in the environments window. You may then either start your program up from the environments window, or else set the default to have your program automatically start up when you first power up.

I recommend using Quick Port, now that it's available with Pascal release 3.0, rather than creating a shell for your program. Quick Port is much more versatile, allowing you to cut and paste to the other Lisa applications, print using the Office System print routines, and so on.

Good Things to Know About Lisa

Tech Info Library Article Number:431



Tech Info Library

Lisa Pascal: Units

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Units

=====

It's not possible to create an intrinsic unit. Even though the manual gives you a minimum of information, you can compile a regular unit. You don't have to put it in a library to use it, as with the Apple II and Apple III. To compile a regular unit, just include the following compiler command at the beginning of your unit:

```
{ $U- }  
Unit Sample;  
  Interface  
    . . .  
  Implementation  
    . . .  
end.
```

Include the object code file in your program's USES statement.

Tech Info Library Article Number:433



Tech Info Library

Qume

Revised: 7/16/93
Security: Everyone

Qume

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 16 July 1993

Qume

1515 Centre Pointe Dr.
Milpitas, CA 95035

408-262-7700 (Sales, Data Tech., Tech. Support)
408-942-4000 (Corp. Headquarters)

800-926-5263 (Supplies & Accessories)

Fax: 408-942-4052

Company Profile:
Hardware, specializing in printer products, monitors and terminals, controller boards for disk drives

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:434



Tech Info Library

Lisa Pascal: Pictures

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Pictures

=====

Set the ClipRect before drawing any pictures in Quickdraw. To do this, just include:

```
ClipRect(thePort^.portBits.bounds);
```

Tech Info Library Article Number:436



Tech Info Library

Lisa Pascal: TextSize

Revised: 7/30/87
Security: Everyone

Lisa Pascal: TextSize

=====

TextSize in Pascal release 1.0 and 2.0 doesn't seem to work. Use pictures instead.

Tech Info Library Article Number:437



Tech Info Library

Lisa Pascal: Printing Graphics

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Printing Graphics

=====

Quickdraw has no facility for printing graphics except to use the debugger to print contents of the screen. Refer to the Workshop Manual in the section named The Debugger for more information on printing using the debugger. See also the AppleLink article titled "Workshop 3.1 and Earlier: How to Get a Screen Dump."

To write your own routine to print graphics, use the printer ESC sequences. Remember as you are opening the printer to make sure you specify the actual port connected, instead of "-printer".

Tech Info Library Article Number:438



Tech Info Library

Lisa Pascal: Typestyles

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Typestyles

=====

Here are the typestyles available to you from QuickDraw that are not described in the manual:

Font #0	system font
Font #1	small icons and symbols
Font #2	LisaDraw shading patterns
Font #3	more icons and symbols
Font #4	ps pitch, 12 point, sans serif
Font #5	ps pitch, 18 point, sans serif
Font #6	ps pitch, 24 point, sans serif
Font #7	15 pitch, 9 point, sans serif
Font #8	12 pitch, 12 point, sans serif
Font #9	10 pitch, 12 point, sans serif
Font #10	ps pitch, 12 point, serif
Font #11	ps pitch, 18 point, serif
Font #12	ps pitch, 24 point, serif
Font #13	12 pitch, 12 point, serif
Font #14	10 pitch, 12 point, serif
Font #18	calculator symbols
Font #19	20 pitch, unknown point, sans serif
Font #20	LisaGraph tic marks
Font #21	18 pitch, sans serif
Font #22	large icons and symbols
Font #49	LisaGuide icons and symbols

- * Pitch is the number of characters per inch; ps pitch is proportional spacing.
- * Point is the size of the characters (1 point = about 1/72 inch).
- * Serifs are the short decorative lines at the ends of strokes in classical typestyles.
- * Sans serif refers to typestyles without serifs.

Use the number of the font as the parameter of the TextFont procedure. Font numbers not listed comprise undefined characters.



Tech Info Library

Lisa: Printing

Revised: 11/15/84
Security: Everyone

Lisa: Printing

=====

If you have difficulties printing to a printer connected to a parallel card in slot 3, try slot 2 or 1. Don't forget to change Preferences before you move the card.

Good Things to Know About Lisa

Tech Info Library Article Number:441



Tech Info Library

Thursby Software Systems (TSS)

Revised: 3/15/97
Security: Everyone

Thursby Software Systems (TSS)

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 15 March 1997

Thursby Software Systems

5840 West Interstate 20, Suite 100
Arlington, TX 76017

817-478-5070

Fax: 817-561-2313

World Wide Web Site: <http://www.thursby.com/>

Company Profile:

Thursby Software Systems, Inc. (TSS), founded in 1986, engineers, markets, and supports software connectivity solutions worldwide. These market-driven solutions provide connectivity between DEC VAX/VMS systems, UNIX, Microsoft networks, and Apple Macintosh platforms.

Article Change History:

15 Mar 1997 - Updated with World Wide Web address.

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Tech Info Library Article Number:443



Tech Info Library

Aldus Corp. Consumer Division

Revised: 4/3/97
Security: Everyone

Aldus Corp. Consumer Division

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 02 April 1997

Aldus Corp. Consumer Division

5120 Shoreham Place
San Diego, CA 92122

Telephone: 619-558-6000

Fax: 619-558-8774

Company Profile:

Specializing in graphics, multimedia, and other productivity software for the Macintosh and Windows computers.

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:445



Tech Info Library

Lisa Disks: Disk Is Deteriorating Message

Revised: 11/15/84
Security: Everyone

Lisa Disks: "Disk Is Deteriorating" Message

=====

The dialog box stating that the "Disk Is Deteriorating" indicates that bad blocks have been found on the diskette and that spare good blocks are starting to be used.

A directory on the diskette contains the addresses of good blocks that are used as spares. When you get about as many bad blocks on your diskette as you have spare good blocks, the error message is displayed and the diskette may soon become unreadable.

If you receive a message that the Disk is Deteriorating, it's time to put the documents onto another diskette. However, if the disk works fine in other drives, there may be something wrong with the drive.

Good Things to Know About Lisa

Tech Info Library Article Number:446



Tech Info Library

Lisa Disks: ProFile Memory Loss

Revised: 11/15/84
Security: Everyone

Lisa Disks: ProFile Memory Loss

=====

If you suspect that you don't have as many blocks available to store your documents as you should, perform a "repair" of the hard disk. The Lisa 1 Owner's Guide describes the repair procedure on p. D53, while in the Lisa 2 Owner's Guide, it's on p. C24. When given the option to Install or Don't Install, click Don't Install.

Good Things to Know About Lisa

Tech Info Library Article Number:447



Tech Info Library

Apple II Business Graphics: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple II Business Graphics: Specifications (Discontinued)

=====

I. Technical Specifications

A. Language:

- Pascal
- Assembly

B. Format:

- 16-sector diskette.

C. Imaging:

- Graph Types: Scatter, solid-line, dash-line, bar (vertical or horizontal), pie (filled or outline), and multiple overlays
- Color: Six available on color monitor--user-selectable or default values
- Titling/Labeling:
 1. Alphanumeric labeling on x- and y-axis
 2. Auto-scale or user-defined label ranges
 3. Centered titles
 4. Floating titles:
 - any number
 - horizontal or vertical
 5. Tick marks and extended grid lines

D. Graphic Devices:

- Console
- Silentype
- Apple Color Plotter
- Qume Sprint 5 printers
- Hewlett-Packard 7225A/B with 17603A, RS-232 Personality Module
- Houston Instruments DMP-3, -4 high-quality pen plotters

E. Data Manipulation:

- Curves that can be FITed to any data set:
LINE LOGARITHMIC CONSTANT SINE PARABOLA

--Coefficients can be manually set to produce known curves.
--Statistical analyses that can be performed on any data set:
 MINIMUM MEAN MAXIMUM STANDARD DEVIATION SUM VARIANCE
--Either moving average or exponential smoothing may be performed
 with a single command.
--Additional data manipulation commands:
 ADD SHIFT DIFFERENCE SUBTRACT(FROM) DIVIDE(BY/INTO)
 SUM MULTIPLY
--TAKE Files:
 1. Store business Graphics commands in a single file that
 allows multiple, complex plots to be recreated with a
 single command.
 2. WAIT command allows users to insert a timed pause in a TAKE
 file.
--Virtual files:
 1. System allows user to utilize large data files exceeding the
 size of computer memory.
 2. Default virtual file provides space for approximately 90-100
 points.
 3. SET VIRTUAL FILE command allows user to define a virtual file on
 another diskette, greatly expanding the maximum number of points
 to be processed.
--Interchange Facility:
 Generates a Business Graphics data file from these common
 formats:
 1. VisiCalc print files (13- and 16-sector)
 2. ApplePlot (13- and 16-sector)
 3. DIF format
 4. BASIC text files (13- and 16-sector)
 5. Apple Pascal

II. System Configuration:

- A. Apple
 - 1. II Plus with 48K of memory
 - 2. IIe
 - 3. IIC
- B. Two 5 1/4 inch disk drives
- C. Apple Language Card
- D. Video display device
- E. Optional compatible printer and printer controller card
 - 1. With Silentype Interface Card: Silentype
 - 2. With High Speed Serial Interface Card with P8-02 PROM:
 Qume Sprint 5 printers
- F. Optional compatible plotter and plotter controller card
 - With High Speed Serial Interface Card:
 - 1. Hewlett-Packard 7225A/B with 17603A, RS-232 Personality
 Module
 - 2. Houston Instruments DMP-3, -4 high-quality pen plotters

NOTE: Apple Business Graphics includes drivers supporting the printers and plotters mentioned here. Using a special kit, called a Printer/Plotter Installation Kit (PIK), Apple Business Graphics can support other

plotters, letter quality printers, and dot matrix printers.

III. Features

- Enlarges any area of a graph for close study
- User may specify all graph parameters:
 1. axis labels
 2. floating labels
 3. plot colors,
 4. horizontal and vertical axis ranges
- Macro commands can replace multiple command sequences

Apple Technical Communications

Tech Info Library Article Number:448



Tech Info Library

Lisa: Page Numbering

Revised: 11/15/84
Security: Everyone

Lisa: Page Numbering

=====

The Lisa Office System numbers the pages of a documents differently, as follows:

LisaCalc, LisaGraph, LisaList:	1	3
	2	4
LisaProject	1	2
	3	4
LisaDraw (in portrait format)	1	3
	2	4
LisaDraw (in landscape format)	1	2
	3	4

Keep these facts in mind for those occasions when you wish to print specific pages of your document.

Good Things to Know About Lisa

Tech Info Library Article Number:449



Tech Info Library

Lisa: Screen Dumps

Revised: 7/9/85
Security: Everyone

Lisa: Screen Dumps

=====

To print the current contents of the screen, hold down the SHIFT and OPTION keys while pressing the 4 on the keypad. Screen dumps of the Office System 1.0 software only print to the DMP, which must be connected to the upper port of the parallel card in slot 2. Versions newer than Release 1.0 support either the DMP or Imagewriter connected to any port, as long as they're selected in Preferences.

Virtually anything displayable on the screen may be printed--including, for instance, disk directories.

Apple Technical Communications

Tech Info Library Article Number:450



Tech Info Library

Lisa: Spontaneous Reset and Power Ups

Revised: 7/30/87
Security: Everyone

Lisa: Spontaneous Reset and Power Ups

=====

A Lisa that resets itself spontaneously may have a bad I/O board. A Lisa that starts itself up has a bad power supply.

Tech Info Library Article Number:451



Tech Info Library

Lisa: Dialog Boxes

Revised: 11/15/84
Security: Everyone

Lisa: Dialog Boxes

=====

Dialog boxes have a default button distinguishable by its heavy outline.
When you click outside the dialog box, the default button is automatically
selected.

Good Things to Know About Lisa

Tech Info Library Article Number:452



Tech Info Library

Lisa: Empty Folders

Revised: 11/15/84
Security: Everyone

Lisa: Empty Folders

=====

The Empty Folder pad is easily replaced if you happen to have lost it. Every initialized or repaired diskette contains one. Just make a duplicate of one those pads and place it onto the disk that lost it.

Good Things to Know About Lisa

Tech Info Library Article Number:453



Tech Info Library

Lisa: Accessing the Environments Window

Revised: 7/30/87
Security: Everyone

Lisa: Accessing the Environments Window

=====

This is a summary of ways to access the Enviroments window:

- From the Office System, press the on/off switch while holding down the Apple key. (Lisa 1 Owner's Guide, p. G26; Lisa 2 Owner's Guide, p. G55.)
- From the Workshop, (Q)uit the main command line. When prompted to leave the editor, etc., press "Y". Choose Another_Shell to display the Environments window.
- To boot the system up to the Environments window: press any key on the keyboard (except the Caps Lock key) after you hear the double click. (This double click occurs at the end of the self-tests.) If you asked to start up from a specific device by using the "Start Up From..." menu, press any key when you see the large hour glass displayed.

Tech Info Library Article Number:454



Tech Info Library

Apple Color Plotter and Apple Writer Interface

Revised: 12/17/84
Security: Everyone

Apple Color Plotter and Apple Writer Interface

=====

The following instructions are aimed at helping you use the Apple Writer IIe word processor to generate text with the Apple Color Plotter.

NOTE: (No.) represents a variable.

Step	Input	Result
1	Boot Apple Writer	
2	Type .LM0 (CR)	Sets left margin to 0
3	Type SP0 (CR)	Plotter command to set paper to 8 1/2 x 11
4	Type LR90 (CR)	Sets printing on Apple Color Plotter horizontal
5	Type MA(No.),0(CR)	Moves plotter to the point on the paper where you want to start plotting. (No.) = any value in millimeters from 0 - 340
6	Type CTRL-P?(CR)	Print Menu
7	Type PD(No.)(CR),(CR)	Sets the slot location (No.) = Super Serial slot location
8	Type LS(No.)(CR)	Sets letter height to any height you desire - please be sure it fits on the page. (No.) = any measurement in graphic unit within the parameters of the page (See Help Chart below)
9	Type PS(No.)(CR)	Commands the Apple Color Plotter to change pens (No.) = Any number from 1-4 with 1 as the default
10	Type PL(CR)	Tells plotter to accept text
11	Enter your text here	
12	Type CTRL-V(CR)	
13	Type CTRL-C(CR)	
14	Type CTRL-V(CR)	This terminates the PL command
15	Type CTRL-P	
16	Type NP(CR)	Sends commands and text to the plotter

USEFUL HINTS:

- o If it doesn't run, first set the CR command (Print Menu) to CR1.

- o There are 1759 graphic units (g.u.) per 8 1/2" edge of paper OR 175.9 mm of usable space. So, each graphic unit = 0.1 mm.
- o To determine the number of characters per line use the formula 1759 g.u. divided by (No.) g.u. per horizontal line on the page.

APPLE COLOR PLOTTER - HELP CHART

# of Characters	# of G.U.	Hght of Chrs across page
2	612	61.2
6	254	25.4
11	148	14.8
17	102	10.2
29	60	6.0
36	48	4.8

Note: Use the 0.3mm pens to generate 6.0mm letters or less

Apple Technical Communications

Tech Info Library Article Number:456



Tech Info Library

Apple FORTRAN: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple FORTRAN: Specifications (Discontinued)

=====

--Order #: A2D0032

--Technical Specifications:

1. Format: 16-sector disks
2. Language:
 - a. Pascal
 - b. Produces P-code, which runs in the Apple Pascal Operating System
3. Intrinsic Functions:
ABS, ACOS, AINT, ALOG, ALOG10, AMAX0, AMAX1, AMIN0, AMIN1, AMOD,
ANINT, ASIN, ATAN, ATAN2, CHAR, COS, COSH, DIM, EOF, EXP, FLOAT,
IABS, ICHAR, IDIM, IFIX, INT, ISIGN, LGE, LGT, LLE, LLT, MAX0, MAX1,
MIN0, MIN1, MOD, NINT, REAL, SIGN, SIN, SINH, SQRT, TAN, TANH

--Package:

1. Disk: Apple FORTRAN System
2. Disk: Apple FORTRAN System
3. Manual: Apple FORTRAN Language Reference

--System Configuration:

1. Computer:
 - a. Apple II
 - b. Apple II Plus with Language Card
 - c. Apple IIe
 - d. Apple IIc
2. disk drive: Apple Disk II

NOTE: While a single drive system is adequate for very small programs, two drives are strongly recommended for ease of operation and more serious program development

3. video display: Monitor II
4. Apple Pascal package

--Features:

1. Industry standard, ANSI X3.9-1978
2. ANSI Standard Subset of the FORTRAN 77 standard
 - Supports enhancements and facilities from the full FORTRAN 77 language
 - Contains enhancements beyond the full FORTRAN 77 specifications:
 1. Compiler directives in the source code permit many files in one compilation.
 2. An additional parameter to the OPEN statement allows you to specify that the file is blocked or unblocked.
 - Minor differences between the ANSI Standard Subset FORTRAN 77 and Apple FORTRAN:
 1. Subprogram names cannot be passed as parameters.
 2. INTEGER and REAL data types have different storage requirements:
 - a. 2 bytes for INTEGER
 - b. 4 bytes for REAL

NOTE: Apple FORTRAN does not support double-precision arithmetic.

3. Apple Pascal Operating System Linker links:
 - FORTRAN P-Code files
 - Compiled P-code
 - Assembled machine code
4. Interfaces to routines in Pascal system library
 - High-res graphics
 - Sound generation
 - Hand control routines
5. Subscript expressions may include array elements and function calls
6. DO statement limits may be defined by expressions, rather than just single variables
7. Input/output (I/O) units may be specified by expressions, rather than just constants or simple variables
8. The I/O list of a WRITE statement may include expressions
9. All combinations of FORMATTED/UNFORMATTED and SEQUENTIAL/DIRECT files are allowed, with the following restrictions:
 - BACKSPACE is supported only for files connected to the blocked devices -- it is not supported for UNFORMATTED SEQUENTIAL files;
 - DIRECT files must be connected to block devices

Apple Technical Communications

Tech Info Library Article Number:457



Tech Info Library

White Pine Software (4/97)

Revised: 4/3/97
Security: Everyone

White Pine Software (4/97)

=====

Article Created: 11 September 1987
Article Reviewed/Updated: 02 April 1997

White Pine Software

40 Simon St.
Suite 201
Nashua, NH 03060-3043

603-886-9050

Fax: 603-886-9051

WWW: <http://www.wpine.com>

Company Profile:
Software, specializing in Macintosh-to-VAX communication software.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:460



Tech Info Library

Lisa and Macintosh XL: Memory and Hard Disk Requirements

Revised: 8/16/85
Security: Everyone

Lisa and Macintosh XL: Memory and Hard Disk Requirements

=====

Lisa Office System:

Hard Disk: Office Systems 1.0, 1.2, 1.4, 2.0, 3.0, and 3.1 all require you to use at least a 5-megabyte hard disk.

Memory: Only Lisa 7/7 Version 3.1 will run with 1/2 megabyte of memory. All previous versions of the Office System require 1 megabyte of memory. If you're using Version 3.1, we highly recommend that you use a full megabyte of memory in order to improve system performance.

Workshop:

Hard Disk: Within certain limitations, you can operate Lisa Pascal Workshop 1.2 without a hard disk; we recommend that you use one, though, unless you aren't concerned about system performance. All subsequent versions of the Workshop require at least a 1/2-megabyte hard disk.

Memory: All versions of the Workshop require 1 megabyte of memory. Versions 1.2 and 2.0 appear to offer you, in the Preferences window, an option to run them with only 1/2 megabyte. If you choose this option, though, the system will hang if you then try to access either the Editor or Preferences.

MacWorks:

Hard Disk: MacWorks Versions B and later do not require a hard disk, though those versions will support one. If you opt not to use a hard disk, the system will simply behave like a Macintosh without an external drive.

Memory: All versions of MacWorks can run with either 1/2 or 1 megabyte of memory.



Tech Info Library

Lisa 2: Copying Office System Diskettes

Revised: 7/30/87
Security: Everyone

Lisa 2: Copying Office System Diskettes

=====

The easiest way to backup your Office System diskettes is to use Office System 3.1. Release 3.1 allows you to duplicate a diskette to another diskette; it even prompts you when to insert your destination diskette. Office System 3.0 is unable to copy an Office System 1 diskette.

If you don't have access to a Lisa with Office System 3.1, but do have a version of the Workshop which is the same version of the Office System diskettes you're copying:

1. Enter the Workshop.
2. Type "S" to get into the System manager.
3. Set FilesPrivate to Yes; Quit the System Manager.
4. With the File Manager, Copy all of the files on the diskette to the ProFile with a unique prefix--e.g. Copy -LOWER=,ZX=
5. Swap microdisks so the destination diskette is in the drive. Copy all the files back to the diskette, this time stripping the unique prefix--e.g., Copy ZX=,-LOWER=
6. Create as many duplicates as you wish from the prefixed files on the hard disk.

Tech Info Library Article Number:462



Tech Info Library

Lisa: How and Why To Back Up Data

Revised: 7/30/87
Security: Everyone

Lisa: How and Why To Back Up Data

=====

Because no computer system is infallible, it is important to periodically back up all important documents. This minimizes the risk of loss of data due to power failure, hard disk failure, system hangs, and so on.

There are 3 kind of backups:

- A. A full backup.
- B. An incremental backup.
- C. Individual duplication of the document onto a backup disk. (This is the method Apple recommends.)

To do a full or incremental backup (method A or B):

- 1. Insert your diskette.
- 2. Duplicate the hard disk, then move the duplicate to the diskette.
- 3. Follow the directions displayed on your screen.

Full and incremental backups are described on pp. D14-D16 in the Lisa 1 Owner's Guide, and on pp. B32-B37 of the Lisa 2 Owner's Guide.

To duplicate a document (method C):

- 1. Select the document.
- 2. Scroll open the File/Print menu; choose Duplicate.
- 3. A flashing duplicate of the document will appear on your screen next to the original. Move that duplicate to another folder, diskette, or drive.

Duplicating a document or folder is described on p. D11 in the Lisa 1 Owner's Guide and p. B68 in the Lisa 2 Owner's Guide.

Tech Info Library Article Number:463



Tech Info Library

Lisa: Full Backup

Revised: 7/30/87
Security: Everyone

Lisa: Full Backup

=====

A full backup of the Office System 2.0 or 3.0 copies all of your files on the hard disk, including any Workshop files you may have stored there. Backing up a 5-megabyte ProFile may require as many as 20-25 microdisks, while an internal 10-Megabyte disk could require more. Release 1.0 copies only your Office System documents.

Tech Info Library Article Number:464



Tech Info Library

Lisa: Incremental Backups

Revised: 7/30/87
Security: Everyone

Lisa: Incremental Backups

=====

An incremental backup theoretically copies only those files that have changed since the last backup. In Office Systems 1.0 and 2.0, the incremental backup does NOT work that way: it copies everything, just as if you had selected a full backup. Because of this problem, Apple recommends in the Lisa 2 Owner's Guide Release Notes: "Do not back up a hard disk icon to the diskette icon. Instead, make duplicates of the tools or documents you wish to back up, and then move the duplicates to the micro diskette icon."

At the end of an incremental backup with release 3.0 software, the error number 941/3 may be displayed. All documents that were changed since the last full backup are copied to the disk. These documents are accessible only from the desktop; they may not be used to restore the ProFile using the Office System 1 diskette's Restore routine. Lisa Office System version 3.1 corrects this problem, allowing you to restore your hard disk from backup diskettes if you wish.

Tech Info Library Article Number:465



Tech Info Library

Bridgette Inc. (formerly Ehman Inc.)

Revised: 7/7/93
Security: Everyone

Bridgette Inc. (formerly Ehman Inc.)

=====

Article Created: 09/11/87
Article Reviewed: 07/07/93
Article Updated: 11/05/92

Bridgette Inc.

1466 Pioneer Way, Suite 9
El Cajon, CA 92020

800-257-1666 (Sales)

619-441-6990 (Tech. Support)

619-441-6999 Fax

Company Profile:

Formerly Ehman Inc., hardware, specializing in disk drives (also removable)
and monitors primarily for Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:466



Tech Info Library

Lisa: Backup Problems

Revised: 3/4/85
Security: Everyone

Lisa: Backup Problems

=====

This article outlines known problems both with backing up Office Systems 1.0 and 2.0 and with restoring from backups of those Office Systems.

Preferences is destroyed by restoring the hard disk from backups. The only way to replace Preferences is to do a full Install (i.e., erase the hard disk and reinstall everything). Instead of restoring the hard disk, then, we advise that you simply duplicate the documents on the desktop individually from the backup disks to the hard disk.

The Lisa 2.0 Owner's Guide, p. B36, item number 7, reads: "Everything on Internal Hard Disk, the Internal Hard Disk, is about to be erased." This error message in the manual is not correct. It does not erase the hard disk; it erases the microdisks. The correct message is displayed on your screen.

Sometimes the backup has difficulties on the 3rd or 4th disk: typically, an error message is displayed stating that there isn't room on the diskette, even though the diskette has just been erased. This seems to happen most often when (a) it's been a long while since installation of the software, (b) the system has hung at one time and a Repair wasn't properly performed, or (c) Office System 2.0 is being used, and some of the files being backed up are very large. (Office System 2.0 has been known to have problems backing up very large files.) Usually, the only recourse is to completely reinstall your software.

Backing up a file larger than 728 blocks onto microdisks is not possible with releases 1.0 or 2.0: as the system tries to copy these large files, it repeatedly asks you to "Insert the next backup diskette" and yet does no copying to these diskettes, because it's looking for a large enough microdisk to back up your entire file. If you have Office Systems 1.0 or 2.0, then, simply make duplicates of any files larger than 728 blocks and place them on your hard disk or onto an additional ProFile instead of trying to back them up onto microdisks. Alternatively, upgrade to Office System release 3.0, which has no problem backing up very large files: it knows how to split a large file into portions and back up the portions onto a series of microdisks.

Good Things to Know About Lisa

Tech Info Library Article Number:467



Tech Info Library

Apple Writer IIe: How to underline words

Revised: 3/4/85
Security: Everyone

Apple Writer IIe: How to underline words

=====

To implement underlining in Apple Writer IIe:

1. Press the CTRL-P to get to the Print/Program Command Menu.
2. Type UT for "Underline Token", then type some unique character such as a backslash or tilde, and then press Return.
3. Press Return again to get back to the text. Insert the character you chose just before and just after the portion you want underlined: the first character turns underlining on, and the second turns it off. NOTE: You must check to see that your underline token doesn't appear anywhere else in the text so that you don't end up with underlined text where you don't want it.
4. Print the file; the portions between pairs of underline tokens will be underlined.

Some printers may not accept the character that Apple Writer's printing program sends to the printer to start and stop underlining. If your printer expects a special control character to turn underlining on and off, look in your printer's manual to determine which character that is; then, embed the control character before and after the portion of text you wish underlined:

1. Move the cursor to the place where you want the underlining to start.
2. Press CTRL-V; "A V" will appear on the Data Line at the top of the screen. Any control characters that you type at this time will be inserted into the text.
3. Press the control key along with the character that signals your printer to begin underlining.
4. Press CTRL-V to get back to normal mode.
5. Move the cursor to the place where you want the underlining to stop.

6. Press CTRL-V; then, type the control character that signals your printer to stop underlining.
7. Press CTRL-V to get back to normal mode.
8. Print the file; the portions between pairs of control characters will be underlined.

Apple Technical Communications

Tech Info Library Article Number:468



Tech Info Library

Lisa 2: Possible Problems With The Upgrade Kit

Revised: 11/9/88
Security: Everyone

Lisa 2: Possible Problems With The Upgrade Kit

=====

This article last reviewed: 9 November 1988

1. Symptom: Operating system error 10726, or error 82.
Problem: Bad motherboard-ProFile interaction.
Solutions:
 - A. Replace the motherboard with an upgraded one. (Upgraded motherboards are distinguished by resistor packs around the parallel port.) Also make sure that the system has an I/O board with the resistors clipped and the proper boot ROMs installed.
 - B. Use a different ProFile.
2. Symptom: CPU boot error 43.
Problem: Bad CPU-boot ROM interaction.
Solutions:
 - A. Replace CPU board with upgraded CPU board.
 - B. Use the original Lisa boot ROMs. The only noticeable differences between using the old (version D) boot ROMs and using later revisions are (a) slightly different icons displayed in the Startup Menu, and (b) an apparent option to boot from two drives, though only one drive exists. Careful, though! If you select the top drive, the system hangs and must be reset.
3. Symptom: Blank screen when attempting to boot system after retrofitting.
Problem: Incorrectly labelled or placed CPU ROMs.
Solution:

Verify that the CPU ROMs are installed according to the directions. If they are correctly installed, one or both may be mislabelled. In that case, simply use the old version D boot ROMs instead.

4. Symptom: System goes through self-test, then hangs.

Problem: System is trying to start from nonexistent drive

Solutions:

A. If you're using your old CPU ROM:

Reset the system and tell it specifically what drive to boot from. Preference settings, such as the correct time and the default startup device, may have been lost when you unplugged the system to swap the chips. Since Preference's startup default is drive 1 with the old CPU ROMs, the system probably hung while booting, since (of course) there is no drive 1.

B. If you have the new CPU ROMs installed:

- a. Reinstall the software.
- b. Test the memory boards with LisaTest or the extended memory board test.
- c. Test the memory board #2 by swapping it with with memory board #1 or with one from your spares kit.

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Tech Info Library Article Number:469



Tech Info Library

LisaGuide: Startup

Revised: 11/15/84
Security: Everyone

LisaGuide: Startup

=====

IMPORTANT FACT: The LisaGuide diskette doesn't contain any system startup instructions, so if you try to start LisaGuide solely from the diskette, a crossed out Lisa icon and an error 10735 is displayed.

To boot LisaGuide: Startup From... the ProFile with your LisaGuide diskette in the drive.

If you're still unable to boot LisaGuide, your Office System or your LisaGuide diskette may be damaged. First, repair and reinstall the Office System startup software as described on p. D50 in the Lisa 1 Owner's Guide or p. C24 in the 2's guide; then, repair the LisaGuide diskette. If LisaGuide still doesn't boot, replace the diskette.

Good Things to Know About Lisa

Tech Info Library Article Number:470



Tech Info Library

ACI US, Inc. (4/97)

Revised: 4/3/97
Security: Everyone

ACI US, Inc. (4/97)

=====

Article Created: 09/11/87
Article Reviewed: 07/02/93
Article Updated: 04/02/97

ACI US, Inc.

10351 Bubb Rd.
Cupertino, CA 95014

408-252-4444

Fax: 408-252-0831 (Tech. Support)
Fax: 408-252-7765 (Product Orders)
Fax: 408-252-4829 (Customer Service)

Company Profile:
Ssoftware, specializing in Macintosh software developing,
primarily database programs.

Article Change History: 07/02/93 Phone number added

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:471



Tech Info Library

Installing LisaGuide as a Shell

Revised: 11/15/84
Security: Everyone

Installing LisaGuide as a Shell

=====

If you wish, you may install LisaGuide as a shell so that you can access it from the hard disk instead of having to boot it from a diskette. To install LisaGuide as a shell, you'll need go into the workshop and copy all the files on the LisaGuide diskette to the ProFile EXCEPT:

```
{!CATALOG}
{!CATALOG}$R
{!SAVEDESKTOP} BOOT
{!TFCATALOG}
```

CAUTION: If you mistakenly copy these files, the Lisa will see your ProFile as a diskette!

Remember to set FilesPrivate to Yes with the System Manager before attempting to copy any files; then, copy to the ProFile all the files that start with "{" EXCEPT the ones listed above. Finally, change the name of LISAGUIDE.SHELL on your ProFile to SHELL.LISAGUIDE.

Your environments window on the hard disk will now give you the option of starting up LisaGuide the next time you power up.

Good Things to Know About Lisa

Tech Info Library Article Number:472



Tech Info Library

MicroTouch, Inc.

Revised: 4/3/97
Security: Everyone

MicroTouch, Inc.

=====

Article Created: 09/16/87
Article Reviewed: 07/13/93
Article Updated: 04/03/97

MicroTouch, Inc.

300 Griffin Book Park
Methuen, MA 01844

800-UNMOUSE (866-6873)

508-659-9000

508-659-9100 Fax

Company Profile:

Hardware, specializing in peripherals; primarily of touch screens.

Article Change History: 07/13/93 Address changed, phone number changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:473



Tech Info Library

Using double high-res graphics or a Color 100 on older IIs's

Revised: 2/13/87
Security: Everyone

Using double high-res graphics or a Color 100 on older IIs's

=====

The IIe needs a Revision B Motherboard or an Enhanced IIe Logic Board in order to support double high-resolution graphics or an RGB (Red Green Blue) Color Monitor 100. (The Revision B board differs from the Revision A board in that the RGB signals are sent to slot 7 and the auxilliary slot.) To determine which revision your Motherboard is, look at the back of the board behind the I/O slots: there you'll see the Motherboard's part number. The number will be 820-0064-A or 820-0064-B; the last character tells you whether the board is Revision A or Revision B. If the part number is 607-0187-A, it is an Enhanced IIe and does not need upgrading.

If you have a IIe with a Revision A (820-0064-A) Motherboard and an Extended Text card or an RGB interface card, you can have your Motherboard upgraded to Revision B by exchanging the motherboard.

Apple Technical Communications

Tech Info Library Article Number:474



Tech Info Library

Unix Software for Lisa

Revised: 11/15/84
Security: Everyone

Unix Software for Lisa

=====

If you have questions about Unix and what software is available for that operating system, contact:

Santa Cruz Operations
500 Chestnut St.
Santa Cruz, CA 95060
(408) 425-7222

--OR--

Unipress Software
1164 Raritan Ave.
Highland Park, NJ 08904
(201) 985-8000

Good Things to Know About Lisa

Tech Info Library Article Number:476



Tech Info Library

LaserWriter: Print layout can differ from screen layout

Revised: 7/2/87
Security: Everyone

LaserWriter: Print layout can differ from screen layout

=====

Drivers 3.0 or earlier try to create a resemblance to the screen's image of text. The driver then sends this resemblance to a LaserWriter or LaserWriter Plus.

To create this resemblance, a line layout routine in the driver formats each line extensively, padding the spaces between characters. The routine that does the formatting takes into account that the Macintosh's screen, 512x342 pixels, displays 72 pixels/inch and that the LaserWriter prints 300 dots/inch.

In the complex conversion from Macintosh screen pixels to LaserWriter printer dots, converting a 72 pixel inch to a 300 dot inch and accounting for angles, boldfacing, italicizing, and so on, the result is not always an exact resemblance. While the routine creates a printed line that resembles the screen line in length, the printed line can look different because of the routine's padding between characters.

This padding appears in lines printed with drivers 3.0 or later EXCEPT when fractional pixel widths, disabled by default, are turned on by an application. With fractional pixel widths enabled, the printer driver doesn't use its line layout routine and doesn't measure line length; printing can go as fast as possible.

In case an application enables fractional pixels and thus disables the line layout routine, the designers have made it possible to create a resemblance going the other way: the screen's image of text can be made to resemble the LaserWriter's image of text. This can happen even if text never goes to the LaserWriter.

To match LaserWriter text on the screen, the Macintosh uses FOND resources. FOND resources represent "families" of FONT resources and contain information about the width of each character in the font as if it were printed. To map the printer's ROM-based fonts to the Macintosh's screen fonts, the Font Manager and QuickDraw use these FOND's to calculate the width for the text to be displayed on the screen. To determine line breaks, the application can use these widths as well.

Fonts should be added or deleted from the System File with Font/DA Mover version 3.0 or later to insure that FONDS and Fonts are correctly updated.

For further information refer to "Inside Macintosh: The Font Manager" and/or "LaserWriter Reference Manual".

Tech Info Library Article Number:477



Tech Info Library

Macintosh, Apple II: Specifications of Plastic Enclosures (4/94)

Revised: 4/12/94
Security: Everyone

Macintosh, Apple II: Specifications of Plastic Enclosures (4/94)

Article Created: 22 June 1989
Article Reviewed/Updated: 1 April 1994

TOPIC -----

What kind of materials are the plastic enclosures for Macintosh computers made of?

DISCUSSION -----

Macintosh cases, mouse devices, and keyboard enclosures through the Macintosh SE are made of Cycolac ABS grade KJC plastic.

Macintosh plastic cases, mouse devices, and keyboard enclosures after the Macintosh SE are made of either

- Cycolac ABS grade KJC plastic, rated at 94V-2, or
- Cycolac ABS grade KJW plastic, rated at 94V-0.

The keyboards listed below use unreinforced polyester for the keycaps. The polyester makes the sublimation printing of the legends possible.

There is more than one vendor of polyester: the Apple Standard and Extended keyboards use Celanese Celanex 2000-2 resin.

Vendor information on Asian manufacturers' plastic is not available.

- the Apple Standard and Extended Keyboards
- the Macintosh Plus keyboard
- some Apple IIGS keyboards
- all Apple IIc keyboards
- possibly some Apple IIe keyboards

Other keyboards have ABS keycaps; these keycaps are double-shot to put the legends in a different color plastic.

Information on the plastic used in later keyboards is not available at

this time.

Article Change History

1 April 1994 - Reviewed for technical accuracy.

8 July 1992 - Reviewed and retitled for accuracy.

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Tech Info Library Article Number:478



Tech Info Library

Anti-Theft Device for the Lisa

Revised: 11/15/84
Security: Everyone

Anti-Theft Device for the Lisa

=====

An anti-theft device for the Lisa is available from:

Anchor Pad of Northern California
1255 Post St., Suite 723
San Francisco, CA 94109
(415) 441-2593

Good Things to Know About Lisa

Tech Info Library Article Number:479



Tech Info Library

Lisa: When to Repair Your Hard Disk

Revised: 7/30/87
Security: Everyone

Lisa: When to "Repair" Your Hard Disk

=====

Anytime your system resets or falls victim to a power outage or any other kind of abnormal power down, you must "repair" your hard disk. Also consider repairing your hard disk when your system is acting strangely or if you're having difficulties locating or displaying your documents, even if they are located on a diskette. The repair is basically a disk clean-up: it closes any files left open, gets rid of unused scratch files, and then reconstructs the catalog files if necessary.

If you receive the message "the disk needs minor repairs", start up with the Office System 1 diskette to repair your hard disk. If you've just repaired the hard disk using the Office System 1 diskette, perform the "minor repair" as well when given the choice.

The Office System 1 repair is very thorough, while the minor repair merely reconstructs the catalog files.

Note: Repairing the hard disk will delete folders (but not documents) in Office Systems older than version 3.0.

Tech Info Library Article Number:480



Tech Info Library

System 4.1: Keyboard Mapping Changes

Revised: 7/16/90
Security: Everyone

System 4.1: Keyboard Mapping Changes

=====

This article last reviewed: 11 September 1987

The Macintosh character set is illustrated on page I-247 of Inside Macintosh, Vol. 1, copyright 1985. All characters that are not shaded in this illustration can be generated on any Macintosh.

With System 4.1, the keyboard mapping changed. It now uses resources in the System file for mapping dead keys. "Dead keys" are those that don't produce a character until a second key is pressed. If the second character is one that is recognized as a proper dead-key combination, then a character is produced. For example, Option-n is a dead key that produces the n-tilde character only if n is the next key pressed.

There are two omissions in the new keyboard maps for System 4.1. The capital A with tilde and capital O with tilde are valid combinations that were omitted from the key map.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:481



Tech Info Library

Apple IIGS: Problem with Sort Directory When Using One Drive

Revised: 9/16/87
Security: Everyone

Apple IIGS: Problem with Sort Directory When Using One Drive

=====

This article last reviewed: 8/31/87

On single-drive Apple IIGS systems, using Sort Directory on a disk other than the System disk causes a system crash. Before the disk on which the sort is to be done can be inserted, the System disk must first be ejected. When the user chooses Sort Directory from the Apple menu, he or she is prompted to insert the System disk, and the data disk is ejected. When the System disk is again inserted and the OK button clicked, the system crashes.

Here are three workarounds:

- Use the new IIGS Finder.
- Attach another drive to the system so that the System disk doesn't have to be ejected.
- Upgrade the Apple IIGS' memory so that the RAM disk can be used.

Tech Info Library Article Number:485



Tech Info Library

Apple IIGS: Chatsworth Optical Mark Reader Compatibility

Revised: 5/26/88
Security: Everyone

Apple IIGS: Chatsworth Optical Mark Reader Compatibility

=====

This article last reviewed: 16 September 1987

The Chatsworth OMR1000 is a popular optical mark card reader that is normally connected to an Apple IIe. It is also compatible with the Apple IIGS, but with one precaution.

The OMR software defaults the slot for the controller card to slot 4. On the Apple IIGS, slot 4 defaults to MOUSE. Before using the OMR1000 with the IIGS, use the Apple IIGS control panel to change Slot 4 for "Your Card".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:486



Tech Info Library

SCSI Drives: Size Differences After Formatting

Revised: 9/18/87
Security: Everyone

SCSI Drives: Size Differences After Formatting

=====

This article last reviewed: 1 September 1987

SCSI drives formatted under different versions of HD SC Setup may show differing numbers of blocks available, even though the storage capacity of the drives is theoretically the same. This is due to different methods used by various versions of HD SC Setup.

HD SC Setup Version 1.1 checks each drive and formats the disk with that drive's maximum number of blocks. Versions 1.4 and later determine the approximate size of the drive (20MB, 40MB, or 80MB), then format all manufacturers' drives with a set number of blocks. On an HD-20SC, the result is 19,171 blocks. This is the number of blocks available on an Apple HD-20.

Apple made this change in order to provide an easier method of using tape backup systems, and to provide a consistent amount of storage on a hard disk without regard to the computer or drive's manufacturer. Since all 20MB drives formatted with version 1.4 and later will contain the same number of blocks, it is possible to restore a backup from one drive onto another type of drive without encountering problems due to insufficient storage. This will avoid problems that could develop when users compare two "identical" units and find that they have different amounts of disk storage available.

Tech Info Library Article Number:487



Tech Info Library

Apple II And II Plus Hardware: Stopping The Blinking Cursor

Revised: 11/9/88
Security: Everyone

Apple II And II Plus Hardware: Stopping The Blinking Cursor

=====

This article last reviewed: 9 November 1988

Hardware generates the blinking cursor on the Apple's screen. You can stop the blinking using this Applesoft program:

```
10 FOR A = 935 TO 941
20 READ B
30 POKE A,B
40 NEXT A
50 POKE 56,167
60 POKE 57,3
70 CALL 1002
80 END
100 DATA 72,41,63,145,40,104,76,27,253
```

This program assumes that you have DOS booted. If you don't have DOS, delete line 70.

After you run the program, the cursor will be a solid block until the RESET key is pressed, until there is an IN#0 command, or until the Apple is turned off.

The cursor can be completely eliminated by changing the 63 in line 100 to a 191.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:489



Tech Info Library

Apple II Hardware: Apple II vs Apple II+

Revised: 11/20/84
Security: Everyone

Apple II Hardware: Apple II vs Apple II+

=====

The only difference between the Apple II and the Apple II+ is that the Apple II has Integer BASIC and the "old" monitor ROM, while the Apple II+ has Applesoft BASIC and the Autostart monitor ROM. Most of the game programs available today are written in Integer BASIC and most of the business, scientific, and industrial programs require Applesoft, so the selection depends upon what your application requires. Apple offers firmware cards that will supply Applesoft to Apple II owners and Integer Basic to Apple II+ owners.

Apple Tech Notes

Tech Info Library Article Number:491



Tech Info Library

Apple II Hardware: The Apple II Keyboard

Revised: 11/20/84
Security: Everyone

Apple II Hardware: The Apple II Keyboard

=====

The keyboard on the Apple II has an upper-case-only encoder. It can produce ASCII characters 0 through 95, excluding `_`, `\`, `[`, `CTRL-_`, `CTRL-[`, and `CTRL-\`. The Apple III uses the very same encoder. However, the Apple III also has a second keyboard port; with this port, the Apple III can independently to sense the shift, control, and alpha lock keys, as well as a number of other functions.

You can modify an existing Apple II to allow it to sense whether or not the shift keys are depressed. This modification is supported by system software such as Pascal 1.1 and Pilot, as well as some word processing software. The core of the modification is a wire running from the shift keys to button input 2 of the game I/O port which button input the paddles don't use. This modification is not recommended for in-warranty Apples and should be only performed by an authorized service technician.

Since the modified Apple can sense whether or not the shift key is being pressed, it can distinguish 51 new characters: `CTRL-SHIFT-A` thru `Z` excluding `M`, `N`, and `P`, `SHIFT-A` thru `Z` excluding `M`, `N`, and `P`, `SHIFT-0`, `SHIFT-RETURN`, `SHIFT-ESC`, `SHIFT-LEFT ARROW`, and `SHIFT-RIGHT ARROW`. This raises the total number of distinguishable characters to 141, which easily encompasses the 128 member ASCII character set.

To facilitate the most natural use of the keyboard, software sometimes rearranges the interpretation of these characters so that the keyboard resembles that of a typewriter. Apple has employed several types of keyboards on the Apple II since its introduction, so the modification has two appearances.

1. On the older style keyboard, a wire should be run between pin 2 of the 74LS00 and pin 4 of the keyboard connector on the keyboard.
2. On the newer style keyboard with the "piggy-back" electronic assembly, the wire should be run between pin 9 of the 74LS00 closest to the keyboard connector and pin 4 of the keyboard connector.

In either case, a second wire should connect the bottom of pin 4 at location

..TIL00492-Apple_II_Hardware-The_Apple_II_Keyboard_(TA40714).pdf

A7 to pin 7 at location J14 on the motherboard. Check carefully that the wire isn't connected to pin 7 of H14. The keyboard cable acts as a connection between these two wires.

Apple Tech Notes

Tech Info Library Article Number:492



Tech Info Library

Apple II Hardware: Character Generator ROM

Revised: 11/20/84
Security: Everyone

Apple II Hardware: Character Generator ROM

=====

To allow you to write programs involving special characters or lower case characters, you can get a 2716 PROM to replace the the character generator ROM in revision 7 and later Apples. This note describes how the characters are mapped in the ROM.

Characters storage uses a scheme of eight bytes per character, arranged in the ROM in the order shown in Table 7 on page 15 of the Apple II Reference Manual. The starting address for each character is the address from Table 7 multiplied by eight. Lower case characters, if desired, should be mapped in place of the numbers and punctuation in columns \$E0 and \$F0.

Each character is made up of eight bytes. Each byte represents one row of dots. The most significant bit of each byte is ignored by the hardware. The lowest-addressed byte of each character is the topmost row of dots of the displayed character. The first and last bits of each row of dots are usually set to zero to supply a two dot space between characters. The bottom row of dots is usually left set to zero to allow a one row space between lines. Some lower case character sets use the bottom row for descenders (the letter "g", for example). This causes overlap when the descender is directly above an upper case letter like "B". The following diagram shows how the characters are built. The three digit hexadecimal number is the hexadecimal ROM address for each byte and the two digit hexadecimal number is the pattern of on and off bits.

\$208	\$08	...*...	\$708	\$00	.....	\$730	\$08	...*...
\$209	\$14	..*.*..	\$709	\$00	.....	\$731	\$14	..*.*..
\$20A	\$22	.*...*	\$70A	\$1C	..***..	\$732	\$10	..*....
\$20B	\$22	.* *	\$70B	\$02	.....*	\$733	\$10	..*....
\$20C	\$3E	.*****	\$70C	\$1E	..*****	\$734	\$3E	.*****
\$20D	\$22	.*...*	\$70D	\$22	.*...*	\$735	\$10	..*....
\$20E	\$22	.*...*	\$70E	\$1E	..*****	\$736	\$10	..*....
\$20F	\$00	.....	\$70F	\$00	.....	\$737	\$00	.....
\$210	\$3C	.*****	\$710	\$20	.*....	\$738	\$00	.....
\$211	\$22	.*...*	\$711	\$20	.*....	\$739	\$00	.....
\$212	\$22	.*...*	\$712	\$3C	.*****	\$73A	\$1C	..***..
\$213	\$3C	.*****	\$713	\$22	.*...*	\$73B	\$22	.*...*

\$214	\$22	.*...*.	\$714	\$22	.*...*.	\$73C	\$22	.*...*.
\$215	\$22	.*...*.	\$715	\$22	.*...*.	\$73D	\$1E	..****.
\$216	\$3C	..****..	\$716	\$3C	..****..	\$73E	\$02*.
\$217	\$00	.....	\$717	\$00	.....	\$73F	\$1C	..****..

Apple Tech Notes

Tech Info Library Article Number:493



Tech Info Library

Apple II Hardware: 6522 Versatile Interface Adapter (2/97)

Revised: 3/3/97
Security: Everyone

Apple II Hardware: 6522 Versatile Interface Adapter (2/97)

=====

Article Created: 21 September 1984
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes the 6522 Versatile Interface Adapter (6522 VIA).

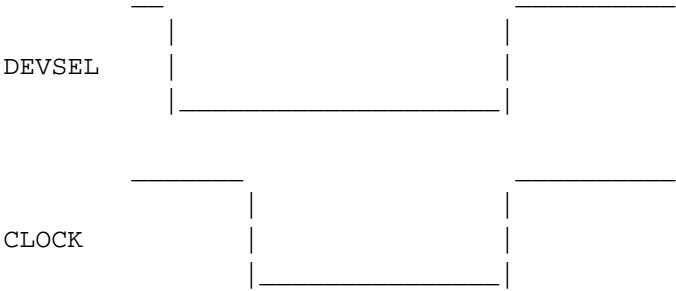
DISCUSSION -----

The 6522 Versatile Interface Adapter (6522 VIA) is a popular integrated circuit for use with microcomputers because it operates in a variety of modes. The precursor to the 6522, the 6520, has been used in several interfaces with no difficulty. Unfortunately, although these two parts have identical timing specifications, their operation is different. The 6520 is very tolerant of operation outside of the parameter limits on its data sheet while the 6522 must have its timing specifications met exactly.

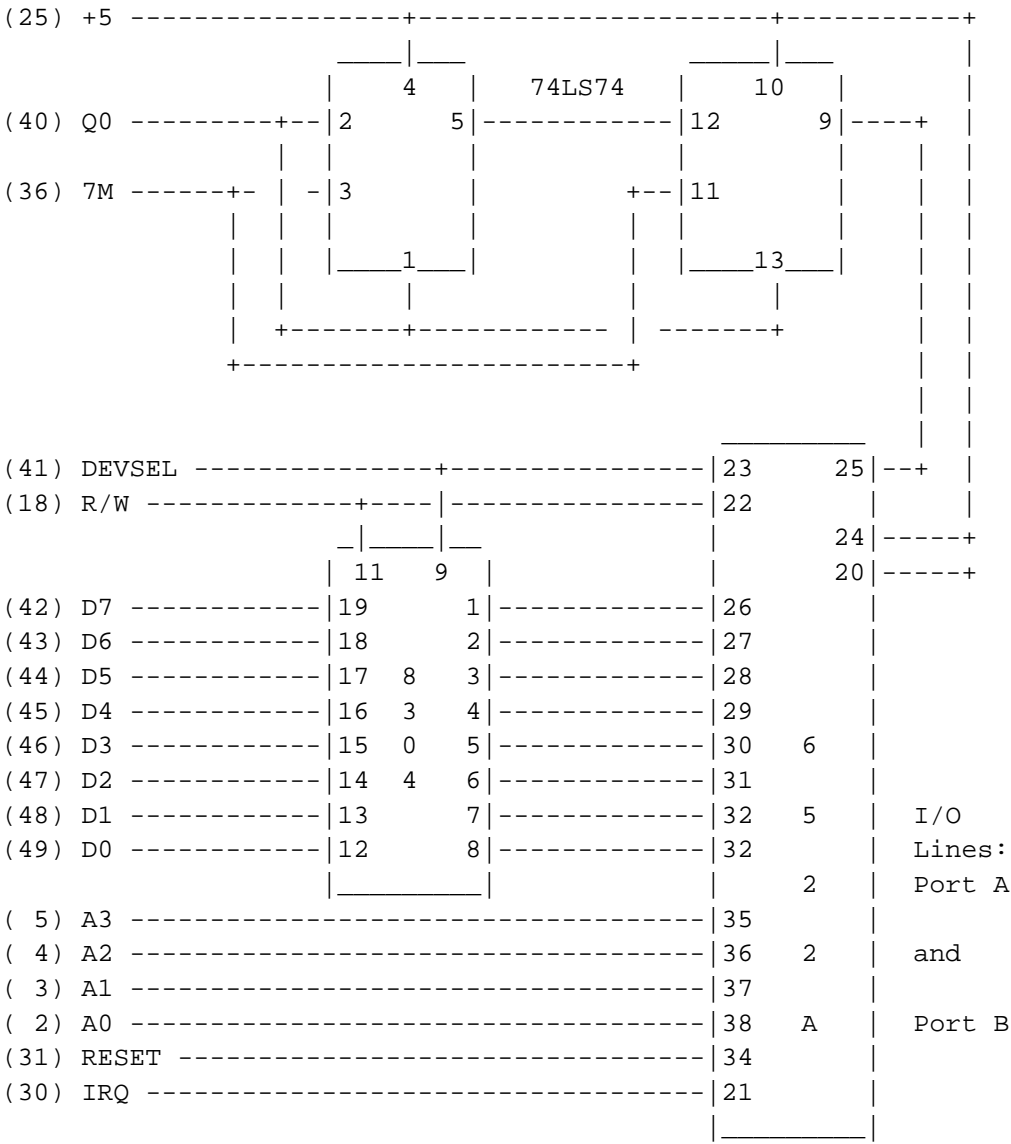
The most critical timing parameter for the 6522 is the address set-up time, the delay between the chip select and the rising edge of the 1MHz clock. The 6522 will not operate under the nearly identical Device Select and 1 MHz clock of the Apple II. The solution is to shorten the positive half-cycle of the 1 MHz waveform. This can be achieved by various methods, but, since the length of the positive half-cycle is critical, it is essential to have a well-controlled circuit to do this.

The circuit below is proposed for use with the Apple II. The 74LS74 circuit delays the positive edge of the clock by one cycle of the 7 MHz clock, generating the clock waveform that the 6522 needs. The negative edge of the clock is set by the falling edge of the 1 MHz clock; this also holds off the flip-flop until the next cycle. The shortened positive half-cycle of the clock waveform results in a leading edge delayed by 140 nanoseconds from the falling edge of Device Select.

The 6522A is required to meet the data sheet timing parameters. The 6522 will usually work but its operation cannot be guaranteed.



SUGGESTED SCHEMATIC



Article Change History:
28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library

The Apple II Cassette Interface (1 of 2)

Revised: 11/20/84
Security: Everyone

The Apple II Cassette Interface (1 of 2)

=====

This note is about the cassette interface built into the Apple II and Apple II+, subroutines. An assumption made here is that the cassette recorder is in the proper mode, play or record, when the read and write routines are executed. Note also that the timing is approximate and may vary from one Apple to another.

A record is a block of binary data. This data may be a BASIC or APPLESOFT program, a machine language program, or just binary data. Records representing BASIC or APPLESOFT programs are really two records, the length of the program and the actual program. A record consists of a header, synchronous bit, the actual data, and a checksum byte for error detection.

Monitor record format

```
+-----+-----+-----+-----+
| HEADER |S|          DATA          |C|
+-----+-----+-----+-----+
```

BASIC program record format

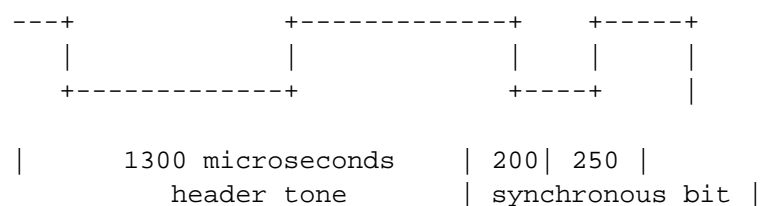
```
+-----+-----+-----+-----+-----+-----+-----+-----+
| HEADER |S| LB |C| HEADER |S|          PROGRAM          |C|
+-----+-----+-----+-----+-----+-----+-----+-----+
```

Key: S = SYNC bit
C = CHECKSUM byte
LB = BASIC program length

The header consists of 10 seconds of 770 Hz tone, (1 cycle equals 1300 microseconds). This gives enough time for the cassette motor to attain speed and the plastic tape leader to go by. A subroutine called HEADR generates a shortened header between the BASIC length bytes and the BASIC program itself. The length of the header tone is controlled by the value of the accumulator on entry to the subroutine. This can vary from 0.2 seconds to 40 seconds. On entry the X register should be 0 and the carry flag should be set. HEADR also generates a synchronous bit at the end of the tone. HEADR resides at

hexadecimal address \$FCC9, or decimal address -882.

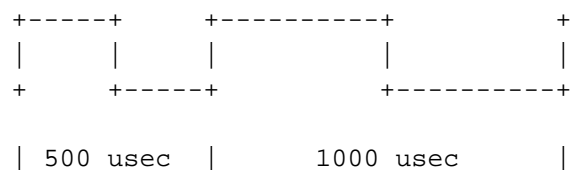
The last cycle of header tone and SYNC bit



The synchronous bit, generated by HEADR, is one half cycle of 2500 Hz, (200 microseconds) and one half cycle of 2000 Hz, (250 microseconds). It is used to signal the end of the header tone and the start of the data.

The data is recorded on the tape with a low starting address and a high ending address. Each byte of data is shifted out most significant bit first, least significant bit last. A zero bit is made up of one cycle of 2 kHz, (250 microseconds per half cycle) and a one bit is one cycle of 1 kHz, (500 microseconds per half cycle). This works out to 2000 baud for zeros only and 1000 baud for ones, or an average of 1500 baud.

A zero bit and a one bit



The checksum byte is written on the tape at the end of the data block. All during reading or writing each data byte is EXCLUSIVE OR-ed with the checksum byte. If the checksum computed during a read agrees with the checksum that was written out, then the data is probably good. This method will detect an odd number of errors for any of the eight bits of the byte.

In writing data, the cassette output uses quite simple circuitry, a flip-flop connected through a voltage divider to the jack on the back panel of the Apple. Any time the address \$C020 is accessed this flip-flop changes state. Accessing the flip-flop once every 500 microseconds generates a 1000 Hz tone.

Apple Tech Notes

Tech Info Library Article Number:495



Tech Info Library

The Apple II Cassette Interface (2 of 2)

Revised: 11/20/84
Security: Everyone

The Apple II Cassette Interface (2 of 2)

=====

For reading data, the cassette recorder uses a more complicated input circuit consisting of a 741 operational amplifier configured as a zero crossing detector. Zero crossing detection means that whenever the voltage at the input jack goes from positive to negative (or negative to positive) the output of the amplifier switches from a 1 to a 0 (or 0 to 1). The detector is accessed by any read to address \$C060. The sign bit (most significant bit) of the byte read reflects the detector status. The read routines continually EXCLUSIVE ORs this bit with the value most recently read to detect a change in state. The amount of time required to change state indicates the incoming frequency which then is used to determine if a one or a zero has been received. After detecting the first zero crossing at the start of the header, the read routine uses HEADR to generate a 3.5 delay, and then the read routine waits for the sync bit. After HEADR generates the synchronous bit, the read routine reads the data and puts it in the specified memory range.

In using the cassette interface to either read or write, all you need do is specify an address range and execute the read or write subroutine. The address range is stored in four bytes, two for the first address to be saved and two for the last to be saved. In both cases the least significant byte is first.

Commanding the cassette interface:

1. from the monitor:

If the start is \$800 and the end is \$9FF, then
800.9FFW will write the data to the cassette and
800.9FFR will retrieve it.

2. from machine language:

Again, if the start is \$800 and the end is \$9FF then store the address range,

```
LDA #$00
STA $3C starting address low
LDA #$08
STA $3D starting address high
```

```
LDA #$FF
STA $3E ending address low
LDA #$09
STA $3F ending address high
JSR $FEDC write to block to tape
```

The JSR \$FEDC will write to the cassette; JSR \$FEFD will read from the cassette.

3. from BASIC:

First set up the address range. If S = the start and E = the end then from integer BASIC,

```
POKE 60,S MOD 256
POKE 61,S / 256
POKE 62,E MOD 256
POKE 63,E / 256
```

4. from APPLESOFT,

```
POKE 60,S - INT(S / 256) * 256
POKE 61,S / 256
POKE 62,E - INT(E / 256) * 256
POKE 63,E / 256
```

Then, to write out to cassette, use CALL -307; to read in from the cassette, use CALL -259.

Apple Tech Notes

Tech Info Library Article Number:496



Tech Info Library

AppleShare: Types of Programs That Can Run in the Foreground

Revised: 10/4/89
Security: Everyone

AppleShare: Types of Programs That Can Run in the Foreground

=====

This article last reviewed: 4 September 1987

These are the three major conditions that a program must meet for it to be an AppleShare foreground application:

- it must be of type FGND.
- it must be in the server folder (so AppleShare can find it) and it can save files only in the server folder (so as not to disrupt the desktop in a manner AppleShare cannot handle).
- it must call SYSTEMTASK often in order to give AppleShare run time.

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Tech Info Library Article Number:497



Tech Info Library

Apple III Hardware: Apple III Video (2/95)

Revised: 2/14/95
Security: Everyone

Apple III Hardware: Apple III Video (2/95)

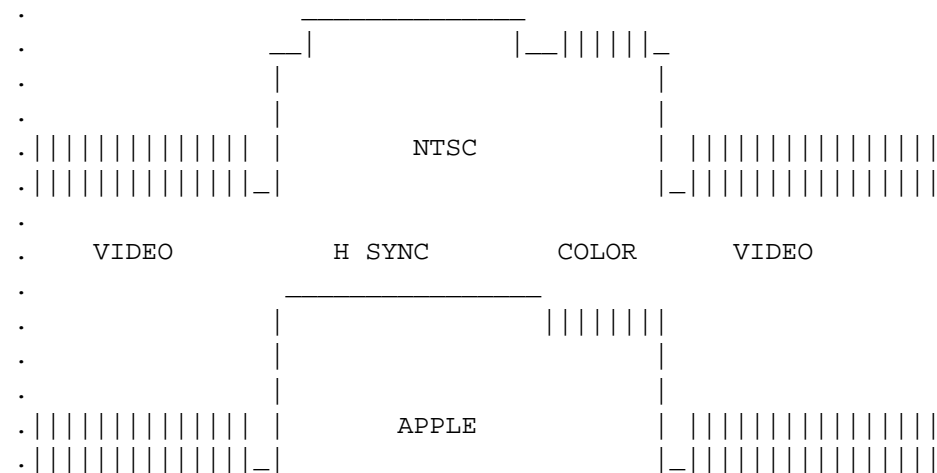
Article Created: 21 September 1984
Article Reviewed/Updated: 14 February 1995

TOPIC -----

This article describes the horizontal sync signals for the Apple ///.

DISCUSSION -----

The Apple III's horizontal sync consists of 8usec of sync and 4usec of color burst. There are no porches or breezeways. There is a certain amount of 3.58 MHz during a video line due to the switching of the pixels.



Article Change History:
14 Feb 1995 - Reviewed for technical accuracy, corrected spelling of sync.

Support Information Services

Apple Tech Notes

Tech Info Library Article Number:498



Tech Info Library

AppleShare: Problem With Early Version Of TOPS

Revised: 11/2/88
Security: Everyone

AppleShare: Problem With Early Version Of TOPS

=====

This article last reviewed: 4 September 1987

When older versions (before September 1986) of TOPS for the Macintosh are used together with AppleShare, an endless loop of error messages ("The Disk need minor repairs" and "Desktop file could not be created") appear when you try to mount an AppleShare volume. Newer versions of TOPS fix the problem.

There is an external file system hook that both AppleShare and TOPS use. Since there is only one hook, and more than one application needs to access it, the solution implemented is to daisy-chain the routines that latch into it. This means that any routine that puts its address in the hook should preserve the address that was previously there, and then call it after it's done performing its tasks. That way, all applications have a chance to examine a filing call if all other applications are well-behaved. While early versions of TOPS daisy-chained properly, and passed on the filing command to other routines, they didn't preserve register values.

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Tech Info Library Article Number:499



Tech Info Library

FORTRAN: Using WCHAR from FORTRAN

Revised: 11/20/84
Security: Everyone

FORTRAN: Using WCHAR from FORTRAN

=====

This applies to the Apple II, Apple II+, Apple IIe, and Apple IIfx. The Turtlegraphics WCHAR procedure, which writes a single character on the high-res screen, will often give a "Value Range Error" (S#20, P#17, I#11) when called from FORTRAN. WCHAR does not check the high byte of the character word passed before calling the DRAWHBLOCK routine, so if the high byte contains a value, WCHAR will choke by trying to access an index beyond the end of SYSTEM.CHARSET.

This error will occur when passing a single character from a character array, but not from a single character "string". For example,

```
CHARACTER CH(10)
READ (*,100) CH(1)
CALL WCHAR (CH(1))
```

will result in a "Value Range Error". However,

```
CHARACTER*1 CH
READ (*,100) CH
CALL WCHAR (CH)
```

will work correctly. To prevent the error in the first example, replace the call statement with

```
CALL WCHAR (CHAR (ICHAR ( CH(1))))
```

which will convert the character to a integer, and then back to a character before calling WCHAR.

Apple Tech Notes

Tech Info Library Article Number:501



Tech Info Library

FORTRAN Language Reference Manual: Errata

Revised: 11/20/84
Security: Everyone

FORTRAN Language Reference Manual: Errata

=====

This applies to the Apple II, Apple II+, Apple IIe, and Apple IIC.

Page inside cover

The number A2D0032 is for the diskette, not the manual. The correct number for the manual is A2L0032 030-0118-00.

Page ix

The page number for the Appendices should be 135 instead of 134.

Page xi

The top paragraph should be deleted because the information is presented on page x.

Page 156

In a multi-drive system, it isn't necessary to duplicate the system files on FORT2:. Here is a configuration for Apple FORTRAN diskettes that leaves you with over 130 blocks of storage on FORT1:, which remains the boot diskette, and allows you to write-protect FORT2: to prevent you from accidentally crashing the diskette that has the uncopyable FORTRAN SYSTEM.COMPILER .

FORT1:	FORT2:
-----	-----
SYSTEM.APPLE	SYSTEM.COMPILER
SYSTEM.PASCAL	SYSTEM.FILER
SYSTEM.MISCINFO	SYSTEM.EDITOR
SYSTEM.LIBRARY	SYSTEM.LINKER
SYSTEM.STARTUP	SYSTEM.CHARSET
	FORTMOD.CODE
	FORTLIB.CODE
	SYSTEM.LIBRARY

The copy of SYSTEM.LIBRARY on FORT2: is a copy of the original that came on FORT1:. There is a little room left on FORT2: which makes a good place to archive it. The SYSTEM.STARTUP program is generated from Pascal and contains the following commands:

```
PROGRAM LIBLINK;  
USES APPLESTUFF;  
BEGIN  
END.
```

After compiling the program in Pascal, use the Filer to Transfer the codefile to FORT1: with the file name SYSTEM.STARTUP

Apple Tech Notes

Tech Info Library Article Number:502



Tech Info Library

AppleShare: Restoring AppleShare Volumes

Revised: 5/28/92
Security: Everyone

AppleShare: Restoring AppleShare Volumes

=====

This article last reviewed: 4 September 1987

When you restore a backed-up AppleShare volume, all access privileges are lost and the files and folder are property of the Custodian. The Admin program creates a new Server folder (Server2) when it reinitializes the drive for AppleShare.

AppleShare, when determining access privileges, uses the directory IDs to keep track of separate folders. However, when you backup a hard disk and then restore it, all of the ID numbers are reassigned. Consequently, AppleShare can't match up its stored lists of access privileges with what is on the disk. The only solution is to use an 'image backup' device, usually a tape backup. This backup device would in essence make a clone of the hard disk onto a tape, keeping all directory IDs intact, and correctly restoring them later.

The reason for the creation of the folder named Server2 is that AppleShare has also lost track of its older Server folder. When you run the Admin program, it looks for the server volume based on its directory ID. Because the IDs have changed, the Admin program can't find the server folder and notices that there is a folder on the desktop with the name Server. Thinking that the folder belongs to someone other than itself, the Admin program creates a new name (Server2) and uses that. When this happens, you can use the old 'Users & Groups' file to create a new one, and throw out the old Server folder.

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Tech Info Library Article Number:503



Tech Info Library

Graphics Tablet: Manual Errata (11/96)

Revised: 11/19/96
Security: Everyone

Graphics Tablet: Manual Errata (11/96)

=====

Article Created: 21 September 84
Article Reviewed/Updated: 18 November 1996

TOPIC -----

The following manual corrections are for Graphics Tablet manual 030-0076-00.

DISCUSSION -----

Page 26

The first word on line 5 should read "initialized" instead of "uninitialized".

Page 55

The following lines are incorrect:

- 2475 GOTO 2340 should be 2475 GOTO 2350
- 2490 GOTO 2340 should be 2490 GOTO 2348

Article Change History:
18 November 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:504



Tech Info Library

FORTTRAN: Unformatted I/O

Revised: 11/20/84
Security: Everyone

FORTTRAN: Unformatted I/O

=====

Statements of the form PRINT*, READ*, or WRITE* are not allowed.

All I/O is of the form:

```
READ ( <unit number> [, <format identifier> ] ) <iolist>  
WRITE ( <unit number> [, <format identifier> ] ) <iolist>
```

Refer to pages 81 through 86 of the Apple FORTRAN Language Reference Manual for more information on the OPEN, READ, and WRITE statements.

Apple Tech Notes

Tech Info Library Article Number:505



Tech Info Library

FORTRAN: FORT2 Copy protection

Revised: 11/20/84
Security: Everyone

FORTRAN: FORT2 Copy protection

=====

This applies to the Apple II, Apple II+, Apple IIe, and Apple IIC.

The Apple FORTRAN compiler is protected and cannot be copied. A Bad Block scan of the FORT2: diskette will show blocks 30, 31, and 32 as bad. Any attempt to "fix" these blocks will ruin the FORT2: diskette. See your local service center if your FORT2: diskette doesn't work.

Apple Tech Notes

Tech Info Library Article Number:506



Tech Info Library

FORTRAN: Data file limits

Revised: 11/20/84
Security: Everyone

FORTRAN: Data file limits

=====

Apple FORTRAN can only allow a total of 16 files to be opened within a program; this number is based on of file identifier blocks available within the Pascal operating system. However, the upper limit on the number of files any one program may open is more likely to be based on the available buffer space (memory) for those files.

Apple Tech Notes

Tech Info Library Article Number:507



Tech Info Library

Creating FORTRAN Data files

Revised: 11/20/84
Security: Everyone

Creating FORTRAN Data files

=====

An error in the FORTRAN "CLOSE" statement causes the operating system to mishandle the disk file space. If, within a program, even the smallest data file is created, closed, and reopened, then the system will report that there is no room left on the volume because the CLOSE statement does not release blocks not used in closing the file. When FORTRAN first goes to OPEN a file with STATUS="NEW", FORTRAN looks for, finds, and reserves all unused blocks in the largest available space for the new file. The CLOSE statement does not release the blocks that really are unused after the close, so the second time the OPEN statement (with STATUS="NEW") looks for all unused blocks in the largest available space, OPEN doesn't find any.

One way to avoid this problem is to "Make" a file of the size you will be needing on the given disk; this file will then have STATUS="OLD" and when accessing it, OPEN will not reserve records CLOSE can't release. For example, your program might be creating a data file (by the name of "MYFILE") which will eventually occupy 100 blocks on your data disk (let's call the disk "DATA"). From the Filer, type "M" (for Make), followed by "DATA:MYFILE[100]". This will create the directory entry, reserving 100 blocks for the data file. The FORTRAN program can then OPEN the data file with STATUS="OLD", and the space will be managed correctly. When all the blocks are actually filled, the expected error messages will occur.

Apple Tech Notes

Tech Info Library Article Number:508



Tech Info Library

FORTRAN: Making the Most of your Disk Space

Revised: 11/20/84
Security: Everyone

FORTRAN: Making the Most of your Disk Space

=====

When using FORTRAN in a multiple-drive system, it is not necessary to duplicate system files on both FORT1: and FORT2:. However, since the SYSTEM.COMPIILER cannot be copied, it is necessary that FORT2: have at least that one file, but the majority of FORT2: can be dedicated to developing programs. Follow the procedure for formatting diskettes and transferring files which is described in the Pascal or FORTRAN reference manuals.

Here are two possible FORTRAN configurations. Your setup will depend on your methods.

1. If you normally don't intend to use the system work file, you may wish to use this configuration:

FORT1: (boot disk)	FORT2:
SYSTEM.APPLE	SYSTEM.COMPIILER
SYSTEM.PASCAL	
SYSTEM.MISCINFO	
SYSTEM.CHARSET	
SYSTEM.EDITOR	
SYSTEM.FILER	
SYSTEM.LINKER	
SYSTEM.LIBRARY	
FORTLIB.CODE	

With this configuration, FORT1: will have only 26 unused blocks, but FORT2: will have 182 blocks available for text and code files. If you exit the Editor by Writing a named file to FORT2: instead of Updating SYSTEM.WRK, you'll have plenty of room to compile and link your FORTRAN programs.

2. If you plan to use the system work file, use the following configuration to leave the majority of free space on the boot disk. This setup may also be used for writing files, of course. The remaining space on FORT2 can be used for files you don't use during development of a particular program.

FORT1: (boot disk)	FORT2:
--------------------	--------

SYSTEM.APPLE	SYSTEM.COMPILER
SYSTEM.PASCAL	SYSTEM.LINKER
SYSTEM.MISCINFO	SYSTEM.EDITOR
SYSTEM.LIBRARY	SYSTEM.FILER
	SYSTEM.CHARSET
	FORTLIB.CODE

For development of text and code with a single-drive system, please consult your FORTRAN reference manual.

Apple Tech Notes

Tech Info Library Article Number:509



Tech Info Library

Macintosh: Control Panel 3.0 Incompatible with System 3.2

Revised: 5/10/89
Security: Everyone

Macintosh: Control Panel 3.0 Incompatible with System 3.2

=====

This article last reviewed: 3 September 1987

The new Control Panel 3.0 is not backward compatible with older System files. Previously, the setting of the mouse scaling option (set by the Control Panel and used by the System file) was stored in a single bit in the battery backed-up parameter RAM. Because the new system offers a larger choice of scaling options, the format of the saved setting had to change. This is why older version of the System file can't properly read the settings saved by the new Control Panel.

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Tech Info Library Article Number:510



Tech Info Library

Library Units in FORTRAN with Pascal 1.1 and 1.2

Revised: 11/20/84
Security: Everyone

Library Units in FORTRAN with Pascal 1.1 and 1.2

=====

FORTRAN that runs under Pascal version 1.1 does not access the SYSTEM.LIBRARY in order to find the location of each library segment. Therefore, as a FORTRAN program that uses Library Units (\$USES <filename>) starts to execute, it almost immediately incurs a stack overflow.

A Pascal program which will repair the segment dictionary of a FORTRAN code file is included on the FORT2 diskettes. If your FORTRAN package does not include this program, you may get a copy from your dealer, regional support center, or the International Apple Core on their April 1981 Disk of the Month, named ATTACH. This Pascal program should be used after compiling and linking, but prior to the first execution of each FORTRAN program.

Or you may use another method of forcing the operating system to load the locations of each segment by compiling the following Pascal program:

```
PROGRAM READTABLE;  
USES TURTLEGRAPHICS; (* or any other intrinsic unit *)  
BEGIN  
END.
```

Place the code file on your FORTRAN boot disk, and name that code file SYSTEM.STARTUP. The program will be executed automatically during each boot and will cause the table to be read in.

Apple Tech Notes

Tech Info Library Article Number:511



Tech Info Library

Graphics Tablet: Area Calculation Errors (11/96)

Revised: 11/19/96
Security: Everyone

Graphics Tablet: Area Calculation Errors (11/96)

=====

Article Created: 21 September 84
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article explains problems with the Graphics Tablet and area calculation.

TOPIC -----

Area calculation for the graphics tablet are not totally accurate. It was not designed for critical situations but rather as an example of the way such a tool could be used. The simplicity of the code and the inaccuracies in BASIC may account for the error encountered.

Article Change History:
18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:512



Tech Info Library

Apple IIe and IIc: Can't Use Desktop

Revised: 9/17/87
Security: Everyone

Apple IIe and IIc: Can't Use Desktop

=====

This article last reviewed: 3 September 1987

The Desktop program, although it runs under ProDOS 8, was not designed to run on an Apple IIe or Apple IIc. If you look at the memory locations starting at 1000, you'll see:

1000: 18 FB 5C 04 E0 D0

When disassembled, they translate into

1000: 18	CLC
1001: FB	XCE
1002: 5C 04 E0 D0	JMP E0D004

This is the segment of code that the Desktop executes when it exits back to ProDOS. However, those assembly language instructions are implemented only on the Apple IIGS's 65816, not on the Apple IIe's and IIc's 6502.

Tech Info Library Article Number:513



Tech Info Library

Graphics Tablet: Quick.Draw (11/96)

Revised: 11/20/96
Security: Everyone

Graphics Tablet: Quick.Draw (11/96)

Article Created: 21 September 1984
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Below are two BASIC programs that demonstrate how to use Quick.Draw for the Graphics Tablet. Type both programs in, save with the titles listed below and then RUN "START.TEST". "START.TEST" will create an EXEC file and EXEC it. (See DOS manual for further information on EXEC.)

The EXEC file will load "TEST.QUICK.DRAW" above High-Res and run the program. The programs are written with the assumption the Graphics Tablet Interface is in slot 5. Line 20 of the second program controls the slot number.

DISCUSSION -----

```
10 D$ = CHR$ (4)
20 PRINT D$"OPEN START.TEST"
30 PRINT D$"WRITE START.TEST"
40 PRINT "POKE103,1"
50 PRINT "POKE104,64"
60 PRINT "POKE16384,0"
70 PRINT "RUN QUICK-DRAW"
80 PRINT "RUN TEST.QUICK.DRAW"
90 PRINT D$"CLOSE"
100 PRINT D$"EXEC START.TEST"
```

* Save as "START.TEXT"

```
-----
5 DIM X%(500),Y%(500)
10 D$ = CHR$ (4)
20 PRINT D$"PR#5"
30 PRINT "H1,S16,R"
40 PRINT D$"PR#0"
```

```
45 D% = 1:EP% = PEEK (752) + PEEK (753) * 256
46 N% = 0
47 HGR
50 CALL EP%
60 PRINT N%
70 N = N%:  FOR I = 0 TO N:  PRINT X%(I),Y%(I):  NEXT I
100 TEXT
```

* Save as "TEST.QUICK.DRAW"

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:514



Tech Info Library

High Speed Serial Interface Card: Qume Sprint 5 (11/96)

Revised: 11/20/96
Security: Everyone

High Speed Serial Interface Card: Qume Sprint 5 (11/96)

=====

Article Created: 21 September 1984
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article details the setup necessary for the High Speed Serial card and Qume Sprint 5 printer to function together.

DISCUSSION -----

Qume Setup

Form length	11 inches
Character spacing	10 or 12
Twintellect	Standard
Auto LF	On
Parity	Mark
Duplex	Test (For normal operation set to Full)
Baud rate	1200

The two switches inside the cover should be set to "MOD" and "HI".

High Speed Serial Card

Ensure the P8A PROM is installed in location B2 on the card and the switchs are set to the following.

1	2	3	4	5	6	7
Off	Off	On	Off	On	Off	On

Enter and run this BASIC program

```
10 PR# 1
20 PRINT CHR$ (27); CHR$ (26); CHR$ (14)
```

30 PR#0

The Sprint 5 printer will do the Self-Test and print "Self-Test OK", then it will print the entire character set until the Duplex switch is set to Full.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:515



Tech Info Library

Apple IIGS: Problem Starting Up From Slot 5, Disk II in Slot 6

Revised: 9/16/88
Security: Everyone

Apple IIGS: Problem Starting Up From Slot 5, Disk II in Slot 6

=====

This article last reviewed: 21 September 1987

If you try to start up from a 3.5" disk in a drive connected to slot 5, you may encounter a problem if you have a Disk II drive connected to slot 6. Unlike the UniDisk 5.25" drive, the Disk II drive can't deflect startup attempts if it contains no disk. Instead, it keeps trying to read from a disk that's not there. This is a problem when you want to start up from a 3.5" drive in slot 5.

There are three ways to start up from slot 5 if there's no disk in the Disk II in slot 6:

- Enter the Control Panel and set the startup slot to 5. (After turning on the computer, you have about a second to press Option-Control-Reset before the Disk II drive starts spinning.)

The second and third methods can be used after the Disk II starts spinning.

- Press Control-Reset, which put you in Applesoft BASIC (with the] prompt at the left of the screen). Then type PR#5 to start up from slot 5.
- Press Option-Control-Reset, set the startup slot to 5, exit the Control Panel, and press Control-Open Apple-Reset. This aborts the startup attempt from slot 6 and makes slot 5 the startup slot.

If you need the SCAN option to work properly, you need a Unidisk, Apple IIc External Drive, or an Apple 5.25" drive. These drives can be attached to the Apple IIGS either at the SmartPort connector in the back, with a UniDisk drive controller card, or in a daisy chain off an Apple 3.5" drive connected to the SmartPort. The firmware that drives them can abort a startup attempt if there is no disk in the drive.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:516



Tech Info Library

Apple IIGS: Getting the LaserWriter to Emulate an Epson Printer

Revised: 5/9/89
Security: Everyone

Apple IIGS: Getting the LaserWriter to Emulate an Epson Printer

=====

This article last reviewed: 11 September 1987

It is possible for the LaserWriter to emulate an Epson printer. The easiest way to do this is to modify the IWEM file on the Apple IIGS System disk. IWEM is simply a text file with PostScript commands that emulate the ImageWriter commands. If you are familiar with writing in PostScript, then you can change which control codes are recognized and what they do.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:520



Tech Info Library

High Speed Serial Interface: Handshake Modification (11/96)

Revised: 11/20/96
Security: Everyone

High Speed Serial Interface: Handshake Modification (11/96)

=====

Article Created: 21 September 84
Article Reviewed/Updated: 19 November 1996

TOPIC -----

Most printers cannot run faster than 300 baud with the High Speed Serial Interface card because it has no printer busy line. This modification uses the existing data input line to sense if the printer is busy and inhibit output if necessary. This modification will work with cassette, DOS 3.2, or DOS 3.3.

DISCUSSION -----

Before making any wiring changes, determine which wire your printer uses to indicate a printer busy or buffer full condition. Your printer's manual should contain this information; failing that, contact the manufacturer.

Examples

IDS 125/225	pin 4
HEATH H-14	pin 4
TI-810	pin 11
SPINTERM	pin 19
COMPRINT	pin 20

Wiring Change

The cable is the preferred place to do the wiring change, but it can also be done to the Serial Card or the printer. Disconnect the wire between pin 2 of the printer and pin 2 on the Serial Card. Then connect the wire with the printer busy signal to the wire for pin 2 on the Serial Card.

Software Patch

To make the software patch, determine which slot the interface will be placed in and type in the software patch below. The patch is customized for this slot number and will not work in a different configuration. The patch forces the computer to access the printer busy signal and wait if it is on.

For the slot number, enter the patch using the values from this table for the words in the <> brackets.

SLOT	1	2	3	4	5	6	7
DATA	90	A0	B0	C0	D0	E0	F0
CODE	C1	C2	C3	C4	C5	C6	C7

Enter the monitor with CALL -155 and type in the following:

```
3B0:A9 <SLOT>
:20 95 FE
:A9 00
:20 ED FD
:A9 C5
:85 36
:A9 03
:85 37
:4C EA 03
:2C <DATA> C0
:30 FB
:4C 07 <CODE>
:00 00 00
```

To check your typing, type "3B0L" and compare your listing to the one below for slot 1.

```
03B0- A9 01    LDA #$01
03B2- 20 95 FE JSR $FE95
03B5- A9 00    LDA #$00
03B7- 20 ED FD JSR $FDED
03BA- A9 C5    LDA #$C5
03BC- 85 36    STA $36
03BE- A9 03    LDA #$03
03C0- 85 37    STA $37
03C2- 4C EA 03 JMP $03EA
03C5- 2C 90 C0 BIT $C090
03C8- 30 FB    BMI $03C5
03CA- 4C 07 C1 JMP $C107
03CB- 00      BRK
03CC- 00      BRK
03CD- 00      BRK
```

Now return to BASIC with "3D0G".

To save the patch to disk, type "BSAVE PATCH, A\$3B0, L\$20".

The first time you use the printer you must load the patch into memory and

initialize the interface. From immediate mode, type:

```
BLOAD PATCH CALL 944.
```

This may also be done from within a program by entering:

```
"100 PRINT D$;"BLOAD PATCH": CALL 944", assuming D$ is a CTRL-D.
```

If you need to turn off the printer, type "PR#0", or in a program enter "200 PRINT D\$;"PR#0"

Then to reconnect the printer, all that is required is "CALL 954", or from a program "300 CALL 954".

If the printer does not print after the CALL 944, it is probably sending the opposite polarity busy signal. The patch can be changed to recognize the opposite polarity signal with by using "POKE 968,16".

If this doesn't work, have the printer checked.

The modification allows the speed, column width, and other variables to be changed with the POKES listed in the card manual.

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:521



Tech Info Library

Apple IIGS: Entering the Control Panel

Revised: 9/29/87
Security: Everyone

Apple IIGS: Entering the Control Panel

=====

This article last reviewed: 21 September 1987

On page 13, the Apple IIGS Owner's Guide (Apple Computer Inc., 1986, part no. 030-1292-A) says that holding down the Option key while turning on power to the computer takes you to the Control Panel. This doesn't always work.

Here are two other ways to access the Control Panel:

- Press Option-Control-Reset.
- Choose Quit from the Finder's File menu, then hold down the Option key while restarting the computer from the Start Next Program display.

Tech Info Library Article Number:522



Tech Info Library

PostScript: How to Print an Image to a Disk

Revised: 9/17/87
Security: Everyone

PostScript: How to Print an Image to a Disk

=====

This article last reviewed: 4 September 1987

How to print a PostScript image "to disk" rather than to a printer:

1. Use the Chooser to select a LaserWriter.
2. Choose the Print... command in the File menu.
3. Click OK.
4. Hold down (don't release them yet) the Command key, and either
 - the K key (to dump a PostScript image with LaserPrep), or
 - the F key (to dump PostScript without LaserPrep).Hold the keys down until you see the Print Status dialog box.

The Print Status dialog box will say something like "Creating PostScript File." When the program is through printing, you will find a text file in your System folder called "PostScriptn," where n is a number.

Tech Info Library Article Number:523



Tech Info Library

Apple IIGS: RAMDisk Hides Second 3.5 Drive from Pascal 1.3

Revised: 5/25/89
Security: Everyone

Apple IIGS: RAMDisk Hides Second 3.5" Drive from Pascal 1.3

=====

This article last reviewed: 3 September 1987

When using Pascal 1.3 on an Apple IIGS with two 3.5" drives and a RAMDisk active, the second 3.5" drive can't be accessed. Here's why: using the RAMDisk causes the Apple IIGS SmartPort firmware to move the second drive to slot 2, drive 1. Because Pascal doesn't use this slot as a storage device, you can't access it there.

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Tech Info Library Article Number:524



Tech Info Library

Macintosh II: Video Overview (1 of 3)

Revised: 7/8/92
Security: Everyone

Macintosh II: Video Overview (1 of 3)

=====

Article Created: 29 September 1989
Article Last Reviewed: 1 July 1992
Article Last Updated:

TOPIC -----

This is the first part of a three-part article describing how the Macintosh II produces video.

DISCUSSION -----

HOW DOES THE MACINTOSH II PRODUCE VIDEO?

Digitized video is a rectangular array of pixels mapped into RAM. This is called bit mapping and it's used by both Macintosh and Apple II computers. At one bit per pixel for black and white images, bit mapping uses up lots of memory. Color images are even more memory-intensive, because each color pixel is defined by a group of bits. A Macintosh II display contains 307,200 pixels (640 x 480), requiring a minimum of 37.5 kilobytes of memory for a monochrome display. A color Macintosh II uses up to eight bits per pixel, and may require up to 300 kilobytes.

The Macintosh II's video card generation circuitry works independently of video memory updates from changing graphics. The signal that controls the speed of the image display process is called a pixel clock, which is produced by an oscillator on the card. Once a graphic image has been stored, it continues to be displayed at the speed of the vertical refresh scan rate: 66.67Hz on the Macintosh II video card. A full screen of video information (307,200 pixels) is displayed 66.67 times per second. This means it takes only 15ms to display an entire screen. A horizontal line (480 pixels) takes only 1/35,000 of a second or .029ms (35KHz scan rate).

The Macintosh II video signal is a linear electrical stream converted from the pixel information stored in the Macintosh II Video Card's RAM. This RAM is called a frame buffer. These bits represent the collective

dots that make up the picture, hence the term bit-mapped graphics. A single bit can represent a single dot of the picture. For example, a bit value of 1 might signify a white dot, while a 0 represents a black dot. More than one bit is needed to represent the dots of a color picture -- a color dot might use eight bits to represent a single dot of a video picture.

Graphics on a Macintosh II are organized into consecutive bits (1, 2, 4, or 8) used to represent pixels. This is a chunky format, also known as pixel mapping. Other possible formats include adding different planes of bits. Each plane is a representation of the screen with a one-to-one correlation of bit to pixel. Adding the bit planes allows a pixel to have an increased value to represent variations in color (planar format). A combination of the two techniques, known as chunky planar, can also be used. An example of such a combination would be to use three separate bit planes or video maps, each with values for red, green, and blue intensities to be combined into the color value for each pixel. The Macintosh II Video Card uses an eight-bit look-up table and chunky format. In binary, a string of eight bits can represent 256 different values: 0 through 255. This allows 256 intensities of red, green, and blue to be defined for each pixel. The 24-bit combinations of 8 bit red, 8 bit green, and 8 bit blue available on the Macintosh II video card generate 16.8 million possible colors (2 to the 24th power). Of the more than 16 million colors, 256 are selected and stored in a look-up table. Colors are then requested by software, and the closest matching color within the table of 256 is selected and stored in the frame buffer for conversion into a video signal of a particular pixel within the picture.

CREATING A VIDEO SIGNAL

To create a video signal recognizable by an analog RGB monitor, each of the 'dots' is converted by the Video Card into a time period of electrical strength by a device known as a digital to analog converter (DAC). The analog signal, or video signal, is a series of picture dots converted into time periods of varying electrical amplitude. A monitor or television is able to convert the signals into an exposure intensity of its phosphor dots known as pixels by a constantly moving electron beam. The beam is controlled by deflection, or sweep, circuits, which produce either electrical or magnetic fields that deflect the beam to hit the screen phosphors and cause them to give off electrons and thus glow. The persistence of the phosphor pixels after exposure to an electron beam creates the glowing dots of the video screen. If the persistence of the phosphor were very short, the video picture might show only a single dot moving across the screen as the electron beam sweeps down the screen, one horizontal line at a time. If the phosphor decay were not equal to the timing of the beam, a flicker may appear where the phosphors have decayed to black, or a ghosting image when the decay rate is longer than the scan. In the case of a color signal, instead of having one beam to turn on pixels, three beams are used. Each picture dot is made up of three pixels: red, green, and blue. Each of the three beams fires only on a color pixel assigned to it. The blocking of the separate beams is done through a shadow mask or aperture grill. This is a metal mask made up of wires on the Apple High Resolution Color Monitor. The spacing between

openings in the shadow mask is known as the grill pitch. The size of the grill pitch enhances the sharpness of the image. When the green beam fires, it is only on the green phosphor dots. The same situation is repeated for the colors red and blue. The strength of the beam is controlled by the signal magnitude received while firing on a pixel and produces the intensity of the color. A color dot might contain all three pixel colors at varying intensities.

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Tech Info Library Article Number:525



Tech Info Library

Apple Writer 2.1: Revision Utility

Revised: 6/1/85
Security: Everyone

Apple Writer 2.1: Revision Utility

=====

There is a patch diskette that fixes the problem Apple Writer 2.0 has with Parallel Cards. With the patch, Apple Writer can work under ProDOS with interface cards that worked with Apple Writer's DOS versions. Although Apple cards will still function normally from patched software, please label this disk.

The patch program is self-prompting. It asks for three or four disk swaps as it updates the Apple Writer disk with prodos 1.1.1 and updates the Apple Writer software with fixes. The fix changes Apple Writer's output routines so that commands go out with the the high bit set, allowing more interface cards to recognize commands.

ProDOS-based software used with parallel cards will probably continue to have this command recognition problem. Apple is telling hardware and software vendors about it and advising that future software and firmware updates take steps to alleviate the problem.

Apple Technical Communications

Tech Info Library Article Number:528



Tech Info Library

High Speed Serial Interface: Manual Errata (11/96)

Revised: 11/21/96
Security: Everyone

High Speed Serial Interface: Manual Errata (11/96)

Article Created: 21 September 1984
Article Reviewed/Updated: 19 November 1996

TOPIC -----

Listed below are corrections to the High Speed Serial Interface manual
(030-0012-00).

DISCUSSION -----

Corrections
=====

Page 16

The information for switch 4 is reversed, it should read:

ON = delay enabled
OFF = delay disabled

Page 32

Two labels on the schematic diagram are wrong:

XMIT		XMIT
-----O B	should be	-----O C
WIRE		WIRE
TO		TO
PIN 3		PIN 3

RECV		RECV
-----O C	should be	-----O B
WIRE		WIRE
TO		TO

PIN 2

PIN 2

P8A PROM

The P8A PROM interferes with the operation monitor routines that use \$3C. The P8A uses this location as a temporary storage space and does not restore it.

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:529



Tech Info Library

Apple IIGS: A Descriptive List of Interrupts (2/95)

Revised: 2/3/95
Security: Everyone

Apple IIGS: A Descriptive List of Interrupts (2/95)

Article Created: 11 September 1987
Article Reviewed/Updated: 3 February 1995

TOPIC -----

This article describes the list of interrupts on an Apple IIGS.

DISCUSSION -----

To take advantage of the power of the Apple IIGS, its designers installed a new set of interrupts. An interrupt is a hardware signal that tells the computer to stop what it is doing and devote its attention to a more important task. Print spooling and mouse handling are examples of interrupts: they don't take up all the time available to the system, but they should be taken care of promptly.

When an interrupt occurs, the microprocessor jumps to an interrupt- handling routine through a fixed vector in the computer's memory. This routine has to put the state of the machine into a standard configuration, determine the type of interrupt that occurred, and then (if appropriate) command a jump to the user's interrupt-handling routine.

Many types of interrupts are handled automatically for the user. For instance, the serial ports and keyboard can generate interrupts that make it easy to use data buffering. Routines in ROM handle the new user interface, detecting mouse interrupts and moving the mouse around the screen.

Here are the Apple IIGS interrupts and their causes, the actions during the interrupt, and the devices causing the interrupt:

RESET: Caused by startup or RESET keypress. Forces emulation mode. The interrupt is processed by firmware, then vectors to user link. Cold start attempts to boot a disk. Warm start vectors to user links; this link normally points to a BASIC cold start routine. Device: Power switch or RESET key.

NMI: Non-maskable interrupt. Vectors to user link. No NMI interrupts are used by the Monitor.

ABORT: Vectors to user link. If none, then vectors to break handler that displays the address and opcode of the code being executed at the time the abort pin on the 65816 was being pulled low. The ABORT interrupt can be activated by hardware installed in the memory expansion slot only.

COP: Vectors to COP manager vector in RAM, which points to firmware. If the COP manager is not installed, the firmware displays the COP message. This occurs via a software COP instruction only.

BRK: In emulation mode, the interrupt vectors to the interrupt (IRQ) handler and then to the break handler. In native mode, it vectors directly to a break handler. This occurs via a software BRK instruction only.

IRQ: Interrupt request. The remainder of this list describes the IRQ interrupts:

IRQ - AppleTalk: This interrupt has the highest priority because its code is very timing-intensive; data can be lost if the SCC is not read within 104.167 microseconds (230K bd) after an AppleTalk SCC interrupt occurs.

IRQ - Serial Ports: If in interrupt mode, data will be lost if the SCC is not read within 1.094 ms (19.2K bd) after the interrupt occurs.

IRQ - Scan Line: Interrupts, at the most, every 63.694 ms. The interrupt is caused by the video counters counting down to zero, which occurs when the beam reaches the right side of the scan line.

IRQ - Ensoniq Chip: Interrupts when the waveform buffer has been depleted. Because there are 32 oscillators in the chip, there are 32 possible interrupts from the chip.

IRQ - VBL: Interrupts every 16.67 ms. Interrupt occurs when the beam is retracing from the bottom-right corner to the upper-left corner of the screen.

IRQ - Mouse: Interrupts only if the interrupt option is chosen. The interrupt options are movement, button press, or VBL.

IRQ - Quarter-second Timer: Interrupts every 0.2667 seconds. Used by AppleTalk to trigger event processing.

IRQ - Keyboard: Interrupts if a key is pressed.

IRQ - SRQ: If an Apple DeskTop Bus device requires servicing, an SRQ is issued. Control is passed to the SRQ Manager.

IRQ - Desk Accessory Manager: This is called at a simultaneous press of the keys OPEN-APPLE, CTRL, and ESCAPE.

IRQ - Flush: If OPEN-APPLE/CTRL/DELETE is pressed, the keyboard micro clears its internal type-ahead buffer, issues a Flush command to

external keyboards, and causes an interrupt.

IRQ - Micro-abort: If the keyboard micro detects a fatal error and the fatal-error interrupt occurs, the system is interrupted.

IRQ - Clock-chip: Interrupts every second.

IRQ - EXTINT: Interrupt generated by a special device connected to the VGC.

IRQ - External cards: Interrupt as defined by the card manufacturer.

Article Change History:

03 Feb 1995 - Corrected reference to AppleTalk and updated format.

Support Information Services

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Tech Info Library Article Number:530



Tech Info Library

IEEE-488 Interface Card: Time-Saving Hints (11/96)

Revised: 11/18/96
Security: Everyone

IEEE-488 Interface Card: Time-Saving Hints (11/96)

Article Created: 21 September 1984
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Keep the following hints in mind when using the Apple IEEE-488 Interface:

DISCUSSION -----

1. Use the IEEE card only from within an Applesoft program. If you try to use it in command mode, a SYNTAX ERROR will result, since the Applesoft prompt "]" will be sent to the interface. If you do not reset the I/O at the end of your program, a "CMD ERR" will result.
2. Issue the command "SC1" as one of the first commands in any new program. This command will cause the IEEE commands to be echoed to the screen for easier debugging. When the device works properly, the "SC1" can then be removed.
3. Ascertain whether the IEEE device you're using requires the REMOTE ENABLE command before it will accept anything you send it. (Many IEEE devices do require this command.) If the device requires the command and does not receive it, the device will not be enabled: it will handshake properly but won't recognize its address on the bus, and will therefore return a BUS ERROR the next time it's accessed. In some cases, the "RA" command can be used to turn on all remote devices on the bus; likewise, the "RM address list" command can sometimes be used to enable selected devices.
4. Understand the convention for listener and talker addresses. All devices on the bus have a device number in the range of \$00 to \$1E. If you want the device to act as a listener, use the address range \$20 to \$3E--that is, add \$20 to the device number. If you want the device to act as a talker, use \$40 to \$5E--that is, add \$40 to the device number. For example: If an HP 3438A has a device number of 3 and if you want it to be a listener you must use address \$23. From the keyboard, \$23 is a , so you could use (for example) PRINT "TG ". If the device is to be a talker, you must use address

\$43, which is an upper case C from the keyboard; an appropriate command to use would be PRINT "RDC".

Article Change History:

14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:531



Tech Info Library

Integer BASIC: The X Register in Machine language routines

Revised: 11/20/84
Security: Everyone

Integer BASIC: The X Register in Machine language routines

=====

Integer BASIC keeps track of where it is in the lines of code by using the X register. Machine language routines that can be called from a multi-statement line should save and restore the X register.

Apple Tech Notes

Tech Info Library Article Number:532



Tech Info Library

Integer BASIC: How to PEEK and POKE location 32768

Revised: 11/20/84
Security: Everyone

Integer BASIC: How to PEEK and POKE location 32768

=====

Integer BASIC numbers are limited to the range -32767 to 32767. You can still access location 32768 by using -32767-1.

```
PRINT PEEK (-32767-1)
POKE -32767-1,0
```

Apple Tech Notes

Tech Info Library Article Number:533



Tech Info Library

Integer BASIC Firmware Card: Switch Options (2/97)

Revised: 2/12/97
Security: Everyone

Integer BASIC Firmware Card: Switch Options (2/97)

Integer BASIC Firmware Card: Switch Options (2/97)

Article Created: 21 September 1984
Article Reviewed/Updated: 12 February 1997

TOPIC -----

Listed below are the two options the user may select when using the Integer BASIC firmware card.

DISCUSSION -----

The Integer BASIC firmware card was designed to supply Integer BASIC to Apple II+ owners. Both hardware and software can be used to supply Integer BASIC to the Apple II+.

Hardware

The position of the switch on the rear of the card is used immediately after a system reset to force the selection of one of two banks of ROMs: the firmware card or the motherboard. If the switch is up then the system will default to Integer BASIC, otherwise the system will default to Applesoft.

Software

By accessing address \$C080, can select Integer BASIC, or, by accessing address \$C081, Applesoft.

NOTE: For systems with Auto Start ROM, every time DOS gets control immediately after a reset, DOS forces a load of the version of BASIC DOS last used, regardless of the position of the switch.

Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-97, Apple Computer, Inc.

Tech Info Library Article Number:534



Tech Info Library

Apple IIGS: ProDOS/16 Version 2

Revised: 9/17/87
Security: Everyone

Apple IIGS: ProDOS/16 Version 2

=====

This article last reviewed: 4 September 1987

To support the new fast mode of the Apple IIGS, ProDOS/16 version 2 handles expanded Apple IIGS capabilities, features, and operating modes:

- ProDOS/16 is designed to accept system calls from applications running in either 8-bit or 16-bit mode (the 65816 micro-processor can run in either).
- ProDOS/16 can accept system calls from anywhere in the full 16MB range of memory in the Apple IIGS, and those calls can manipulate data anywhere in memory.
- ProDOS/16 relies on a sophisticated memory management system.
- System calls must be made to ProDOS/16 in order to access system global variables such as date and time, system level, and I/O buffer addresses. ProDOS/16 does not support a global variables page.

There are major differences from ProDOS 1.1.1. ProDOS/16 not strictly upward-compatible from previous ProDOS versions. Programs written to function under ProDOS on an Apple II will not run on the IIGS under ProDOS/16 without some modifications.

ProDOS/16 functions, however, are upward-compatible:

- There is a functionally equivalent ProDOS/16 call for almost every ProDOS system call, usually with the same name.
- Calls are made in nearly the same way as with earlier ProDOS versions.
- For passing values to functions, the parameter blocks have a structure similar to (but not exactly like) earlier ProDOS.
- ProDOS/16, using the same file system as earlier ProDOS, can read from and write to any disk volume produced by ProDOS, using the same file and volume

structure, both disk resident and logical.

On the Apple IIGS, ProDOS/8 and ProDOS/16 are designed to the run in tandem, as a package. Whereas ProDOS/16 takes advantage of all the Apple IIGS's hardware and capabilities, ProDOS/8 is provided to maintain compatibility with ProDOS v1.1.1. In normal situations, you need not be concerned with which operating system is functioning; if you run an Apple IIGS application, ProDOS/16 is loaded automatically.

While most ProDOS/8 calls have functionally exact equivalents in ProDOS/16, some ProDOS/8 calls do not appear in ProDOS/16 because they are unnecessary:

- RENAME: The ProDOS/16 call CHANGE_PATH performs the same function.
- GET_TIME: Under ProDOS/16, the time and date are obtained through a call to the Miscellaneous Tools.
- SET_BUF: Under ProDOS/16, the memory manager, rather than the application, allocates file I/O buffers.
- GET_BUF: This call is unnecessary under ProDOS/16 because the OPEN call returns a handle to the file's I/O buffer.
- ONLINE: This call is replaced in ProDOS/16 by the VOLUME call.

Under ProDOS/16, you can:

- make ProDOS/16 system calls from anywhere in memory, using ProDOS/16 parameter blocks located anywhere in memory.
- make I/O data transfers to or from anywhere in memory.
- allow limited use of named devices. With ProDOS/8, you must refer to a device by its volume name or its slot and drive number.
- support up to eight system prefixes (ProDOS/8 supports only one).
- have an unlimited number of open files (ProDOS/8 allows only 8).
- have any number of online devices (ProDOS/8 allows a maximum of 14).
- support of at least 3 separate device protocols (ProDOS/8 supports only one block device protocol).
- extensively support named devices.
- use a volume mounting function, not in ProDOS/8, which prompts the user to mount a needed volume.



Tech Info Library

HyperCard 1.0 and 1.0.1: Intermittent Laser Font Problem

Revised: 5/2/89
Security: Everyone

HyperCard 1.0 and 1.0.1: Intermittent Laser Font Problem

=====

This article last reviewed: 10 September 1987

When HyperCard documents are printed to a LaserWriter Plus, certain fields that contain LaserWriter fonts (Helvetica and Times for example) sometimes print as though they are not LaserWriter fonts. When Font Substitution is turned on, some Helvetica fields print in Helvetica, some are bit-mapped. With Font Substitution turned off, all Helvetica and Times are bit-mapped.

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Tech Info Library Article Number:536



Tech Info Library

Using the Old Monitor with the Apple Language Card

Revised: 11/20/84
Security: Everyone

Using the Old Monitor with the Apple Language Card

=====

This applies to the Apple II and Apple II+.

The Apple Language Card gives you all the advantages of the Auto Start ROM whether you have an Apple II or Apple II+. This is because there is an Auto Start ROM on the Language Card that is used instead of the F8 ROM on the main board. There is no way to disable this ROM if you want to use the old monitor in an Apple II. However, there are still two ways to use the old monitor with the Language Card.

1. Replace the Auto Start ROM on the Language Card with an old monitor ROM. In this case, you lose the Auto Start ROM's features when you are in the BASIC that is resident on the main board. The BASIC that is loaded into the Language Card will still be working out of an image of the Auto Start ROM that was loaded with the BASIC. For example, Applesoft would use the old monitor and Integer BASIC would use the Auto start ROM.

2. This method will give you the old monitor while in the BASIC that's in the Language Card but the BASIC on the main board will still access the Auto Start ROM. All you need do is load an image of the old monitor into the Language Card yourself. This is a two step process.

The hard part is to get an image of the old monitor into a DOS binary file. First, boot DOS 3.3 on an Apple II without a Language Card. Then type:

```
INT
BSAVE OLDMON, A$F800, L$800
```

Now all you need is a program or subroutine to load the monitor into the card. The following program fragment must be in Integer BASIC if you have an Apple II or Applesoft if you have an Apple II+. It can be added to the HELLO or APPLESOFT program on the DOS 3.3 Master diskette.

```
10 D$ = "": REM CONTROL D
20 A = PEEK ( -16255): A = PEEK ( -16255)
30 PRINT D$;"BLOAD OLDMON"
40 A = PEEK ( -16254)
```

The old monitor will stay there until you re-boot or reload the Language card.

Apple Tech Notes

Tech Info Library Article Number:537



Tech Info Library

Lisa Migration Package: Where to Get It

Revised: 9/17/87
Security: Everyone

Lisa Migration Package: Where to Get It

=====

This article last reviewed: 10 September 1987

This product, which allows users to "migrate" their data from Lisa to Macintosh, is no longer available from Apple. It is available from:

Sun Remarketing
3663 North Hwy. 91
Smithsfield, UT 84335
(801) 752-7631
(800) 821-3221

Tech Info Library Article Number:538



Tech Info Library

Language Card: Loading Integer BASIC (2/97)

Revised: 2/12/97
Security: Everyone

Language Card: Loading Integer BASIC (2/97)

=====

Language Card: Loading Integer BASIC (2/97)

Article Created: 21 September 1984
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article describes how Integer BASIC is loaded into the Language card.

DISCUSSION -----

When you boot an Apple II with the BASICS diskette or the DOS 3.3 System Master Diskette, Integer BASIC and the Programmer's Aid #1 are loaded into the Language Card. The code between Integer BASIC and the Programmer's Aid #1 (\$D800 - \$DFFF) is loaded with a completely useless part of Applesoft.

This applies to the Apple II and Apple II+.

Article Change History:
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:539



Tech Info Library

LOGO: Silentype printer

Revised: 11/20/84
Security: Everyone

LOGO: Silentype printer

=====

The Silentype dumps the High-Res screen whenever it is sent a CTRL-Q. Once the Silentype has been selected with .PRINTER, it is possible to change its parameters by using .DEPOSIT. Changing the direction parameter from bidirectional to unidirectional will result in significantly better graphics printing. Parameter changes stay in effect until a power cycle or Silentype cold start, so changes made to dump the graphics should be undone after the dump.

A list of parameters with their addresses and possible values appears on page 45 of the Silentype manual. The decimal addresses in the manual are expressed as negative numbers. They can be converted for use with LOGO by adding 65,536 (two to the sixteenth power).

Here is a no-frills Dump with unidirectional printing:

```
TO DUMP :ST SLOT
TYPE CHAR 17
END
```

CHAR 17 is CTRL-Q. :ST SLOT should be set to the number of the slot that the Silentype interface is plugged into.

To dump a negative copy of the screen, with black on the paper where there was white on the screen, change the appropriate parameter:

```
TO NEG DUMP :ST SLOT
TYPE CHAR 17
END
```

Apple Tech Notes

Tech Info Library Article Number:540



Tech Info Library

LOGO: Reading the graphics screen

Revised: 11/20/84
Security: Everyone

LOGO: Reading the graphics screen

=====

The following LOGO code allows the user to determine the setting of the bit of the graphics screen directly under the turtle (HITP), or at any point (DOTP). This code may not give the expected results for colors other than black and white. Depending on HEADING, HITP may not always see the turtle if it is shown.

```
TO HITP
LOCAL "ADDR
MAKE "ADDR (.EXAMINE 916) + (.EXAMINE 127) + 256 * .EXAMINE 128
OP BITP .EXAMINE 917 .EXAMINE :ADDR
END
```

```
TO RESTORE
SETPOS :OLDPOS
SETPEN :OLDPEN
IF :OLDSHOWNP [ST]
END
```

```
TO BITP :BITSIG :BYTE
IF NOT :BITSIG < 128 [MAKE "BITSIG :BITSIG -128]
OP 1 = INT ((REMAINDER :BYTE 2 * :BITSIG) / :BITSIG)
END
```

```
TO DUMP :POSLIST
LOCAL "OLDSHOWNP
MAKE "OLDSHOWNP SHOWNP
LOCAL "OLDPOS
MAKE "OLDPOS POS
LOCAL "OLDPEN
MAKE "OLDPEN PEN
PU
HT
SETPOS :POSLIST
IF HITP [RESTORE OP "TRUE]
RESTORE
OP "FALSE
```

END

Apple Tech Notes

Tech Info Library Article Number:541



Tech Info Library

LOGO: Saving graphics to disk

Revised: 11/20/84
Security: Everyone

LOGO: Saving graphics to disk

=====

The High-Res pictures can be saved to disk, at the expense of LOGO and the user's workspace. A DOS 3.3 slave diskette should be placed in the disk drive. (Refer to the DOS 3.3 manual for information on slave vs. master diskettes.) Assuming that the disk interface card is in slot 6, type .PRINTER 6 to LOGO; this command boots the diskette, trashes LOGO and the user's workspace, but doesn't damage the High-Res screen buffer.

Now that the Apple is running BASIC with DOS 3.3 in its memory, it is possible to save the High-Res screen buffer as a binary file:

```
BSAVE <filename>, A$2000, L$2000
```

To view the picture, type:

```
HGR  
BLOAD <filename>
```

Apple Tech Notes

Tech Info Library Article Number:542



Tech Info Library

Applesoft Firmware Card: Options

Revised: 11/20/84
Security: Everyone

Applesoft Firmware Card: Options

=====

The Applesoft firmware card was designed to supply floating point BASIC to Apple II owners. There are two options on the card that the user may select.

1. Most obviously, the position of the switch on the rear of the card is used immediately after a system reset to force the selection of one of two banks of ROMs: the firmware card or the motherboard. If the switch is up then the system will default to Applesoft, otherwise the system will default to Integer BASIC.

2. Software, by accessing address \$C080, can select Integer BASIC, or, by accessing address \$C081, Applesoft.

Unfortunately for systems with Auto Start ROM, every time DOS gets control immediately after a reset, DOS forces a load of the version of BASIC DOS last used, regardless of the position of the switch.

Apple Tech Notes

Tech Info Library Article Number:544



Tech Info Library

LaserWriter: Suppressing Control Characters

Revised: 3/4/90
Security: Everyone

LaserWriter: Suppressing Control Characters

=====

This article last reviewed: 21 September 1987

A customer who is spooling PostScript files from a VAX to a LaserWriter wants to know if it's possible to suppress the LaserWriter's EOT acknowledgment or timeout messages.

There is no way to suppress the LaserWriter's EOT acknowledgment. In the PostScript Language Reference Manual, pages 278-279 (copyright 1985, Adobe Systems, Inc., Addison-Wesley Publishing Co., ISBN 0-201-10174-2): "Certain character codes serve special purposes, such as control-D to mark end-of-file. The server performs a job by reading and executing a PostScript program from the serial channel. When it reads the end-of-file character and the program terminates, the server sends an end-of-file character, ends the job, and starts a new one."

The LaserWriter's timeout and job flush message are generated in response to the CONTROL-G from the spooler. The LaserWriter's PostScript command interpreter does not understand the CONTROL-G and generates an error. The spooler does not know the printer is in a timeout/flush mode and continues to send data to the printer. Error messages from the LaserWriter are generated spontaneously and are directed to the standard output file and cannot be suppressed.

Note: The customer may want to consider using DTR for the handshake, eliminating the need for two-way communications with the LaserWriter. This way, the spooler can neither confuse nor be confused with extra control characters. To use DTR on the LaserWriter, the ROMs in the LaserWriter must be revision 2.0.

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Tech Info Library Article Number:545



Tech Info Library

DOS Tool Kit: Animatrix grid cursor

Revised: 11/20/84
Security: Everyone

DOS Tool Kit: Animatrix grid cursor

=====

Animatrix has no provision for controlling the grid cursor from the keyboard;
you have to use paddles.

Apple Tech Notes

Tech Info Library Article Number:547



Tech Info Library

DOS Tool Kit: HRCG -- Switching it on and off

Revised: 11/20/84
Security: Everyone

DOS Tool Kit: HRCG -- Switching it on and off

=====

The High-Res Character Generator can be turned on and off under software control. The following two subroutines will switch back and forth. The software was written assuming the variable "ADRS" is assigned as it is in the subroutine starting at line 2000 of MAXWELL on the Tool Kit diskette.

```
3000 REM          TURN OFF HRCG
3010 PRINT CHR$(4);"PR#0"
3020 PRINT CHR$(4);"IN#0"
3030 HOME
3040 TEXT
3050 RETURN
4000 REM          TURN ON HRCG
4010 CALL ADRS + 3
4020 RETURN
```

Beware: the HRCG overwrites the text screen when outputting to the High-Res screen. It will destroy any information there. You will have to rewrite the text screen after using HRCG.

Apple Tech Notes

Tech Info Library Article Number:548



Tech Info Library

Using Dow Jones Portfolio Evaluator 1.0 with a Super Serial card

Revised: 5/25/89
Security: Everyone

Using Dow Jones Portfolio Evaluator 1.0 with a Super Serial card

=====

Dow Jones Portfolio Evaluator was designed to work with the Communications card; however, it also works fine with the Super Serial card after you make the change listed below in the DJPE program. The Communications and Super Serial card differ in these three ways:

- * The location of the status and data registers are different.
- * The status register bit arrangement is different
- * The Super Serial card is switch dependent, while the Communications Card must be programmed entirely in software.

Place your Super Serial in slot 2, and then set its switches to:

switch:	SW1		switch	SW2									
1	2	3	4	5	6	7	1	2	3	4	5	6	7
1	0	0	1	0	1	1	1	0	1	1	0	0	0

Note: These settings are not the same as for Dow Jones News and Quotes.

Next, modify the software as shown below:

1. Load Login
2. Unlock Login, then make these changes.

```
5710 ST=49321: rem addr of SS status
5720 DA = ST - 1: rem addr of SS data
5730 print : print chr$(4)"pr#2": print chr$(24)
5740 print chr$(4)"pr#0
5780 for I = 1 to len (I$):wait ST, 16: poke DA,
      asc(mid$(I$, I, 1)): next I
5840 I = peek (772): if I = 8 then I = 1 : rem err flag
```

3. Save Login

4. Load Fetch

5. Unlock Fetch, then make these changes:

```
6910 wait ST, 16: poke DA, 17: rem Xon
7120 if IN = 1 then wait ST,16 : poke DA,19 : run
7200 if 5 * int (S / 5) <> S then wait ST, 16:
```

```
        poke DA, 17: goto 7360
7300 wait ST,16: poke DA,17: rem Xon
7900 ST=49321: rem addr of SS status
7910 DA = ST - 1: rem addr of SS data
7920 print : print chr$(4)"pr#2": print chr$(24)
7930 print chr$(4)"pr#0
7970 for I = 1 to len (I$): wait ST, 16: poke DA,
      asc ( mid$ (I$,I,1)): next I
8030 I = peek (772): if I = 8 then I = 1: rem err flag
```

6. Save Fetch

```
7. Bload Com22.obj
8. Unlock Com22.obj
9. Call -151
10. Enter 341:8 N 343:A9 N 34C:A8
11. Bsave Com22.obj,A$300,L$B1
12. Enter "fp" to enter Applesoft.
```

Apple Tech Notes

Tech Info Library Article Number:549



Tech Info Library

AGE Logic, Formerly Pacer Software, Inc. (12/95)

Revised: 12/13/95
Security: Everyone

AGE Logic, Formerly Pacer Software, Inc. (12/95)

=====

Article Created: 18 September 1987
Article Reviewed/Updated: 13 December 1995

AGE Logic, Formerly Pacer Software, Inc.

12651 High Bluff Drive
San Diego, CA 92130

619-755-1000

619-755-3998 FAX

WWW: <http://www.age.com>

Company Profile:
Software, specializing in Macintosh-to-minicomputer data communication software.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:550



Tech Info Library

DOS 3.3: Dumping Text Files

Revised: 11/20/84
Security: Everyone

DOS 3.3: Dumping Text Files

=====

This program moves text files, including all leading spaces and characters strings greater than 239, to any slot you desire.

```
100 KB = -16384: KBS = -16368
110 D$ = chr$(4)
120 home
130 input "text file name? ";file$
140 print
150 input "destination slot? ";SL
160 onerr goto 500
170 print D$;"open ";file$
180 print D$;"read ";file$
190 get A$
200 pr# SL
210 print A$;
220 if peek (KB) <> 155 then 190
230 poke KBS,0
500 pr# 0
510 call 1002
520 print
530 print D$;"close ";file$
540 end
```

To stop the program before the end of the file is reached, press ESCAPE.

Apple Tech Notes

Tech Info Library Article Number:551



Tech Info Library

Peripheral Land, Inc.

Revised: 4/3/97
Security: Everyone

Peripheral Land, Inc.

=====

Article Created: 18 September 1987
Article Reviewed/Updated: 15 July 1993

Peripheral Land, Inc

47421 Bayside Parkway
Fremont, CA 94538

800-288-8754

510-657-2211

510-683-9713 Fax

Company Profile:
Hardware, specializing in SCSI storage devices for the Macintosh.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:552



Tech Info Library

DOS 3.3: Commands ignored

Revised: 3/10/86
Security: Everyone

DOS 3.3: Commands ignored

=====

The CTRL-D of a DOS command must be the first character on an output line and must immediately follow a carriage return. If it doesn't, the command is printed on the screen or to the printer, but is ignored by DOS.

GET or PRINT statements that end with one of the following often cause this problem:

- * ";" semi-colon
- * "," comma
- * tab
- * space

A PRINT statement on the line above a DOS command generates the necessary carriage return; alternatively, define D\$ as a carriage return and a CTRL-D:

```
10 D$ = chr$ (13) + chr$ (4)
```

DOS commands are also ignored when improperly used. IN# and PR# DOS commands, for example, must be sent out as:

```
10 print chr$(4);"IN#0"  
20 print chr$(4);"PR#0"
```

For further explanation, refer to pages 100 through 103 of The DOS Manual or page 25 of The DOS Programmer's Manual.

Apple Tech Notes

Tech Info Library Article Number:555



Tech Info Library

Macintosh II Video Card: Features (2/95)

Revised: 2/14/95
Security: Everyone

Macintosh II Video Card: Features (2/95)

=====

Article Created: 18 September 1987
Article Reviewed/Updated: 14 February 1995

TOPIC -----

This article describes the original Macintosh video card.

DISCUSSION -----

The Macintosh II video card provide scolor capability for simultaneous display of up to 256 colors on the Apple High Resolution Color Monitor. With the card's three 8 bit digital to analog converters (RGB) there are more than 16 million possible colors to choose from.

Color Modes

- One bit per pixel for 2 color output
- Two bits per pixel for 4 colors
- Four bits per pixel for 16 colors
- Optional Eight bits per pixel for 256 colors

Video Signals

- RS343 Analog RGB for Apple High Resolution Color Monitor
- RS343 Analog Green signal for Apple High Resolution Monochrome Monitor
- RS170 Composite interlaced video for analog RGB monitors, film recorders and projection TV's
- RS170 Analog Green signal for composite interlaced video with sync for analog monochrome monitors, film recorders, and projection TV's

Hardware Features

- Multiple video card operation for larger screen area For example, 2 cards handle 2 video screens for viewing different or large format documents.

- Standard VIDEO RAM configuration of 256K for 1, 2, and 4 bit color modes 8 chips of 150NS 64x4 KBit Video RAM.

- Upgraded VIDEO RAM configuration of 512K for 8 bit color mode 8 additional chips of 150NS 64x4 Kbit Video RAM

*** Video RAM contains a shift register for the copying of rows of bits from the RAM array. This allows reads and writes to the RAM array and the shift register simultaneously. This is not a feature of standard or common RAM and is necessary to the workings of the video card.

- Two Oscillators provide timing signals of:
30.24MHz for Macintosh II monitors (RS343)
12.27MHz for RS170 monitors (Composite Monochrome interlaced video)

- Slot independent operation

- Triple 8 bit digital to analog converters for 2 to the 24th colors equalling 16.8 million.

Article Change History:

14 Feb 1995 - Reviewed for technical accuracy, corrected spelling of sync.

Support Information Services

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Tech Info Library Article Number:556



Tech Info Library

DOS 3.3: MUFFIN

Revised: 11/20/84
Security: Everyone

DOS 3.3: MUFFIN

=====

MUFFIN is a utility included on your DOS 3.3 master diskette; it converts 13 sector diskettes to 16 sector. Some diskettes which have protection schemes cannot be converted by MUFFIN. These diskettes must continue to be used with the Basics diskette, or by BRUNing Boot13.

Apple Tech Notes

Tech Info Library Article Number:557



Tech Info Library

DOS 3.3: The I/O vectors

Revised: 11/20/84
Security: Everyone

DOS 3.3: The I/O vectors

=====

The Apple monitor sends all input and output, including Applesoft and Integer BASIC's I/O, to a pair of two byte vectors. DOS takes the contents of these vectors and saves them to memory, then puts pointers to itself in the monitor's I/O vectors.

DOS is no longer able to intercept commands when the I/O vectors are changed. A DOS routine starting at \$3EA, accessible from BASIC with call 1002, checks the monitor I/O vectors to see if they point to DOS. This routine stores the current values in the I/O vectors and points to DOS in the vector if DOS isn't already there. It's most useful when the I/O vectors need to be modified to a custom I/O routine like the High-Res Character Generator routine in Contributed Software, volume 3. Here's how to use the Character Generator and DOS:

```
10 poke 54,0
20 poke 55,96
30 call 1002
40 print chr$(4);"catalog"
50 print chr$(4);"PR#0"
```

Apple Tech Notes

Tech Info Library Article Number:558



Tech Info Library

DOS 3.3: INTBASIC and FPBASIC on the master diskette

Revised: 11/20/84
Security: Everyone

DOS 3.3: INTBASIC and FPBASIC on the master diskette

=====

The INTBASIC and FPBASIC files on the master diskette load automatically into your Language Card if you have one. Since these files are written to operate specifically in the memory space of the Language Card, they don't work anywhere else.

To use Applesoft with your Apple II (which has Integer BASIC built in), you need either the Applesoft Firmware Card or the Language Card installed into your system.

Apple II+s have Applesoft built in; therefore, your system needs the Integer BASIC firmware card or a language card to use Integer BASIC.

Apple Tech Notes

Tech Info Library Article Number:559



Tech Info Library

DOS 3.3: Hiding machine language routines above the file buffers

Revised: 11/20/84
Security: Everyone

DOS 3.3: Hiding machine language routines above the file buffers

=====

It's possible to position your machine language routines between DOS and its first file buffer so that they won't be overwritten by BASIC programs.

Since \$9D00 and \$9D01 (48K system) point into the first, highest buffer:

1. Add the number of pages (256 byte blocks) your routine needs to the contents of \$9D01.
2. Put a \$00 in the address now pointed at by the contents of \$9D00, \$9D01.
3. Store a \$00 at the address pointed at by the contents of \$9D00, \$9D01 plus \$25.
4. Perform a JSR \$A7D4 to rebuild the DOS file buffers and move the current BASIC's HIMEM down.

The first available address for your routine is the address pointed at by the contents of \$9D00, \$9D01 plus \$2D.

Apple Tech Notes

Tech Info Library Article Number:560



Tech Info Library

DOS 3.3: Auto-run with a machine language program

Revised: 11/20/84
Security: Everyone

DOS 3.3: Auto-run with a machine language program

=====

When DOS is booted, it runs the program that was in memory when the diskette was initialized, unless you change DOS to BRUNs the Hello file instead. In a 48K Apple change the byte at \$9E42 from \$06 to \$34. The following sequence of commands creates a disk that BRUNs Hello when it is next booted. After putting a blank diskette into the drive:

- a. Call -151
- b. 9E42:34
- c. 3D0G
- d. init Hello
- e. delete Hello
- f. BLOAD the binary program from another diskette
- g. BSAVE Hello on the new diskette

Apple Tech Notes

Tech Info Library Article Number:561



Tech Info Library

DOS 3.3: Interrupts (IRQ)

Revised: 11/20/84
Security: Everyone

DOS 3.3: Interrupts (IRQ)

=====

Interrupting the Apple's 6502 microprocessor while using DOS can be treacherous. DOS uses location \$45 when converting your decimal numeric parameters to hexadecimal for its internal use. Similarly, the monitor's interrupt handler uses \$45 to save the 6502 accumulator. So, if an interrupt occurs while DOS is executing a command, the numeric parameters DOS uses when it executes commands are changed. Also vulnerable is the sector length of the files listed in a catalog, since DOS also uses \$45 to display this length.

Since DOS uses timing loops during its read and write operation, interrupting the Read Write Track Sector routines can kill a disk. DOS protects itself from IRQ, but has no control over NMI (nonmaskable interrupt)--so don't use a NMI while using DOS.

Apple Tech Notes

Tech Info Library Article Number:562



Tech Info Library

DOS 3.3: Not Direct Command Error

Revised: 11/20/84
Security: Everyone

DOS 3.3: "Not Direct Command" Error

=====

A "Not direct command" error is caused by invoking certain DOS commands from a machine language routine. When DOS receives commands, it checks to ensure the current BASIC interpreter is running in order to allow you to respond to an input statement with "Running", instead of trying to run the "Ning" file. The commands which cause these errors are listed on page 122 of the DOS manual. The following relocatable machine language routine insures that DOS is satisfied.

LDA #\$80	
STA \$33	This location must not equal \$DD
STA \$76	This location must not equal \$FF
STA \$D9	This location must be greater than \$7F
RTS	

Apple Tech Notes

Tech Info Library Article Number:563



Tech Info Library

LaserWriter 2.0 ROM: Changes to Data Rates for Serial I/O

Revised: 9/29/87
Security: Everyone

LaserWriter 2.0 ROM: Changes to Data Rates for Serial I/O

=====

This article last reviewed: 4 September 1987

In general, the information here supersedes corresponding material in Appendix D of the PostScript Language Reference Manual (copyright 1985, Adobe Systems Inc., Addison-Wesley Publishing Co., ISBN 0-201-10179-3); you should refer there for further information.

The LaserWriter's serial communication capability has been enhanced. The maximum baud rate has been increased from 9600 to 57600 bits per second.

While the default mode of operation of the LaserWriter's serial I/O remains the same as the original LaserWriter, the new capabilities must be explicitly enabled if desired. This is accomplished by executing 'setscbatch' or 'setscinteractive' operators as described in the PostScript Language Reference Manual.

The baud operand of 'setscbatch' or 'setscinteractive' may now be any positive integer less than 100000. The hardware can achieve only certain baud rates; other values will be rounded to the nearest achievable one. Above 9600 baud, the achievable rates are:

10473, 11520, 12800, 14400, 16457, 19200, 23040, 28800, 38400, and 57600.

Of these, 19200 is the most likely to be supported by the host operating systems.

Tech Info Library Article Number:564



Tech Info Library

DOS: Version 3.3 and the language card

Revised: 11/20/84
Security: Everyone

DOS: Version 3.3 and the language card

=====

At power up, DOS 3.3 looks at location \$E000, both on the motherboard and on the firmware card, to check which version of BASIC is available. If a Language card is present, DOS tries to jump into some random information on the card. This jump is prevented by a machine language routine that places a \$00 at \$E000 on the Language card during booting. This routine is stored on the DOS diskette at track 0, sector 9, starting at byte \$D3

Apple Tech Notes

Tech Info Library Article Number:565



Tech Info Library

LaserWriter 2.0 ROM: Changes to Font Cache

Revised: 9/29/87
Security: Everyone

LaserWriter 2.0 ROM: Changes to Font Cache

=====

This article last reviewed: 4 September 1987

Operation of the font cache has changed somewhat. Formerly there was a single limit on the number of bytes occupied by a character in the cache; a character larger than that would not be cached. Now there are two cache thresholds, upper and lower. If a character is larger than the upper threshold (as determined by the bounding box specified to 'setcachedevice'), it will not be cached, otherwise it will be. If a character is cached and is larger than the lower threshold, it will be compressed, otherwise it will be stored as a full pixel array.

The two thresholds are manipulated by the new operators 'setcacheparms' and 'currentcacheparms', described below. The old operators, principally 'cachestatus' and 'setcachelimit', remain valid. PostScript programs rarely deal with these operators.

Although they consume much less space in the font cache than full pixel arrays (by a factor of up to 40), compressed characters require more computation to reconstitute when they are needed. Reconstituting a compressed character is still substantially faster than re-executing the original character description. In systems printing at 300 pixels per inch or less (including the LaserWriter), the default lower threshold is set so that characters up to about

20 points are stored as full pixel arrays while larger ones are stored in compressed form. Caching of regular-sized body text occurs with the full pixel array representation which is time-efficient while caching of large characters occurs with the compressed representation which is space-efficient.

Tech Info Library Article Number:566



Tech Info Library

DOS 3.3: Nonstop catalog

Revised: 11/20/84
Security: Everyone

DOS 3.3: Nonstop catalog

=====

The Catalog command stops every 18 lines, allowing you to read the information on the screen before continuing. Vary this pause by changing three bytes in memory. In a 48K Apple:

```
poke 44601,234
poke 44602,234
poke 44603,234
```

Apple Tech Notes

Tech Info Library Article Number:567



Tech Info Library

DOS 3.3: Text file format

Revised: 11/20/84
Security: Everyone

DOS 3.3: Text file format

=====

DOS sequential text files are saved as strings of ASCII characters, just as if they were printed. Furthermore, numeric variables are stored as a string of characters rather than in their internal binary format. The number of characters required by a given variable VAR can be found with:

```
PRINT LEN (STR$ (VAR))
```

The carriage return, along with other separating characters sent out after the data, also need space allocated for them.

Apple Tech Notes

Tech Info Library Article Number:568



Tech Info Library

DOS 3.2, 3.2.1 and 3.3: Which version is this?

Revised: 11/20/84
Security: Everyone

DOS 3.2, 3.2.1 and 3.3: Which version is this?

=====

Check two locations to determine which version of DOS your Apple is running. These addresses are for a 48K Apple; therefore, subtract \$4000 (16384) for a 32K system.

Addresses

DOS	\$9D02 (-25342)	\$BD84 (-17020)
3.2	\$81 (129)	\$D0 (208)
3.2.1	\$81 (129)	\$AE (174)
3.3	\$81 (129)	\$0B (11)

Apple Tech Notes

Tech Info Library Article Number:569



Tech Info Library

DOS 3.3: BASIC entry vectors

Revised: 11/20/84
Security: Everyone

DOS 3.3: BASIC entry vectors

=====

The following table shows the addresses of some machine language routines on a 48K Apple. Call them from your BASIC program after a command or DOS error if you wish.

Addr	Int	ASRom	ASRam	Description
\$9D56	36 E8	-	-	Chain entry
\$9D58	E5 24	FC 24	06 25	Run
\$9D5A	E3 E3	65 D8	67 10	Error entry
\$9D5C	00 E0	00 E0	84 1D	Initialize BASIC memory
\$9D5E	03 E0	3C D4	3C 0C	Continue after DOS commands
\$9D60	-	F2 D4	F2 0C	Line link resequence

Apple Tech Notes

Tech Info Library Article Number:570



Tech Info Library

DOS 3.3: Renumber fix

Revised: 11/20/84
Security: Everyone

DOS 3.3: Renumber fix

=====

The Renumber program on your DOS master diskette contains an error which mistakes the number after a "*" as a line number and rennumbers it. For example, if you had a line:

```
10 let A=B*10
```

it might become:

```
20 let A=B*20
```

The permanent fix is:

For RAM Applesoft

(DOS 3.2)

```
load renumber
poke 14342,172
poke 14343,171
unlock renumber
save renumber
lock renumber
```

(DOS 3.3)

```
load renumber
poke 14316,172
poke 14317,171
unlock renumber
save renumber
lock renumber
```

For ROM Applesoft

```
load renumber
poke 4815,172
poke 4816,171
unlock renumber
save renumber
lock renumber
```

```
load renumber
poke 4789,172
poke 4790,171
unlock renumber
save renumber
lock renumber
```

Apple Tech Notes

Tech Info Library Article Number:571



Tech Info Library

LaserWriter 2.0 ROM: Problems the New ROMs Haven't Fixed

Revised: 9/29/87
Security: Everyone

LaserWriter 2.0 ROM: Problems the New ROMs Haven't Fixed

=====

This article last reviewed: 4 September 1987

Nearly all the problems described in section D.7 of the PostScript Language Reference Manual (copyright 1985, Adobe Systems, Inc., Addison-Wesley Publishing Co., ISBN 0-201-10174-2) have been fixed in the new LaserWriter software. The only unsolved problems are:

- The readline problem described under 'Input/output problems'
- The BuildChar problem, described under 'Font and cache problems'
- The manualfeed problem, described under 'Miscellaneous problems'

The first of these should be considered a property of all PostScript printers when connected to AppleTalk; the latter two are peculiar to the LaserWriter.

Tech Info Library Article Number:572



Tech Info Library

PostScript: Language change incorporates packed arrays

Revised: 9/18/87
Security: Everyone

PostScript: Language change incorporates packed arrays

=====

This article last reviewed: 4 September 1987

Several additions have been made to the standard PostScript language. These additions are upward-compatible and do not affect the function of any existing PostScript programs. The changes are included in the new LaserWriter, LaserWriter Plus, and other PostScript printers; they will be documented in a future edition of the PostScript Language Reference Manual.

-- General comments

PostScript programs that are intended to be compatible with all PostScript printers should not make use of the new features. However, it is possible for a program to determine whether or not the new features are present and to invoke them conditionally. The descriptions below suggest how to determine whether a particular feature is present or not.

-- Packed array representation

PostScript procedures are represented as executable arrays which, until now, have been stored in the same fashion as literal data. The representation, while offering maximum flexibility, is very costly in space (8 bytes per element). Large PostScript programs, such as the built-in server program, and downloaded preambles, consume considerable amounts of Virtual Memory.

Since most programs do not require the ability to be treated as data but only the ability to be executed, a more compact representation has been introduced: the packed array. Programs represented by packed arrays are typically 50 to 75 percent smaller than the same programs represented as ordinary arrays.

The packed array object has a type different from an ordinary array object ('packedarraytype' versus 'arraytype'); but in most respects it behaves the same as an ordinary array.

The differences between a packed array and an ordinary array are:

1. Packed arrays are always read-only: you can't use 'put', 'putinterval', etc. to store into a packed array.
2. Packed arrays are created differently from ordinary array (see below).
3. Accessing arbitrary elements of a packed array can be quite slow; however, accessing the elements sequentially (as is done for the PostScript interpreter and by the 'forall' operator) is approximately as efficient as accessing an ordinary array.
4. The 'copy' operator cannot copy into a packed array since it is read-only; however, it can copy the value of a packed array to an ordinary array of at least the packed array's length.

To create packed arrays, you may employ two methods, the PostScript input scanner and the operator 'packedarray'. More commonly, the PostScript input scanner creates packed arrays automatically for all executable arrays that it reads. That is, whenever the scanner encounters a "{" while reading a file or string, the scanner accumulates all tokens up to the matching "}" and turns them into a packed array instead of an ordinary array. To build a packed array explicitly, invoke the 'packedarray' operator with a list of operands to be incorporated into the new packed array.



Tech Info Library

DOS 3.3: CHAIN

Revised: 11/20/84
Security: Everyone

DOS 3.3: CHAIN

=====

Your DOS master diskette contains a utility called CHAIN. Though described on page 106 of The DOS Manual, there are a few additional things to look out for.

CHAIN does an effective PR#0 and IN#0 when it is used, disabling an 80 column card or a High-Res character generator in the process. The first program can save four memory locations that, when the second program restores them, leave the input and output vectors unchanged.

```
63000  rem  prepare to chain
63010  J = peek (999) + peek (1000) * 256 - 110
63020  for K = 0 TO 3
63030  A(K) = peek (J+K)
63040  next K
63050  rem chain now

10 rem  Program 2 #2
20 for  K = 0 TO 3
30 poke J+K,A(K)
40 next K
50 rem  rest of the program
```

CHAIN overlays your existing Applesoft program with the new program. Watch out for your programs that use DEF FN and Onerr Goto statements. These statements must be re-executed in the new program if they are to work properly, because both statements contain pointers into the program text, which is different for each program.

Apple Tech Notes

Tech Info Library Article Number:574



Tech Info Library

DOS 3.3: RENUMBER and the MAXFILES command

Revised: 11/20/84
Security: Everyone

DOS 3.3: RENUMBER and the MAXFILES command

=====

Applesoft RENUMBER doesn't work with MAXFILES other than 3. RENUMBER is a machine language program loaded as an Applesoft program, when run, relocates the machine language up to HIMEM in your system. DOS defaults to MAXFILES 3, so HIMEM is on page boundary \$9600, in a 48K Apple. Changing MAXFILES moves HIMEM off this page boundary. RENUMBER's relocater still does the move, but it doesn't relocate the address properly. The usual result is that the system drops into the monitor in the address range of \$0200 - \$0300.

Apple Tech Notes

Tech Info Library Article Number:575



Tech Info Library

DOS 3.3: RENUMBER and the FRE(0) command

Revised: 11/20/84
Security: Everyone

DOS 3.3: RENUMBER and the FRE(0) command

=====

RENUMBER doesn't always reset the variable pointers when it returns to Applesoft, causing the Apple to hang or drop into the monitor when the PRINT FRE(0) command is used. To check the amount of free memory left after a RENUMBER operation, CLEAR before using PRINT FRE(0).

Apple Tech Notes

Tech Info Library Article Number:576



Tech Info Library

DOS 3.1, 3.2 and 3.2.1: APPEND

Revised: 11/20/84
Security: Everyone

DOS 3.1, 3.2 and 3.2.1: APPEND

=====

The APPEND command opens sequential files, then reads through all of the records until it finds the end. The next WRITE command is then appended to the end of the file. Unfortunately, there are some problems with APPEND:

When the last carriage return written out is the last byte in the last sector of the file, DOS doesn't allocate another sector for the end of file mark. Therefore, the next APPEND never finds the end of the file, and so the file pointer gets left at the beginning of the file. Consequentially, the next WRITE command writes over the first record.

Try a READ after the APPEND command:

- A. When the READ returns an "Out of Data" error, do a normal APPEND, assuming that you're using an ONERR GOTO in Applesoft.
- B. A successful READ means that APPEND writes over the file. In this case, the only way to add to the end of the file is to copy the entire file into another, then write your information into the new file. Delete the old file and rename the new file with the old file's name.

Apple Tech Notes

Tech Info Library Article Number:577



Tech Info Library

DOS 3.3: Volume number

Revised: 11/20/84
Security: Everyone

DOS 3.3: Volume number

=====

A DOS diskette's volume number is recorded in the address field of every sector on the diskette. The only way to change this information is to reinitialize the diskette.

Apple Tech Notes

Tech Info Library Article Number:578



Tech Info Library

DOS 3.3: Disk layout

Revised: 4/8/91
Security: Everyone

DOS 3.3: Disk layout

=====

DOS reserves the first three tracks (0,1,2) of every disk for the boot image of itself, while track 17 (\$11) is reserved for the directory and VTOC. Tracks 1 and 2 can be freed by modifying the bit map in the VTOC; however, the disk won't be able to boot properly.

Expanded the directory by changing the link bytes in bytes 1 and 2 of the last sector of the directory.

The number of sectors required for a DOS file can be calculated:

$$\text{Sectors} = \text{length} / 256 + \text{length} / 256 / 122$$

The physical number of sectors required to hold the data is recorded in the first part of the expression. It's 2 bytes higher for a program and 4 bytes higher for a binary file. The second part contains the track/sector information, even when there is no data. Thus, the minimum number of sectors for a file is two.

Random access files, as are all files, are maintained through the track/sector list at the beginning of the file. DOS:

- * Locates the start of the record
- * Determines which sector that byte would be in, relative to the start of the file
- * Determines with the track/sector list in which sector the record is located
- * Calculates the offset into the sector
- * Writes data.

DOS allocates enough sectors in the track/sector list to access the required sector; however, DOS doesn't allocate any sectors when there hasn't been any data written to the records of that sector. Example:

```
10 D$ = chr$(4)
20 print D$;"open test, L500"
30 print D$;"write test, R65"
```



```
40 print "hello"  
50 print D$;"close test"
```

This program creates;

```
65 records * 500 bytes = 32500 bytes = 126 sectors
```

```
126 sectors = 2 track/sector list sectors
```

for a grand total of:

```
1 sector of data  
2 sectors of track/sector list
```

No data sectors are allocated for records 0 through 64.

Apple Tech Notes

Tech Info Library Article Number:579



Tech Info Library

LaserWriter 2.0 ROM: Parity & Hardware Handshaking Change (2/95)

Revised: 2/23/95
Security: Everyone

LaserWriter 2.0 ROM: Parity & Hardware Handshaking Change (2/95)

Article Created: 4 September 1987
Article Reviewed/Updated: 23 February 1995

TOPIC -----

DISCUSSION -----

The LaserWriter's serial communication capability has been enhanced. The DTR flow control protocol has been introduced as an alternative to the XOn/XOff protocol.

DTR flow control makes use of a control signal, Data Terminal Ready, which is available through the DB-25 connector (but not through the DB-9 connector). Normally the LaserWriter leaves this signal turned on. However, when it needs to stop the flow of characters from the host, it turns DTR off. The host must immediately stop sending characters until the LaserWriter turns DTR back on again. Similarly, another signal, Data Set Ready, (DSR) may be used by the host to control the flow of data sent to it from the LaserWriter.

Failure of the host to conform to the selected flow control protocol may result in unexpected occurrences of 'ioerror', caused by overflow of the LaserWriter's input buffer. Note that only one flow control protocol can be used at a time, and for flow control to work correctly, the LaserWriter and the host must agree on which protocol is in use.

The parity parameter of 'setscbbatch' or 'setscinteractive' has been changed to an options parameter that encodes both the treatment of the parity bit (as before) and the choice between Xon/Xoff and DTR flow control. The values of the options parameter now have the following meanings:

Xon/Xoff Flow Control

- 0 Ignore parity: (RCV high order bit ignored, XMIT high order bit is zero).
- 1 Odd parity: (RCV checked for odd parity, XMIT each character has odd parity)
- 2 Even parity: like odd but for even parity.

3 No parity: all eight bits are data and no checking is performed.

DTR Flow Control

4 Ignore parity (see 0 above)

5 Odd parity (see 1 above)

6 Even parity (see 2 above)

7 No parity (see 3 above)

The 9 pin connector's signal pin assignments are unchanged from before.

The set of signals on the DB-25 have been slightly expanded as follows:

2 Transmit Data

3 Receive Data

4 Request to Send (RTS) (optional)

6 Data Set Ready (DSR) (optional)

7 Signal Ground

20 Data Terminal Ready (DTR) (optional)

A cable diagram for connecting a LaserWriter to an RS-232 port might look like this:

. RS-232 Port Pin -- Pin on LaserWriter

.	2	2
.	3	3
.	6	6
.	7	7
.	20	20

The optional signals need to be connected only if the host computer requires them. If DTR flow control is used, the DTR and DSR lines must be connected.

Availability of DTR flow control considerably simplifies use of the LaserWriter from some computer systems, including the IBM PC. To set up the IBM PC for communication with the LaserWriter over serial port 1 using DTR flow control, issue the commands:

```
MODE COM1:9600,n,8,1,p
```

```
MODE LPT1:COM1
```

To set up the LaserWriter, connect your serial cable from the LaserWriter to the RS-232 port, set the server mode switch on the LaserWriter to the '9600' position and send from the host computer to the LaserWriter the following PostScript Code:

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

%=====

```
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
25 9600 4 setsccbatch
end
%
% end PostScript Code
%=====
```

This changes the LaserWriter over to DTR flow control when executing in PostScript batch mode over the 25 pin connector. The LaserWriter will now be communicating with the RS-232 port using DTR (hardware) handshaking. This status is written into EEROM and will be permanent until changed.

To set up the LaserWriter to use DTR flow control during Diablo 630 emulation, send it the same program with 'setscinteractive' substituted for 'setscbatch'.

To change back to Xon/Xoff (software) handshaking, send this PostScript code to the printer:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
25 9600 0 setsccbatch
end
%
% end PostScript Code
%=====
```

These programs need to be sent to the LaserWriter with the server mode switch set to '9600' even if setting up Diablo mode communications protocols. Once the handshake mode is changed, the user may then switch to Diablo mode (switch in 'Special') if desired.

Article Change History:

23 Feb 1995 - Reviewed for technical accuracy. Added PostScript caution.

Support Information Services

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Tech Info Library Article Number:580



Tech Info Library

Business BASIC III: Numerics

Revised: 11/20/84
Security: Everyone

Business BASIC III: Numerics

=====

Apple III Business BASIC uses the same floating point math package that Applesoft uses internally. However, Business BASIC only display a maximum of 6 decimal digits when it prints. This limitation was built in because the last three digits of Applesoft's math package develop errors that can seriously affect some applications.

Apple Tech Notes

Tech Info Library Article Number:581



Tech Info Library

Business BASIC III: Turnkey Operation

Revised: 11/20/84
Security: Everyone

Business BASIC III: Turnkey Operation

=====

The Apple III, after booting Business BASIC III, automatically runs a program named Hello.

Apple Tech Notes

Tech Info Library Article Number:582



Tech Info Library

Business BASIC III: Finding what volume is in what drive

Revised: 11/20/84
Security: Everyone

Business BASIC III: Finding what volume is in what drive

=====

The following program determines the volume name of the diskette in drive two.

```
10 temp$ = prefix$
20 prefix$ = ".D1"
30 D1$ = prefix$
40 prefix$ = ".D2"
50 D2$ = prefix$
60 prefix$ = temp$
70 print ".D1 contains ";D1$;" and .D2 contains ";D2$
```

Apple Tech Notes

Tech Info Library Article Number:583



Tech Info Library

Business BASIC III: Error codes not in the manual

Revised: 11/20/84
Security: Everyone

Business BASIC III: Error codes not in the manual

=====

Here are some error codes that aren't in the manual:

37	device disconnected
38	resource unavailable
39	directory full
40	duplicate volume

These messages print on the screen when the program does not have ONERR enabled. Error #39 only shows up in the root directory under SOS 1.1.

Apple Tech Notes

Tech Info Library Article Number:584



Tech Info Library

Business BASIC III: RENUMBER -- Unreferenced Lines

Revised: 11/20/84
Security: Everyone

Business BASIC III: RENUMBER -- Unreferenced Lines

=====

Business BASIC's RENUMBER program isn't able to properly renumber the sample program:

```
10 GOTO 20
```

Though it's obvious that GOTO 20 references a line that doesn't exist, it won't always be obvious in a large program. One way to check that there are no "phantom" line numbers is to use the XREF function in the RENUMBER program before you actually renumber your program.

Apple Tech Notes

Tech Info Library Article Number:585



Tech Info Library

Business BASIC III: Swap

Revised: 11/20/84
Security: Everyone

Business BASIC III: Swap

=====

The Swap command exchanges the values of two variables of the same type; however, there are several reserved variables, like HPos and VPos, that Swap does not work with properly.

10 Swap A%,B%	works
20 Swap A%,HPos	does not work
30 Temp% = A%: A% = HPos: HPos = Temp%	works

Apple Tech Notes

Tech Info Library Article Number:586



Tech Info Library

Business BASIC III: Print Using

Revised: 11/20/84
Security: Everyone

Business BASIC III: Print Using

=====

The string specification in Print Using takes only as many characters of a long string as are required to fill its field length; hence, the rest of the string is ignored. This example:

```
A$ = "abcdefghijklmnopqrstuvwxyz"  
Print Using "3X,10A,3X";A$
```

returns:
 abcdefghij

A\$ is truncated to 10 characters. Use the MID\$ function to split up a string into multiple lines.

Apple Tech Notes

Tech Info Library Article Number:587



Tech Info Library

Business BASIC III: IF...THEN...ELSE

Revised: 11/20/84
Security: Everyone

Business BASIC III: IF...THEN...ELSE

=====

The IF/THEN statement can give some unexpected results. The rules for IF/THEN are:

1. When the logical expression is true, the rest of the line is executed, except:
 - A. When there is an ELSE on the same program line, execution continues to the ELSE, then goes the next numbered program line.
 - B. If there is an implicit or implied GOTO, execution continues at the target line.
2. When the logical expression is false, execution continues on the next numbered program line, except:
 - A. When there is an ELSE on the line, execution continues after the ELSE.

The following examples might help explain some of these special cases:

Example 1:

```
10 if A = 0 then print "1" : print "2"  
20 print "line 20"
```

Assuming	A = 0	A <> 0
Results	1 2	line 20

If A equals 0, then the Print statements in line 10 are executed (rule 1).
If A doesn't equal 0, then line 20 is executed (rule 2).

Example 2:

```
10 if A = 0 then 500 : print "1" : print "2"  
20 print "line 20"
```

```
500 print "end"
```

Assuming	A = 0	A <> 0
Results	end	line 20 end

If A equals 0, the Print statements in line 10 are never executed; then execution transfers to line 500 (rule 1B). If A doesn't equal 0, then line 20 is executed (rule 2).

Example 3:

```
10 if A = 0 then print "1" : goto 500 : print "2"
20 print "line 20"
500 print "end"
```

Assuming	A = 0	A <> 0
Results	1 end	line 20 end

If A equals 0, then the first Print is executed, then the execution is transfer to line 500 (rule 1A). If A doesn't equal 0, then line 20 is executed (rule 2). The last Print statement in line 10 is never executed.

Example 4:

```
10 if A = 0 then print "1" : print "2" : else print "3" : print "4"
20 print "line 20"
```

Assuming	A = 0	A <> 0
Results	1 2 line 20	3 4 line 20

This is a classic example of how ELSE is used. Either execute Print 1 and 2 or execute Print 3 and 4 (rules 1A, 2A).

Example 5:

```
10 if A = 0 then 500 : print "1" : print "2" : else print "3"
20 print "line 20"
500 print "end"
```

Assuming	A = 0	A <> 0
Results	end	3 line 20 end

Print 1 and 2 in line 10 is never executed, because if A equals 0, then

execution transfers to line 500 (rule 1B). If A doesn't equal 0, then the statements after the ELSE is executed (rule 2A).

Example 6:

```
10 if A = 0 then print "1" : goto 500 : print "2" : else print "3"
20 print "line 20"
500 print "end"
```

Assuming	A = 0	A <> 0
Results	1 end	3 line 20 end

If A equals 0, then Print 1 is executed, then execution is transfer to line 500 (rule 1B). If A doesn't equal 0, then the statements after the ELSE is executed (rule 2A). Print 2 statement is never executed.

Apple Tech Notes

Tech Info Library Article Number:589



Tech Info Library

Business BASIC III: Errata for Reference Manual

Revised: 11/20/84
Security: Everyone

Business BASIC III: Errata for Reference Manual

=====

The following are errata for Business BASIC III manual # A3L0002/030-0122-00

Page iv...The correct page number for Chapter 6 is 159.

Page iv...The entries for appendices C and D are reversed. They should read:

C	Alphabetic list of reserved word	236
D	Variable maps	238

Page 27...The section on CTRL-5, -6, -7, -8, -9 should refer to page 139 of the Standard Device Drivers Manual.

Page 128...The information at the top of the page is missing periods. It should read:

```
)print using "+###.###"; 3.14159
+ 3.142
```

This spec, +###.##,

Page 151...The line at the top of the page should read:

```
DEF FN MODB(A)=int ((A - int (A / B) * B +.5)
```

Page 240...The information for Long integers is reversed. It should read:

Long integer	0	high byte
	7	low byte

Page 329...The example that starts "print1;Apple" should read:

```
print #1;"Apple"
```

Prints text characters on the graphics display, starting at the cursor position.

If you used:

```
open #1, ".Graphix"
```

to open the graphics driver. Cursor marks upper left corner of character's rectangular cell.

To send direct screen-control characters to the .Graphix driver:

```
print #1; chr$(19);chr$(13)
```

Page 322...KBD is described on page 121 instead of page 43.

Apple Tech Notes

Tech Info Library Article Number:590



Tech Info Library

LaserWriter 2.0 ROM: Performance Enhancements

Revised: 9/29/87
Security: Everyone

LaserWriter 2.0 ROM: Performance Enhancements

=====

This article last reviewed: 4 September 1987

The performance of the LaserWriter for many applications has been significantly improved in the new implementation of the LaserWriter software. The main areas of improvement are as follows:

-- PostScript interpreter

The PostScript interpreter is substantially (30 to 40 percent) faster than before. This improvement applies primarily to programs that are being interpreted from procedures already stored in VM; programs being interpreted from a file or string receive little benefit.

-- AppleTalk

Efficiency of AppleTalk communication has been improved by a buffer strategy that permits greater overlap between the work being performed on the LaserWriter and on the host. This is especially noticed when using Apple's Print Manager on the Macintosh, which sends relatively short (512 byte) blocks.

-- Throughput

Page throughput for many applications is significantly increased by a new printing strategy that permits imaging of a page to be overlapped with execution of the PostScript description for the next page. Formerly, page imaging and PostScript execution were performed serially; the imaging time (up to 6 seconds per page) was entirely wasted.

-- Compressed character mechanism

Page descriptions that print large characters may benefit from the compressed character mechanism. Large characters now are often obtained from the font cache, whereas formerly they were always produced by re-executing the character descriptions.

-- Font cashe

Characters may be retained in the font cache even after removal of the font definition from which they were generated. If the same font is later defined again, the cached characters will be found and used if they still exist. This depends on correct use of the UniqueID entry in the font definitions; see the discussion under 'Modifying and creating fonts' in the PostScript Language Tutorial and Cookbook.

-- Virtual memory

The total amount of virtual memory available is not exactly the same as in the original LaserWriter, although it is close to being the same. This may affect the maximum number of down-loaded and user defined fonts that can be present simultaneously. Note that PostScript page descriptions with large preambles can obtain significant VM space savings by making use of the packed array facility.

Tech Info Library Article Number:591



Tech Info Library

Business Graphics III: INTERCHANGE

Revised: 11/20/84
Security: Everyone

Business Graphics III: INTERCHANGE

=====

The INTERCHANGE command automatically adds a ".text" suffix to your file name unless disabled by adding a period at the end of the file.

Enter	What INTERCHANGE tries to find
file	file.text
file.	file

Apple Tech Notes

Tech Info Library Article Number:592



Tech Info Library

Business Graphics III: HP Plotters

Revised: 11/20/84
Security: Everyone

Business Graphics III: HP Plotters

=====

Business Graphics III includes a set of drivers for different graphic plotters, one of which is the HP 7225A plotter. HP has since changed their product; the 7225A Plotter has been replaced by the HP 7470A plotter. To connect this new plotter to the Business Graphics III:

- a. Use the Apple Modem Eliminator Cable (A3M0019) along with the cable supplied with the plotter (AMP 07470-60090).
- b. Set the .printer driver to 1200 baud and one (1) stop-bit.
- c. Set the plotter's switches as follows:

S2	S1	Y	US	B4	B3	B2	B1
0	1	0	0	0	1	1	1

- d. Enter the command SET DEVICE HP 7225A to initialize the plotter from Business Graphics.

Apple Tech Notes

Tech Info Library Article Number:593



Tech Info Library

Business Graphics III: Silentype printer

Revised: 11/20/84
Security: Everyone

Business Graphics III: Silentype printer

=====

Occasionally, Business Graphics III hangs and doesn't recognize the Silentype when trying to use the WRITE SCREEN Silentype command. To avoid this problem, enter "set unit 128" each time you boot the program before using the WRITE SCREEN Silentype command.

Copies of Business Graphics III, beginning with copies which have a 9 NOV 81 date on the PLOT.CODE file, need this procedure.

Apple Tech Notes

Tech Info Library Article Number:594



Tech Info Library

Parallel Interface Card: Initializing with POKEs (11/96)

Revised: 11/21/96
Security: Everyone

Parallel Interface Card: Initializing with POKEs (11/96)

Article Created: 21 September 1984
Article Reviewed/Updated: 19 November 1996

TOPIC -----

This article explains how to use POKEs to control the Parallel Interface card.

DISCUSSION -----

Neither PR# nor IN# commands in Applesoft and Integer Basic initialize the Parallel Interface. This situation can cause problems if you need to modify the parameters of the interface for your application.

The ROM on the Parallel Interface card, upon receiving the first character, sets all parameters to their default settings. After you POKE the parameter you want, the first character you send causes the ROM to overwrite all the parameter locations you have set up.

To correct this, send a character through the card and then change the parameter locations by means of the following POKEs. (Please refer to the Parallel Interface Card manual for additional information about what each POKE does.)

Replace all occurrences of "s" in the BASIC program below with the number of the slot the Parallel Interface Card is plugged into.

```
10 POKE 1400+s,80      carriage width
20 POKE 1656+s,0       character counter
30 POKE 1784+s,137     set command prefix to CTRL-I
40 POKE 1912+s,0       no video, no linefeed
    or                ,1      no video, enable linefeed
    or                ,128    enable video, no linefeed
    or                ,129    enable video, enable linefeed
```

The next list of POKEs replace the PR# and IN# commands and they must be used to benefit from the previous POKEs. Use "Call 1002" to execute DOS commands while the interface is enabled. However, if speed is of the essence, use the "Call

1002" after the data transfer has been made since DOS slows down I/O. All of these POKEs must be on one command line separated by colons to work in command mode; in a program, they may have separate line numbers.

```
50 POKE 54,2          PR#s
60 POKE 55,192+s
70 Call 1002
```

The normal way to reset the I/O back to the Apple video and keyboard is:

```
900 D$ = CHR$ (4): Rem CTRL-D
910 Print D$;"PR#0"
920 Print D$;"IN#0"
```

This only works after a Print and it is ignored after a Get or Print terminated with a comma or semicolon.

To avoid entering an extra Print statement, you can use the following:

```
900 Call -375 : Rem this is IN#0
910 Call -365 : Rem this is PR#0
920 Call 1002 : Rem this reconnects DOS
```

The Parallel Printer Interface Card can echo characters to the Apple's video output, disable the video out while printing lines more than 40 characters long. Please refer to the Parallel Printer Interface manual for more information on what each POKE does.

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:595



Tech Info Library

LaserWriter 2.0 ROM: General description of revisions (9/94)

Revised: 9/8/94
Security: Everyone

LaserWriter 2.0 ROM: General description of revisions (9/94)

=====

Article Created: 4 September 1987
Article Reviewed/Updated: 8 September 1994

TOPIC -----

LaserWriter Revision 2 and LaserWriter Plus are enhanced versions of the original LaserWriter printer. The original LaserWriter is fully described in Appendix D of the PostScript Language Reference Manual (copyright 1985, Adobe Systems, Inc., Addison-Wesley Publishing Co., ISBN 0-201-10179-3) so only the differences between the old and the new software will be described here.

DISCUSSION -----

A LaserWriter containing the new software can be identified in several ways:

The test page printed at power on time includes the LaserWriter revision number in the lower left corner of the line graph illustration; for the new software, this revision number is '2.0'.

A revision entry in statusdict contains the integer '2' identifying the new revision of the LaserWriter software. A PostScript program can read this value.

The version entry in 'systemdict' contains the string '37.0' or '38.0', identifying the PostScript interpreter included in the new software.

The product entry in 'statusdict' contains the string 'LaserWriter' for a LaserWriter with the standard 13 fonts, or 'LaserWriter Plus' for a LaserWriter Plus with its expanded set of 35 fonts. Note that a program is better advised to determine the selection of available fonts by enumerating the FontDictionary dictionary.

The enhancements introduced in the new software fall into three categories, LaserWriter-specific functions, improvements in software implementation, and PostScript language changes.

1. LaserWriter-specific functional changes. There include expanded communications options, additional paper tray selections, new fonts, and various other features present in revision 2 LaserWriter and not necessarily present in other PostScript printers.
2. Improvements in implementation. Nearly all the problems present in the original LaserWriter software have been corrected, and a number of operations have been made significantly faster.
3. PostScript language changes. Several new operations and capabilities have been introduced into the standard PostScript language and are being incorporated into all PostScript printers.

Installation of the new LaserWriter or LaserWriter Plus ROM software in an existing LaserWriter causes the page count to be reset to zero and all system parameters to revert to their default values.

Article Change History:

8 Sep 1994 - Reviewed for accuracy.

Support Information Services

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Tech Info Library Article Number:597



Tech Info Library

Linking from PILOT to Pascal

Revised: 11/30/84
Security: Everyone

Linking from PILOT to Pascal

=====

Use the LP (LINK TO PASCAL) command to exit PILOT and enter Pascal. If you are in a PILOT lesson and wish to use a Pascal program, insert the following command into your lesson. For this example, the Pascal program is named MyProg.code.

```
LP:MyProg
```

Don't enter the ".code" suffix on the file name, since PILOT automatically adds it.

Use Pascal version 1.0 to compile your Pascal program, but link it to the system.library file provided on the PILOT Lesson1: Student Diskette. The "\$U name" compiler option allows you to do this.

After executing the LP command, the PILOT interpreter no longer has control. LP closes any open PILOT data files, and erases from memory the status and locations of PILOT variables.

When the Pascal program ends, the system reboots your PILOT "Hello" lesson. To return to a specific spot in your PILOT lesson, have your PILOT program "leave a trail". The following example instructs PILOT to return to the label "bolts" in the lesson "Mechanics":

```
D:N$(50)
T:going off to Pascal...
```

```
R:Open file "restart"
C:N$="restart"
FOX:1,N$
```

```
R:leave a trail in the form of the
R:appropriate L: command
C:N$="L:Mechnaics,bolts"
FO:1,N$
```

```
R go off to Pascal file MyProg.code
```

LP:MyProg

The Hello lesson on the PILOT disk looks for the restart file, as follows:

D:N\$(50)

C:N\$="restart"

FIX:1,N\$

R: If error flag is raised, the restart file

R: does not exist, so link to the normal first lesson

LE:firstlesson

R: Otherwise, read in the record containing our

R: restart lesson and label, and link there.

FI:1,N\$

XI:N\$

Apple Tech Notes

Tech Info Library Article Number:598



Tech Info Library

PILOT: Controlling Memory Mapped I/O

Revised: 11/30/84
Security: Everyone

PILOT: Controlling Memory Mapped I/O

=====

Many Apple II-compatible I/O devices are memory mapped; therefore, you can control them using Apple PILOT. The PILOT system variable %M is actually a memory map controlled by a subscript. The value of this subscript defines the location in the I/O device control space addressed by %M.

The I/O locations begin with address C080 (hex). This constant offset is added automatically to all %M locations. Variables %M(16) thru %M(127) address the device control space of slots 1 thru 7; access to slot 0 is not permitted. Variables %M(128) thru %M(1919) refer to the I/O select space of slots 1 thru 7. This space is typically used for ROM memory, but can be used in some cases for auxiliary device control information. For example, the PILOT command:

```
C: %M(16) = 0
```

POKEs a zero into I/O location 16, which is the first available byte (relative location zero) in the device select space of slot 1. Similarly, the command:

```
C: X = %M(20)
```

PEEKs into location 20 (relative location 4 in slot 1); it returns the result in variable X.

Generally variable %M may be used wherever the system variable %A is legal. It cannot be used to manipulate program memory from within PILOT lessons, but does provide some control of external devices.

The %M variable is a very powerful construct--I/O devices can be damaged by indiscriminate PEEKing and POKEing. Particularly avoid trying to manipulate any of the device controls for slot 6 where the disk controller is typically located. It is entirely possible to erase entire tracks of on your PILOT diskettes.

Apple Tech Notes

Tech Info Library Article Number:599



Tech Info Library

How to read Apple PILOT data files from Pascal

Revised: 11/30/84
Security: Everyone

How to read Apple PILOT data files from Pascal

=====

Though it may appear that data files are randomly accessible text files, they are actually block structured files, two strings long, with 255 per block. Records 0 and 1 are contained in relative block zero, 2 and 3 are in block 1, etc. The Pascal construct which defines this file format is:

```
VAR PILOTFILE: FILE OF STRING [255];
```

The data record associated with this file has the description PILOTFILE^, with a string of length 255. This file may be sequentially or randomly accessed using the commands Get, Put and Seek. See the Pascal Language Reference manual for details.

To open an existing file, use the Reset command; a new data file may be created using Rewrite. These commands are the same as the PILOT commands Fix and Fox respectively. Always Close a new file using the Lock option to record the data file in the diskette directory.

PASCALPGM Links to the Pascal program contained in the file PASCALPGM.code. Compile any intrinsic library units this program requires with the libraries found on your Apple PILOT Author Diskette or Lesson Diskette using the Pascal 1.0 compiler. The Apple PILOT system uses a special 48K run-only version of Pascal 1.0, which requires different intrinsics due to its unique storage allocation.

The linkage from PILOT to Pascal is one-way: data cannot be transmitted from PILOT to Pascal, except by data files on diskette. When the Pascal program ends, the PILOT lesson diskette reboots automatically and begins executing the Hello program if any. Programs running in this environment have approximately 10K less user storage space than in the standard Pascal system.

The first compiled procedure in the outer block of any Pascal program running under the PILOT system should be:

```
Procedure Syserror;  
Begin  
End;
```

System errors automatically divert control to this procedure, with IOResult set to the corresponding error number. The default action is:

- A. If the error is non-fatal, execution of the procedure currently executed is aborted. Execution of its calling procedure is resumed.
- B. When the error is fatal, the program terminates with an appropriate error message. Any additional error checking or recovery should be done in this procedure.

The following example prints the contents of any Apple PILOT data file:

```
Program Datalist;

Var PILOTFILE: file of string [255];
    Filename: string;
    RECNO: integer;

Procedure Syserror;
Begin
End;

Procedure Pause;
Begin
    Writeln;
    Write ('Press RETURN to continue...');
    Readln;
    Writeln
End;

Begin
    Page (output);
    Write ('List which data file? ');
    Readln (Filename);
    Writeln;
    Filename := CONCAT (Filename, '.data');
    RESET (PILOTFILE, Filename);
    RECNO := 0;
    While not EOF (PILOTFILE) Do Begin
        Writeln ('Record ', RECNO, ': ', PILOTFILE^);
        Get (PILOTFILE);
        RECNO := RECNO + 1;
        If RECNO MOD 20 = 0 Then PAUSE
    End;
    Writeln;
    Writeln ('End of file: ', RECNO, ' records listed.');
```

Pause

End.

Apple Tech Notes

Tech Info Library Article Number:600



Tech Info Library

LaserWriter: How to Change Page Types

Revised: 9/29/87
Security: Everyone

LaserWriter: How to Change Page Types

=====

This article last reviewed: 4 September 1987

The selection of built-in 'page types' has been enlarged to include two European sizes. The height of the letter and legal page sizes has been slightly decreased because of memory constraints in the new software. Finally, the function of the 'note' page type has been generalized.

The LaserWriter includes built-in device setup procedures for establishing any of seven standard page types:

1. letter
2. legal
3. A4
4. B5
5. lettersmall

'Lettersmall' is an imageable region 7.68 by 10.16 inches centered on an 85. by 11 inch page.

6. A4small
7. note

'Note' selects one of the above page types according to the paper tray that is installed. If the letter or A4 tray is installed, 'note' selects 'lettersmall' or 'A4small' respectively. If the legal or B5 tray is installed, 'note' selects 'legal' or 'B5'. For the letter or A4 paper sizes, this has the effect of increasing all four margins to approximately 0.42 inch. The reduction in the imageable area frees up as much as 100,000 bytes of memory, which is added to the VM (Virtual Memory) and made available for PostScript

programs.

Page 121 of the LaserWriter and LaserWriter Plus manual (copyright 1986, Apple Computer, Inc., manual number: 030-1296-B) describes the letter, legal, A4 and B5 pages sizes.

Tech Info Library Article Number:601



Tech Info Library

Programmer's Aid #1: Problems with the memory test

Revised: 11/30/84
Security: Everyone

Programmer's Aid #1: Problems with the memory test

=====

The memory test in the Programmer's Aid #1 diskette has a problem. According to the listing on page 86 of the manual, \$D670 contains 20 8A D6 when the ROM contains 4C CB 02. This causes the program to jump to \$02CB where there normally isn't any program. To patch around this problem, enter these instructions in the monitor before testing any memory:

02CB:20 8A D6 4C 73 D6

Apple Tech Notes

Tech Info Library Article Number:602



Tech Info Library

Programmer's Aid #1: Memory test and DOS

Revised: 11/30/84
Security: Everyone

Programmer's Aid #1: Memory test and DOS

=====

Disable DOS before attempting to test the memory locations used by DOS. All input from the keyboard displayed on your screen goes through DOS; therefore, DOS is erased during the memory test, which causes your system to hang. To disable DOS, type from the monitor:

FE89G
FE93G

Apple Tech Notes

Tech Info Library Article Number:603



Tech Info Library

Programmer's Aid #1: Applesoft and the Programmer's Aid

Revised: 11/30/84
Security: Everyone

Programmer's Aid #1: Applesoft and the Programmer's Aid

=====

The Programmer's Aid #1 diskette uses some of the same addresses as the Applesoft ROMS, making it impossible to use the diskette from Applesoft. The only way to have access to the memory test is to enter Integer BASIC before going into the monitor. The sequence of commands is:

```
Int
Call -155
```

Apple Tech Notes

Tech Info Library Article Number:604



Tech Info Library

QuickFile III: Problem in dealing with long lists of numbers

Revised: 11/30/84
Security: Everyone

QuickFile III: Problem in dealing with long lists of numbers

=====

When a QuickFile file contains only one field, the Arrange command may stop and display a Pascal run-time error, or just not sort the data.

Apple Tech Notes

Tech Info Library Article Number:605



Tech Info Library

QuickFile III: String overflow error

Revised: 11/30/84
Security: Everyone

QuickFile III: String overflow error

=====

When you try to save your file, QuickFile III prompts you for the date for the catalog. If you type in eight or more characters, which is more than QuickFile can convert to a valid date, the program stops with a String Overflow error and loses all the data you just typed in.

To avoid this error, verify that the date you typed in is correct before pressing RETURN. Examples of what QuickFile considers to be valid dates are listed on page 41 of the QuickFile Manual.

Apple Tech Notes

Tech Info Library Article Number:606



Tech Info Library

Silentype: Spacing errors

Revised: 11/30/84
Security: Everyone

Silentype: Spacing errors

=====

If your Silentype's right margin is set at less than 40 and the screen is OFF, extra spaces may be introduced into the printout. To correct this, turn your screen to ON by sending a control "T" to the printer.

Reset these Silentype margins after every PR#1. Other options, such as print intensity, don't need to be set every time.

Apple Tech Notes

Tech Info Library Article Number:607



Tech Info Library

Silentype and the TAB command

Revised: 7/30/87
Security: Everyone

Silentype and the TAB command

=====

TABs do not work properly with the Silentype. From Integer BASIC, the tab is limited to the first 40 columns, while an Applesoft TAB(20) occassionally outputs 20 spaces instead of going to column 20. Use POKE 36,T instead of TAB(T) (where T is the tab value) with either BASIC.

```
Print "first item";: POKE 36,45: Print "second item"
```

Output:

```
first item                second item
```

Tech Info Library Article Number:608



Tech Info Library

Macintosh Plus: Serial Driver Differences Of The 128K ROM

Revised: 11/1/91
Security: Everyone

Macintosh Plus: Serial Driver Differences Of The 128K ROM

=====

Article Created: 18 September 1987
Article Last Reviewed: 31 October 1991
Article Last Updated: 31 October 1991

TOPIC -----

This article describes issues with RAM and ROM based serial drivers when the Macintosh Plus was introduced.

DISCUSSION -----

When connected to third party printers, the newer ROM-based Macintosh Plus serial driver occasionally doesn't work, possibly because of differences between the old RAM and ROM drivers and the newer ROM driver.

If you have recently upgraded your system to a Macintosh Plus and your printer no longer works with some of your applications, you may have to change from Xon/Xoff (Software) to DTR (hardware) type handshaking, if your printer has this option.

There were originally three different serial drivers, two RAM serial drivers and a ROM serial driver. The RAM drivers had features that the ROM driver didn't. One version of the RAM driver was for use with the 128K and 512K Macintosh and one version was for use with the Macintosh XL. All serial drivers default to 9600 baud, 8 bits data, no parity, and two stop bits with the ROM serial driver supporting CTS hardware handshake and the RAM driver supporting Xon/Xoff software handshake. The ROM driver would terminate input requests when an error occurred. The RAM driver would not terminate with errors. It can be seen that, depending on which driver was used by an application, a user could access certain built-in functions.

The newer serial driver in the Macintosh Plus 128K ROM has some differences from all the previous drivers. The new driver verifies that the serial port is correctly configured and free; if not, an error is returned. When opened, the new driver defaults to hardware handshake ON (as did the old ROM driver). When

opened, the new driver also asserts the DTR line and negates that line when closed. There have been new control calls implemented that let the application control the input data flow from an external device, as well as set control options, and modify the translation of parity default characters.

Further information on the old RAM and ROM serial drivers can be obtained from Inside Macintosh Vol. II, Page 245-255. Further information on the newer ROM serial driver can be obtained from Inside Macintosh Vol. IV, Page 225-228.

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Tech Info Library Article Number:609



Tech Info Library

Apple II Silentye manual A2L0034/030-0095-00: Errata

Revised: 11/30/84
Security: Everyone

Apple II Silentye manual A2L0034/030-0095-00: Errata

=====

Page 11... The procedure for printing a High-Res image doesn't work, since Pascal clears the High-Res buffer when you go to the Filer. We suggest modifying the program as shown below:

```
Program Sprio;

USES Turtlegraphics, Applestuff;
Var angle, distance : integer;
    CH : Char;                                (* added *)

Begin
  angle := 0;
  While not Keypress Do
  Begin
    InitTurtle;
    Pencolor (white);
    For distance := 0 to 99 Do
    Begin
      Move (2 * distance);
      Turn (angle);
    End;
    angle := angle + 5;
  End;
  CH:=CHR (17);                                (* added *)
  Unitwrite (6,CH,1,0,12);                      (* added *)
  Textmode
End.
```

Page 13...The discussion on "Echoing to the screen" assumes that you have already done a PR#1 before you do the T command.

Page 18...The discussion in the last paragraph assumes that you have already done a PR#1 before you do the Q command.

Page 38...Line 4, "for the right margin is 2" should be "for the left margin is 2"

Page 39...Program line 6040 should end with Then Goto 6070

Apple Tech Notes

Tech Info Library Article Number:610



Tech Info Library

Apple II Memory Expansion Card: Using it on the Apple IIGS

Revised: 10/12/87
Security: Everyone

Apple II Memory Expansion Card: Using it on the Apple IIGS

=====

This article last reviewed: 14 September 1987

The Apple II Memory Expansion Card does not function as Apple IIGS RAM. The card appears as a volume on your desktop; the volume name refers to the slot the card's in e.g., slot four = '/RAM4'. You should be able to format and rename as well as write to the memory card as a standard ProDOS volume.

To increase performance, the Apple IIGS's DeskTop program does recognize the Apple II Memory Expansion card and loads itself into the RAM card.

Tech Info Library Article Number:611



Tech Info Library

Softcard III: Diskette compatibility with Apple II CP/M

Revised: 11/30/84
Security: Everyone

Softcard III: Diskette compatibility with Apple II CP/M

=====

The diskette organization used in the Apple II Softcard CP/M and the Apple III Softcard CP/M are identical. This means that files generated on either system is readable by the other. However, the Softcard III CP/M System File does not work correctly on an Apple II, and visa-versa.

Some programs were designed with specific hardware in mind and may not work correctly on the Apple III. Several examples are MBASIC, GBASIC, and FORTRAN supplied by Microsoft.

Apple Tech Notes

Tech Info Library Article Number:613



Tech Info Library

Softcard III: Accessing Apple III system clock under CP/M

Revised: 11/30/84
Security: Everyone

Softcard III: Accessing Apple III system clock under CP/M

=====

The Apple III clock is accessible from machine language under CP/M. There are two call addresses in BIOS used to read and set the clock. Both use a common 18 byte area for returning the Date/Time or for setting the clock. If no clock is installed, the byte at 0DFE0H is 00H.

To Set Clock: Call 0DF89H

To Read Clock: Call 0DF86H

Example: Friday, March 21, 1982, 1:27 PM and 41.234 seconds is represented as the ASCII string: "198203216132741234".

	Addresses	Contents	
		Hex	ASCII
Year:	0DFE0H	31	(1)
	0DFE1H	39	(9)
	0DFE2H	38	(8)
	0DFE3H	32	(2)
Month:	0DFE4H	30	(0)
	0DFE5H	33	(3)
Day:	0DFE6H	32	(2)
	0DFE7H	31	(1)
Day of week:	0DFE8H	36	(6) (1=Sunday)
Hour:	0DFE9H	31	(1)
	0DFEAH	33	(3)
	0DFEBH	32	(2)
Minute:	0DFECH	37	(7)
	0DFEDH	34	(4)
Second:	0DFEEH	31	(1)
	0DFEFH	32	(2)
Tenths:	0DFEFH	32	(2)
Hundrenths:	0DFF0H	33	(3)
Thousands:	0DFF1H	34	(4)

Apple Tech Notes

Tech Info Library Article Number:614



Tech Info Library

Softcard III: Selecting 40-Column and 80-Column Text Modes

Revised: 11/30/84
Security: Everyone

Softcard III: Selecting 40-Column and 80-Column Text Modes

=====

There are several ways to switch to either 40 or 80 column mode in the CP/M environment. One way is to write a short assembly language program, assemble it, then load it as a .COM file. Another way is to use the BASIC's CHR\$ functions to change modes. Don't forget to reset the viewport when changing to 80 column mode. Refer to the Standard Device Drivers Manual for further information.

Below are two assembly language programs which allows you to set 40 or 80 column modes from the CP/M command level. Enter these in your ED.COM editor, then assembled them using ASM.COM. Once assembled, load them into .COM files using the Load utility on the CP/M System Disk.

```
;
;      Forty.COM
;
BDOS    EQU    0005H    ; BDOS entry point
WARM    EQU    0000H    ; Warm start entry point
PRINT   EQU    9        ; Print string command
;
;      ORG      0100H    ; Beginning of TPA
;
;      LXI      D,CMDS   ; Point to command string
;      MVI      C,PRINT  ; Set-up BDOS command
;      CALL     BDOS     ; Call BDOS to print string
;      JMP      WARM     ; Warm start return to CP/M
;
CMDS:   DB      16       ; Set text mode
;      DB      1        ; To 40 column mode
;      DB      28       ; Clear viewport command
;      DB      '$'      ; End print string command
;
;      End
;
;      Eighty.COM
;
```

```
BDOS    EQU    0005H    ; BDOS entry point
WARM    EQU    0000H    ; Warm start entry point
PRINT   EQU    9        ; Print string command
;
        ORG     0100H    ; Beginning of TPA
;
        LXI     D,CMD$   ; Point to command string
        MVI     C,PRINT  ; Set-up BDOS command
        CALL    BDOS     ; Call BDOS to print string
        JMP     WARM      ; Warm start return to CP/M
;
CMD$:    DB      16       ; Set text mode
        DB      2        ; To 80 column mode
        DB      1        ; Reset viewport
        DB      28       ; Clear viewport command
        DB      '$'      ; End print string command
;
        End
```

From Microsoft BASIC, use:

A. To switch to 40 Column mode:

```
100 Print CHR$(16) + CHR$(1) + CHR$(28)
110 End
```

B. To switch to 80 Column mode:

```
100 Print CHR$(16) + CHR$(2) + CHR$(1) + CHR$(28)
110 End
```

Apple Tech Notes

Tech Info Library Article Number:615



Tech Info Library

Softcard III: Problems using .RS232, .PRINTER and CP/M

Revised: 11/30/84
Security: Everyone

Softcard III: Problems using .RS232, .PRINTER and CP/M

=====

Both the .RS232 and .PRINTER drivers were designed to use the built in serial port (Port C) on the Apple III. If one configures the CP/M system such that both of these drivers are active and assigned to logical devices, the first attempt to send or receive characters causes the system to crash with an inverse S D (System Death) displayed on the console. Reboot your system to recover.

Apple Tech Notes

Tech Info Library Article Number:616



Tech Info Library

Softcard III: CP/M Reference Manual -- Errata

Revised: 11/30/84
Security: Everyone

Softcard III: CP/M Reference Manual -- Errata

=====

Page 13... The top line should read:

REName Command

REN ufn1=ufn2

Apple Tech Notes

Tech Info Library Article Number:617



Tech Info Library

Softcard III Installation and Operation Manual: Errata

Revised: 11/30/84
Security: Everyone

Softcard III Installation and Operation Manual: Errata

=====

Page 87... Item 4 should read:

4. When the A> prompt appears, type:

```
SOSXFER A:Driver.SOS=B:Driver.SOS
```

Apple Tech Notes

Tech Info Library Article Number:618



Tech Info Library

Super Serial Card: Manual Errata (12/96)

Revised: 12/16/96
Security: Everyone

Super Serial Card: Manual Errata (12/96)

=====

Article Created: 21 September 1984
Article Reviewed/Updated: 16 December 1996

TOPIC -----

Listed below are corrections to the Super Serial Card Owner's manual.

DISCUSSION -----

Page 5

The second paragraph under "Preparing the SSC for Printer Mode" should read:

If the triangle on the jumper is pointing toward the word "Modem", remove the block, using an IC Extractor if necessary, then carefully reinsert it so the triangle is pointing towards the word "Terminal".

Page 13

The example for Applesoft BASIC should read:

Applesoft BASIC: Print CHR\$(9); "command"

Page 21

The second paragraph under "Preparing the SSC for Communication Mode" should read:

If the triangle on the jumper is pointing down toward the word "Terminal", remove the block, using an IC Extractor if necessary, then carefully reinsert it so the triangle is pointing toward the word "Modem".

Page 36

The last two lines of the paragraph titled "A Terminal Mode Example" should read:

"...BASIC program to an Applesoft program, substitute CHR\$(4) for D\$, and CHR\$(1) for A\$. Leave out program lines 40 and 42."

Page 54

In the section that starts "\$C08A+s0 Command", bit 1 of the Command Register should be set to 0 to enable the receiver to cause interrupts.

Article Change History:

16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:619



Tech Info Library

UPIC: Interfacing the Epson MX-80 Printer

Revised: 11/30/84
Security: Everyone

UPIC: Interfacing the Epson MX-80 Printer

=====

* Table 2-2, which was to appear on page 10 of the Universal Parallel Interface Card manual, was left out. Refer to the identical table 4-2 on page 19.

* The Epson printer does not work properly with an Apple II parallel interface cable. Wire the cable as specified in table 2-1 on page 8.

* The UPIC switch must be set to Auto.

* The SOS driver configuration block must be set to the values in table 4-2 on page 19 for the Epson MX-80.

Apple Tech Notes

Tech Info Library Article Number:620



Tech Info Library

Problem using Apple II parallel cable with UPIC

Revised: 11/30/84
Security: Everyone

Problem using Apple II parallel cable with UPIC

=====

You may have problems using Pascal III with the Apple II Parallel Printer Interface cable, since Pascal requires different error handshaking than the cable is able to support. Rewire the cable to the pin specifications on page 16 of the Universal Parallel Interface Card manual.

Apple Tech Notes

Tech Info Library Article Number:621



Tech Info Library

UPIC: Interfacing the OKIDATA 83A printer

Revised: 11/30/84
Security: Everyone

UPIC: Interfacing the OKIDATA 83A printer

=====

To connect an Okidata 83A printer to an Apple III Universal Parallel Interface Card using an Apple II parallel cable, make the following adjustments:

DCB : 00 00 40 00 5A

Printer : All switches off
Jumper set to B

Apple Tech Notes

Tech Info Library Article Number:622



Tech Info Library

UPIC: Interfacing the C. Itoh 8510A printer

Revised: 11/30/84
Security: Everyone

UPIC: Interfacing the C. Itoh 8510A printer

=====

This is the cable configuration to connect an Apple III Universal Parallel Interface card to a C.Itoh 8510A printer.

Universal Parallel Interface		C.Itoh 8510A	
Pin	Function	Pin	Function
1	Shield Ground	17	Chassis Ground
2	Acknowledge	10	Acknowledge
3	Not used	-	Not connected
4	Not used	-	Not connected
5	Not used	-	Not connected
6	Printer in check	32	Fault
7	Not used	-	Not connected
8	Strobe out	1	Strobe in
9	Printer empty	12	Printer empty
10	Data bit 0 (LSB)	2	Data bit 0
11	Data bit 1	3	Data bit 1
12	Data bit 2	4	Data bit 2
13	Data bit 3	5	Data bit 3
14	Data bit 4	6	Data bit 4
15	Data bit 5	7	Data bit 5
16	Data bit 6	8	Data bit 6
17	Data bit 7 (MSB)	9	Data bit 7
18	Printer on-line	18	Select
19	Printer Power-on	19	+5 volt
20	Signal Ground	16	0 volt

Apple III Universal Parallel Printer driver configuration block:

ERRMASK: E8
ERRSTAT: C8
AUTOLF: 40
CTRLWRD: 00
TIMEOUT: 0A

C.Itoh 8510A Switch selection:

Switch one:

1	2	3	4	5	6	7	8
0	1	0	0	0	1	1	1

Switch two:

1	2	3	4	5	6	7	8
0	0	0	0	0	0	1	0

Apple Tech Notes

Tech Info Library Article Number:623



Tech Info Library

Universal Parallel Interface Card Manual: Errata

Revised: 11/30/84
Security: Everyone

Universal Parallel Interface Card Manual: Errata

=====

Page 8...The UPIC's pin 9 should connect to pin 24 on the IDS printers instead of to pin 12, as shown in Table 2-1.

Page 9...The note located next to the pointing hand symbol reads "Version 4.0 of the Utilities Diskette". This is referring to the current version of the System Utilities Diskette.

Page 27...Paragraph 3, third line should read "Output, Apple B sets..."

Page 30...The end of the third line under the heading "CTRLWRD" should read "negative; that is, it's clocked on the falling edge where 0V is "low"."

Page 30...In the last paragraph, the third and fourth lines should read: "When the receiving program reads a carriage return character, it should write a carriage". The Get statement returns a one character string equal to CHR\$(13) if it receives a carriage return.

Page 41...The first line of the listing just below the middle of the page should read:

```
STA      PORTA,Y      ;Place character in Port A
```

Page 48...The first line under "Toggle the Linefeed Switch (K)" should read: "If the Printer L.F. switch on the UPIC is set to AUTO, the K..."

Page 48...The paragraph just above the "eye" symbol should read: "When the Printer L.F. switch is in the Norm position, this command has no effect."

Reference Card - Printer Mode

The CTRL-I command sequence for TAB mode in BASIC is:

Implement BASIC tabs	T E
Do not implement BASIC tabs	T D

Apple Tech Notes

Tech Info Library Article Number:624



Tech Info Library

Visicalc III: Column insertion problem

Revised: 11/30/84
Security: Everyone

Visicalc III: Column insertion problem

=====

If column 254 has be used in a given session, Visicalc assumes that there isn't anymore room; therefore, it doesn't allow you to insert additional columns. To recover, save the file to disk, then reload it to reset Visicalc's pointers.

Apple Tech Notes

Tech Info Library Article Number:625



Tech Info Library

Printing from Visicalc III

Revised: 11/30/84
Security: Everyone

Printing from Visicalc III

=====

The driver file on the Visicalc III diskette is set up with two drivers: .PRINTER, which is the default printer driving the Silentype, and .QUME, the driver for the RS-232 port. Two ways to get output to the Qume are:

- A. Use the System Configuration Program to rename the existing .PRINTER to .SILENTYPE, then rename .QUME to .PRINTER.
- B. Send the information to the printer as if it were a file.

For the Silentype:

/P
P

For the Qume:

/P
F
.QUME

Then enter the lower right coordinate of the part of the worksheet you want printed.

Apple Tech Notes

Tech Info Library Article Number:626



Tech Info Library

Converting Visicalc II files to Visicalc III

Revised: 11/30/84
Security: Everyone

Converting Visicalc II files to Visicalc III

=====

A utility program included with the Apple Writer III Utilities diskette converts Visicalc II files to Visicalc III files. Here's how to use it:

1. Save your Visicalc II program to diskette; press /SS "filename".
2. Boot your Apple Writer III text file converter program.
3. Convert said files to Apple III.
4. Load the converted file into Visicalc III; press /SL "filename".
5. When you hear the beeping; press control C.
6. Save to disk; press /SS "filename".
7. Load the converted file; press /SL "filename".

Apple Tech Notes

Tech Info Library Article Number:627



Tech Info Library

Pascal III: Changing text modes

Revised: 11/30/84
Security: Everyone

Pascal III: Changing text modes

=====

The Write and Writeln procedures are unable to send the necessary control sequences to change the text mode to 40 columns black and white; use the Unitwrite procedure instead. The correct syntax is:

```
Program Demo;
Var ans :String;

Procedure Control (number:integer);
Var tryit :CHAR;
Begin
    tryit := CHR (number);
    Unitwrite (1, tryit, 1, , 12);
End;

Begin
    Control (16);
    Control (0);
    Readln (ANS);
End.
```

Apple Tech Notes

Tech Info Library Article Number:628



Tech Info Library

Apple IIGS: VCR Connection

Revised: 6/1/89
Security: Everyone

Apple IIGS: VCR Connection

=====

This article last reviewed: 09 December 1988

Here's how and why to connect your Apple IIGS to a VCR.

How: use a normal Apple IIGS video cable to connect the Apple IIGS's video output to the VCR's camera input. (Video cables are available in several lengths.) Set the VCR to "camera."

Why: This arrangement lets you use the television that's connected to the VCR as a computer monitor -- and you don't have to use an RF modulator. Because the VCR thinks the computer is a camera, you can save whatever the computer displays on video tape. Use a drawing program, for example, to make title screens for your live-action videos, or use an animation program to make your own cartoon videos.

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Tech Info Library Article Number:629



Tech Info Library

Pascal III: Comparison to Apple II Pascal (1 of 2)

Revised: 11/30/84
Security: Everyone

Pascal III: Comparison to Apple II Pascal (1 of 2)

=====

The majority of Apple II Pascal programs can be recompiled then executed on the Apple III without modification. The following is summary of significant differences between Pascal II and Pascal III. Please refer to the Apple III Pascal Programmer's Manual, Volume 2, starting on page 128, for additional information.

OTHERWISE Clause in CASE Statement:

Pascal III provides an OTHERWISE clause in the CASE statement. The OTHERWISE clause allows you to enter a statement that is executed if none of the cases are executed. Refer to chapter 5 of the Apple III Pascal Programmer's Manual.

SOS Pathnames:

SOS Pathnames are different from the Pascal filenames used on the Apple II. Pascal III supports both types of names, as explained in the Apple III Pascal Introduction, Filer, and Editor manual.

SOS Device Driver Support:

Pascal III supports SOS device drivers as "I/O units." See Chapters 10 thru 12 in the Standard Device Drivers Handbook.

Graphics:

The Apple III screen graphics modes driven through the SOS graphics driver differs significantly from the Apple II. Therefore, a new unit named PGRAF is supplied as a high-level interface to the graphics driver. Refer to the Standard Device Driver manual for additional information on the SOS graphics driver.

Turtlegraphics is available only for compatibility with the Apple II. Refer to Appendix K of the Apple III Pascal Programmer's Manual.

New Procedures:

The AppleStuff unit contains Date, TimeOfDay, ClockInfo, and SetTime procedures for reading and setting the Apple III system's internal date and time. See Appendix D of the Apple III Pascal Programmer's Manual.

New Data Types:

The ByteStream and WordStream types are provided for use as types of Var parameters in procedure and function definitions. See Chapter 3 of the Apple III Pascal Programmer's Manual.

Real Arithmetic:

For operations on type Real values, Pascal III conforms to the IEEE floating-point standard. Under default conditions, the difference between the Pascal III and Apple II Pascal is invisible, unless the program performs operations giving exceptional results, such as division by zero. See Appendix F of the Apple III Pascal Programmer's Manual for complete details.

The Apple Pascal Numeric SANE package, available for both the Apple II and Apple III, establishes a universal mathematic environment for the two systems.

Library Files and Units:

Each Pascal III codefile can have a "program library" file associated with it in addition to the System.Library file. Thus, library units are more convenient; furthermore, programs may have up to 48 segments at run time.

When compiling a unit, it is no longer necessary in all cases to use the Compiler's swapping option.

Apple Tech Notes

Tech Info Library Article Number:630



Tech Info Library

Pascal III: Comparison to Apple II Pascal (2 of 2)

Revised: 11/30/84
Security: Everyone

Pascal III: Comparison to Apple II Pascal (2 of 2)

=====

Memory Organization:

An Apple III operating SOS or Pascal has different memory organization than when running Apple II Pascal. The amount of memory available is somewhat greater on the 128K Apple III than on the Apple II.

Memory organization could effect an Apple II program run on a Apple III, if the program depends on pointer values created when running on an Apple II and stored on a diskette.

Similarly, an Apple II program that depends on specific Apple II hardware addresses does not work on the Apple III. This could for example affect Apple II Pascal programs designed to drive the Silentype printer; though such programs could be revised to use the Apple III Silentype driver described in the Standard Device Drivers Handbook.

The UNITSTATUS Procedure:

The UNITSTATUS procedure is supported for device oriented I/O. See Chapter 12 of the Apple III Pascal Programmer's Manual.

Runtime Segment Table:

The runtime segment table allows for 64 segments instead of 32. See Chapter 15 of the Apple III Pascal Programmer's Manual.

Conditional Compiling:

The Apple III Pascal Compiler allows conditional compilation. See Appendix F of the Apple III Pascal Programmer's Manual.

CHAINSTUFF Unit:

Since Apple III Pascal has no "system swapping" mode, the SWAPON and SWAPOFF procedures are absent from the CHAINSTUFF unit.

Compiling Apple II Code:

The Pascal III compiler can compile code to run on the Apple II. Refer to Appendix F of the Apple III Pascal Programmer's Manual.

File Variable Size:

Every declared file in an active procedure requires 1,100 bytes of memory.

Compiler Options:

Option names can be spelled out.

Because Compiler options always end with a comma, all can be chained together except for the Include option. The Comment option cannot contain a comma and the Resident option does not accept a list.

Procedure Complexity:

The Apple III larger memory supports more complex code than the Apple II.

System Globals:

Users of the {\$USER-} option may find that their programs are not portable.

Apple Tech Notes

Tech Info Library Article Number:631



Tech Info Library

Pascal III: Error code summary

Revised: 11/30/84
Security: Everyone

Pascal III: Error code summary

=====

System Failures

01	Re-entrant system call
02	Interrupt not found
03	Too many nested interrupts
04	Unable to allocate NMI
05	Event queue overflow
06	Stack overflow
07	Invalid request code
08	Reserved
09	Memory size less than 64K bytes
0A	Invalid volume control block
0B	Invalid file control block
0C	Invalid allocation block
0D	Pathname buffer overflow
0E	
0F	Invalid buffer number
10	Invalid buffer request

Pascal Execution Errors

1	Value range error
2	No procedure in segment table
3	Exit from uncalled procedure
4	Stack overflow
5	Integer overflow
6	Divide by zero
7	NIL pointer reference
8	Program interrupted by user
9	System I/O error
10	User I/O error
11	Unimplemented instruction
12	Floating point error
13	String overflow
14	Program HALT
15	Programmed break-point

Pascal I/O Errors

0	No error, normal I/O completion
1	
2	Bad unit number
3	Illegal operation (e.g. read from Printer:)
4	
5	Lost unit, no longer on line
6	Lost file, file no longer in directory
7	Illegal pathname
8	No room, insufficient space on diskette
9	No unit, unit not on line
10	No such file in specified directory
11	Duplicate pathname
12	Attempt to open an already open file
13	Attempt to access a closed file
14	Bad input format, error in reading number
15	Ring buffer overflow, input arriving too fast
16	Write protect error, diskette is protected
17	
18	
19	Too many files open for system to handle
20..31	
32	(SOS) Invalid request code
33	
34	(SOS) Invalid control parameter list
35	(SOS) Character device not open
36	(SOS) Device not available
37	(SOS) Resource not available
38..43	
44	(SOS) Invalid byte count
45	(SOS) Invalid block number
46..47	
48..63	(SOS) Device specific error
64	(SOS) Device error, bad address or bad data on diskette
65	(SOS) Too many character files open
66	(SOS) Too many block files open
67	(SOS) Invalid file reference number
68..72	
73	(SOS) Directory full
74	(SOS) Incompatible file format
75	(SOS) Unsupported storage type
76	(SOS) Attempted read past end of file
77	(SOS) File position out of range
78	(SOS) Illegal access attempted
79	(SOS) User's buffer too small
80	(SOS) File busy
81	(SOS) Volume format neither SOS nor Apple II
82	
83	(SOS) Invalid value in list parameter
84	(SOS) Out of memory for SOS system buffer

85	(SOS) Buffer table full
86	(SOS) Invalid system buffer parameter
87	(SOS) Duplicate volume error
88..126	
123..127	(SOS) System call error

Apple Tech Notes

Tech Info Library Article Number:632



Tech Info Library

Apple IIGS: Use System Disk 2.0 After ROM Upgrade

Revised: 11/9/88
Security: Everyone

Apple IIGS: Use System Disk 2.0 After ROM Upgrade

=====

This article last reviewed: 9 November 1988

Anyone who upgrades the ROM in an Apple IIGS should then use only the system software on System Disk 2.0 or later versions.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:633



Tech Info Library

Pascal III Editor: Inserting control characters

Revised: 11/30/84
Security: Everyone

Pascal III Editor: Inserting control characters

=====

The Pascal Editor recognizes 32 different control characters. The trick to producing them is to press the OPEN-APPLE key together with whatever key is required to obtain the desired control character, as described in the table on p. 136 of the Standard Drivers Manual. These characters go into the file with their high bit set to one, but that probably won't be a problem: most programs and peripherals ignore the high bit anyway.

Apple Tech Notes

Tech Info Library Article Number:634



Tech Info Library

Macintosh: Key Caps desk accessory

Revised: 7/17/92
Security: Everyone

Macintosh: Key Caps desk accessory

=====
Article Created: 17 December 1984
Article Last Reviewed: 29 May 1992
Article Last Updated: 29 May 1992

The Key Caps desk accessory is used to show the current keyboard mapping - that is, which keys correspond to which characters. It is especially useful for showing the characters accessed by the Option key, which are not typically displayed on the keyboard itself. The Key Caps menu, available when the DA is open, allows you to select and view any font available in your system. Key Caps can also be used to "type" characters into the Key Caps desk accessory using the mouse to click on letters. The characters can then be copied and pasted into another application if your keyboard is broken or inaccessible.

To print the Key Caps layout take a snapshot of the screen and print it. Search on "Screen Dump" for more information. It's not possible to screen dump the keys displayed on the Key Caps screen when the option key is pressed down. If you want a printout of the characters produced when pressing the option key, type them into an application, such as MacWrite or MacPaint, then print using the print dialog box.

To display all the characters in a given font, use ResEdit or the simple MS-BASIC program below.

```
10 c = 32
15 l = 0
20 Print CHR$(c);
25 c = c +1
30 l = l +1
35 If c > 255 Then End
40 If l < 50 Then 20
45 Print
50 Goto 15
```

This program prints the default (Geneva 12-point) key caps to the default screen. Add the following lines to your program to print other fonts and sizes

contained on the BASIC disk:

5 CALL TEXTFONT (typeface)
--0 is system font, 2 is New York, etc.; refer to the Microsoft BASIC manual.

7 CALL TEXT SIZE (size)
--9, 12, 14 or whatever sizes are on the disk.

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Tech Info Library Article Number:635



Tech Info Library

Pascal III: Listing large directories

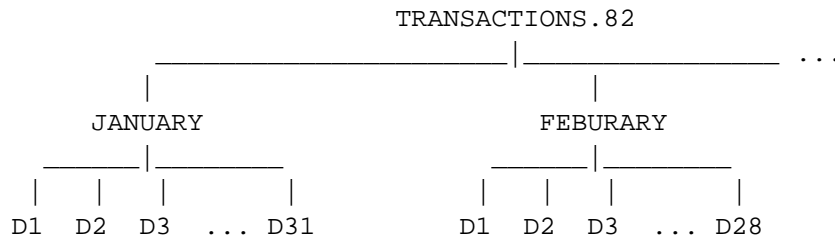
Revised: 4/8/91
Security: Everyone

Pascal III: Listing large directories

=====

The Pascal III Filer reads the entire directory into memory before printing any of it, and so the number of files in a directory is limited. With a 128K Apple III, this limit is approximately 500 files; a ProFile with a directory containing more than 500 files, then, can cause problems.

SOS was designed to accomodate subdirectories so that large numbers of files can be stored and used with ease. A complex daily log of transactions, for instance, might be arranged like this:



This way, the pathname to the data for the last day of Feburary would be:

/PROFILE/TRANSTIONS.82/FEBURARY/D28

By making use of SOS's ability to accomodate subdirectories, then, you can store far more than 500 files, as long as you never exceed the 500-file limit within any single directory.

Apple Tech Notes

Tech Info Library Article Number:637



Tech Info Library

Pascal III: SEEK

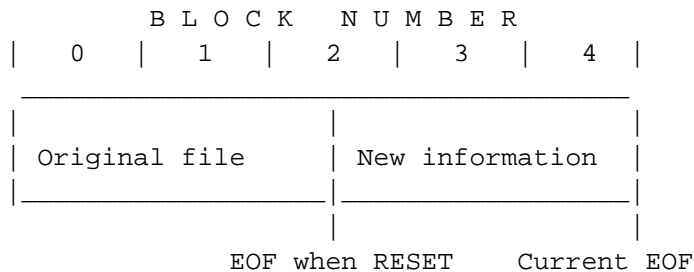
Revised: 11/30/84
Security: Everyone

Pascal III: SEEK

=====

SEEK has a problem when used with an Apple II Pascal formatted diskette. When SEEKing a record that has been added to the file since the last RESET, it either takes a long time to find the record, or else Pascal stops with a System Failure error.

This commonly happens when you increase a file's size with PUTs and then use a SEEK to access one of the new records. Further operations on the file may destroy it.



For example: a SEEK to a record in the last half of block 2, block 3 or 4 causes undesirable results.

If you must extend a file, RESET the file before using SEEK.

Apple Tech Notes

Tech Info Library Article Number:638



Tech Info Library

Pascal III: Accessing the extra memory (1 of 5)

Revised: 11/30/84
Security: Everyone

Pascal III: Accessing the extra memory (1 of 5)

=====

Apple III Pascal is upwardly compatible from Apple II Pascal. One of the constraints this imposed on the design of Pascal III was the restriction of the data space to 64K bytes. This restriction has been made clear on all specifications of the product. However, since the system uses additional space for SOS, drivers, graphics, the interpreter and code segments, this restriction may still interfere with programs that use large quantities of data.

To illustrate the steps involved in accessing more data, below are some small assembly routines. They ask SOS to allocate more space for the program, allow transfers of data back and forth to that space, then deallocate the space. On top of that is built a simple string package which stores up to 128K of string values in this space. Though the memory within this space may be managed only in the simplest of ways, the space can still be very useful.

The routines consists of three portions:

- A. An assembly language routine containing macros that the SOS interface needs.
- B. A fancy version of MOVELEFT that moves bytes from one location in banked memory to another. It understands the memory addressing of the Apple III, and so it increments pages accordingly.
- C. A Pascal unit that uses the first two programs to implement the string routines.

; Macro Definitions

```
.Macro Pull
; Pull 2 bytes off the stack and store them
PLA
STA %1
PLA
STA %1+1
```

```
.EndM
```

```
.Macro Push
```

```
; Load 2 bytes and put them on the stack
```

```
LDA %1+1
```

```
PHA
```

```
LDA %1
```

```
PHA
```

```
.EndM
```

```
.Macro Return
```

```
; Load the return address, PUSH it and RTS
```

```
Push %1
```

```
RTS
```

```
.EndM
```

```
.Macro EnterProc
```

```
; Save the return address
```

```
Pull %1
```

```
.EndM
```

```
.Macro EnterFunc
```

```
; Save the return address and kill the 4 byte bias
```

```
EnterProc %1
```

```
PLA
```

```
PLA
```

```
PLA
```

```
PLA
```

```
.ENDM
```

```
.Macro PushTrue
```

```
; Put a Boolean True on the stack
```

```
LDA #0
```

```
PHA
```

```
LDA #1
```

```
PHA
```

```
.ENDM
```

```
.Macro PushFalse
```

```
; Put a Boolean FALSE on the stack
```

```
LDA #0
```

```
PHA
```

```
PHA
```

```
.ENDM
```

```
.Macro P_A_Word
```

```
; Copies a word from a Pascal Var to assembly language
```

```
.If %1 & 0FF00 <> 0
```

```
WrongOrderInA_P_Word
```

```
.ENDC
```

```
LDY #0
```

```
LDA (%1),Y
```

```
STA %2
INY
LDA (%1),Y
STA %2+1
.ENDM

.Macro A_P_Word
; Copies a byte from a assembly lang word to a Pascal word
.IF %2 & 0FF00 <> 0
WrongOrderInA_P_Word
.ENDC
LDY #0
LDA %1
STA (%2),Y
INY
LDA %1+1
STA (%2),Y
.ENDM

.Macro P_A_Byte
; Copies a byte from a Pascal byte to assembly language
.If %1 & 0FF00 <> 0
WrongOrderInP_A_Byte
.EndC
LDY #0
LDA (%1),Y
STA %2
.ENDM

.Macro A_P_Byte
; Copies a byte from assembly language to a Pascal word
.If %2 & 0FF00 <> 0
WrongOrderInA_P_Byte
.ENDC
LDY #0
LDA %1
STA (%2),Y
TYA
INY
STA (%2),Y ; Clear highbyte of Pascal var
.ENDM

.Macro SOSCall
; Framework for calls to the SOS memory manager
BRK
.Byte %1
.Word %2
.ENDM

Temp1 .EQU 0E0
Temp2 .EQU 0E2
Temp3 .EQU 0E4
Temp4 .EQU 0E6
```



```
; Procedure Allocate(Var NumPages,Segnum,Bank,SegBase:
                      integer);external;
; {allocates a chunk of SOS memory:
;   Input:
;     NumPages: Maximum number of pages to try for.
;   Output:
;     NumPages: Number of pages actually allocated.
;     SegNum:   SOS Segment number (for deallocate)
;     Bank:    Starting address bank number
;     SegBase: Starting address byte address ($0200..$9E00)}
```

Apple Tech Notes

Tech Info Library Article Number:639



Tech Info Library

Pascal III: Accessing the extra memory (2 of 5)

Revised: 11/30/84
Security: Everyone

Pascal III: Accessing the extra memory (2 of 5)

=====

```
.PROC    Allocate,4
FindSeg .EQU    41
```

```
SegBase .EQU    Temp1
Bank     .EQU    Temp2
SegNum   .EQU    Temp3
NumPages .EQU    Temp4
```

```
EnterProc RetAddr
```

```
PULL     SegBase
PULL     Bank
PULL     SegNum
PULL     NumPages
```

```
P_A_Word NumPages,Pages
```

```
SOSCall Find_Seg,Param
BEQ      $1                ; If it worked,great
SOSCall Find_Seg,Param    ; Else try again!
$1       BEQ      $2
LDA      #0                ; 2 failures ==> return 0 pages
STA      Pages
STA      Pages+1

$2       LDA      SPage      ; Send back starting address
LDY      #1                ; in high byte!!
STA      (SegBase),Y
DEY
TYA
STA      (SegBase),Y
```

```
A_P_Word Pages,NumPages
A_P_Byte SBank,Bank
A_P_Byte Seg, SegNum
```

```

        Return  RetAddr

Param    .BYTE    06
SrchMde  .BYTE    02      ; Can cross more than one boundary
SegId    .BYTE    30      ; First user segment?
Pages    .WORD
SBank    .BYTE
SPage    .BYTE
         .WORD
Seg       .BYTE

RetAddr  .WORD

        .PROC DeAllocate,1
        ; PROCEDURE DeAllocate(SegNum:INTEGER); EXTERNAL;
Release_Seg .EQU      45
        EnterProc      RetAddr
        PULL           SegNum

        LDA            SegNum
        BEQ            Ret      ; Don't release all segs!

        SOSCALL        Release_Seg,Param
Ret      Return        RetAddr

Param    .BYTE    1
SegNum    .WORD      ; Only first byte used by SOS, but PULL
                ; needs 2
RetAddr    .WORD

        .END

=====
; This file contains an assembly language procedure which moves
; bytes from one bank to another.  Use this from Pascal to get
; access to the rest of the bank space in larger machines.
; This can allow you to do SOS Request-Seg calls and use
; that area for data storage for later use or to pass to an
; assembly procedure. This procedure does two slightly difficult
; things :
;
; 1. it avoids holes in bank memory map, and
; 2. it switches banks on both source and destination at the
;    right times.
;
; Pascal declaration is:
;   PROCEDURE FetchBytes(SrcBank:INTEGER;    Source:INTEGER;
;   ;                               DstBank:INTEGER;    Dest:INTEGER;
;   ;                               PageCount:INTEGER;    Count:INTEGER
;   ;                               ); EXTERNAL;
;
; The procedure will copy 256*PageCount+Count bytes from
; Source (a bank pointer to bank pair starting with SrcBank) to

```

```
; Dest (a bank pointer to bank pair starting with DstBank);
; A SrcBank or DstBank of -1 means "in Pascal's bank pair"
; Thus FetchBytes(-1,Atsign(S),-1,Atsign(D),0,C) ==
;   MoveLeft(S,D,C)
;
; RESTRICTIONS:
;   1. Equivalent to a moveleft (ascending transfer)
;   2. Cannot reach top and bottom (system) banks,
;       and "real" addresses must be offset
;       by $2000 to render bank addresses
;
; ALGORITHM:
;   1.   If we're moving  X*65535 +Y*256 + Z bytes, then
;   2.   First move Y pages to clear middle byte of Count
;   3.   Then use middle byte to move X*256 pages,
;   4.   Finally, move Z bytes in last page.
; =====
; MACRO Defs
;   .MACRO PULL
;     PLA
;     STA    %1
;     PLA
;     STA    %1+1
;   .ENDM
;
;   .MACRO PUSH
;     LDA    %1+1
;     PHA
;     LDA    %1
;     PHA
;   .ENDM
```

Apple Tech Notes

Tech Info Library Article Number:640



Tech Info Library

Pascal III: Accessing the extra memory (3 of 5)

Revised: 11/30/84
Security: Everyone

Pascal III: Accessing the extra memory (3 of 5)

```
=====

.MACRO SetBank
; This macro saves %1 (an extended address bank pointer) in Save%1
; and pops the new value. The code follows a convention that if the new
;
; 1. check the address currently pointed to by corresponding word
;    in Zero page, and
; 2. modify it and %1 (bank register) to make sure the address does
;    not point to zero page of bank pair to avoid holes in the memory
;    map.
;
; Zero page wraparound during execution taken care of by main loop.

LDA    %1
STA    Save%1        ; Save old one

PLA                    ; Get low order byte of new bank
CMP    #0FF          ; Don't use if = to -1
BEQ    $1
ORA    #80            ; Set extended addressing on
STA    %1            ; And save bank

$1    LDA    %1-1601+1 ; Check for zero page reference of
; starting pointers (rest of
; algorithm guarantees it will never
BNE    $3            ; happen again)
LDA    #80            ; If was nn:00xx , change to
; nn-1:80xx
STA    %1-1601+1
DEC    %1

$3    PLA
.ENDM

; The following macro guarantees that the base pointer %1 will not
; wrap into zero page during next 256 increments of the pointer.
.MACRO TestWrap
```

```

        LDA        %1+1          ; Before moving each page,
                                   ; check for wraparound

        CMP        #0FF
        BCC        $1
        SBC        #80
        STA        %1+1
        INC        %1+1601
$1      .ENDM

;=====
        ; Main procedure
        .PROC FetchBytes,6

Source  .EQU       0E0           ; Zero page pointer to read
                                   ; bytes through
SrcBank .EQU       1601+Source
Dest    .EQU       0E2           ; Zero page pointer to write
                                   ; bytes through
DstBank .EQU       1601+Dest

; temps
Count   .EQU 030   ; Three byte counter of # of bytes to move
SaveDstBank .EQU 033 ; Allow us to restore Pascal bank at end
SaveSrcBank .EQU 034 ; of subroutine

;=====
        ; Initializations

        PULL      RetAddr        ; Get information off stack

        ; Convert 4 bytes of page/byte count to
        ; three byte integer
        PULL      Count

        PLA                ; low order byte of page count
        CLC
        ADC        Count+1    ; add two (low order) page counts
                                   ; together
        STA        Count+1
        PLA                ; now get high order byte
        ADC        #0         ; and add carry to high order count
        STA        Count+2

        ; now pull destination and source off stack
        PULL      Dest
        SetBank   DstBank
        PULL      Source
        SetBank   SrcBank

        ; END    Initializations

;=====
        ; test to see if we need to move another whole page.
MovePg  TestWrap Dest        ; guarantee copy loop works for next
```

```
TestWrap Source      ; 256 bytes

LDA    Count+1        ; Y pages to copy?
BNE    PgLoop         ; yes, go copy them
LDA    Count+2        ; X chunks of 256 pages?
BEQ    Partial        ; no, just copy last fragment
DEC    Count+2        ; yes,go copy it (count+1 now
                     ; contains $100)

; now copy one page
PgLoop LDY    #0        ; move one page. This is key loop.
$1     LDA    @Source,Y  ; get data
      STA    @Dest,Y    ; store it
      INY
      BNE    $1

; change to next page
INC    Source+1
INC    Dest+1
DEC    Count+1
JMP    MovePg
```

Apple Tech Notes

Tech Info Library Article Number:641



Tech Info Library

Pascal III: Accessing the extra memory (4 of 5)

Revised: 11/30/84
Security: Everyone

Pascal III: Accessing the extra memory (4 of 5)

```
=====

; At this point, there is an assumption that
; 1. move partial page and
; 2. Testwrap on source and dest
; have been done so we can move at least 256 bytes without
; thinking about it again.
Partial LDA    Count          ; all done yet?
      BEQ      Return
      LDY      #0              ; now move (low byte of Count)
                                   ; # of bytes
$1     LDA      @Source,Y
      STA      @Dest,Y
      INY
      CPY      Count
      BNE      $1
;=====
Return  LDA      SaveSrcBank    ; and go home
      STA      SrcBank
      LDA      SaveDstBank
      STA      DstBank
      PUSH     RetAddr
      RTS

Retaddr  .WORD

      .FUNC      Atsign,1
; x := Atsign(Y) causes X to point to Y
      PULL      RetAddr
      PLA
      PLA
      PLA
      PLA
      PUSH     RetAddr
      RTS

RetAddr  .WORD
Loc      .WORD
```


.END

```
=====
{$SETC Debug := TRUE}
UNIT StringSpace;

INTERFACE
    TYPE
        STRING1    = STRING[1];
        STRING255  = STRING[255];
        STRPTR     = INTEGER;

    FUNCTION  InitStringSpace(ColdStart:BOOLEAN): INTEGER;
    PROCEDURE FreeStringSpace;
    FUNCTION  PutString(VAR S:STRING1; VAR WHERE:STRPTR):
                BOOLEAN;
    PROCEDURE GetString(Who:STRPTR; VAR S:STRING255);
                {S had better be 256 bytes long!}
IMPLEMENTATION

    VAR
        SegNum,           {segment number of memory chunk}
        Bank,             {what bank is chunk in}
        Base,             {start of chunk received (byte address)}
        Tos,              {next word to allocate}
                        {(base rel word address)}
        Limit: INTEGER;   {last word allocatable}
                        {(base rel word address)}

    PROCEDURE Allocate(VAR NumPages, Segnum, Bank, SegBase:
                        INTEGER); EXTERNAL;
    {allocates a chunk of SOS memory:
    Input:
        NumPages: Maximum number of pages to try for.
    Output:
        NumPages: Number of pages actually allocated.
        SegNum:   SOS Segment number (for deallocate)}
    { Bank:      Starting address bank number
      SegBase:   Starting address byte address ($0200..$9E00)}

    PROCEDURE DeAllocate(SegNum:INTEGER); EXTERNAL;

    PROCEDURE FetchBytes(SrcBank:INTEGER; Source:INTEGER;
                        DstBank:INTEGER; Dest:INTEGER;
                        PageCount:INTEGER; Count:INTEGER
                        ); EXTERNAL;

    FUNCTION Atsign( VAR x:INTEGER):INTEGER; EXTERNAL;

    FUNCTION InitStringSpace{(ColdStart:BOOLEAN): INTEGER};
    VAR
        NumPages:INTEGER;
        TempBase:INTEGER;
```

```
BEGIN
  IF ColdStart THEN BEGIN
    FreeStringSpace;

    {$IFC Debug}
    WRITELN('How many pages to allocate?');
    READLN(NumPages);
    IF NumPages > 512 THEN NumPages := 512;
    {$ELSEC Debug}
    NumPages := 512;
    {$ENDC Debug}

    Allocate(NumPages, SegNum, Bank, TempBase);
    Base := TempBase - {$2000}8192;    {shift into}
                                      {extended address}
    Limit := NumPages*128 - 32767-1;   {128 = words/page}

    {$IFC Debug}
    WRITELN('Assembly results:');
    WRITELN('Segment ', Segnum, ' Allocated ', NumPages,
            ' pages', ' in bank ', Bank, ' at real address ',
            TempBase);
    IF Base MOD 256 <> 0 THEN
      WRITELN(CHR(7), 'bad base address');
    {$ENDC Debug}

    END;
    Tos := -32767-1;                  {compiler doesn't like -32768}
    InitStringSpace := NumPages;
  END;
```

Apple Tech Notes

Tech Info Library Article Number:642



Tech Info Library

Pascal III: Accessing the extra memory (5 of 5)

Revised: 11/30/84
Security: Everyone

Pascal III: Accessing the extra memory (5 of 5)

=====

```
PROCEDURE FreeStringSpace;
BEGIN
  IF SegNum <> 1 THEN De_Allocate(SegNum);
END;

PROCEDURE Convert(Who:STRPTR;
                  VAR TempBank,TempAddr:INTEGER);
BEGIN
  TempBank := Bank;
  IF Who >= 0 THEN BEGIN
    {must be in second half of chunk}
    TempBank := TempBank+2;
    {$IFC  DEBUG}
    WRITE('+');
    {$ENDC  DEBUG}
  END;
  TempAddr := Who+Who+Base;
  IF (TempAddr < Base) AND (TempAddr >= 0) THEN BEGIN
    {must be in third bank of this half}
    TempBank := TempBank+2;
    {$IFC  DEBUG}
    WRITE('2');
    {$ENDC  DEBUG}
  END;
  {$IFC  DEBUG}
  WRITE('(',TempBank,':',TempAddr,')');
  {$ENDC  DEBUG}
END;

FUNCTION PutString {(VAR S:STRING1;
                    VAR WHERE:STRPTR): BOOLEAN};
VAR
  NewTos:INTEGER; {if this succeeds, where will Tos be?
                  (base relative word pointer)}
  TempBank,
  TempAddr:  INTEGER;    {real bank address of string}
```

```

BEGIN
  {check for space overflow; this is tricky due to negative
  addresses:
  (if limit is positive (i.e. we have at least 32k words))
      Tos +      -      (note: 0 is +)
      ===== CMP means Overflow if newtos > limit
n      |      EW  means impossible situation
e + |      CMP      CMP      (must have already overflowed)
w      |      OVFL means overflow
t      |      OK  means no overflow possible
o - |      OVFL      CMP
s      |
  (if limit is negative (i.e. we have less than 32k words))
      Tos +      -
      =====
n      |
e + |      EW      OVFL (=CMP)
w      |
t      |
o - |      EW      CMP
s      |
  }
  {$IFC  DEBUG}
  WRITE('Storing "',S,'" at ',tos);
  {$ENDC  DEBUG}
  NewTos := Tos+(LENGTH(S)+2) DIV 2;
  IF (Tos < NewTos) AND (NewTos < Limit) THEN BEGIN
    PutString := TRUE;
    Convert(Tos,TempBank,TempAddr);
    FetchBytes(-1,AtSign(S),TempBank,TempAddr,0,Length(s)+1);
    Where := Tos;                      {hand back pointer}
    Tos := NewTos;
  END ELSE BEGIN
    PutString := FALSE;
  END;
  {$IFC  DEBUG}
  Writeln;
  {$ENDC  DEBUG}
END;

```

```

PROCEDURE GetString{(Who:INTEGER; VAR S:String255)};
  VAR
    TempBank,
    TempAddr:  INTEGER;      {real bank address of string}
BEGIN
  {compute real address of string in memory}
  {$IFC  DEBUG}
  WRITE('Getting ',Who);
  {$ENDC  DEBUG}
  Convert(Who,TempBank,TempAddr);
  FetchBytes(TempBank,TempAddr,-1,AtSign(S),1,0);
  {$IFC  DEBUG}
  Writeln(' ==>"',S,'"');

```

```
        {$ENDC DEBUG}  
    END;
```

```
BEGIN  
    SegNum := -1;  
END.
```

Apple Tech Notes

Tech Info Library Article Number:643



Tech Info Library

Pascal III: Typeahead Killer

Revised: 11/30/84
Security: Everyone

Pascal III: Typeahead Killer

=====

The following program demonstrates how to control the typeahead feature of the .CONSOLE driver. The Standard Drivers Manual and the Pascal Programmer's Manual explain how it works.

```
PROGRAM KILL_TYPEAHEAD;

VAR CH:          CHAR;
    COMMAND:     INTEGER;

BEGIN
    WRITE (CHR (28)); GOTOXY (0,12);
    WRITE ('Typeahead: K)ill, R)estore, A)bort: ');
    REPEAT
        READ (KEYBOARD, CH);
    UNTIL CH IN ['K', 'k', 'R', 'r', 'A', 'a'];
    GOTOXY (0,12);
    CASE CH OF
        'K', 'k': BEGIN
            COMMAND := 0;
            UNITSTATUS (1, COMMAND, 19);
            WRITE ('Typeahead is off.', CHR (31));
            END;
        'R', 'r': BEGIN
            COMMAND := 128;
            UNITSTATUS (1, COMMAND, 19);
            WRITE ('Typeahead is on.', CHR (31));
            END;
        'A', 'a': WRITE ('Aborted...', CHR (31));
    END; { CASE }
END.
```

Apple Tech Notes

Tech Info Library Article Number:644



Tech Info Library

Apple IIGS: VGC and ROM Upgrade

Revised: 9/30/96
Security: Everyone

Apple IIGS: VGC and ROM Upgrade

=====

Article Created: 12 October 1987
Article Reviewed/Updated: 30 September 1996

TOPIC -----

Beginning August 1, 1987, two free component upgrades have been available to Apple IIGS owners. This REA program ended on 31 March 1995.

DISCUSSION -----

Overview

These are the two component upgrades:

- A new ROM chip corrects minor problems and provides enhancements for future software releases.
- A new Video Graphics Controller (VGC) chip corrects video display problems that may occur in double hi-res and standard text modes.

Look at the first three digits of the serial number on the bottom of the Apple IIGS to determine which of the two upgrades your computer needs. (This is only a general guide, because a given computer may have already undergone modifications after leaving the factory. For more specific information, see the "Upgrade Part Numbers" section later in this article.) These are the guidelines:

- Computers with the first three digits of the serial number 704 or lower, generally require both the new VGC and the ROM upgrade.
- Computers with the first three digits of the serial number 705 through 724 (inclusive), generally require only the new ROM.
- Computers with the first three digits of the serial number 725 or higher, generally require neither of the upgrades.

Upgrade Part Numbers

Because some systems may have had logic board swaps since date of purchase, it's best to check the individual VGC and ROM numbers on the main logic board to be sure of which upgrade is required.

- Replace any ROM chip numbered 344-0077-A with the replacement part 344-0077-B.
- Replace any VGC chip numbered AMI 344S0046-1 or AMI 344S0046-A with the replacement part AMI 344S0046-3, IMP 344S0046, or IMP 344S0056.
- VGCs numbered AMI 344S0046-2 or AMI 344S0046-B need no replacement.

The repair extension program number is 0LR853.

***** IMPORTANT NOTE *****

This program expired on 31 March 1995 and is no longer available under an REA program. However, you can purchase the VGC IC and ROM chip as separate items. In order to pull the VGC chip off the logic board, you will also need the VGC IC extraction tool. Here are the parts you need:

342-0077 ROM, Apple IIGS
344S0046 VGC, Apple IIGS
076-0246 VGC IC Extraction Tool

Article Change History:

30 Sep 1996 - Added REA closing date and part numbers.

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Tech Info Library Article Number:645



Tech Info Library

Pascal III: Intrinsic Units

Revised: 11/30/84
Security: Everyone

Pascal III: Intrinsic Units

=====

Intrinsic Units in Pascal allow the programmer to write and compile code in modules. The programmer can put the modules in a library; several different programs can then use them without a separate linking step. The unit is automatically loaded with the program code file when the program is executed.

The following is a simple example of how to write an intrinsic unit. It is a supplement to the information in chapter 14 of the Programmer's Manual.

First let's enter the unit. This unit has one function that asks for an integer number and returns that number doubled. From the editor, enter:

```
UNIT LIB2;
INTRINSIC CODE 10;

INTERFACE
FUNCTION DOUBLE (NUM:INTEGER):INTEGER;

IMPLEMENTATION
FUNCTION DOUBLE;
BEGIN
    DOUBLE := NUM + NUM;
END;

BEGIN
    WRITELN ('LIB2 INITIALIZATION');
END.
```

Save the file as LIB2, quit the Editor and compile the unit.

Now put the unit in a library. We suggest you use a program library for this test so that you won't have to modify the SYSTEM.LIBRARY. Here's how to do it:

```
Execute /PASCAL3/LIBRARY
The destination will be TEST2.LIB
The source is LIB2.CODE
Enter "=" to copy the entire codefile into the library
```

..TIL00646-Pascal_III-Intrinsic_Units_(TA44996).pdf

Enter "Q" to save the library and exit the program
Press return when asked for Notice?

When that's done, go back to the Editor and enter:

```
PROGRAM TEST2;  
  
USES {$USING TEST2.LIB} LIB2;  
  
VAR INT:INTEGER;  
  
BEGIN  
    READLN (INT);  
    WRITELN (INT, ' times 2 equals ', DOUBLE (INT));  
END.
```

Save the file as TEST2 and quit the Editor. Compile the program. The unit will be loaded automatically when the program is executed.

Apple Tech Notes

Tech Info Library Article Number:646



Tech Info Library

Pascal III: Regular Units

Revised: 11/30/84
Security: Everyone

Pascal III: Regular Units

=====

Regular Units in Pascal allow the programmer to write and compile code in sections. The programmer can then link the sections to form a single code file that will run without the need to refer to a library. The following is a simple example of how to write a regular unit. It is a supplement to the information in chapter 14 of the Programmer's Manual.

First let's enter the unit. This unit has one function that asks for an integer number and returns that number doubled. Enter the editor and enter:

```
UNIT LIB1;

INTERFACE
FUNCTION DOUBLE (NUM:INTEGER):INTEGER;

IMPLEMENTATION
FUNCTION DOUBLE;
BEGIN
    DOUBLE := NUM + NUM;
END;

BEGIN
    WRITELN ('LIB1 INITIALIZATION');
END.
```

Save the file as LIB1, quit the Editor and compile the unit. Now enter the program that will use LIB1:

```
PROGRAM TEST1;

USES {$USING LIB1.CODE} LIB1;

VAR INT : INTEGER;

BEGIN
    READLN (INT);
    WRITELN (DOUBLE (INT));
```

END.

Save this file as TEST1, Quit the Editor, and Compile TEST1. Now you have the code file for the unit and the program. The next step is to link them together. Enter L from command mode to get into the Linker.

The Host File is TEST1
The Lib file is LIB1
Just press return for the next two questions
The output file will be TEST1

Now TEST1 is ready to execute. Any time you change or re-compile either TEST1 or LIB1 you will have to re-link them.

Apple Tech Notes

Tech Info Library Article Number:647



Tech Info Library

Pascal II: Intrinsic Units compiler options RESIDENT & NOLOAD

Revised: 11/30/84
Security: Everyone

Pascal II: Intrinsic Units compiler options RESIDENT & NOLOAD

=====

You can get Apple Pascal version 1.1 to treat intrinsic units as segments (overlays) by using the noload (*\$N+*) and the resident (*\$R unit name*) compiler options. Units specified by these options are read in from the disk only when a reference is made to code contained within the unit. When the calling procedure is exited and all active references to the unit have been resolved, the unit is "swapped out" and the memory range can be used for other code segments. For more details on the use of these options, refer to pages 66-67 of the Pascal Language Reference Manual, and the Language Manual addendum.

The unit code with the noload option will remain in memory until the calling procedure is exited. This may result in a stack overflow (out of memory) if control never exits from such a unit after it is called repeatedly from inside the same procedure. This is a known problem, and can be avoided by specifying the unit as "Resident" within that procedure or segment. Calling the unit from within a different procedure will also remedy this. The following examples illustrate this situation:

EXAMPLEA below will generate an out of memory STACK OVERFLOW error by repeatedly loading APPLESTUFF.

```
PROGRAM EXAMPLEA;
USES APPLESTUFF;

VAR I:  INTEGER;

BEGIN (* MAIN PROGRAM *)
  (*$N+*)
  WRITE ('NUMBER OF WORDS AVAILABLE AT START OF PROGRAM :  ');
  WRITELN (MEMAVAIL);
  FOR I:=1 TO 100 DO BEGIN
    WRITELN (I, ' ', MEMAVAIL, ' WORDS');
    NOTE (25,1) (* APPLESTUFF MUSIC ROUTINE *)
  END;
  WRITELN ('PROGRAM COMPLETED SUCCESSFULLY')
END.  (* MAIN PROGRAM *)
```

EXAMPLEB uses the RESIDENT OPTION to prevent APPLESTUFF from being reloaded.

```
PROGRAM EXAMPLEB;
USES APPLESTUFF;

VAR I:  INTEGER;

BEGIN (* MAIN PROGRAM *)
  (*$N+*)
  (*$R APPLESTUFF *)
  WRITE ('NUMBER OF WORDS AVAILABLE AT START OF PROGRAM :  ');
  WRITELN (MEMAVAIL);
  FOR I:=1 TO 100 DO BEGIN
    WRITELN (I, ' ',MEMAVAIL, ' WORDS');
    NOTE (25,1) (* APPLESTUFF MUSIC ROUTINE *)
  END;
  WRITELN ('PROGRAM COMPLETED SUCCESSFULLY')
END.  (* MAIN PROGRAM *)
```

EXAMPLEC uses individual procedure to call APPLESTUFF routine, which allows unit to be released and then reloaded.

```
PROGRAM EXAMPLEC;
USES APPLESTUFF;

VAR I:  INTEGER;

PROCEDURE PLAY;
  BEGIN WRITELN (I, ' ',MEMAVAIL, ' WORDS');
  NOTE (25,1) (* APPLESTUFF MUSIC ROUTINE *)
END;

BEGIN (* MAIN PROGRAM *)
  (*$N+*)
  WRITE ('NUMBER OF WORDS AVAILABLE AT START OF PROGRAM :  ');
  WRITELN (MEMAVAIL);
  FOR I:=1 TO 100 DO PLAY;
  WRITELN ('PROGRAM COMPLETED SUCCESSFULLY')
END.  (* MAIN PROGRAM *)
```

Apple Tech Notes

Tech Info Library Article Number:648



Tech Info Library

Chatsworth Data Corp.

Revised: 7/7/93
Security: Everyone

Chatsworth Data Corp.

=====

Article Created: 09/29/87
Article Reviewed: 07/07/93
Article Updated: 04/01/92

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Company Profile:
Hardware, specializing in optical mark card readers.

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Tech Info Library Article Number:650



Tech Info Library

Pascal: Speeding up Pascal text file reading (1 of 3)

Revised: 11/30/84
Security: Everyone

Pascal: Speeding up Pascal text file reading (1 of 3)

=====

Although the READLN statement reads Pascal text files--for example:

```
READLN (FILEID, STRINGVARIABLE);
```

--this operation can be made much faster by using the routines contained in the following program. Three procedures do the work. Their operation is explained, line-by-line, below:

```
PROCEDURE FILLBUFFER;
    (* Fills the working buffer with data
       from the .TEXT file. *)
BEGIN
    EMPTY := BLOCKREAD (INFILE,BUFFER,2) = 0;
    (* Reads 2 blocks of the file into
       BUFFER and leaves the variable EMPTY
       equal to zero if the end of file
       marker is not yet reached.*)
    IF NOT EMPTY THEN BEGIN
        (* If there is still unprocessed data
           in the buffer, do this:*)
        NOTNULLS := BUFSIZE +
            SCAN (- BUFSIZE, <> CHR(0), BUFFER [1023]);
        (* The length of a Pascal .TEXT file
           should always be in multiples of 2
           blocks. Since strings (lines) do not
           span blocks, each block is likely to
           contain nulls (ASCII ZERO) at the end.
           This line returns the number of real
           characters in the file, and discards
           the null ones. *)
        BUFINDEX := 0;
        (* The working index into the buffer is
           reset to zero after refilling the
           buffer. *)
    END;
END;
```



```
PROCEDURE OPENFILE (FNAME:  STRING);
    (* Opens the file using the name passed
    by calling procedure.*)
BEGIN
    IF ((POS('.text',FNAME) = 0) AND
        (POS('.TEXT',FNAME) = 0)) THEN
        FNAME := CONCAT (FNAME, '.TEXT');
    (* Adds the .TEXT suffix if it's not
    already there.  *)

    RESET (INFILE, FNAME);
    (* Actually opens the referenced file.  *)

    FILLBUFFER; FILLBUFFER;
    (* The first call to FILLBUFFER skips
    over the 2 blocks of header
    information on .TEXT files.  The
    second call actually fills the buffer
    with information which will be used.*)
END;

PROCEDURE READFILE (VAR LINE:  STRING);

(* Reads from the file and returns a string at a time in the variable LINE. A
word about the Pascal .TEXT file format: Lines are stored as ASCII
characters terminated with carriage returns.  If a line contains any leading
spaces, and most Pascal source files contain some, these spaces are "packed"
into two bytes.  The first byte is an ASCII DLE (decimal 16) signifying that
the line is packed.  The second byte is a count of spaces to be expanded.
The Editor unpacks these lines automatically, as does a READLN from a file.
We do that operation ourselves in this procedure.  The increase in speed is
because we are using highly specialized routine, whereas the READLN
intrinsic is very general in nature, accepting strings, integers and reals
from the keyboard as well as from files.  Note that this format is optimized
for Pascal source files and it wastes two bytes for each and every line that
does not contain leading spaces.  *)

VAR INDENT, LINELEN:  INTEGER;  (* INDENT is the number of
                                space characters to add.
                                LINELEN is the length of the
                                new string to be formed.  *)
```

Apple Tech Notes

Tech Info Library Article Number:651



Tech Info Library

Pascal: Speeding up Pascal text file reading (2 of 3)

Revised: 11/30/84
Security: Everyone

Pascal: Speeding up Pascal text file reading (2 of 3)

=====

```
BEGIN
  IF BUFINDEX >= NOTNULLS THEN FILLBUFFER;
                                (* If the buffer needs refilling,
                                go and get another buffer. *)
  IF NOT EMPTY THEN BEGIN      (* If the file is not yet empty,
                                then do the following: *)
    LINELEN := SCAN (BUFSIZE, = CHR(13), BUFFER [BUFINDEX]);
                                (* Set LINELEN to the number of
                                characters from the current
                                buffer pointer position
                                (BUFINDEX) to the next carriage
                                return in the buffer. *)
    IF BUFFER [BUFINDEX] = CHR (16) THEN BEGIN
                                (* If the character at the buffer
                                index is an ASCII DLE, then we
                                have to unpack the leading
                                spaces. *)
      INDENT := ORD (BUFFER [BUFINDEX + 1]) - 32;
                                (* Set INDENT to the number found
                                at BUFINDEX + 1, the number
                                of space characters to
                                insert. *)

      (*$R-*)
      LINE [0] := CHR (LINELEN + INDENT - 2);
      (*$R+*)      (* Turn off Range Checking so we can
                     manually change the string length. Set
                     the length of LINE to the number we had
                     already gotten plus the number of spaces
                     to unpack, throwing away two bytes for
                     the DLE and count bytes. Turn Range
                     Checking back on. *)
    IF INDENT > 0 THEN FILLCHAR (LINE [1], INDENT, ' ');
                                (* If there are spaces, then fill in the
                                appropriate number of them, starting
                                with the first position in the new
                                string. *)
```

```
    IF LINELEN > 2 THEN MOVELEFT (BUFFER [BUFINDEX + 2],
                                  LINE [1 + INDENT], LINELEN - 2);
    (* If the string is more than 2
       characters long, then move the rest of
       it from the buffer into the string
       starting just after the leading spaces
       previously inserted. *)

    END ELSE BEGIN
    (* No DLE character was found. That
       means straight ASCII. *)

    (*$R-*)
    LINE [0] := CHR (LINELEN);
    (*$R+*)

    (* Turn Range Checking off, set the
       length of the string to LINELEN, and
       turn Range Checking back on. *)

    IF LINELEN > 0 THEN MOVELEFT (BUFFER [BUFINDEX],
                                  LINE [1], LINELEN);
    (* Move the characters from the buffer
       into LINE as above. *)

    END;
    BUFINDEX := BUFINDEX + LINELEN + 1;
    (* Sets the pointer to the first
       character of the next string in the
       buffer for the next time through. *)

    END;
END;
```

Here's a program that demonstrates the difference in speed between the two methods of reading strings:

```
PROGRAM QUICKREAD; (* Very fast line read routine *)
CONST BUFSIZE = 1024;
      BUFLen = 1023;
      FILENAME = 'QWERTY9.TEXT';
(* Probably not on user disk *)
VAR LINE: STRING;
    INFILE: FILE;
    TEXTFILE: TEXT;
    CH, OPTION: CHAR;
    EMPTY, HELL_FREEZES_OVER: BOOLEAN;
    ERROR: INTEGER;
    NOTNULLS: 0..BUFSIZE;
(* # of non-null chars *)
    BUFINDEX: 0..BUFSIZE;
(* Index within buffer *)
    BUFFER: PACKED ARRAY [0..BUFLen] of CHAR;
```

Apple Tech Notes

Tech Info Library Article Number:652



Tech Info Library

Pascal: Speeding up Pascal text file reading (3 of 3)

Revised: 11/30/84
Security: Everyone

Pascal: Speeding up Pascal text file reading (3 of 3)

=====

```
PROCEDURE FILLBUFFER;
BEGIN
    EMPTY := BLOCKREAD (INFILE,BUFFER,2) = 0;
    IF NOT EMPTY THEN BEGIN
        NOTNULLS := BUFSIZE + SCAN (- BUFSIZE, <> CHR(0),
            BUFFER [1023]);
        BUFINDEX := 0;
    END;
END;

PROCEDURE OPENFILE (FNAME:  STRING);
BEGIN
    IF ((POS('.text',FNAME) = 0) AND
        (POS('.TEXT',FNAME) = 0)) THEN
        FNAME := CONCAT (FNAME, '.TEXT');

    RESET (INFILE, FNAME);
    FILLBUFFER; FILLBUFFER;
END;

PROCEDURE READFILE (VAR LINE:  STRING);
VAR INDENT,
    LINELEN:  INTEGER;
BEGIN
    IF BUFINDEX >= NOTNULLS THEN FILLBUFFER;
    IF NOT EMPTY THEN BEGIN
        LINELEN := SCAN (BUFSIZE, = CHR(13), BUFFER [BUFINDEX]);
        IF BUFFER [BUFINDEX] = CHR (16) THEN BEGIN
            INDENT := ORD (BUFFER [BUFINDEX + 1]) - 32;
            (*$R-*)
            LINE [0] := CHR (LINELEN + INDENT - 2);
            (*$R+*)
            IF INDENT > 0 THEN FILLCHAR (LINE [1], INDENT, ' ');
            IF LINELEN > 2 THEN MOVELEFT (BUFFER [BUFINDEX + 2],
                LINE [1 + INDENT], LINELEN - 2);
        END ELSE BEGIN
            (*$R-*)
```

```
        LINE [0] := CHR (LINELEN);
        (*$R+*)

        IF LINELEN > 0 THEN MOVELEFT (BUFFER [BUFINDEX],
                                      LINE [1], LINELEN);

    END;
    BUFINDEX := BUFINDEX + LINELEN + 1;
END;

PROCEDURE GETOPTION;
BEGIN
    REPEAT
        WRITELN;
        WRITE ('OPTIONS: Q)uickread, R)eadln, E)xit ');
        CH := ' ';
        READ (KEYBOARD, CH);
    UNTIL CH IN ['Q', 'q', 'R', 'r', 'E', 'e'];
    IF CH IN ['E', 'e'] THEN BEGIN
        PAGE (OUTPUT);
        RESET (INFILE, FILENAME);
        CLOSE (INFILE, PURGE);
        EXIT (PROGRAM);
    END;
END;

PROCEDURE PRINTFILE;
BEGIN
    PAGE (OUTPUT); WRITELN;
    CASE CH OF
        'Q', 'q': BEGIN
            OPENFILE (FILENAME);
            REPEAT
                LINE := '';
                READFILE (LINE);
                WRITELN (LINE);
            UNTIL EMPTY;
            CLOSE (INFILE);
        END;
        'R', 'r': BEGIN
            RESET (TEXTFILE, FILENAME);
            REPEAT
                READLN (TEXTFILE, LINE);
                WRITELN (LINE);
            UNTIL EOF (TEXTFILE);
            CLOSE (TEXTFILE);
        END;
    END; (* CASE *)
END;

PROCEDURE INIT;
VAR TEMP: STRING;
BEGIN
```

```
PAGE (OUTPUT); WRITELN;
WRITE ('One momemt, please...');
REWRITE (TEXTFILE, FILENAME);
WRITE (TEXTFILE, 'This is a test file written to ');
WRITE (TEXTFILE, 'demonstrate the ');
WRITE ('. ');
WRITELN (TEXTFILE, '"QUICKREAD" program. ');
WRITE ('. ');
WRITELN (TEXTFILE);
TEMP := 'I'm melting.';
REPEAT
    WRITE (TEXTFILE, 'TEST STRING --> ');
    WRITELN (TEXTFILE, TEMP);
    DELETE (TEMP, LENGTH (TEMP), 1);
    WRITE ('. ');
UNTIL TEMP = '';
WRITELN (TEXTFILE, ' AHHHHHHhhhhh.... ');
WRITELN (TEXTFILE);
WRITE (TEXTFILE, 'Notice that using READLN takes much ');
WRITE (TEXTFILE, 'more time');
WRITELN (TEXTFILE, ' to read a long line');
WRITE ('. ');
WRITELN (TEXTFILE, 'than it takes to read a short one. ');
WRITE ('. ');
CLOSE (TEXTFILE, LOCK);
WRITELN;
END;

BEGIN
    INIT; (* Write a temporary file for *)
    HELL_FREEZES_OVER := FALSE;
    REPEAT
        GETOPTIONS; (* Get users choice *)
        PRINTFILE; (* Print the file *)
    UNTIL HELL_FREEZES_OVER; (* Forever.  *)
END.
```

Apple Tech Notes

Tech Info Library Article Number:653



Tech Info Library

Pascal: Extra linefeeds on printer

Revised: 11/30/84
Security: Everyone

Pascal: Extra linefeeds on printer

=====

E(X)ecute APPLE3:LINEFEED to remedy the double spacing some printers show when used with Pascal. The program can be transferred to the diskette you boot (usually APPLE1: or APPLE0:) as SYSTEM.STARTUP and it will execute automatically when the system is booted. You may also include the text of this routine in your own programs; the text is also on the volume APPLE3:.

Apple Tech Notes

Tech Info Library Article Number:654



Tech Info Library

Sun Remarketing, Inc. (4/97)

Revised: 4/3/97
Security: Everyone

Sun Remarketing, Inc. (4/97)

=====

Article Created: 29 September 1987
Article Reviewed/Updated: 02 April 1997
Sun Remarketing

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Company Profile:

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Tech Info Library Article Number:655



Tech Info Library

Pascal: Saving a High-Res picture to a disk file

Revised: 11/30/84
Security: Everyone

Pascal: Saving a High-Res picture to a disk file

=====

Pascal graphics does not provide built-in routines to load or save the High-Res graphics screen to a disk file. The following program illustrates a simple method for saving and loading any High-Res screen created in a Pascal environment.

```
PROGRAM DEMOPIC;
(*
(*   Program loads and saves high-res screen to disk   *)
(*   12/79 based on "SLIDE SHOW" by Bill Atkinson      *)
(*
(*
USES TURTLEGRAPHICS, APPLESTUFF;
CONST HIRESPI = 8192;
VAR CHEAT: RECORD CASE BOOLEAN OF
    TRUE: (INTPART: INTEGER);
    FALSE: (PTRPART: ^INTEGER);
END;

PROCEDURE DRAWPICS;
(*
(*   Draw some stuff on the high-res screen.           *)
(*   This can be replaced with any graphics routine.   *)
(*
(*
BEGIN
    MOVETO (0,0); PENCOLOR (WHITE);
    MOVETO (279,0); MOVETO (279,191);
    MOVETO (0,191); MOVETO (0,0);
    PENCOLOR (NONE);
    MOVETO (75,95); WSTRING (' THIS IS A TEST ');
    MOVETO(28,5); WSTRING ('<PRESS RETURN TO EXIT PROGRAM>')
END;

PROCEDURE ERROR;
(*
(*   If error, program will terminate from here.      *)
(*
(*
BEGIN
```

```
TEXTMODE;
WRITELN ('ERROR ENCOUNTERED - PROGRAM TERMINATED');
EXIT (PROGRAM)
END;

PROCEDURE BLOAD (FILENAME: STRING);
(* *)
(* Blockreads the high-res buffer into memory. *)
(* *)
VAR I,IO: INTEGER;
    F: FILE;
BEGIN
    CHEAT.INTPART:=HIRESPl;
    RESET(F,FILENAME);      (* OPEN FILE FOR INPUT *)
    (*$I-*)
    IO:=BLOCKREAD(F,CHEAT.PTRPART^,16);
    I:=IORESULT;
    (*$I+*)
    CLOSE(F);
    IF (I <> 0) OR (IO <> 16) THEN ERROR;
END;

PROCEDURE BSAVE (FILENAME:STRING);
(* *)
(* Saves high-res picture to disk via blockwrite. *)
(* *)
VAR I,IO: INTEGER;
    F: FILE;
BEGIN
    CHEAT.INTPART:=HIRESPl;
    REWRITE (F,FILENAME); (*OPEN NEW DISK FILE FOR OUTPUT*)
    (*$I-*)
    IO:=BLOCKWRITE (F,CHEAT.PTRPART^,16);
    I:=IORESULT;
    (*$I+*)
    CLOSE (F,LOCK)
    IF (I <> 0) OR (IO <> 16) THEN ERROR;
END;

BEGIN (* MAIN PROGRAM *)
    INITTURTLE;
    DRAWPICS;
    BSAVE (' :DEMO.PIC');
    FILLSCREEN (BLACK);      (* Clears high-res screen. *)
    BLOAD (' :DEMO.PIC');
    REPEAT UNTIL KEYPRESS;   (* Pause. *)
    TEXTMODE
END.
```



Tech Info Library

Pascal: Exponents

Revised: 11/30/84
Security: Everyone

Pascal: Exponents

=====

The calculation 10^X is not included in the UCSD Pascal definition. The system intrinsic PWROFTEN ("power of ten") returns 10^X , provided X is an integer in the range 0..37. (Please refer to page 45 in the Pascal Language Reference manual.)

The function EXP (in the library unit TRANSCEN) is of the form e^X , where X is a real number. The relationship between 10^X and e^X is:

$$10^X = e^{(X \text{ LN } 10)} \quad (\text{LN} = \text{natural log})$$

Here is a simple program which illustrates the use of Pascal exponents:

```
PROGRAM EXPONENT;  
  
USES TRANSCEND;  
  
BEGIN  
  WRITELN ('10 ^ 3 = ',PWROFTEN(3));  
  WRITELN ('e ^ 3 = ',EXP(3));  
  WRITELN ('10 ^ 3 by the conversion = ',EXP(3*LN(10)));  
END.
```

Apple Tech Notes

Tech Info Library Article Number:657



Tech Info Library

Pascal: Clearing the video screen

Revised: 11/30/84
Security: Everyone

Pascal: Clearing the video screen

=====

As described by Kenneth Bowles in Problem Solving Using Pascal, the routine CLEARSCREEN is a system function of the UCSD computer facility. By issuing a form feed to the standard Apple screen, the system intrinsic PAGE(OUTPUT) can perform a similar function on your system.

You can use the following procedure to clear the screen.

```
PROCEDURE CLEARSCREEN;  
BEGIN  
  WRITE (CHR(12));  
END;
```

As in the SETUP program, the procedure uses the character CHR(12) to clear the standard Apple video screen. Other external terminals may require a different value; for these terminals, modify the procedure by replacing CHR(12) with the appropriate control character (or characters) for "Erase Screen".

Apple Tech Notes

Tech Info Library Article Number:658



Tech Info Library

Macintosh XL and Lisa 2/10: Internal 800K disk drive

Revised: 9/30/87
Security: Everyone

Macintosh XL and Lisa 2/10: Internal 800K disk drive

=====

This article last reviewed: 30 September 1987

An 800K internal floppy disk drive can be installed in a Lisa 2/10 or Macintosh XL.

The product is available from DAFAX Processing Corp.

Tech Info Library Article Number:659



Tech Info Library

Pascal: Interface cards in peripheral slot #3

Revised: 11/30/84
Security: Everyone

Pascal: Interface cards in peripheral slot #3

=====

The Pascal system will not appear to boot correctly on the standard Apple video if slot #3 has a Communications card, Serial card, or DC Hayes Micromodem card in it. Pascal reserves slot #3 for an external terminal, so when Pascal recognizes a card in this slot, it attempts to communicate with the assumed terminal and not with the default CONSOLE and SYSTERM (video and keyboard). Other cards may also cause this effect, which can be easily remedied by removing the card from slot #3.

Apple Tech Notes

Tech Info Library Article Number:660



Tech Info Library

ProDOS Filer 1.1: Changes from 1.0

Revised: 9/30/87
Security: Everyone

ProDOS Filer 1.1: Changes from 1.0

=====

This article last reviewed: 30 September 1987

These are the changes between Filer 1.0.1 and Filer 1.1. From looking at these, it seems that modification #4 may be the fix referred to in paragraph 4 above.

- 1) The critical speed tolerance of the formatting routine was extended.
- 2) The format routine was made to allow for different size volumes in the same slot. The routine now correctly uses the UNIT number in the Device List in the Global Page as a pointer into the Driver Address table. Previously, the routine would only look at Drive 1 for the information on the size of the volume and would later write out an incorrect Bit Map and Directory after the formatting of the different device in drive 2.
- 3) The volume number is now transferred from source disk to destination disk in Volume Copy. The volume number on a format is now 1.
- 4) The 'DEVICE NOT FOUND' bug when trying to format previously unformatted media was fixed.

The Formatter in ProDOS 1.0/Filer1.0 would not format a disk in drive 2 if it had never been formatted. This problem also occurred in DuoDisks. The solution was to format the disk in DOS 3.3 and then re-format the disk with the Filer. We later released a new version of ProDOS 1.1.1 and the Filer 1.1.

- 5) The standard MLI QUIT call will now be executed when a selector is present.
- 6) Formatting volumes consecutively will now start with a random 'nn' value ('/BLANKnn') in the default volume name and then continue increasing sequentially.

In addition, these are the changes made from Filer 1.0 to Filer 1.0.1

- 1) Interrupts were disabled during formatting.

2) The BitMap create routines were corrected for all disk sizes.

Tech Info Library Article Number:661



Tech Info Library

Hard Disk 20SC: Connecting a terminator

Revised: 9/29/90
Security: Everyone

Hard Disk 20SC: Connecting a terminator

=====

This article last reviewed: 30 September 1987

The actual Small Computer Systems Interface specification from ANSI states that each END of the daisy chained cables are terminated. This indicates that the HD20SC manual is 'incorrect' and the Apple SCSI Cabling System manual is correct.

The diagram on page 15 of the "Hard Disk 20SC Owner's Guide" shows the terminator on the extra SCSI port. On page 5 of the HD20SC manual, it shows that when connecting a single HD20S to a CPU, the SCSI System cable should connect the 2 machines, while the SCSI Terminator connects to the other port on the hard drive.

The top diagram on page 12 of "The Apple SCSI Cable System" shows the terminator goes between the cable and the (one) peripheral device. Page 10 of the SCSI Cable System manual states that for the same configuration that the System cable should connect directly to the SCSI Terminator and the other end of the Terminator connects to the SCSI device (in this case HD20SC).

In truth, both ways work. However, if you were to check the amount of line noise on both one-device setups, you might find a bit more noise on the incorrectly placed terminator configuration.

The terminator should be placed on the SCSI input of the first device. If the configuration has more than one device or more than 10 feet of SCSI cable hooked together, a second terminator should be placed on the pass through of the last device. If the user has a self-terminated SCSI device, it should be the last device on the chain. You may refer to the Apple SCSI Cabling System manual for all of the correct configurations.

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Tech Info Library Article Number:662



Tech Info Library

Apple IIGS: Not Enough Disk space for 5.25 Desktop Disk

Revised: 9/29/87
Security: Everyone

Apple IIGS: Not Enough Disk space for 5.25 Desktop Disk

=====

This article last reviewed: 29 September 1987

There is no way to create a ProDOS 8 or ProDOS16 Desktop disk on a 5.25 floppy: there is just not enough disk space. However, a startup P8 (ProDOS 8) disk can be created. As an example, below are instructions of how to create a startup ProDOS 8 System Utilities disk.

1. Format a 5.25 disk
2. Copy these 5 files from System Utilities to the 5.25 disk:
 - a. P8 (ProDOS 1.2, found in the SYSTEM sub-directory)
 - b. SYSUTIL.SYSTEM *
 - c. GSSU0 *
 - d. GSSU1 *
 - e. GSSUE1 *

* These 4 files comprise the System Utilities program and can be found in the SYS.UTILS sub-directory. They must be kept in the same directory.

3. Rename the file 'P8' to 'PRODOS'

System Utilities may now be booted from the floppy disk. The files take up around 180 blocks and leave about 100 blocks for extra file storage.

Tech Info Library Article Number:663



Tech Info Library

ANSI S1.29-1979: Bystander Position Definition

Revised: 7/30/92
Security: Everyone

ANSI S1.29-1979: Bystander Position Definition

=====

Article Created: 29 September 1987
Article last reviewed: 29 September 1987
Article last updated: 30 July 1992

The American National Standard document ANSI S1.29-1979 defines bystander position:

For equipment which does not require attention while in the operating mode, an operator position need not be defined. One or more bystander positions shall be selected and defined in the test plan or equipment specifications. The bystander position shall be 1.00 m away from the projection of the reference parallelepiped on the horizontal plane and 1.50 m above the floor. If one or more bystander positions are defined, the A-Weighted sound pressure level shall be measured for the operating mode(s) and idle mode defined in Sec.5. Section 7.3.2.1 and Fig. 2 of ANSI S1.13-1971(R1976) may be used as guide to define bystander position around the machine. The measurements shall be carried out in accordance with the procedures of ISO DIS 6081.

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Tech Info Library Article Number:664



Tech Info Library

LaserWriter: How to Print Diacriticals

Revised: 9/29/87
Security: Everyone

LaserWriter: How to Print Diacriticals

=====

This article last reviewed: 29 September 1987

There is a way to use the LaserWriter fonts' diacritical marks, the curved short-vowel symbol (shift-option-period) and the straight long-vowel symbol (shift-option-comma). To put these symbols directly above a vowel as is done with an accent or umlaut, you must create diacritical font characters using Fontographer, from Altsys Corp, or some other LaserWriter font utility.

Tech Info Library Article Number:665



Tech Info Library

Macintosh II: Video Overview (2 of 3)

Revised: 7/8/92
Security: Everyone

Macintosh II: Video Overview (2 of 3)

=====

Article Created: 10 December 1987
Article Last Reviewed: 1 July 1992
Article Last Updated:

TOPIC -----

This is the second part of a three-part article describing how the Macintosh II produces video.

DISCUSSION -----

STANDARD RGB DISPLAY SIGNAL

The Macintosh II Video Card uses an approximation of the RS343 display signal. (RS video standards are set by the Electronic Industries Association.) The RS343 display standard is essentially a monochrome video signal combined with a composite sync signal (horizontal and vertical scan control) with timings that produce a non-interlace, or progressive, scan. This means that the horizontal and vertical scan rates are timed to cause the display electron guns to produce even progressively horizontal scans. This is by comparison to the interlaced video standards. The importance of the RS343 standard is its provision for a timing and voltage level signal that allows the display and generation of high resolution video.

While the Macintosh II version of the RS343 signal varies somewhat, it essentially follows the guidelines necessary for connection to RS343 display devices. The major differences are:

- the separate TTL level composite sync signal found on pin 3
- the separate video lines used to produce RGB color
- a vertical scan rate of 66.67Hz to reduce screen flicker
- a voltage white level of 1 volt for its red and blue signals and 1.3 volts on its green signal

RS343 provides for a 60hz signal but has been changed to 66.67Hz on the

Macintosh II Video Card to prevent the screen flicker visible at 60Hz. The inclusion of the analog composite sync found on pin 5 of the video card connector, called the green signal, allows for monochrome composite video.

COMPONENTS OF AN NTSC/RS170 TIMING SIGNAL

RS170 is a standard that defines the timing of broadcast video in the United States, Japan, and several other markets. It specifies a 15.75KHz horizontal and a 60Hz vertical interlaced scan frequency. Interlacing is the process by which two fields, called scan lines, are interleaved on the screen. Due to the limitations of video devices at the time of the RS170 standard's creation in 1957, the speed of broadcast signals and picture tubes required the image to be displayed in part. The solution allowed for the partial update of video pictures to remain unnoticed to the viewer. An RS170 video frame contains 525 lines and is displayed 60 times per second -- for a total of 15,750 lines, or 15.75KHz. Of these lines, only the odd or even lines are displayed with each frame. A total of 60 frames per second allows for 30 frames per second, or 30Hz update of each line. Like the RS343 standard, RS170 is strictly a timing specification for monochrome video signals. By combining three such signals to control individual red, green, and blue sweep circuits, a full color system can be created. The RS170 mode was included on the Macintosh II video card as a way for large screen projectors, not capable of high frequency scans, to display the Macintosh II video in the usual broadcast standard of RS170.

THE MACINTOSH VIDEO CARD RS170 MODE

To produce RS170 video, software can be written to logically select the proper timing values and pixel clock from the Macintosh II video card. The pixel clock is a 12.2727MHz oscillator built on the video card and is selected over the 30.24MHz oscillator used in the RS343 mode. With the selection of the RS170 mode, a red, green, and blue signal with a separate TTL composite sync are produced. An analog composite sync pulse is superimposed on the green channel, allowing this signal to drive broadcast devices such as a television, to produce a monochrome image.

NTSC VIDEO (RS170A)

This is not available directly from the Macintosh II video card, but can be produced from the video signals supplied.

When color televisions became available, studios had to decide how to place color onto the broadcast bandwidths delivering black and white signals. There being very little space to work with, the solution was to use a color subcarrier signal modulated onto the luminance signal. The luminance signal controls the intensity of the black and white image. To place the color signal, or chrominance, onto the video signal, an NTSC color encoder is used. This effectively combines the primary additive colors red, green, and blue into a wave form. An output device filters the color signal from the luminance signal and recalculates the original values. To connect an NTSC color encoder, outputs for horizontal sync, vertical sync, blanking period, red, green, and blue in RS170 levels are required. These signals are all available on the Macintosh II video card

and are discussed in the document "About Macintosh II Video Signals."

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Tech Info Library Article Number:666



Tech Info Library

Macintosh: Description of AT&T Datakit Configuration

Revised: 9/4/92
Security: Everyone

Macintosh: Description of AT&T Datakit Configuration

=====

Article Created: 29 September 1987

Article Change History

08/20/92 - UPDATED

- To include information on AT&T's enhanced Datakit

TOPIC -----

Can I connect a Macintosh to Datakit or the "commercial" offering of Datakit, AT&T's Information Systems Network, ISN.

DISCUSSION -----

The AT&T Datakit VCS (Virtual Circuit Switch) is an architecture for high-speed data communications between computers and terminals of different types. It supports both terminal-to-computer and computer-to-computer communication. Functionally, it uses an internal packet switch capable of switching 44,000 packets per second.

A virtual circuit is a sequence of packets joined together by a "switch" module (switch circuit pack) to form a transmission path between host computers and network destinations (host, personal computers, modem pools, etc). After a connection (circuit) is made, subscribers can talk to only that destination until they make an explicit request to terminate or suspend the connection. The physical link can be one of four different types:

- RS-232C sync or async
- Parallel flat band cable, optical fiber, or two 50-wire cables using balanced transmission for multiple host interfaces

- Optical fiber trunk links
- RS-232C or V.35 connection for a DDS or T1 trunk

Apple supports the RS-232C interface in a wide variety of terminal emulation modes and can provide a solution for replacement of a "dumb" terminal with a computer connected to the Datakit VCS for the host connection.

The fundamental architecture for Datakit and ISN is the same. Both use centralized short-bus architecture to implement local-area networking. Both use AT&T's contention mechanism known as "perfect scheduling" to packetize transmissions on a time-slotted bus. This contention scheme provides for no destructive collision or periods of idleness on the bus, in contrast to distributed bus and ring architectures.

The basic scheme of the LAN is to connect devices, via copper or fiber, to interface modules residing in a centralized cabinet. This cabinet houses the control circuitry necessary to assemble, address, route, establish circuit take-up/take-down, synchronize, disassemble, and so on. Control cards, along with interface cards for devices and circuits, meet with the backplane of the cabinet to form the "short-bus." Imagine a star configuration meeting at the center to create a bus.

The backplane bus is short. In ISN, it is about 5 meters, running at 8.64Mbps (48,000 packets/second, each packet 180 bits). Propagation delay is minimal along the bus (less than 2 percent of the first bit of transmission is exposed before the receiving device sees it).

Datakit uses a 2-bus scheme, while ISN uses a 3-bus scheme. One packet period prior to the transmission of data, ISN resolves contention on the third bus. Packet headers contain a module number related to the sending device. This, along with a priority code, comprises the packet contention code. Basically, the module having the highest contention code wins access to the bus for any particular time slot on that bus, resulting in perfect scheduling.

It's best to think of ISN as a phone system. Everyone has potential access to everyone else via the "switching" capabilities of ISN. PC# 1 needs to communicate with Host A, so PC# 1 breaks into an ISN session, "dials" (literally or by keyboard) the host, and is connected via routing mechanisms of the ISN.

ISN provides a large assortment of interface modules for connecting trunks and data equipment. ISN are modular in nature and can grow to several thousand devices, using concentrators and inter-networked packet controllers.

Some of the interface modules include:

- Async Interface Modules (AIMs)
- StarLan Interface Modules (SLIMs)
- Fiber Interface Modules (FIMs)

- Ethernet Interface Modules (EIMs)
- Trunk Interface Modules (TIMs)
- 3270 Terminal Switching
- Synchronous Transport (for Cluster Controller interfacing)

It is possible that the Macintosh can interface with ISN (Datakit) as an asynchronous terminal connected to an AIM board. The AIM board is looking for an 8-pin modular tipped connect, RS232. Synchronously, there may be problems if the ISN had to handle. For example, a Netway 1000 looking at one of its synchronous transport cards. Issues critical to the success of this idea might prove to be the administration of buffers and taking advantage of ISN's flexibility in defining packet sizes. Of course, you need the proper cable and connector spec in both configurations.

Another possibility is using Ethernet Interface Modules to bridge AppleTalk networks that incorporate Ethernet in their design.

AT&T Computer Systems enhanced its Datakit II Virtual Circuit Switch line by adding token ring support, support for AppleTalk networks, and by including access to multiple hosts. Release 2.0 of the product includes the capacity to relay switch, two-way communication between Datakit terminals and X.25 hosts on public and private packet networks. Disk storage was increased to include support of a 40MB SCSI hard disk and tape subsystem. Current users of the product can upgrade. An optional offering is the Maintenance and Redundancy Control Module, an interface which lets you switch the unit from a primary network to a backup.

To locate a vendor's address and phone number, use the vendor name as a search string.

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Tech Info Library Article Number:667



Tech Info Library

AppleTalk: Connecting to InteCom IBX

Revised: 11/2/88
Security: Everyone

AppleTalk: Connecting to InteCom IBX

=====

This article last reviewed: 29 September 1987

To link up AppleTalk via an InteCom IBX switch, use the LANmark Ethernet on the IBX. LANmark is a featured product of InteCom, the IBX folks. The LANmark Ethernet is a slower (1Mhz vs 10 Mhz) version of an ordinary Ethernet. Then use a Kinetics PastPath Bridge to connect AppleTalk to the Ethernet. Both Kinetics and InteCom should be able to supply you and RPI with more detailed information.

Also, you can less expensively but not as elegantly use half-bridges such as those from Hayes and connect via Synch or Asynch Data Option Boards.

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Tech Info Library Article Number:668



Tech Info Library

Apple IIGS: How To Pick Up Video Blanking Signals

Revised: 3/23/89
Security: Everyone

Apple IIGS: How To Pick Up Video Blanking Signals

=====

This article last reviewed: 29 September 1987

There is no way to physically pick up the video blanking signal since it is now buried inside the VGC chip. However, through software, there are two ways to pick up this signal.

1. Arm the Vertical Interrupts as one would do with an Apple IIc.
2. Read the Vertical Blanking location at \$C019 as one would do with an Apple IIe.

Research the appropriate manual for how to do these operations. If a routine is written to handle video timing for the Apple IIe by picking up video blanking signals from an IO chip (UE5), the routine can be converted for the IIGS environment with these two techniques.

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Tech Info Library Article Number:669



Tech Info Library

LaserWriter: PostScript Command For DTR Protocol

Revised: 3/4/90
Security: Everyone

LaserWriter: PostScript Command For DTR Protocol

=====

This article last reviewed: 9 November 1988

To interface a LaserWriter with an IBM compatible, WordPerfect 4.2, which now claims support for the LaserWriter, furnishes a segment of PostScript code with the file name INITWRT.PS. This file, according to their instructions, is to be sent to the printer via the serial port to change the EEROM so that the LaserWriter will thereafter support a hardware protocol, specifically DTR.

Leaving out the comments and password checking, the essential PostScript code that is sent to the LaserWriter is

```
25 9600 7 SETSCCBATCH
```

The channel and baud numbers are default, but the LaserWriter Technical manual mentions only integers 0 through 3 for the parity position and mentions nothing about 7.

The code would have no effect on the AppleTalk Network. This code makes changes strictly in the LaserWriter and then only where specified by the code (batch or interactive). This code does not affect the "SPECIAL" mode. SCCBATCH is only for the "9600" or "1200" switch positions in Diablo emulation mode for using PostScript with the printer. The "SPECIAL" mode is controlled by SCCINTERACTIVE, and the line

```
25 9600 7 SETSCCINTERACTIVE.
```

could control the Diablo 630 mode functions under 9600 and DTR protocol.

The only problem is that unless the user has a LaserWriter Plus or a LaserWriter with 2.0 (or later) ROMs in it, this "7" command is useless. Since the LaserWriter only supports Xon/Xoff flow control, any command sent to set up DTR handshaking will not function, and there may actually be some strange actions from the printer if it is attempted. If they don't have 2.0 or later ROMs in their LaserWriter, do not use this code.

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Tech Info Library Article Number:670



Tech Info Library

Macintosh II: Video Overview (3 of 3) (2/95)

Revised: 2/14/95
Security: Everyone

Macintosh II: Video Overview (3 of 3) (2/95)

=====

Article Created: 10 May 1988
Article Reviewed/Updated: 14 February 1995

TOPIC -----

This is the last part of a three-part article describing how the Macintosh II produces video.

DISCUSSION -----

Color Burst

A reference signal by which color signal values can be determined. The phase of a color signal in relation to the color burst signal indicates hue. This is located on the trailing edge of the horizontal video signal and is known as a back porch.

Chrominance

The 3.58MHz subcarrier that contains the signal for color value of each pixel:

Red signal: 90 degrees out of phase
Green signal: 0 degrees out of phase
Blue signal: 180 degrees out of phase

The red, green, and blue signals (RGB) can vary in hue depending on their phase with the sync signal. A variation in signal magnitude increases or decreases the intensity of the color.

Macintosh II Video Modes Revisited

- RGB RS343 compatible is an RGB video signal with separate TTL sync. It is timed by a 30.24 MHz oscillator. 1 volt signal. 75 ohm terminated. An analog standard level sync is available on green.

- RGB RS170 interlaced is an RGB video signal with sync. It is timed by a

12.2727 MHz oscillator. Its horizontal signals are alternately spaced in relation to the vertical blanking period. The electron beam moves down from the left corner to the right and from the bottom right corner to the top, to begin again in the center or the corner of the screen. In this way, there are twice the of number rows than are being displayed in each frame. Each row follows a slightly slanted path. One begins at the top left corner and slants downward, while the other begins from the top and center. These interlaced lines provide a greater number of images to the eye, to compensate for a slow refresh time.

In the RS170 mode, the sync signal has been combined with the green signal. A television or similar monitor could take advantage of this signal in black and white only.

Picture Quality

Bandwidth is the signal width. It describes how much information is being delivered. The higher the bandwidth, the more video information that can be delivered and displayed by a monitor.

Pixel size is the size of the phosphor dots on the screen. It determines the precision in which the video information can be duplicated.

Dot pitch is pixel size.

Scan rate is the time period in which the electron gun moves across one line of the screen or repeats one entire screen. These values are known as the horizontal and vertical sync periods, respectively.

Grill pitch is the width of the lines in the color mask used to block the color electron beams. It is usually measured at the phosphor positions, and is synonymous with dot pitch.

Pin cushion is a display effect of warping or curved display screens.

Convergence is beam position accuracy. Color systems require exact accuracy of beams, both for position and speed, to properly produce the desired colors from their phosphors.

Article Change History:

14 Feb 1995 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:671



Tech Info Library

Pascal: Pascal Turnkey

Revised: 12/5/84
Security: Everyone

Pascal: Pascal Turnkey

=====

Create a Pascal Turnkey system by transferring the desired program code to the boot diskette and changing its name to System.Startup. When no file by that name is present on the boot volume, the system defaults to the command line.

To execute the System.Startup code from the command line, type X (for execute), and then

SYSTEM.STARTUP.

The final period prevents the operating system from appending the .CODE suffix to the file name before trying to execute it.

Apple Tech Notes

Tech Info Library Article Number:673



Tech Info Library

Pascal: External references

Revised: 12/5/84
Security: Everyone

Pascal: External references

=====

Apple Pascal may only "externally" link assembly routines. However, Pascal procedures compiled separately can be placed into a library unit and accessed with the USES command.

Assembly code may also be placed into library units, provided it's called from the Pascal level. To do so: assemble the code file(s) and create a Pascal unit which refers to each .PROC and .FUNC of the code as EXTERNAL. To create an intrinsic unit containing assembly code, link the external references to the compiled P-code unit structure, then install this completed unit in the System.library file on your boot disk.

Since the regular units which reference assembly code are not linked prior to installing the library file, install the unlinked Pascal units in the System.library or in your own library file to keep these assembly code file(s) on hand. Link the assembly routines into the final code file when you link the host program with this regular unit.

Apple Tech Notes

Tech Info Library Article Number:674



Tech Info Library

System 4.0/Finder 5.4: Alarm Setting Won't Stay On (9/95)

Revised: 9/20/95
Security: Everyone

System 4.0/Finder 5.4: Alarm Setting Won't Stay On (9/95)

Article Created: 29 September 1987
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Every time I turn off my Mac Plus I lose the alarm clock setting. I am running System 4.0. Why does this happen?

DISCUSSION -----

In a Macintosh Plus with System 4.0 and Finder 5.4, a set alarm clock functions properly as long as system power stays on. If the system is powered down and back up again, a quick check of the alarm clock reveals that the switch to the alarm clock is turned off.

This does not occur under the previous system software, System 3.2 and Finder 5.3. You will need to upgrade to a more current version of the system software or revert to the previous version to correct this problem.

Article Change History:
19 Sep 1995 - Reformatted to current standards.
29 Sep 1987 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:675



Tech Info Library

Hard Disk 20: No Multiple System Folders

Revised: 10/12/87
Security: Everyone

Hard Disk 20: No Multiple System Folders

=====

This article last reviewed: 29 September 1987

The "Macintosh Update Hard Disk 20" documentation which accompainies all HD20's states:

Disregard any references to multiple system files on the Hard Disk 20 in your owner's manual. Apple does not recommend that you have multiple system files on the Hard Disk 20.

Instead, you could configure and "startup from" other volumes containing the applications, system files and fonts you want.

Tech Info Library Article Number:676


```

        LDA Version
        BNE $1           ;Jump if not original Pascal version
        JSR CONCK
        JMP $2
$1      JSR CONCKVEC      ;Check console
$2      LDA RPTR
        CMP WPTR         ;Char in buffer?
        BEQ Empty
TRUE    LDA #1           ;Yes, return Keypress=True
        BNE KPDONE       ;Always taken
EMPTY   LDA #0           ;No, return Keypress=False
KPDONE  PHA              ;Push LSB result
        LDA RETURN+1
        PHA              ;Restore return address
        LDA RETURN
        PHA
        RTS
        .END
```

The sample program below illustrates the use of Keypress as an externally linked routine. Follow the instructions given on pp. 136-182 of the Pascal Operating System Reference Manual for assembling and linking external code.

```

Program Presstest;

Var I: integer;

Function Keypress: boolean; external;

Begin
I:=0;
Repeat
    Writeln (I);
    I:=I+1;
Until Keypress
End.
```

Apple Tech Notes

Tech Info Library Article Number:677



Tech Info Library

Pascal: SCAN function

Revised: 12/5/84
Security: Everyone

Pascal: SCAN function

=====

The Pascal SCAN function scans a range of memory, searching for a specified target. This function takes the form:

SCAN (Limit, PEXPR, Source)

where Limit is the number of bytes scanned, PEXPR defines the target and Source is the variable. The Pascal Language Manual on pp. 51-52 describe this function in greater detail.

Use SCAN on any variable except file types. When scanning string S, for example, specify Source as S[1] to avoid having SCAN look at the length parameter stored in S[0], which usually yields an erroneous value.

Apple Tech Notes

Tech Info Library Article Number:678



Tech Info Library

Pascal: TRUNC and ROUND functions

Revised: 12/5/84
Security: Everyone

Pascal: TRUNC and ROUND functions

=====

The TRUNC and ROUND functions are available in Apple Pascal. The ROUND function is of the form $I := \text{ROUND}(R)$, where I is an integer and R is a real number.

TRUNC takes the form $I := \text{TRUNC}(R)$, where I is an integer and R is a real number, and $I := \text{TRUNC}(L)$, where L is a long integer. In all cases, integer values must be in the range -32767 to +32767; otherwise, a value range error is returned.

Although the compiler may accept other forms of these functions, these are the only legitimate forms according to UCSD definitions.

Apple Tech Notes

Tech Info Library Article Number:679



Tech Info Library

ImageWriter: Cleaning Guide Rails Solves Registration Problem

Revised: 12/17/87
Security: Everyone

ImageWriter: Cleaning Guide Rails Solves Registration Problem

=====

This article last reviewed: 1 December 1987

As ImageWriters and wide-carriage ImageWriters become older, the lubricants used on the carriage rails tend to dry up and prevent the carriage assembly from moving freely during printing. This can lead to unacceptable horizontal print registration: columns of characters don't line up properly from one line to the next, and appear to be shifted anywhere from one dot to half a character.

When this happens, thoroughly clean both guide rails with a degreasing solution and lint free cloth, then lubricate them. Clean the rail all the way around, not just the surface area visible from the top.

Tech Info Library Article Number:680



Tech Info Library

Pascal: Converting strings to numeric variables (1 of 2)

Revised: 12/5/84
Security: Everyone

Pascal: Converting strings to numeric variables (1 of 2)

=====

Apple Pascal doesn't allow you to edit integer or real variable inputs. If the wrong data is entered by mistake, the program will be stuck with that data; worse yet, the system may crash.

The STRINGSTUF intrinsic unit is designed to avoid this problem. All data is entered in the form of strings, then converted to the appropriate data format by the unit. This allows you to edit the input data while it is still in string form. STRINGSTUF is located on the no-longer distributed Apple Graphics software package for the Apple II. If you're unable to locate a copy of this software, refer to the article that contains the STRINGSTUF code and instructions on its use: Apple Orchard, Vol. 1, #3, p. 59. The article is by Jo and Frank Kellner.

The STRINGSTUF unit and accompanying demo program are designed to run in versions of Pascal released later than version 1.0. Long integers are not supported in STRINGSTUF.

Locate STRINGSTUF in any unused segment number between 17 and 31. Install the unit in SYSTEM.LIBRARY, following the instructions in the Pascal Operating System Reference Manual on pp. 186-193.

```
(*S+*)  
(*$LPprinter:*) (* Get a compile listing..optional *)
```

```
Unit STRINGSTUF;  intrinsic code 26;
```

```
Interface
```

```
  Type String255=String[255];
```

```
  Function STRFP (Var STR:String255;  
                  Var FP:real): boolean;
```

```
  Function Strint (Var STR:String255;  
                  Var INT:integer): boolean;
```

```
Implementation
```

```
Function STRFP; (* String to Real *)

CONST MaxReal=1.70E37; (* Max/10 *)
      MinReal=1.2E-37; (* Min/10 *)

VAR DEC,DEX,EDP,INX,LEN: integer;
    DP,EX,IM,MN,MX,SN: boolean;
    CH: CHAR;
    Numeric,Exponent,Modifier: Set Of CHAR;

Procedure Terminate;
Var I: integer;
Begin
    If MX Then DEX:=-DEX;
    EDP:=EDP+DEX-DEC;
    If EDP<0
    Then For I:=1 To -EDP DO
        If FP>=MinReal Then FP:=FP/10.0
        Else FP:=0 (* Underflow => 0 *)
    Else For I:=1 To EDP Do
        If FP<=MaxReal Then FP:=FP*10.0
        Else exit (STRFP); (* Overflow *)
    If MN Then FP:=-FP;
    STRFP:=True;
    exit (STRFP) (* Successful conversion *)
End;

Procedure Search;
Begin
    While INX<=LEN Do
        IF STR[INX] in Numeric
        Then Begin
(*$R-*)
            While (INX>1) and
                (STR[INX-1] in Exponent+Modifier)
(*$R+*)
                Do INX:=INX-1;
            Exit(Search) (* Found start of number *)
        End
        Else INX:=INX+1;
    Exit (STRFP) (* Non-numeric string *)
End;
```

Apple Tech Notes

Tech Info Library Article Number:681



Tech Info Library

Pascal: Converting strings to numeric variables (2 of 2)

Revised: 3/4/85
Security: Everyone

Pascal: Converting strings to numeric variables (2 of 2)

=====

```
Begin (*STRFP*)
  Numeric:=['0'..'9'];
  Exponent:=['E','e'];
  Modifier:=['+','-','.',' ',''];
  DP:=False; EX:=False; IM:=True;
  MN:=False; MX:=False; SN:=False;
  DEC:=0; DEX:=0; EDP:=0; INX:=1;
  LEN:=Length(STR); FP:=0;
  STRFP:=False;
  Search; (* Find start of number *)
  While INX<=LEN Do Begin
    CH:=STR[INX];
    If CH in Numeric+Exponent+Modifier
      Then Begin
        If CH in Numeric
          Then If EX
            Then Begin
              If DEX<1000 Then (* Exponent *)
                DEX:=DEX*10+ORD(CH)-ORD('0');
              SN:=True;
            End
          Else Begin
            If FP<1.0E8
              Then (* Mantissa *)
                FP:=FP*10+ORD(CH)-ORD('0')
              Else EDP:=EDP+1;
            If DP Then
              (* Digits to right of DP *)
              DEC:=DEC+1; IM:=False;
            SN:=True;
          End
        Else Case CH of
          '+': If SN Then
            (* Duplicate '+' sign *)
            Terminate
```

```

        Else SN:=True
    '-' : If SN Then
        (* Duplicate '-' sign *)
        Terminate
    Else Begin
        If EX Then MX:=True
        Else MN:=True;
        SN:=True
    End;
    '.' : If DP of EX Then
        (* Duplicate '.' *)
        Terminate
        Else DP:=True;
    'E','e' : If EX Then Terminate
        (* Duplicate 'E' *)
    Else Begin
        If IM Then
            (* Implied mantissa *)
            FP:=1.0;
            EX:=True;
            SN:=False
        End;
    End; (*Case*)
    INX:=INX+1
End
Else Terminate (* End of number *)
END;
Terminate (* End of string *)
End;

Function Strint; (* String to Integer *)

Var FP: real;

Begin
    Strint:=STRFP (STR,FP); (* First convert to real *)
    If ABS(FP)<=MasInt
    Then INT:=ROUND(FP) (* then round to integer *)
    Else Begin
        String:=False; (* Integer out of range *)
        INT:=0
    End
End;

Begin (* Unit Initialization *)
End.
```

This sample program illustrates the use of STRINGSTUF. Use the compiler \$V- option to override the normal string length checking.

```

Program Stringtest;

Uses STRINGSTUF; (* tests STRINGSTUF library unit *)
```

```
Var Input,STR: string;
    INT: integer;
    FP: real;

Begin
  Page (output);
  Writeln ('STRINGSTUF String => Numeric Conversion:');
  Repeat
    Writeln;
    Write ('String : ');
    Readln (input);
  (*$V-*)
    If STRFP (input,FP) Then
      Begin
        Writelnn ('    real: ',FP);
        If Strint (input,INT)
          Then Writeln ('integer:  ',INT)
            Else Writeln('integer:  Out of range.')
        End
      Else Writeln('No numeric value in string.');
```

(*\$V+*)

```
    Until input=''
  End.
```

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Pascal: Intrinsic unit for Silentye procedures (1 of 3)

Revised: 12/5/84
Security: Everyone

Pascal: Intrinsic unit for Silentye procedures (1 of 3)

=====

Appendix D (pp. 53-59) of the Silentye reference manual indicates that all parameter procedures can be placed into an intrinsic library unit. This is a handy and valuable unit to have if you plan to use the Silentye printer in a Pascal program.

To extend the usefulness of the Silentye unit, two procedures have been added to this listing and another has been changed. These three procedures are discussed here; refer to the Silentye manual for a description of the remainder.

Procedure SetPage (Page: integer):

This procedure allows you to change from one high-resolution graphics screen to the other; however, only the first high-res page is used in the Pascal system. Values: 1=first page; 2=second page.

Procedure ColdStart:

The ColdStart procedure resets the Silentye parameters to the default values as specified in the printer manual. This procedure is equivalent to turning off the power to the printer. Values: none required.

Procedure WarmStart:

The Restore procedure as listed in the Silentye manual has been revised and renamed WarmStart. Included in the revision is the SetPage procedure. This procedure differs from ColdStart in that the parameters set by WarmStart are user-definable; that is, they reflect the particular setup that you find most applicable to your needs. For instance, you may set a darkness setting to 3 or 5, and so on.

Initialization Code:

The initialization code consists of a call to the ColdStart procedure. This call is executed when the unit is first brought into the system from the

library to ensure that the printer is not retaining any settings from previous uses with either Pascal or BASIC. If you wish, you may change this code to WarmStart or another code of your choice; you may also leave the initialization section empty, though in that case you should still include the BEGIN and END.

Installing the Unit:

The Silentype unit comes ready for you to enter it, compile it and install it in your copy of SYSTEM.LIBRARY, though you may wish first to change the Intrinsic Code value or the contents of WarmStart to suit your individual needs. Refer to pp. 186-193 of the Apple Pascal Operating System Reference manual for the instructions for placing the compiled Silentype unit into your SYSTEM.LIBRARY.

```
(*S+*)
```

```
Unit Silentype; Intrinsic Code 27;
```

Interface

```
Procedure ROMEnable;
Procedure SetByteValue (Loc,Value: integer);
Function ByteValue (LOC: integer): integer;
Procedure Send (CH: CHAR);
Procedure SetUniDirect;
Procedure SetBidirect;
Function UniDirect: boolean;
Procedure SetNegative;
Procedure SetPositive;
Function Negative: boolean;
Procedure SetPage (Page: integer);
Procedure SetDark (Darkness: integer);
Function Dark: integer;
Procedure SetForm (Length: integer);
Function Form: integer;
Procedure SetSpace (Length: integer);
Function Space: integer;
Function LeftMargin: integer;
Function RightMargin: integer;
Procedure SetLeftMargin (Position: integer);
Procedure SetRightMargin (Position: integer);
Procedure PrintBuffer;
Procedure ClearBuffer;
Procedure FormFeed;
Procedure PrintPic;
Procedure ColdStart;
Procedure WarmStart;
```

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Pascal: Intrinsic unit for Silentye procedures (2 of 3)

Revised: 12/5/84
Security: Everyone

Pascal: Intrinsic unit for Silentye procedures (2 of 3)

=====

Implementation

```
Procedure ROMEnable;
  CONST ROMSOff= -12289;
         ROMOn= -16128;
  Type Window= packed array [0..0] OF 0..255;
  Var ADDR: integer;
      P: ^Window;
  Begin
    ADDR:=ROMSOff;
    MoveLeft(ADDR,P,2);
    P^[0]:=0;
    ADDR:=ROMOn;
    MoveLeft(ADDR,P,2);
    P^[0]:=0
  End;

Procedure SetByteValue;
  Type Window= packed array [0..0] OF 0..255;
  Var ADDR: integer;
      P: ^Window;
  Begin
    ROMEnable;
    ADDR:=LOC;
    MoveLeft(ADDR,P,2);
    P^[0]:=Value
  End;

Function ByteValue;
  Type Window= packed array [0..0] OF 0..255;
  Var ADDR: integer;
      P: ^Window;
  Begin
    ROMEnable;
    ADDR:=LOC;
    MoveLeft(ADDR,P,2);
```

```
        ByteValue:=P^[0]
    End;

Procedure Send;
    CONST PrintUnit= 6;
    Begin
        UnitWrite(PrintUnit,CH,1,0,12)
    End;

Procedure SetUnitDirect;
    CONST MaxByte= 255;
        Direction= -12529;
    Begin
        SetByteValue(Direction,MaxByte)
    End;

Procedure SetBiDirect;
    CONST MinByte= 0;
        Direction= -12529;
    Begin
        SetByteValue(Direction,MinByte)
    End;

Function UniDirect;
    CONST MaxByte= 255;
        MinByte= 0;
        Direction= -12529;
    Begin
        Case ByteValue(Direction) Of
            MinByte: UniDirect:=False;
            MaxByte: UniDirect:=True
        End
    End;

Procedure SetNegative;
    CONST MinByte= 0;
        Flip= -12524;
    Begin
        SetByteValue(Flip,Minbyte)
    End;

Procedure SetPositive;
    CONST MaxByte= 255;
        Flip= -12524;
    Begin
        SetByteValue(Flip,MaxByte)
    End;

Function Negative;
    CONST MaxByte= 255;
        MinByte= 0;
        Flip= -12524;
    Begin
```

```
        Case ByteValue(Flip) Of
            MinByte: Negative:=True;
            MaxByte: Negative:=False
        End
    End;

Procedure SetPage;
    CONST GraphPage =-12525;
    Begin
        If Page=2 Then Page:=64
            Else Page:=32;
        SetByteValue(GraphPage,Page)
    End;

Procedure SetDark;
    CONST INTEN= -12528;
    Begin
        If Darkness<0 Then Darkness:=0;
        If Darknes>7 Then Darkness:=7;
        SetByteValue(INTEN,Darkness)
    End;

Function Dark;
    CONST INTEN= -12528;
    Begin
        Dark:=ByteValue(INTEN)
    End;

Procedrue SetForm;
    CONST FormLength= -12531;
    Begin
        If Length<0 Then Length:=0;
        If Length>255 Then Length:=255;
        SetByteValue(Formlength,length)
    End;
```

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Pascal: Intrinsic unit for Silentye procedures (3 of 3)

Revised: 12/5/84
Security: Everyone

Pascal: Intrinsic unit for Silentye procedures (3 of 3)

=====

```
Function Form;
  CONST Formlength= -12531;
  Begin
    Form:=ByteValue(Formlength)
  End;

Procedure SetSpace;
  CONST INCR= -12530;
  Begin
    If Length<1 Then Length:=1;
    IF Length>252 Then Length:=252;
    SetByteValue(INCR,Length)
  End;

Function Space;
  CONST INCR= -12530;
  Begin
    Space:=ByteValue(INCR)
  End;

Function LeftMargin;
  CONST LMAR= -12527;
  Begin
    LeftMargin:=ByteValue(LMAR)
  End;

Function RightMargin;
  CONST RMAR= -12526;
  Begin
    RightMargin:=ByteValue(RMAR)
  End;

Procedure SetLeftMargin;
  CONST LMAR= -12527;
  Begin
    If Position>=RightMargin Then
```

```
        Position:=RightMargin-1;
    If Position<0 Then Position:=0;
    SetByteValue(LMAR,Position)
End;

Procedure SetRightMargin;
CONST RMAR= -12526;
Begin
    If Position<=LeftMargin Then
        Position:=LeftMargin+1;
    If Position>83 Then Position:=83;
    SetByteValue(RMAR,Position)
End;

Procedure PrintBuffer;
CONST CF= 6;  (* ASCII for CONTROL-F *)
Begin
    Send(CHR(CF))
End;

Procedure ClearBuffer;
CONST PrintUnit= 6;
Begin
    UnitClear(PrintUnit)
End;

Procedure FormFeed;
CONST FF= 12;  (* ASCII for form-feed *)
Begin
    Send(CHR(FF))
End;

Procedure PrintPic;
CONST CQ= 17;  (* ASCII for CONTROL-Q *)
Var BiDirect: boolean;
Begin
    If UniDirect =True Then BiDirect:=False
    Else BiDirect:=True;
    If BiDirect Then SetUniDirect;
    Send(CHR(CQ));
    If BiDirect Then SetBiDirect
End;

Procedure ColdStart;
CONST MinByte= 0;
    Default= -12506;
Begin
    SetByteValue(Default,MinByte)
End;

Procedure WarmStart;
Begin
    SetBiDirect;
```

```
        SetPositive;  
        SetPage(1);  
        SetDark(5);  
        SetForm(40);  
        SetSpace(2);  
        SetLeftMargin(2);  
        SetRightMargin(81);  
    End;  
  
    Begin  (* Initialization Section *)  
        ColdStart;  
    End.
```

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Tech Info Library

Pascal II: Operand Formats (1 of 4)

Revised: 12/5/84
Security: Everyone

Pascal II: Operand Formats (1 of 4)

=====

When you need to send data (especially complex data formats, such as strings) to an assembly routine from a Pascal host program, it can be very useful to be familiar with the internal structure of Pascal variables. This article describes a few of the more commonly used variable types; for a complete description of the more complex variables, including records and arrays, see pp. 227-228 of the Apple Pascal Operating System Reference Manual.

Machine language (assembly) routines are commonly used either when (a) speed is critical, or (b) when the code must access other assembly routines (such as PROMs or I/O drivers) that can't be reassembled as part of the program. Also, bit manipulations such as right-shift are much easier to do in assembly than in Pascal.

In the UCSD Pascal system, it's fairly easy to create short assembly programs which can be linked into a Pascal host program. In some cases, it may be sufficient to merely call the assembly routine; most routines require that data be passed to them, though. Data is passed to or from routines by means of a "parameter", a temporary variable created by Pascal specifically for that purpose. The term "Var parameter" implies that the address of the actual variable is passed to the routine as a parameter instead of its value.

Certain types of variables may be passed by value, but any variable may be passed by name by simply declaring it to be a Var parameter. Pascal does not allow parameters of variable length (with the exception of certain sets and long integers) to be passed on the CPU stack, since doing so could end up filling the stack to capacity and thereby crashing the operating system. These parameters, therefore, are automatically used as if defined as Var parameters. A good explanation of the various methods of passing parameters may be found in Peter Grogono's book, "Programming in Pascal".

Before delving into the details, let's define some terms and conventions which we'll use later on:

Bit = a binary digit (0 or 1). A bit is the smallest unit of information which can be stored in a computer.
Nybble = 4 bits (half a byte). A hexadecimal digit is one nybble

(pronounced "nibble").
Byte = 8 bits (2 nybbles). This is the unit of storage which the
6502 processor uses.
Word = 2 bytes (16 bits). A word is the unit of information which
Pascal uses.
LSB = least significant bit
MSB = most significant bit

decimal	65535	0
hexadecimal	\$FFFF	\$0000
	MSB	LSB

This diagram of memory structure is useful for understanding the format of variables: although we're used to writing numbers from left to right, Pascal reads data from memory FROM RIGHT TO LEFT, starting at the least significant byte.

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Tech Info Library

Pascal II: Operand Formats (2 of 4)

Revised: 12/5/84
Security: Everyone

Pascal II: Operand Formats (2 of 4)

Integers:

Integers in UCSD Pascal are whole numbers between -32768 to +32767, inclusive. They are stored in one word (2 bytes). Negative integers are represented in "two's complement," which means that they appear to have positive values greater than 32767; the negative integer is arrived at by subtracting 2^{16} (65536) from this positive value. Similarly, large positive integers are stored as a complementary negative numbers (cf. Integer BASIC). The sign bit (MSB) is 0 if positive, 1 if negative.

```
<-----byte----->    <-----byte----->
15 14 . . . . . 8 7 . . . . . 0    <== 16 bits
Sign                Integer Value
```

Example: the number 3 is represented in binary as:

```
MSB 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 LSB
```

However, -3 is represented as:

```
MSB 1 1 1 1 1 1 1 1 1 1 1 1 1 1 0 1 LSB
```

which also reads as 65533 (or 65536-3)!

Integers may be passed by value or as Var parameters.

Reals:

Real numbers, in UCSD Pascal, are floating point numbers between +/-1.17550E-38 to +/-3.40282E+38, inclusive. Real numbers take up four bytes (2 words) of storage. Their binary representations are similar to the proposed IEEE standard for floating point numbers:

```
31 30 . . . . . 23 22 . . . . . 0    <== 32 bits
Sign      Exponent                Mantissa
```

"Mantissa" is the name given to the decimal portion of a number; by convention, it's expressed in scientific (exponential) notation. The "exponent" indicates the power to which the mantissa is raised. The exponent is represented in base 2 (2^n). The number 3×10^2 , for instance, is defined as having a mantissa of 3, an exponent of 2, in base 10 (decimal).

The sign bit refers to the sign of the mantissa; it's 0 if positive, 1 if negative. The exponent is "offset" by 127; that is, a value of 127 in the exponent field corresponds to an exponent of 0. Similarly, if the value is 1, the exponent is -126, and if the field is 254, the exponent is +127. A value of 0 indicates that the real number is 0.

The mantissa of the real number is stored in normalized format in bits 0-22. "Normalizing" a number means adjusting it so that the highest bit is significant (that is, set to 1). The exponent indicates how many times (and in which direction) the value was shifted during normalization.

Notice that the MSB of the mantissa of any non-zero number that has been normalized is always a one. Zero can be treated as a special case: the exponent is simply set to zero. So, to gain additional precision, the mantissa has an implied "1" that is not stored, resulting in a functional 24-bit mantissa, even though only 23 bits are actually used. This gives slightly more than a 6-decimal-place (single precision) accuracy.

To make this clearer, let's look at some examples:

```
Real number = 1
MSB 0      01111111      000000000000000000000000 LSB
Exponent = 127 ( $2^0$ ) Mantissa = 1 (the implied 1 isn't stored)
```

```
Real number = -9.9
MSB 1      10000010      00111100110011001100110 LSB
Exponent = 130 ( $2^3$ ) Mantissa = 99000015
```

In the second example, the real number (in binary) appears as 1001.1110011... During normalization, the decimal point is moved to the left 3 times (incrementing the exponent), and the most significant bit becomes implied. The sign bit is 1, indicating that the number is negative.

Real numbers may be passed by value, or else they may be defined as Var parameters and then passed by address.

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Tech Info Library

Pascal II: Operand Formats (3 of 4)

Revised: 12/5/84
Security: Everyone

Pascal II: Operand Formats (3 of 4)

Characters:

Characters, by ASCII definition, are simply integers between 0 to 255, inclusive. Characters take up one word of storage. The ASCII value of the character is stored in the least significant byte. The most significant byte is not used by Pascal and should be ignored.

15 8 7 0 <= 16 bits
unused ASCII

Example: the character "A" has an ASCII value of 65 (hexadecimal 41). The binary representation is:

MSB x x x x x x x x 0 1 0 0 0 0 0 1 LSB
<----- not used-----> 4 (hex) 1

Characters can be passed either as actual parameters (by value) or as Var parameters (by address).

Strings:

A string is a packed array of characters that can be from one to 256 bytes long. The first byte of a string always contains a number from 0 to 255; this number indicates the length of the string. One character is stored per byte, and the string ends on a word boundary--that is, if the last character in the string is the first byte of a new word, the other byte of the word is also reserved and not used by the string.

Each character of the string can be accessed in a packed array of characters; you cannot, however, access the length byte (the 0th element). Doing so causes the message "Value Range Error" to be displayed.

Example: The string "ABCD" has a length of 4. It looks like this:

S[4] S[3] S[2] S[1] S[0]
MSB 01000100 01000011 01000010 01000001 00000100 LSB

"D"	"C"	"B"	"A"	4
-----	-----	-----	-----	---

Pascal always passes strings by address, since strings' lengths may vary.

Pointers:

Address pointers are unsigned integers that occupy 1 word of storage. Their format is identical to that of integers, except that their values may range from 0 to 65535. The value of a pointer, in this implementation of Pascal, is the memory address of the object being described.

Example: The address of AN0 (one of the annunciator ports) is hex C058 (49240 decimal). This address is stored as:

MSB	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	LSB
	<----->				<----->				<----->				<----->				
	C				0				5				8				

Pointers, like integers, may be passed by value or by reference (as a Var parameter).

Long Integers:

Long integers are a special type of variable, first defined at UCSD as part of their extensions to the Pascal language. They are primarily used to handle calculations involving numbers which (a) cannot be represented accurately in floating point (real) format, and (b) are too large to store in integer format.

Long integers are stored in BCD (binary coded decimal)--one digit per nybble. One entire word is reserved for the sign of the long integer, and the variable must end on a word boundary. Four digits can be contained in one word, so the smallest definable long integer takes up two words of memory. The numbers are padded with leading zeroes when necessary to fill up the last word. The sign is 0 if positive and 255 if negative. (One byte is used for the sign.)

To illustrate the structure of long integers, let's take a specific example: the long integer -123456 takes 3 words: one for the sign, and two for the digits (since they are stored in multiples of 4). This long integer is stored in the following format:

<----- each digit is one nybble ----->																
MSB	6	5	4	3	2	1	0	0	0	0	F	F	LSB			
	<-- word -->				<-- word -->				< sign word >							

A long integer should always be passed by address, since its length depends on its definition.

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Pascal II: Operand Formats (4 of 4)

Revised: 12/5/84
Security: Everyone

Pascal II: Operand Formats (4 of 4)

=====

Booleans:

The Boolean (binary) variable can have two values: TRUE and FALSE. Booleans are most commonly used in determining yes/no conditions, such as equality or set inclusion. Boolean variables are stored in one word, though only the LSB (least significant bit) is used. TRUE is represented by a 1; FALSE is represented by a 0.

MSB	15	.	.	.	.	.	.	8	7	.	.	.	.	.	.	0	LSB
																	Boolean

UCSD Pascal does not allow direct printing of Boolean variables. For example:

```
Program PrintBoolean;
Var A: boolean;
Begin
  A := FALSE;
  Writeln (A);    (* this is illegal *)
  If A = FALSE Then Writeln ('FALSE') Else Writeln ('TRUE');
  (* this is correct *)
End.
```

Booleans are most efficient in packed arrays, where each bit of the word is utilized. DrawBlock is probably the best-known example of this use. An excellent example of the use of boolean packed arrays is in the GrafDemo program on the Apple Pacal diskette APPLE3.

Boolean variables may be passed by value or by address.

Other Types:

In addition to all the above standard types, Pascal allows the programmer to define a wide variety of non-standard variable types. Probably the most popular example of this is the SET.

A set is an arbitrary collection of elements with each element assigned an

ordinal position (that is, represented by a number). Each element of the set is represented by a name; you may choose any word for this name, except for (a) words reserved by Pascal, and (b) other variable definitions already in use. Each name is then associated with one bit in the data definition, beginning with bit 0. The set is stored in memory as a series of bits identified by the ordinal position of the element in the type definition. A set must end on a word boundary: for example, 17 elements would take up 2 words, even though only one bit of the second word is actually used.

Example:

```
Type Colors = (Red,Green,Blue,Yellow,Black,White);
ColorSet = Set of Colors;
```

is a set of colors. Red occupies position 0, and white has position 5.

```
<-----one word----->
MSB 0 0 0 0 0 0 0 0 0 0 1 1 1 1 1 1 LSB
      W B Y B G R
      h l e l r e
      i a l u e d
      t c l e e
      e k o   n
                w
```

Sets may be passed either by address or by value, with certain restrictions. See p. 203 of the Pascal reference manual for details.

In general, complex record types consist of one or more standard types, each stored as described above. For the last word on Pascal data types, read Niklaus Wirth's Report in "User Manual and Report" by Jensen and Wirth.

References:

- Apple Pascal Reference Manual, by Apple Computer Inc. 1979.
- Apple Pascal Language Reference Manual, by Apple Computer, 1980.
- Apple Pascal Operating System Reference Manual, by Apple Computer, 1980.
- Programming in Pascal, by Peter Grogono, Addison Wesley, 1978.
- User Manual and Report, by Kathleen Jensen and Niklaus Wirth, Springer-Verlag, 1974.

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Tech Info Library Article Number:689



Tech Info Library

Pascal: Run-time errors

Revised: 12/5/84
Security: Everyone

Pascal: Run-time errors

Run-time errors generate an error message, as well as a set of numbers that refer to the instruction during which the error occurred. "S" stands for "Segment", "P" for "Procedure" and "I" for "Instruction Count". These can be correlated with the textfile by using the System List options, (*\$L+*) or (*\$L<filename>*), while compiling. Doing so produces an annotated listing of the text, with the S, P and I numbers included.

For example, here's a very simple program compiled with the listing option:

(1)	(2)	(3:4)	(5)<--Text----->
1	1	1:D	1 (*\$LPrinter:*)
2	1	1:D	1 Program Example;
3	1	1:D	3
4	1	1:D	3 Var S:string;
5	1	1:D	44
6	1	1:0	0 Begin
7	1	1:1	0 Readln(S);
8	1	1:1	21 Writeln(S)
9	1	1:0	40 End.

Key:

- (1) Line number of text
- (2) Segment number (S#): When S# values do not appear in your listing, the error occurred in that segment of the operating system. S#0 is System.Pascal, while S#17-31 are usually SYSTEM.LIBRARY segments.
- (3) Procedure number (P#) is the number within the segment designated by the S#.
- (4) Nesting level (D=declaration)
- (5) Instruction count (I#) is the number of instructions counted from the beginning of the procedure. It indicates the count at the beginning of each line; a value between two lines, then, means the error occurred in

the middle of the line.

Warning: When using Apple Pascal Version 1.0, do not use \$L+ as your listing option. Doing so will cause you to lose your code file, and possibly your operating system. Instead, specify a disk file on a volume other than the one that you wish to be the destination of your code file. Better yet, use (*\$LPrinter:*) to put the listing directly onto your printer. The \$L+ option works correctly in later versions.

Apple Tech Notes

Tech Info Library Article Number:690



Tech Info Library

Pascal: Real number format

Revised: 12/5/84
Security: Everyone

Pascal: Real number format

=====

Real numbers in UCSD Pascal are floating point numbers between +/-1.17550E-38 and +/-3.40282E+38, inclusive. Real numbers take up four bytes (2 words) of storage. Their binary representation is similar to the proposed IEEE standard for floating point numbers:

31	30	23	22	0	<=	32 bits
Sign	Exponent						Mantissa												

"Mantissa" is the name given to the decimal portion of a number; by convention, it's expressed in scientific (exponential) notation. The "exponent" indicates the power to which the mantissa is raised; it's represented in base 2 (2^N). The number 3×10^2 , for example, is defined as having a mantissa of 3 and an exponent of 2, in base 10 (decimal).

The sign bit refers to the sign of the mantissa; it's 0 if positive, 1 if negative. The exponent is "offset" by 127--that is, a value of 127 in the exponent field corresponds to an exponent of 0. Similarly, if the value is 1, the exponent is -126, and if the field is 254, the exponent is +127. A value of 0 indicates that the real number is 0.

The mantissa of the real number is stored in normalized format in bits 0-22. "Normalizing" a number means adjusting it so that the highest bit is significant (that is, set to 1). The exponent indicates how many times, and in which direction, the value was shifted during normalization.

Notice that the MSB of the mantissa of any non-zero number that has been normalized is always a one. Zero can be treated as a special case--the exponent is simply set to zero. For the sake of additional precision, then, the mantissa has an implied "1" that is not stored, resulting in a functional 24-bit mantissa, even though only 23 bits are actually used. This structure yields slightly more than a 6-decimal-place (single precision) accuracy.

Real numbers may be formatted for output by means of field-width designations. As described on pp. 36-37 of the Apple Pascal language Reference Manual, the output specification has the following form:

Real : FieldWidth : FractionLength

where FieldWidth is the minimum number of characters written, including the decimal point (default=1). FractionLength is the number of digits to be written after the decimal place (default=5). Thus, a field specification of R:8:3 indicates the real variable R, printed within a field size of 8, with 3 of those digits appearing to the right of the decimal. A FractionLength of zero is illegal.

If the field size necessary for displaying the variable accurately is greater than the formatting specification, the formatting is ignored. If the size is smaller than FieldWidth, the field is padded with blanks to the left of the variable; the variable is thereby right-justified.

Apple Tech Notes

Tech Info Library Article Number:691



Tech Info Library

Pascal II: Library units (1 of 2)

Revised: 12/5/84
Security: Everyone

Pascal II: Library units (1 of 2)

=====

"Modular programming" is defined as the separation of procedures and functions, or groups of them, from the main program. Source language modules, called "units", are incorporated into libraries for use with Pascal programs. Units may consist of procedures and functions, or a combination of them written in Pascal or assembly language.

Compiling routines separately--a necessary part of modular programming--affords you a major advantage in the development of your program: it allows you to approach the task as a group of smaller tasks linked together in a logical manner. The host program must contain a USES statement in order to use routines from the unit.

The two principal kinds of units are called "Regular" and "Intrinsic". NOTE: You are not afforded the capability of having separate units in Apple Pascal.

Regular Units:

When a host program "uses" a regular unit, the Linker physically inserts the unit's code into the host's codefile. Once linked, the files don't need to be relinked until either the unit or the host program is modified and recompiled.

Regular units, since they become part of the host file, may have references to file names. A regular unit may use an intrinsic unit or another regular unit. NOTE: Regular units in version 1.0 of the Apple Pascal system are unable to use intrinsic units.

Install your Regular units in SYSTEM.LIBRARY or in any other library file. Once installed in an alternate library, the Uses statement should include the compiler option \$U <library name> before the unit name.

Intrinsic Units:

An intrinsic unit is pre-linked--that is, it contains sufficient information to allow the host program to use it without invoking the Linker. The code for an intrinsic unit remains in the SYSTEM.LIBRARY and is loaded into memory before the host program begins its actual execution. This keeps the size of the host

program down; it also allows you to modify and recompile the unit and host program individually without relinking them.

Intrinsic units must be installed in SYSTEM.LIBRARY. Intrinsic units may use other intrinsic units; they may NOT, however, use a regular unit.

NOTE: Intrinsic units may not reference files, such as data files, in Pascal version 1.0.

Assembly Routines as part of Units:

Assembly language routines may be placed into library units. With intrinsic units, the unit is compiled, the machine language routines are assembled, and then the assembled code is linked to the unit prior to installation of the unit into SYSTEM.LIBRARY.

Regular units may also contain machine language routines; however, these routines are not linked to the unit before it's installed in the library. Instead, the host program, the unit and the assembly routines are linked together at the same time.

Additional Notes on the Construction of a Unit:

Any unit which does not contain at least one procedure in the Interface section cannot have an Implementation section. In such a case, however, do include the initialization section--that is, the BEGIN and END.

Procedures listed in the Interface section are "public" to the host program as well as to the unit. Procedures listed only in the Implementation section cannot be accessed by the calling program; such procedures are called "private." When procedures are not listed publicly, they cannot be called from the host; furthermore, the Implementation section is not allowed.

Any intrinsic unit containing a global variable, either public ones (defined in the Interface) or private ones (defined in the Implementation), must have a data segment. If there is no data segment, a system error will occur.

General Format of Units:

The following example is designed to illustrate the general structure of a unit. The line numbers at the left of the page are for reference: they are NOT part of the actual structure.

Apple Tech Notes

Tech Info Library Article Number:692



Tech Info Library

Pascal II: Library units (2 of 2)

Revised: 11/21/84
Security: Everyone

Pascal II: Library units (2 of 2)

=====

```
1:  (*$S+*)
2:  UNIT < name >; INTRINSIC CODE xx DATA yy;
    (* DATA yy is used only if a data segment is
       required. *)

3:  INTERFACE

4:      USES < name of unit to be used >;
        CONST < definitions >;
        TYPE < definitions >;
5:      VAR < definitions >;

6:      PROCEDURE ONE (I:Integer);
        PROCEDURE TWO (I:Integer);
            (* External procedure *)
        FUNCTION THREE (I:Integer) : Integer;
        FUNCTION FOUR (I:Integer) : Integer;
            (* External function *)

7:  IMPLEMENTATION

8:      CONST < definitions >;
        TYPE < definitions >;

9:      VAR < definitions >;

10:     PROCEDURE ONE;
        BEGIN
            END;

        PROCEDURE TWO; EXTERNAL;

        FUNCTION THREE;
            BEGIN
                END;
```

```
FUNCTION FOUR; EXTERNAL;
```

```
11:  BEGIN
      (* initialization section *)
      END.
```

DISCUSSION

1: The swapping option is required when compiling ANY unit, regardless of its size. Omitting this option is the most common cause of compiler failures when working with units. The option should be the first line of text, preceding the UNIT header and any other compiler option.

2: The word INTRINSIC is required if the unit is to be intrinsic. DATA is optional, used only if a data segment is necessary (see #5 below). Regular units use only the UNIT < name > portion of this line.

3: INTERFACE is required. It defines the start of this section, which must contain some entries. (A totally empty INTERFACE section is not allowed.) This section contains the information which is public to both the host program and the unit (and visible from the LIBMAP program).

4: These entries are optional. If used, they are public (see #3). If a nested unit is used, it MUST be declared at this point, and the host program must also declare it in its USES statement before declaring this unit. (See pages 75-81 in the Pascal Language Reference Manual.)

5: VARs are also optional. If VARs are used in an intrinsic unit, a DATA segment MUST be declared, since these are global variables.

6: These are the public statements of the unit's procedures and functions. All parameters MUST be declared in this section, and must not appear in the IMPLEMENTATION. EXTERNAL may not be specified at this point (see #10).

7: IMPLEMENTATION is required. This section contains the code-generating statements and any private types or variables to be declared. If an item is declared in this section only, it is local to the unit and cannot be accessed from the host program directly; it is also not visible to LIBMAP.

8: CONST and TYPE definitions are optional. If included at this point, they are private and will not be visible to the calling program.

9: VARs are optional, and are private if defined at this point. A DATA segment is required if global VARs are specified in the IMPLEMENTATION section of an intrinsic unit, even though they are private.

10: These are the actual code-generating procedures. Procedures and functions already declared in the INTERFACE section need not have parameters listed here, since that would be redundant. EXTERNAL references are specified at this time.

11: This is the initialization section. Code in this portion is optional, but the BEGIN and END statements must always be present. The final END

statement must be followed by a "." to indicate the end of the text. Code placed in the initialization section will be executed immediately upon access to the unit (through the USES statement in the host program), and ignored thereafter. An example of this is Turtlegraphics, where the initialization code is responsible for allocating the high-res page so that variables will not be lost.

Apple Tech Notes

Tech Info Library Article Number:693



Tech Info Library

Pascal: STR Function

Revised: 11/21/84
Security: Everyone

Pascal: STR Function

=====

The LONGINTEGER unit of the SYSTEM.LIBRARY is used whenever the program uses the STR function or contains Long Integers. Programs that use the STR function must have the LONGINTEGER unit available in either the system library or a program library.

Apple Tech Notes

Tech Info Library Article Number:695



Tech Info Library

Pascal: Error Numbers--Runtime Pascal

Revised: 11/21/84
Security: Everyone

Pascal: Error Numbers--Runtime Pascal

=====

Apple has a special version of Pascal for applications programs that doesn't require a Language Card: it's called Runtime Pascal. Any errors that the programmer doesn't catch will stop the program with an error number equal to the error number from page 280 of the Apple Pascal Operating system Manual plus 100. For example, a 'file not found' error would cause error 110.

Apple Tech Notes

Tech Info Library Article Number:696



Tech Info Library

Pascal: WRITE Statement--the field specifier

Revised: 11/21/84
Security: Everyone

Pascal: WRITE Statement--the field specifier

=====

The field specifier in the WRITE statement allows you to fix the number of decimal places of a real number that will be printed; a field specifier of 0, however, won't work:

```
WRITELN (REAL:5:0); doesn't work
WRITELN (REAL:5:1); does
```

See page 36 of the Apple Pascal Language Reference Manual for more information.

Apple Tech Notes

Tech Info Library Article Number:697



Tech Info Library

Pascal: Interrupts

Revised: 11/21/84
Security: Everyone

Pascal: Interrupts

=====

Pascal 1.1 will work with interrupts. Usually, interrupts are disabled when Pascal boots and the IRQ vector at \$FFFE,FFFF points to the system re-initialization routine. You can write an assembly language routine that will point the IRQ vector to your interrupt handler, and thereby enable interrupts. Refer to the Language Card manual for how to write to the IRQ vector.

The disk routines in Pascal 1.1 are protected from interrupts during their time-dependant code. However, Pascal 1.0 doesn't protect its disk routines; interrupts are therefore not recommended in that environment.

Apple Tech Notes

Tech Info Library Article Number:698



Tech Info Library

Power R Inc.

Revised: 4/3/97
Security: Everyone

Power R Inc.

=====
Article Created: 12 October 1987
Article Reviewed/Updated: 2 November 1993

Power R Inc.

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Company Profile:
Hardware, Macintosh, Apple IIGS, and VGA splitter video connections.

The Presenter 520 connects a Macintosh LC 520 to both Apple and third-party VGA monitors and LCD panels. Because it clips onto the VRAM SIMM, it doesn't occupy the PDS slot. (Not compatible with the Apple Basic Color Monitor, or any other non-multisynched VGA compatible monitor.) Power R has similar products for the Macintosh Color Classic, Classic II, Classic, SE/30, SE, Plus, and 512K.

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Tech Info Library Article Number:699



Tech Info Library

Pascal: Turtlegraphics -- Circles

Revised: 11/21/84
Security: Everyone

Pascal: Turtlegraphics -- Circles

=====

The program below is supposed to draw a circle, but it doesn't--it draws an octogon. The drawing routines can calculate exactly where the end of the line will be, but with a move of only one dot, the result is limited to one of the eight adjacent dots. For example, if we move a distance of one dot at an angle of five degrees, then the co-ordinates of the destination are $X + 0.09$, $Y + 0.99$, which are rounded to $X + 0$, $Y + 1$.

Calculated Angle	Actual Angle
0 - 22.5	0
22.5 - 67.5	45
67.5 - 112.5	90
112.5 - 157.5	135
157.5 - 202.5	180
202.5 - 247.5	225
247.5 - 292.5	270
292.5 - 337.5	315
337.5 - 382.5	0

The next table gives the calculated and actual X and Y coordinates for an angle of 5 degrees and varying move distances.

Move	X-Coordinate		Y-Coordinate	
	Calc	Act	Calc	Act
1	0.09	0	0.99	1
2	0.17	0	1.99	2
3	0.26	0	2.98	3
4	0.35	0	3.98	4
5	0.43	0	4.98	5
6	0.52	1	5.97	6

The next diagram simulates the High-Res graphics display. Clearly, you must move at least 6 units for 5 degrees to show any effect.

M o v e
1 2 3 4 5 6

```

                                     *
                                   *
                                *
                             *
                          *
                       *
                    *
               *
          *
      *
  *
```

As you can see, the computer can't display a 5 degree change unless the move is at least 6 units.

```
PROGRAM CIRCLE;
```

```
USES Turtlegraphics;
```

```
VAR I : INTEGER;
```

```
BEGIN
```

```
  INITTURTLE;
```

```
  PENCOLOR (WHITE);
```

```
  FOR I := 1 TO 8 DO BEGIN
```

```
    MOVE (1);
```

```
    TURN (1);
```

```
  END;
```

```
  READLN;
```

```
END.
```

Apple Tech Notes

Tech Info Library Article Number:701



Tech Info Library

Pascal II: Disable Slot 3 Terminal Initialization

Revised: 11/21/84
Security: Everyone

Pascal II: Disable Slot 3 Terminal Initialization

=====

This program modifies the file SYSTEM.APPLE on the boot diskette so that Pascal won't initialize an 80-column card in slot 3, thereby allowing graphics programs to be run without interference from the 80-column card.

```
PROGRAM PATCH_40_COL;

TYPE BYTE = 0..255;

VAR  F : FILE;
     BUFFER : PACKED ARRAY [0..511] OF BYTE;
     BLOCK, BLOCK_XFER : INTEGER;

BEGIN
  WRITELN (CHR (12));
  WRITELN ('Put disk with "SYSTEM.APPLE" in drive 1');
  WRITELN;
  WRITELN ('Press RETURN when ready');
  READLN;
  RESET (F, '#4:SYSTEM.APPLE');
  BLOCK_XFER := BLOCKREAD (F, BUFFER, 1, 3);

  BUFFER[327] := 76;                (* PATCH #1 *)
  BUFFER[328] := 245;
  BUFFER[329] := 254;

  BUFFER[384] := 24;                (* PATCH #2 *)
  BUFFER[385] := 144;
  BUFFER[386] := 12;

  BLOCK_XFER := BLOCKWRITE (F, BUFFER, 1, 3);
  BLOCK_XFER := BLOCKREAD (F, BUFFER, 1, 4);

  BUFFER[201] := 24;                (* PATCH #3 *)
  BUFFER[202] := 144;
  BUFFER[203] := 12;
```

```
        BUFFER[345] := 24;                (* PATCH #4 *)
        BUFFER[346] := 144;
        BUFFER[347] := 14;

        BLOCK_XFER := BLOCKWRITE (F, BUFFER, 1, 4);
        CLOSE (F, LOCK);
        WRITELN ('Done')
    END.
```

Apple Tech Notes

Tech Info Library Article Number:702



Revised: 11/21/84
Security: Everyone

=====

When you SEEK to a record that has been added to the file since the last RESET, often it either takes a very long time to find the record or else Pascal stops with a SYSTEM FAILURE.

B L O C K		N U M B E R	
0	1	2	3
Original file		New information	
EOF when RESET		Current EOF	

If you must extend a file and then SEEK to one of the new records, RESET the file before doing the SEEK.

Tech Info Library Article Number:703



Tech Info Library

Apple Tape Backup 40SC Description, Compatibility (Discontinued)

Revised: 5/3/94
Security: Everyone

Apple Tape Backup 40SC Description, Compatibility (Discontinued)

=====

Article Created: 12 October 1987
Article Reviewed/Updated: 3 May 1994

TOPIC -----

This article describes the Apple Tape Backup 40SC.

DISCUSSION -----

The Tape Backup 40SC is a block-type device: data is written to, and read from, the tape cartridge in blocks. The controller module provides all data handling functions for SCSI bus transfers and tape cartridge Read/Write module controls, Read-Write head positioning, end sense, and analog-to-digital, digital-to-analog (ADC/DAC) signal conversion for the tape cartridge. The drive and Read-Write modules perform their functions under the direction of the controller module.

Writing to the tape unit begins with the user's command to back up a storage device such as a hard disk. Backup utility software loaded into the Macintosh receives this command and begins transferring data from the storage device to a range of Macintosh main memory. The software then passes control and the address in main memory of the data being transferred (buffer address) to the Macintosh SCSI firmware.

Using standard SCSI commands, the SCSI firmware gives the controller module the logical address to write the incoming block to the tape unit. The controller module translates the logical address to a physical address on the tape, and sends the Read-Write and drive modules commands to position the Read-Write head and activate the tape transport. The incoming data blocks are buffered in the controller module during this translation, but then are passed to the Read-Write module for writing through the control module interface. The Read-Write module then performs the actual write operation according to the commands sent to it by the controller module. The controller module uses the standard SCSI protocol to tell whether the write was successful.

Reading from the tape backup unit begins when the user issues a command to

recover a backup file. The backup utility software receives this command and sets up a range of Macintosh main memory (a buffer) to receive the incoming file. The software then passes control (and the buffer address in main memory) to the Macintosh SCSI firmware.

To read from the tape unit, the Macintosh SCSI firmware sends the controller module the logical address of the target block, using the standard SCSI commands. The controller module translates the logical address to a physical address on the tape cartridge and sends the Read-Write and drive modules the commands to position the Read-Write head and activate the tape transport. The outgoing data blocks are passed to the controller module through the control module interface. They are buffered in the controller module and then passed to the SCSI controller for output onto the SCSI bus. The controller module acknowledges correct (or faulty) execution of the read operation to the Macintosh software through the standard SCSI protocol.

The SCSI firmware in the Macintosh receives the data sent by the controller module and writes it to the previously allocated buffer. The controller module, however, acknowledges correct operation as soon as it has passed the data blocks on to the SCSI bus, regardless of the success or failure of the SCSI firmware's side of the exchange.

IMPORTANT COMPATIBILITY NOTES:

- The Tape Backup 40sc is compatible with type DC 2000 tape cartridges.
- The bundled software included with the Tape Backup 40SC is Tape Backup 40SC 2.0.1, which is INCOMPATIBLE with System 7 and later.
- Apple recommends using third-party backup software with the Tape Backup 40SC. Some products that work with the Tape Backup 40SC are Retrospect and Retrospect Remote from Dantz Development Corp., and FastBack Plus from Fifth Generation Systems.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

- 3 May 1994 - Revised article, added information regarding the type of backup tapes which can be used.
- 27 September 1993 - Revised article, adding current compatibility information.
- 23 September 1987 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:704



Tech Info Library

Pascal II: INCLUDE Directive

Revised: 11/21/84
Security: Everyone

Pascal II: INCLUDE Directive

=====

The PASCAL compiler "Include" directive (*\$I<filename>*) causes the named file to be inserted into the compilation at that point. Similarly, the assembler directive ".INCLUDE <filename>" is used to insert files during assembly.

Apple Tech Notes

Tech Info Library Article Number:705



Tech Info Library

Pascal II: Compiler-swapping

Revised: 11/21/84
Security: Everyone

Pascal II: Compiler-swapping

=====

The PASCAL compiler swapping option (*\$S+*) should be used if the compile fails and trashes the system. This option should be the first line of the text, preceding the program statement. Swapping MUST be used in compiling units. Please see page 91 of the Apple Pascal reference manual for further information.

Apple Tech Notes

Tech Info Library Article Number:706



Tech Info Library

Apple File Exchange: No Lotus WK1 to Excel Translators

Revised: 12/3/88
Security: Everyone

Apple File Exchange: No Lotus WK1 to Excel Translators

=====

This article last reviewed: 23 September 1987

Apple has no Apple File Exchange translator that converts from a Lotus WK1 format to a format that Excel can read. Excel sometimes reads Lotus WK1 files as long as they don't use any of the new version 2.0 features. Lotus 1-2-3, version 2.1, saves files in the Lotus WKS format, which Excel translates on its own.

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Tech Info Library Article Number:707



Tech Info Library

Pascal II: High-res Character Set

Revised: 11/21/84
Security: Everyone

Pascal II: High-res Character Set

=====

SYSTEM.CHARSET is used by the WCHAR and WSTRING procedures in Turtlegraphics to write textual information on the High-Res Graphics screen. It's a file of 1024 bytes, arranged in a sequence of 128 X 8 bytes in order to represent the ASCII character set. Each character is drawn from bottom to top; e.g., byte 0 is the bottom line of dots in the character. Drawblock uses these characters, so they should be accessed and treated as any other drawblock unit.

Apple Tech Notes

Tech Info Library Article Number:708



Tech Info Library

Pascal II: Intrinsic Units -- Data Segment

Revised: 11/21/84
Security: Everyone

Pascal II: Intrinsic Units -- Data Segment

=====

Intrinsic units that use GLOBAL variables, either public (defined in interface) or private (defined in implementation), MUST have a data segment in addition to the code segment. Under some circumstances, the compiler may fail to give an error message if the data segment is omitted; in that event, the system will crash when the unit is used.

Apple Tech Notes

Tech Info Library Article Number:709



Tech Info Library

LaserWriter: Loose Screws Cause Printing to Stop

Revised: 10/12/87
Security: Everyone

LaserWriter: Loose Screws Cause Printing to Stop

=====

This article last reviewed: 23 September 1987

Near the microswitches inside the LaserWriter, there is a bracket held in place by two screws (but no lock washers). As old toner cartridges are removed and new ones installed, these screws and the bracket become loose. This causes the toner cartridge to 'disappear to the LaserWriter' as the drive train tightens to pull the paper through, causing the LaserWriter to stop printing.

When printing stops, the tension in the drive train slackens and the toner cartridge 're-appears'. This series of events results in what appears to be a paper jam. At first, this can happen about once a week. Then it begins to happen every day. Eventually, the bracket becomes so loose that the cartridge 'disappears' entirely.

To fix the problem, just adjust the bracket and tighten the screws.

Tech Info Library Article Number:710



Tech Info Library

Pascal: Reading DOS 3.3 Diskettes

Revised: 11/21/84
Security: Everyone

Pascal: Reading DOS 3.3 Diskettes

=====

Both Pascal and DOS 3.3 use the same recording format on the diskettes. Pascal can read a DOS diskette with the UNITREAD procedure, but there is a hitch: Pascal uses 512 byte blocks, while DOS uses 256 byte sectors. The following table shows the correspondence between Pascal's block number and DOS's track and sector numbers. Columns 4 and 5 refer to bytes 0..255 of the block and columns 2 and 3 refer to bytes 256..511.

(1) BLOCK	(2) TRACK	(3) SECTOR	(4) TRACK	(5) SECTOR
6	1	0	1	E
7	1	D	1	C
8	1	B	1	A
9	1	9	1	8
10	1	7	1	6
11	1	5	1	4
12	1	3	1	2
13	1	1	1	F
14	2	0	2	E

The rest of the disk is arranged the same, except that the track number increases.

Apple Tech Notes

Tech Info Library Article Number:711



Tech Info Library

Pascal: Error Messages

Revised: 11/21/84
Security: Everyone

Pascal: Error Messages

=====

--> "ERROR: WRITING OUT THE FILE. PRESS <SPACEBAR> TO CONTINUE."

This message can be generated in one of three ways:

1. File names are restricted to 10 characters, not including the volume name prefix or the .TEXT suffix; a name longer than that will generate the error immediately without accessing the disk drive.
2. The error will be generated if there is insufficient room on the root disk to save the new file. This condition is particularly prone to occur when Pascal is updating the workfile, since Pascal always saves the new copy of the file before removing the previous copy.
3. The directory is limited to 77 entries. If you try to save a 78th, the error will be generated, even if there is enough room on the disk for the file.

--> "NO ROOM ON VOLUME" or "CODE WRITE ERROR"

These messages may be displayed if there isn't enough room to write the file to the specified volume. This error can occur in the Filer, Compiler, Assembler, or Linker, and can usually be corrected either by using the Filer "Krunch" option (to consolidate unused blocks) or by removing unnecessary files.

--> More on "CODE WRITE ERROR"

During creation of a code file on the boot disk, the Assembler creates a temporary file called LINKER.INFO on the boot disk; this file stores linkage information that is later written into the final block of the code file. If the code file is directed to the boot disk during the assembly, the largest unused block of disk space is opened for the code file. If the disk has been Krunched recently, there may be no space available for opening LINKER.INFO, in which case the "CODE WRITE ERROR" message will be displayed. To rectify the problem, simply "Make" an 8-block file on the boot disk, and then Make a

1-block file. (The names of these files are unimportant). After that, R)emove the 8-block file, thereby separating the space into two distinct areas and creating a place for LINKER.INFO to live. NOTE: This error may also occur in the Compiler, since the Compiler also creates a LINKER.INFO (though only during very large compiles when the system needs to temporarily swap out information). The fix is the same.

If an error occurs when you use the include file option, "Make" a 4-block file on the volume where the compiler resides, and name it SYSTEM.SWAPDISK. Doing so makes it possible for the Compiler to swap out some information in order to read in the new directory in preparation for the include file.

The Pascal (version 1.0) compiler error #407 ("Too Many Libraries") can usually be avoided by changing the length of the text file being compiled. The problem is corrected in Pascal version 1.1.

Apple Tech Notes

Tech Info Library Article Number:712



Tech Info Library

Pascal II: Compiler Options

Revised: 11/21/84
Security: Everyone

Pascal II: Compiler Options

=====

The Pascal compiler swapping option (*\$S+*) should be used if the compile fails due to lack of symbol table space. This option should be the first line of the text, preceding the program statement. Swapping MUST be used in compiling units. Please see page 68 of the Apple Pascal Language Reference Manual for more details.

The Pascal compiler list option (*\$L+*) should not be used with Pascal version 1.0, since this will result in the loss of the code file and possibly of the directory. Instead, direct the list to the printer (*\$L Printer:*), the console (*\$L Console:*), or to a named file ON ANOTHER VOLUME: for example, (*\$L Mydisk:Myfile.text*). We recommend using the printer. NOTE: This problem has been corrected in Pascal 1.1, and will work as described in the Pascal reference manuals.

The (*\$U-*) "lex level" compiler option will result in a non-executable codefile and so should not be used for compiling user programs. This option is intended for working on the system level; it requires files and information not available to the user.

Compiler options in Pascal version 1.0 must be in capitals. In version 1.1, capitals and lower case are interchangeable.

Apple Tech Notes

Tech Info Library Article Number:714



Tech Info Library

Apple 300/1200 Baud Modem: No Eight-Bit Command

Revised: 8/3/89
Security: Everyone

Apple 300/1200 Baud Modem: No Eight-Bit Command

=====

This article last reviewed: 23 September 1987

The Apple 300/1200 baud modem supports data formats up to 8 bits. There is no command to change the data handling of the modem from 7 bits to 8 bits. When data is sent to the modem, as a series of level transitions, the modem simply converts those transitions to frequency shifts. It does not care what the data structure is, up to the specified limits, and will echo whatever is sent to it.

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Tech Info Library Article Number:715



Tech Info Library

Errata for Pascal Reference Manual A2l0027 030-0101-00

Revised: 11/21/84
Security: Everyone

Errata for Pascal Reference Manual A2l0027 030-0101-00

=====

The following are errata for Apple Pascal Language Reference
Manual # A2L0027 030-0101-00.

Page 22

There is no mention of the CHR (X) function.

Page 86

ORD will accept any ordinal type (integer, character, or user defined type)
and return the ordinate of the argument. NOTE: The most common use for ORD is
to return the ASCII value of a character.

Page 148

The two-step boot cannot use APPLE1: for the first step, since RESET does a
cold boot in Version 1.1. Use APPLE3: for the first part of the boot
instead.

Apple Tech Notes

Tech Info Library Article Number:717



Tech Info Library

Pascal: Difference between REPEAT..UNTIL and WHILE..DO

Revised: 11/21/84
Security: Everyone

Pascal: Difference between REPEAT..UNTIL and WHILE..DO

=====

Pascal supports two forms of conditional loop: REPEAT..UNTIL and WHILE..DO.
A loop of the form

```
REPEAT  
UNTIL <condition>
```

will be executed at least once, even if the condition is satisfied before the first execution.

The loop consisting of

```
WHILE <condition> DO
```

will be executed ONLY if the condition is satisfied when the loop is entered.
For further information, see pages 22 and 23 of the Pascal User Manual and Report.

Apple Tech Notes

Tech Info Library Article Number:718



Tech Info Library

Lisa Basic+ 2.0

Revised: 11/9/88
Security: Everyone

Lisa Basic+ 2.0

=====

This article last reviewed: 9 November 1988

You might expect the German umlaut, not a standard ASCII character, to get the interpreter to generate a syntax error. Instead, the system hangs as if it were in an infinite loop; use the "pc 0" in the debugger to return to the command line. Avoid using option characters within the program text.

If a missing "&" in a multiline statement generates a syntax error instead of a system hang, something else may be wrong with the statement or with the system itself.

The renumbering of embedded numbers in 'REM' statements is often unsuccessful. Usually, the problem is that the number embedded in the 'REM' statement is both (a) the same as a line number in the program before or after the 'REM' statement itself, and (b) also a number that would be used in the renumbered sequence.

Lisa Basic+ supports two types of arrays, virtual and non-virtual (i.e. resident in memory). Both virtual and non-virtual arrays contain a limited number of elements: 2730 for real arrays and 16383 for integer arrays. (See the Basic+ User's Guide, page 9-2.) The system allocates a maximum of 32K of system memory to each non-virtual array dimensioned. Use the "LENGTH" command to tell you how much memory is available. With that amount, calculate the number of arrays you can dimension within the specific program.

Virtual array files (disk based) as well as arrays within the file can occupy more space than the available system memory. An example:

The maximum number of non-virtual arrays of maximum size with 504K of available memory is 16. Yet, if the program utilizes virtual arrays, the number of arrays that can be dimensioned is limited only by the amount of free disk space.

You can delete a file from within a basic program using the system statement 'Kill'. Refer to page 14-3 in the Basic Language manual for more details.

To transfer files with the file-manger to Slot 2 Channel 2:

- 1) press f for file-manager.
- 2) press t for Transfer.
- 3) in response to:
 WHERE?
 type -slot2chan2-

APPLE-. does terminate a LisaBasic program at the next logical stopping point; you can cause the program to resume by typing CONT. (Refer to page 3-11 in the Basic Language manual for details.) This method will NOT work, however, with a system hang due to, for instance, as an infinite loop; in such a case, you must implement the debugger in order to escape.

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Tech Info Library Article Number:720



Tech Info Library

Macintosh: What is the Resource Manager?

Revised: 12/17/84
Security: Everyone

Macintosh: What is the Resource Manager?

=====

The Resource Manager, one of the cornerstones of Macintosh's ROM-based user Interface Toolbox, was designed and implemented by Bruce Horn, a member of the Macintosh software team. It provides a way for applications to separate their code from the data they use--to keep the data, such as prompt strings, menus or icons, in a separate, structured part of the file. This allows the data to be edited by a utility program without any specific knowledge of that application.

Since all of the language-dependent parts of an application are resources, an application may be translated to another language (French, German, etc.) in a matter of hours by a nontechnical translator without access to the source code. Similarly, users with this utility program can customize the prompts and phrases in an application to suit their particular tastes.

The Resource Manager has proven so useful that now many other parts of the system use it in one way or another. Desk accessories, code segment, fonts, icons, windows, menus, controls, and dialogs are all kept as resources.

Reprinted from St.Mac, Vol 1.

Tech Info Library Article Number:721



Tech Info Library

AppleWorks: Using Spreadsheet data with Business Graphics II

Revised: 3/4/85
Security: Everyone

AppleWorks: Using Spreadsheet data with Business Graphics II

=====

To convert Appleworks Spreadsheet data to work with Business Graphics II (from Business and Professional Software), first use AppleWorks to print the Spreadsheet data to a ProDOS Data Interchange Format (DIF) file. From AppleWorks you can then convert this ProDOS DIF file to a DOS 3.3 DIF file. Business Graphics II can read this DOS 3.3 DIF file and plot the file's data.

Apple Technical Communications

Tech Info Library Article Number:723



Tech Info Library

LisaCalc 3.0: Problems Handling Large Documents

Revised: 7/30/87
Security: Everyone

LisaCalc 3.0: Problems Handling Large Documents

=====

LisaCalc has difficulty handling documents over 400 blocks long. If you try to build a file that large, an error may occur after you save and put away the document. If you attempt to redisplay it, you may see a dialog box saying "Unable to Redisplay the Document."

These problems have been fixed in Lisa Office System Release 3.1. The new LisaCalc size limit is approximately 700 blocks (350K). Larger documents still require much more time to calculate, update, print, and save.

Tech Info Library Article Number:724



Tech Info Library

AppleWorks: Using With Wide Carriage ImageWriter

Revised: 10/12/87
Security: Everyone

AppleWorks: Using With Wide Carriage ImageWriter

=====

This article last reviewed: 28 September 1987

AppleWorks can print over the entire width of the Wide Carriage ImageWriter's platen. How you do it depends on whether you're using AppleWorks' word processor, database, or spreadsheet module:

- In the word processor or spreadsheet, press Open-Apple-O, set PW (platen width) to 13.2, and press Escape.
- In the database, press Open-Apple-O when in a Report Format and set PW (Platen Width) to 13.2.

To print the maximum number of characters per line, change the Characters per Inch setting to 17. This allows up to 224 characters per line.

Tech Info Library Article Number:726



Tech Info Library

MacTerminal, versions earlier than 2.0: Backspacing

Revised: 9/1/87
Security: Everyone

MacTerminal, versions earlier than 2.0: Backspacing

=====

The host you communicate with using MacTerminal may or may not support the methods of backspacing available to you on the Macintosh. To determine whether the host does recognize methods of backspacing used by the Macintosh, try typing CTRL-H to delete a character, or hit the backspace key (upper right corner of the keyboard) to reposition the cursor without deleting the character. If neither method works, you'll need to consult the host's operating manual.

NOTE: In version 2.0, the backspace and delete keys can be swapped.

Tech Info Library Article Number:728



Tech Info Library

Lisa 7/7: Installing the Office System

Revised: 10/8/84
Security: Everyone

Lisa 7/7: Installing the Office System

=====

If the system reboots at any time during installation of the Lisa Office System software, make sure the diskettes are not write-protected. The red tab must show through to the front of the micro diskette for the Lisa Office system to use the diskette.

Apple Technical Communications

Tech Info Library Article Number:729



Tech Info Library

Lisa 7/7: Form feeds during printing

Revised: 1/30/85
Security: Everyone

Lisa 7/7: Form feeds during printing

=====

If the Lisa 7/7 document you wish to print is less than 1/2" from the top of the page, the Lisa will send a form feed to the printer and begin printing the document on the next page of paper. This feature replaces the dialog box in version 2.0 stating that "the paper is about to be rolled back, lift the bail...". We made this change so that Lisa 7/7 software would be able to support queued printing, which should be able to run unattended.

Apple Technical Communications

Tech Info Library Article Number:730



Tech Info Library

Relax Technology, Inc.

Revised: 4/3/97
Security: Everyone

Relax Technology, Inc.

=====

Article Created: 12 October 1991
Article Reviewed/Updated: 16 July 1993

Relax Technology, Inc.

3101 Whipple Rd.
Union City, CA 94587

510-471-6112 (Call collect)

Fax: 510-471-6267

Company Profile:
Hardware, specializing in hard drives and data storage hardware.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:731



Tech Info Library

LisaProject 3.0: Largest Integer

Revised: 10/8/84
Security: Everyone

LisaProject 3.0: Largest Integer

=====

In LisaProject, entered or calculated integers greater than 2,147,483,646 will be stored incorrectly--most likely as a negative number. Consider using multiples of hundreds or thousands of dollars whenever you suspect the cost of your project might exceed 2 billion.

Apple Technical Communications

Tech Info Library Article Number:732



Tech Info Library

Using LisaTerminal in the Background

Revised: 10/8/84
Security: Everyone

Using LisaTerminal in the Background

=====

Sometimes large documents take several minutes to transmit from the Lisa to the host computer, so you may set aside the LisaTerminal document to work on another document. In this other document, avoid using the options Cut, Paste, Copy from the edit menu. Until the paste has been completed, you run the risk of aborting the transmission.

Apple Technical Communications

Tech Info Library Article Number:733



Tech Info Library

LisaProject 3.0: Copying and Pasting the Task Table

Revised: 2/1/85
Security: Everyone

LisaProject 3.0: Copying and Pasting the Task Table

=====

When copying and pasting the Task Table into documents such as LisaCalc and LisaList, the late finish dates (4th column) is pasted over the top of the early finish dates (2nd column). Since you cannot select and Copy just a portion of the Task Table, you will have to correct the early finish dates manually.

Apple Technical Communications

Tech Info Library Article Number:734



Tech Info Library

LisaWrite: Disappearing Text

Revised: 10/8/84
Security: Everyone

LisaWrite: Disappearing Text

=====

On rare occasions, lines or possibly even pages of text may disappear from the screen of a LisaWrite document for no apparent reason. If the text has been cut, merely paste it back into the document. If the text hasn't been cut, open the page layout menu and select Don't Preview Pages. Your missing text should reappear after you select Save and Continue from the File Print menu.

There are also rare occasions when a line of text may not be printed at the bottom of a page. Selecting Save and Continue should correct the problem. If it doesn't, adjust the paragraph spacing in the line (with the Format menu) or insert a page mark (with the Page Layout menu), and then repeatedly choose Save and Continue until the line prints successfully.

Apple Technical Communications

Tech Info Library Article Number:735



Tech Info Library

Backup II: Problems backing up a 10 Mb Profile containing Pascal

Revised: 5/12/86
Security: Everyone

Backup II: Problems backing up a 10 Mb Profile containing Pascal

=====

Version 1.1.1 of Backup II fixes a problem contained in previous versions. Those versions had difficulties backing up a 10 Megabyte Profile with the Pascal language installed on it.

Apple Technical Communications

Tech Info Library Article Number:736



Tech Info Library

Lisa: Format for Printer

Revised: 10/8/84
Security: Everyone

Lisa: Format for Printer

=====

When printer format settings are made for a document, other blank documents and stationary pads may also change their printing formats to the new settings.

This can only happen to documents or stationary pads, such as the LisaWrite stationary pad, that have never had text or data entered into them. The printer format settings of non-empty documents and stationary pads will not change unless specifically set by the Format for Printer dialog box while the document is open.

Apple Technical Communications

Tech Info Library Article Number:737



Tech Info Library

LisaTerminal: Sending PF1

Revised: 7/30/87
Security: Everyone

LisaTerminal: Sending PF1

=====

Pressing the PF1 key in LisaTerminal's VT100 mode causes LisaTerminal to send an ESC-P, not an ESC-1.

To send an ESC-1, hold down the tilde key (upper-left corner of the keyboard) then press the 1 key.

Tech Info Library Article Number:738



Tech Info Library

Lisa 7/7: Technical Difficulty messages

Revised: 3/4/85
Security: Everyone

Lisa 7/7: "Technical Difficulty" messages

=====

If your Lisa frequently hangs, or if it often tells you it's having "Technical Difficulty", try reinstalling the software again. If the problem persists, check to see that you are using one of these acceptable versions of the CPU and I/O ROMs:

Lisa: 2.0: D/A8 or H/A8
Lisa 2/10: F/88 or H/88

Apple Technical Communications

Tech Info Library Article Number:740



Tech Info Library

Lisa 7/7: Hardware Failures and Software Installation

Revised: 7/30/87
Security: Everyone

Lisa 7/7: Hardware Failures and Software Installation

=====

Various error numbers usually associated with hardware failures have appeared on Lisas with the 7/7 Office System. Typically, the user hasn't selected Erase when installing the 7/7 Office System. After you safely backup your documents, reinstall the software to erase the hard disk before using the system.

Tech Info Library Article Number:741



Tech Info Library

Lisa 7/7: LisaTerminal Problems

Revised: 7/30/87
Security: Everyone

Lisa 7/7: LisaTerminal Problems

=====

LisaTerminal doesn't have a soft break: pressing the break key drops the carrier. This was true in previous versions of the Office System as well.

Tech Info Library Article Number:742



Tech Info Library

Lisa 7/7: LisaTerminal Parity

Revised: 7/30/87
Security: Everyone

Lisa 7/7: LisaTerminal Parity

=====

LisaTerminal occasionally changes the parity while receiving a transmission from a host computer. You can detect this change of parity by the grey boxes that appear in the place of the anticipated characters. You must cancel the transmission, reset the parity, and begin again.

Tech Info Library Article Number:743



Tech Info Library

Lisa Pascal: CRUNCH

Revised: 10/23/84
Security: Everyone

Lisa Pascal: CRUNCH

=====

Page 10-6 Pascal Language Manual indicates that a file closed with CRUNCH should move the EOF mark to the last place of access. This is not the case. If this function is important to users, they may need to write their own routines, insert their own EOF character, or possibly maintain an EOF pointer, which would suggest using block I/O.

Apple Technical Communications

Tech Info Library Article Number:748



Tech Info Library

Computer Associates

Revised: 4/3/97
Security: Everyone

Computer Associates

=====
Article Created: 12 November 1987
Article Reviewed/Updated: 02 April 1997

Computer Associates, software, specializing in accounting and project management software.
Culer City address: formerly Nantucket Corporation, acquired in 1992, software, specializing in application development software called Clipper.

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1240 McKay Dr.
San Jose, CA 95131
408-432-1727
800-531-5236 (Sales)
Fax: 408-954-8947

Massachusetts Office:
201 University Ave.
Westwood, MA 02090
617-320-7615
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300 Corporate Pointe
2nd Floor
Culver City, CA 90230
310-216-0818
Fax: 310-216-7692

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Tech Info Library Article Number:749



Tech Info Library

Qualstar Corporation

Revised: 4/3/97
Security: Everyone

Qualstar Corporation

=====

Article Created: 12 November 1987
Article Reviewed/Updated: 02 April 1997

Qualstar Corporation

9621 Irondale Avenue
Chatsworth, CA 91311

818-882-5822

Fax: 818-882-4081

Company Profile:
Hardware, specializing in tape drives.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:750



Tech Info Library

ImageWriter Family & Scribe: Connecting To An IBM PC, PS/2, AT&T

Revised: 4/30/90
Security: Everyone

ImageWriter Family & Scribe: Connecting To An IBM PC, PS/2, AT&T

=====
This article last reviewed: 11 April 1990

TOPIC-----

What are the cable and printer configurations that will interface an IBM PC, PS/2, AT&T 6300 or other IBM compatible to an ImageWriter I, ImageWriter 15", ImageWriter II, LQ or Scribe printer.

DISCUSSION-----

Cabling pinouts for a custom cable:

IBM PC (use female DB-25)	ImageWriter II or ImageWriter LQ (use circular 8 connector)
5,6 (CTS, DSR)	1 (DTR)
20 (DTR)	2 (DSR)
3 (RxD-)	3 (TxD-)
7 (SG)	4,8 (SG, RxD+)
2 (TxD-)	5 (RxD-)

IBM PC (use female DB-25)	ImageWriter/15"/Scribe (use male DB-25)
3 (RxD-)	2 (TxD-)
2 (TxD-)	3 (RxD-)
5 (CTS)	4 (RTS)
7 (SG)	7 (SG)
6 (DSR)	20 (DTR)

Reference:

RS232 Signal (DB-25 DTE)
1 - Sig Gnd - Normally Shield or Chassis Ground

2 - TXD	- Transmit Data
3 - RXD	- Receive Data
4 - RTS	- Request to Send
5 - CTS	- Clear to Send
6 - DSR	- Data Set Ready
7 - GND	- SIGNAL Ground
8 - DCD	- Data Carrier Detect
20 - DTR	- Data Terminal Ready
22 - RI	- Ring Indicate

Set printer switches to the following settings for this configuration:

U.S. Character set,
66 lines per page,
8 data bits (1 stop bit, no parity),
pica character pitch,
no LF after CR,
9600 Baud,
Data Terminal Ready Protocol.

ImageWriter I Switch Settings:

	8	7	6	5	4	3	2	1	
SW 1:									(CLOSE)
	X	X	X	X	X	X	X	X	(OPEN)
SW 2:				4	3	2	1		
						X	X		(CLOSE)
						X			(OPEN)

ImageWriter II Switch Settings:

SW 1 :	1	2	3	4	5	6	7	8	
	X	X	X	X	X	X	X	X	(OPEN)
									(CLOSE)

SW 2:	1	2	3	4	5*	6*			
			X	X					(OPEN)
		X	X						(CLOSE)

* NOTE: DO NOT CHANGE SWITCH 5 AND 6.

ImageWriter LQ Switch Settings:

SW 1:	1	2	3	4	5	6	7	8	
	X	X	X	X	X	X	X	X	(OPEN)
									(CLOSE)

SW 2:	1	2	3	4	5	6	7	8	
	X	X	X	X	X	X			(OPEN)

X X

(CLOSE)

SW 3: DO NOT TOUCH!

Finally, configure the serial port of the computer to match the printer configurations as above and assign the port to LPT1 by running this autoexec program:

```
mode COM1:96,N,8,1,P
```

```
mode LPT1:=com1
```

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Tech Info Library Article Number:752



Tech Info Library

Scribe Printer: Graphics Dumps

Revised: 7/30/87
Security: Everyone

Scribe Printer: Graphics Dumps

=====

You can use two versions of the Imagewriter Toolkit to dump graphic images to the Scribe printer. The original version, written under DOS, dumps graphic images created under DOS. The new version, written under ProDOS, works with ProDOS images. If you want to use the ProDOS version to print DOS graphic images, convert your DOS files to ProDOS with the Convert utility included on the ProDOS Users Disk.

Tech Info Library Article Number:753



Tech Info Library

ProDOS: Setting the prefix before using the CONVERT Program

Revised: 10/23/84
Security: Everyone

ProDOS: Setting the prefix before using the CONVERT Program

=====

The ProDOS User's Disk, /USERS.DISK, contains a CONVERT Program that transfers DOS files to ProDOS disks. For these transfers, users must remember to set the ProDOS prefix (in this case, volume name) to the prefix of the disk to which they want to send files. The ProDOS prefix defaults to the prefix of the startup disk (/USERS.DISK in this case). At the beginning of the transfer, the system checks for the correct type of disk (ProDOS or DOS 3.3) and the prefix of the ProDOS disk; if you've forgotten to change the prefix, you will receive the message "No Room on Volume" (namely, /USERS.DISK). Select option "P" from the CONVERT main menu, change the prefix, and all will be fine.

A Tip: Writing the volume name on the label of each of your ProDOS disks will help you to remember that you must provide CONVERT with the disk's prefix.

Apple Technical Communications

Tech Info Library Article Number:754



Tech Info Library

Macintosh: Typesetting with TeleTypesetting's MicroSetter

Revised: 10/12/87
Security: Everyone

Macintosh: Typesetting with TeleTypesetting's MicroSetter

=====

This article last reviewed: 30 September 1987

MicroSetter, from the TeleTypesetting Company, converts Macintosh documents into a form acceptable to Varityper typesetting machines. The product includes the MicroSetter desk accessory, cables, conversion software, and connectivity software.

MicroSetter can connect to both digital and non-digital Varitypers. In the case of digital Varitypers, a "ruling" option lets the user typeset rules, boxes, and graphics from MacPaint-type applications.

MicroSetter can handle documents created by Ready,Set,Go, Page Maker, Microsoft Word, MacWrite, and MacDraw. (Graphics from Quark XPress and Cricket Draw are not compatible with MicroSetter.)

The MicroSetter desk accessory is used in two ways:

- to convert a document to Varityper format,
- then to send the document to the Varityper.

The Varityper can't generate all the text and graphics that the Macintosh can. A non-digital Varityper can do text only. And a digital Varityper can't do screen fill patterns, rotated type, circles, or arcs (but with the "ruling" option can handle text, bit-mapped graphics, lines, and boxes).

Tech Info Library Article Number:757



Tech Info Library

Kermit File Transfer Protocol

Revised: 6/29/90
Security: Everyone

Kermit File Transfer Protocol

=====

This article last reviewed: 28 September 1987

Columbia University created the Kermit protocol for mainframe-to-microcomputer file transfers. Red Ryder 9.4, a "shareware" communications package, supports the Kermit protocol and is available on most public bulletin board systems. Another software package, Mac240 from White Pine Software, supports VT240, VT220, VT100, and the Kermit protocol.

For more information on how the Kermit protocol is implemented, see "Kermit: A File Transfer Protocol" by Frank da Cruz (Digital Press, ISBN 0-932376-88-6). Or contact Columbia University Kermit distribution at (212) 280-3703.

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Tech Info Library Article Number:758



Tech Info Library

Apple IIGS: Disk Drive Slot Assignments

Revised: 10/12/87
Security: Everyone

Apple IIGS: Disk Drive Slot Assignments

=====

This article last reviewed: 23 October 1986

Depending on the operating system and the available combination of drives, the Apple IIGS can use disk drives in a number of different slot assignments. Below are some guidelines for determining the slot assignments.

Under DOS, ProDOS 1.1.1, ProDOS 1.2 (ProDOS 8), and ProDOS 16, you may use the slot number to refer to hard drives and floppy drives using an interface card. Disks may also be called by ProDOS pathnames without regard to slot locations.

The Apple IIGS SmartPort, controlled by the firmware in the IIGS, includes the internal RAM disk and ROM disk as well as any external drives connected to the SmartPort. These drives are referenced in slot 5 because the IIGS takes SmartPort to be slot 5. There are exceptions in the use of the SmartPort: it's not available under DOS or ProDOS 1.1.1.

ProDOS 1.2 (ProDOS 8) permits up to four devices connected to the SmartPort. If four drives are found on the SmartPort, the first two drives are considered to be in slot 5 (drives 1 and 2), and the last two drives are "found" in slot 2 (drives 1 and 2). If the RAM disk is active, it occupies slot 5, drive 2, and remaining drives are moved down in the sequence to slot 2, drive 1 and slot 2, drive 2, if necessary.

ProDOS 16 allows the SmartPort up to six devices, all found in slot 5; if activated (from the Control Panel), the RAM disk occupies slot 5, drive 2. If both RAM and ROM disks are both activated, the ROM disk will be found immediately after the RAM disk. If RAM and ROM disks are available and if only the ROM disk is activated (from the Control Panel), the ROM disk will be found in drive 2.

Tech Info Library Article Number:759



Tech Info Library

AppleWorks: Boldface Commands

Revised: 8/10/87
Security: Everyone

AppleWorks: Boldface Commands

=====

With Appleworks, standard boldface commands stay in force until a carriage return. To print an entire document in boldface with the standard boldface command alone, you must place the command at the beginning of each block of text that ends with a carriage return.

Tech Info Library Article Number:760



Tech Info Library

AppleWorks: File guidelines for versions 1.1, 1.2, and 1.3

Revised: 5/12/86
Security: Everyone

AppleWorks: File guidelines for versions 1.1, 1.2, and 1.3

=====

I. General File Guidelines:

- A. Maximum number of AppleWorks files per Root Directory: 51.
- B. Maximum number of files in ProDOS subdirectory created by AppleWorks: 51.
- C. Maximum number of AppleWorks files allowed on AppleWorks' Desktop: 12.
- D. Guidelines for file names:
 - 1. 15 characters maximum.
 - 2. The name must start with a letter.
 - 3. The name must contain only:
 - a. uppercase and lowercase characters,
 - b. numbers,
 - c. spaces, and
 - d. periods.
- E. Maximum number of characters in the file is limited by disk size.

II. Data Base File Guidelines:

- A. Maximum number of records, regardless of record size or number of categories: 1350
- B. Maximum number of records in a file, assuming a record size of 75 characters and given the following RAM and Desktop:
 - 1. 140 with 64K RAM (10K Desktop)
 - 2. 750 with 128K RAM (55K Desktop)
 - 3. 13,817 with 128K RAM and full RAM card (1012K Desktop),

version 1.3 ONLY

C. Maximum number of categories per record: 30

D. Maximum length of a record: 1024 characters

-- It is only possible to reach this limit if you use field names of one character.

E. Maximum length of an entry: 76 characters

F. Maximum number of characters in a category name: 20

III. Word Processor File Guidelines:

A. Maximum length of a Word Processor file: 2250 lines by 79 characters

B. Maximum number of characters in a file, given the following RAM and Desktop:

-- The page counts have been calculated using a line length of 79 characters and a page length of 54 single spaced lines.

1. 10,000 characters with 64K RAM (10K Desktop),

-- 3 pages approximate minimum

2. 56,000 characters with 128K RAM (55K Desktop),

-- 13 pages approximate minimum

3. 177,750 characters with 128K RAM and full RAM card (1012K Desktop), version 1.3 ONLY

-- 41 pages approximate minimum

IV. Spreadsheet File Guidelines:

A. Maximum empty cells: 126,873 (127 columns and 999 rows)

B. Rows: numbered 1 through 999

C. Columns:

1. A through Z (1-26)

2. AA through AZ (27-52)

3. BA through BZ (53-78)

4. CA through CZ (79-104)

5. DA through DW (105-127)

D. Maximum filled cells:

1. Maximum number of cells in a file, assuming a cell size of ONE NUMBER and given the following RAM and Desktop:
 - a. 930 with 64K RAM (10K Desktop)
 - b. 5,120 with 128K RAM (55K Desktop)
 - c. 94,208 with 128K RAM and full RAM card (1012K Desktop),
version 1.3 ONLY
2. Maximum number of cells in a file, assuming a cell size of ONE CHARACTER and given the following RAM and Desktop:
 - a. 2,560 with 64K RAM (10K Desktop)
 - b. 14,080 with 128K RAM (55K Desktop)
 - c. 126,873 with 128K RAM and full RAM card (1012K Desktop),
version 1.3 ONLY

Apple Technical Communications

Tech Info Library Article Number:762



Tech Info Library

Macintosh: Using the Alarm Clock

Revised: 12/22/89
Security: Everyone

Macintosh: Using the Alarm Clock

=====

Article Created: 23 October 1984
Article Last Reviewed: 1 June 1992
Article Last Updated:

To see the clock, choose Alarm Clock from the Apple Menu. A single box displaying the time will appear on screen. Clicking on the flag to the right of the time will bring up two more boxes under the time display. The bottom box contains icons for the alarm, date, and time; the middle box contains the setting for the icon selected in the bottom box.

To set the alarm, date, or time:

1. Choose Alarm Clock from the Apple Menu.
2. Click on the flag to the right of the time display. The setting and icon boxes appear.
3. Click in the bottom box on the icon for the setting you want to change.
4. Click in the middle box. Scroll arrows appear.
5. Click in the middle box on the setting you want to change. To change the setting, click on the scroll arrows or type the new setting.
6. Set the clock by clicking on another icon or clicking on the Close box in the upper left corner of the time display.

When you select the alarm icon, an on/off switch icon shows up on the left of the alarm setting in the middle box. Small lines radiate from the alarm icon in the bottom box when the alarm is on. When the alarm goes off, the speaker beeps once and the Apple menu flashes.

When the Apple on the Menu bar is flashing, it means that the alarm has gone off. To turn off the alarm, choose the Alarm Clock from the Apple menu; if the clock is on screen, get to the clock's icon box and click on the date or time

icon.

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Tech Info Library Article Number:763



Tech Info Library

Access II: Printing Files

Revised: 7/26/89
Security: Everyone

Access II: Printing Files

=====

This article last reviewed: 26 July 1989

Access II cannot send files directly to a printer. You may, however, (1) record the file to disk and then print it off-line, or (2) print the recording file without going off-line by choosing 'Print a file' from the Utilities menu of Access II.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:764



Tech Info Library

Macintosh: How To Change Number Of Copies Default

Revised: 11/12/91
Security: Everyone

Macintosh: How To Change "Number Of Copies" Default

=====

Article Created: 17 December 1987
Article Last Reviewed: 5 November 1991
Article Last Updated: 18 October 1988

TOPIC -----

Here's how to change the Print Manager's "Number of Copies" value from its default of 1.

DISCUSSION -----

Note: ResEdit is a resource editor available from APDA, the Apple Programmer's and Developer's Association.

1. Use ResEdit to open the LaserWriter or ImageWriter file in your System Folder.
2. Change the "Copies:" field in DITL resource -8191. Change the number from 1 to whatever number you like.
3. Save the change when you quit ResEdit.

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Tech Info Library Article Number:765



Tech Info Library

Catalyst 2.0: Apple Writer III 2.0 installation

Revised: 10/23/84
Security: Everyone

Catalyst 2.0: Apple Writer III 2.0 installation

=====

Catalyst's Automatic Install exhibits problems when installing Apple Writer III version 2.0 on the ProFile. The problem usually manifests itself with a stack overflow (System Error \$06) upon selecting the menu option.

Quark is not sure of what the problem is, but it appears that the person adding Apple Writer III to the Catalyst Menu must have both the Catalyst Master and Catalyst Backup diskettes on hand when doing the installation. As the automatic install program runs, it needs the Catalyst Backup diskette and displays a request for it. Do not ignore this request during the installation. If you do try to bypass this step with the Escape key, the installation seems to proceed normally--yet Apple Writer does NOT install and generates a Stack Overflow error whenever you select Apple Writer III from the Catalyst menu.

Apple Technical Communications

Tech Info Library Article Number:766



Tech Info Library

MousePaint: Printing

Revised: 4/11/91
Security: Everyone

MousePaint: Printing

=====

Article Created: 23 October 1984
Article Last Reviewed: 11 April 1991
Article Last Updated: 11 April 1991

MousePaint was designed as a black and white program, not a color program. While MousePaint will output to the Scribe in color, the quality is poor. The current version of MousePaint prints directly to Apple dot matrix printers only.

Meanwhile, for printing to third party printers such as Epson or Okidata, here are some indirect methods.

NOTE: All procedures reviewed here use the ProDOS /USERS.DISK that comes with the ProDOS supplied with Disk II's or with the ProDOS User's Kit.

1. Using an intelligent graphics interface: Grappler, Pkaso, or other.
 - A. Save the picture by selecting the "Put a copy in..." command from the MousePaint File menu. This will create a standard binary picture file on a ProDOS-formatted data disk.
 - B. Leave Paint.
 - C. Start up Applesoft BASIC using the ProDOS /USERS.DISK. BASIC is an option on the main ProDOS menu.
 - D. Now you must instruct your Apple to load the graphics image and to tell the interface to dump it to the printer. Most graphics interfaces come with examples of programs that do this. Enter and save one of these on your ProDOS data disk.

Sales Tip: Enter the programs for the intelligent interfaces you support. Make sure they run under ProDOS and give them to your customers.

2. Using a "snapshot" interface.

Some cards, e.g., the "PRINT IT" interface, will print the screen when a button is pressed. Because you would print the Paint palette if you did a MousePaint screen dump, you should save the graphic as above and start up

BASIC from the ProDOS /USERS.DISK. Then give these direct commands to your Apple:

```
HGR:POKE -16302,0  
BLOAD picturename, A$2000
```

Then press the interface's button to dump the picture.

3. Making your Apple do the work.

This works if you have a graphics printing program that works with your printer, e.g., Printographer, Zoom Grafix, Apple LOGO Tool Kit and so on. Most of these programs run under DOS 3.3.

- A. Follow the instructions above to store a binary file on your ProDOS data disk.
- B. Start up the ProDOS /USERS.DISK.
- C. Now you must convert the binary file over to DOS 3.3 format using the CONVERT option on the ProDOS menu. Follow the instructions in the ProDOS manual for doing this conversion. (See our article on using the ProDOS CONVERT program for more information).
- D. After the file is converted to DOS 3.3, it may be loaded and dumped by your DOS 3.3 graphics program.

Of course, once these programs are published under ProDOS, you will not need to convert the binary file before using the graphics program.

To dump graphics, Apple IIc users can also employ the Imagewriter Tool Kit, Revision B, which works under ProDOS.

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Tech Info Library Article Number:767



Tech Info Library

ImageWriter and Dot Matrix Printers: Setting Page Lengths

Revised: 8/10/87
Security: Everyone

ImageWriter and Dot Matrix Printers: Setting Page Lengths

=====

You can set custom page lengths for the Imagewriter and Dot Matrix printers by sending a string of continuous text to the printer. This string sets the number of printed lines per page and the number of lines between the current BOF (bottom of form) and the following TOF (top of form). The commands that need to be entered are as follows:

COMMAND STRING	DECIMAL EQUIVALENT	FUNCTION
control]A@	29 65 64	Set TOF

@@ 64 64

At this point you would enter the command @@ for each printed line of text, less two. For example, to set a length of 44 lines, you would enter the string @@ 42 times with no spaces.

C@	67 64	Set BOF
----	-------	---------

@@ 64 64

At this point you would enter the command @@ for each line between the current BOF and the next TOF. For example, if you need to skip 10 lines to bring you to the next TOF, then you would enter the string @@ 10 times.

A@control^	65 64 30	Set TOF Next Page
------------	----------	----------------------

A program to produce these strings will ensure the needed accuracy in the character string. Once the page length has been set, it will remain in effect until the printer power is turned off. If you need more information, refer to the Imagewriter and Dot Matrix Printer Reference Manuals under the headings of Setting Page Length and Vertical Tabbing.

Tech Info Library Article Number:769



Tech Info Library

Macintosh: Advanced Cut & Paste Tips for Multiplan & MS-BASIC

Revised: 2/11/88
Security: Everyone

Macintosh: Advanced Cut & Paste Tips for Multiplan & MS-BASIC

=====

This article last reviewed: 23 October 1984

A limited number of fonts are available in Multiplan; it does, though it have several print options, including (a) printing with or without coordinates, (b) printing with or without cells, and (c) printing in condensed or draft form. If you wish, you can vary the font used in Multiplan by moving the text into a MacWrite document:

1. Simply cut or copy the desired cells.
2. Quit and eject Multiplan.
3. Without rebooting, insert the MacWrite disk.
4. Start up an application.
5. Paste in your model.
6. Customize the type style of the text as you wish.

MacPaint also accepts graphics created in MS-BASIC. To move such a document into MacPaint:

1. Enlarge the MS-BASIC output window to its full extent.
2. Run your graphics program.
3. Key in SHIFT-COMMAND-3. This dumps the screen to disk.
4. Open and modify the resulting Screen file in MacPaint.
5. Move the MacPaint document to MacWrite.

Though the MS-BASIC editor only uses the clipboard for single lines, MS-BASIC programs can write many lines of text to the Clipboard. At present, MS-BASIC does not write graphics to the Clipboard, but it does have text-only access to the Clipboard's facilities through the device name CLIP:. Here is a pair of programs to demonstrate the use of CLIP:; note that the programs do file I/O with text created by the program.

```
10 REM Writes to Clipboard
20 Open "CLIP:" for output as #1
30 For i=1 to 10
40 Write#1: ,"Hi, I'm Macintosh!"
```

```
10 REM Gets data from Clipboard
20 Open "CLIP:" for input as #1
30 While not EOF (1)
40 Input #1,A$
```

50 Next i	50 Print A\$
60 Close #1	60 Wend
70 Close #1	

You can also use MS-BASIC to manipulate Multiplan data. The working solution elaborates upon the Clipboard example shown above. See Appendix H of the MS-BASIC manual for more details.

Tech Info Library Article Number:771



Tech Info Library

Macintosh: Microsoft BASIC program merging

Revised: 10/23/84
Security: Everyone

Macintosh: Microsoft BASIC program merging

=====

When merging MS-BASIC programs with the MERGE command (see p. 119, MS-BASIC manual), care must be taken with the program to be merged with the program in memory: make sure that you have saved IN ASCII FORMAT the program to be merged. Make sure also that the line numbers of both programs do not overlap or repeat, because the MERGE function overwrites the lines in memory with lines from the disk file that have matching line numbers. To avoid the problem, renumber the program in memory with the RENUMB command described on p. 154 of the MS-BASIC manual.

Apple Technical Communications

Tech Info Library Article Number:772



Tech Info Library

Macintosh: Disk Recovery

Revised: 9/16/88
Security: Everyone

Macintosh: Disk Recovery

=====

This article last reviewed: 23 October 1984

At the outset, we recommend that you and your customers practice that time-honored tradition of backing up important files. Recently, however, we have gotten suggestions on reviving damaged Macintosh application disks and retrieving files from damaged data disks. Since there are many ways to blow up disk directories, though, these methods are not 100% effective.

Method one: Rebuild the desktop file.

1. If the disk is bootable (i.e. has a system folder on it), put the bad disk into the internal drive while the Macintosh is turned off.
2. Hold down the OPTION and COMMAND keys and turn the Macintosh on.
3. While the Macintosh boots, hold down the OPTION and COMMAND keys until the disk icon appears.
4. If the disk is a data disk (i.e. no system folder on it) then boot the system with a good disk. When the data disk is inserted into the drive hold down the OPTION and COMMAND keys as above.

This method sometimes requires several attempts, and while it restores data files, file folders are lost on Finders prior to 4.1; they must be re-created, and the documents must be placed back into them manually. If the Finder is version 4.1 or greater then the folders lose their names and must be manually renamed.

Method two: Recovering files.

1. Boot the Macintosh with a good copy of the application needed to read the data files you wish to recover.
2. Create a new document in that application with a double click on the application's icon.
3. Once the document, usually called "Untitled", has opened, close it.
4. Select Open on the File menu.
5. Insert the bad disk.
6. Select Open again and try to read files off of the bad disk.

7. Save the files to a good disk.

This method also works faster if you use a second drive for reading data files.

Method three: Replacing System Files.

This method has been known to work with disks that fail to boot and exhibit a "Sad Macintosh" with the address 0F0064. First attempt Method one above. If that doesn't work, boot from a good disk and then insert the bad one. If the bad one appears on the desktop, then throw away the bad disk's System Files and replace them with new ones from the good disk.

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Tech Info Library Article Number:773



Tech Info Library

Macintosh MacPaint: Fill

Revised: 2/11/88
Security: Everyone

Macintosh MacPaint: Fill

=====

This article last reviewed: 23 October 1984

Normally the MacPaint bucket allows for a single filling of a bounded area of a shape. If you wish to try various fills to see which looks best, select Undo on the Edit Menu after each fill.

The May 1984 Version 1.3 of MacPaint has a new Fill command on the Edit Menu. To use it, lasso an object and select Fill. The active fill pattern at the bottom of the palette will fill the entire object. There are no limitations on the number of times an object may be filled. The bucket still has its original limitations.

Often there is the need to put one outline shape on top of another and to have both shapes filled with the same pattern. This helps you to position objects and text, providing a "stop" every eight fatbits. The smallest square that may be created while the grid is active is nine by nine fatbits. Unlike the grid in LisaDraw, this grid is invisible and nonadjustable.

Tech Info Library Article Number:776



Tech Info Library

Macintosh: Cut from MacWrite and Paste to MicroSoft BASIC

Revised: 2/11/88
Security: Everyone

Macintosh: Cut from MacWrite and Paste to MicroSoft BASIC

=====

This article last reviewed: 23 October 1984

MacWrite files of MS-BASIC code can be turned into a program.

1. Leave MacWrite and open a new MS-BASIC document.
2. Type the MERGE command with the syntax, MERGE "volumename:filename", where "volumename" is the name shown under the disk's icon on the desktop and "filename" is the name you gave your MacWrite file.

See page 119 of the MS-BASIC manual for information about MERGE.

Note that if you stored text in more than one MacWrite document, you should repeat the command until you have MERGED the remainder of your files into the new BASIC program. The program will be named with the name of the last file you merged into it.

Tech Info Library Article Number:777



Tech Info Library

AppleWorks: Form feed problem with some third party printers

Revised: 3/4/85
Security: Everyone

AppleWorks: Form feed problem with some third party printers

=====

At times, AppleWorks' Top-of-Form command does not work properly with some third party printers, including the Juki printer. If your printer seems to ignore AppleWorks' Top-of-Form command, follow this procedure:

1. Check the printer's Top-of-Page and Lines-Per-Inch settings.
2. Change AppleWorks' "Accepts Top of Page" to NO.
3. Turn off the printer.
4. Align the top of the form on the printer.
5. Turn on printer.
6. Proceed as usual.

Apple Technical Communications

Tech Info Library Article Number:778



Tech Info Library

Why the Macintosh Has No Parity Checking

Revised: 5/11/89
Security: Everyone

Why the Macintosh Has No Parity Checking

=====

This article last reviewed: 29 September 1987

Here's why Macintosh systems don't implement parity checking:

- Reliability. RAM is typically the most reliable component in our systems.
- Simplicity. Parity checking requires additional hardware overhead, which lowers reliability.
- Low chip count. The systems for which parity checking was originally designed required more chips for the same amount of RAM. RAM chips used in these older system were far less reliable than the chips used today.
- The Macintosh does a full read/write RAM test every time it is switched on. This test is a sufficient diagnostic.

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Tech Info Library Article Number:779



Tech Info Library

Super Serial Card: Using Serial Multiplexer (12/96)

Revised: 12/16/96
Security: Everyone

Super Serial Card: Using Serial Multiplexer (12/96)

=====

Article Created: 23 October 1984
Article Reviewed/Updated: 16 December 1996

TOPIC -----

This article discusses using the Super Serial Card with a Serial Multiplexer.

DISCUSSION -----

To reduce costs, many schools install a Serial Multiplexer to allow many Apples to share an Imagewriter. The multiplexer scans each computer by sampling a signal called "Data Set Ready" or DSR from the Super Serial Card in each IIe.

The nature of the SSC causes a modem nullifier to map this signal to DTR, "Data Terminal Ready." Normally this signal is not turned off by the computer since other equipment, like a modem, requires this signal to remain on. In this configuration the Serial Multiplexer stops scanning and hangs if the signal is not dropped. A simple POKE in BASIC releases the line.

The general form is: POKE 49050+256*Slot,1

Example

Most systems have the SSC in slot 1, so the command is:

POKE 49306,0

Article Change History:
16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:780



Tech Info Library

HyperCard: Hanging Up The Phone

Revised: 3/1/89
Security: Everyone

HyperCard: Hanging Up The Phone

=====

Article Created: 10 February 1989
Article Last Reviewed: 5 June 1992
Article Last Updated:

When you use HyperCard's dial command with a modem, HyperCard doesn't hang up the phone right away if the line is busy. This is because the dial command simply sends a string to the modem and doesn't check whether the line is busy.

You can create a button that hangs up the modem. The basic format of the dial command is:

```
dial phonenumber with modem modemCommands
```

If you specify 'with modem,' HyperCard sends the information out the modem port. The modemCommands are commands you can send to the modem, such as the Hayes command set with which Apple modems are compatible.

To tell HyperCard to dial the number

```
9,555-1212
```

you'd use the dial command

```
dial "9,555-1212" with modem "ATS0=ODT"
```

which would send the string ATS0=ODT9,555-1212 out the modem port. If your modem understands the Hayes command set, it dials the phone. Because Hypercard is not looking at the modem port, it ignores any "busy" signal sent by the modem.

To make the modem hang up, you need a button that sends a character to the modem. This button script hangs up the phone if it gets a busy signal:

```
on MouseUp
```

```
    dial "n" with modem " "  
    -- n can be any number. The space in quotes is there because the  
    -- default for the 'with modem' command is ATS0=0DT.  
end MouseUp
```

Copyright 1989, Apple Computer, Inc.

Tech Info Library Article Number:781



Tech Info Library

Macintosh: Double lines in MacWrite

Revised: 2/11/88
Security: Everyone

Macintosh: Double lines in MacWrite

=====

This article last reviewed: 17 December 1984

Double lines, which are often used to set off a heading or divide segments in a bulletin, can easily be created in MacWrite. To do so: hold down the command key while pressing the letter U to toggle on the underline operation, or choose Underline from the Style menu. Next, hold down the Shift key while pressing the hyphen/line key (to the left of the = key); you should see a double line move across the screen.

Creating the same effect under a word or a group of figures in a column can only be approximated. First, enter the double line for two or three spaces. Then enter your figures with the Underline option toggle on to get a single underline, and then follow with a double line for two or three more spaces.

This suggestion was reprinted from the Open Window column in the December 1984 issue of MacWorld.

Tech Info Library Article Number:782



Tech Info Library

LisaDraw, MacDraw, MacPaint: White letters on a black background

Revised: 12/17/84
Security: Everyone

LisaDraw, MacDraw, MacPaint: White letters on a black background

=====

Need to put white letters on a black background? Well, just do the following.

MacPaint:

1. Select the text option from the pallet; select the font of your choice, then Outline or Shadow from the Style menu and type in your text.
2. Select the Paint Can from the pallet, then a shade of black. Move the pointer (now a small paint can) off to the side of your text and double click.

The Paint Can fills in the region around your text in black, leaving your typed characters white.

MacDraw or LisaDraw:

1. Type in your line, then change your letters to Outline or Shadow, with a fill of none.
2. Draw a box, circle, etc., over the top of your text.
3. While your box is still selected, select Send to Back from the Arrangement menu, then choose a fill of black.

The end result gives you white letters on a black background.

Icon, Volume 1

Tech Info Library Article Number:783



Tech Info Library

Apple Writer IIe: Converting DOS files to ProDOS

Revised: 12/17/84
Security: Everyone

Apple Writer IIe: Converting DOS files to ProDOS

=====

To convert Apple Writer IIe DOS files to ProDOS, first print your files to disk:

1. Insert your destination diskette into the drive.
2. Press "p" while holding down the Control key.
3. Type in PD8 Return.
4. Press control P again, then press NP to begin printing to your disk.
Enter your file name when prompted. Don't forget to type the disk drive and slot number if necessary.

By the way: you type PD8 because there is no slot 8 in an Apple IIe. This alerts Apple Writer to print to a disk and ask you for a file name.

Now convert your file from DOS to ProDOS using the Apple IIc Utilities disk (part number 680-3234) or the CONVERT program on the the ProDOS User's disk (pn 680-0224).

Apple Technical Communications

Tech Info Library Article Number:784



Tech Info Library

AppleWorks: Bi-directional Printing on a DWP or Sprint 11

Revised: 8/10/87
Security: Everyone

AppleWorks: Bi-directional Printing on a DWP or Sprint 11

=====

You cannot print a file bi-directionally on an Apple Daisy Wheel or Qume Sprint 11 printer from any version of Appleworks. OA-H does cause these printers to print bi-directionally, but only what's on the screen, not the entire file. To print the entire file, you must use OA-P, which cancels bi-directional printing.

Tech Info Library Article Number:785



Tech Info Library

HyperCard: Importing and Exporting Text, and Where To Get Info

Revised: 10/2/95
Security: Everyone

HyperCard: Importing and Exporting Text, and Where To Get Info

=====

Article Created: 12 October 1987
Article Reviewed/Updated: 2 October 1995

TOPIC -----

Here is a button script that imports text data into HyperCard. The data source is a text file with the following format:

```
data<tab>data<tab>.....data<tab>data<carriage return>
data<tab>data<tab>.....data<tab>data<carriage return>
data<tab>data<tab>.....data<tab>data<carriage return>
...
```

DISCUSSION -----

This script reads data and puts it into a field in the card where the button is. It moves to the next field when it encounters a tab, and makes a new card after a carriage return. This script requires that the number of fields in your card equals the number of data items you want to import.

Begin_Table

```
on mouseUp
  ask "Import text from what file?" -- Ask user for name of source file.
  if it is empty then exit mouseUp
  put it into fileName -- "put" and "open" open the text file for reading.
  open file fileName
  repeat -- Data is imported in the "repeat" loops.
    doMenu "New Card" -- Make a new card.
    repeat with i = 1 to the number of fields - 1
      read from file fileName until tab -- Read text from the file until Tab
      -- character is encountered.
      put empty into last char of it -- Remove Tab.
      put it into field i
    end repeat
  read from file fileName until return
```

```
    if it is empty then -- end of file
      if i = 1 then doMenu "Delete Card"
      close file fileName
      exit mouseUp
    end if
    put empty into last char of it -- remove Return.
    put it into field (i + 1)
  end repeat
end mouseUp
```

End_Table

When the first tab is encountered, the tab is removed from the string and the data is placed in field one. This is done until the next to last field, because we have to look for a carriage return at the end of the last field. We then read in data until a carriage return occurs, and the data is placed into the last field of the card.

This script has been used to import data files 500K and larger into HyperCard. It may have to be changed to work with a specific data file or format.

You can also EXPORT text from HyperCard fields into a text file. You can tab delimit the fields, or use any character you want:

Begin_Table

```
on mouseUp
  ask "Export text to what file?" -- Ask user for name of source file.
  if it is empty then exit mouseUp
  put it into fileName -- "put" and "open" open the text file for reading.
  open file fileName
  repeat with i = 1 to the number of cards -- go through all the cards
    go to card i
    repeat with j = 1 to the number of fields - 1
      write field j to file fileName -- get the field and write it out
      write tab to file fileName -- put a tab after it,
      -- or any character you want
    end repeat
    write field (j + 1) to file fileName -- write the last field
    write return to file fileName -- and a carriage return
  end repeat
  close file fileName
end mouseUp
```

End_Table

This would export the data you had just imported with the first script.

NOTE: This second script has NOT been extensively tested.

ANOTHER NOTE: This is NOT the only way to import & export data: use it as a guide for your own scripts. These examples were chosen because

tab-delimited data is a common format. HyperCard offers a large amount of flexibility in reading data in and out, and it would be impossible to describe all the different methods in this article. There are various sources of information regarding the HyperTalk scripting language.

For more information:

- HyperCard's Help stack (look for "ask", "put", "open", "write", "repeat", and "doMenu")
This part of HyperCard is often overlooked. The built-in help has descriptions of the HyperTalk commands available to you, and is on-line.
- "HyperCard Script Language Guide" (APDA)
This is the definitive guide to the HyperTalk scripting language. It contains descriptions to all the HyperTalk commands available, and also discusses the HyperCard environment.
- Danny Goodman's "The Complete HyperCard Handbook" (Bantam)
This was the first book available as a reference for HyperCard, and covers the tools available in HyperCard, as well as how to use the scripting abilities. It also has example scripts.
- Additional third-party books.
You should be able to find various other books on HyperCard at a local computer bookstore.
- The User Groups Icon on AppleLink.
This icon is a meeting place for Apple dealers and user groups to exchange information relating to Apple products. There is also a HyperCard folder, devoted to questions and answers and public domain and shareware utilities and stacks for HyperCard.

Article Change History:

02 Oct 1995 - Corrected minor typo, brought format up to date.

Support Information Services

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Tech Info Library Article Number:786



Tech Info Library

ImageWriter II: Carriage Motor Makes a Loud Humming Noise

Revised: 1/30/92
Security: Everyone

ImageWriter II: Carriage Motor Makes a Loud Humming Noise

=====

This article last reviewed: 9 September 1987

BEFORE YOU START: Familiarize yourself with the ImageWriter II Technical Procedures. Be sure to follow proper ESD procedures.

PROBLEM: The carriage motor makes a loud "humming" noise when the carriage moves to the left side of the printer upon power up. This sometimes occurs after the printer has been taken apart and reassembled.

CURE: Check to make sure the ground strap from the CPU board to the Driver PCB is NOT routed around the right side of the motor mount. If the ground strap gets between the motor mount and the carriage assembly, the left carriage position sensor never detects the carriage, consequently the motor stays on as the printer tries to complete the power up sequence. The ground strap should be positioned between the motor mount and the left side of the case. If the ground strap is routed correctly see the General Troubleshooting Procedures for the ImageWriter II.

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Tech Info Library Article Number:789



Tech Info Library

Apple IIc (platinum): Mouse Moved from Slot 4 to Slot 7

Revised: 10/12/87
Security: Everyone

Apple IIc (platinum): Mouse Moved from Slot 4 to Slot 7

=====

This article last reviewed: 28 September 1987

When the latest ("platinum") version of the Apple IIc was released, the main circuit board was changed to accommodate the new Memory Expansion Card. The firmware was also changed: the logical location for the mouse was moved from slot 4 (where the memory card image now resides) to slot 7.

This causes problems when customers run the sample BASIC program in Appendix A of the AppleMouse II User's Manual. To make the program work correctly with the newest Apple IIc, change all occurrences of [slot] 4 to [slot] 7.

Tech Info Library Article Number:790



Tech Info Library

LisaCalc: Problems with rounding

Revised: 11/15/84
Security: Everyone

LisaCalc: Problems with rounding

=====

In cell A2, enter the formula `INT(A1*100)/100`; in cell A1, enter the value 1.17. You would expect the result in A2 to be 1.17; however, due to difficulties in converting decimal to binary and back, the result returned is 1.16. If the intent of the above expression is to round to two decimal places, then use `ROUND(A1,2)` or `ROUND(INT(A1*100)/100,2)`. To compare the two cells to see if they are equal, use `IF(A2-A1<.0001,EQUAL,NOTEQUAL)`.

Apple Technical Communications

Tech Info Library Article Number:791



Tech Info Library

Apple IIe: Brother EM-701 Typewriter Interface

Revised: 5/25/89
Security: Everyone

Apple IIe: Brother EM-701 Typewriter Interface

=====

This article last reviewed: 28 September 1987

Here's how to interface a Brother EM-701 typewriter to an Apple IIe with a Super Serial Card. This information was supplied by Merlin's Computers, Covina, California.

Brother EM-701 Switch Settings

SW-1-1 ON
1-2 OFF
1-3 ON
1-4 OFF
1-5 OFF
1-6 OFF
1-7 OFF
1-8 ON

SW-2-1 OFF
2-2 OFF These set the typewriter to 9600 baud.
2-3 OFF
2-4 OFF

SW-2 Controls the baud rate of the typewriter. If the typewriter is set to 8-bit transmission, the typewriter will need a different print wheel because of the \$ and %. The characters don't appear in the 8-bit form or have problems printing.

Super Serial Card

(The Super Serial Card needs to have the jumper block pointing toward 'Terminal').

SW-1-1 OFF
1-2 OFF

1-3 OFF
1-4 ON
1-5 ON
1-6 ON
1-7 ON

SW-2-1 ON
2-2 OFF
2-3 OFF
2-4 OFF
2-5 ON
2-6 ON
2-7 OFF

Apple Computer, Inc., is not responsible for the content of this article.

Merlin's Computers

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Tech Info Library Article Number:792



Tech Info Library

AppleShare PC: A Description (Discontinued)

Revised: 6/6/94
Security: Everyone

AppleShare PC: A Description (Discontinued)

=====

This article last reviewed: 16 October 1987

Overview

With AppleShare PC, users of IBM PCs (and PC-compatibles) can share, with Macintosh users on an AppleTalk Personal Network, the information stored on an AppleShare file server. AppleShare PC software gives an MS-DOS user the same ability to access folders, documents, applications, and storage space that Macintosh users have. Yet using the AppleShare server from an MS-DOS PC is as easy as using a local disk drive -- AppleShare volumes appear to IBM PC users as logical DOS drives, and are accessed using most standard DOS commands. Most applications and documents can be stored and used on the server with no modification.

The AppleTalk PC Card used with AppleShare PC also lets users print, on the LaserWriter, documents they have created using MS-DOS applications. With Apple File Exchange and other optional file conversion products, Macintosh and PC users can share documents created under different operating systems. And optional bridges give PC users access to AppleShare servers on other interconnected AppleTalk networks.

Users need to remember only one password. Once a user has logged on to a server, the server automatically manages access to all directories.

System Requirements

- A PC-compatible computer with at least 384K of RAM
- two floppy disk drives (a hard disk is recommended)
- MS-DOS version 3.1 or later
- AppleTalk PC Card
- An AppleTalk Connector Kit

Installation

1. Install AppleShare PC software on a startup disk.

2. Add an AppleTalk PC card to an IBM PC or PC-compatible computer.
3. Attach the computer to an existing AppleTalk network equipped with an AppleShare server.

Features and Benefits

MS-DOS access to AppleShare allows:

- MS-DOS and Macintosh file server users to access information stored on an AppleShare file server.
- Provides a foundation for multi-user programs that allow Macintosh and MS-DOS users to work with the same information at the same time.
- Lets Macintosh and MS-DOS users work with data files created by applications that use a common file format (for example, Excel for the Macintosh and Lotus1-2-3 for the IBM PC).
- Lets AppleShare PC users share MS-DOS applications stored on AppleShare file server volumes. (The software license must allow for application sharing.)

Support for file translation:

- Allows Macintosh and MS-DOS users utilities to share documents created under different operating systems when used with optional file translation products such as Apple File Exchange.
- Makes it easier to share data between different operating environments.

Privacy (Access Privileges)

AppleShare PC fully supports the AppleShare server's powerful privacy system. File server users control information by selectively granting access to the directories they own on the file server volumes. Access privileges allow the owner of a directory to keep information private, share it with a work group, or make it available to everyone on the network.

Users can control the type of access others have to the contents of a directory. There are three levels of access:

- see documents and applications stored in the directory
- see subdirectories beneath that directory
- see, read, and make changes to documents, subdirectories, and applications located in the directory.

Flexible access privileges make many kinds of directories possible.

- Private directories. Documents stored there remain private to the owners. Only the directory's owner can see or change documents stored there.

- Shared directories. Documents stored there can be seen and read by everyone on the network; however, only the directory's owner can change the documents stored there. This is useful for storing forms which you wish everyone on the network to copy and use but not be able to change. Documents stored there can be seen, read, and changed by others on the network.
- One-way drop boxes. Anyone on the network can copy documents into the drop box, much like a one-way mail slot; however, only the directory's owner can see documents stored there or make changes to them. This is useful for collecting and storing sensitive documents such as expense reports and personnel evaluations.

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Tech Info Library Article Number:793



Tech Info Library

LocalTalk: Description of Cable System Hardware

Revised: 9/18/89
Security: Everyone

LocalTalk: Description of Cable System Hardware

=====

This article last reviewed: 02 May 1989

Overview

The cables and connectors in the LocalTalk Cable System incorporate a locking mini-3 (AppleTalk) connector. The connector assembly has a small latching pin as part of the male connector shield sleeve that mates to a receptacle in the female connector housing. Insertion of the connector latches the pin; the male connector sleeve must be pulled back to extract the pin, freeing the connector. The latching connector is engineered to have a shear pull force of no less than 6 pounds, preventing the accidental loosening of the connectors.

Compatibility

The cables are compatible with earlier connectors, except that there is no latching action if any old-to-new connection is made (either new male to old female, or new female to old male).

Custom Cable Assembly

Because of the added complexity of the new connector assembly, customers are not required to construct the actual connector as before. Instead, the new cable assembly will consist of simply splicing cables together with a new "splice box".

1. The user will take a short 6- to 8-inch cable section (which has a latching connector on one end and the wires stripped in "pig-tail" fashion in the other) and place the stripped end into the splice box housing.
2. The next step is to strip the end of the plenum cable and place it in the other side of the splice box.
3. Closing the box forces the wires between two insulation displacement fasteners, making a wire-to-wire connection and at the same time ensuring

a positive cable shield attachment, acting as a secure strain relief.

Cable/Connector Kits

LocalTalk Locking Cable Kit-10 meter

LocalTalk Locking Connector Kit-din8

LocalTalk Locking Connector Kit-DB9

LocalTalk Locking Cable Kit-25 meter

AppleTalk Custom Wiring Kit: Includes 100 meters (300 feet) of plenum cable, 26 cable and connector assemblies, and 4 cable extenders.

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Tech Info Library Article Number:794



Tech Info Library

GS BASIC: Features and Editing Commands

Revised: 10/19/87
Security: Everyone

GS BASIC: Features and Editing Commands

=====

This article last reviewed: 15 October 1987

ToolBox Primitives

GS BASIC includes primitives (built-in, low-level commands) that let the user interact with the ToolBox routines. Whereas most other ToolBox routines are implemented in external libraries that need to be explicitly called up, these commands -- Eventdef, Menudef, and Taskpoll -- are included in GS BASIC itself because they bind the ToolBox and BASIC line numbers.

Eventdef. The structure of Macintosh-like programs, as implemented by the Apple II GS and its ToolBox routines, requires that programs be event-driven. This means that the heart of a program is a main loop that constantly monitors what events -- mouse clicks, keyboard presses, window update events, network activity, and so on -- have taken place. Eventdef associates BASIC line numbers with these events: whenever one of these events occurs, GS BASIC starts running the instructions specified in a table set up by the programmer and maintained by Eventdef.

Menudef. One of the places a mouse click can occur is in the menu bar. When this happens, a menu is displayed, letting the user select a menu item. The user specifies that a certain function is to be performed. Like Eventdef, Menudef associates BASIC line numbers with menu items, so that when a menu item is selected, GS BASIC can easily determine what statements to run, and run them.

Taskpoll. Programs shouldn't start fielding events and responding to them until all the ToolBox libraries are loaded and the tables that Menudef and Eventdef maintain are initialized. The Taskpoll command lets the programmer turn off the interrupting feature of GS BASIC and turn them on when ready for them.

Procedures and Functions

The most convenient structure of of any program is a procedure, function, or

subroutine. In most BASICs, including Applesoft, subroutines are implemented in a very straightforward fashion. GS BASIC provides a more powerful way to specify and call procedures.

Applesoft lets programmers call subroutines with the GOSUB xxx command, where xxx is the line number to which control branches. Statements are then executed until a RETURN command is executed, at which time the program returns to the line that called the subroutines, and continues from there.

GS BASIC allows programmers to define specific procedures that are called with the PROC command. The PROC command performs the same functions as Applesoft's GOSUB, and lets the programmer pass local parameters as well.

Editing Commands

GS BASIC has a more powerful line editor than Applesoft's. Access it by typing EDIT linnum[-linnum]

CONTROL-D	delete character to the left of cursor; moves line to left
CONTROL-F	delete character under the cursor; moves line left
CONTROL-X	delete entire line
CONTROL-Y	delete line to left and under cursor
CONTROL-E	toggle insert mode
RETURN	accept entire line (even characters to right of cursor)
DELETE	same as CONTROL-D

GS BASIC Commands

_ (underscore)	ERRLIN	LOG(	SCALB(
ABS(	ERROR	LOG1(	SCALE(
AND	ERRTOOL	LOG2(	SECONDS@
ANU(	ERRTXT\$(	LOGB%(	SET
APPEND	EVENTDEF	MENUDEF	SGN(
AS	EXCEPTION	MID\$(	SHOWDIGITS
ASC(	EXEC	MOD	SIN(
ASSIGN	EXEVENT@ (	NEGATE(	SPACE\$(
ATN(	EXFN	NEW	SPC(
AUTO	EXP(	NEXT	SQR(
AUXID@	EXP1(	NORMAL	SRC
BASIC@ (	EXP2(	NOT	STEP
BDF	FILE(	NOTRACE	STOP
BREAK	FILTYP(	OFF	STR\$(
BTN(	FILTYP=	ON	SUB\$(
CALL	FIX(	OPEN	SWAP
CALL%	FN	OR	TAB(
CAT	FOR	OUTPUTPUT	TAN(
CATALOG	FRE	OUTREC	TASKPOLL
CHAIN	FREMEM(	PDL(	TASKREC%(
CHR\$(	GET	PEEK(	TASKREC@ (
CLEAR	GOSUB	PERFORM	TEN(
CLOSE	GOTO	PFX\$(	TEXT
COMPI(	GRAF	PI	TEXTPORT
CONT	HEX\$(	POKE	THEN

CONV(	HLIST	PREFIX	TIME\$
CONV@ (	HOME	PREFIX\$	TIME(
CONV#(	HPOS	PRINT	TIMER
CONV\$(	IF	PROC	TO
CONV%(	IMAGE	PROGNAM\$	TRACE
CONV&(	INDENT	PUT	TXT
COPY	INIT	QUIT	TYPE
COS(	INPUT	R.STACK%(	TYP(
CREATE	INSTR(	R.STACK@ (	UBOUND(
DATA	INT(	R.STACK&(	UCASE\$(
DATE\$	INVERSE	RANDOMIZE	UIR(
DATE(	INVOKE	READ	UNLOCK
DEF	JOYX(	REC(	UNTIL
DEL	JOYY(	RELATION(	UPDATE
DELETE	KBD	REM	USING
DIM	LEFT\$(	REMDR	VAL(
DIR	LEN(	RENAME	VAR(
DIV	LET	REP\$(	VAR\$(
DO	LIBFIND	RESTORE	VARPTR(
EDIT	LIBRARY	RESUME	VARPTR\$(
ELSE	LIST	RETURN	VOLUMES
END	LISTTAB	RIGHT\$(	VPOS
EOF	LOAD	RND(	WHILE
EOFMARK(	LOCAL	ROUND(	WRITE
ERASE	LOCATE	RUN	XOR
ERR	LOCK	SAVE	

Toolbox Definition Files (TDFs)

QuickDraw	ADB	Desk	Dialog
Event	Font	Intmath	LineEdit
List	Loader	Locater	Memory
Menu	MiscTool	NoteSyn	Print
QDAux	Scheduler	Scrap	StdFile
Text	Window	Control	

Built-in Constants and Reserved Variables

PI	to 20 digits
LISTTAB	number of spaces between line number and first statement
INDENT	controls indenting of FOR...NEXT and WHILE...UNTIL loops
OUTREC	maximum line length
VPOS	vertical cursor position
HPOS	horizontal cursor position
FRE	amount of memory available
SHOWDIGITS	specifies the number of digits to display for REAL numbers
KBD	holds value of last key pressed
ERR	contains error number
ERRLIN	contains line where error occurred

Variable Specifications

Real: (+ or - 1.7E38) (less than 1.5E-45 equals 0)

Double real: (+ or - 1.7E308) (less than 5.0E-324 equals 0)
Integer: (%) (2 bytes) (-32768 to 32767)
Double integer: (@) (4 bytes) (-2147483648 to 2147483647)
Long integer: (&) (8 bytes) (-9223372036854775808 to 9223372036854775807)
String: (\$) 255 characters
Arrays: (!)

Tech Info Library Article Number:795



Tech Info Library

Lisa: Line Frequency

Revised: 11/15/84
Security: Everyone

Lisa: Line Frequency

=====

The Lisa hardware manual wrongly states that the line frequency should be 60 Hz +/- 2. The actual number is 50-60 Hz +/- 2, which covers most reasonable power sources. This is true of all Lisa 2s.

Apple Technical Communications

Tech Info Library Article Number:797



Tech Info Library

GS BASIC: Overview of Features

Revised: 10/19/87
Security: Everyone

GS BASIC: Overview of Features

=====

This article last reviewed: 15 October 1987

GS BASIC vs Applesoft BASIC

Unlike Applesoft BASIC, GS BASIC gives programmers access to all of the new features of the Apple IIGS: Super hi-res graphics, the Ensoniq sound chip, expanded memory, the new Tools, and other enhanced ROM facilities.

GS BASIC is an entirely RAM-based language. It does not rely on Applesoft, nor is it related to it in any way except that they are both BASIC languages. In fact, because of advanced features like access to all of GS RAM, more powerful I/O instructions, and access of external routines, GS BASIC is not 100% compatible with Applesoft. The number of commands is increased from 120 to over 200 (see List of GS BASIC Commands), many Applesoft BASIC commands do different things in GS BASIC, and some Applesoft commands do not appear in GS BASIC at all (PR#, IN#, and HGR for example). Applesoft and GS BASIC files are stored differently on disk, and are not interchangeable. Finally, GS BASIC is designed to run under ProDOS 16, whereas Applesoft can run only under ProDOS 8. Otherwise, GS BASIC would not be able to take advantage of the GS's powerful new features.

GS BASIC gives the programmer twice the number of variable types that Applesoft has. In addition to Integer, Real, and String types, GS BASIC provides Double Real, Double Integer, and Long Integer.

GS BASIC is not as fast as Applesoft. Applesoft runs the following program in 4 seconds, while GS BASIC takes 43 seconds:

```
10 FOR i = 1 TO 10000
60 NEXT i
```

With longer programs, the difference is less. This program takes Applesoft 48 seconds and GS BASIC 217 seconds:

```
10 FOR i = 1 TO 10000
```

```
20 a=i-i
30 a=i+i
40 a=i/i
50 a=i*i
60 NEXT i
```

Access to External Routines

One of GS BASIC's main advantages is its powerful library and external routine facilities. Provided with GA BASIC are many ToolBox Definition Routines (TDFs) that let programmers call the GS's ToolBox routines (QuickDraw II, Menu Manager, Window Manager, Sound Manager, and so on). These routines are setup with the LIBRARY command, and called with the CALL and EXFN commands.

Programmers can also define and call their own library routines. These are loaded with the INVOKE command, and called with the PERFORM and EXFN commands.

Display Format

GS BASIC offers improved formatting of listings. Users can specify how much space appears between a line number and the first statement, and how far to indent when listing program statements within a FOR...NEXT or DO...WHILE...UNTIL loop. See the List of Built-in Constants and Reserved Variables.

Sound

Sound is created through Sound Manager routines.

Built-in Constants and Variables

GS BASIC includes pi calculated to 20 digits. Also, GS BASIC stores many system parameters in reserved variables. Much of the system's status can be determined and changed by examining and setting these variables. For example, the cursor's screen position is stored in the variables VPOS and HPOS. You can move the cursor simply by assigning new values to these variables.

Labels

GOTO, GOSUB, and ON xxx commands can point to labels instead of line numbers, making programs much easier to follow. Instead of:

```
1234 GOSUB 50: REM Read a character from the modem
```

the programmer can type:

```
1234 GOSUB READ_MODEM
```

Looping

GS BASIC includes three looping structures not in Applesoft:


```
IF...THEN...ELSE
FOR...NEXT...STEP
DO...WHILE...UNTIL
```

These structures, common in other languages such as Pascal and Fortran, give the programmer greater flexibility in program control. In addition, the IF...THEN structure has multi-line capabilities. This means that all statements that appear between the IF and the THEN do not have to appear on the same line.

PRINT USING and INPUT USING

PRINT USING and INPUT USING have long been a features of BASICs other than Applesoft. GS BASIC implements them with a vengeance, making them nearly as powerful as FORTRAN format statements. A programmer has many ways to specify how to print data to a screen and read it from a keyboard or other device.

When defining a USING statement, a programmer can specify it in many ways. The first way is to specify the format on the same line, right after the USING statement. The second way is to assign the formatting string to a variable (such as FMT\$), and then enter that variable after the USING statement. This allows the programmer to use the same formatting in many PRINT statements. Or, if the programmer doesn't want to use variable space to store a formatting string, he can use the IMAGE command to define it. The programmer can then simply refer to the line on which it appears in the PRINT USING statement. All of these options apply to INPUT USING as well.

PRINT and INPUT USING don't merely have to work with the text screen. With optional device extensions, a programmer can PRINT or INPUT to or from a file, or PRINT to a printer or even the Super-Hi-res graphics screen.

Finally, GS BASIC offers many formatting commands that are to be placed in the formatting strings. These are divided into three groups: String Spec, Literal Spec, and Numeric Spec. Numeric Spec is further divided into three sub-sections: FIXSPEC, SCISPEC, and ENGRSPEC. The SCALE command can be used to accurately reposition a decimal point in a floating point number.



Tech Info Library

Macintosh Mouse: Mouse/Cursor Tracking

Revised: 5/10/89
Security: Everyone

Macintosh Mouse: Mouse/Cursor Tracking

=====

There is a way to detect if the mouse was moved and how far it was moved. The mouse location call provides the current coordinates of the mouse position. If two successive calls to mouse location yield different results, then the mouse has moved, and (given the previous and present coordinates) the distance traveled can be calculated. If you wish to know the total distance the mouse traveled between calls to mouse location, then you should use the mouse odometer. The fact that the mouse moves is not considered an event, so it is up to the programmer to determine the mouse's location and distance traveled. Also note that the only thing that happens to a cursor as it travels around the screen (without any mouse clicks) is that the cursor changes according the area it is in--e.g., it becomes an I-beam over text, a cross in a spreadsheet, and an arrow most other times. It should also be noted that these cursor changes are under program control and are not automatic.

Here is a small program that uses some of the cursor/mouse tracking routines. These routines automatically keep the cursor on the screen--i.e., if the cursor is already at the left edge of the screen and you move the mouse further left, the cursor stays on the screen. This program is similar to the Hendrix program on the MacMaster 2 disk in that it makes noise.

```
PROGRAM VOL;
USES
{$U-}
    {$U QD/QuickDraw } QuickDraw,
    {$U QD/QDSupport } QDSupport,
    {$U QD/Hardware } Hardware;
{$U+}

VAR heapBuf:    ARRAY[0..10000] OF INTEGER;{must keep array under 32K
byte limit}
    ABS,ORD:PIXELS;
    event:      KeyEvent;

FUNCTION HeapFull(hz: QDPtr; bytesNeeded: INTEGER): INTEGER;
{ This function will be called if the heapZone runs out of space }
```

```
BEGIN
  WRITELN('The heap is full.  The program must now terminate! ');
  Halt;
END;

BEGIN {MAIN PROGRAM}
  {----- Initialization - Generic to all applications using QuickDraw
  -----}
  QDInit(@heapBuf, @heapBuf[10000], @HeapFull); { Must do this once at
beginning }

  INITCURSOR;
  SHOWCURSOR;
  REPEAT
    MOUSELOCATION(ABS,ORD);
    SETVOLUME((ABS DIV 120)+1);
    NOISE(ORD *(8000 DIV 360)+80 );
  UNTIL KEYBDEVENT(FALSE,FALSE,EVENT);
  HIDECURSOR;
  SILENCE
END.
```

Apple Technical Communications

Tech Info Library Article Number:799



Tech Info Library

Daisy Wheel Printer: Problem with random marks in printed output

Revised: 1/26/87
Security: Everyone

Daisy Wheel Printer: Problem with random marks in printed output

=====

When random ticks, accents and so on show up in the printed output of a daisy wheel printer, there are two probable causes:

1. The printwheel is bad. If the spokes of a printwheel were either poorly manufactured or subsequently bent, then the hammer may strike two spokes at a time. If the same letters are always printing poorly, then it is likely that the printwheel is at fault.
2. The stepper motor and the hub where the printwheel mounts are out of sync. To check this, print vertical lines using the vertical bar character and horizontal lines using the underscore character. If the characters are not vertical or horizontal and the lines are broken, then the alignment is off.

Apple TechComm

Tech Info Library Article Number:800



Tech Info Library

Lisa/Macintosh XL: RS-232 and RS-422 Pinouts for Serial Port B

Revised: 7/30/87
Security: Everyone

Lisa/Macintosh XL: RS-232 and RS-422 Pinouts for Serial Port B

=====

The signals available on Serial Port B of the Lisa are shown in Figure 3-9, page 3-24 of the Lisa Hardware Manual (for RS-232) and on page 3 of Macintosh Technical Notes #10 (for RS-422). This data is combined here.

Pin No.	RS-232 Name	RS-422 Name	Notes
1	Ground	Ground	
2	Transmit data	TxD-	
3	Receive data	RxD-	
4	Request to send		
6	Data set ready	HSK/DSR	TRxCB or CTSB
7	Ground	Ground	
19	AppleTalk receive data	RxD+	
20	Data terminal ready	TxD+/DTR	Connected to DTRB

Tech Info Library Article Number:801



Tech Info Library

LisaTerminal: Maximum length of phone number

Revised: 1/26/87
Security: Everyone

LisaTerminal: Maximum length of phone number

=====

The LisaTerminal manual states that the phone number must not exceed 40 characters; however, when you enter a number, only the first 24 characters are displayed. Only the first 24 characters are dialed when the dial menu is used. The practical limit, therefore, is 24 digits, not 40.

Apple TechComm

Tech Info Library Article Number:802



Tech Info Library

LisaTerminal 7/7: Configuring Preferences to Use a Modem

Revised: 7/30/87
Security: Everyone

LisaTerminal 7/7: Configuring Preferences to Use a Modem

=====

To use a modem from LisaTerminal 7/7, use Preferences to make the device connection a Serial Cable rather than a Modem. If you fail to do this, the system will constantly set LisaTerminal communications to Off-Line.

Tech Info Library Article Number:803



Tech Info Library

AppleWorks 1.1: Indentation Problems On A Scribe Printer (9/95)

Revised: 9/19/95
Security: Everyone

AppleWorks 1.1: Indentation Problems On A Scribe Printer (9/95)

=====

Article Created: 4 May 1985
Article Reviewed/Updated: 19 September 1995

TOPIC -----

When I print from AppleWorks 1.1 to my Scribe printer the second paragraph always prints with the wrong indentation. Why does this happen?

DISCUSSION -----

When you print an AppleWorks 1.1 file using the Scribe printer, the first paragraph always prints with an indentation of 5 spaces, as it should. If, however, the second paragraph prints without the proper indentation, check to see whether justification is set to FULL JUSTIFY. If not, set the justification to FULL JUSTIFY and then try again. This problem has been corrected in later versions of AppleWorks.

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.
26 Jan 1987 - Reviewed for technical accuracy.

Support Information Services

Apple TechComm

Tech Info Library Article Number:804



Tech Info Library

Lisa 2/10 10MB Hard Disk: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Lisa 2/10 10MB Hard Disk: Specifications (Discontinued)

=====

These are the specifications for the 10-megabyte hard disk in the
Lisa 2/10:

Access time	50 msec
RPM	3100 +/- 1%
Latency	9 msec
Data transfer rate	5 MHz

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Tech Info Library Article Number:805



Tech Info Library

Workshop 2.0 and Earlier: How To Get a Screen Dump

Revised: 7/30/87
Security: Everyone

Workshop 2.0 and Earlier: How To Get a Screen Dump

=====

The only way to get a screen dump from anywhere in the Workshop is through the debugger commands PR and PS. This set of commands only supports a parallel dot matrix printer. Keep in mind also that the editor will allow printing of a document in the window.

Version 3.0 and later support both serial and parallel printers:

PRnm
n=which port
m=UL

Tech Info Library Article Number:806



Tech Info Library

AppleWorks 2.0: New way to create Mail Merge documents

Revised: 1/26/87
Security: Everyone

AppleWorks 2.0: New way to create Mail Merge documents

=====

AppleWorks 2.0 lets you merge database records with word processor documents to create mail merge documents using a new print option which can be imbedded in a word processor file.

1. From the database, create a table style report.
2. The records appear on the clipboard in the order of the last sort in the table style report. Open your word processor document.
3. In your word processor document, place the cursor where the mail merge category should go. Select "MM" from the Open-Apple-O printer options. A list of Mail Merge catagories appears.
4. Select a database category. Answer the question regarding whether a line should be deleted if the category is blank.
5. Repeat steps 3 and 4 until all the categories you want are placed in the document.

Mail Merge places the database category in the document with a provision for appending one space at the end of the merged entry. A caret also appears in front of the category name. AppleWorks marks this caret as a mail merge printing option; place the cursor on this caret and the prompt line reads "Mail Merge".

6. Press Open-Apple-P to print the word processor document.
7. If there is mail merge data in the document, AppleWorks will ask you if you want to print the document with the categories merged, or un-merged (as you see it on the screen.)
8. If there isn't mail merge data on the clipboard, AppleWorks tells you. Be further aware that only during printing does AppleWorks report an error if the word processor document has a category name that AppleWorks cannot find on the clipboard.

..TIL00807-AppleWorks_2-0-New_way_to_create_Mail_Merge_documents_(TA46582).pdf

Apple TechComm

Tech Info Library Article Number:807



Tech Info Library

LisaCalc 7/7: The NPV function is different

Revised: 1/26/87
Security: Everyone

LisaCalc 7/7: The NPV function is different

=====

The NPV function has changed in the 7/7 version of LisaCalc. In the old version (2.0), the first value of the cashflow was counted as the payment for the first period and was thus discounted (annuity due). The formula looked like this:

$$v1/(1+discount)^1 + v2/(1+discount)^2 + \dots vn/(1+discount)^p$$

where v is the value of your cash flow, discount is the discount percentage, n is the number of the payment, and p is the number of the period.

In the new LisaCalc 7/7, the first value of the cashflow is not counted as the first period and not discounted (annuity arrears). The formula looks like this:

$$v1/(1+discount)^0 + v2/(1+discount)^1 + \dots vn/(1+discount)^p$$

It's just another way of looking at the same function. Both are equally correct.

Apple TechComm

Tech Info Library Article Number:808



Tech Info Library

Lisa Pascal: Problem Reading Directly Into Real Arrays

Revised: 7/30/87
Security: Everyone

Lisa Pascal: Problem Reading Directly Into Real Arrays

=====

In versions 1.2 and 2.0 of the Lisa Workshop, there was a problem with reading directly into a real array:

```
READLN(FILE,STUFF[2])
```

where FILE is a file and STUFF is a real array. The problem is fixed in version 3.0.

Tech Info Library Article Number:809



Tech Info Library

LisaWrite 2.0: Landscape Printing

Revised: 7/30/87
Security: Everyone

LisaWrite 2.0: Landscape Printing

=====

There is a problem printing in Landscape mode in LisaWrite 2.0. Missing and partly formed characters are printed in the upper right portion of a write document printed 'while you wait'. (Versions 3.0 and 3.1 of Lisa 7/7 don't give you the option of printing 'while you wait', so the problem doesn't occur with these versions.)

The workaround is to print 'while you work'.

Tech Info Library Article Number:810



Tech Info Library

Apple File Exchange: A Description (Discontinued)

Revised: 7/24/95
Security: Everyone

Apple File Exchange: A Description (Discontinued)

=====

Article Created: 15 October 1987
Article Reviewed/Updated: 24 July 1995

Overview

Apple File Exchange (AFE) is an application that lets users:

- copy files and directories from one file system to another
- convert files from one file format to another
- transliterate the characters in a file from one character set to another

AFE copies files among three file systems: Macintosh, ProDOS, and MS-DOS.

System Requirements

Apple File Exchange runs on any Macintosh that supports double-sided disks. If you want to use Apple File Exchange to read and write MS-DOS disks, your Macintosh must have a SuperDrive installed.

Apple File Exchange is not compatible with any operating system beyond System 7.1. You should use PC Exchange to get the same file translation capabilities in operating systems after System 7.1.

Advantages of Apple File Exchange

For developers writing translation routines, AFE has important advantages over other file conversion utilities:

- It performs batch translation of dissimilar files. Files of different types can be translated in a single operation
- It can move files between Macintosh disks, 800K ProDOS disks, and 5.25-inch MS-DOS disks.
- It is generally available.

- It provides a consistent, easy-to-use human interface for all translations.
- It provides a framework that allows quick development of new translation routines. Apple File Exchange handles the user interface and provides file system calls that are the same for all file systems. This frees developers to concentrate on actual file conversion.

Translators

A translator is a routine invoked by AFE when it copies a file. These routines are used to convert a file from one format to another. As part of translation, translators may also transliterate a file -- that is, convert the printable characters in the file to the equivalent characters in another character set.

Although AFE includes several built-in translators, most translators are produced by independent software publishers. The built-in translators perform a number of fundamental translations, such as converting text files from one file system to equivalent text files on another. All other translations are performed by translators that are separate from AFE.

All translators, with the exception of the fundamental translators built into AFE, are kept in translator files in the Apple File Exchange folder.

Translator Menus

Translations are performed using selection menus, or translator menus.

Translator menus are the AFE menus that display currently available translators. Depending on the disks currently selected, AFE displays either one or two translator menus:

- If the file systems of both the source and destination disks are the same, there is only one translator menu. The Mac-to-Mac menu is an example.
- If the file systems of the source and destination disks are different, there are two translator menus. One menu contains translators that handle translations from the first file system to the second (for example, Mac to ProDOS), while the other menu contains translators that handle translations in the opposite direction (for example, ProDOS to Mac).

Active and Inactive Translators

The translators shown in translator menus are either active or inactive.

- Active translators are those that Apple File Exchange will attempt to use when translating a file.
- Inactive translators are those that Apple File Exchange will not attempt to use when translating a file.

Users activate and deactivate translators by selecting their names in the

menu. Selecting an active translator makes it inactive, while selecting an inactive translator makes it active. An active translator is shown with a check mark to the left of its name in the menu.

General-purpose and Special-purpose Translators

Each translator menu is divided into parts:

- At the top of the menu are special-purpose translators. These translators are used in cases where either the source file format or the destination file format is used by a limited range of applications. Except in very rare cases, translators written by suppliers other than Apple will be special purpose translators (for example, MultiMate to MacWrite).
- If translators have been imported to this menu from another menu, they appear in the middle of the menu.
- At the bottom of the menu are general-purpose translators. These convert file formats used by a wide variety of applications to other widely-used formats. One example is a translator that converts text files from one file system to equivalent text files on another file system. Another possible example would be a translator for encrypting files. Except in very rare cases, the only general-purpose translators will be those that are built into Apple File Exchange.

The parts of the translator menu are separated by dotted lines. Special-purpose translators are shown in alphabetical order, while general-purpose translators are arranged by their resource ID numbers.

General-purpose translators have two important limitations that distinguish them from special-purpose translators:

- They can't be imported into other menus.
- In the dialog box that allows the user to select a translator when more than one translator can translate a file, general-purpose translators are not shown. It is assumed that one or more of the general-purpose translators can translate any file.

Article Change History:

24 Jul 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:811



Tech Info Library

Lisa Workshop: Transfer Program

Revised: 11/15/84
Security: Everyone

Lisa Workshop: Transfer Program

=====

In Transfer, there is a Break key for a hard break: it disconnects you. The easiest way to get around it is to send an XOFF from the keyboard or imbedded in your file (you would have to write a program to put it there). The file is then sent without filtering.

Apple Technical Communications

Tech Info Library Article Number:812



Tech Info Library

MacWorks: Starting Up From a Hard Disk

Revised: 7/30/87
Security: Everyone

MacWorks: Starting Up From a Hard Disk

=====

There are several versions of MacWorks, each with a different start-up procedure. The two later versions let you access the built-in 10-megabyte hard disk (in a Macintosh XL) or a 5- or 10-megabyte ProFile connected to the built-in parallel port of a Lisa 2.

MacWorks: 682-0103-A

After the Macintosh XL starts up from this original version of MacWorks, the system can run almost any Macintosh application residing on diskette. But this version cannot access a hard disk.

MacWorks: 682-0103-B

MacWorks Revision B can access Macintosh software and files on diskette, as well as on a hard disk installed with the MacWorks Hard Disk Install program. Once you install MacWorks, you can access the hard disk by starting up from MacWorks XL and then inserting the System Diskette.

MacWorks XL: 682-0103-C and MacWorks: 682-0103-C

MacWorks Revision C is not an official release and could damage documents and data stored on the hard disk. If you use this or earlier versions of MacWorks, be sure to upgrade to MacWorks XL Revision D, available from Sun Remarketing, P. O. Box 4059, Logan, Utah 84321.

MacWorks XL: 682-0103-D

MacWorks XL lets you to start up from the hard disk. It also lets you use additional Macintosh software, such as Jazz and XL/Serve by Infosphere. This version supports AppleTalk and the LaserWriter. This version is identified by the product number on the diskettes and by the display "MACWORKS XL 3.0 COPYRIGHT 1985 - APPLE COMPUTER" that appears on the screen during startup.

MacWorks XL enables you to start up off the hard disk directly if:

1. You've previously used the accompanying hard disk install program to install MacWorks on the hard disk, and
2. The hard disk is being used exclusively for Macintosh software.

If the hard disk contains both Lisa and Macintosh software, you must first start up from MacWorks XL, but even this procedure is faster than with previous versions. Hold down the option key and start up the Macintosh XL if you want to start up with software from the microdisk drive.

The Hard Disk Install program that comes with MacWorks Versions B and D lets you initialize the hard disk to either 1) run exclusively Macintosh software, or 2) to run both Macintosh and Lisa software. To share the hard disk with Lisa software, you must first partition the hard disk with Lisa Office System software (selecting Share during the Lisa software install procedure); you must then use the Hard Disk Install program to initialize the Macintosh portion of the hard disk.

If you use BOTH 1) the built-in parallel port connected to a hard disk, or the built-in hard disk after it's been formatted exclusively for Macintosh software, AND 2) a Parallel Interface Card connected to a hard disk formatted for Lisa software, then you'll have to select the hard disk you want the system to start up from. The system will automatically start up from the hard disk last used, provided you haven't unplugged the system or changed the Preference settings. To start up from the other hard disk:

1. Press the On-Off button.
2. Wait for the memory board test.
3. Hold down the Apple key while pressing a number key as listed below:

To start up from:	press these keys:
Internal hard disk:	Apple 1
Built-in parallel port:	Apple 3
Interface card:	
slot one, lower port	Apple 4
slot one, upper port	Apple 5
slot two, lower port	Apple 6
slot two, upper port	Apple 7
slot three, lower port	Apple 8
slot three, upper port	Apple 9



Tech Info Library

Lisa 7/7: SHIFT-OPTION-7

Revised: 11/15/84
Security: Everyone

Lisa 7/7: SHIFT-OPTION-7

=====

The Lisa Office System Manual for 7/7 documents a procedure to get screen dumps to disk. When this SHIFT-OPTION-7 keystroke procedure is performed, the diskette drive makes the noise of a diskette access. Yet, after this access, there doesn't seem to be anything other than missing blocks on the diskette. And even though the workshop can recognize the file that the disk access created, this file is of little use without some software that is unavailable to the casual user. The tried and true SHIFT-OPTION-4 screen dump is still the best procedure for most users.

Apple Technical Communications

Tech Info Library Article Number:814



Tech Info Library

Apple II and II+: Problems with keypresses on the keypad

Revised: 11/15/84
Security: Everyone

Apple II and II+: Problems with keypresses on the keypad

=====

A keypress on the numeric keypad is only retained as long as the key is held down. When the key is let up, the keyboard returns to its previous state (with the key that was last pressed on the keyboard at location \$C000). This causes many strange problems, like having to hit the key longer to have it recognized. There is no way to correct this on the current keypad because of the limitations of the keyboard encoder chip.

Apple Technical Communications

Tech Info Library Article Number: 815



Tech Info Library

Apple FORTRAN: Scientific Notation

Revised: 11/15/84
Security: Everyone

Apple FORTRAN: Scientific Notation

=====

To input numbers in scientific notation on the Apple FORTRAN system with both the E and F format specifications, follow this example:

```
10      FORMAT ( E10.2 )  
      READ (A, 10)
```

When you specify an input field as E10.2, FORTRAN sets aside a field of 10 places, and will put the decimal two places in from the right unless the input string has an explicit decimal point in it.

Another interesting result occurs if you enter the number in scientific notation. FORTRAN reads in the number up to the E and then starts reading the exponent using the next format specification in the FORMAT statement. The example above would use the E10.2 spec for both the mantissa and the exponent. The string 1.0E1 would be read as 1 times ten raised to ten to the tenth power.

```
10  
10  
1 * 10 = 1 followed by 10000000000 zeros.
```

This, of course, causes an overflow error.

You can get around this problem either by specifying a decimal in the exponent or by padding the input field with spaces. The following example has the entered string in brackets to indicate the extra spaces.

You enter	Fortran interprets
>1.0E1<	10000000.00
>1 E1 <	1.00
>1.0E1.0<	1.00
>1.0E1 <	1.00

Apple Technical Communications

Tech Info Library Article Number:816



Tech Info Library

Softcard III: BDOS Errors

Revised: 11/15/84
Security: Everyone

Softcard III: BDOS Errors

=====

Sometimes, as a program runs, it drops out with a message BDOS ERROR BREAK IN (various numbers). After this, either the program proceeds after a return or the entire machine is locked up. This happens at infrequent intervals on many other Apple IIIs and other Softcards.

It may seem that the problem is hardware-related, but in fact BDOS ERRORS are usually caused by the CP/M software when it attempts to access a device that is not ready or not on line. In the most common situation, the program tries to read a non-existent disk drive; this reports a BDOS ERROR ON xx: SELECT. Typing a RETURN should return you to the system prompt, and typing an 'R' will retry the last command. The BDOS ERROR BREAK message example above is from MBASIC and refers to the fact that the program attempted to access a device that is not ready or on line; the number in the message is the line number of the MBASIC statement which tried the read. To avoid this message, use the ON ERROR GOTO statement to branch to statements that display instructions to ready the device or put it on line.

Apple Technical Communications

Tech Info Library Article Number:817



Tech Info Library

Softcard III: Using CP/M with a Profile

Revised: 11/15/84
Security: Everyone

Softcard III: Using CP/M with a Profile

=====

The Softcard III Installation manual recommends on page 83 that a user allocate 3200 SOS BLOCKS into two CP/M volumes (each 1600 blocks) when setting up ProFile. This will give the user approximately 792K in each CP/M volume. These blocks are on the ProFile and in no way effect the size of the transient program area (TPA). The TPA is fixed by the implementor (Apple) and cannot be changed. The size of the TPA is defined as the memory range from 0100H to the bottom of the BDOS (0CC00H), which works out to 50.75K (51,960 Bytes). Note that the TPA includes the area of memory used by the CCP (2K). Application programs may overwrite the CCP and use the 2K of memory, but must exit back to the CP/M system via a Warm Boot (which reloads the CCP).

Remember that SOS device drivers reside outside of the CP/M environment and therefore have no effect on the size of CP/M. CP/M takes up 56K in the Apple III because of the amount of BIOS code required to interface to device drivers.

Use 2060 blocks for each CP/M volume on the ProFile. This works out to 1 Meg of user space (exlcuding directory) for each volume. We highly recommend that you use the updated version of the CP/M Boot & BIOS code, version 2.21.

Apple Technical Communications

Tech Info Library Article Number:818



Tech Info Library

HyperCard: How To Hide Its Title Bar on External Monitor

Revised: 6/2/88
Security: Everyone

HyperCard: How To Hide Its Title Bar on External Monitor

=====

Article Created: 2 June 1988
Article Last Reviewed: 5 June 1992
Article Last Updated:

TOPIC -----

I am doing a presentation and want to hide HyperCard's title bar so it doesn't appear that I am in HyperCard.

DISCUSSION -----

When HyperCard is run on a Macintosh with a display larger than nine inches (basically, any Macintosh with an external monitor), a title bar normally appears at the top of the HyperCard window. It's possible to make this title bar invisible (on a color system), and it's also possible to eliminate it entirely.

- Making the Window Title Bar Invisible

Making the title bar invisible is the safer method, because the changes you make can easily be undone. And although the title bar is invisible, it's still there and can be dragged. However, this method works only in color, and in color you lose HyperCard's visual effects.

Here's how to set the Desktop, and the window title bar and its components, to the same color -- making the title bar invisible:

1. Put the cdev called Kolor (Kolor is available on bulletin boards) in your System Folder.
2. Open the Control Panel, then click on the cdev named General.
3. Click on the dark blue color where it says "Desktop Pattern."
4. Color in the box above the word "Desktop" so it is solid blue.

5. Double click on the dark blue color. A window will appear with a color wheel. Write down the values in the Red, Green, and Blue fields.
6. Click on the cdev Kolor.
7. In the window title bar section, click on the "Title text" square. This will bring up the color wheel again.
8. Change the values in the Red, Green, and Blue fields to match the numbers you wrote down in step 5.
9. Repeat steps 7 and 8 for the "Lines/boxes," "Border," and "Title bar" squares.

Your title bars now appear to be invisible when shown against the Desktop Pattern.

- Eliminating the Window Title Bar

Eliminating the title bar actually changes the window structure. It has nothing to do with color, so it has effect on large-screen monochrome systems as well as color systems. This procedure changes HyperCard itself, so back up HyperCard first. The information here is given for versions through 1.2 of HyperCard.

1. Use a file editor such as Fedit Plus to open the HyperCard application.
2. Do a search for one of the following hexadecimal strings:

```
HyperCard 1.01: 05A0 2F3C 0004
HyperCard 1.1:  05DC 2F3C 0004
HyperCard 1.2:  0638 2F3C 0004
```

which should occur only once in the HyperCard file.

3. Change the last character of this string from 4 to 2.
4. Save the change and exit the file editor.
5. When you run HyperCard, the window will no longer show the title bar.

If you need to restore the window title bar, use the file editor to change the 2 back to 4. The parameter that was changed is passed to the Toolbox Window Manager call NewWindow. The value 4 tells NewWindow to draw a document window (with title bar) without a grow box. The value 2 tells NewWindow to draw a plain box without a menu title bar.

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Tech Info Library Article Number:819



Tech Info Library

Pascal II: Program control and CTRL-A

Revised: 11/15/84
Security: Everyone

Pascal II: Program control and CTRL-A

=====

You can't switch the 40 column halves of the Pascal display screen from program control; to flip the bit that does that (usually by pressing CTRL-A) you will have to POKE the BIOS, which can be dangerous.

Apple Technical Communications

Tech Info Library Article Number:820



Tech Info Library

Apple Color Plotter: Compatibility

Revised: 11/15/84
Security: Everyone

Apple Color Plotter: Compatibility

=====

The Apple Color Plotter is not compatible with the HP 7470. The Apple Plotter is based on the Yokogawa Electric Works (YEW) PL-1000.

Apple Technical Communications

Tech Info Library Article Number:821



Tech Info Library

X.25 Protocol: Using It With InterBridges

Revised: 6/1/89
Security: Everyone

X.25 Protocol: Using It With InterBridges

=====

This article last reviewed: 15 October 1987

The Question

Suppose you want to connect to a network based on the X.25 protocol. You may want to connect an InterBridge to their backbone zone, then connect the InterBridge via one of its modem ports to one of the ports on an X.25 pad located in the WHTC complex. The connection is to tie into another AppleTalk network that has been connected in a similar fashion at some other point in the X.25 network. Your concerns are:

- how to initiate the connection between two InterBridges across the X.25 bridge.
- the amount and size of packet traffic generated by two InterBridges polling each other's existence across the X.25 bridge.

Making the Connection

To initiate the communication between bridges, just turn on the InterBridge. It then polls the nearest bridge and updates its internal table of zones available on the net from the adjacent InterBridge. It also passes its zone address number and name to the other bridge. If a bridge is turned off, it will rebuild the zone table at power on. After a delay in rebuilding the table, it maintains the table on its own. Applications such as the Chooser and InBox, which communicate over AppleTalk, can request the zone information from the InterBridge. Bridges periodically update their tables and will, upon receiving a new zone address or a packet referencing an unnamed zone address with a name, will update the table to reflect the new zone address and zone name.

There is one consideration that may cause some applications not to function with this network. Because InterBridges use ZIP, which is "best effort" protocol, checking for timeouts or proper data handling must be handled by the application. Some applications, notably AlisaTalk running on a VAX, will time-

out if delays are very long across the network. You are then at the mercy of whatever traffic and traffic problems might exist on the X.25 net.

Packet Traffic

During the first 30 seconds of polling time, approximately 5-6 packets are transferred between InterBridges. These packets are in ZIP (Zone Information Protocol). The first will be a ZIP bringup packet that will be delivered out each of the connected ports. This is followed by a ZIP GetZoneList or GetMyZone packet. The GetZoneList packet is replied with a GetZoneList Reply packet. The new InterBridge might send a ZIP Query for information on packets whose addresses are not yet in its Zone Information Table (ZIT). This also will be replied and will be in the form of a ZIP reply packet.

The packets range in size: 8 bytes for a ZIP GetZoneList, 45 bytes for a ZIP bringup, 13 bytes plus 32 bytes for each zonename for a ZIP reply packet, and for a GetZoneList Reply there would be 9 bytes and 32 bytes for each zone name.

The first group of bytes contain the LAP (Link Access Protocol) header, the DDP Datagram Delivery Protocol) header, and the ZIP (Zone Information Protocol) header. This will be true for takedown, bringup, query, and reply packets. The ZIP GetzoneList and GetZoneList Reply packets use ATP (AppleTalk Transaction Protocol) header and user bytes. These transactions take place with each connected port.

There are two AppleTalk ports and two Serial ports on the InterBridge. After the initial polling, one packet each 10 seconds is transmitted to maintain the connection while idling.

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Tech Info Library Article Number:822



Tech Info Library

Apple III: Keyboard layout

Revised: 11/15/84
Security: Everyone

Apple III: Keyboard layout

=====

Applications in development often require a particular keyboard layout. There are some problems during the creation of this file because the standard drivers manual doesn't provide enough information about the internal organization of a keyboard layout file. The easiest way to change the layout is to modify an existing keyboard file. The file is laid out in the order of the table on page 136-137 of the Apple III Standard Device Drivers manual. For example, the first eight bytes of the SHOLES layout are:

```
31 21 32 21 32 40 32 00
1  !  2  !  2  @  2  NUL
```

The four values, as presented in the table in the manual, are in the order: Alone, SHIFT, CONTROL, Both.

Apple Technical Communications

Tech Info Library Article Number:823



Tech Info Library

Apple FORTRAN: Complex Numbers and Character String Functions

Revised: 11/15/84
Security: Everyone

Apple FORTRAN: Complex Numbers and Character String Functions

=====

In learning FORTRAN, you sometimes have to simulate complex number functions without actually using CMPLX(A,B) (which takes the real number A and the imaginary number B and returns the complex number result) or AIMAG(A) (which returns the imaginary part of the complex number A). REAL Fortran77 brings an easy solution: use character strings and simple arithmetic, treating the real and imaginary parts of the complex numbers separately. Alas, the designers of Apple FORTRAN chose not to include the character string functions and procedures.

The following hints at a solution; an end-user wanted to print character strings in the graphics page using WSTRING(string), which also wasn't implemented.

The small assembly language function below returns the ascii value of the nth character of a string. Frustrated Apple FORTRAN programmers will find this useful.

For the complex function other such routines might need to be written; a length-of-string and an index function would be very helpful.

```
;
;      Function CHAR1 (string,N)
;
;      returns ASCII value of Nth character in string
;
;      William B. Judd, TRI, 10/27/83
;
;_____
```

```
.macro pop
    pla
    sta
.macro push
    lda
```

```

        .func    char1,2        ; two parameters

return .equ     0
string .equ     2
n      .equ     4
junk   .equ     6

        pop      return        ; save return address
        pop      junk          ; discard stack bias
        pop      junk
        pop      n             ; get n address
        pop      string        ; get string address

        lda      #0            ; push msb of return value
        pha
        tay
        lda      (n),y         ; get index value
        tay
        dey              ; reduce offset
        lda      (string),y    ; get nth char
        pha              ; push value

        push     return
        rts

        .end

```

```

$EXT integer function char1 2
$uses turtlegraphics
$uses applestuff
c
c  to test char1 function
c

```

```

        program test
        character*10 a
        a = 'ABCDEFGHIJK'
        call inittu
        do 10 i=1,10
            k = char1(a,i)
10      call wchar (char(k))

c *** hard halt
20      goto 20
        end

```

Apple Technical Communications

Tech Info Library Article Number:824



Tech Info Library

RPS: File Access Structure in REBUILD

Revised: 11/15/84
Security: Everyone

RPS: File Access Structure in REBUILD

=====

In the following situations, the FAS (File Access Structure) was set up incorrectly for the rebuild.

1. At an error -1406 (Index file is damaged), the RPS Damage Report showed Index corrupted as TRUE. The RPS REBUILD gave error -1520 (No duplicate key allowed). The key was set up as No duplicates allowed. Therefore the file was inaccessible and couldn't be repaired.

2. A file with 13 records was set up the same way as the damaged file (making sure there were no duplicate keys). The RPS REBUILD gave the same error.

To correct the problem, you would have to Consult the FAS in the program that created the file.

Apple Technical Communications

Tech Info Library Article Number:825



Tech Info Library

ProDOS: Problems using the CONVERT program in 80 columns

Revised: 11/15/84
Security: Everyone

ProDOS: Problems using the CONVERT program in 80 columns

=====

The CONVERT program malfunctions if it is executed when the 80 column display is active. The top lines are scrambled and ProDOS date and prefix aren't displayed.

Here are two possible bypasses:

1. Exit from the 80-column card firmware with ESC-CTRL-Q, then execute CONVERT.
2. Enable 40-column display with ESC-4, then execute CONVERT.

In both cases you restore the 40-column screen, and the program works correctly.

This situation occurs in the following configuration:

1. ProDOS Developer's Disk V 1.0 C
2. ProDOS system file dtd 01.11.83
3. Convert program version 1.1, dated 01.11.83
4. System configuration: Apple IIe and Extended 80-column card.

Apple Technical Communications: PCSD Vendor Tech Support

Tech Info Library Article Number:826



Tech Info Library

SOS: Error messages

Revised: 11/15/84
Security: Everyone

SOS: Error messages

=====

Here are some Pascal III I/O errors reported (in Volume 2 of the programmer's manual) as SOS errors and which cannot be found in the SOS Apple Technical Communications Manual. The remarks are general and made without knowing the circumstances, applications or languages involved.

36: Device not available = SOS error \$24

Error \$24 means that a device like a printer is not on-line, although a driver that will return this error is not known.

44: Invalid byte count = SOS error \$2C

Error \$2C means that a SOS call from an application didn't have the appropriate parameter list for the call.

45: Invalid block number = SOS error \$2D

Error \$2D means that the application is asking for a block past the end of the disk. This has occurred with System Utilities. There the problem is that some program, perhaps Apple Writer, changes the directory or index blocks on the disk so that the file points off the end.

Apple Technical Communications

Tech Info Library Article Number:827



Tech Info Library

Extended 80-column card: Applesoft

Revised: 11/15/84
Security: Everyone

Extended 80-column card: Applesoft

=====

Supplied with the Extended 80-column text card supplement, the ERRATA sheet tells programmers not to use the INPUT and GET statements in Applesoft when using the 80-column card. In fact, the Applesoft INPUT statement will work fine with the 80-column card. The GET statement will not put the cursor where it belongs on the screen. This is because GET does not use the monitor routines the way the 80-column card should be used.

Apple Technical Communications

Tech Info Library Article Number:828



Tech Info Library

CP/M: Cursor addressing

Revised: 11/15/84
Security: Everyone

CP/M: Cursor addressing

=====

Below is a table for the Cursor commands required when using CP/M 2.21 on the Apple III. Note that all of the commands are offset by 128 decimal. This prevents CP/M BDOS from interpreting control codes (Tab for example) in the cursor command sequences.

Command	AIII Dec	AIII Hex	CP/M Dec	CP/M Hex
Turn Screen ON	15	0F	143	8F
Turn Screen OFF	14	0E	142	8E
Normal Video (White on Black)	17	11	145	91
Inverse Video (Black on White)	18	12	146	92
Lead-in, Cursor Addressing	26	1A	154	9A
Horizontal (X-Axis) Offset	0	0	128	80
Vertical (Y-Axis) Offset	0	0	128	80
Clear Screen (& Home Cursor)	28	1C	156	9C
Clear to End of Screen (From Cursor)	29	1D	157	9D
Clear to End of Line (From Cursor)	31	1E	159	9E
Clear line	30	1E	158	9E
Setup - Initialize Screen to 80x24	16 03	10 03	144 03	90 03
Home Cursor (Do Not Clear)	12	0C	140	8C

Note the Setup command; this places the console in 80x24 text format if it is not already there.

For additional information on the subject, refer to the Standard Device Drivers Manual supplied with the Apple III.

Apple Technical Communications: January 4, 1983

Tech Info Library Article Number:829



Tech Info Library

ImageWriter Manual Errata: Producing slashed & unslashed zeroes

Revised: 3/2/88
Security: Everyone

ImageWriter Manual Errata: Producing slashed & unslashed zeroes

=====

This article last reviewed: 15 November 1984

Page 42 of the Imagewriter User's Manual, Part 1, has reversed the commands for producing slashed and unslashed zeros. The correct commands are:

Code	Decimal	Hex	Effect
ESC-Z	27 90	\$1B \$5A	Unslashed
CTRL-@ CTRL-A	0 1	\$00 \$01	

To print unslashed zeros, send: CHR\$(27);CHR\$(90);CHR\$(0);CHR\$(1).

ESCAPE D	27 68	\$1B \$44	Slashed
CTRL-@ CTRL-A	0 1	\$00 \$01	

To print slashed zeros, send: CHR\$(27);CHR\$(68);CHR\$(0);CHR\$(1).

Once the Imagewriter has received your instructions, it will continue to follow them until the printer is turned off. Therefore, you may use a word processor or other application program to print slashed or unslashed zeros after setting up the Imagewriter appropriately.

If Applesoft sends codes directly to the printer, zeros may be printed as you desire, but other side effects, such as double line spacing, may occur.

The sample program below sends the appropriate codes to the Imagewriter through a small machine language routine. This bypasses Applesoft's setting the high bit which may cause the Imagewriter to interpret information incorrectly.

```
10 POKE 768,169 : POKE 769,0 : POKE 770,32 : POKE 771,237 : POKE
    772,253 : POKE 773,96
20 D$ = CHR$(4)
30 PRINT D$;"PR#1"
40 PRINT "LINE ONE - 0000 - NO SLASHES"
```

```
50 REM SEND CODES TO SLASH ZEROS
60 PRINT CHR$(27);"D"; : POKE 769,0 : CALL 768 : POKE 769,1 : CALL 768
70 PRINT "LINE TWO - 0000 - SLASHES"
80 REM SEND CODES TO UNSLASH ZEROS
90 PRINT CHR$(27);"Z"; : POKE 769,0 : CALL 768 : POKE 769,1 : CALL 768
100 PRINT "LINE THREE - 0000 - NO SLASHES"
110 PRINT D$;"PR#0"
120 END
```

Tech Info Library Article Number:830



Tech Info Library

Apple Writer IIe: Using Connect Keyboard to Printer w/the SSC

Revised: 11/15/84
Security: Everyone

Apple Writer IIe: Using "Connect Keyboard to Printer" w/the SSC

=====

If you plan to use the "Connect Keyboard to Printer" option in Apple Writer IIe with the Super Serial Card, be sure to refer first to page 138 of the manual ("Connecting the Keyboard to the Printer"). Take note especially of the warning about the Super Serial Card and of the fact that you must type CTRL-I T SPACE E RETURN in order to avoid the occurrence of unwanted tabs in your printed text.

Apple Technical Communications

Tech Info Library Article Number:831



Tech Info Library

Apple II 5.25 Drive: Using It With Other Disk Controller Cards

Revised: 10/19/87
Security: Everyone

Apple II 5.25 Drive: Using It With Other Disk Controller Cards

=====

This article last reviewed: 15 October 1987

New Apple II 5.25 drives can be connected to controller cards other than the ones specifically designed for those drives.

- an Apple 5.25 drive can be daisy-chained to a UniDisk, either 5.25 or 3.5.
- an Apple 5.25 drive can be connected to a DuoDisk controller card.
- an Apple 5.25 drive can be connected to a Disk II controller card, if you first use Quark's adaptor to make the Apple 5.25 drive's cable fit the Disk II controller card.

Tech Info Library Article Number:832



Tech Info Library

Apple III: NPL III

Revised: 11/15/84
Security: Everyone

Apple III: NPL III

=====

When you direct reports from NPL III to a DMP connected via device-name .DMP and NPL seems to refuse this name after the C>DISK:, you must revise the driver file of CONSOLE:, SILENTYPE:, PRINTER:, and DISK:.

NPL III is written in Pascal. Pascal scans the drives when it boots and assigns unit numbers depending on the type and order in which they are loaded. Assuming you are using the diskettes, delete the .PRINTER driver from the driver file and add your .DMP driver. Rename .DMP to .PRINTER.

If you are using Catalyst, you'll have to arrange the drivers so that the Pascal Filer's 'Volumes' command shows .DMP as Unit #6.

Apple Technical Communications

Tech Info Library Article Number:833



Tech Info Library

ImageWriter: Guide to Apple II Errata

Revised: 8/10/87
Security: Everyone

ImageWriter: Guide to Apple II Errata

=====

Page 21 of the Imagewriter User's Manual, Guide to the Apple II, has an error.
The end of line 340 of the program listing is

```
PRINT CHR$ B$;
```

it should be:

```
PRINT B$;
```

Tech Info Library Article Number:834



Tech Info Library

Apple III: RETURN and ENTER

Revised: 11/15/84
Security: Everyone

Apple III: RETURN and ENTER

=====

In order to differentiate being the RETURN and ENTER keys on an Apple III, you need to redefine the keyboard layout table to command the console driver to return two bytes with every request for a character. While we cannot obtain a document of the format of the keyboard part of the driver, the diagram on page 165 in conjunction with the diagram on page 135 of the Standard Device Drivers manual shows what information is returned in the two byte mode. The ENTER key will return \$0D just like RETURN but the second byte will have bit 7 set.

Beware that after enabling the double byte read from Business BASIC, an invokable module is required for text. Two GET statements won't work.

Apple Technical Communications

Tech Info Library Article Number:835



Tech Info Library

Macintosh: Calculating the Draw Rate

Revised: 10/19/87
Security: Everyone

Macintosh: Calculating the Draw Rate

=====

This article last reviewed: 14 October 1987

Apple is often asked about the "draw rate" of Macintosh computers. If the question is "how many pixels per second?" the answer is "it varies." This is explained below. If the question is "how many vectors per second?" the answer is "the Macintosh doesn't use vector processing."

This article explains how graphic images are produced on both the Macintosh and on vector graphics terminals, and shows why there's no constant "draw rate" for the Macintosh.

Vector Graphics vs Bit-mapping

Vector graphic (line drawing) systems evolved from the basic plotter design that was first used for displaying computer graphics. To conserve memory (remember when memory was expensive?), only two points are stored for each line. The display image is calculated, during a screen refresh, by image generating hardware. Entire images can be stored on a mainframe or mass storage device and off-loaded to a terminal for processing.

The Macintosh uses a different technology, bit-mapping, which deals with an array of pixels mapped into RAM. A new image is displayed as fast as the bit-map RAM is updated; there is no need to calculate vectors. Storing the pixel information requires a great deal of memory. A monochrome image requires one bit per pixel; a color pixel requires several bits to specify its color (pixel mapping). Because a display like that of the Macintosh II contains 307,200 pixels (640 x 480), a minimum of 37.5 Kbytes is needed for a monochrome display. The same display using 8 bits per color pixel would need about 300 Kbytes.

Bit-mapped images, once stored, are updated at the speed of the vertical refresh rate, which is 66.67Hz on the Macintosh II video card. This means a full screen of video information (307,200 pixels) is displayed 1/66.67 times per second 14.5ms and a horizontal line (480 pixels) takes only 1/35,000 of a second .0285714ms (35KHz scan rate). (The actual number of

pixels is slightly more as there are black borders where the beam is off.)

Calculating the Draw Rate

To calculate the time it takes to draw a given line, you must define where and when on a system the drawing of the line occurs. On a vector graphic system, the vectors are calculated (by a graphics generator) and sent to an image processor (video circuitry) for calculation of lines. Eventually they are converted by video circuitry to a display.

On a Macintosh, the "graphics generator" consists of the CPU and QuickDraw routines. The image is stored in video memory as a pixel map that is displayed by the video card circuitry. No further modeling is needed at the video card.

In both cases, to determine the time required to draw a line, a starting point and end point are needed. A number of other events can influence the timings and that will not accurately describe a working situation. This is not to imply that the two methods, pixel mapping and vector graphics, can or should be compared in this manner -- they're two different technologies. The benefit of pixel mapping lies in the finer control of each pixel for color or even video (analog) image processing at high speeds -- something not available through vector graphics processing.

Kinds of Graphics Generators

A graphics generator is a dedicated processor (or host) that calculates and stores graphics information in some format, not necessarily similar to what will be displayed. A video processor is the circuitry that examines and converts graphics data into signals for the actual display. The examined data on vector graphics systems needs an added function of the video processor for the purpose of calculating the points between the end points as well as outputting the display signals.

Some of the possible methods (there are endless permutations) of generating graphics on a CRT:

- A graphics generator (dedicated or computer system) mixed with live video sources and even stored video sources with output to a display monitor and possibly a transmission and/or recording device.
- A standalone graphics system connected directly to a monitor.
- A host computer connected to a monitor. Usually, update times limit the practicality of using graphics terminals to alphanumeric or vector displays.
- A host computer connected to a graphics terminal that has its own processor to handle the graphics calculations.
- A host computer connected to a graphics controller that is connected to a monitor. The display information is fed to the controller for channeling to the needed device.

One of the options being used with small non-graphics dedicated computers is to place a graphics generator on a controller card with a video processor. The purpose of this is to free up the system CPU from the graphics handling tasks that it shares with the various system tasks.

The Macintosh II uses a host computer to graphics controller configuration with the storage of the RGB pixel information directly on the controller/video card. Other pixel maps can be created in the main memory of the Macintosh as well. This is useful for fast updates of the video card's pixel map. All logical maps or QuickDraw records are stored in main memory. This refers to the calculated pixels that are then transferred to the video card memory for updating of the display pixel map.

The Bottom Line

Now, to face the question of how long it takes to draw a given line. Because a Macintosh actually displays pixels, not lines, the question can't be answered with a simple number. The display times as noted above the display are themselves updated as fast as the Macintosh II CPU, running at 16Mhz, can calculate the line. This is still not display time, since it has to be combined with the time to transfer the calculated bits to the video card. The transfer time is not much of an issue when lines are the question, because very little information needs to be transferred. NuBus, the connection between the Macintosh II CPU board and the video card, can transfer 2.7 MBytes per second. Because a line in monochrome video mode might have 67 dots to the inch, only 67 bits need to be transferred. This doesn't take into account transfer protocol information and size of the data path on the NuBus.

The question then narrows down to "how long does it take QuickDraw to calculate a 1-inch line?" When you consider the other processes that must go on during an application:

- memory management
 - vertical blanking interrupt processes
 - interrupts from external devices
 - the location of the line and its relation to other graphic entities
- you begin to see why there is no single definition of the time it takes to draw a given line.

For More Information

The Raster Graphics Handbook, Conrac Division, Conrac Corporation
The AppleLink article "Macintosh II: Video Signals and Pinouts"

Tech Info Library Article Number:836



Tech Info Library

RS-232: Applefile III and QuickFile III

Revised: 11/15/84
Security: Everyone

RS-232: Applefile III and QuickFile III

=====

Applefile will not recognize an .RS232 driver configured as a character read-write device (\$63). If .RS232 is changed to a write only device (\$41), Applefile recognizes it and shows it under the printers available. If an RS-232 device is a write only device, the handshaking, XON/XOFF or ETX/ACK, will still function. XON/XOFF and ETX/ACK are not data per se and will be treated as handshaking. Therefore, a driver will still be found if it is configured as a write only device such as a printer, since the driver does not have to READ the printer. These same modifications will allow QuickFile III to use the .RS232 driver.

Apple Technical Communications

Tech Info Library Article Number:839



Tech Info Library

MacTerminal and LisaTerminal: Line feeds after carriage returns

Revised: 9/1/87
Security: Everyone

MacTerminal and LisaTerminal: Line feeds after carriage returns

=====

It is the job of the sending device to provide line feeds after carriage returns if necessary. For example, when you're using your Macintosh to send text to another Macintosh, you must select New Line (a Terminal Settings option from the Settings menu); otherwise, the user on the other end will receive all the incoming text overwritten on one line.

In LisaTerminal, set Auto New Line to "on" to SEND a line feed after a carriage return. Auto New Line is an option in the Computer Compatibility box located in the Setup menu.

Tech Info Library Article Number:840



Tech Info Library

Apple Cluster Controllers: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Apple Cluster Controllers: Specifications (Discontinued)

=====

I. Technical Specifications

1. Protocols:

- A. Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC)
- B. Binary Synchronous Communication (BSC)

2. Cluster Controllers Emulated:

- A. SNA/SDLC: IBM 3274, 3276 MOD 12
- B. BSC: IBM 3276 MOD 2

3. Devices Emulated:

- A. Terminals:
 - 1. SNA/SDLC: IMB 3278-2
 - 2. BSC: IBM 3277
- B. Printer: 3287-1

4. Physical Unit Type: SNA/SDLC: PU (1-7 LU's)

5. Device Address:

- A. SNA/SDLC: PU2, address switch selectable
- B. BSC: Switch selectable

6. Transmission Speed:

- A. Full Duplex: Up to 9600 bps
- B. Printer: 300 to 9600 bps, Full duplex flow control (X-on/X-off)

7. Interface:

- A. Asynchronous:

- a. Seven-bit ASCII
- b. Full duplex
- B. Synchronous:
 - a. 8-bit EBCDIC

8. Power Requirements: 115 AC, 1 amp, 50/60 Hz

9. Physical Connection:

- A. Synchronous port: Serial high-speed synchronous modem
- B. Asynchronous port: Serial interface (DTE or DCE) for:
 - a. computer
 - b. printer
 - c. modem

10. Data Security:

- A. Monitors data flow from each port in both directions
- B. Automatically terminates when the transmission is interrupted

11. Diagnostics:

- A. A diagnostic line monitors every port
- B. Self-diagnostic test programs that may be run at any time
- C. Complete system test at power-on
- D. Results displayed on the Status Line

12. Environmental Requirements

- A. Operating temperature: 50 to 90 degrees F (10 to 35 degrees C)

II. Package

NOTE: For Datacomm approved dealers only

Order Numbers: Search on "Cluster" in the Product Prices Library

1. An Apple Cluster Controller
2. Power cord
3. Jumper package for configuration
4. Test loopback plug
5. Accessory Kit
 - a. Cluster Controller Operating Manual
 - b. Cluster Controller Installation Guide
 - c. Warranty and Product Registration Card

III. System Configuration

1. An Apple Computer
 - a. Macintosh or Macintosh XL

- b. III
- c. II, II Plus, IIe, or IIC:
 - 1. Not recommended
 - 2. Cable and pinout information on connecting your Apple II to an Apple Cluster Controller may be found by searching AppleLink's Technical Library on "Apple Cluster Controller and pinout"
- 2. Serial printer (optional)
- 3. Data cables to connect to a computer, printer or asynchronous modem
- 4. Data cables or a synchronous modem to connect to the IBM mainframe
- 5. Terminal software:
 - a. Apple III: Access III or Access 3270
 - b. Macintosh XL: LisaTerminal or MacTerminal (under MacWorks)
 - c. Macintosh: MacTerminal

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Tech Info Library Article Number:841



Tech Info Library

Monitor II: Phosphor

Revised: 5/25/89
Security: Everyone

Monitor II: Phosphor

=====

The decay time for the P-31 phosphor is 70 microseconds from 100% to 10%. That correlates to about a 77 microseconds decay time to 0%. This knowledge may be useful to, for example, research labs conducting visual perception experiments that include extremely rapid presentation of visual stimuli.

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Tech Info Library Article Number:842



Tech Info Library

SCSI: Finding Information on How to Write Formatters & Drivers

Revised: 5/17/89
Security: Everyone

SCSI: Finding Information on How to Write Formatters & Drivers

=====

This article last reviewed: 14 October 1987

Here is where to find documentation on writing SCSI drivers and disk formatters:

- SCSI Development Package
- SCSI Manager chapter, Inside Macintosh Volume IV
- American National Standard Committee's draft proposal for the SCSI standard
- Tech Notes #159, #134, #113, #94
- Technical documentation on the specific hard disk

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Tech Info Library Article Number:843



Tech Info Library

Apple IIe: Stopping the blink of the cursor

Revised: 11/15/84
Security: Everyone

Apple IIe: Stopping the blink of the cursor

=====

There are two ways to stop the blinking cursor on the IIe.

1. If you have an 80-column card, do a PR#3 and then an ESC 4. This uses the 80-column firmware but in 40-column mode.
2. If there is no 80-column card installed on your system, do a
POKE 49162,0:PRINT CHR\$(4)"PR#3". This has the same effect.

In the 80-column firmware, the cursor is an inverse blank. This effectively removes the flashing cursor.

Apple Technical Communications

Tech Info Library Article Number:844



Tech Info Library

Macintosh: Changing Font Size in Menu Bars

Revised: 5/10/89
Security: Everyone

Macintosh: Changing Font Size in Menu Bars

=====

This article last reviewed: 14 October 1987

At the end of this article is the MPW Assembly source code for an Init file that, when placed in the System Folder, modifies three low memory globals at startup.

The Init changes the System font from Chicago 12 to Chicago 14, the largest font that doesn't cause distortion in dialogs and buttons. (You must, of course, have Chicago 14 installed in the System file.) Menu bars and window title bars will change in size based on the values you supply.

Warnings: This method of changing the size of the system font is not recommended, but is the easiest way to change the font size of the menu bar with existing System files. The Init has been tested with few applications, but may not work with all programs. It makes direct calls to hardware locations and may not work with future versions of hardware or of system software.

For more information, see:

- the Font Manager Chapter of Inside Macintosh, volume III
- the Menu Manger Chapter of Inside Macintosh, volume V

Here is the source code for the ChangeFont Init:

```
; Source for an Init that will change the system default menu bar size to other
; than chicago 12 point. By Jim Mensch
; Note: you can use ResEdit to change the Font/size without recompiling
;
Main          Proc      Export
OPT           NONE      ; Turns off code optimization
lea           $BA6,A0    ; Load address of system font number
lea           $BA8,A1    ; Load address of system font size
Move.W        #$00,(A0)  ; Store my font number into sysFont ( 0 is
                        ; Chicago )
Move.W        #$0E,(A1)  ; Store the new Font Size
```

```
        lea      $BAA,A0      ; Load in the MBar Height address
        Move.W   #$16,(A0)    ; Adjust it for 14 pt NOTE: you must do this in
                                ; order to make the finder adjust at boot time
                                ; This value must be computed for each
                                ; font/size pair you want to use. To easily
                                ; get this number use macsbug to change the
                                ; Font/Size and do an Exit to Shell. This will
                                ; cause the address BAA to be recomputed
                                ; {Because it calls InitMenus}

        rts
    end

;
; MPW assemble and link instructions for this init
;   asm ChangeFont.a
;   link -o ChangeFont -rt INIT=0 -c ZSYS -t INIT ChangeFont.a.o
;   DumpCode -rt INIT=0 ChangeFont
;
;   File: ChangeFont, Resource 0, Type: INIT, Name: Main
;   000000: 41F8 0BA6      'A...'      LEA      $0BA6,A0
;   000004: 43F8 0BA8      'C...'      LEA      $0BA8,A1
;   000008: 30BC 0000      '0...'      MOVE.W   #$0000,(A0)
;   00000C: 32BC 000E      '2...'      MOVE.W   #$000E,(A1)
;   000010: 41F8 0BAA      'A...'      LEA      $0BAA,A0
;   000014: 30BC 0016      '0...'      MOVE.W   #$0016,(A0)
;   000018: 4E75          'Nu'        RTS
;
```

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Tech Info Library Article Number:845



Tech Info Library

Apple II FORTRAN: Double precision arithmetic

Revised: 11/15/84
Security: Everyone

Apple II FORTRAN: Double precision arithmetic

=====

Usually, in FORTRAN IV & 77, the way to handle numbers up to 10 to 11 significant figures is to declare double precision variables or implicit double precision variables.

The new strategy here is to use the Pascal SANE unit linked to a FORTRAN program following the instructions in the Apple FORTRAN Language Reference Manual Chapters 15 and 16. Double precision poses more difficult problems. With the advent of the SANE package there are solutions possible. In short, such Pascal units are not available and must be written and created by the FORTRAN user.

Apple Technical Communications

Tech Info Library Article Number:846



Tech Info Library

FORTRAN II: Reading Keyboard variables in a single statement

Revised: 11/15/84
Security: Everyone

FORTRAN II: Reading Keyboard variables in a single statement

=====

To READ more than one variable at a time from the keyboard, use the proper format described on page 83 and 84 of the FORTRAN manual. The form of the iolist mentioned there is any list of variables, array elements, character substrings, character arrays. Members of the iolist must be separated by commas, for example, READ A,B,C.

Apple Technical Communications

Tech Info Library Article Number:847



Tech Info Library

TIFF (Tag Image File Format): Specifications (5 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (5 of 7)

=====

This article last reviewed: 12 February 1988

5. The Fields, continued

Threshholding

Tag = 263 (107)

Type = SHORT

N = 1

1 = a bilevel "line art" scan. BitsPerSample must be 1.

2 = a "halftone" or "dithered" scan, usually of continuous tone data such as photographs. BitsPerSample must be 1.

3 = Error Diffused.

Default is Threshholding = 1.

CellWidth

Tag = 264 (108)

Type = SHORT

N = 1

The width, in 1-bit samples, of the dithering/halftoning matrix. Assumes that Threshholding = 2. That is, this field is only relevant if Threshholding = 2.

No default.

CellLength

Tag = 265 (109)

Type = SHORT

N = 1

The length, in 1-bit samples, of the dithering/halftoning matrix. Assumes that Threshholding = 2. This field and the previous field may be useful for converting from halftoned to true gray level data.

No default.

Photometrics

These fields are useful in determining the visual meaning of the sample data.

MinSampleValue

Tag = 280 (118)

Type = SHORT

N = SamplesPerPixel

The minimum valid sample value.

Default is 0.

MaxSampleValue

Tag = 281 (119)

Type = SHORT

N = SamplesPerPixel

The maximum valid sample value.

Default is $2^{(\text{BitsPerSample})} - 1$.

PhotometricInterpretation

Tag = 262 (106)

Type = SHORT

N = 1

0 = MinSampleValue should be imaged as white. MaxSampleValue should be imaged as black. If the bit-map represents gray scale, then the values between the minimum and maximum sample values should be interpreted according to either the gray scale response curve information (if included) or according to the result of some more arbitrary rule. See GrayResponseCurve.

1 = MinSampleValue should be imaged as black. MaxSampleValue should be imaged as white. If the bit-map represents gray scale, then the values between the minimum and maximum sample values should be interpreted according to either the gray scale response curve information (if included) or according to the result of some more arbitrary rule.

2 = RGB. In the RGB model, a color is described as a combination of the three primary colors of light (red, green, and blue) in particular concentrations. For each of the three samples, MinSampleValue represents minimum intensity, and MaxSampleValue represents maximum intensity. For PlanarConfiguration = 1, the samples are stored in the indicated order within a pixel: first Red, then Green, then Blue. For PlanarConfiguration = 2, the sample planes are stored in the indicated order: first the Red sample plane, then the Green plane, then the Blue

plane.

The Red, Green and Blue intensity values are defined according to the NTSC specifications for primary color chromaticity. These specifications assume the illumination to be CIE D6500. See the Red, Green and Blue color response curve tags.

Note: some compression schemes, such as the CCITT schemes, imply a particular PhotometricInterpretation. Therefore, when reading such data, TIFF readers should ignore PhotometricInterpretation. And, ideally, TIFF writers should not write out the field when using one of these schemes.

No default.

GrayResponseUnit

Tag = 290 (122)

Type = SHORT

N = 1

1 = number represents tenths of a unit.

2 = number represents hundredths of a unit.

3 = number represents thousandths of a unit.

4 = number represents ten-thousandths of a unit.

5 = number represents hundred-thousandths of a unit.

Default is 2.

GrayResponseCurve

Tag = 291 (123)

Type = SHORT

N = 2**BitsPerSample

The purpose of the gray response curve and the gray units is to further provide photometric interpretation information for gray scale image data. The gray response curve specifies for given levels of gray between the minimum and maximum sample values the actual photometric gray level of the value. It represents this gray level in terms of optical density.

The GrayScaleResponseUnits specifies the accuracy of the information contained in the curve. Since optical density is specified in terms of fractional numbers, this tag is necessary to know how to interpret the stored integer information. For example, if GrayScaleResponseUnits is set to 4 (ten-thousandths of a unit), and a GrayScaleResponseCurve number for gray level 4 is 3455, then the resulting actual value is 0.3455.

If the gray scale response curve is known for the data in the TIFF file, and if the gray scale response of the output device is known, then an intelligent conversion can be made between the input data and the output device. For example, the output can be made to look just like the input. In addition, if the input image lacks contrast (as can be seen from the response curve), then appropriate contrast enhancements can be made.

The purpose of the grey scale response curve is to act as a "lookup" table

mapping values from 0 to $2^{**\text{BitsPerSample}}-1$ into specific intensity values. Refer to the PhotometricInterpretation tag to determine how the mapping should be done.

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Tech Info Library Article Number:848



Tech Info Library

Mainstay

Revised: 4/3/97
Security: Everyone

Mainstay

=====

Article Created: 19 November 1987
Article Reviewed/Updated: 02 April 1997
Mainstay

591-A Constitution Ave.
Camarillo, CA 93012

805-484-9400

805-484-9428 Fax

Company Profile:
Software, including development environments and productivity applications.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:849



Tech Info Library

Macintosh: System 4.0 and Alarm Clock

Revised: 2/23/89
Security: Everyone

Macintosh: System 4.0 and Alarm Clock

=====

This article last reviewed: 14 October 1987

With System 4.0, every time you restart the system, you must reset the alarm.

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Tech Info Library Article Number:851



Tech Info Library

Macintosh Finder: Reasons for Slow Operation

Revised: 7/31/91
Security: Everyone

Macintosh Finder: Reasons for Slow Operation

=====

Article Created: 2 November 1987
Article Last Reviewed: 2 February 1991
Article Last Updated:

TOPIC -----

What could make the Finder run slowly?

DISCUSSION -----

A slow Finder is not caused by the size of the disk, but by the size of the Desktop file. The size of the Desktop file is not directly related to the number of files it contains, but to the number of icons and file comments.

The number of icons is related to the number of applications. Slow operation becomes a problem for hard disks with more than 50 applications. The number of comments is a problem only for those who add a comment to every file and folder. This is typical with public domain software. To remove all comments, you can rebuild the Desktop file in one of two ways.

- You can delete the Desktop file in ResEdit.
- You can hold down the Command and Option keys while you start up your computer.

These operations remove the comments and speed things up appreciably.

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Tech Info Library Article Number:852



Tech Info Library

AppleLine: Capabilities

Revised: 8/19/87
Security: Everyone

AppleLine: Capabilities

=====

AppleLine will replace a 3278 Model 2 on a IBM 3274 or 3276 control unit (cluster controller). It supports a 25 line display and 80 or 132 columns. It must be used in conjunction with a 3270 type emulator on the Apple product; 4 user passwords and one supervisors password are supported. It can also be attached to the Apple product via asynchronous modems.

Tech Info Library Article Number:853



Tech Info Library

Apple 300/1200 Modem:Using one from within BASIC on an Apple II

Revised: 8/3/89
Security: Everyone

Apple 300/1200 Modem:Using one from within BASIC on an Apple II

=====

On page 3 of the Modem 300/1200 User's Manual, "Part II: Guide to Apple II", you're told to set SW2-2 on the Super Serial Card (SSC) to the OFF position. This isn't entirely correct.

Setting the switches this way causes the SSC to send data in 7 data bits and 1 stop bit, whereas Apple modems are only equipped to handle data in 8 data bits and 1 stop bit. This situation causes no problems if you're using Access II or AppleTerm. These terminal programs override the switch settings on the SSC, and send data to the modem in 8 data b; and 1 stop bit no matter what the switches on the SSC are set to.

It DOES cause problems, though, if you're using BASIC with your modem, since BASIC has no such override capability. When you use BASIC with your Apple modem, the switches on the Super Serial Card must be:

SW2-1 ON
SW2-2 ON

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Tech Info Library Article Number:854



Tech Info Library

SchoolBus: File Sharing (2/97)

Revised: 2/12/97
Security: Everyone

SchoolBus: File Sharing (2/97)

=====

SchoolBus: File Sharing (2/97)

Article Created: 15 November 1984
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article discusses file sharing using the BOS (Bus Operating System).

DISCUSSION -----

The BOS (Bus Operating System) will not allow different users to access the files of a single user. A student cannot save a file to disk so that another student can access that file. BOS only allows the student to save files and retrieve them under his name and will not allow more than one user to have the same name.

Article Change History:
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:855



Tech Info Library

Softcard III: SOSXFER file size

Revised: 11/15/84
Security: Everyone

Softcard III: SOSXFER file size

=====

SOSXFER is limited to a file length of 31K. If the file is larger than that, it will truncate it to 31K.

Apple Technical Communications

Tech Info Library Article Number:856



Tech Info Library

Tape Backup 40SC: Problems with HD Setup (9/93)

Revised: 12/1/93
Security: Everyone

Tape Backup 40SC: Problems with HD Setup (9/93)

=====

Article Created: 6 November 1987
Article Reviewed/Updated: 27 September 1993

TOPIC -----

The Tape Backup 40SC Owner's Manual (copyright 1987, 030-5571-A) clearly states on page 29, "Important: Back up and restore to the same device. Don't back up one hard disk and restore to another".

IMPORTANT COMPATIBILITY NOTES:

- The bundled software included with the Tape Backup 40SC is Tape Backup 40SC 2.0.1, which is INCOMPATIBLE with System 7 and later.
- Apple recommends using third-party backup software with the Tape Backup 40SC. Some third-party products that work with the Tape Backup 40SC are Retrospect and Retrospect Remote from Dantz Development Corp., and FastBack Plus from Fifth Generation Systems. Further, using of these applications will not cause the problem detailed below.

DISCUSSION -----

Here is a more in-depth explanation of the manual statement:

When using the Apple Tape Backup 40SC and Tape Backup 40SC 2.0.1 software to do a "Volume" backup, be aware of several factors. The tape backup program puts a "mirror" image of the hard drive onto the tape. In other words, the backup software starts at sector 0 and continues reading to the end of the hard drive. During this process, the backup software writes the data to the tape, sector by sector; any and all bad sectors are written onto the tape as well. This method of backup also copies information such as boot blocks, volume size, and the volume directory.

When the "Restore Volume" command is selected, the software checks the tape for the size of the volume it is going to restore. You are now prompted to select the volume you want to have restored. At this point, the tape backup program verifies that both volumes are exactly the same size. If the volume you are

restoring to is smaller than the volume on the tape backup, you get an error message and the backup program won't allow you to continue. If the volume you are restoring to is larger than the tape backup volume, you'll be able to restore, but the volume will appear to be the same size as the original volume. For example, after backing up a HD 20SC using the backup "Volume" option, then restoring it to a HD 40SC, the HD 40SC will appear to have a total of only 20 megabytes of storage.

Different versions of the HD Setup program format Apple hard drives with various amounts of total capacity. HD Setup 1.0 and 1.1 format hard drives with the same number of blocks. HD Setup 1.2 give a different number than 1.0 and 1.1, while HD Setup 1.3 and 1.4 yield yet another different number of blocks. The numbers of blocks also depends on the physical size of the disk (e.g. 5.25" vs 3.5") or manufacturer.

Apple HD Setup 1.4 and later versions format all hard drives of like capacity with the same number of blocks.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

27 September 1993 - Revised, removing obsolete information and adding current compatibility information.

5 November 1987 - Reviewed for technical accuracy.

1987-93, Apple Computer, Inc.

Tech Info Library Article Number:857



Tech Info Library

Grappler+ Card: Using w/ProDOS 1.1.1 Software (2/97)

Revised: 2/12/97
Security: Everyone

Grappler+ Card: Using w/ProDOS 1.1.1 Software (2/97)

=====

Grappler+ Card: Using w/ProDOS 1.1.1 Software (2/97)

Article Created: 15 November 1984
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article list the revision of the Grappler+ parallel printer interface cards experiencing problems with ProDOS 1.1.1 based software.

DISCUSSION -----

Grappler+ parallel printer interface cards that have PROM rev. 3.1 or earlier do not work well with software that is ProDOS 1.1.1-based.

Article Created:
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:858



Tech Info Library

AppleWorks: Printing a Text File

Revised: 8/10/87
Security: Everyone

AppleWorks: Printing a Text File

=====

The Appleworks option to print to "a text (ASCII) file on disk" does not put carriage returns at the end of each line. It is designed to let the user create a file which can be used with other (ASCII) word processors.

If you want to use Appleworks for electronic mail or other applications which require a carriage return at the end of each line, here's how:

From the Main Menu,

Choose "5. Other Activities."

Choose "7. Specify Information about your Printer."

Choose "2. Add a Printer."

Choose "4. Apple Silentype."

Name the printer "EMail" (or name of your choice).

Choose "7. Print onto disk or on another Apple."

Press Escape 3 times to return to the Main Menu.

Now, when you wish to print a file to disk with carriage returns at the end of every line, choose the printer "EMail."

Note: The Apple Silentype was chosen for the "EMail" printer because it accepts no printer control codes. Therefore, the file that is created contains only text with the appropriate carriage returns.

NOTE: This works for IIIEasy Pieces as well.

Tech Info Library Article Number:860



Tech Info Library

PASCAL II 1.1: Line Feeds

Revised: 11/15/84
Security: Everyone

PASCAL II 1.1: Line Feeds

=====

Pascal always prints a LF after a CR; to suppress the LF you have to execute LINEFEED.CODE. (This only works for the PRINTER:.) There is a way to override this feature for REMOUT: when using a Super Serial Card and UNITWRITE, but not when using WRITE and WRITELN.

Apple Technical Communications

Tech Info Library Article Number:861



Tech Info Library

Super PILOT Random number generator

Revised: 11/15/84
Security: Everyone

Super PILOT Random number generator

=====

Super PILOT uses the Pascal function RANDOM. Running a Pascal program that calls RANDOMIZE (before running a Super PILOT program) will generate a different starting point for the numbers returned. For more info, see the Pascal Language Reference Manual, pages 101 and 102.

Apple Technical Communications

Tech Info Library Article Number:862



Tech Info Library

MacTerminal: Escape character

Revised: 9/1/87
Security: Everyone

MacTerminal: Escape character

=====

MacTerminal adheres, as specified, to the keyboard layout that LisaTerminal uses. Thus an escape is generated by the tilde (~) key (upper left corner of the keyboard).

To Send Escape sequences to the Imagewriter via MacTerminal, you must connect the printer to the printer port. Select Local Echo and New Line in the Terminal Settings Dialog box, and Another Computer in the Compatiblilty Settings Dialog box. Using the Escape Key (Accent/Tilde Key), the control letter and return will then send the sequence to the printer.

Tech Info Library Article Number:863



Tech Info Library

AppleShare 1.0, 1.1: Incompatible with AST-4000 3.0

Revised: 10/4/89
Security: Everyone

AppleShare 1.0, 1.1: Incompatible with AST-4000 3.0

=====

This article last reviewed: 12 October 1987

Version 3.0 of the AST-4000 utilities is incompatible with AppleShare and can cause server crashes. AST Utilities version 3.2 fixes the problem. Among other things, it supports changing the SCSI address of the AST-4000. You can use AST's product BBS (714-660-9175) to download the software and send queries to the AST's Tech Support group.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:864



Tech Info Library

ProDOS: Substitute for FRE(0)

Revised: 7/17/85
Security: Everyone

ProDOS: Substitute for FRE(0)

=====

To perform garbage collection in a ProDOS Basic program, use the ProDOS FRE command like this:

```
10 D$ = CHR$(4)
20 PRINT D$;"FRE"
```

Using this method substantially speeds up garbage collection.

Apple Technical Communications

Tech Info Library Article Number:865



Tech Info Library

Apple Platinum Color: Specification

Revised: 7/1/92
Security: Everyone

Apple Platinum Color: Specification

=====

Article Created: 12 October 1987
Article Last Reviewed: 24 June 1992
Article Last Updated:

TOPIC -----

I'd like to know the PMS (Pantone Matching System) number for the platinum color Apple uses on its products.

DISCUSSION -----

Apple does not normally use PMS color charts or Pantone color numbers to designate the platinum color that is now the company standard. Our platinum color number on a coded PMS chart is somewhere between 420 and 421, somewhat closer to 421. (This depends on the age of the chart and the light source used for viewing it.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:866



Tech Info Library

80-Column Text Card: Interrupt Disable (11/96)

Revised: 11/14/96
Security: Everyone

80-Column Text Card: Interrupt Disable (11/96)

=====

Article Created:15 November 1984
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Is there anyway to prevent the 80-column card from disabling interrupts on the I/O slots?

DISCUSSION -----

There is no way to prevent the 80-column card from disabling interrupts on the I/O slots. A programmer whose program relies on interrupts could write routines to do everything the 80-column card firmware does without disabling interrupts, but this is a far-from-trivial programming task.

Article Change History:
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:867



Tech Info Library

Pascal : STRING and CHAR concatenation

Revised: 11/15/84
Security: Everyone

Pascal : STRING and CHAR concatenation

=====

To concatenate using STRING types and CHAR types and not get a type mismatch error, use the routine below to create a STRING containing the CHARacters the user wishes to add to the STRING, then use the Pascal CONCAT to put them together. Make sure that if this is done within a PROCEDURE or FUNCTION, and the STRING is passed as a parameter, that the (*\$V-*) option is used as well as declaring a TYPE to pass rather than STRING.

```
TYPE STR_TO_PASS = STRING;

PROCEDURE WHATEVER (ST : STR_TO_PASS);
BEGIN
END;

here's the concat stuff ...

PROGRAM CONCAT_CHAR;

CONST LEN = 4;                      { or whatever you want }

VAR TEST_STRING : STRING;
    CH : CHAR;
    I : INTEGER;

(*$R-*)      { turn Range Checking off so you can }
              { alter individual cells of the string }

BEGIN
    TEST_STRING[0] := CHR(LEN); { set length of string }
    FOR I := 1 TO LEN DO
        BEGIN
            READ (CH);
            TEST_STRING[I] := CH;
        END;
    WRITELN;
    WRITELN (TEST_STRING);
END.
```

Apple Technical Communications

Tech Info Library Article Number:868



Tech Info Library

Apple Writer IIe under DOS 3.3: Printer codes from all Apples

Revised: 4/30/86
Security: Everyone

Apple Writer IIe under DOS 3.3: Printer codes from all Apples

=====

Many printers have special features that the computer signals by sending command codes. To send codes to a printer from Apple Writer IIe under DOS 3.3, you must insert the codes into the Apple Writer file you want printed. The manual of the printer may list the codes by several names: decimal, hexadecimal, teletype abbreviations (SOH, ETX, DC1, DC3, etc.), standard keys, and combinations of the above.

Using the chart "ASCII characters, values, and keystrokes", you have to translate from the name of the code in the printer manual into the name of the corresponding keystroke or keystrokes on the keyboard of the Apple IIe, Enhanced Apple IIe, or Apple IIc.

Some keystrokes put so-called control characters into the Apple Writer file. These control characters are not part of the conventional English character set; while screen shows them, the printer intercepts and does not print them, instead recognizing them as signals to turn special functions on and off or to change printer settings.

NOTE: In the descriptions of the keystrokes, the characters greater than and less than, < and >, are used to contain one keystroke, which can mean that:

1. You must simultaneously hold down the control key, the shift key, or both as you press the other key, or
2. You must press a special key, such as ESC or RETURN.

With these considerations in mind, here is a list of codes and methods for inserting them in an Apple Writer file.

Null (ASCII value 0):

The following patch is for Apple Writer IIe under DOS 3.3. The patch allows you to enter NULs (CTRL-@) when in CTRL-V mode. The only side-effect is that the DELETE key doesn't work for correcting a filename entered from the keyboard for the DOS COMMANDS or ADDITIONAL FUNCTIONS menu; instead, just use the left arrow key.

--Boot the DOS 3.3 System Master diskette.

--Remove the System Master diskette, insert the Apple Writer IIe under DOS 3.3 diskette and type the following commands.

```
BLOAD OBJ.APWRTIIE
CALL -151
1CE1:EA EA EA EA
3EBA:EA EA EA EA
3D0G
UNLOCK OBJ.APWRTIIE
BSAVE OBJ.APWRTIIE,A$1900,L$2F58
LOCK OBJ.APWRTIIE
BLOAD OBJ.APWRTIIF
CALL -151
1D81:EA EA EA EA
4033:EA EA EA EA
3D0G
UNLOCK OBJ.APWRTIIF
BSAVE OBJ.APWRTIIF,A$1900,L$30D1
LOCK OBJ.APWRTIIF
```

If you don't want to do this to your Apple Writer IIe diskette, refer below to the Applesoft BASIC solution.

Control-A through Control-Z (ASCII decimal values 01 through 26):

Example: Control-Z (ASCII decimal value 26): <CTRL-V><CTRL-Z><CTRL-V>

Exception: Control-V (ASCII decimal value 22) can't be entered.
See "Missing Characters" below.

Escape (ASCII value 27): <CTRL-V><ESC><CTRL-V>

Other Control characters: These can be entered in the manner of Control-A through Control-Z.

Missing Characters:

You can't directly enter a Control-V in Apple Writer. To use these and other characters in Apple Writer, it is necessary to use an Apple Writer glossary file.

Apple Writer doesn't send a Null character.

Applesoft BASIC can be used to send a Null character to your printer.

1. Create your Apple Writer document as usual, but substitute a unique character in each place that you want a Null character.

2. Type <CTRL-P> to display the Print/Programs Command menu.

3. Type PD8, Apple Writer's code for Print to Disk on an Apple II.

4. Type NP to begin printing.

5. To the Apple Writer prompt for a file name, do not enter the same name with which the file is already saved. Enter a unique name, and note it down.

6. After the printing to disk is finished, exit Apple Writer and boot up a ProDOS diskette.

7. Run the following program:

```
100 HOME
110 PRINT TAB(10);APPLE WRITER TO PRINTER"
120 VTAB 5
130 INPUT "NAME OF APPLE WRITER FILE PRINTED TO DISK: ";F$
140 IF F$="" THEN 900
145 VTAB 12
146 INPUT "CHARACTER TO REPLACE: ";X$
147 IF X$="" THEN 145
150 VTAB 10
160 INPUT "PRINTER SLOT #: ";S$
170 IF S$="" THEN 900
180 S=VAL$(S$); IF S < 1 OR S > 7 OR INT(S) <> S THEN 150
190 D$=CHR$(4)
200 ONERR GOTO 800
210 PRINT D$;"UNLOCK";F$
220 POKE 216,0
230 VTAB 12: PRINT SPC(75)
240 PRINT
250 PRINT D$;"PR#";S
260 PRINT CHR$(9);"132N"
270 PRINT D$;"OPEN";F$280 ONERR GOTO 400
290 PRINT D$;"READ";F$
300 A$=""
310 GET C$
315 IF C$=CHR$(12) THEN 310
320 IF C$=CHR$(13) THEN 350
330 IF C$=X$ THEN C$=CHR$(0)
340 A$=A$+C$:GOTO 310
350 PRINT A$
390 GOTO 300
400 POKE 216,0
410 PRINT D$;"CLOSE"
420 PRINT D$;"PR#0"
430 VTAB 15
440 PRINT TAB(5);"FILE ";F$;" HAS BEEN PRINTED."
450 GOTO 900
800 POKE 216,0
810 VTAB 12
820 PRINT CHR$(7);"I CAN'T FIND THE FILE ";F$;"."
830 INPUT "";Z$
840 GOTO 100
900 END
```

Apple Technical Communications

Tech Info Library Article Number:871



Tech Info Library

Apple III: Problems with cursor positioning in CP/M

Revised: 3/4/85
Security: Everyone

Apple III: Problems with cursor positioning in CP/M

=====

If you're having problems with cursor positioning in CP/M--specifically, problems with accessing rows 8 or 9 from BASIC--you're probably using a version of CP/M earlier than version 2.21. The remedy is to upgrade to CP/M 2.21, and then to study page 32 of the documentation that comes with that upgrade.

Apple Technical Communications

Tech Info Library Article Number:872



Tech Info Library

Super Serial Card: Detecting DSR (12/96)

Revised: 12/16/96
Security: Everyone

Super Serial Card: Detecting DSR (12/96)

=====

Article Created: 15 November 1984
Article Reviewed/Updated: 16 December 1996

TOPIC -----

This article discusses how to detect if a printer has issued a DSR signal.

DISCUSSION -----

If you're writing a program that outputs to a printer and want to be able to peek into a location to detect whether the printer has issued a DSR signal, the info you seek is on page 54 of the SSC manual. Checking location \$C0E9 will give the status of DSR as read from the ACIA status register. If using some non-Apple card, check that card's manual.

Article Change History:
16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:873



Tech Info Library

Apple III COBOL: Using CALL and CANCEL with subprograms

Revised: 11/15/84
Security: Everyone

Apple III COBOL: Using CALL and CANCEL with subprograms

=====

When a linkage section is used between a calling and a called program and there is I/O (disk read/write, etc.) in the called program, the file I/O instructions are not successfully executed by the called program. Also, the "Cancel" verb does not seem to always free up the entire amount of memory allocated to subprograms.

Page 85 of the COBOL Manual states, " If you are not careful in Call/Cancel sequences, you can fragment memory, leaving no room for a new Call, even though the total amount of free memory might be enough." Page 86 says, " There is one more complication to consider: any program can be segmented. When you Call a segmented program, The Run-Time System allocates for it enough memory to hold the root segment and the largest overlay." What this all means is that all memory is returned with Cancel but fragmentation could be the problem. A Called module requires contiguous memory to be loaded.

Apple Technical Communications

Tech Info Library Article Number:874



Tech Info Library

Dow Jones Portfolio Evaluator and Apple Modem

Revised: 5/25/89
Security: Everyone

Dow Jones Portfolio Evaluator and Apple Modem

=====

DJPE does not support the Apple Modem as far as autodial. If the software finds a Super Serial Card, it automatically goes to a manual dial mode. From the terminal mode, type the commands for the modem to dial, and then manually log on. After that, type CTRL-G (for go), and the software will operate normally from then on. No revision is planned for either of the Dow Jones packages.

Apple Technical Communications

Tech Info Library Article Number:875



Tech Info Library

ImageWriter: First printed line is expanded or crunched

Revised: 8/10/87
Security: Everyone

ImageWriter: First printed line is expanded or crunched

=====

When you print a file on the Imagewriter, sometimes the first printed line at the beginning of the paper is crunched or expanded. This problem sometimes occurs after you take the paper out of the platen: you may have left the tractor gears in a position "between linefeeds". Solve this problem by doing a form feed right every time you reload the printer with paper.

Sometimes the paper is not held tight enough by the rollers, especially when you use cut sheets. Solve the problem by "burping" the printer: turn the printer off and on so the printhead moves back and forth and the gears are tightened.

Owen Densmore, Sep/Oct 1984 issue of Macworld

Tech Info Library Article Number:877



Tech Info Library

Using Lisa 2.0 Files With Lisa 7/7

Revised: 7/30/87
Security: Everyone

Using Lisa 2.0 Files With Lisa 7/7

=====

When you open a document with a Lisa application, there must be enough disk space to retain the original document while you work - in the event you later choose "revert to previous version." Even more disk space is required to enable you to use "undo." This is why you may see the message "Not enough room to open file" when you try to read a Lisa 2.0 document stored on diskette by Lisa 7/7. If this happens, move the document to the hard disk, where you are likely to have more free storage space. You should then be able to work on your document with no problems.

Tech Info Library Article Number:878



Tech Info Library

Using an American Apple IIC in Europe

Revised: 11/15/84
Security: Everyone

Using an American Apple IIC in Europe

=====

An domestic Apple IIC will work well in Europe (Italy, for instance), as long as it has a 220V external power supply. Video out at the RCA jack would be NTSC, however.

Apple Technical Communications

Tech Info Library Article Number:879



Tech Info Library

Apple Modem: Using one from within an Applesoft BASIC program

Revised: 8/3/89
Security: Everyone

Apple Modem: Using one from within an Applesoft BASIC program

=====

If you wish to use an Apple Modem from within an Applesoft BASIC program, you must write your own software to do so; you must be prepared to read each character you send, though, since the Apple Modem echoes each character sent through it.

Following is an example routine for dialing a number. NOTE: this routine is only meant to illustrate how to read each character after sending it. The routine does dial a number, but this routine cannot stand alone: notice how it ends without completely flushing the input from the modem.

```
10 D$ = CHR$(4)
20 S$ = "AT D123-4567"
30 PRINT D$;"PR#2"
40 PRINT D$;"IN#2"
50 FOR I = 1 TO LEN(S$)
60 PRINT MID$(S$,I,1);
70 GET X$
80 NEXT I
90 PRINT
100 PRINT D$;"PR#0"
110 PRINT D$;"IN#0"
```

WARNING: When trying to access the modem from the program, if you use PRINT CHR\$(4);"PR#2" and/or PRINT CHR\$(4);"IN#2", followed by CTRL-A T, the computer hangs and BASIC program control is lost. That's because once you send a CTRL-A T, the firmware takes over and is in control until you type CTRL-A Q.

To send AT commands to the modem, send only the "PR#2"; then, using a PRINT statement, you may send whatever you wish. For example:

```
10 D$ = CHR$ (4)
20 PRINT D$; "PR#2"
30 PRINT "ATDT1231234"
40 END
```

will dial 123-1234. You could also replace line 40 with

```
40 PRINT D$; "IN#2" and add,  
50 PRINT CHR$ (1); "T"
```

and you'd be in terminal mode.

Apple Technical Communications

Tech Info Library Article Number:880



Tech Info Library

Apple III: SOS Error 90

Revised: 11/15/84
Security: Everyone

Apple III: SOS Error 90

=====

SOS error 90 is, in fact (in hex), error \$5A. Error code \$5A is a 'bad bitmap address on a block device'. This usually indicates that the directory bitmap information is damaged or mangled in some way, or at least SOS thinks so.

Apple Technical Communications

Tech Info Library Article Number:881



Tech Info Library

Business Basic III: Distinguishing between RETURN and ENTER keys

Revised: 11/15/84
Security: Everyone

Business Basic III: Distinguishing between RETURN and ENTER keys

=====

Using an invokable module (which you'd have to write), it is possible to detect whether the key pressed is located on the keypad or the main keyboard, and thereby distinguish (if you wish) between the RETURN key and the ENTER key. The Standard Device Drivers manual provides information on how this is done, particularly in Appendix G and in the chapter on the Console driver.

Also, Volume #1, Issue #1 of a magazine named "On Three" contains a program for recognizing the difference between the ENTER and RETURN keys. You can obtain a copy by writing to:

Attn: Order Dept.
P.O. Box 3825
Ventura, CA 93006
(805) 644-3514

Apple Technical Communications

Tech Info Library Article Number:882



Tech Info Library

Apple IIe and the Numeric Keypad: Some problems

Revised: 5/25/89
Security: Everyone

Apple IIe and the Numeric Keypad: Some problems

=====

If an Apple IIe is configured with a 342-0132-B ROM as the keyboard ROM, then the numeric keypad works properly. If there is a 342-0132-C ROM installed, then the keypad numbers work right but the functions do not. This ROM IS NOT related to the Mousetext ROM change. A Rev D ROM will be released soon.

Apple Technical Communications

Tech Info Library Article Number:883



Tech Info Library

Apple III: Pascal ToolKit

Revised: 9/16/85
Security: Everyone

Apple III: Pascal ToolKit

=====

Page 5 of the Pascal ToolKit manual says:

The 2.0 Compiler shipped with the Tool Kit consists of three files:

PAS.CODE
PASCAL.OPTIONS
PASCAL.ERRORS

These files are not on the disk. After the files were dropped from the product, the editors left the reference to the files in the manual by oversight. Future builds will have Errata Sheets addressing this problem.

Apple Technical Communications

Tech Info Library Article Number:884



Tech Info Library

Business BASIC III: Random Access File Problem

Revised: 11/15/84
Security: Everyone

Business BASIC III: Random Access File Problem

=====

In Business Basic, if you open TWO random access files and then try to access some of the records, you get a SOS CALL ERROR 22. This error occurs, for example, in line 511 of the following sample program:

Enter the record number 723 for A%, and anything for B%;
enter anything for A\$ and B\$ on the first entry;
enter the record number 723 for A%, and anything for B%;
the system crashes with a "SOS CALL ERROR 22".

```
10 OPEN#6, ".PROFILE/FILE1",15
20 OPEN#7, ".PROFILE/FILE2",15
25 CATALOG ".PROFILE"
30 INPUT "Enter A% ";A%
40 INPUT "Enter B% ";B%
50 ON EOF#6 GOTO 500
60 READ#6,A%
70 R=0:IF TYP(6)<>4 THEN GOTO 510
80 READ#6;A$
90 IF R=0 THEN 520
95 INPUT "Enter A$ & B$";A$,B$
100 WRITE#7,B%;A$
110 WRITE#6,A%;B$
120 GOTO 25
500 PRINT"Nothing in the file":OFF EOF#6:GOTO 70
510 PRINT"Nothing in the record":R=1
511 CLOSE#6
512 OPEN#6, ".PROFILE/FILE1",15
513 GOTO 90
520 END
```

If, however, you add the following lines, the program seems to continue to work normally:

```
5 ON ERR GOTO 1000
1000 PRINT"Error# "; ERR
1010 OFF ERR
```


1020 GOTO 512

Use this workaround to avoid any further problems.

Apple Technical Communications

Tech Info Library Article Number:885



Tech Info Library

DOS Tool Kit Assembler

Revised: 11/15/84
Security: Everyone

DOS Tool Kit Assembler

=====

Here's an undocumented fact about the DOS Tool Kit: If you have assembled a relocatable file and are then trying to run it from a BASIC program, make sure that the BASIC program file name does not begin with the same characters as your relocatable file. An example of what to avoid:

```
Relocatable file = Relocate Example.OBJO
BASIC file       = Relocate
```

If you make this error, the following BASIC program (named Relocate) will fail and display the error message "Undefined statement at 5".

```
10 ADDRS=0: REM PRE ALLOCATE VARIABLE TABLE
20 PRINT CHR$(4); "BLOAD RBOOT" CALL 520
30 ADRS=USR(0),"RELOCATE.OBJO"
40 CALL ADRS
```

Simply by changing the name of the relocatable file to Example.OBJO, and changing line 30 in the above program as follows, you can correct the problem.

```
30 ADRS=USR(0),"EXAMPLE.OBJO"
```

Apple Technical Communications

Tech Info Library Article Number:886



Tech Info Library

Lisa 7/7: Printing Executive PS on a DWP

Revised: 3/4/85
Security: Everyone

Lisa 7/7: Printing Executive PS on a DWP

=====

When you select to print a document on a Daisy Wheel Printer in Executive PS, the printer sometimes simply ejects a blank page. If this occurs, select Elite 12, Courier 10 or Gothic 15 instead; your DWP will then print properly.

Apple Technical Communications

Tech Info Library Article Number:887



Tech Info Library

Apple II, Apple III, Lisa Family: Video Specs (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple II, Apple III, Lisa Family: Video Specs (Discontinued)

Article Created: 15 November 1984
Article Reviewed/Updated: 26 June 1992

TOPIC -----

The following information is for the benefit of users who may wish to interface Apple models to video projectors:

DISCUSSION -----

Apple II, II+, IIe, IIC

- | | |
|-----------------------------------|-----------------|
| 1. Number of lines in the raster. | 525 |
| 2. Whether interlaced. | No |
| 3. Signal type. | NTSC compatible |
| 4. Frame rate. | 60 hz. |

Apple III, III+

- | | |
|-----------------------------------|--|
| 1. Number of lines in the raster. | 525 |
| 2. Whether interlaced. | No / Yes for III+ |
| 3. Signal type. | NTSC B/W, NTSC
color composite,
RGB Pure Video,
Composite Sync
Signals |
| 4. Frame rate. | 60 hz. |

Euro IIC, IIe, II+, Euro PAL color card

- | | |
|-----------------------------------|---|
| 1. Number of lines in the raster. | 625 |
| 2. Whether interlaced. | No (IIC, IIe) |
| 3. Signal type. | Composite PAL
video
(unmodulated) |
| 4. Frame rate. | 50 hz. |

Lisa

- | | |
|-----------------------------------|-----------------|
| 1. Number of lines in the raster. | \| video output to |
|-----------------------------------|-----------------|

- | | |
|------------------------|---------------|
| 2. Whether interlaced. | \| Conrac or |
| 3. Signal type. | \| Electrohome |
| 4. Frame rate. | \| monitor with |
|  | \| 22.7 Khz scan |
|  | \| rate |

Copyright 1984, 1992 Apple Computer, Inc.

Tech Info Library Article Number:889



Tech Info Library

AppleWorks: Problems with calculations in spreadsheets

Revised: 8/10/87
Security: Everyone

AppleWorks: Problems with calculations in spreadsheets

=====

If, in cell A1, you enter the formula $17.9-17*10$, the cell will display 9, the correct result. If you then enter, in cell A2, `@INT(A1)`, the cell will display 8. Even if you try the `@IF`, the result will always be something less than 9.

This phenomenon is not the application's fault: it's that old standard floating point error. Remember that $17.9-17$ isn't .9, but rather .899999, so that when you multiply by 10, you get 8.99999--and `@INT(8.9999) = 8`. The best workaround is to use `@INT(A1+0.5)` instead.

Tech Info Library Article Number:890



Tech Info Library

AppleTerm: Using it with a IIfc or IIfc

Revised: 5/25/89
Security: Everyone

AppleTerm: Using it with a IIfc or IIfc

=====

If the AppleTerm program refuses to address a modem when a printer is attached to another port or card, check that the printer is turned on and selected. If so, everything should work right. If the printer isn't turned on or selected, and is yet still connected to the port or card, then the modem won't work: the program sends an initialization procedure to the printer, and if it doesn't get something back from the printer firmware, it will hang. Usually what happens is that a "@" appears in the upper left corner of the screen.

NOTE: This same problem will occur if the printer interface isn't on an Apple Super Serial Card: AppleTerm will only acknowledge an Apple SSC.

Apple Technical Communications

Tech Info Library Article Number:891



Tech Info Library

Apple Access II: 'Character Delay' and 'Line Delay'

Revised: 5/25/89
Security: Everyone

Apple Access II: 'Character Delay' and 'Line Delay'

=====

Access II version 1.1 has fixed the problem of 'Line Delay' working erratically. In versions previous to 1.1, a line delay of 100 resulted in a considerable delay, but changing the line delay to 9999 resulted in less delay.

Apple Technical Communications

Tech Info Library Article Number:892



Tech Info Library

ImageWriter II: Every Other Line Faded

Revised: 10/21/87
Security: Everyone

ImageWriter II: Every Other Line Faded

=====

This article last reviewed: 12 October 1987

When an ImageWriter II prints correctly in one direction (either left to right, or right to left), but prints faded lines in the opposite direction, try replacing the ribbon wire and spring (935-0001). If the spring has been stretched slightly, the wire can slip on the pulley when moving in one direction. This prevents the ribbon from advancing and creates the faded lines.

Tech Info Library Article Number:893



Tech Info Library

Scribe Printer: What Kinds of Paper to Use (10/93)

Revised: 10/20/93
Security: Everyone

Scribe Printer: What Kinds of Paper to Use (10/93)

=====

Article Reviewed/Updated : 20 October 1993

TOPIC -----

What kind of paper can I use in the Scribe printer?

DISCUSSION -----

Tests of continuous feed papers for the Scribe Printer have shown that most smooth finish papers are acceptable, whether fanfold or single-sheet.

If you wish to use other papers, keep in mind that although no specially-coated paper is necessary, it's nevertheless true that the smoother the paper, the better the print quality. Even standard pin-feed and copying machine papers (such as Xerox 4024 copy paper) yield satisfactory results; avoid using rougher-textured papers, though, such as personal stationery or papers with a high rag content.

Article Change History:

20 October 1993 - Removed phone numbers & paper vendors, they no longer exist

Copyright 1993, Apple Computer, Inc.

Tech Info Library Article Number:894



Tech Info Library

EtherTalk Card: A Description (Discontinued)

Revised: 6/7/94
Security: Everyone

EtherTalk Card: A Description (Discontinued)

Article Created: 9 October 1987
Article Reviewed/Updated: 26 June 1992

TOPIC -----

This article should answer some of the questions that you've been asking about the EtherTalk card: what it is and what it does.

DISCUSSION -----

What It Is

The EtherTalk card is a low-level transport mechanism that allows a variety of protocols to be transported over an Ethernet network. This means that the EtherTalk card addresses itself only to the lower two layers of the ISO reference model: the physical layer and the data link layer. The upper layers of the session are controlled by whatever protocol you wish to implement over these two lower layers. Two examples of upper layer implementations: AppleTalk and TCP/IP.

What It Does

The card, using a software driver, places these upper layer protocol packets in the data field of the Ethernet transport frame. The Ethernet frame properly addresses these packets to their 'target' devices, which strip off the frame and then process the packet inside. On the Ethernet wire, no device really cares what is contained in the frame unless that frame is directed at that device. This means that you can have devices using different upper layer protocols (such as TCP/IP, XNS, or AppleTalk) on the same physical wire. These encapsulated packets can co-exist on a single Ethernet without interference, because the devices don't look at what's inside unless the packet is directed specifically at that device.

The software shipped with EtherTalk is a driver for the Macintosh operating system. This driver lets AppleTalk packets be redirected to the

EtherTalk card rather than the printer port. The EtherTalk card then encapsulates the AppleTalk packet in an Ethernet frame, for delivery to a device on the Ethernet that understands AppleTalk packets. An example: a Macintosh II running AppleShare with EtherTalk as a 'server,' and a Macintosh II with EtherTalk as 'workstation.' Both devices are directly connected to Ethernet and use Ethernet only as a physical connection with delivery assurance and error correction.

This card can also be used to encapsulate other upper-level protocols with an Ethernet frame, for transport on the network. An example: the TCP/IP support under A/UX. Here, the Ethernet frame is the same as used in the earlier example, but the packet in the frame is TCP/IP rather than AppleTalk.

It's possible to use other protocols, such as XNS, with the same card and using the same Ethernet frame. The only thing that changes is what's in the frame.

Using Ethernet, it's also possible to have one device 'push' more than one protocol over the same physical connection. An example: a VAX running VMS, with AlisaTalk and DECnet installed. AlisaTalk will deliver AppleTalk packets to the VAX, which will encapsulate them with an Ethernet frame and send them out onto the Ethernet network. The VAX can also 'push' DECnet packets encapsulated in the Ethernet frame over the same card and physical connection. This happens serially, because Ethernet is a baseband network. In the example, the AppleTalk packet goes out first, followed by the DECnet packet over the same wire, following the rules of CSMA/CD, which provides the delivery assurance and error correction.

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Tech Info Library Article Number:895



Tech Info Library

Applesoft: RENUMBER in ProDOS

Revised: 12/17/84
Security: Everyone

Applesoft: RENUMBER in ProDOS

=====

To renumber your ProDOS Applesoft Basic program, access RENUMBER through the APA program located on your ProDOS Basic Programming Example Disk (part number 680-0235).

Apple Technical Communications

Tech Info Library Article Number:897



Tech Info Library

AppleShare: Copy-Protection and Locked Files or Folders

Revised: 10/4/89
Security: Everyone

AppleShare: Copy-Protection and Locked Files or Folders

=====

This article last reviewed: 10 May 1989

AppleShare 1.0 and 1.1

AppleShare 1.0 and 1.1 do not provide a mechanism to prevent users from copying files from an AppleShare volume.

Locking folders with these versions will not prevent someone from moving the folder elsewhere on the volume.

AppleShare File Server 2.0 or Later

You can Lock folders but you cannot copy-protect them. Locking prevents renaming, discarding, or moving the folder elsewhere on the volume. Locking does not affect access privileges. Only the folder's owner can enable or disable the folder lock option from the Access Privileges window.

Files can be locked and/or copy-protected. Locking a file prevents renaming, discarding, or saving any changes to the file but does NOT prevent someone from moving, copying, or opening the file. You can lock a file from the finder within the Get Info window.

When a file is copy-protected, users are unable to copy or duplicate it in the finder. Users with access privileges could still open a copy-protected document and using the Save As function could make a copy of the document -- defeating the copy protection.

The copy-protection feature is most useful for preventing copying of applications, to comply with copyrights and licensing agreements. Copy-protection can only be set with AppleShare Administration software within the file information window.

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Tech Info Library Article Number:898



Tech Info Library

ProDOS: Error 900 When Using Apple IIf Sys Utilities Disk (9/95)

Revised: 9/19/95
Security: Everyone

ProDOS: Error 900 When Using Apple IIf Sys Utilities Disk (9/95)

Article Created: 17 December 1984
Article Reviewed/Updated: 19 September 1995

TOPIC -----

I started up my system with the Apple IIf System Utilities Disk. This disk has a new port configuration saved to it. If I select any menu option then press the Escape key to return to the main menu, I always drop into the monitor with Error #900 displayed. How can I get around this?

DISCUSSION -----

The workaround is as follows:

Step 1

Duplicate your Systems Utilities disk: select the main menu option 5. Boot your system with this new copy.

Step 2

Select main menu option 9 to exit from System Utilities.

Step 3

From the Basic prompt, type in the following:

```
Load SU,S6  
List 900
```

You will see the listing:

```
900 Call 768: Poke 216,0: Onerr Goto 930
```

Step 4

Change line 900 to:

```
900  Poke 216,0: Onerr Goto 930: Call 768
```

Step 5

Enter the following commands to unlock the file, save the changes to disk and relock the file to prevent accidental damage:

```
List 900
```

Step 6

Check once again that line 900 reads properly as in step 4, then type:

```
Unlock SU,S6
```

```
Save SU,S6
```

```
Lock SU,S6
```

Article Change History:

19 Sep 1995 - Reformatted it to meet current standards

Support Information Services

Apple Technical Communications

Tech Info Library Article Number:899



Tech Info Library

Lisa 7/7 (version 3.0): UNABLE TO PRINT message

Revised: 11/15/84
Security: Everyone

Lisa 7/7 (version 3.0): "UNABLE TO PRINT" message

=====

When your Lisa informs you it's having difficulties printing your document, check everything suggested by both the dialog message and the manual, and then try the following.

1. Open Preferences and click on Connect devices. Select each of the connections (e.g., Serial A Connector), and set each to Nothing.
2. Re-select each of the connections in Connect Devices, and select what you physically have connected to the Lisa at that connection.
3. Click on Select Defaults in Preferences and make your printer the default printer.
4. Open your document and choose Format for Printer from the File/Print menu. Click on the "New Printer..." button, then select a printer different from what is currently selected (a new default printer). Finally, select Format for Printer and choose the printer you wish to print the document on.

Apple Technical Communications

Tech Info Library Article Number:900



Tech Info Library

LisaCalc: Updating Documents From Earlier Releases

Revised: 7/30/87
Security: Everyone

LisaCalc: Updating Documents From Earlier Releases

=====

The new calculation algorithm in LisaCalc, release 3.0, may be unable to fully update a spreadsheet created with an earlier version of LisaCalc. If no data was included to calculate a value for a cell created using Paste Adjusting, then the formula may not be present in the updated spreadsheet. If this occurs, simply Paste Adjust the formula again.

Tech Info Library Article Number:901



Tech Info Library

Apple Desktop Bus (ADB): Specifications (12/94)

Revised: 12/8/94
Security: Everyone

Apple Desktop Bus (ADB): Specifications (12/94)

Article Created: 23 October 1986
Article Reviewed/Updated: 08 December 1994

TOPIC -----

This article provides specifications and information about the Apple Desktop Bus, which was introduced with the Apple IIGS and has been used in Macintosh computers since the introduction of the Macintosh SE and Macintosh II.

DISCUSSION -----

The Apple Desktop Bus (ADB) is a standard for input devices connecting to the Apple IIGS and later Macintosh computers that follow the Apple Desktop Bus protocol. Because the Apple Desktop Bus is run by an intelligent microcontroller, a number of different types of input devices may be connected to the ADB simultaneously: the computer's keyboard, mouse, tablet, light pen, second keyboard, or joystick.

Each device has a unique bus address, so that the ADB microcontroller may direct its commands to a particular piece of equipment. The ADB specification supports up to a maximum of 16 unique devices, however it is suggested that only 3 devices be connected to each ADB bus in order to prevent signal degradation problems from appearing. On the Apple IIGS, the control function is performed by the M50740 Keyboard Microcontroller. It uses a superset of the 6502 instruction set, and contains 96 bytes of RAM and 3K bytes of ROM. The Macintosh may use one of several different implementations which are documented in the Guide to the Macintosh Family Hardware manual published by Addison Wesley.

When the microcontroller requests input from a device, it sends a signal to the input device to "talk". If no return input information action (key pressed, mouse movement, button clicked, etc.) has occurred, the microcontroller keeps waiting for the device to respond until a time-out occurs.

The host may also instruct a device to "listen" to data being sent on the bus from the host. All devices on the Apple Desktop Bus must include the intelligence to respond to both talk and listen commands.

The Apple Desktop Bus uses a 4-pin mini-DIN jack and a 4-wire cable, with serial interface signals. When appropriate, the input device will have two ADB jacks, so that devices may be daisy-chained from the host. The Apple Desktop Bus Mouse does not have a second connector, so it must be at the end of the chain.

SPECIFICATIONS:

- throughput: approximately 154 bytes per second
- cable length: maximum 5 meters
- cable capacitance: maximum 100 picofarads per meter

ADB devices may use the +5 volt power supplied by the bus, but must not draw more than 500 mA total for all devices.

The Apple Standard Keyboard draws a maximum of 100 mA, and the Apple Extended Keyboard draws a maximum of 85 mA.

All devices are connected in parallel, using the signal, power, and ground wires. Due to connector resistance and signal degradation, daisy-chaining more than three devices is not recommended.

Article Change History:

08 Dec 1994 - Revised discussion.

21 Jun 1994 - Updated to combine information from two similar articles.

Support Information Services

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Tech Info Library Article Number:902



Tech Info Library

MousePaint: Saving Pictures To Disk

Revised: 7/30/87
Security: Everyone

MousePaint: Saving Pictures To Disk

=====

Drive 1 is the default drive in MousePaint. To save a picture to another disk, specify a new ProDOS pathname by selecting "save a picture in" from the File menu. Then type the pathname of your new destination disk: for example, /NewDisk/MyPicture.

Tech Info Library Article Number:903



Tech Info Library

ProDOS: Filenames and directories

Revised: 8/6/86
Security: Everyone

ProDOS: Filenames and directories

=====

This article provides background information on files and directories. Refer to your ProDOS User's Manual for a more comprehensive discussion of these conventions.

Filenames

While DOS 3.3 allows you to save a file with a file name that has a tilde for the first character, ProDOS is much more strict:

- Only fifteen characters
- Only the letters A-Z, numbers 0-9, and a period
- Only a letter for the first character
- No control characters

Some acceptable filenames are:

PotatoSalad
SillyProgram
Biz.letter
Memo.1.April.84

Some unacceptable filenames are:

Potato Salad	- can't have spaces
Ridiculousprogram	- too long--greater than 15 characters
Emily'sPoem	- apostrophes aren't legal characters
Memo: Bill	- colons and spaces are illegal characters

If you forget these rules: for example, you leave a blank in the middle of a filename, your program beeps and the cursor won't budge until you type a character that is acceptable.

Directories

When a volume is first formatted, it gets a name and a directory. Anything you save on that volume is accessed through that directory. The directory

is also a file, but it just tracks where other files on the disk are stored. You could say that a directory file is like an address book.

There comes a time -- especially with a mass storage disk -- when it's convenient to have a way of organizing your files so you find such things as financial forecasts without listing the contents of the entire disk.

Subdirectories allow you to group your files logically. A subdirectory is just like a directory except that it's subordinate to the directory.

In the directory for the disk, you can create a subdirectory with the name "Financial", and in this subdirectory you create the subdirectories with the names "Forecasts" or "Statements". This kind of arrangement is called a hierarchial file structure because files are organized into successive levels.

Apple Technical Communications

Tech Info Library Article Number:904



Tech Info Library

ProDOS: Pathnames and prefixes

Revised: 8/6/86
Security: Everyone

ProDOS: Pathnames and prefixes

=====

Pathnames

A pathname is the volume directory name, followed by any number of subdirectory names, followed by the filename. The entire pathname is preceded by a slash; furthermore, each name within the pathname is separated by a slash. This slash is called a delimiter.

To get to a particular file, ProDOS looks at the pathname for the volume directory name. ProDOS then finds that volume and looks in the volume directory for the location of the next subdirectory in the pathname. ProDOS then looks in that directory for the location of the file. You can have as many subdirecories as you want as long as the total number of characters in the pathname dosen't exceed 64.

Prefixes

You may not want to type a complete pathname every time you want to locate a file. ProDOS can store a partial pathname, called a prefix. This prefix stores care of as many subdirectories as you wish; you only type the rest of the pathname, such as the filename. ProDOS appends this after the prefix, completing the pathname, and then looks for the file you want.

To set a prefix with the ProDOS User's Disk: 1) boot from this diskette, 2) enter the filer, 3) select P from the filer menu, and 4) enter your prefix, the first character of which should be a slash.

When a you want a file and you want to use the prefix you've entered, don't type a slash for the first character, just type the rest of the pathname, e.g. the filename.

When you want a file and you want ProDOS to ignore the prefix you've entered, type a slash for the first character. This does mean, however, you have to type in the complete pathname, starting with the volume name.

Apple Technical Communications

Tech Info Library Article Number:905



Tech Info Library

LisaWrite: Removing Hyphenated Words From the Dictionary

Revised: 2/1/85
Security: Everyone

LisaWrite: Removing Hyphenated Words From the Dictionary

=====

If you wish to remove hyphenated words from the dictionary:

1. Select "Write Dictionary to Document" from the Spelling menu.
2. Correct/delete the hyphenated words.
3. Select the dictionary portion of the document.
4. Select "Put in Dictionary".

Apple Technical Communications

Tech Info Library Article Number:906



Tech Info Library

Lisa: Error Tones

Revised: 11/15/84
Security: Everyone

Lisa: Error Tones

=====

Some systems (usually those containing old ROMs) emit a low-high error tone upon startup before starting the internal diagnostics. To proceed, merely power the Lisa off and back on.

Other errors, ones usually associated with hardware failures, sometimes appear on Lisas in the 7/7 Office System. Typically, you may have neglected to erase your hard disk before installing the 7/7 Office System. After you safely backup your documents, reinstall the software after first erasing the present contents of the hard disk.

Apple Technical Communications

Tech Info Library Article Number:908



Tech Info Library

Business Basic III: VARIABLE ERROR in version 1.1 and earlier

Revised: 3/4/85
Security: Everyone

Business Basic III: VARIABLE ERROR in version 1.1 and earlier

=====

The most common cause for a variable error in versions 1.1 and earlier of Apple III Business Basic is to use SWAP with at least one of the arguments set to a null string: doing so creates an error in the string variable storage area. Unfortunately, these versions of Business Basic don't notice this error until they run short on storage space and try to consolidate all free space; the variable error occurs when the consolidation routine finds the swapped null string. The following fragment of code will generate this error:

```
10 T$ = "The little red fox jumped over the lazy dog's back ten times."  
20 PRINT "Length of T$ is " LEN(T$); TAB(40); "Length of B$ is " LEN(B$)  
30 SWAP T$, B$  
40 PRINT "Length of T$ is " LEN(T$); TAB(40); "Length of B$ is " LEN(B$)  
50 PRINT FRE
```

This problem has been fixed in versions 1.2 and later.

Apple Technical Communications

Tech Info Library Article Number:909



Tech Info Library

Lisa: Restart After Installing the Dictionary

Revised: 7/30/87
Security: Everyone

Lisa: Restart After Installing the Dictionary

=====

Even though the Lisa often restarts after installing the dictionary, this restart does not necessitate repairing the hard disk. You may begin using the system immediately.

Tech Info Library Article Number:910



Tech Info Library

LisaDraw: Printing 18-point bold italic text

Revised: 11/15/84
Security: Everyone

LisaDraw: Printing 18-point bold italic text

=====

Even though 18-point bold italic appears to be fine on the screen, it may grow 10 to 15% in size when printed, possibly overrunning any boxes it may have been placed in or graphics it was placed close to.

Apple Technical Communications

Tech Info Library Article Number:911



Tech Info Library

Brother Printer: Printing from AppleWorks (9/95)

Revised: 9/19/95
Security: Everyone

Brother Printer: Printing from AppleWorks (9/95)

Article Created: 17 December 1984
Article Reviewed/Updated: 19 September 1995

TOPIC -----

This article describes printing tips to use with a Brother Printer when printing from AppleWorks using an Apple IIc or IIe computer.

DISCUSSION -----

Since the Brother printer requires certain escape sequences to include a CTRL-I, the escape sequences in the Brother Manual may have to be modified in order to avoid interface cards from "trapping" the CTRL-I in the card. This occurs in the following situations:

1. Apple IIe with Super Serial Card -- add the following IN FRONT OF THE NORMAL SEQUENCE: <CTRL-I> Z RETURN
2. Apple IIc -- add the following IN FRONT OF THE NORMAL SEQUENCE: <CTRL-I> Z
3. Apple IIe with Apricorn parallel card and parallel Brother printer -- add the following IN FRONT OF THE NORMAL SEQUENCE: <CTRL-I> <CTRL-A>

Also, Brother's 10-pitch command requires a carriage return as part of the sequence, which does not appear to ever get to the printer. Instead, use the "set to switch command" (<ESC>S) to get back to 10-pitch.

BEST DIP SWITCH SETTINGS FOR APRICORN PARALLEL CARD:

	1	2	3	4
ON	X			
OFF		X	X	X

These settings force an 80-column mode and turn off the screen while printing, just like the serial card does.

APPLEWORKS PRINTER CODES TO USE:

Interface Cards (version 1.2) -- none

10-pitch -- <ESC>S

12-pitch -- <ESC><CTRL-_><CTRL-K>

15-pitch -- Super Serial Card: <CTRL-I>Z<RETURN><ESC><CTRL-_><CTRL-I>

IIc: <CTRL-I>Z<ESC><CTRL-_><CTRL-I>

Parallel Card: <CTRL-I><CTRL-A><ESC><CTRL-_><CTRL-I>

6-LPI -- Super Serial Card: <CTRL-I>Z<RETURN><ESC><CTRL-6><CTRL-I>

IIc: <CTRL-I>Z<ESC><CTRL-6><CTRL-I>

Parallel Card: <CTRL-I><CTRL-A><ESC><CTRL-6><CTRL-I>

8-LPI -- <ESC><CTRL-6><CTRL-G>

Bold Begin: <ESC>F

Bold End: <ESC>&

Subscript Begin: <ESC>U

Subscript End: <ESC>D

Superscript Begin: <ESC>D

Superscript End: <ESC>U

Underline Begin: <ESC>E

Underline End: <ESC>R

Article Change History:

19 Sep 1995 - Reformatted it to meet current standards.

20 Dec 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:913



Tech Info Library

Manugistics, Inc. (formerly STSC, Inc.)

Revised: 7/16/93
Security: Everyone

Manugistics, Inc. (formerly STSC, Inc.)

=====

Article Created: 19 November 1987
Article Reviewed/Updated: 16 July 1993

Manugistics, Inc.

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Company Profile:

Formerly STSC, Inc., software, specializing in application development systems.

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Tech Info Library Article Number:914



Tech Info Library

Macintosh II: Problems With Limelight Projector

Revised: 7/8/92
Security: Everyone

Macintosh II: Problems With Limelight Projector

=====

Article Created: 29 September 1987
Article Last Reviewed: 6 July 1992
Article Last Updated:

TOPIC -----

I'm having problems using a Limelight projector with a Macintosh II. The resolution isn't very good.

DISCUSSION -----

There are two problems with connecting a Limelight to a Macintosh II video card:

1. The Macintosh II video card has a 15 pin DB-style female connector, whereas the Limelight has a BNC female input.
2. The Macintosh II video signals are 35KHz for horizontal frequency and 66.67Hz for vertical scan rate. To properly display the video signal, a bandwidth of 21 MHz for monochrome and 22MHz for color is needed. The Limelight projector has a bandwidth of 20Mhz and a horizontal auto lock maximum frequency of 33Khz

The first problem can be fixed with a specially configured cable. We wired a Macintosh video cable to split the green signal on pin 5 to a BNC connector. This cable allowed connection of both the monitor and the projector. Another solution would be to contact Arizona Covid or Extron Electronics. These companies manufacture break-out cables and converter boxes. In this case, it would merely be a cable change. Although some enhancements (vertical and horizontal picture centering or color enhancement) are included in their converter boxes, this is not particularly useful on a monochrome projector like the Limelight. Since screen position controls are also supplied on the projector, a converter will probably not be needed.

The second problem is not as easily dealt with without modifications to the projector. Since its circuitry can not accept higher frequency data rates, there is some image loss. Also, the plastic lens of the projector can't focus all parts of the screen clearly, resulting in a good deal of blurring on the edges. (A curved-back screen helps somewhat.) Though the Limelight specification claims a maximum of 33 KHz for the horizontal scan rate, the projector we tested was able to handle a full line of video from the Macintosh at 35KHz. This may be a specification set below the performance level on the projector -- however, the Macintosh scan frequencies were pushing the limits of the projector: it took very little adjustment to the horizontal control to lose the signal. A black box is not likely to sharpen the image by modifying the signals, since the problems are inherent in the projector's ability to handle the resolution. As it stands, with a break-out cable the projector does display the Macintosh II video, though the image may be objectionable to some.

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Tech Info Library Article Number:915



Tech Info Library

EtherTalk: Ethernet Connectivity for the Macintosh II

Revised: 7/1/92
Security: Everyone

EtherTalk: Ethernet Connectivity for the Macintosh II

=====

Article Created: 16 October 1987
Article Last Reviewed: 26 June 1992
Article Last Updated:

TOPIC -----

This is an article about EtherNet for the Macintosh.

DISCUSSION -----

Overview

EtherTalk demonstrates that AppleTalk is a network architecture independent of media type. EtherTalk increases AppleTalk's bandwidth significantly by using Ethernet, an industry standard medium. It also provides increased throughput for transmission-intensive applications while implementing the layered features and functionality of the AppleTalk architecture.

Installation

The EtherTalk card is easy to install and use. You don't need to worry about the Ethernet Link Access Protocol address assignments. Each EtherTalk card has a unique address, assigned at the factory and stored on the card. The driver automatically looks for and uses this address on an Ethernet network. (The network address is also printed on a label on the back of the board.)

Features

EtherTalk Macintosh OS software redirects AppleTalk packets from the printer port to the EtherTalk card. These packets are then encapsulated in Ethernet Link Access Protocol and then sent out onto the network. EtherTalk operates at speeds up to 10MBPS. The card can be configured for use on 'thick' or 'thin' Ethernet networks. (See the EtherTalk Interface

Card manual for configuration details.)

You can connect a LocalTalk node to the printer port with one or more EtherTalk cards installed, and switch between the printer port or any one of the EtherTalk cards. Only one AppleTalk path can be active at any one time, and the 'network' function in the control panel is used to select the active network. (See Chapter 2 of the EtherTalk User's Guide.) There is a limit of 254 active EtherTalk users (including bridges) on any one Ethernet.

Performance

EtherTalk improves AppleTalk throughput, depending on the level of 'foreign' Ethernet traffic and total available bandwidth. A practical expectation is an improvement of 1.3 to 3 times over LocalTalk connections, with a total capacity of 3 to 5 times that of LocalTalk networks.

Bridges

An EtherTalk Macintosh II can't act as a bridge between a LocalTalk network and Ethernet. It's possible to write bridging software, but none is included with the EtherTalk product.

AppleTalk Protocol Notes

EtherTalk under Macintosh OS implements AppleTalk according to Inside AppleTalk specification with some enhancements to allow operation on Ethernet networks. This means that Ethernet devices that don't implement these protocols and enhancements will be unable to 'see' the card on an Ethernet network. This is applicable only under Macintosh OS using AppleTalk protocol.

Under Macintosh OS, a special driver (.ENET) is utilized to 'push' packets onto the network. This driver is similar to the LocalTalk driver. Packets sent by this driver in AppleTalk mode are restricted to 768 bytes to allow encapsulation by an Ethernet LAP.

These packets will co-exist with TCP/IP, XNS or other Ethernet protocols on the same network without problem.

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Tech Info Library Article Number:916



Tech Info Library

Macintosh: Don't Have More Than One System Folder per Disk

Revised: 10/21/87
Security: Everyone

Macintosh: Don't Have More Than One System Folder per Disk

=====

This article last reviewed: 21 October 1987

In spite of what you may have read -- for example, on page 24 of the Macintosh Hard Disk 20 manual -- a given disk, be it a floppy, HD 20 or SCSI drive, should contain one and only one System folder.

Tech Info Library Article Number:917



Tech Info Library

Macintosh Pascal 1.0: Screen Echo

Revised: 3/4/85
Security: Everyone

Macintosh Pascal 1.0: Screen Echo

=====

To defeat the echo to the screen when entering data from the keyboard, use the GET statement rather than the READ statement. For example:

```
Program No_Display(input, output);
Var
  i:integer;
  v:array [1..10] of char;
Begin
  i:=1;
  Writeln('Enter 10 Character Password:');
  While i <=10 do
    Begin
      Get(input);
      v[i]:=input^;
      i:=i+1;
    End;{while}
End.
```

Apple Technical Communications

Tech Info Library Article Number:921



Tech Info Library

Macintosh Pascal 1.0: Putting comments into the code

Revised: 3/24/87
Security: Everyone

Macintosh Pascal 1.0: Putting comments into the code

=====

Multi-line comments with a single pair of brackets are not allowed in Macintosh Pascal; instead, you must frame each line of the comment with its own set of brackets.

To work around the problem of using large blocks of comments within MacPascal, break up large blocks of comments with a valid Pascal statement. A declaration, begin or end statement, etc. will do the job, and the program can then be loaded normally. You might also try severely limiting the number of consecutive comments on lines by themselves.

There are no plans to change this situation, documented in the new version of the MacPascal Technical Reference manual.

The problem is easily duplicated by creating a Pascal "program" that contains nothing but comments. The key is the number of characters contained in the comments: 20 lines of about 70 characters per line should be sufficient. As long as comments reside on lines following an actual Pascal statement, the problem goes away. But this is not really practical or practiced. This will be submitted to Software Testing for further evaluation.

To create a Macintosh Pascal listing with any amount of comment information, cut and paste your code to another document; you can then add documentation to this listing as you please.

Apple Technical Communications

Tech Info Library Article Number:922



Tech Info Library

ImageWriter II: Faded Print Caused By Damaged Carrier Shaft

Revised: 10/21/87
Security: Everyone

ImageWriter II: Faded Print Caused By Damaged Carrier Shaft

=====

This article last reviewed: 21 October 1987

If an ImageWriter II is dropped or handled roughly, the carrier shaft bushing may break, allowing the carriage to pull away from the platen on one side. Output looks fine on one side of the paper, but gradually fades out as it moves to the opposite side of the paper. Adjusting the paper thickness lever doesn't cure the problem.

The carrier shaft bushing may appear intact, but if you look closer, the two small dimples that the shims mount to are probably fractured or broken off. Replace the broken carrier shaft bushing (958-0006).

Tech Info Library Article Number:923



Tech Info Library

GCC Technologies

Revised: 4/2/97
Security: Everyone

GCC Technologies

=====

Article Created: 11/21/87
Article Reviewed: 07/08/93
Article Updated: 04/02/97

GCC Technologies

209 Burlington Rd.
Bedford, MA 01730

800-422-7777 (Direct Sales)

617-275-5880 (Corp. Office)

617-276-8833 Fax
617-275-1115 Fax Corp.

Company Profile:

Hardware and software, specializing in internal and external hard disk drives, accelerator cards, laser printers, and file server software, quickdraw and postscript pointers

Article Change History:

02 April 1997 - Removed expired on-line email address.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:924



Tech Info Library

Super Serial Card: Cable for Anadex DP-9500, DP-9501 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Anadex DP-9500, DP-9501 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a
Anadex DP-9500 or DP-9501 printer?

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....(FG)	
Transmit Data (Tx)	2	<----->	3.....(Rx)	
Receive Data (Rx)	3			
Request to send (RTS)	4			
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	19.....(SCTS)	
Signal Ground .....(SG).....	7	<----->	7.....(SG)	
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:926



Tech Info Library

Super Serial Card: Cable for Axiom EX-801, EX-820 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Axiom EX-801, EX-820 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to an Axiom EX-801 or EX-820 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....	(FG)
Transmit Data (Tx)	2	<----->	3.....	(Rx)
Receive Data (Rx)	3			
Request to send (RTS)	4			
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	20.....	(DTR)
Signal Ground .....(SG).....	7	<----->	7.....	(SG)
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:927



Tech Info Library

Super Serial Card: Cable for Centronics 737 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Centronics 737 (11/96)

Article Created: 04 December 84
Article Reviewed/Updated: 20 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Centronics 737 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....(FG)	
Transmit Data (Tx)	2	<----->	3.....(Rx)	
Receive Data (Rx)	3			
Request to send (RTS)	4	<----->	6 & 8..(DSR) & (DCD)	
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	11	
Signal Ground .....(SG).....	7	<----->	7.....(SG)	
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
20 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:928



Tech Info Library

Super Serial Card: Cable for C.Itoh, C.Itoh F10 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for C.Itoh, C.Itoh F10 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a C.Itoh or C.Itoh F10 printer.

DISCUSSION -----

C.Itoh Printer

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1	<----->	1.....	(FG)
Transmit Data	(Tx) 2	<----->	3.....	(Rx)
Receive Data	(Rx) 3			
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6	<----->	20.....	(DTR)
Signal Ground	(SG)..... 7	<----->	7.....	(SG)
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20			

* Check C.Itoh owners manual for additional information on setting the printer's option jumpers.

C.Itoh F10 Printer

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
-------------------------	-----	-------	-----	-------------------

Frame Ground	.....(FG).....	1	<----->	1	.....(FG)
Transmit Data	(Tx)	2	<----->	3	.....(Rx)
Receive Data	(Rx)	3	<----->	2	.....(Tx)
Request to send	(RTS)	4	<----->	8	.....(DCD)
Clear To Send	(CTS)	5	<----->	8	.....(DCD)
Data Set Ready	(DSR)	6	<----->	20	.....(TDR)
Signal Ground	.....(SG).....	7	<----->	7	.....(SG)
Data Carrier Detect	(DCD)	8	<----->	4 & 5	.(RTS) & (CTS)
Secondary Clear To Send	(SCTS) ...	19			
Data Terminal Ready	(DTR)	20	<----->	6	.....(DSR)

* Use printer at 1200 Baud.

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:929



Tech Info Library

Super Serial Card: Cable for the C. Itoh F10

Revised: 12/4/84
Security: Everyone

Super Serial Card: Cable for the C. Itoh F10

=====

Super Serial Card (SSC)	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<-----> 1	.....(FG)
Transmit Data (Tx) 2	<-----> 3	.....(Rx)
Receive Data (Rx) 3	<-----> 2	.....(Tx)
Request to send (RTS) 4	<-----> 8	.....(DCD)
Clear To Send (CTS) 5	<-----> 8	.....(DCD)
Data Set Ready (DSR) 6	<-----> 20	....(TDR)
Signal Ground .....(SG)..... 7	<-----> 7	.....(SG)
Data Carrier Detect (DCD) 8	<-----> 4 & 5	.(RTS) & (CTS)
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20	<-----> 6	.....(DSR)

NOTE: This is the standard Apple Modem Eliminator cable part # A3M0019.

NOTE: Use printer at 1200 Baud.

Apple Technical Communications

Tech Info Library Article Number:930



Tech Info Library

Super Serial Card: Cable for Comprint 912 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Comprint 912 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Comprint 912 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....(FG)	
Transmit Data (Tx)	2	<----->	3.....(Rx)	
Receive Data (Rx)	3			
Request to send (RTS)	4			
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	20.....(DTR)	
Signal Ground .....(SG).....	7	<----->	7.....(SG)	
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

* Check Comprint owners manual for correct setting of the printer option jumpers.

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:931



Tech Info Library

Super Serial Card: Cable for DEC LA34, DEC LA120 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for DEC LA34, DEC LA120 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a DEC LA34 or LA120 printer.

DISCUSSION -----

DEC LA34 Cable -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1	<----->	1.....	(FG)
Transmit Data	(Tx) 2	<----->	3.....	(Rx)
Receive Data	(Rx) 3			
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6	<----->	20.....	(DTR)
Signal Ground	(SG)..... 7	<----->	7.....	(SG)
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20			

* Use printer at 300 Baud.

DEC LA120 Cable -----

Super Serial Card (SSC)	Pin	Cable	Printer Connector
Frame Ground	(FG)..... 1	<----->	1 (FG)

Transmit Data	(Tx) 2	<-----> 3(Rx)
Receive Data	(Rx) 3	<-----> 2(Tx)
Request to send	(RTS) 4	<-----> 8(DCD)
Clear To Send	(CTS) 5	<-----> 8(DCD)
Data Set Ready	(DSR) 6	<-----> 20(TDR)
Signal Ground	(SG) 7	<-----> 7(SG)
Data Carrier Detect	(DCD) 8	<-----> 4 & 5 .(RTS) & (CTS)
Secondary Clear To Send	(SCTS) . . . 19	
Data Terminal Ready	(DTR) 20	<-----> 6(DSR)

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:932



Tech Info Library

Super Serial Card: Cable for Diablo 630 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Diablo 630 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Diablo 630 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....	(FG)
Transmit Data (Tx)	2	<----->	3.....	(Rx)
Receive Data (Rx)	3			
Request to send (RTS)	4	<----->	6 & 8.	(DSR) & (DCD)
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	11	
Signal Ground .....(SG).....	7	<----->	7.....	(SG)
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:934



Tech Info Library

Super Serial Card: Cable for Epson MX-70, MX-80, MX-100 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Epson MX-70, MX-80, MX-100 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a
Expson MX-70, MX-80 or MX-100 printer.

DISCUSSION -----

MX-70 & MX-80 Cable -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1	<----->	1.....	(FG)
Transmit Data	(Tx) 2	<----->	3.....	(Rx)
Receive Data	(Rx) 3			
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6	<----->	11	
Signal Ground	(SG)..... 7	<----->	7.....	(SG)
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20			

* Use printer at 9600 Baud.

MX-100 Cable -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1	<----->	1.....	(FG)

Transmit Data	(Tx)	..... 2	<----->	3.....(Rx)
Receive Data	(Rx)	..... 3		
Request to send	(RTS)	.... 4		
Clear To Send	(CTS)	.... 5		
Data Set Ready	(DSR)	.... 6	<----->	20.....(DTR)
Signal Ground	(SG).....	7	<----->	7.....(SG)
Data Carrier Detect	(DCD)	.... 8		
Secondary Clear To Send	(SCTS)	... 19		
Data Terminal Ready	(DTR)	.... 20		

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:935



Tech Info Library

Super Serial Card: Cable for Heathkit H-14 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Heathkit H-14 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Heathkit H-14 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....(FG)	
Transmit Data (Tx)	2	<----->	3.....(Rx)	
Receive Data (Rx)	3			
Request to send (RTS)	4			
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	4.....(RTS)	
Signal Ground .....(SG).....	7	<----->	7.....(SG)	
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:937



Tech Info Library

Super Serial Card: Cable for IDS 125,225,440,445,460,560 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for IDS 125,225,440,445,460,560 (11/96)

=====

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a IDS 125, 225, 440, 445, 460, or 560 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1			
Transmit Data	(Tx) 2	<----->	3.....	(Rx)
Receive Data	(Rx) 3			
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6	<----->	20.....	(DTR)
Signal Ground	(SG)..... 7	<----->	7.....	(SG)
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:938



Tech Info Library

Super Serial Card: Cable for Qume Sprint 5 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Qume Sprint 5 (11/96)

=====

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Qume Sprint 5 printer.

DISCUSSION -----

Super Serial Card (SSC)	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<-----> 1	.....(FG)
Transmit Data (Tx) 2	<-----> 3	.....(Rx)
Receive Data (Rx) 3	<-----> 2	.....(Tx)
Request to send (RTS) 4	<-----> 8	.....(DCD)
Clear To Send (CTS) 5	<-----> 8	.....(DCD)
Data Set Ready (DSR) 6	<-----> 20	.....(TDR)
Signal Ground .....(SG)..... 7	<-----> 7	.....(SG)
Data Carrier Detect (DCD) 8	<-----> 4 & 5	.(RTS) & (CTS)
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20	<-----> 6	.....(DSR)

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:941



Tech Info Library

Super Serial Card: Cable for Teletype 43 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Teletype 43 (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Teletype 43.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....(FG)	
Transmit Data (Tx)	2	<----->	3.....(Rx)	
Receive Data (Rx)	3			
Request to send (RTS)	4			
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	20.....(DTR)	
Signal Ground .....(SG).....	7	<----->	7.....(SG)	
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20			

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:942



Tech Info Library

Super Serial Card: Cable for TI 810 Printer (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for TI 810 Printer (11/96)

Article Created: 04 December 1984
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a TI 810 printer.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground	(FG)..... 1	<----->	1.....	(FG)
Transmit Data	(Tx) 2	<----->	3.....	(Rx)
Receive Data	(Rx) 3			
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6	<----->	20.....	(DTR)
Signal Ground	(SG)..... 7	<----->	7.....	(SG)
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20			

Printer settings

* 1200 baud, Odd Parity, 7 Data Bits and 1 Stop Bit.

* Jumper Pins 6, 8, and 9 together on the printer but not connect them to the Super Serial card.

* Switch 1 2 3 4 5 6 7 (The switch is located inside the access cover.)
1 1 0 1 1 1 1

Super Serial card settings

Switch Settings: 1 = On = Closed; 0 = Off = Open

Switch	1	2	3	4	5	6	7
SW1:	0	1	1	1	1	1	1
SW2:	1	0	1	0	1	0	0

Article Change History:

21 Nov1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1984-96, Apple Computer, Inc.

Tech Info Library Article Number:943



Tech Info Library

Apple III Serial Port: Cables for the Anadex DP-9500 and DP-9501

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cables for the Anadex DP-9500 and DP-9501

=====

III SERIAL PORT	Cable	Printer Connector
Frame Ground .....(FG).....	1	<-----> 1.....(FG)
Transmit Data (Tx)	2	<-----> 3.....(Rx)
Receive Data (Rx)	3	
Request to send (RTS)	4	
Clear To Send (CTS)	5	
Data Set Ready (DSR)	6	<-----> 19.....(SCTS)
Signal Ground .....(SG).....	7	<-----> 7.....(SG)
Data Carrier Detect (DCD)	8	
Secondary Clear To Send (SCTS) ...	19	
Data Terminal Ready (DTR)	20	

NOTE: Check Parity, Baud Rate, Stop Bits...

Apple Technical Communications

Tech Info Library Article Number:944



Tech Info Library

Apple III Serial Port: Cables for the Axiom EX-801 and EX-820

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cables for the Axiom EX-801 and EX-820

=====

Apple III SERIAL PORT	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20.....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:945



Tech Info Library

Apple III Serial Port: Cable pinouts for the Centronics 737

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Centronics 737

=====

Apple III SERIAL PORT	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4	<----->	6 & 8..(DSR) & (DCD)
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	11
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:946



Tech Info Library

Yokogawa Corporation of America

Revised: 7/21/93
Security: Everyone

Yokogawa Corporation of America

=====

Article Created: 21 November 1987
Article Reviewed/Updated: 21 July 1993

Yokogawa Corporation of America

2 Dart Rd.
Shenandoah Industrial Park
Newnan, GA 30265

404-253-7000

800-445-8467

Fax: 404-251-2088

Company Profile:
Hardware, specializing primarily in meter and recorders.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:947



Tech Info Library

Apple III Serial Port: Cable pinouts for the C. Itoh F10

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the C. Itoh F10

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<-----> 1	.....(FG)
Transmit Data (Tx) 2	<-----> 3	.....(Rx)
Receive Data (Rx) 3	<-----> 2	.....(Tx)
Request to send (RTS) 4	<-----> 8	.....(DCD)
Clear To Send (CTS) 5	<-----> 8	.....(DCD)
Data Set Ready (DSR) 6	<-----> 20	.....(TDR)
Signal Ground .....(SG)..... 7	<-----> 7	.....(SG)
Data Carrier Detect (DCD) 8	<-----> 4 & 5	.(RTS) & (CTS)
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20	<-----> 6	.....(DSR)

NOTE: This is the standard Apple Modem Eliminator cable part # A3M0019.

NOTE: Use printer at 1200 Baud.

Apple Technical Communications

Tech Info Library Article Number:948



Tech Info Library

Apple III Serial Port: Cable pinouts for the Comprint 912

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Comprint 912

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20.....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

NOTE: Check printer option jumpers.

Apple Technical Communications

Tech Info Library Article Number:949



Tech Info Library

Apple III Serial Port: Cable pinouts for the DEC LA34

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the DEC LA34

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20.....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

NOTE: Use at 300 Baud.

Apple Technical Communications

Tech Info Library Article Number:950



Tech Info Library

Apple III Serial Port: Cable pinouts for the DEC LA120

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the DEC LA120

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<-----> 1	.....(FG)
Transmit Data (Tx) 2	<-----> 3	.....(Rx)
Receive Data (Rx) 3	<-----> 2	.....(Tx)
Request to send (RTS) 4	<-----> 8	.....(DCD)
Clear To Send (CTS) 5	<-----> 8	.....(DCD)
Data Set Ready (DSR) 6	<-----> 20	....(TDR)
Signal Ground .....(SG)..... 7	<-----> 7	.....(SG)
Data Carrier Detect (DCD) 8	<-----> 4 & 5	.(RTS) & (CTS)
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20	<-----> 6	.....(DSR)

NOTE: This is the standard Apple Modem Eliminator cable part # A3M0019.

Apple Technical Communications

Tech Info Library Article Number:951



Tech Info Library

Apple III Serial Port: Cable pinouts for the Diablo 630

Revised: 8/29/86
Security: Everyone

Apple III Serial Port: Cable pinouts for the Diablo 630

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4	<----->	6 & 8.(DSR) & (DCD)
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:952



Tech Info Library

Apple III Serial Port: Cable pinouts for Epson MX-70 and MX-80

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for Epson MX-70 and MX-80

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	11
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

NOTE: Use at 9600 Baud.

Apple Technical Communications

Tech Info Library Article Number:953



Tech Info Library

Apple III Serial Port: Cable pinouts for the Epson MX-100

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Epson MX-100

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20.....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:954



Tech Info Library

Apple III Serial Port: Cable pinouts for the Heathkit H-14

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Heathkit H-14

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	4.....(RTS)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:955



Tech Info Library

Apple III Serial Port: Pinouts: IDS 125, 225, 440, 445, 460, 560

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Pinouts: IDS 125, 225, 440, 445, 460, 560

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1		
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:956



Tech Info Library

Apple III Serial Port: Cable pinouts for NEC printers

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for NEC printers

=====

These pinouts are for the NEC 5510/7710, 5515/7715, 5520/7720, and 5525/7725.

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG).....	1 <----->	1.....(FG)
Transmit Data (Tx)	2 <----->	3.....(Rx)
Receive Data (Rx)	3	
Request to send (RTS)	4 <----->	5.....(CTS)
Clear To Send (CTS)	5	
Data Set Ready (DSR)	6 <----->	19.....(SCTS)
Signal Ground .....(SG).....	7 <----->	7.....(SG)
Data Carrier Detect (DCD)	8	
Secondary Clear To Send (SCTS) ...	19	
Data Terminal Ready (DTR)	20 <----->	6 & 8.(DSR) & (DCD)

NOTE: Printer dip switches need to be set as shown;

SW1 1 - OPEN
 2 - CLOSED
 3 - OPEN
 4 - OPEN
 5 - CLOSED
 6 - OPEN
 7 - CLOSED
 8 - OPEN

Apple Technical Communications

Tech Info Library Article Number:957



Tech Info Library

Apple III Serial Port: Cable pinouts for Okidata 82A and 83A

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for Okidata 82A and 83A

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG).....	1	<-----> 1.....(FG)
Transmit Data (Tx)	2	<-----> 3.....(Rx)
Receive Data (Rx)	3	
Request to send (RTS)	4	
Clear To Send (CTS)	5	
Data Set Ready (DSR)	6	<-----> 11
Signal Ground .....(SG).....	7	<-----> 7.....(SG)
Data Carrier Detect (DCD)	8	
Secondary Clear To Send (SCTS) ...	19	
Data Terminal Ready (DTR)	20	

NOTE: Printer dip switches need to be set as shown:

FRONT		BACK	
1 - OPEN		1 - CLOSED	
2 - OPEN		2 - CLOSED	
3 - OPEN		3 - OPEN	
4 - OPEN		4 - CLOSED	
5 - CLOSED		5 - OPEN	
6 - OPEN		6 - CLOSED	
7 - OPEN			
8 - CLOSED			

NOTE: Jumper blocks should be in position A.

Apple Technical Communications

Tech Info Library Article Number:958



Tech Info Library

Apple III Serial Port: Cable pinouts for the Qume Sprint 5

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Qume Sprint 5

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<-----> 1	.....(FG)
Transmit Data (Tx) 2	<-----> 3	.....(Rx)
Receive Data (Rx) 3	<-----> 2	.....(Tx)
Request to send (RTS) 4	<-----> 8	.....(DCD)
Clear To Send (CTS) 5	<-----> 8	.....(DCD)
Data Set Ready (DSR) 6	<-----> 20	....(TDR)
Signal Ground .....(SG)..... 7	<-----> 7	.....(SG)
Data Carrier Detect (DCD) 8	<-----> 4 & 5	.(RTS) & (CTS)
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20	<-----> 6	.....(DSR)

NOTE: This is the standard Apple Modem Eliminator cable part # A3M0019.

Apple Technical Communications

Tech Info Library Article Number:959



Tech Info Library

Apple III Serial Port: Cable pinouts for the Teletype 43

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the Teletype 43

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	20.....(DTR)
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:960



Tech Info Library

Apple III Serial Port: Cable pinouts for the TI 810

Revised: 12/4/84
Security: Everyone

Apple III Serial Port: Cable pinouts for the TI 810

=====

Apple III Serial Port	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4	<----->	6 & 8.(DSR) & (DCD)
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	11
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

Apple Technical Communications

Tech Info Library Article Number:961



Tech Info Library

Apple III Serial Cable For Anderson Jacobson Printers (9/95)

Revised: 9/20/95
Security: Everyone

Apple III Serial Cable For Anderson Jacobson Printers (9/95)

Article Created: 4 December 1984
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Description of cable for Anderson Jacobson Printer Models 832, 833, 841.

DISCUSSION -----

Begin_Table

Apple III Serial Port		Cable		Printer Connector
-----		----		-----
Frame Ground	(FG).....	1	<----->	1 .....(FG)
Transmit Data	(Tx)	2	<----->	3 .....(Rx)
Receive Data	(Rx)	3	<----->	2 .....(Tx)
Request to send	(RTS)	4	<----->	8 .....(DCD)
Clear To Send	(CTS)	5	<----->	8 .....(DCD)
Data Set Ready	(DSR)	6	<----->	20 ....(TDR)
Signal Ground	(SG).....	7	<----->	7 .....(SG)
Data Carrier Detect	(DCD)	8	<----->	4 & 5 .(RTS) & (CTS)
Secondary Clear To Send	(SCTS) ...	19		
Data Terminal Ready	(DTR)	20	<----->	6 .....(DSR)

NOTE: This is the standard Apple Modem Eliminator cable part # A3M0019.

NOTE: Install printer jumper at location "F"

End_Table

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.

Support Information Services

Apple Technical Communications



Tech Info Library

Apple III Serial Port: Pinouts (6/94)

Revised: 6/27/94
Security: Everyone

Apple III Serial Port: Pinouts (6/94)

=====

Article Created: 12 April 1984
Article Reviewed/Updated: 27 June 1994

TOPIC -----

This article provides the pinouts and signal descriptions for the Apple /// serial port.

DISCUSSION -----

DB 25	
Connector	Signal Name
1	..... Frame Ground
2	..... Transmit Data (Tx)
3	..... Receive Data (Rx)
4	..... Request to send (RTS)
5	..... Clear To Send (CTS)
6	..... Data Set Ready (DSR)
7	..... Signal Ground
8	..... Data Carrier Detect (DCD)
19	..... Secondary Clear To Send (SCTS)
20	..... Data Terminal Ready (DTR)

Article Change History:
27 Jun 1994 - Revised formatting, revised title.

Support Information Services

Copyright 1984-94 Apple Computer, Inc.

Tech Info Library Article Number:963



Tech Info Library

Lisa 7/7: Installing OS 3.1 & Pascal Workshop 3.0 on Hard Disk

Revised: 7/30/87
Security: Everyone

Lisa 7/7: Installing OS 3.1 & Pascal Workshop 3.0 on Hard Disk

=====

To install Lisa 7/7 Office System 3.1 or 3.0 and Pascal Workshop 3.0 on a hard disk:

1. Backup any Office System or Macintosh documents from the hard disk.
2. Install the 7/7 Office System (release 3.0 or 3.1) as detailed in Chapter 6 of the Lisa Office System manual.
 - a. Select Erase when prompted.
 - b. Select Share if you wish to store Macintosh software on the hard disk
3. Install the Pascal Workshop as described in Chapter 1 of the Lisa Workshop manual. Select Don't Erase when prompted.
4. If you installed release 3.0 in step 2 above and want to upgrade to 3.1,
 - a. Get into the Workshop environment and insert the Release 3.1 Office System 2 diskette into the microdrive.
 - b. From the Workshop command line, type R.
 - c. When asked which file you wish to run, type: <-lower-StartUpdate.
 - d. Press the RETURN key.
 - e. You are then guided through the process of updating the system libraries. After answering a series of questions, follow the prompts to insert the necessary disks.
 - f. Since the update process changes the libraries on the startup disk,
 1. Restart the Lisa when you've completed step 4e.
 2. Replace the LisaWrite and LisaProject tools and stationary pads on the hard disk with the updated versions.

Tech Info Library Article Number:964



Tech Info Library

LaserWriter/LaserWriter Plus: External Pinouts (7/94)

Revised: 7/12/94
Security: Everyone

LaserWriter/LaserWriter Plus: External Pinouts (7/94)

Article Created: 29 May 1985
Article Reviewed/Updated: 12 July 1994

TOPIC -----

What are the external signals associated with the DB-25 and DB-9 connectors on the LaserWriter and LaserWriter Plus?

DISCUSSION -----

Here are the pinouts and signal names for the LaserWriter and LaserWriter Plus.

DB-25

Connector	Signal Name
1	Frame Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
4	Request to Send (RTS)
7	Signal Ground
20	Data Terminal Ready (Tx)

NOTE: The other signals are not used.

DB-9

Connector	Signal Name
1	Chassis Ground
3	Signal Ground
4	Transmit Data (Dx+)
5	Transmit Data (Tx-)
7	Data Set Ready (DSR)
8	Receive Data (Rx+)
9	Receive Data (Rx-)

NOTE: RTS and DTR are only present for the convenience of the computer that the

LaserWriter is attached to. You should use Xon/Xoff for flow control.

Article Change History:

12 Jul 1994 - Revised formatting, reviewed for technical accuracy.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:965



Tech Info Library

Macintosh: External Floppy Drive Connector Pinouts (5/96)

Revised: 5/15/96
Security: Everyone

Macintosh: External Floppy Drive Connector Pinouts (5/96)

Article Created: 29 May 1985
Article Reviewed/Updated: 15 May 1996

TOPIC -----

What are the pinouts for the External Disk Drive Connector?

DISCUSSION -----

The external floppy disk drive connector is featured on the Macintosh 128K, 512K, 512K enhanced, Plus, SE, SE/30, Classic, Classic II, IICx, IICI, IISI, Portable, and Performa 200.

A Macintosh 400K External Drive can be connected to the Macintosh 128K, 512K, 512K enhanced, Plus, SE, and Portable.

A Macintosh 800K External Drive or an Apple 3.5 Drive can be connected to the Macintosh 512K enhanced, Plus, SE, SE/30, Classic, Classic II, IICx, IICI, IISI, and Performa 200.

An Apple SuperDrive can be connected to the Macintosh SE (with SuperDrive upgrade), SE/30, Classic, Classic II, IICx, IICI, IISI, and Performa 200

An Apple Hard Disk 20 can be connected to a Macintosh 512K, 512K enhanced, Plus, and SE.

Begin_Table

Connector type: DB-19.

.	Pin	Name	Description/Notes
.	1	CGND	Chassis ground
.	2	CGND	Chassis ground
.	3	CGND	Chassis ground
.	4	CGND	Chassis ground

.	5	-12V	
.	6	+5V	
.	7	+12V	
.	8	+12V	
.	9	N/C	Not connected
.	10	PWM	Regulates speed of the drive
.	11	PH0	Control line to send commands to drive
.	12	PH1	Control line to send commands to drive
.	13	PH2	Control line to send commands to drive
.	14	PH3	Control line to send commands to drive
.	15	WrReq-	Turns on the ability to write data to the drive
.	16	HdSel	Control line to send commands to the drive
.	17	Enbl2-	Enables the Rd line (else Rd is tristated)
.	18	Rd	Data actually read from the drive
.	19	Wr	Data actually written to the drive

End_Table

Article Change History:

15 May 1996 - Corrected list of relevant CPUs

19 Sep 1995 - Revised to show discontinued upgrade.

05 May 1995 - Corrected minor error; reformatted for readability.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:966



Tech Info Library

Macintosh 128K,512K,Plus: Keyboard connector pinouts

Revised: 7/16/92
Security: Everyone

Macintosh 128K,512K,Plus: Keyboard connector pinouts

=====

Article Created: 29 May 1985
Article Last Reviewed: 30 June 1992
Article Last Updated: 30 June 1992

TOPIC -----

What are the pinouts for the RJ-11 connector used to connect the keyboard on the Macintosh 128K, 512K, and Plus?

DISCUSSION -----

Early Macintosh models used an RJ-11 (phone) connector for the keyboard. Note that all models since the Plus use the Apple Desktop Bus instead, and are incompatible with these cables and connectors.

Pin	Name	Comments
1	CGND	Chassis Ground
2	KBD1	Keyboard Clock
3	KBD2	Keyboard Data
4	+5V	

Connector Type: RJ-11 Connector, 4 pin male

WARNING: Macintosh Keyboard cable connectors are just like those used in modular telephones, but the cables themselves are not. Never connect these cables to your telephone, and never connect a phone cable to your Macintosh.

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:967



Tech Info Library

Modems overseas: Power, protocol and legal considerations

Revised: 5/29/85
Security: Everyone

Modems overseas: Power, protocol and legal considerations

=====

-- Power for a modem overseas

This is not a problem. Buy a grounded isolation transformer in the country of use, plug the modem's wall outlet transformer into this converter, and the modem's power supply regulates the voltage internally. You should thoroughly investigate the voltage and frequency of the power source, however.

-- Different Protocols

A number of overseas countries use the French standard "CCITT" protocol for modem communications. The systems of some countries may not be suitable for clean data transmission or may not allow communication except on specially conditioned lines.

-- Special Laws restricting data communication

German law, for example, requires a permit to use a communications device. You should acquaint yourself with any national, regional, or local laws or conditions on using modems.

Apple Technical Communications

Tech Info Library Article Number:969



Tech Info Library

Consulair Corp.

Revised: 4/3/97
Security: Everyone

Consulair Corp.

=====

Article Created: 26 November 1987
Article Reviewed/Updated: 02 April 1997

Consulair Corp.
P.O. Box 2192
Ketchum, ID 83340

208-788-1222

Company Profile:
Software, specializing in programming software for the Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:973



Tech Info Library

Apple III: Apple II Emulation mode and RGB Video

Revised: 6/1/85
Security: Everyone

Apple III: Apple II Emulation mode and RGB Video

=====

The Apple III's RGB color video outputs do NOT generate a color signal for High-Resolution Graphics in the Emulator. Apple II High-Resolution images are available only on the NTSC black and white and color video outputs.

On the left border of the high-resolution graphics screen, the dots flicker uncontrollably.

Apple III Owner's Guide, page 144

Tech Info Library Article Number:975



Tech Info Library

LOGO: No Boot on IIC or Enhanced IIE

Revised: 6/5/85
Security: Everyone

LOGO: No Boot on IIC or Enhanced IIE

=====

There are some disks of Apple LOGO with DOS that don't boot on the Apple IIC or Enhanced IIE. The problem stems from the scheme used to protect the disks from illegal copying.

You can recognize these disks by the sign between the words Apple and Logo. The sign is the registered trademark sign, the R in a circle: Apple (R) Logo. Disks so labeled will not work. Send them to Media Exchange for replacement.

Apple Technical Communications

Tech Info Library Article Number:976



Tech Info Library

MacWorks XL: Error on Hard Disk Startup

Revised: 6/5/85
Security: Everyone

MacWorks XL: Error on Hard Disk Startup

=====

A problem with the released version of MacWorks XL can be worked around, even though the exact cause is not clear as yet.

After installing MacWorks on a hard disk dedicated only to Macintosh files, you may get the following error during the boot process: the expansion card icon appears with an X through it and a 2 inside it. There may also be the number 90 below it.

At this point, you have a choice of starting up from one of two disks: hard or floppy. The system will start up fine after you click on the hard disk icon; however, you must make this choice each time for start up. If you unplug the Macintosh XL to clear parameter memory and then reboot, it works fine, directly booting from the hard disk. But the same error message appears the next time you boot.

There are two workarounds: the first takes more time and the second takes more equipment.

First workaround:

1. Install Lisa office system.
2. Set preferences to boot from the hard disk.
3. Re-install MacWorks.

Second workaround:

1. Install a parallel card.
2. Boot Lisa.
3. Set Preferences to Boot from the internal hard disk.

Apple Technical Communications

Tech Info Library Article Number:977



Tech Info Library

LaserWriter: Form feeds and blank pages

Revised: 9/21/87
Security: Everyone

LaserWriter: Form feeds and blank pages

=====

This article last reviewed: 7 June 1985

In Diablo 630 Emulation mode, the LaserWriter prints a page under two conditions: (1) when it reaches the end of a page, or (2) when it receives a form feed. The LaserWriter cannot detect the end of a document; it simply assumes that the document has come to an end when data stops arriving.

If the last page of a document isn't full and doesn't end with a form feed, the printer doesn't print it immediately; instead, it waits for a printer timeout, which occurs (1) as soon as the next document arrives, or (2) after 30 seconds, if no document arrives before that. You can avoid this delay by being careful to include a form feed at the end of your document's last page.

During printing there is a step called data preparation. In this step, the Laserwriter determines how many pages it takes to print the document. There is a possibility that one character, even a carriage return, will force the generation of a blank page at the end of the document. With MacWrite documents, the Laserwriter prints this last page first.

Tech Info Library Article Number:980



Tech Info Library

Kent Marsh Limited, Inc.

Revised: 4/3/97
Security: Everyone

Kent Marsh Limited, Inc.

=====

Article Created: 11/26/87
Article Reviewed: 07/12/93
Article Updated: 04/02/97

Kent Marsh Limited, Inc.

3260 Sul Ross
Houston, TX 77098

800-831-7008

713-522-5625

713-522-8965 Fax

Company Profile:
Software, specializing in Macintosh security systems.

Article Change History: 07/12/93 Phone number information corrected

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:981



Tech Info Library

DuoDisk: Shield service and support notice

Revised: 8/10/87
Security: Everyone

DuoDisk: Shield service and support notice

=====

Currently, all Duodisk mechanical assemblies are NOT being made with threaded screw holes in the bottom of the casing.

However, the first 5,000 Duodisks had those screw holes; they were used to mount the Duodisk mechanisms to the bottom case.

If one of the original mechanisms is replaced with a new mechanism that has no screw holes, the following parts will have to be ordered:

Part Number	Description	Quantity to Order
400-1604	Screw	4
415-1410	Screw	4
805-5000	Shield	1
860-0053	Washer, lock	4
860-0242	Washer	4

Whether or not the unit is covered by warranty or AppleCare, Apple will reimburse the Level I Service Center for the parts used in this action. In order to receive credit, please note 'Duodisk Installation' in the comments section of the SRO form.

If the Duodisk is out of warranty and is not covered by AppleCare, the 'Other' line in the warranty section of the SRO should be marked and 'Duodisk Installation' should be noted.

Tech Info Library Article Number:982



Tech Info Library

Monitor II: Wavy display and voltage regulation

Revised: 5/25/89
Security: Everyone

Monitor II: Wavy display and voltage regulation

=====

This article last reviewed: 7 June 1985

When a Monitor II starts to exhibit a wavy display, it may be attributed to overheating of the voltage regulator, IC601, mounted on the heat sink near the power transformer. If a voltage check shows the voltage regulator to be good, it may only fail while hot. Apple's Quality Assurance reports have indicated that this failure is directly related to the mounting screw that secures the voltage regulator to the heat sink. If the screw is loose, there is inadequate heat transfer between the heat sink and the voltage regulator and it fails prematurely.

When servicing the Monitor II, insure that the IC601 mounting screw is secured.

If you replace the IC601, be sure to use thermal compound or an insulator pad (P/N 725-0006) between the IC601 and the heat sink.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:983



Tech Info Library

AppleWorks IIe: LaserWriter interface

Revised: 12/11/86
Security: Everyone

AppleWorks IIe: LaserWriter interface

=====

The following describes the connection between AppleWorks on the Apple IIe and LaserWriter.

I. Apple IIe

1. Super Serial Card (SSC)

A. Circuit Configuration

Near the internal cable (Part 590-0021) of the SSC there is a removable block of pins with a triangle on its top face. Make sure this jumper block is plugged into its socket so that the triangle points to the word `TERMINAL` printed on the card.

This configuration, called modem elimination, compensates for the standard RS-232-C pin assignments so that the internal cable through the appropriate pins.

B. Install the SSC in Slot 1 of the IIe Motherboard.

C. SSC DIP Switch Settings

SW1:	1	2	3	4	5	6	7	SW2:	1	2	3	4	5	6	7
	|	|	|	|X|	|X|X|				|X|	|	|X|X|	|	|		(ON)
	|X|X|X|	|X|	|	|					|	|X|X|	|	|X|X|			(OFF)

These switch settings are for: 9600 baud (SW1: 1-4), Printer Mode (5-6), Normal Clear To Send (7), 8 data bits and 1 stop bit (SW2: 1), no delay after CR (2), video off (3), 132 character line (4), auto-LF after CR (5), Disabled ACIA-CPU interrupts (6), and Normal Clear To Send (7).

No parity is set automatically in the Printer Mode.

II. The Connection

1. Cable

Serial and Communications Cable
(Part 590-0037)

From				To	
Super Serial Card				LaserWriter	
IIfx Back panel				DB-25 connector	
DB-25 connector				DB-25 connector	
signal	-	pin	wiring	pin	- signal
Frame Ground		1	<->	1	Frame Ground
Tx		2	<->	2	Tx (Transmit Data)
Rx		3	<->	3	Rx (Receive Data)
RTS		4	<->	4	RTS (Ready To Send)
Signal Ground		7	<->	7	Signal Ground
DTR		20	<->	20	Tx (Transmit Data)

2. Signal

1. Levels from Super Serial Card:

- a. True (asserted): 0 volts
- b. False: +5 volts

III. Apple LaserWriter Printer

1. Set the Selector Switch on the LaserWriter to "Special", which can be done without turning off the printer. In Diablo 630 emulation mode, the LaserWriter uses 9600 baud, XON/XOFF protocol, and no parity.

2. Check

To verify the connection, turn on the IIfx, video monitor, and LaserWriter. Boot AppleWorks and choose "Other Activities" from the Main Menu. Add a custom printer, naming it LaserWriter. Use these settings for this custom printer:

- | | |
|---------------------------------------|------------------------------------|
| 1. Needs line feeds after each Return | No |
| 2. Accepts top-of-page commands | Yes |
| 3. Stop at end of each page | No |
| 4. Platen width | 8.0 inches |
| 5. Interface cards | Control-I 80N Control-I X space E^ |
| 6. Printer codes | Yes |

The printer codes for the Diablo Emulation are in the LaserWriter Technical Description. If you specify no printer codes, the typeface

will default to Courier standard, 12 characters per inch, monospaced.

Return to the Main Menu and try to print a document.

Note: When you use the AppleWorks command Open-Apple-H for hard copy, you will have to print a document using Open-Apple-P before you may use the Open-Apple-H command again. This is because the command Open-Apple-H does not issue the form feed the LaserWriter needs to output the last page and clear its Diablo emulation settings.

Apple Technical Communications

Tech Info Library Article Number:984



Tech Info Library

Lisa 7/7: Compatibility with other released products

Revised: 1/30/85
Security: Everyone

Lisa 7/7: Compatibility with other released products

=====

Released products compatible with Lisa 7/7:

Software:	By:	Compatible with:	Status:
Lisa Workshop	Apple Computer	*OS 3.0, 3.1	Released
Brock Keystroke	Brock SW Products	OS 3.0, 3.1	
Relational Database			Released
BPI Accounting	BPI Systems	*WS 2.0, 3.0, 3.1	
General Ledger			Released
Accounts Receivable			Released
Accounts Payable			Released
Payroll			Released
Desktop Calendar	Videx	OS 3.0, 3.1	Released
BASIC	Pterodactyl SW	WS 3.0,3.1	Released

We will update this list periodically to keep you abreast of new developments.

Apple Technical Communications

Tech Info Library Article Number:985



Tech Info Library

AppleWorks: Printing Forms from the Database or Word Processor

Revised: 8/10/87
Security: Everyone

AppleWorks: Printing Forms from the Database or Word Processor

Some Appleworks printing jobs have a page length less than 11 inches for continuous tractor-feed envelopes or mailing labels.

With data base documents, most users define the page length from the printer options menu in each "Print a report" format (OA-O) of the database document that contains the label text.

1. Choose the data base document you want to print.
2. Press OA-P, choose a label report format, and then press OA-O. You're now in the Printer Options Menu.
 - a. Type PL (Paper Length). Enter a value equal to the vertical length, in inches, of a single form. Many labels are 1.0, 1.5, or 3.5 inches high; Appleworks accepts all these values as paper lengths.
 - b. Set the options PH (Print Header) and OM (Omit Line) to NO by typing the two letter code until the option reads NO.

With word processor documents, however, there are a few additional parameterss you must control in order to produce acceptable results when printing continuous forms: (1) automatic top and bottom margins, and (2) form feeds. Unless you take care to control these two parameters properly, the printer will usually produce documents that are either badly printed or altogether blank.

To avoid these problems, do the following:

1. Choose the word processor document you want to print.
2. Press the OA-O. This gets you to the Printer Options Menu.
 - a. Type PL (Paper Length). Type a single form's vertical length in inches. Many labels are 1.0, 1.5, or 3.5 inches high; Appleworks accepts these values as page lengths.
 - b. Make sure the Top and Bottom Margins are zero.

3. From the main menu, select item number 5, "Other Activities". This selection will display a menu with 7 items.
4. Select item number 7, "Specify information about your printer(s)". This displays a menu entitled "Printer Information".
5. Under the heading "Change printer specifications" you will find one or two printer names. Select the name of the printer you want to use.
6. Change item number 2 ("Accepts top-of-page commands") to NO.

AppleWorks will now print using the page length you defined in the printer options menu.

Tech Info Library Article Number:986



Tech Info Library

Lisa: Boot ROM Versions

Revised: 7/30/87
Security: Everyone

Lisa: Boot ROM Versions

=====

Many users have received notices telling them that they must upgrade to Rev. H CPU ROMs to run Pascal 3.0. THAT NOTICE WAS IN ERROR! Acceptable ROM versions include:

Lisa 2: D/A8 or H/A8
Lisa 2/10: F/88 or H/88

--The first (alphabet) character indicates the revision of the CPU ROM; the following two characters identify the I/O ROM.

Other CPU ROM versions, such as A, B, C, E and G, should definitely be upgraded. If a user insists on Rev. H CPU ROMs, or if you need to upgrade old CPU or I/O ROMs, order them from your Apple Regional Service Center. The part numbers are:

	CPU ROMs	I/O ROM
Lisa 2:	341-0175, 341-0176	341-0290
Lisa 2/10:	341-0175, 341-0176	341-0281

NOTE: The ROM versions are both stamped on the chip itself and displayed in the upper right corner of the Lisa's screen when you boot the system.

Tech Info Library Article Number:987



Tech Info Library

ProDOS Assembler Tools: Startup Sequence

Revised: 10/26/87
Security: Everyone

ProDOS Assembler Tools: Startup Sequence

=====

This article last reviewed: 22 October 1987

The ProDOS Assembler Tools disk doesn't start up exactly as described on page 15 of the manual. When an Apple II starts up, it looks for a file named PRODOS. After it finds and loads PRODOS, it runs the first file on the disk that has the suffix .SYSTEM in its name. On the ProDOS Assembler Tools disk, the first such file is BASIC.SYSTEM, but the one needed is EDASM.SYSTEM. Here's how to change the name of BASIC.SYSTEM so that EDASM.SYSTEM gets loaded first:

1. Make a copy of the ProDOS Assembler Tools disk.
2. Start up from the new disk.
3. When the Applesoft] prompt appears, type the following, pressing Return after each line:

```
] UNLOCK BASIC.SYSTEM  
] RENAME BASIC.SYSTEM,BASIC.SYS
```

4. Either restart the system, or type the following to start the assembler:

```
] -EDASM.SYSTEM
```

This tells BASIC.SYSTEM to load and run EDASM.SYSTEM. ProDOS Assembler Tools now starts up, as described in the manual.

Tech Info Library Article Number:988



Tech Info Library

Lisa 7/7: Problems printing proportional-spaced fonts on a DWP

Revised: 5/13/87
Security: Everyone

Lisa 7/7: Problems printing proportional-spaced fonts on a DWP

=====

Printing your Lisa 7/7 document in a proportional-spaced (PS) font, such as 12 Point, will yield the following results:

- A. If you're using a standard "fixed" printwheel, characters such as "w", "m" and "r" will be oddly spaced.
- B. If you're using a proportional-spaced print wheel, such as the Apple Modern 10/12 PS Printwheel, the odd spacing will be less apparent.

You can eliminate the odd spacing entirely by selecting a fixed pitch, such as 12 Point-15 Pitch, and using a fixed pitch printwheel, such as the Prestige Elite Printwheel.

Tech Info Library Article Number:989



Tech Info Library

MacWorks: Dot Matrix Printer Installation

Revised: 7/30/87
Security: Everyone

MacWorks: Dot Matrix Printer Installation

=====

The Parallel Printer Installation Utility enables a Macintosh XL to send print files to a parallel printer, such as an Apple Dot Matrix printer. This utility is distributed on the MacWorks XL System Disk (part number 682-0103-B).

The utility installs the driver on whichever disk contains it, so you should:

1. Copy the utility to the application disk you wish to print to the DMP from.
2. Run the disk's Parallel Printer Installation Utility and follow the instructions.

Tech Info Library Article Number:990



Tech Info Library

LisaTerminal 7/7: Record Separator function

Revised: 3/8/85
Security: Everyone

LisaTerminal 7/7: Record Separator function

=====

LisaTerminal's Record Separator (RS) function doesn't work as documented in the manual: neither pressing "CTRL-6" nor the tilde key (upper left corner of keyboard) will send an RS.

Apple Technical Communications

Tech Info Library Article Number:991



Tech Info Library

Lisa 1/2-MB System: Error 815/315 while installing OS 3.0

Revised: 2/1/85
Security: Everyone

Lisa 1/2-MB System: Error 815/315 while installing OS 3.0

=====

Error 815/315 indicates your system is out of memory. This error appears when you initialize your hard disk before installing Lisa Office System Release 3.0 software on a 1/2 meg system. You will need to obtain a 512K Add-On Memory Board before you can successfully install the software; alternatively, you could obtain Lisa Office System Release 3.1, which allows you to install the Office System using 1/2 megabyte.

Apple Technical Communications

Tech Info Library Article Number:992



Tech Info Library

AppleColor Monitor 100: Power Supply Board Fuse And Logic Board

Revised: 11/9/88
Security: Everyone

AppleColor Monitor 100: Power Supply Board Fuse And Logic Board

=====

This article last reviewed: 9 November 1988

--> If you receive an AppleColor Monitor 100 that has no power or no raster, a blown fuse, F601, on the Power Supply board may have caused the failure. This easily detected problem may be corrected by installing the 250V, 2A, slow-blow fuse which has been added to the AppleColor Monitor Service Price List under Replacement Parts (Service Programs Manual, Page 7.10.3). This fuse, part number 740-0204, is available immediately. Refer to the March Technical Procedures update for instructions for replacing the fuse.

--> In March 1985, Apple sent out AppleColor 100 Monitors with Rev. 0 of the service stock logic board. Later that month, though, the logic board was revised, and subsequent monitors were sent out with this new logic board--Rev. A. Rev. 0 and Rev. A logic boards are NOT interchangeable: a Rev. 0 logic board cannot be used to repair a Rev. A system, and vice versa. Dealers should therefore purchase Rev. A logic boards in order to be able to support the new monitors. Instructions for recognizing and replacing boards have been included in the AppleColor Monitor March 1985 Technical Procedures. The Rev. A logic board has been added to the AppleColor Monitor Service Price List under Service Stock and Exchange Modules.

NOTE: You will be reimbursed for repairs involving both fuses and logic boards in systems covered under warranty or AppleCare.

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Tech Info Library Article Number:993



Tech Info Library

Daisy Wheel Printer: Using it with AppleWorks

Revised: 2/18/86
Security: Everyone

Daisy Wheel Printer: Using it with AppleWorks

=====

To use the Daisy Wheel Printer with AppleWorks, set the switches as follows:

	1	2	3	4	5	6	7	8
Front	X					X		
Switch	X	X	X	X		X	X	
	--- OPEN ---							

	OFF								OFF							
Rear	X	X	X	X		X	X				X	X				
Switches					X		X		X	X	X		X	X	X	
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	S2								S1							

The diagrams of these switches are presented as seen from the back of the Daisy Wheel Printer or Letter Quality Printer. The front switches are rocker switches; X means that that side of the switch is down. The rear switches are toggle switches; X marks the toggle.

The front switch settings are for 12 characters per inch (1-2), 11 inch form length (3-6), no carriage return line feed (7), and 6 lines per inch (8).

SUPER SERIAL CARD

	1	2	3	4	5	6	7		1	2	3	4	5	6	7
ON				X		X	X	ON	X			X			
SW1								SW2							
OFF	X	X	X		X			OFF	X	X		X	X	X	
	1	2	3	4	5	6	7		1	2	3	4	5	6	7

AppleWorks sends a carriage return code to the printer as part of the setup command. When the SSC sees this code and you have configured the SSC to add a line feed, the printed page gets one line more than AppleWorks has calculated for the page. This can lead to misprints, often called paper creep, which get worse with each successive page.

To work around this problem, set the SSC for no <lf> after <cr>

	ON	ON	5
SW1		SW2	X
OFF		OFF	
			5

Apple Technical Communications

Tech Info Library Article Number:995



Tech Info Library

Macintosh Pascal 1.0: creating and accessing data files

Revised: 12/4/84
Security: Everyone

Macintosh Pascal 1.0: creating and accessing data files

=====

Open data files with the Reset, Rewrite and Open commands listed on pages 9-3 thru 9-5 of the Pascal Reference Manual. When accessing your data file, be sure to use a proper name. The correct format for "title" is "VolumeName:FileName", where VolumeName is the name of the diskette on which your file resides and FileName is the name of the file (see page 9-25).

If you do not know the name of the volume or file, use the OldFileName function to search for the file; alternatively, create a new file with NewFileName. OldFileName allows you to choose from a dialog box the existing files on any number of diskettes. The returned string value from these routines can then be used in a Reset, Rewrite, or Open command. Refer to page 9-26 for additional descriptions of these functions.

A possible area of confusion is with the variable-reference parameter in the Reset, Rewrite and Open commands, "f". This variable-reference is a reference to the file being accessed--for example, the command Open(TheFile, "Volumel:Inventory") opens the file "Inventory" on the diskette named "Volumel" and sets the variable-reference "TheFile" so that it refers to that particular file. Commands such as Get(TheFile), Put(TheFile) and Close(TheFile), all access this file.

Apple Technical Communications

Tech Info Library Article Number:996



Tech Info Library

Macintosh Pascal: Printing

Revised: 9/11/86
Security: Everyone

Macintosh Pascal: Printing

=====

To print from your Pascal program, open the printer with the command `Rewrite(f,"printer:").` The commands `Write(ThePrinter,p1[p2,...,pn])` and `WriteLn(ThePrinter,p1[p2,...,pn])` cause the values represented by `p1`, `p2`, etc., to be sent to the printer (See pages 9-16 thru 9-20 of the Macintosh Pascal Reference Manual.). Since Pascal considers every peripheral device to be an external file, a program never directly accesses a driver.

From within a program, printing sends data to the printer via the serial port selected in the Chooser. A Laserwriter in the Diablo 630 mode (NOT over AppleTalk) can print the text as can any printer that functions serially on the Macintosh. Simply send the appropriate ASCII "escape" sequences for the specific printer and then send the ASCII text.

To print the width of the 15" ImageWriter, the user should determine how many characters are sent before sending a CR/LF, which in turn determines the length of the line.

A good example would be the "PRINTTEXTFILE" sample included on the Pascal disk, which includes a technique for setting up the printer so that it skips page breaks.

Apple Technical Communications

Tech Info Library Article Number:997



Tech Info Library

Macintosh Pascal: Accessing the Toolbox

Revised: 12/4/84
Security: Everyone

Macintosh Pascal: Accessing the Toolbox

=====

Apple does not support any Toolbox routine that is not a built-in Macintosh Pascal function or procedure documented in either the Reference Manual or the Technical Appendix. We can only refer you to the Inside Macintosh documentation. A brief description of "Inline", a routine which enables you to access the Toolbox, may be found on the Macintosh Pascal diskette in the text file named "InLines". Note: careless or erroneous use of the "Inline" facility can be fatal to your diskettes or data.

Apple Technical Communications

Tech Info Library Article Number:998



Tech Info Library

Macintosh Pascal: Memory Use by Programs

Revised: 7/30/87
Security: Everyone

Macintosh Pascal: Memory Use by Programs

=====

About 35K of memory is available not only for your program text, but for program variables, the program's pseudo-code representation, debugging information and libraries. The majority of your Macintosh memory is used to keep as much of Macintosh Pascal resident in RAM as possible in order to minimize disk I/O. On a 512K Macintosh or Lisa, only 64K is available, due to pointer size limitations.

Version 2.0 of Macintosh Pascal lets you write larger programs, depending on the contents of the program, of approximately 750 lines on a 128K Macintosh and 2,000 on a 512K Macintosh.

Inside Macintosh provides a brief introduction to memory management in the Macintosh in the chapter "Macintosh Memory Management: An Introduction". Macintosh Pascal uses the Macintosh memory in a slightly different way.

The 2.0 version of Macintosh Pascal includes new predefined procedures for manipulating relocatable objects. (A relocatable object is an object that can be moved within memory and is referred to indirectly by means of a handle.) Anyone using these procedures needs to have a basic understanding of how Macintosh Pascal uses memory.

Macintosh Pascal uses two main run-time data structures: the machine stack and the general stack. The machine stack grows downward from high memory. From the bottom of the application heap just above the master pointer area, the general stack grows upward. The second stack is actually a pointer object that has a base fixed throughout a Macintosh Pascal session. When either the interpreter or the user interface is running, its code segments are moved to the top of the application heap and locked. Thus, programmers who cause objects to be allocated in the heap must be very careful not to cause the objects to be locked down just above the general stack. This will almost always cause the interpreter to run out of memory and exit to the Finder. Similarly, objects should not be allowed to be locked down just below the code segments that are locked high.

Tech Info Library Article Number:999



Tech Info Library

Macintosh II NuBus Card: Heat Dissipation Specifications (10/94)

Revised: 10/12/94
Security: Everyone

Macintosh II NuBus Card: Heat Dissipation Specifications (10/94)

Article Created: 22 October 1987
Article Reviewed/Updated: 12 October 1994

TOPIC -----

This article contains Macintosh II NuBus Card heat dissipation specifications for internal and external power supplies.

DISCUSSION -----

If power is supplied only by the Macintosh II power supply, the heat dissipation allowed for Macintosh II NuBus cards is:

- an average of 15W for each of the six cards, or
- 90W overall

If external power is supplied to a card, the input power may exceed the nominal 15W provided by the Macintosh II power supply. In that case, additional information is needed from the external power supply vendor to verify that the total heat to be dissipated does not exceed 90W.

The heat dissipation tolerances given here are based on the need to have no more than a 15-degree Celsius rise over ambient temperature. The Macintosh II power supply is designed to protect the CPU from extremely high temperatures: it shuts down the system if the internal temperature rises above 65 degrees Celsius.

Article Change History:
12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1987-94 Apple Computer, Inc.

Tech Info Library Article Number:1000



Tech Info Library

MacTerminal 2.2: Launching Error May Be Caused By CNFG (10/94)

Revised: 10/12/94
Security: Everyone

MacTerminal 2.2: Launching Error May Be Caused By CNFG (10/94)

=====

Article Created: 17 December 1987
Article Reviewed/Updated: 12 October 1994

TOPIC -----

There is a minor problem that occurs when a desk accessory or driver containing a resource titled CNFG is installed in the System file.

DISCUSSION -----

MacTerminal 2.2 does not check to see whether a particular CNFG resource belongs to the System or to a desk accessory within the System. As a result, users may see an error message when MacTerminal is launched. The message, though annoying, does not indicate any actual error.

Article Change History:
12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1987-94 Apple Computer, Inc.

Tech Info Library Article Number:1001



Tech Info Library

Macintosh Pascal 1.0: Correction in manual

Revised: 12/4/84
Security: Everyone

Macintosh Pascal 1.0: Correction in manual

=====

Section 10.6.5.2 on page 10-26 should read:
10.6.5.2 The SoundDone Function

Result Type: boolean

Parameter List: SoundDone

SoundDone returns TRUE if the sound requested by the most recent call to StartSound has been generated; otherwise, it returns FALSE.

Apple Technical Communications

Tech Info Library Article Number:1002



Tech Info Library

Silentype: Pinouts (10/94)

Revised: 10/12/94
Security: Everyone

Silentype: Pinouts (10/94)

=====

Article Created: 26 October 1987
Article Reviewed/Updated: 12 October 1994

TOPIC -----

This article documents the pinout configuration and signal name for the Apple Silentype printer.

DISCUSSION -----

DB-9	
Connector	Signal Name

1	Shield Ground
2	+5 volts
3	Logic Ground
4	Serial Data
5	Machine Status
6	+12 volts
7	Power Ground
8	Store Clock
9	Shift Clock

The Silentype Printer needs its own specially designed interface card, or an Apple III with the built in Silentype port. It is not possible to connect it to any other type of interface card.

Article Change History:
12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1987-94 Apple Computer, Inc.

Tech Info Library Article Number:1003



Tech Info Library

Macintosh 128, Plus, SE and Macintosh II: RFI Emissions (10/94)

Revised: 10/12/94
Security: Everyone

Macintosh 128, Plus, SE and Macintosh II: RFI Emissions (10/94)

Article Created: 22 October 1987
Article Reviewed/Updated: 12 October 1994

TOPIC -----

This article provides RFI emission information for some Apple products.

DISCUSSION -----

The conductive emissions tests Apple has run on the Macintosh family include testing up to 600 MHz. Beyond that point, the emissions are not significant for FCC standards and all emissions levels fall within FCC regulations.

Each member of the Macintosh family has a switching power supply with emissions in the range 100 to 140 KHz.

Macintosh II

Because the Macintosh II has three clocks, there are three emission sources:

- The first is the system clock, at 31.33 MHz. Harmonics of that clock will be seen up to the 600 MHz limits of Apple testing.
- The second clock, with a base of 40 MHz, is used for NuBus communications. Since it is internally divided by 4 to provide the 10 MHz NuBus synchronous signal, the harmonics seen from this clock will be at 10 MHz intervals and are significant up to 600 MHz.
- The third source of RFI is the Macintosh II Video Card. Its clock runs at 30.24 MHz and will provide harmonics emissions up to Apple's 600 MHz limit.

Other Macintosh Models

The Macintosh 128K, Macintosh 512K, Macintosh Plus, and Macintosh SE have

emissions that are harmonics of the system clock, which runs at 15.75 MHz. These Macintoshes have emissions that are multiples of 15.75 MHz, ranging as high as 500 MHz.

Article Change History

12 Oct 1994 - Reviewed for technical accuracy, reformatted.
07 Sep 1992 - Reviewed for technical accuracy and retitled.

Support Information Services

Copyright 1989-94 Apple Computer, Inc.

Tech Info Library Article Number:1004



Tech Info Library

Macintosh: Not Enough Room to Duplicate error (10/94)

Revised: 10/12/94
Security: Everyone

Macintosh: "Not Enough Room to Duplicate" error (10/94)

Article Created: 18 July 1986
Article Reviewed/Updated: 12 October 1994

TOPIC -----

I am getting the message "Not enough room to duplicate" when I try to copy a file to my hard disk, even though there is plenty of room left on the disk.

DISCUSSION -----

The "Not enough room to duplicate" problem usually occurs when the invisible Desktop file has grown very large.

Rebuilding the Desktop file may help this situation:

1. Hold down the COMMAND and OPTION keys as your Macintosh boots up.
2. At the prompt for rebuilding the desktop, click OK.

This method of rebuilding the Desktop file (which keeps track of all the icons and their locations) rebuilds the file with only the current contents of the disk. Otherwise the Desktop file keeps copies of every icon, whether emptied from the trash or current on the disk, that the Desktop file has ever encountered, which can cause it to balloon to a large size.

Be aware that when rebuilding the desktop, you will lose any notes you have typed in the comment box in the Get Info windows of your files.

Article Change History:
12 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:1008



Tech Info Library

Macintosh: Multiple NotePads (4/95)

Revised: 4/4/95
Security: Everyone

Macintosh: Multiple NotePads (4/95)

Article Created: 4 January 1985
Article Reviewed/Updated: 04 April 1995

TOPIC -----

Is there a practical limit to the Note Pad file and if so, is there any way to work around this?

DISCUSSION -----

The practical limit of each page of a Note Pad is 248 characters, which limits the entire Note Pad to under 2K. If you find that the Note Pad has too few pages, you can create additional pads by means of the following procedure. Note the directions for System 7.5 at thebottom.

When the Note Pad's eight pages are filled up, rename its icon stored in the System Folder to something like "NOTE 1". A new pad is created the next time you choose Note Pad from the Apple menu. If you need to look at something in the original pad, just rename your current file to something like "NOTE 2", and rename your original file (NOTE 1) back to "Note Pad File". The next time you choose Note Pad from the Apple menu, you access the one you just renamed. You can continue creating storage files for notes in this fashion until the disk fills up.

Under System 7.5, you need to remove and/or rename the Note Pad File which resides at the root level of the system folder. The next time the Note Pad is opened, a new Note Pad File is created.

There are also shareware or freeware utilities which expand on the Note Pad concept by allowing more pages as well as scrolling text fields.

Article Change History:

04 Apr 1995 - Revised System 7.5 keyword.
08 Feb 1995 - Added keyword; made minor technical updates.
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-95, Apple Computer, Inc.

Tech Info Library Article Number:1011



Tech Info Library

Macintosh: Mini DIN-8 to DB-9 Adapter Pinouts (10/94)

Revised: 10/12/94
Security: Everyone

Macintosh: Mini DIN-8 to DB-9 Adapter Pinouts (10/94)

Article Created: 12 February 1986
Article Reviewed/Updated: 12 October 1994

TOPIC -----

This adapter cable is used to connect DB-9 cables to devices with Mini DIN-8 ports (such as on the Macintosh Plus or newer).

DISCUSSION -----

Circular 8	Signal	DB-9
1	HSKo (+12V)	6
2	HSKi	7
3	TXD-	5
4	GND	3,1*
5	RXD-	9
6	TXD+	4
7	No Wire	
8	RXD+	8

* Pins 1 and 3 on the DB-9 end are jumpered together.

The pins on the male end of the circular 8 connector are numbered as shown:

6 7 8
3 4 5
1 2

NOTE: The Macintosh Plus peripheral adapter cable is stamped with the number 590-0341; when reordering, however, be sure to use the cable's service part number, which is 699-0430 (older cables may be referred to as 699-0372).

Article Change History:
12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1986-94, Apple Computer, Inc.

Tech Info Library Article Number:1019



Tech Info Library

Apple III Port C: RS-232-C Pinouts & Configuration (10/94)

Revised: 10/12/94
Security: Everyone

Apple III Port C: RS-232-C Pinouts & Configuration (10/94)

Article Created: 04 December 1984
Article Reviewed/Updated: 12 October 1994

TOPIC -----

The following table explains how use System Utilities to configure the driver for the RS-232 port (Serial Interface and Serial Card III). Remember to set the slot number on the Serial Card III driver.

DISCUSSION -----

Data Configuration Blocks:

Data Configuration

Block Address: \$00

Baud rate:

110	\$03
134.5	\$04
300	\$06
600	\$07
1200	\$08
1800	\$09
2400	\$0A
4800	\$0C
9600	\$0E

Data Configuration

Block Address: \$00 \$01

Data Format:

Bits	Parity	
8	none	\$00
7	odd	\$22
7	even	\$26
7	MARK	\$2A
7	SPACE	\$2E

6	odd	\$42
6	even	\$46
6	MARK	\$4A
6	SPACE	\$4E

Data Configuration

			*	*	*								
Block Address:	\$00	\$01	\$02	\$03	\$04	\$05	\$06	\$07	\$08	\$09	\$0A	\$0B	
Comm Protocol:													
none						\$00							
XON/XOFF						\$80	\$13	\$11	\$DF	\$84		\$00	
ENQ/ACK						\$40	\$05	\$06			\$50	\$00	
ETX/ACK						\$40	\$03	\$06			\$50	\$00	
HW Handshake						\$00			\$DF	\$84		\$80	

* \$02 - Delay after CR

* \$03 - Delay after LF

* \$04 - Delay after FF

Delays (bytes \$02, \$03, and \$04)

Using this driver to connect to a printer may require that you set delay times while the printer advances to a new line or the top of a new page. These delays are given in the range \$00...\$FF characters. The RS-232 driver will wait for the time taken to transmit the amount of character specified before it sends the following character.

Pinouts:

DB-25

Connector	Signal Name	
1	Shield Ground	
2	Transmit Data	(Tx)
3	Receive Data	(Rx)
4	Request to send	(RTS)
5	Clear To Send	(CTS)
6	Data Set Ready	(DSR)
7	Signal Ground	
8	Data Carrier Detect	(DCD)
20	Data Terminal Ready	(DTR)

Serial Card III has a modem eliminator button; when this button is "in", the above pinouts are correct. If the button is "out", this has the effect of a modem eliminator cable being installed. (For more information on modem eliminator cables, search this database for MODEM AND ELIMINATOR.)

Article Change History:

12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

The Apple Interface Manual, Apple Computer (UK) Ltd.



Tech Info Library

Lundeen & Associates

Revised: 7/19/93
Security: Everyone

Lundeen & Associates

=====

Article Created: 6 November 1987
Article Reviewed/Updated: 19 July 1993

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Company Profile:
Software, specializing primarily in Macintosh software.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:1026



Tech Info Library

CE Software, Inc.

Revised: 4/3/97
Security: Everyone

CE Software, Inc.

=====

Article Created: 6 November 1987
Article Reviewed/Updated: 02 April 1997

CE Software

1801 Industrial Circle
P.O. Box 65580
West Des Moines, IA 50265

800-523-7638 (Orders Only)

515-221-1801 (Main)
515-224-1953 (Tech. Support)
515-224-1995 (Customer Service)

515-224-4534 Fax
515-221-1806 Fax

Company Profile:
Specializing in Macintosh and PC software and E-mail systems.

Important Note: As of September, 1993, the following CE Software products were sold to PrairieSoft, Inc: DiskTop, Alarming Events, Amazing Paint, MockPackage Plus Utilities and In/Out. Use PrairieSoft as a search to obtain contact information.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1027

Disable								Off
	1	2	3	4	5	6	7	8
	Switch SW2							
	1	2	3	4				
Baud Rate:								
300	Off	Off						
1200	On	Off						
2400	Off	On						
9600	On	On						
Data Protocol:								
XON/XOF			On					
DTR			Off					

Off - Open
On - Closed

Pinouts:

(Order numbers A9M0303P and A9M0305P)

DB-25

Connector	Signal Name
1	Frame Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
4	Request to send (RTS)
7	Signal Ground
14	Fault
20	Data Terminal Ready (DTR)

Pin Out Explanation

Pin 1 (FG) is used to provide a common ground reference for the electronics in both the ImageWriter and the device it is connected to. This pin is sometimes not connected. If there is an intermittent problem which can be cured by turning the IW off and on again, check the cable to see if pin 1 is connected. Pin 2 (TD) conveys serial data sent from the ImageWriter (EXAMPLE: If the IW's DIP switches are set for XON/XOFF flow control protocol then this line would send characters to the connected device to tell it when to start and stop transmission. This is one of the pins that may need to be crossed over if the peripheral device is a DTE. A modem eliminator cable can perform this crossover.

Pin 3 (RD) receives serial data sent from the device the ImageWriter is connected to. This is one of the pins that may need to be crossed over if the other device is a DTE. A modem eliminator can perform this crossover.

Pin 5 (RTS) is asserted whenever the ImageWriter is powered on.

Pin 7 (SG) provides a common electrical ground level that the devices can reference the RS232 signals to. This pin should always be connected.

Pin 14 (Fault) notifies the device connected to the ImageWriter that the ImageWriter has been deselected (the SEL lamp goes out). This can be due to normal events such as you pressing the SEL switch or paper running out or it can be due to a problem such as the ImageWriter's microprocessor experiencing a glitch.

Pin 20 (DTR) becomes active when the ImageWriter is ready to go on line. If the IW's DIP switches are set for the DTR flow control protocol, this line will go on and off to tell the connected device when to start and stop transmission. This is one of the pins that may need to be crossed over if the device connected is a DTE. The modem eliminator cable can perform this crossover.

Article Change History:

24 Jun 1994 - Added pinout descriptions to article, revised formatting.

Support Information Services

The Apple Interface Manual, Apple Computer (UK) Ltd.

Tech Info Library Article Number:1028



Tech Info Library

AppleLine: How To Use With an Apple IIe or Apple IIc (10/94)

Revised: 10/12/94
Security: Everyone

AppleLine: How To Use With an Apple IIe or Apple IIc (10/94)

=====

Article Created: 04 November 1987
Article Reviewed/Updated: 12 October 1994

TOPIC -----

The following information has only been partially verified for the 3274-2.2 ROMs. Though this setup should work with the newer ROMs, this has not been confirmed.

DISCUSSION -----

Hardware Configuration:

Apple IIe
Super Serial Card in Slot 2. The jumper block should be set to terminal.
Straight thru cable - 590-0037
or
Apple IIc
Apple IIc-ImageWriter/Scribe printer cable.

Gender changer - 590-0214
Appleline - 699-0239 with version 2.2 of the ROMs.
Appleline wall mounting power supply - 970-0950
(optional - Loop Back Connector - 970-0879)

Software Configuration:

ProDOS 1.1.1
Apple Access II v 1.1
Set Access II as follows:
Terminal Characteristics
"Set ANSI Mode"
"Do NOT Send LF After CR" - for Supervisor mode
or
"Send LF After CR" - for 'On-Line' mode

```
"7 Bits per Character"
"Enable XON/XOFF"
"Normal Video"
"Full Duplex"
"No Wraparound"
Set Speed - "2400 baud"
Set Parity - "Even"
```

Appleline Configuration:

```
Terminal Type....."VT100"
Baud Rate....."2400"
Parity....."Even"
Autobaud....."Enabled"
Speed Indicator....."Disabled"
Modem type....."Local Connect"
Auto Logoff....."Disabled"
Special Terminal Capability..."None"
24/25 Line Automatic Toggle..."Disabled"
```

Notes

- 1- Set Access II for 2400 baud. 4800 & 9600 seem to overrun it.
- 2- The autobaud sequence is OpenApple-B Return (OA-B Return).
- 3- If you use 8 bits per character, set parity to None in Access II and on the Appleline.

For more information on VT-100 keypad sequences, see Apple Access II (030-0923-A, copyright 1983), Appendix i, pp 165-166.

4 - The mapping for an Apple IIe or IIC running Access II to IBM 3278 Keys is as follows (not checked):

3278 Key	Press
-----	-----
PF1	Esc 1
PF2	Esc 2
PF3	Esc 3
PF4	Esc 4
PF5	Esc 5
PF6	Esc 6
PF7	Esc 7
PF8	Esc 8
PF9	Esc 9
PF10	Esc 0
PF11	Esc - (minus)
PF12	Esc =

PF13	Esc !
PF14	Esc @
PF15	Esc #
PF16	Esc \$
PF17	Esc %
PF18	Esc ^
PF19	Esc &
PF20	Esc *
PF21	Esc (
PF22	Esc)
PF23	Esc _ (underscore)
PF24	Esc +
* NEW LINE	OA-Return
ENTER	Return
TAB	Tab
BACK-TAB	Control-OA-K
HOME	Control-\
LEFT CURSOR	Left-Arrow or Control-H
RIGHT CURSOR	Right-Arrow or Control-U
DOWN CURSOR	Down-Arrow or Control-J
UP CURSOR	Up-Arrow or Control-K
PA1	Esc [
* PA2	Esc]
* DUP	Control-OA-U
* FM	Control-Y
ATTN	Control-A
* SYS REQ	Control-B
* CURSR SEL	Control-D
CLEAR	Control-E
ERASE INPUT	Control-L
ERASE EOF	Control-F
* PRINT	Control-P
* IDENT	Control-V
* TEST	Control-T
RESET	Control-R
a DEV CNCL	Control-R
INSERT	Control-]
b DELETE	Delete

* NOT TESTED

- According to the documentation (See Appleline Users Manual, Appleline Part II: Guide to Lisa, Chapter 2, p65) Control-X should give a DEV CNCL function, but where DEV CNCL is needed (according to the systems types there) Control-R works. This is the same code as is used for the RESET

function.

- According to the documentation (See Appleline Users Manual, Appleline Part II: Guide to Lisa, Chapter 2, p65) Control-underscore should work. Instead it locks Appleline.

Article Change History:

12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1987-94 Apple Computer, Inc.

Tech Info Library Article Number:1029



Tech Info Library

Apple Daisy Wheel Printer: Pinouts & Switch Settings (10/94)

Revised: 10/12/94
Security: Everyone

Apple Daisy Wheel Printer: Pinouts & Switch Settings (10/94)

Article Created: 04 December 1984
Article Reviewed/Updated: 12 October 1994

TOPIC -----

This article documents the pinouts and switch settings for the Apple DaisyWheel Printer.

DISCUSSION -----

Switch settings:

-->Front Panel

	1	2	3	4	5	6	7	8
--	---	---	---	---	---	---	---	---

Type Pitch:

10 cpi	Off	Off
12 cpi	On	Off
15 cpi	Off	On
Proportional	On	On

Form Length (in inches):

3	Off	Off	Off	Off
3.5	On	Off	Off	Off
4	Off	On	Off	Off
5	Off	Off	On	On
5.5	On	On	Off	Off
6	Off	Off	On	Off
7	On	Off	On	Off
8	Off	On	On	Off
8.5	On	On	On	Off

9	On	Off	On	On
10	Off	On	On	On
11 2/3	On	Off	Off	On
12	Off	On	Off	On
14	On	On	Off	On
16	On	On	On	On

Line Feed:

LF after CR	On
No LF after CR	Off

Lines per Inch:

8	On
6	Off

-->Rear Panel

Switch SW1-A

1 2 3 4 5 6 7 8

Baud Rate:

110	Off	Off	Off
150	On	Off	Off
300	Off	On	Off
600	On	On	Off
1200	Off	Off	On
2400	On	Off	On
4800	Off	On	On
9600	On	On	On

Handshake:

ETX/ACK & DTR	Off	Off
XON/XOFF	On	Off
DIR	Off	On

Setting:

No Modem	On
Modem	Off

Parity:

Space	On	On
Mark	Off	On
Even	On	Off
Odd	Off	Off

1 2 3 4 5 6 7 8

Switch SW2-B

1 2 3 4 5 6 7 8

Select Alternative
Character Sets:

ASCII Standard	Off	Off	Off	Off
USA WP	On	Off	Off	Off
Italian	Off	On	Off	Off
Swedish	On	On	Off	Off
English (UK)	Off	Off	On	Off
French	On	Off	On	Off
German	Off	On	On	Off
Spanish	On	On	On	Off

Print:

Unidirectional	Off
Bidirectional	On

Line feed:

Auto CR/LF	On
No auto CR/LF	Off

Setting:

Half Duplex	On
Full Duplex	Off

On Paper Out:

Stop	On
Don't Stop	Off

1 2 3 4 5 6 7 8

Pinouts:

(Order number A3M0027)

DB-25

Connector	Signal Name
1	Chassis Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
4	Request to send (RTS)
5	Clear To Send (CTS)
6	Data Set Ready (DSR)
7	Signal Ground
8	Data Carrier Detect (DCD)
20	Data Terminal Ready (DTR)

Article Change History:

12 Oct 1994 - Reviewed for technical accuracy.

Support Information Services

The Apple Interface Manual, Apple Computer (UK) Ltd.

Tech Info Library Article Number:1030

Gen <LF> out after <CR>:

yes	On
no	Off

	Switch SW2
	1 2 3 4 5 6 7 8
Zero character:	
Slash zero	On
Do not slash zero	Off
Input buffer:	
One line only	On
3k bytes	Off
Character spacing:	
Elite proportional	On
Pica fixed width	Off
8th Data bit:	
Ignore	On
Recognize	Off
On power on:	
Select	On
Deselect	Off
Print:	
Unidirectional	On
Bidirectional	Off

	1	2	3	4	5	6	7	8
On - Closed								
Off - Open								

Pinouts:

Amp		Amp	
Pin No.	Signal Name	Pin No.	Signal Name
1	Data STB (-ve)	19	Ground (TP pin 1)
2	Data 1	20	Ground (TP pin 2)
3	Data 2	21	Ground (TP pin 3)
4	Data 3	22	Ground (TP pin 4)
5	Data 4	23	Ground (TP pin 5)
6	Data 5	24	Ground (TP pin 6)
7	Data 6	25	Ground (TP pin 7)
8	Data 7	26	Ground (TP pin 8)
9	Data 8	27	Ground (TP pin 9)
10	ACK (-ve)	28	Ground (TP pin 10)
11	Input Busy	29	Ground (TP pin 11)
12	Paper Empty	30	Ground (TP pin 12)
13	Select	31	Input Prime (-ve)
14	0V	32	Fault (-ve)
15	NC	33	0V
16	0V	34	NC
17	Chassis Ground	35	NC
18	+5V	36	Input Busy

TP stands for Twisted Pair.

Article Change History:

13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1984-94 Apple Computer, Inc.

Tech Info Library Article Number:1032



Tech Info Library

Apple Color Plotter: Pinouts & Switch Settings

Revised: 10/13/93
Security: Everyone

Apple Color Plotter: Pinouts & Switch Settings

Article Created: 4 December 1984
Article Reviewed/Updated: 13 October 1993

TOPIC-----

Enclosed are the switch settings and pinouts for the Apple Color Plotter.

DISCUSSION -----

Switch settings:	1	2	3	4	5	6	7	8
BAUD RATE:								
75						Off	Off	Off
150						Off	Off	On
300						Off	On	Off
600						Off	On	On
1200						On	Off	Off
2400						On	Off	On
4800						On	On	Off
9600						On	On	On

STOP BIT:								
1 bit				Off	On			
1.5 bits				On	Off			
2 bits				Off	Off			

PARITY								
Parity		Off						
No Parity		On						
Odd			On					
Even			Off					

DATA LENGTH:								
7 bit	On							
8 bit	Off							

..TIL01034-Apple_Color_Plotter-Pinouts_and_Switch_Settings.pdf

Pinouts:

Model number A9M0302P

The Apple Color Plotter uses a standard RS-232-C interface, and so it can be connected to virtually any computer.

DB-25

Connector	Signal Description
-----------	--------------------

1	Frame Ground
---------	--------------

3	Receive Data (Rx)
---------	-------------------

4	+12 VDC
---------	---------

7	Signal Ground
---------	---------------

20	Data Terminal Ready (DTR)
----------	---------------------------

Copyright 1984, 1993 Apple Computer, Inc.

Tech Info Library Article Number:1034



Revised: 10/13/94
Security: Everyone

=====

TOPIC -----

DISCUSSION -----

```

1      2      3      4      5*      6      7      8
Select Alternative
Character Sets:
American      Off Off Off
Italian       On  Off Off
American      Off On  Off
British       On  On  Off
German        Off Off On
Swedish       On  Off On
French        Off On  On
Spanish       On  On  On
Gen <LF> out after <CR>:
yes                               On
no                               Off
Print Intensity:
Normal                               On
Low                               Off
Baud Rate:
1200                               On
9600                               Off
Handshake:
XON/XOFF                               On
DTR                                   Off

```

1 2 3 4 5* 6 7 8

* Switch 5 is not used.

Pinouts:

DB-25

Connector	Signal Name
1	Frame Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
4	Request to Send (RTS)
7	Signal Ground
20	Data Terminal Ready (DTR)

Article Change History:

13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1988-94 Apple Computer, Inc.

Tech Info Library Article Number:1036



Tech Info Library

Macintosh 128K/512K: Cable to RS-232 printer (10/94)

Revised: 10/13/94
Security: Everyone

Macintosh 128K/512K: Cable to RS-232 printer (10/94)

=====

Article Created: 4 December 1984
Article Reviewed/Updated: 13 October 1994

TOPIC -----

What cable do I need in order to connect a Macintosh 128K or 512K to an RS-232 printer like the original ImageWriter?

DISCUSSION -----

(Part number 590-0169)

	DB-9		DB-25
	Connector		Connector
	(Male)		(Male)
	1	-----	1
3 &	8	-----	7
	5	-----	3
	7	-----	20
	9	-----	2

Article Change History:
13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1984-94, Apple Computer, Inc.

Tech Info Library Article Number:1039



Tech Info Library

Numeric Keypad IIe Internal Cable: Pinouts (10/94)

Revised: 10/13/94
Security: Everyone

Numeric Keypad IIe Internal Cable: Pinouts (10/94)

Article Created: 11 September 1986
Article Reviewed/Updated: 13 October 1994

TOPIC -----

What are the pinouts for the IIe numeric keypad?

DISCUSSION -----

Here is the wiring for the internal cable that goes from the Apple IIe motherboard connector to the DB-15 on the back of the Numeric Keypad IIe.

J16 PIN		DB-15		14 PIN CONN.		SIGNAL
1	---	1	--	12	--	Y0
2	---	2	--	5	--	Y1
3	---	3	--	8	--	Y3
4	---	5	--	2	--	Y4
5	---	6	--	7	--	Y2
6	---	7	--	4	--	Y5
7	---	N/C	--	N/C	--	N/C
8	---	9	--	1	--	X7
9	---	10	--	6	--	X4
10	---	11	--	10	--	X6
11	---	12	--	9	--	X5

J16 PIN - Internal (motherboard) connector
DB-15 - External connector (mounts in back of IIe with the Internal Keypad Cable (Part #590-0129))
14-PIN - Female connector that plugs into keypad
SIGNAL - What it does

Article Change History:
13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1986-94 Apple Computer, Inc.

Tech Info Library Article Number:1040



Tech Info Library

LaserWriter: Recommended Transparency Film

Revised: 12/13/89
Security: Everyone

LaserWriter: Recommended Transparency Film

=====

This article last reviewed: 5 November 1987

To make transparencies in a LaserWriter, use 3M's

Scotch 501 (15902-2) Transparency Film for Plain Paper Copiers

It's thick enough to take the heat from the fuser while giving a reasonably dense image. Anything thinner than 501 film could melt within the LaserWriter fuser assembly.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1041



Tech Info Library

Daisy Wheel Printer: Configuring it for all Apples (10/94)

Revised: 10/13/94
Security: Everyone

Daisy Wheel Printer: Configuring it for all Apples (10/94)

Article Created: 04 December 1984
Article Reviewed/Updated: 13 October 1994

TOPIC -----

What are the configuration settings for the Apple Daisy Wheel Printer for all Apple systems?

DISCUSSION -----

Below are the switch settings for configuring a Daisy Wheel Printer to any Apple computer. (NOTE: To get at the switches in the rear of the printer, you must use a screwdriver to remove the top cover.)

System	Rear Panel Switches		Front	
	SW-1	SW-2	Switches	Cable Required
	12345678	12345678	12345678	(see key below)
Apple III	11100111	00001001	10000100	A+B
Macintosh	N/A	N/A	N/A	N/A
Lisa	11100111	00001001	10000100	A+B
Apple IIc	11100111	00001001	10000100	C*
Super Serial	11100111	00001001	10000100	B
High Speed Serial	00100111	00001001	10000100	B

Switch Setting Key: 0 = off = open; 1 = on = closed

Cable Key:

Letter	Part number	Comments
--------	-------------	----------

A	590-0029-00	Modem Eliminator
B	590-0037-B	DB-25 Pin to pin (1-8, 12, 13, 19, 20)
C	590-0191-A	5-pin DIN to DB-25

The pinouts for these cables are contained in separate articles in

AppleLink's Technical Information Library.

* - Using default port settings

Apple III Driver, data configuration block:

```
-----  
      0  1  2  3  4  5  6  7  8  9  A  B  
RS-232  0E 00 10 10 10 00 13 11 DF 84 50 80  
Printer 0E 00 10 10 10
```

Super Serial Card Configuration:

```
      1  2  3  4  5  6  7  
SW1  Off Off Off On  Off On  On  
SW2  On  On  Off Off On  Off Off
```

Jumper block should be pointing towards terminal.

Article Change History:

13 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1984-94 Apple Computer, Inc.

Tech Info Library Article Number:1044



Tech Info Library

Macintosh System Software Version 5.0: Changes

Revised: 5/10/89
Security: Everyone

Macintosh System Software Version 5.0: Changes

=====

This article last reviewed: 05 November 1987

On the System Tools disks, Version 5.0, a number of files are changed compared to those on previous versions of Macintosh system software, and several new files have been added. Here is a list of some of the changes.

LaserWriter 5.0

- Laser Prep 5.0 works only with LaserWriter 5.0.
- The FOND resource was changed to work properly with right and full justification.
- The LaserWriter driver now writes the document name to the LaserWriter resource file.
- Bitmap clipping is changed: MacPaint documents now print without being clipped on the right side.
- The FKEY Command-Shift-4 is disabled when the user has selected more than two bits per pixel.
- StyleExtra is not used to determine whether to do line layout.
- LaserPrep sets timeout at 300 seconds instead of 30 seconds.

Changes Made to System 4.2

- Patched the new Font Manager on the Macintosh Plus.
- The Palette Manager is implemented.
- InitGraf within the Palette Manager is changed so that more than the default device is recognized.

..TIL01045-Macintosh_System_Software_Version_5-0-Changes.pdf

- In the ADB driver, the mouse button debounce time is increased to 20 milliseconds.
- The ADB driver will always notice a mouse down event. Mouse down followed by mouse up will not be discarded.
- The Sound Manager installs its VBL queue request as the last one in the VBL queue, so that other VBL requests will be serviced first and the Sound Manager will not interfere with them.
- Each INIT in the system heap is now guaranteed no less than 16K of memory.
- Disabled menu items no longer "float" among the menu choices.
- Hierarchical menu and scrolling arrows do not resize if the menu font size changes.
- The Script Manager is now initialized before an application launch, it doesn't use a series of spaces with a carriage return as one word, and non-breaking spaces don't terminate words.
- A problem that sometimes occurred when switch-launching between floppy disks on a Macintosh II with multiple monitors has been fixed.
- QuickDraw has speeded up PixMap copying by calling the color mapping CopyBits code only when the color table seed of the source PixMap differs from that of the destination PixMap.

Monitors (cdev)

- Calls ActivatePallette whenever the screen bit depth changes.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1045



Tech Info Library

Apple III: Printer Driver Data Configuration Block

Revised: 1/17/85
Security: Everyone

Apple III: Printer Driver Data Configuration Block

=====

NOTE: All values are in hexadecimal.

	0	1	2	3	4
Baud rate:					
110	03				
134.5	04				
300	06				
600	07				
1200	08				
1800	09				
2400	0A				
4800	0C				
9600	0E				
Data format:					
7 data/odd parity	22				
7 data/even parity	26				
7 data/mark parity	2A				
7 data/space parity	2E				
8 data/no parity	00				
6 data/odd parity	42				
6 data/even parity	46				
6 data/mark parity	4A				
6 data/space parity	4E				
Delay after CR:			*		
Delay after LF:				*	
Delay after FF:					*
	0	1	2	3	4

* In character times; may be any value from \$00 to \$FF.

Apple Technical Communications

Tech Info Library Article Number:1048



Tech Info Library

Apple III: RS-232 Driver Data Configuration Block

Revised: 1/17/85
Security: Everyone

Apple III: RS-232 Driver Data Configuration Block

=====

NOTE: All values are in hexadecimal.

	0	1	2	3	4	5	6	7	8	9	A	B
Baud rate:												
110	03											
134.5	04											
300	06											
600	07											
1200	08											
1800	09											
2400	0A											
4800	0C											
9600	0E											
Data format:												
7 data/odd parity	22											
7 data/even parity	26											
7 data/mark parity	2A											
7 data/space parity	2E											
8 data/no parity	00											
6 data/odd parity	42											
6 data/even parity	46											
6 data/mark parity	4A											
6 data/space parity	4E											
Delay after CR:			*									
Delay after LF:				*								
Delay after FF:					*							
Communications protocol:												
None						00						
XON/XOFF						80						
ENQ/ACK or ETX/ACK						40						
Control character 1:												
XOFF								13				
ENQ								05				

ETX	03	
Control character 2:		
XON	11	
ACK	06	
Maximum XON/XOFF buffer level:		**
Minimum XON/XOFF buffer level:		**
Data block length for ENQ/ACK or ETX/ACK:		**
Hardware handshake:		
Enabled		80
Disabled		00
	0 1 2 3 4 5 6 7 8 9 A B	

* In character times; may be any value from \$00 to \$FF.

** May be any value from \$00 to \$FF; defaults are \$DF for byte 8, \$84 for byte 9, and \$50 for byte A.

Apple Technical Communications

Tech Info Library Article Number:1049



Tech Info Library

Apple IIGS: Characters Print Larger Than Specified Point Size

Revised: 5/25/89
Security: Everyone

Apple IIGS: Characters Print Larger Than Specified Point Size

=====

This article last reviewed: 11 December 1987

The Apple IIGS screen can display 320 by 200, or 640 by 200 pixels. The Apple IIGS print driver's default is to match the vertical resolution of the screen. This does not give you a true point size -- a "point" being 1/72 inch -- as the Macintosh does. The Apple IIGS print driver's default is to print in screen pixels, not in points. This causes the characters to print larger than the Macintosh characters of the same font and size.

If You Choose 'Condensed' in the Page Setup dialog, the print driver will print in points instead of screen pixels. The printed characters will approximate the size of the equivalent Macintosh characters.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1051



Tech Info Library

LocalTalk PC Card: AST Rampage and NeStar Compatibility

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card: AST Rampage and NeStar Compatibility

=====

This article last reviewed: 11 January 1988

Apple Technical Communications is not aware of any problems when using an AST Rampage card or a NeStar net card with a LocalTalk PC card.

However, there are some potential conflicts:

- DRQ, IRQ, and address settings may overlap.
- It's possible that one or both of the mentioned cards will use the same bus lines as the LocalTalk Card.

Parameters on the LocalTalk Card can be reconfigured to include the other card's address range. Instructions for reconfiguring the AppleTalk PC card are in the LocalTalk PC Card manual. Such changes become necessary when the same signal lines are used on two PC boards. There being a small number of data and communication lines available, it is possible for lines to overlap. We suggest you check the documentation of each board with that of the LocalTalk PC Card, and configure one or both as described within the appropriate manual.

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Tech Info Library Article Number:1053



Tech Info Library

HyperCard: Problems with Older Versions of TOPS

Revised: 6/1/92
Security: Everyone

HyperCard: Problems with Older Versions of TOPS

=====

Article Created: 05 November 1987
Article Last Reviewed: 1 June 1992
Article Last Updated:

Reports from the field indicate there have been problems with HyperCard not functioning properly with older versions of TOPS that came with System 3.2.

The problem is related to how TOPS is installed. When the TOPS installer is run, it copies resources (INIT 31 and AppleTalk) from System 3.2 and replaces those resources in the System file of the destination volume. This causes major problems on a Macintosh using System 4.0 or 4.1.

The workaround:

1. Copy the contents of the TOPS disk to a double-sided disk. TOPS comes on a single-sided disk, and System 4.0 or later will not fit on a single-sided disk with the TOPS installer.
2. Use the System Installer to update the new disk to the version of the System and Finder your destination volume is running.
3. Install TOPS.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1054



Tech Info Library

Apple Color Plotter: Configuration Table

Revised: 4/30/90
Security: Everyone

Apple Color Plotter: Configuration Table

=====

This article last reviewed: 5 April 1990

System	SW-1	Cable Required
	12345678	
Apple III	10111100	590-0037 and 590-0166
Apple II GS		590-0037 and 590-0550
Macintosh	01111111	590-0169 *
Lisa	N/A	N/A
Apple IIc	01101100	590-0191 **
Super Serial ***	01101100	590-0037
High Speed Serial	N/A	N/A

Key

0 = off = closed

1 = on = open

* - A special plotter driver is necessary for the Macintosh.

The switch setting here is from an interface package for the Macintosh, "Plot-It" from Mesa Graphics, which works with MacPaint.

** - Using default port settings

*** - Apple II, II+, IIe require the Super Serial card

Apple III Driver Configuration:

Driver	Data Configuration Block											
-----	-----											
	0	1	2	3	4	5	6	7	8	9	A	B
RS-232	08	22	00	00	00	00	13	11	DF	84	50	80
Printer	08	22	00	00	00							

Super Serial Card Configuration:

..TIL01055-Apple_Color_Plotter-Configuration_Table.pdf

	1	2	3	4	5	6	7
SW1	Off	Off	Off	On	Off	On	On
SW2	On	Off	Off	On	Off	Off	Off

Jumper block should be pointing towards terminal.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:1055



Tech Info Library

System Software Updates: Not Available Before Official Release

Revised: 8/25/89
Security: Everyone

System Software Updates: Not Available Before Official Release

=====

This article last reviewed: 10 December 1987

Certain groups have asked to receive System Software Updates in advance of the general public. There is now no option for advance delivery of System Software Updates.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1057



Tech Info Library

Apple Scribe Printer: Configuration Table

Revised: 9/5/85
Security: Everyone

Apple Scribe Printer: Configuration Table

=====

System	SW-1 12345678	Cable Required
--------	------------------	----------------

Apple III	11010000	A+B
Macintosh	11010000	C
Lisa	11010000	A+B
Apple IIc	11010000	E *
Super Serial	11010000	B
High Speed Serial	N/A	N/A

Key: 0 = off = open; 1 = on = closed
* - Using default port settings

Cables:	Letter	Part Number	Comments
	A	590-0029-00	Modem Eliminator
	B	590-0037-B	DB-25 to DB-25
	C	590-0169	DB-9 to DB 25
	E	590-0191-A	5-pin DIN to DB-25

Apple III Driver Configuration:

Driver Data Configuration Block

	0	1	2	3	4	5	6	7	8	9	A	B
RS-232	0E	00	10	10	10	00	13	11	DF	84	50	80
Printer	0E	00	10	10	10							

Super Serial Card Configuration:

	1	2	3	4	5	6	7
SW1	Off	Off	Off	On	Off	On	On
SW2	On	On	Off	Off	On	Off	Off

..TIL01058-Apple_Scribe_Printer-Configuration_Table.pdf

The jumper block should be pointing towards terminal.

The Apple Interface Manual, Apple Computer (UK) Ltd.

Tech Info Library Article Number:1058



Tech Info Library

Heizer Software

Revised: 4/3/97
Security: Everyone

Heizer Software

=====

Article Created: 11/06/87
Article Reviewed: 07/09/93
Article Updated: 04/02/97

Heizer Software

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P.O. Box 232019
Pleasant Hill, CA 94523

510-943-7667 (Main office)

800-888-7667 (Orders only)

Fax: 510-943-6882

Company Profile:

Software, primarily Macintosh and IBM software distribution, IBM and Apple
Microsoft Excel and Works, Apple HyperCard and Clarisworks

Article Change History: 07/09/93 New Product Information Added

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:1060



Tech Info Library

Apple II Hardware: Errata in Apple II Reference Manual (1 of 2)

Revised: 12/16/85
Security: Everyone

Apple II Hardware: Errata in Apple II Reference Manual (1 of 2)

=====

Page 4

Because of continuing cost reductions on 16K RAMs, current revisions of the Apple II accept only 16K RAMs.

Page 7

Table 2, the backspace key are reversed.

->	\$95	\$95	\$95	\$95
<-	\$88	\$88	\$88	\$88

Page 9

2nd Paragraph, the pins carrying the video signals are referred to as being on the left side of the board. They are on the RIGHT.

Page 10

The photograph refers to a Revision 6 Apple. Revision 7 and later Apples will look slightly different.

Page 10

The Eurapple modification is not complete and we do not support or recommend modification of Apples for European television signals.

Page 11

The photograph refers to a Revision 6 Apple. Revision 7 and later Apples will look slightly different.

Page 23

The photograph refers to a Revision 6 Apple. Revision 7 and later Apples will look slightly different.

Page 25

First paragraph, line 4; The address is actually \$C040 instead of \$C04F.

Page 31

Paragraph 3, line 3, "the leftmost column" should read "the rightmost

column"

Page 31

Table 11 should read:

LEFT EDGE	32	\$20	0/ 0/39	\$0/\$ 0/\$27
WIDTH	33	\$21	0/39/39	\$0/\$27/\$27
TOP EDGE	34	\$22	0/ 0/23	\$0/\$ 0/\$17
BOTTOM EDGE	35	\$23	0/24/24	\$0/\$18/\$18

Page 35

ESC E "When COUT detects this" should read "When RDKEY detects this"

Page 36

The Autostart ROM initializes the annunciators 0 and 1 to OFF and annunciators 2 and 3 to ON.

Page 37

Paragraph 5 refers to to using call -1169 to set \$3F4 to XOR of \$3F3 in autostart reset vector. This may garbage the diskette in drive 1 if used on a non-autostart system.

-) and the forward copy key (-

Page 47

The line of monitor command just under the first paragraph should read

```
*0:FF FF AD 30 C0 88 D0 04 C6 01 F0 08
*:CA D0 F6 A6 00 4C 02 00 60
```

Page 70

Paragraph 2, the page 3 memory usage chart is actually on page 65 of the manual instead of page 62.

Page 70

RAM Configuration Blocks are not included on Revision 7 and later Apple boards.

Page 74

The Zero Page memory maps are incomplete. Applesoft also uses \$D6 and Applesoft HIGH-RES uses \$19 to \$1D.

Page 79 Table 22

The line for \$C060 should be

	\$0	\$1	\$2	\$3	\$4	\$5	\$6	\$7
\$C060	cin	pb0	pb1	pb2	gc0	gc1	gc2	gc3

Page 81

Paragraph 3 recommends IOSAVE and IORESTORE. These routines must be used with caution because if any other routine in the system uses them, they will overwrite your information. The 6502 stack is a better place to save the registers.

Page 84

Expansion ROM, paragraph 3, This flip-flop should be turned on by the I/O SELECT signal, not the DEV SEL signal.

Page 89

The photograph refers to a Revision 6 Apple. Revision 7 and later Apples will look slightly different.

Page 89

The pointer to the USER 1 jumper is wrong. See the photograph on page 99 for the correct location.

Page 90 Paragraph 5

RDY, RES, IRQ, NMI lines are held high by a 1000 ohm resistor, NOT 3300 ohm.

Page 91

Data from 6502 (read) and Data to 6502 (write) are reversed.
They should be:

Data from 6502 (write)
Data to 6502 (read)

Page 96

Paragraph 4, line 5, the 74LS283 is at location E14.

Page 100

The Apple's new built-in keyboard is built around a AY-5-3600 keyboard encoder. The inputs to this ROM, pins 17 through 26 and 36 through 40, are connected to the matrix of keyswitches on the keyboard. The outputs of this ROM are buffered by a 74LS04 and are connected to the Apple keyboard connector.

The keyboard decoder rapidly scans through the array of keys on the keyboard, looking for one that has been pressed. This scanning action is controlled by the free running oscillator made up of three sections of a 74LS00 at location B3 on the separate encoder board. The speed of this oscillation is controlled by C7, R7 and R8 on the encoder board.

Apple Tech Notes

Tech Info Library Article Number:1061



Tech Info Library

Apple II Hardware: Errata in Apple II Reference Manual (2 of 2)

Revised: 10/29/84
Security: Everyone

Apple II Hardware: Errata in Apple II Reference Manual (2 of 2)

=====

Page 104

The +12 and -5 volt levels are documented on page 92 as +11.8 and -5.2. The levels will vary from Apple to Apple.

Page 107

Pin 19, SYNC, is connected only on Apples manufactured for sales overseas.

Page 107

Pin 21, RDY, is pulled high with a 1000 ohm resistor to +5 volts.

Page 107

Pin 22, DMA, is held high by a 1000 ohm resistor to +5 volts. This signal will stop the 6502 clock. It should not be held low for more than two clock cycles or the 6502 internal registers may be lost.

Page 108

Pin 28, INT IN, is the second item on the page and is mislabeled 26.

Page 108

Pin 32, INH, is pulled high by a 1000 ohm resistor.

Page 108

Pin 35, COLOR REF, is connected only on Apples manufactured for sales overseas.

Page 119

Figure 3 should be labeled:

ROTATE ONE BIT RIGHT (MEMORY OR ACCUMULATOR) M or A.

Page 120

The Processor status word should be

7							0
+---+---+---+---+---+---+---+							
| N |	V |		| B |	D |	I |	Z | C |	
PROCESSOR STATUS WORD, "P"							

+---+---+---+---+---+---+---+---+

^

This bit is undefined.

Page 121

Note 1 should read "Bits 6 and 7 are transferred to the Status Register. If the result of A AND M is zero, then Z=1; otherwise Z=0."

Page 127-128

The unimplemented opcodes are shown as NOPs, which is wrong. \$EA is the only code defined as NOP. The others should not be used as they perform undefined operations.

Page 128

Op-code \$AD is a LDA, Absolute

Page 137

The addresses starting at line 100 should be:

```
CLRAN0 EQU $C058
SETAN0 EQU $C059
CLRAN1 EQU $C05A
SETAN1 EQU $C05B
CLRAN2 EQU $C05C
SETAN2 EQU $C05D
CLRAN3 EQU $C05E
SETAN3 EQU $C05F
```

Page 143

Starting at address \$FA6F the comments should read:

```
FA6F LDA CLRAN0 ;AN0 = TTL LO
FA72 LDA CLRAN1 ;AN1 = TTL LO
FA75 LDA SETAN2 ;AN2 = TTL HI
FA78 LDA SETAN3 ;AN3 = TTL HI
```

Page 165

The comment after address \$FCAC should read

```
1.0204 USEC * (13+27/2*A+5/2*A*A)
```

Pages 172-176

These tables were cut up to fit the pages so they are no longer in numeric or alphabetic order.

Apple Tech Notes

Tech Info Library Article Number:1062



Tech Info Library

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (1 of 3)

Revised: 10/17/94
Security: Everyone

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (1 of 3)

=====
Pages iii and iv of the Table of Contents are incorrect in some manuals. Those pages should look like this:

Page iii (Table of Contents--Part I):

CHAPTER 3: Setting Up Your Scribe Printer.....	23
23...Testing the Scribe Printer	
25...Connecting the Scribe to your Computer	
25.....What you Need	
26.....Scribe Setup	
26...Ready to Print	
CHAPTER 4: Starting to Print.....	29
29...Preliminary Setup	
29...Turning on the System	
30...Printing with Applesoft	
31.....FYI: A Few Applesoft Hints	
31...If it Doesn't Work the First Time	
CHAPTER 5: Caring for your Scribe Printer.....	35
35...Operating Environment	
36...Cleaning	
36...Replacing the Print Head	
36.....Removal of a Print Head	
38.....Installing a New Print Head	

Page iv (Table of Contents--Part II):

Chapter 1: Applesoft and Pascal Programs.....	41
41...Printing from Applesoft	
41.....Underlines and Headlines in Applesoft	
42.....Subscript and Superscript in Applesoft	
43.....Printing Color in Applesoft	
45...Printing from Pascal	
45.....Pascal Printing Program	
46.....Pascal Printing Features Program	

47.....Pascal Line-by-Line Printing

Chapter 2: Text and General Control Codes.....49

49...Controlling your Scribe

50...Power-On Configuration (Standard Instructions)

50.....DIP Switch Settings

52.....Control Codes

52.....Single-Character Codes

52.....Multi-Character Codes

52...Functions you can Change

53.....DIP Switch SW1-SW8 Functions

55...Text Mode Codes

55.....Draft/Letter Mode

55.....Character Pitch

56.....Headline Type

57.....Underlining

57.....Subscript/Superscript

58.....Slashed/Unslashed Zeros

58.....Left Margin Setting

59.....Character Repetition

59.....Alternate (National) Characters

61.....Backspacing

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1064



Tech Info Library

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (2 of 3)

Revised: 10/17/94
Security: Everyone

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (2 of 3)

=====

On page 24,

1. change DIPSW (00*00000), '1=ON, 0=OFF'
to DIPSW (00000*00), '1=ON, 0=OFF'
2. change the last paragraph to read as follows:

Inside the "DIPSW()" message is the present setting of DIP switches SW1-SW8 at the back of the printer. The printout numbers, reading from left to right, correspond to the setting of the DIP switches SW1-SW8, respectively. If the message shows "DIPSW(00000*00)", the switch settings are normal and correct. If not, refer to "DIP switch SW1-SW8 Functions" in Chapter 2, Text and General Control Codes of Part II of this manual.

3. The statements in the lower left-hand margin should read as follows:

During self-test, the * is printed out for switch 6 regardless of the switch's setting. Switches 5 and 6 are used for setting print density and are normally set to the OFF (UP) position.

The relation of the printout number to the switch positions is as follows:

```
(000000*00)
|           |
SW1.....SW8
```

On page 32, change DIPSW (00*00000)
to DIPSW (00000*00)

On page 53, change the last paragraph to read:

You can run the Scribe Printer self-test to obtain a printout of the switch positions. A self-test DIP switch setting printout of (00000*00) is the normal indication. The printout, reading from left to right, corresponds to the settings of SW1-SW8, respectively. Switch SW6 indicates an * regardless of its setting.

On pages 31, 93 and 121,

change "1-ampere fuse"
to "2-ampere fuse for 110-volt systems and 1-ampere fuse for 220-volt
systems."

On page 12, add the following to the right of step #1:

If you haven't already done so, remove the black plastic coil (print head
shipping retainer) from the inside of the printer.

Pages 59 and 60 are incorrect in some manuals. Those pages should look like
this:

Page 59:

Character Repetition:

You can send a single control code to the Scribe that will cause it to
print the same character up to 80 times at a 10 character per inch pitch
and 136 times at a pitch of 17 characters per inch.

Code:	Decimal:	Hex:	Effect:
ESC R nnn c	27 82 ddd d	\$1B \$52 hhh h	Prints nnn repetitions of character c.

(where nnn is the numer of repetitions, c is the character, d is the
decimal number assigned to each ASCII digit n, or character c in this
case, and each h is the Hex equivalent of each d.)

For example, the following control code will cause 24 asterisks to be
printed one after another:

ASCII Code:	Decimal:	Hex:
ESC R 024 *	27 82 48 50 52 42	\$1B \$52 \$30 \$32 \$34 \$2A

The number nnn in this control code must always be three digits long;
however, leading zeros may be replaced by spaces.

By the way: If the number nnn is so large that the repeated characters
run beyond the end of the line, the auto-print action must be set to
produce a line feed; otherwise, the excess characters will print over
other characters on the same line. (See Auto-Print Action, described
later in this chapter.)

Alternate (National) Characters:

Your Scribe has seven different language fonts to aid in printing your
text in German, French, Italian, Swedish, Spanish, and British English,
as well as American English. You can choose any one of these character

groups to substitute for these ten American symbols:

* @ [\] ` { | } ~

Table 2-3 illustrates the characters in each alternate language font. The Draft Mode characters are shown; Letter Mode characters are the same, except for style. (See Appendix D.)

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Tech Info Library Article Number:1065



Tech Info Library

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (3 of 3)

Revised: 10/17/94
Security: Everyone

Scribe Printer: Apple IIC Manual Errata (030-0993-A) (3 of 3)

=====

Page 60:

Table 2-3 Alternate (National) Language Characters, Draft Mode

Language

American	#	@	[	\	\]	`	{	|	}	~
British	Lbs.	@	[	\	\]	`	{	|	}	~
German	#	sect.	A-um.	O-um.	U-um.	`	a-um.	o-um.	u-um.	Essatz
French	Lbs.	a-ag.	o.	c-c.	sect.	`	e-aa.	u-ag.	e-ag.	um.
Swedish	#	@	A-um.	O-um.	A-o.	`	a-um.	o-um.	a-o.	~
Italian	Lbs.	sect.	o.	c-c.	e-aa.	u-ag.	a-ag.	o-ag.	e-ag.	i-ag.
Spanish	Lbs.	sect.	!-inv.	N-~	?-inv.	`	o.	n-~	c-c.	~
	\$23	\$40	\$5B	\$5C	\$5D	\$60	\$7B	\$7C	\$7D	\$7E

KEY:

aa. = accent aigu (goes above letter)
ag. = accent grave (goes above letter)
c. = cedilla (goes below letter)
Essatz = German double-s elision
o. = diacritical small o (goes above letter)
Lbs. = pounds sterling
sect. = section sign
um. = umlaut (goes above letter)
~ = tilde (goes above letter)
?-inv. = Inverted question mark
!-inv. = Inverted exclamation point

In this table, the top line shows the American characters. The other lines give the alternate character groups that can be substituted for these characters by using the appropriate control codes. DIP switches SW1, SW2 and SW3 specify the selected character group.

Note: The "\$" (Hex 24) and "^" (Hex 5E) are part of the standard font in all languages. For the Spanish hyphen, use the single-quote key "'" (hex

27), which is also the same for all languages.

Table 2-4 shows the control codes and combinations of positions of the three DIP switches to select the desired alternate character group. Note that there are two different sets of DIP switch settings and two different control codes that produce American symbols; you can use either one, since the effects of both are the same.

Table 2-4. Alternate (National) Character Set Codes

Language		DIP Switches		
Font	Code	SW1	SW2	SW3
American	ESC Z CTL-G CTL-@	Off (Up)	Off (Up)	Off (Up)
German	ESC Z CTL-C CTL-@ ESC D CTL-D CTL-@	Off (Up)	Off (Up)	On (Down)
American	ESC Z CTL-E CTL-@ ESC D CTL-B CTL-@	Off (Up)	On (Down)	Off (Up)
French	ESC Z CTL-A CTL-@ ESC D CTL-F CTL-@	Off (Up)	On (Down)	On (Down)
Italian	ESC Z CTL-F CTL-@ ESC D CTL-A CTL-@	On (Down)	Off (Up)	Off (Up)
Swedish	ESC Z CTL-B CTL-@ ESC D CTL-E CTL-@	On (Down)	Off (Up)	On (Down)
British	ESC Z CTL-D CTL-@ ESC D CTL-C CTL-@	On (Down)	On (Down)	Off (Up)
Spanish	ESC D CTL-G CTL-@	On (Down)	On (Down)	On (Down)

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1066



Tech Info Library

Lisa: Converting Workshop files to LisaWrite documents (10/94)

Revised: 10/17/94
Security: Everyone

Lisa: Converting Workshop files to LisaWrite documents (10/94)

=====

Article Created: 30 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

This article describes the conversion process for Lisa Workshop documents into LisaWrite.

DISCUSSION -----

Workshop ASCII files can be converted to LisaWrite documents. Once they are in LisaWrite format, the information they contain can be transferred to other applications, such as LisaCalc, using Cut and Paste. Convert Workshop files with the following procedure.

From the Workshop:

1. Initialize a diskette.
2. Copy the Workshop files to the diskette.
3. Rename the Workshop files with LisaWrite Office System names: e.g., {D200T1}, {D201T1}, {D202T1}, ...{D<200+N>T1}.

From the Office System:

4. Insert the diskette and repair it. This procedure forms a new catalog with containing all files on the diskette.
5. When you open the diskette, each of the documents appear with names such as "Document 200", "Document 201", and so on.
6. Open each of the documents; they should contain the text from the Workshop files.
7. Make a minor change (e.g., add, then delete a space) to force LisaWrite

to rewrite the document, then Save and Put Away.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94 Apple Computer, Inc.

Tech Info Library Article Number:1067



Tech Info Library

LisaWrite: Converting 7/7 Documents For Use w/ Lisa 2.0 (10/94)

Revised: 10/17/94
Security: Everyone

LisaWrite: Converting 7/7 Documents For Use w/ Lisa 2.0 (10/94)

=====

Article Created: 30 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

Those who wish to continue working with the Office System 2.0 software may be able to convert Lisa 7/7 LisaWrite documents to 2.0 if they need to. This article tells how.

DISCUSSION -----

PREREQUISITES:

The document must not contain:

- A. Any graphics (pasted from LisaGraph, LisaDraw, etc.).
- B. Eight or fourteen point text (including spaces, etc.).

PROCEDURE:

1. Save the documents you wish to convert to a diskette formatted for Lisa 2.0.
2. In the Workshop (version 3.0), run the DumpPatch program (refer to the Workshop manual for details) and change the second word of each document from 0005 to 0004.
3. Open the document from the 2.0 Office System, make a minor change (to force the application to rewrite the document), then select Save and Put Away.

The document should now be in Lisa 2.0 format, though we don't guarantee that this procedure will always work.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1068



Tech Info Library

Advanced Ideas, Inc. (Computer Advanced Ideas)

Revised: 4/3/97
Security: Everyone

Advanced Ideas, Inc. (Computer Advanced Ideas)

=====
Article Created: 11/06/87
Article Reviewed: 07/02/93
Article Updated: 04/02/97

Advanced Ideas, Inc.

591 Redwood Hy.
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Mill Valley, CA 94941

415-435-5086

415-388-6575 Fax

Company Profile:
Software, specializing in educational software primarily for the Apple
Macintosh and IBM.

Article Change History: 07/02/93 Name changed, New Product Information Added

Copyright 1989-937, Apple Computer, Inc.

Tech Info Library Article Number:1070



Tech Info Library

Systat, Inc.

Revised: 4/3/97
Security: Everyone

Systat, Inc.

=====

Article Created: 6 November 1987
Article Reviewed/Updated: April 3, 1997

Systat, Inc.

1800 Sherman Ave.
Evanston, IL 60201-9881

708-864-5670

Fax: 708-492-3567

Company Profile:

Software, specializing in Macintosh, DOS, and Windows statistical application software.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1071



Tech Info Library

Applesoft: Syntax errors after CTRL-S (10/94)

Revised: 10/17/94
Security: Everyone

Applesoft: Syntax errors after CTRL-S (10/94)

=====

Article Created: 30 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

Sometimes, when I use the control-S feature to examine a Basic program listing, I get a SYNTAX ERROR after typing the next line. What causes this?

DISCUSSION -----

This happens because you accidentally typed an extra control-S after the program was through listing. This extra control-S is put into the input buffer like any other characters and, since no Basic command starts with a control-S, you get a SYNTAX ERROR.

Typing the left-arrow key until the Apple generates a new prompt line will insure that there is no control-S in the buffer. Alternatively, try to be more careful while typing control characters: holding down the key just a little too long WILL eventually cause more than one character to be generated.

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94 Apple Computer, Inc.

Tech Info Library Article Number:1074



Tech Info Library

LisaTerminal 7/7: NULl character at begining of each pasted line

Revised: 2/1/85
Security: Everyone

LisaTerminal 7/7: NULl character at begining of each pasted line

=====

LisaTerminal sends an ASCII 0 (NULl) character at the beginning of each pasted line. This does not occur when entering text from the keyboard.

The addition of the NULl character helps LisaTerminal compensate for wordwrapping, eliminating the need to have a return at the end of each line of text.

Apple Technical Communications

Tech Info Library Article Number:1081



Tech Info Library

LisaProject 7/7: selecting line cause display to jump

Revised: 2/1/85
Security: Everyone

LisaProject 7/7: selecting line cause display to jump

=====

When you select a perfectly horizontal line connecting two tasks in a multipage LisaProject document, the screen display jumps to the first page of the document. To avoid this inconvenience, move one of the task boxes up or down until the dependancy line is no longer horizontal before selecting it.

Apple Technical Communications

Tech Info Library Article Number:1083



Tech Info Library

LisaCalc 7/7: Format for Printer options change

Revised: 2/1/85
Security: Everyone

LisaCalc 7/7: Format for Printer options change

=====

When you select Preview Pages in your LisaCalc 7/7 document, any Printing Option selections you made revert to their previous setting. Check Preview Pages prior to setting your Printing Options.

Apple Technical Communications

Tech Info Library Article Number:1084



Tech Info Library

Lisa 7/7 Software: Unable to Use a Tool That Has a Password

Revised: 10/17/94
Security: Everyone

Lisa 7/7 Software: Unable to Use a Tool That Has a Password

=====

Even though your Lisa Office System manual states (page 257) that you can protect your tools (applications) with passwords -- don't do it! If you protect a tool that hasn't been used since you powered up, when you attempt to use it, you will get a message that the tool is damaged or is having technical difficulties. You must remove the password before proceeding. LisaWrite and LisaList are exceptions: they seem to function regardless of whether you entered a password.

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Tech Info Library Article Number:1085



Tech Info Library

LisaList: Error Too Many Time Components

Revised: 2/18/92
Security: Everyone

LisaList: Error Too Many Time Components

=====

Typing (or pasting) a time, such as 1:15 pm, into a cell may result in the error message: "Too many time components. Format is..." when your Data Format includes an am/pm (e.g., hh:0m am). The am and pm acts as if they need 4 spaces instead of 2. With a Data Format of hh:0m am, you may enter up to 4 numbers for the hours and minutes, but ONLY up to 2 characters if you include an am or pm. For example:

Your Type	LisaList Displays
555	5:55 pm
1155	11:55 am
13pm	1:00 pm
110pm	not acceptable: you have a total of 6 spaces available of which the pm needs 4.

When your Data Format is hh:0m:0s am you may enter up to 6 numbers, 4 if you enter the am/pm.

Remember, if the Data Format includes an am/pm and you don't specify which, LisaList interpretes the time as:

0	Midnight
1-6	pm
7-11	am
12	Noon
13-23	pm

Refer to your LisaList 7/7 manual, page 144.

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Tech Info Library Article Number:1086



Tech Info Library

Applesoft under ProDOS: Turn 80 columns off before slot commands

Revised: 3/4/85
Security: Everyone

Applesoft under ProDOS: Turn 80 columns off before slot commands

=====

When you use Applesoft under ProDOS, you must turn off the 80-column firmware before issuing any slot command; failing to do so essentially hangs the system. You can turn off the 80-column firmware with ESC CTRL-Q in immediate mode or with `PRINT CHR$(12);CHR$(21)` from deferred mode.

Apple Technical Communications

Tech Info Library Article Number:1091



Tech Info Library

Lisa 3.0: Printing in 10 pitch on a Daisy Wheel Printer

Revised: 3/4/85
Security: Everyone

Lisa 3.0: Printing in 10 pitch on a Daisy Wheel Printer

=====

A problem with the Lisa Office System 3.0 software prevents 10-pitch fonts from actually printing 10 characters per inch on a DWP; instead, these fonts print 9 per inch. This problem was fixed in Release 3.1.

Apple Technical Communications

Tech Info Library Article Number:1092



Tech Info Library

TIFF (Tag Image File Format): Specifications (6 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (6 of 7)

=====

This article last reviewed: 12 February 1988

5. The fields, concluded

ColorResponseUnit

Tag = 300 (12C)

Type = SHORT

N = 1

1 = number represents tenths of a unit.
2 = number represents hundredths of a unit.
3 = number represents thousandths of a unit.
4 = number represents ten-thousandths of a unit.
5 = number represents hundred-thousandths of a unit.
Default is 2.

ColorResponseCurves

Tag = 301 (12D)

Type = SHORT

N = 2**BitsPerSample (for Red samples) +
 2**BitsPerSample (for Green samples) +
 2**BitsPerSample (for Blue samples)

This tag defines three color response curves (one each for Red, Green, and Blue color information). The curves are stored sequentially (in red-green-blue order). The size of each table is 2**BitsPerSample, using the BitsPerSample value corresponding to the respective color. The ColorResponseUnit further specifies how each entry in the table is to be interpreted.

The purpose of the color response curves is to act as a "lookup" table mapping values from 0 to 2**BitsPerSample-1 into specific intensity values. The intensity values are as specified by the NTSC color standard assuming illumination to be CIE D6500.

Correspondence to the Physical World

XResolution

Tag = 282 (11A)

Type = RATIONAL

N = 1

The number of pixels per ResolutionUnit (see below) in the X direction, i.e., in the ImageWidth direction. It is, of course, not mandatory that the image be actually printed at the size implied by this parameter. It is up to the application to use this information as it wishes.

As is the case for many of these fields, XResolution may be invalid and irrelevant for some images (e.g., images made with a hand-held digitizing camera, which has a three-dimensional nature) and should therefore be absent from the image file.

No default.

YResolution

Tag = 283 (11B)

Type = RATIONAL

N = 1

The number of pixels per ResolutionUnit in the Y direction, i.e., in the ImageLength direction.

No default.

ResolutionUnit

Tag = 296 (128)

Type = SHORT

N = 1

To be used with XResolution and YResolution.

1 = no absolute unit of measurement. Used for images that may have a non-square aspect ratio, but no meaningful absolute dimensions.

2 = inch

3 = centimeter

Default is 2

Orientation

Tag = 274 (112)

Type = SHORT

N = 1

1 = The 0th row represents the visual top of the image, and the 0th column represents the visual left hand side.

2 = The 0th row represents the visual top of the image, and the 0th column represents the visual right hand side.

3 = The 0th row represents the visual bottom of the image, and the 0th

column represents the visual right hand side.

4 = The 0th row represents the visual bottom of the image, and the 0th column represents the visual left hand side.

5 = The 0th row represents the visual left hand side of the image, and the 0th column represents the visual top.

6 = The 0th row represents the visual right hand side of the image, and the 0th column represents the visual top.

7 = The 0th row represents the visual right hand side of the image, and the 0th column represents the visual bottom.

8 = The 0th row represents the visual left hand side of the image, and the 0th column represents the visual bottom.

Default is 1.

Document Context

DocumentName

Tag = 269 (10D)

Type = ASCII

The name of the document from which this image was scanned.

No default.

PageName

Tag = 285 (11D)

Type = ASCII

The name of the page from which this image was scanned.

No default.

XPosition

Tag = 286 (11E)

Type = RATIONAL

The X offset of the left side of the image, with respect to the left side of the page, in inches.

No default.

YPosition

Tag = 287 (11F)

Type = RATIONAL

The Y offset of the top of the image, with respect to the top of the page, in inches. In the TIFF coordinate scheme, the positive Y direction is down, so that YPosition is always positive.

No default.

PageNumber

Tag = 297 (129)

Type = SHORT
N = 2

This tag is used to specify page numbers of a multiple page (e.g. facsimile) document. Two SHORT values are specified. The first value is the page number; the second value is the total number of pages in the document.

Note that pages need not appear in numerical order.

Miscellaneous Strings

ImageDescription
Tag = 270 (10E)
Type = ASCII

Useful or interesting information about the image.
No default.

Make
Tag = 271 (10F)
Type = ASCII

The name of the scanner manufacturer.
No default.

Model
Tag = 272 (110)
Type = ASCII

The model name/number of the scanner.
No default.

Storage Management

These fields may be useful in certain dynamic editing situations. Software that merely reads TIFF files will probably not need to care about these fields. And, of course, software that creates TIFF files is by no means required to write these fields.

FreeOffsets
Tag = 288 (120)
Type = LONG

For each "free block" in the file, its byte offset.
No default.

FreeByteCounts
Tag = 289 (121)

Type = LONG

For each "free block" in the file, the number of bytes in the block.

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Tech Info Library Article Number:1093



Tech Info Library

Lisa 7/7 Software: System Reboots During Office System Install

Revised: 10/17/94
Security: Everyone

Lisa 7/7 Software: System Reboots During Office System Install

=====

If, at any time during the installation of the Lisa Office system software, the system reboots, be sure the diskettes are not write protected. The colored tab must show through to the front of the micro diskette.

Copyright 1984 Apple Computer, Inc.

Tech Info Library Article Number:1094



Tech Info Library

Configuring the ImageWriter to an Apple III or III+ (10/94)

Revised: 10/17/94
Security: Everyone

Configuring the ImageWriter to an Apple III or III+ (10/94)

=====

Article Created: 26 September 1984
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following information shows how to configure an Apple /// and an ImageWriter II printer.

DISCUSSION -----

Interface:

You may use either the .PRINTER driver or the .RS232 driver. The appropriate data configuration blocks for these drivers are:

```
.PRINTER:  [0E] [00] [00] [00] [00]
.RS232:    [0E] [00] [00] [00] [00] [00] [13] [11] [DF] [84] [50] [80]
```

Cables:

Modem Eliminator Cable (Part #590-0166)
Serial and Communications Cable (Part #590-0037)

Printer Switch Settings:

```
      8 7 6 5 4 3 2 1
SW1: | | |X| | | | |
      |X|X| |X|X|X|X|X|
```

```
      4 3 2 1
SW2: | | |X|X|
      |X|X| | |
```

NOTE: These switch settings are for the U.S. character set, 66-line page length, 8 data bits, elite pitch, no auto-LF after CR,

9600 baud, DTR data protocol. If you wish to change any of these settings, you must make corresponding changes in the data configuration block for whatever printer driver you're using.

Search on "Imagewriter and switches" and/or "driver data configuration" for more information on configuring.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1095



Tech Info Library

ImageWriter: Configuring For a Macintosh (10/94)

Revised: 10/17/94
Security: Everyone

ImageWriter: Configuring For a Macintosh (10/94)

Article Created: 04 January 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following information shows how to configure a Macintosh and an ImageWriter printer.

DISCUSSION -----

Printer Switch Settings:

	8	7	6	5	4	3	2	1	
SW 1:	|	|	|X|	|	|	|	|	|	CLOSED
	|X|X|	|X|X|X|X|X|							OPEN

	4	3	2	1	
SW2:	|	|	|X|X|		CLOSED
	|X|X|	|	|		OPEN

Cable: Serial Interface Cable (Part # 590-0169)

NOTE:

The first 3,000 Macintosh Imagewriter cables manufactured lacked pins 7 and 20; these cables cannot support hardware handshaking (DTR). To use these cables, change switch 3 of SW2 to closed) so that the printer can use software handshaking (XOn/XOff). (You need change nothing on your Macintosh, since the Imagewriter driver in your Macintosh software supports either protocol.)

One company, Microsoft, uses their own printer drivers; these drivers support only DTR, and so it's not possible to print from Microsoft programs using one of the old cable.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1096



Tech Info Library

Imagewriter: Configuring for a Lisa

Revised: 10/17/94
Security: Everyone

Imagewriter: Configuring for a Lisa

=====

Article Created: 26 September 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following information shows how to configure a Lisa and an ImageWriter printer.

DISCUSSION -----

Cables:

--From back of machine: Modem Eliminator Cable (Part #590-0166)

--From printer: Serial and Communications Cable (Part #590-0037)

The loose end of these two cables are then joined.

Printer Switch Settings:

	8	7	6	5	4	3	2	1
SW1:	|	|	|X|	|	|	|	|	|
	|X|X|	|X|X|X|X|X|						

	4	3	2	1
SW2:	|	|	|X|X|	
	|X|X|	|	|	

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1097



Tech Info Library

Macintosh: Insufficient Room to Copy a Document (10/94)

Revised: 10/17/94
Security: Everyone

Macintosh: Insufficient Room to Copy a Document (10/94)

=====

Article Created: 11 March 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

When I try to copy a document to another floppy disk or hard disk, sometimes a dialog box appears: "There is insufficient room to copy your document" appears. What does this mean?

DISCUSSION -----

There may not be enough temporary work space for your Macintosh to comply with your request. Although there may appear to be plenty of room on the disk, you must free up space on the source disk until your Macintosh can complete the task.

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1098



Tech Info Library

Software Supply

Revised: 4/3/97
Security: Everyone

Software Supply

=====

Article Created: 6 November 1987
Article Reviewed/Updated: April 3, 1997

Software Supply

4395 Wild Eagle Terr.
Reno, NV 89511

702-852-4532

Fax: 702-852-4630

Company Profile:

Software, specializing primarily in developing Macintosh system software utilities.

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Tech Info Library Article Number:1099



Tech Info Library

Lisa 3.0: Using it with a 10 Megabyte ProFile

Revised: 3/11/85
Security: Everyone

Lisa 3.0: Using it with a 10 Megabyte ProFile

=====

Lisa 7/7 (Version 3.0) incorrectly makes a 10 megabyte ProFile look like a 5 megabyte ProFile when it's used with Macintosh software. This problem is fixed in Version 3.1.

Apple Technical Communications

Tech Info Library Article Number:1100



Tech Info Library

LisaTerminal 7/7: Communicating with Unix's Emacs Editor

Revised: 3/11/85
Security: Everyone

LisaTerminal 7/7: Communicating with Unix's Emacs Editor

=====

If you're using LisaTerminal's VT100 mode to communicate with an Emac Editor, avoid using split windows; otherwise, a problem with the 7/7 software causes the Lisa's screen to be updated randomly. Alternatively, transmit a CTRL-I to erase and redisplay the current screen.

Apple Technical Communications

Tech Info Library Article Number:1101



Tech Info Library

Lisa 7/7 and MacWorks: A 5-MB ProFile Can Be Inadequate for Both

Revised: 7/30/87
Security: Everyone

Lisa 7/7 and MacWorks: A 5-MB ProFile Can Be Inadequate for Both

=====

The first time an application is opened during a session, Lisa sets up a process for both that application and all documents created by that application. The first time you print from an application, another process is opened. Because each process uses 200 blocks, using all seven applications requires 1,400 blocks of disk space. Printing requires up to another 1,400 blocks.

A five-megabyte ProFile containing both the Lisa 7/7 Office System and MacWorks can easily become taxed for storage space. The Office System alone takes up about 6,000 blocks (3 megabytes) and Macintosh software takes up another 2,000 blocks (1 megabyte), leaving less than 2,000 blocks for storing documents and all associated processes. In short, users who wish to run both 7/7 software and MacWorks from the same disk should do so from a 10-megabyte ProFile.

Tech Info Library Article Number:1103



Tech Info Library

Lisa 7/7: Installing OS 3.1 and Macintosh software on hard disk

Revised: 6/1/85
Security: Everyone

Lisa 7/7: Installing OS 3.1 and Macintosh software on hard disk

=====

To install ONLY Office System 3.1 to share or not share the hard disk with Macintosh software:

1. Backup any Office System or Macintosh documents from the hard disk.
2. Follow the procedures in Chapter 6 or the Lisa Office System manual to install the Lisa 7/7 Office System 3.1.
 - a. When prompted to Erase or Don't Erase, select Erase.
 - b. When prompted to Share or Don't Share:
 1. Select Share if you want to store Macintosh software on the hard disk.
 2. Select Don't Share if you use your hard disk to store only Office System software.

Apple Technical Communications

Tech Info Library Article Number:1106



Tech Info Library

LisaCalc 7/7: Regression--explanations and clarifications

Revised: 3/11/85
Security: Everyone

LisaCalc 7/7: Regression--explanations and clarifications

=====

Some confusion has arisen regarding the F-test formula, a type of Regression value. To begin with, the formula as listed in the LisaCalc manual on 167 is incorrect; it should be $F = (r / (k - 1)) / ((1 - r) / (n - k))$.

Another cause of confusion about this formula seems to arise from the fact that the result that the function returns is the coefficient of determination, also known as the "r-square value"; the r in the formula, then, is already the r-square value as returned by the regression function. It does not need to be squared in the formula.

Two more corrections to the Regression section in the LisaCalc 7/7 manual:

1. Page 154: The formula at the bottom of the page should read:
Correlation (B3:E7, H6:19).
2. On page 165, under Type of Regression Values: The fourth sentence incorrectly states that the correlation coefficients are sorted from the highest to the lowest index. In fact, they are listed in the order they appear in the data matrix.

Apple Technical Communications

Tech Info Library Article Number:1107



Tech Info Library

Apple IIGS System 3.1: Too Many Files in a Folder Slows Finder

Revised: 8/28/90
Security: Everyone

Apple IIGS System 3.1: Too Many Files in a Folder Slows Finder

=====

This article last reviewed: 11 November 1987

The Apple IIGS System Disk 3.1 has a practical limit in the number of files per folder it can handle. Though having 200 or more files in a folder will not cause a system crash, the Finder slows to where even the simplest of operations becomes unacceptably time consuming.

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Tech Info Library Article Number:1108



Tech Info Library

Bitstream, Inc.

Revised: 4/3/97
Security: Everyone

Bitstream, Inc.

=====

Article Created: 11/12/87
Article Last Reviewed: 07/06/93
Article Last Updated: April 3, 1997

Bitstream, Inc.

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Tech Info Library Article Number:1110



Tech Info Library

Applesoft: 8 Bit Output (1 of 2)

Revised: 3/11/85
Security: Everyone

Applesoft: 8 Bit Output (1 of 2)

=====

For a number of reasons, AppleSoft "sets the eighth bit" of any data that it prints out--that is, it adds 128 to each ASCII value sent to the output device. A statement like

```
10 PRINT CHR$(76),
```

for example, doesn't really send ASCII 76 to the device; rather, it sends ASCII 204, or 76 + 128. This situation doesn't normally cause any problems--unless you're sending data to (1) a printer in "graphics" mode, (2) a printer in "custom character" mode, (3) any device that only uses ASCII values in the range of 0 to 255, (4) any device that expects byte-oriented data, or (5) any device that always needs the eighth bit clear, such as Hewlett-Packard devices. If the device you're sending Applesoft data to is one that needs the eighth bit clear, you will see one or more of the following symptoms:

1. The device refuses to respond to commands;
2. The device refuses to print graphic characters;
3. In graphics mode, an extra dot or line appears periodically throughout the printout.

The following short machine language program allows you to have complete control over the eighth bit in output statements sent from Applesoft; this program works under either DOS 3.3 or ProDOS.

To run the program, first boot from a DOS 3.3 or ProDOS disk, and then type the following commands, following each with a carriage return.

NOTE: The indented material in CAPITAL letters below is what you should type (without the leading spaces, of course); the material in lowercase letters consists of instructions and general information.

From Applesoft BASIC, type:

```
CALL-151
```

The system will respond with an * prompt. After the *, type:

300:A9 4C 8D F5 03 A9 10 8D

Press RETURN; you'll then get a another * prompt. Repeat this process with each of the following lines:

308:F6 03 A9 03 8D F7 03 60

310:20 6D 03 20 E3 DF A0 00

318:B1 83 F0 2E AA C8 B1 83

320:85 5E C8 B1 83 85 5F A0

328:00 B1 5E 20 ED FD C8 CA

330:D0 F7 A0 00 B1 B8 C9 3A

338:F0 10 C9 00 F0 0C C9 3B

340:F0 11 20 7D E0 90 07 4C

348:10 03 20 8E FD 60 A2 10

350:4C 12 D4 20 59 03 4C 60

358:03 E6 B8 D0 02 E6 B9 60

360:B1 B8 C9 3A F0 E7 C9 00

368:F0 E3 4C 10 03 A0 00 B1

370:B8 D9 9F 03 D0 28 C8 C0

378:02 D0 F4 68 68 20 86 03

380:20 ED FD 4C 32 03 A9 02

388:18 65 B8 85 B8 A9 00 65

390:B9 85 B9 20 67 DD 20 FB

398:E6 A5 A1 20 59 03 60 E7

3A0:28

Now, to check your work, type:

300.3A0

What you have typed up to this point will then be listed; it should look like the listing below. If any lines contain mistakes, simply retype the bad line and then repeat the last step (300.3A0). Repeat this process until your listing

exactly matches the one below.

```
300 - A9 4C 8D F5 03 A9 10 8D
308 - F6 03 A9 03 8D F7 03 60
310 - 20 6D 03 20 E3 DF A0 00
318 - B1 83 F0 2E AA C8 B1 83
320 - 85 5E C8 B1 83 85 5F A0
328 - 00 B1 5E 20 ED FD C8 CA
330 - D0 F7 A0 00 B1 B8 C9 3A
338 - F0 10 C9 00 F0 0C C9 3B
340 - F0 11 20 7D E0 90 07 4C
348 - 10 03 20 8E FD 60 A2 10
350 - 4C 12 D4 20 59 03 4C 60
358 - 03 E6 B8 D0 02 E6 B9 60
360 - B1 B8 C9 3A F0 E7 C9 00
368 - F0 E3 4C 10 03 A0 00 B1
370 - B8 D9 9F 03 D0 28 C8 C0
378 - 02 D0 F4 68 68 20 86 03
380 - 20 ED FD 4C 32 03 A9 02
388 - 18 65 B8 85 B8 A9 00 65
390 - B9 85 B9 20 67 DD 20 FB
398 - E6 A5 A1 20 59 03 60 E7
3A0 - 28
```

When your listing contains no errors, type:

```
BSAVE ASOFT8BIT,A$300,L$A1
```

The program is now available for your use. To use it inside your BASIC program, simply include a line like:

```
10 PRINT CHR$(4);"BRUN ASOFT8BIT"
```

in your own program.

Apple Technical Communications

Tech Info Library Article Number:1111



Tech Info Library

Applesoft: 8 Bit Output (2 of 2)

Revised: 3/11/85
Security: Everyone

Applesoft: 8 Bit Output (2 of 2)

=====

Here are some examples of valid statements that use this routine (<CR> means carriage return):

COMMAND	RESULT
10 & CHR\$(0)	sends an ASCII 0 followed by <CR>
10 & CHR\$(0);	sends an ASCII 0 with no <CR>
10 A\$=CHR\$(0)+CHR\$(1)+CHR\$(2) 20 & A\$	sends an ASCII 0 then 1 then 2 then <CR>
10 X=1:Y=2:A\$(X)="SOME GARBAGE" 15 A\$(Y)="MORE" 20 & A\$(X);A\$(Y);	sends strings SOME GARBAGE & MORE

The following statements are invalid and will result in a SYNTAX ERROR.

INVALID COMMAND	REASON FOR SYNTAX ERROR
10 & A\$,B\$	No comma allowed
10 & X	"&" doesn't work with numeric variables. Use (10 A\$=STR\$(X):& A\$) instead.

NOTE: This program is useful mainly for sending output to a printer or similar peripheral device that has been initialized in the normal manner--that is, with PR#(slot #). You can send the output to the screen if you wish, but characters will either flash on and off or appear in inverse video.

Apple Technical Communications

Tech Info Library Article Number:1112



Tech Info Library

LaserWriter: Diablo 630 Emulation Mode (10/94)

Revised: 10/17/94
Security: Everyone

LaserWriter: Diablo 630 Emulation Mode (10/94)

Article Created: 11 March 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

I have a LaserWriter that I want to use in Diablo 630 emulation mode. How do I set this up, what are some of the issues I will encounter, and what are some of the specifications of Diablo 630 emulation mode?

DISCUSSION -----

To select Diablo 630 emulation mode for the LaserWriter, set the switch on the rear connector panel to Special and use standard RS-232C cabling. You may use either a DB-9 or a DB-25 connector for data input. The data transfer rate is 9600 Baud with Xon/Xoff protocol and no parity: the LaserWriter ignores the parity bit. Once data has stopped arriving, all Diablo printer settings (margins, tabs, spacing, and so on) remain in effect until a printer reset occurs.

It is also possible to switch a LaserWriter to Diablo 630 emulation mode from PostScript. Below is a PostScript routine that puts the LaserWriter in Diablo 630 emulation mode for the remainder of the job (until ^D is received). This is the same Diablo emulation that can be selected with the side-panel switch setting, except for one limitation: when Diablo mode is selected from software, the serial port remains sensitive to the seven control characters ^C^D^T^S^Q and CR,LF. Diablo 630 output uses some of these codes, so the potential for problems is fairly high.

%!
%PostScript code to call Diablo emulator from AppleTalk or serial input stream
% This code should go on the front of a Diablo file.

```
/doDiablo {/printpageflag false def
            {statusdict begin
              62 eescratch fontname
```

```
        61 eescratch dup 0 eq {pop 1} if fontname
        60 eescratch
        59 eescratch
                                /diablo load
    end
    exec
} stopped pop
printpageflag {showpage} if
    } def

/fontname {$idleTimeDict begin
    dup ROMnames length ge {pop 0} if
    ROMnames exch get
    end
    } def

doDiablo
```

In Diablo 630 Emulation mode, the LaserWriter prints a page under two conditions:

- when it reaches the end of a page, or
- when it receives a form feed

The LaserWriter cannot detect the end of a document; it simply assumes that the document has come to an end when data stops arriving.

If the last page of a document isn't full and doesn't end with a form feed, the printer doesn't print it immediately; instead, it waits for a printer timeout, which occurs:

- As soon as the next document arrives, or
- After 30 seconds, if no document arrives before that.

You can avoid this delay by being careful to include a form feed at the end of your document's last page.

The Diablo emulator has some limitations. For instance, the emulator will only print in portrait mode. If you want to print a document in landscape mode, you must use PostScript.

In the LaserWriter and LaserWriter Plus, PostScript can change parameters controlling functions of the Diablo 630 emulation mode. These Persistent Parameters can be found on Page 302-303 of Addison Wesley's Postscript Language Reference Manual (Red Cover). The table on Page 302 gives an index number for each parameter and the default setting at that index. For example, index 62 is the 'normal' font location used in Diablo mode and index 61 is the 'bold' font location. The default value for index 62 is 0 and the default value for index 61 is 1, selecting Courier for the 'normal' font and Courier-Bold for the 'bold' font.

Here is a sample program to change one of these Persistent Parameters:

```
serverdict begin 0 exitserver
```

```
statusdict begin
62 4 setteescratch
```

This program changes the definition of the 'normal' font used in Diablo 630 emulation mode from Courier to Times-Roman by writing the value shown, the second number, into the EEROM. Index 62 is the 'normal' font location and the second number is the font selection number taken from the following table:

0	Courier
1	Courier-Bold
2	Courier-Qblique
3	Courier-BoldQblique
4	Times-Roman
5	Times-Bold
6	Times-Italic
7	Times-BoldItalic
8	Helvetica
9	Helvetica-Bold
10	Helvetica-Qblique
11	Helvetica-BoldQblique
12	Symbol
13	AvanteGarde-Book
14	AvanteGarde-BookOblique
15	AvanteGarde-Demi
16	AvanteGarde-DemiOblique
17	Bookman-Demi
18	Bookman-DemiItalic
19	Bookman-Light
20	Bookman-LightItalic
21	Helvetica-Narrow
22	Helvetica-Narrow-Bold
23	Helvetica-Narrow-BoldOblique
24	Helvetica-Narrow-Oblique
25	NewCenturySchlbk-Roman
26	NewCenturySchlbk-Bold
27	NewCenturySchlbk-Italic
28	NewCenturySchlbk-BoldItalic
29	Palatino-Roman
30	Palatino-Bold
31	Palatino-Italic
32	Palatino-BoldItalic
33	ZapfChancery-MediumItalic
34	ZapfDingbats

Given the limited write capability of any given location in the EEROM (approx. 10,000 writes), this program should be used only to change parameters that need to be changed infrequently. Beware that some fonts don't work in some situations, for example, assigning the Symbol font as the default font.

DIABLO 630 Control Codes

Characters Per Inch:

CPI Code

- 4 Escape, Control-Underscore and Control-Underscore
- 5 Escape, Control-Underscore and Control-Y
- 6 Escape, Control-Underscore and Control-U
- 8 Escape, Control-Underscore and Control-P
- 10 Escape, Control-Underscore and Control-M
(From Apple IIe, Apple IIc, or Apple IIGS using an Apple interface and AppleWorks, use Escape, Control-Underscore and Control-M, Escape, D, Escape, D)
- 12 Escape, Control-Underscore and Control-K
- 15 Escape, Control-Underscore, Control-I,
(From Apple IIe, Apple IIc, or Apple IIGS using an Apple interface and AppleWorks, use Control-I, Control-A, Escape, Control-Underscore, Control-I, Control-A, and Control-I.)
- 20 Escape, Control-Underscore and Control-G
(Note that these letters at 20 CPI may overlap.)

Lines Per Inch:

LPI Code

- 6 Escape, Control-^, Control-I
(From Apple IIe, Apple IIc, or Apple IIGS using an Apple interface: Control-I, Control-A, Escape, Control-^, Control-I, Control-I, Control-A)
- 8 Escape, Control-^, Control-G

Other Commands:

	Code	
	Begin:	End:
	Escape-	Escape-
Boldface	O	&
Underline	E	R
Subscript	U	D
Superscript	D	U

Diablo commands NOT supported by the LaserWriter:

- Print suppression
- HY-PLot
- Extended Character Set (ECS)
- The ability to download printwheel information, including program mode
- The ability to override printwheel spacing for proportional fonts, although the proportional spacing offset can be changed
- Page lengths other than 11 inches
- Paper feeder control, such as Manual Feed
- Hammer energy control
- Remote diagnostic
- Backward printing control, though reverse printing is supported

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.
14 Dec 1992 - Corrected to correct information about print modes.
23 Sep 1992 - Rewritten to combine several articles.

Support Information Services

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Tech Info Library Article Number:1113



Tech Info Library

Apple Modem: Specifications (Discontinued) (10/94)

Revised: 10/17/94
Security: Everyone

Apple Modem: Specifications (Discontinued) (10/94)

Article Created: 08 April 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following lists the specifications for the Apple Modem 300 and Apple Modem 1200, now discontinued.

DISCUSSION -----

Model A9M0300 300 BAUD (Discontinued)
A9M0301 1200 BAUD (Discontinued)

I. Technical Specifications

1. Transmission Speed:

- Modem 300: 0-300 BAUD
- Modem 1200:
 - a. 0-300 BAUD in Low-Speed Mode
 - b. 1200 BAUD in High-Speed Mode

2. Data Format:

- Transmission: Asynchronous
- Bits: Seven or eight data bits; one or two stop bits
- Parity: Odd, even, mark, space, or no parity
- Duplex: Full or half

3. Operating Modes:

- Answering: Auto or manual
- Dialing: Auto or manual; tone or pulse

4. Audio Monitor: Volume-control

5. Receiver Sensitivity: 0 to -45 dBm

6. Transmitter Level: -10 dBm, fixed, as per FCC part 68

7. Connectors:

1. Power
2. DB-9 data
3. Two modular telephone

8. Interface:

--RS-232-C using a DB-9 connector

9. Environmental Requirements:

--Temperature:

1. Storage: -4 to 149 degrees F (-20 to 65 degree C)
2. Operating: 13 to 112 degrees F (0 to 45 degrees C)

II. System Configuration:

1. A standard single-line telephone with a standard RJ-11 jack
2. Computer with RS-232 interface. The Apple IIe requires an Apple Super Serial Interface Card.
3. Appropriate communications software

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1116



Tech Info Library

Flat Panel Display: Specifications (Discontinued) (10/94)

Revised: 10/17/94
Security: Everyone

Flat Panel Display: Specifications (Discontinued) (10/94)

Article Created: 08 April 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following lists the specifications for the Apple IIc Flat Panel Display, now discontinued.

DISCUSSION -----

Model A2M4022 (Discontinued)

I. Technical Specifications

1. Electrical

- A. Video signal from IIc DB-15 video port
- B. Power:
 - Consumption: Less than 2 watts
 - Source: IIc DB-15 video port
- C. Connection:
 - Display hardwired with 5-inch flat cable to Buffer box
 - Buffer box connected with DB-15 connector to IIc
 - Simultaneous operation with monochrome monitor off the IIc

2. Environmental Requirements

- A. Temperature
 - Storage: 15 to 130 degrees F (-25 to 55 degrees C)
 - Operating: 50 to 105 degrees F (10 to 40 degrees C)
- B. Meets FCC regulations: Part 15, Class B Computing Devices

3. Physical

Dimensions in	Inches	Pounds,Ounces
---------------	--------	---------------

	Centimeters			Kilograms
	Height	Width	Depth	Weight
Main unit (Display)	5.4	11.4	1.6	2.7 (w/Buffer Box)
	13.8	29.0	4.0	1.1
Buffer Box	3.0	5.4	1.0	
	7.5	13.6	2.5	
Cable Length	5.1			
	13.0			
Tilt Angle: 0 to 45 degrees				

4. Resolution

- A. Text: 80 columns by 24 lines; 40 columns by 24 lines
- B. Graphics: Grid of 560 by 192 dots in double-high resolution mode
- C. Controls:
 - Contrast
 - Normal/Inverse

II. Package

Order A2M4022

- 1. Flat Panel Display
 - a. Cable to Buffer Box
 - b. Buffer Box
- 2. Manual: Owner's
- 3. Limited Warrany Statement
- 4. Card: Tell Apple

III. System Configuration

Apple IIc computer; power: wall socket or battery pack

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1117



Tech Info Library

ImageWriter I: Specifications (Discontinued)

Revised: 10/17/94
Security: Everyone

ImageWriter I: Specifications (Discontinued)

=====
Article Created: 08 April 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

The following lists the specifications for the ImageWriter 1, now discontinued.

DISCUSSION -----

I. Technical Specifications

1. Print Speed:
 - at Pica pitch (10 characters per inch):
 - a. 120 characters per second
 - b. 72 lines per minute
2. Print Method: Impact dot matrix
3. Character Format:
 - 7 x 9 Alpha-numeric symbols (fixed)
 - 16 x 8 User programmable
4. Character Set:
 - U.S. ASCII: 96 characters
 - International: 25 additional characters
 - User programmable: 25 per font, maximum of 7 fonts
5. Pitch:
 - CPI- Characters Per Inch
 - CPL- Characters Per Line
 - SW- Single Width
 - DW- Double Width
 - DPI- Dots Per Inch

Font	CPI		10" CPL		15" CPL	
	SW	DW	SW	DW	SW	DW
1. Compressed	17	8.5	136	68	230	115
2. Pica	10	5	80	40	136	80
3. 72 dots/inch:	9	4.5	72	38	122	61
4. 120 dots/inch:	15	7.5	120	60	204	102
5. 108 dots/inch:	13.4	6.7	107	65	182	91
6. Proportional 1 (160 DPI)						
7. Proportional 2 (144 DPI)						
15" only:						
8. Elite	12	6			162	81
6. Line Spacing: 6.8 LPI plus n/144"						
7. Line Feed Rate: 100ms per step (at 6 LPI)						
8. Graphics Densities: 72, 80, 96, 107, 136, 144, and 160 DPI						
9. Maximum Dots Per Line:						
--10": 576 640 786 856 960 1088 1152 1280						
--15": 976 1088 1296 1456 1632 1840 1952 2176						
10. Paper:						
A. Width:						
--10": 3 to 10 inches						
--15": 3 to 15 inches						
B. Thickness: 0.05 to 0.28 mm						
C. Format: Single cut sheet, fan-fold continuous, roll						
11. Copies: Original plus 3						
12. Ribbon:						
A. Type: Fabric (13mm x 13 meters); continuous loop						
B. Life: 2 million characters (typical)						
13. Interface:						
A. Type: RS-232 serial						
B. Buffer: 1K used for downloadable characters						
C. Baud Rates: 300 1200 2400 9600 (switched)						
D. Connector: DB-25						
14. Dimensions:						

	Inches			Pounds
	Width	Height	Depth	Weight
10"	16.2	4.8	11.8	19
15"	22	5.6	11.8	26.4

15. Electrical:

A. 120 Volts at 60 Hz

B. Power:

-- 16 W standby

--180 W printing

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1118



Tech Info Library

LaserWriter: Specifications (Discontinued 2/88)

Revised: 9/21/93
Security: Everyone

LaserWriter: Specifications (Discontinued 2/88)

=====

Article Created: 8 April 1985

I. Technical Specifications

1. Hardware:

- A. Marking engine: Canon LBP-CX laser-xerographic engine
- B. Controller:
 - a. Microprocessor: 12 MHz MC68000
 - b. Read only memory (ROM): .5 Megabytes
 - c. Random access memory (RAM): 1.5 Megabytes
- C. Interfacing interconnects:
 - a. AppleTalk
 - b. RS-232-C via PostScript
 - c. Special Diablo 630
- D. Noise levels:
 - a. Standby: 45 db(A)
 - b. Printing: 55db (A)

2. Software:

- A. Printing protocols supported:
 - a. PostScript
 - b. Diablo 630 (a daisy-wheel printer) Emulation with a subset of the Diablo command set
- B. Fonts:
 - a. Resident:
 - Medium and Bold: Times, Helvetica, and Courier
 - Italic and Bold Italic: Times
 - Oblique and Bold Oblique: Helvetica and Courier
 - Symbol: Greek and Scientific characters
 - b. Sources:
 - Allied Corporation: Times and Helvetica
 - PostScript: Symbol
 - c. Styles: Underline, Shadow, Hollow

d. Point sizes:

--Range: 3 to 720 points

--Limitations

1. Small: Resolution of printer

2. Large: Size of paper

C. Other Input:

All graphics and Macintosh and international character sets
are treated as downloaded bitmaps

3. Printing materials:

A. From Automatic cassette:

a. Optimum: Single sheet photocopy bond

b. Range: Letterhead and color stock

--16 to 21.33 pounds

--60 to 80 grams per square meter

c. Cassette sizes:

Size Order

Legal M0182

Letter M0181

A4 M0183

B5 M0184

d. Cassette capacity: 100 sheets

B. From manual single sheet feed:

a. Stock:

--Sheet Paper: Copier, Letterhead, and Color

--Transparency

--Envelopes

--Labels

b. Sizes:

--Letter

--Legal

--A4

--B5

c. Weight:

--11 to 34 pounds

--40 to 128 grams per square meter

C. Toner cartridge

a. Not compatible with cartridge of Canon Copier

b. Compatible with cartridge of Canon Laser Printer

c. Compatible with cartridge of HP LaserJet

4. Performance

A. Output tray capacity: 20 sheets

B. Maximum printable surface:

	Letter	Legal	A4	B5
Width (inches)	8.0	7.0	7.5	7.0
Length (inches)	10.9	12.5	10.5	10.0

- C. Print quality: text and graphics:
 - a. 300 dots per inch
 - b. 90,000 dots per square inch
 - c. over 8 million dots per page
- D. Speed
 - a. Initial: 2 to 4 pages per minute
 - b. Thereafter, the LaserWriter can produce copies of the initial page at a rate of 8 pages per minute.
 - c. Actual performance depends on the application and document.
- E. Recommended duty cycle: Less than 4000 pages per month.

5. Physical:

	inches
Width	18.5
Depth (body only)	16.2
Depth (with trays)	28.2
Height	11.5
Weight	77 pounds

6. Electrical

US Model M0156:

115 VAC (+/- 10 percent) 60 Hz

Amp requirements (maximum power utilization): 6.6 amps

European Model M0156Z:

220 VAC (+/- 10 percent) 50 Hz

240 VAC (+/- 10 percent) 50 Hz

7. Safety and Environmental Compliance

- UL 660F listed
- CSA LR49439 certified
- FCC Class B
- BRH certified Class I laser product
 - Laser unit power output: 5 milliwatts (mw)

A. Operating ranges

1. Temperature: 50 to 90.5 degrees Fahrenheit
2. Humidity: 20-80%
3. BTU output: 2599.2

II. Documentation

Inside LaserWriter (available from APDA)

III. Service

1. Every 2,000 to 3,000 pages: Replace toner cartridge
2. 100,000 pages (2.5 years given a rate of 3,000 pages per month):
 - Major service

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1119



Tech Info Library

Super Serial Card: Configuring for ImageWriter I (11/96)

Revised: 11/26/96
Security: Everyone

Super Serial Card: Configuring for ImageWriter I (11/96)

Article Created: 08 April 1985
Article Reviewed/Updated: 26 November 1996

TOPIC -----

The following describes the connection between the Super Serial Card and the 10-inch and 15-inch Imagewriters.

DISCUSSION -----

Install the Super Serial Card into slot 1, which is the left most slot when facing the front of the computer. If slot 1 is occupied, any other slot except AUX is usable.

On the Super Serial Card there is a removable block of pins with a triangle on its top face. Make sure this jumper block is plugged into its socket so that the triangle points to the word TERMINAL printed on the card.

This configuration, called modem elimination, compensates for the standard RS-232-C pin assignments so that the internal cable of the SSC can transmit signals to the Imagewriter through the appropriate pins.

SSC Switch Settings

SW1:	1	2	3	4	5	6	7	SW2:	1	2	3	4	5	6	7
	|	|	|	|X|	|X|X|				|X|	|	|X|X|	|	|		(ON)
	|X|X|X|	|X|	|	|					|	|X|X|	|	|X|X|			(OFF)

Switch 1

- * 9600 baud (1-4)
- * Printer Mode (5-6)
- * Normal Clear To Send (7)

Switch 2

- * 8 data bits and 1 stop bit (1)
- * No delay after CR (2)
- * Video off (3)
- * 132 character line (4)
- * Auto-LF after CR (5)
- * Disabled ACIA-CPU interrupts (6)
- * Normal Clear To Send (7).

* No parity is set automatically in the Printer Mode.

Cable pinout

Super Serial Card (SSC)	Pin	Cable	Pin	Imagewriter Connector
Frame Ground	(FG).....	1	<----->	1.....(FG)
Transmit Data	(Tx)	2	<----->	2.....(Tx)
Receive Data	(Rx)	3	<----->	3.....(Rx)
Request to send	(RTS)	4	<----->	4.....(RTS)
Clear To Send	(CTS)	5		
Data Set Ready	(DSR)	6		
Signal Ground	(SG).....	7	<----->	7.....(SG)
Data Carrier Detect	(DCD)	8		
Secondary Clear To Send	(SCTS) ...	19		
Data Terminal Ready	(DTR)	20	<----->	20.....(DTR)

Imagewriter Switch Settings

SW1:	8	7	6	5	4	3	2	1	SW2:	4	3	2	1	
	|	|	|	X	|	X	|	|	|	|	|	X	|	(CLOSED)
	|	X	|	X	|	|	X	|	X	|	X	|	|	(OPEN)

Switch 1

- * U.S. character set (SW1: 1-3)
- * 66-line page length (4)
- * Ignored 8th bit (5)
- * Elite pitch (6-7)
- * Auto-LF after CR (8)

Switch 2

- * 9600 baud (SW2: 1-2)
- * DTR data protocol (3)
- * Unknown (4).

To verify the connection, turn on the computer, video monitor, Imagewriter and wait for the Applesoft prompt,], to appear on the monitor screen. Then type these two lines, ending each line with a carriage return:

```
PR#1          (if the card is in slot 1)
This is a test
```

The Imagewriter should print "This is a test" and an Applesoft syntax error message (the error message means nothing during this test). However, if the printer does not print, recheck all connections, switch settings and retype the two test lines.

Article Change History:

26 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1121



Tech Info Library

AppleWorks: Problems with output wider than 80 columns

Revised: 5/10/85
Security: Everyone

AppleWorks: Problems with output wider than 80 columns

=====

Customers are having difficulty printing AppleWorks files when lines in the file are greater than 80 columns long. This happens because the interface card adds a CR-LF after 80 columns.

To eliminate this problem:

1. Select the change printer specifications section of AppleWorks.
2. Select the desired printer and choose "6. Printer Codes".
3. Choose Characters per inch.
4. Select the spacing you want to set.
 - a. If the command to set your printer to 15 CPI is <ESC>Q, type <CTRL>I120N<ESC>Q. (Keep in mind that <CTRL>I means to hold the Control key down and press the I key, and <ESC> means press the key marked ESC).
 - b. The same setup will work for 17 CPI if 120 is replaced with 136 (<CTRL>I136N<ESC>Q).

Apple Technical Communications

Tech Info Library Article Number:1125



Tech Info Library

Apple IIe Enhancement Kit: Technical Benefits (10/94)

Revised: 10/17/94
Security: Everyone

Apple IIe Enhancement Kit: Technical Benefits (10/94)

=====

Article Created: 10 May 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

This article documents the benefits of the Apple IIe Enhancement Kit.

DISCUSSION -----

The Apple IIe Enhancement improves the performance of the Apple IIe by replacing four chips on the main circuit board.

The Enhancement has four major benefits:

1. Apple IIc compatibility:

Users can take advantage of software developed for the Apple IIc.

2. Product line consistency:

Apple II software can be used on both the Apple IIe and IIc.

3. The MouseText character set makes it easy for developers to create software that uses pull-down menus, windows, and icons.

4. Easier programming for users:

- a. Accepts BASIC commands in both upper- and lowercase
- b. Additional instructions in the 65C02
- c. Mini-assembler for machine language programs.

The Apple IIe Enhancement Kit, Order A2M2052, is available from Apple Authorized Dealers for users who wish to upgrade their systems.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1127



Tech Info Library

ProFile Hard Drive: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

ProFile Hard Drive: Specifications (Discontinued)

=====
This article last reviewed: 10 May 1985

Model A9M0005 5 Megabyte (Discontinued)
A9M0100 10 Megabyte (Discontinued)

I. Technical Specifications

1. Data Storage Characteristics:

	A9M0100	A9M0005
Data Capacity (formatted)		
in megabytes:	10	5
Data Surfaces:	4	4
Heads per Surface:	1	1
Track Spacing per inch:	345	254
Tracks per Surface:	306	152
Sectors per Track:	16	16
Sectors per Surface:	4896	2432
Block Size		
in bytes:	512	512
5.25" Floppy Equivalence:	70	35

2. Drive Characteristics:

Average Seek Time		
in milliseconds:	85	180
Data Transfer Rate		
in megabits/sec:	5	5
Rotational Start-up Time		
in seconds:	20	20
Drive Ready to Operate		
in seconds:	120	60
Rotational Speed		
in RPMs +/- 1%:	3600	3600

Mean Time Between Failure:
in hours: 10,000 10,000

--Winchester technology

3. Interface:

- a. Type: 8-bit parallel
- b. Connector: DB-25
- c. Drives per Interface: 1

4. Power Requirements:

- a. U.S.: 110 VAC, 35 Watts
- b. Europe: 230 VAC
- c. Drive power source internal to the ProFile.

5. Environmental Requirements

- a. Temperature
 - Operating: 50 to 104 degrees F (10 to 40 degrees C)
 - Storage: -7.6 to 176 degrees F (-22 to 80 degrees C)
- b. Humidity
 - Operating: 20 to 80% noncondensing.
 - Storage: 1 to 95%

6. Physical Characteristics

	inches	centimeters
Height:	4.39	11.15
Width:	17.28	43.89
Depth:	8.81	22.38

	pounds	kilograms
Weight:	11	5

II. Package

With the 5 Megabyte or 10 Megabyte ProFile package:

- 1. Apple ProFile hard-disk drive
- 2. Apple ProFile Accessory Kit including:
 - a. ProFile interface cable
 - b. System-specific ProFile owner's manual
 - c. Warranty and product registration
 - d. User Input Report
- 3. Included in the Apple II Accessory Kit:
 - a. Catalyst II software
 - b. Apple II SOS Driver and Utilities software
 - c. Backup II software
 - d. Apple II ProFile Interface Card
- 4. Included in the Apple III Accessory Kit:
 - a. Catalyst 2.0 software
 - b. Pascal ProFile Manager software

- c. Backup III software
- d. Apple III ProFile Interface Card

III. System Configuration

--Either ProFile may be used the following Apple personal computers:

1. IIe
 - a. RAM: Minimum of 64 kilobytes
 - b. Operating System: ProDOS Pascal 1.2
 - c. Interface Cards:
 - The difference bewteen the 5Mb and 10Mb ProFile Interface cards is the ROM at location C6. The ROM is 341-027 for the 5Mb Card and 341-0299-B for the 10 Mb.
2. Apple III
3. Macintosh XL

NOTE: The Macintosh XL containing a built-in 10-megabyte hard disk requires a Parallel Interface Card (Order A6BB101, obsolete).

Features

Controller automatically scans for error conditions, relocating marginal data blocks elsewhere on the hard disk, if necessary.

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Tech Info Library Article Number:1128



Tech Info Library

Deneba Software (6/97)

Revised: 4/3/97
Security: Everyone

Deneba Software (6/97)

=====

Article Created: 17 December 1991
Article Reviewed/Updated: April 3, 1997

Deneba Software

7400 S.W. 87th Avenue
Miami, FL 33173

305-596-5644

305-273-9069 FAX

America Online: Deneba
CompuServe: 76004,2154
Internet: DENEBA@AOL.com

Company Profile:
Deneba Software, software, specializing primarily in Macintosh software.

Article Change History:
05 Jun 1996 - Updated for technical accuracy.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1132



Tech Info Library

Dataproducts Corp.

Revised: 7/8/93
Security: Everyone

Dataproducts Corp.

=====

Article Created: 11/12/87
Article Reviewed: 07/08/93
Article Updated:

Dataproducts Corp.

6219 Desoto Ave.
Woodland Hills, CA 91367

818-887-8000

818-887-4789 Fax

Company Profile:
Hardware, specializing primarily in printers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:1133



Tech Info Library

Super Pilot: Library Diskette Source

Revised: 10/4/89
Security: Everyone

Super Pilot: Library Diskette Source

=====

This article last reviewed: 26 September 1989

The Super Pilot manual mentions a Library diskette to aid interfacing with external hardware. While the manual states the diskette is at the dealer technical support center, the diskette is also available from Apple Software Licensing.

The customer will be sent licensing information and forms. When Apple gets the forms back, the diskette and pertinent literature will be sent.

Search on Software Licensing for address information.

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Tech Info Library Article Number:1134



Tech Info Library

Apple IIGS Memory Expansion Card: Don't Set It to 768K (10/94)

Revised: 10/17/94
Security: Everyone

Apple IIGS Memory Expansion Card: Don't Set It to 768K (10/94)

=====

Article Created: 12 November 1987
Article Reviewed/Updated: 17 October 1994

TOPIC -----

Why can't I use a 768K memory configuration with my Apple IIgs?

DISCUSSION -----

The manual for the Apple IIGS Memory Expansion Card (copyright 1986, 030-1310-A) Chapter 3, page 11, recommends not having 768K of RAM on the card. Some applications have trouble dealing with that particular configuration.

768K of RAM can cause memory ghosting: a lower-numbered bank of memory appears if an un-equipped upper bank is addressed. This configuration also leaves gaps in the middle of the memory map, which can also confuse the Memory Manager.

If an application turns out to require exactly 768K, choose a higher amount say, 1MB.

Article Change History:
17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1987-94, Apple Computer, Inc.

Tech Info Library Article Number:1135



Tech Info Library

Communications Interface: Directly controlling the 6850 ACIA

Revised: 4/8/91
Security: Everyone

Communications Interface: Directly controlling the 6850 ACIA

=====

This applies to the Apple II, II+, and IIe.

The Communications Interface Card uses an ACIA (Asynchronous Communications Interface Adapter) to automatically perform the serial transfers with an external device. The ACIA contains 4 registers that control data flow between the Apple and the external device. There are two pairs of registers and each pair has a single address in the Apple. In the following discussion, all addresses will be calculated for slot 2. The addresses can be converted to another slot with the following formula.

$$\text{New Address} = \text{Old Address} + (\text{New Slot} - 2) * 16$$

So, \$C0AE in slot 2 becomes \$C09E for slot 1.

The status/control register is at \$C0AE. Reading from \$C0AE yields the status of the ACIA, and writing to \$C0AE modifies the Operation of the ACIA (baud rate, data bits, stop bits, parity). The tables below are a summary of what the registers control. Refer to the Motorola Semiconductors Data Sheet for the MC6850 for complete details.

READ FROM STATUS REGISTER (\$C0AE)

- 0 Receive Data Register Full
- 1 Transmit Data Register Empty
- 2 -Data Carrier Detect
- 3 -Clear to Send
- 4 Framing Error
- 5 Receiver Overrun
- 6 Parity Error
- 7 Interrupt Request

WRITE TO CONTROL REGISTER (\$C0AE)

- 0-1 Baud Rate
 - 0 - Unstable at about 1200 baud

- 1 - 300 baud
- 2 - 110 baud
- 3 - Reset the ACIA

2-4 Word Control Bits

- 0 - 7 bits + Even Parity + 2 Stop Bits
- 1 - 7 bits + Odd Parity + 2 Stop Bits
- 2 - 7 bits + Even Parity + 1 Stop Bit
- 3 - 7 bits + Odd Parity + 1 Stop Bit
- 4 - 8 bits + 2 Stop Bits
- 5 - 8 bits + 1 Stop Bit
- 6 - 8 bits + Even Parity + 1 Stop Bits
- 7 - 8 bits + Odd Parity + 1 Stop Bits

5-6 Transmitter Control Bits

- 0 - -RTS = low, Transmitting Interrupt Disabled
- 1 - -RTS = low, Transmitting Interrupt Enabled
- 2 - -RTS = high, Transmitting Interrupt Disabled
- 3 - -RTS = low, Transmits a Break level on the Transmit Data Output.
Transmitting Interrupt Disabled

7 Receive Interrupt Enable Bit

- 0 - No interrupts from receiver section of ACIA
- 1 - Interrupt on:
 - Receive Data Register Full,
 - Overrun, or
 - A low to high transition on Data Carrier Detect

The data register is located at \$C0AF. A read from \$C0AF yields the data that has been received from the external device. A write to \$C0AF buffers the data and initiates its transmission. Writing or reading to the data register automatically resets the ACIA status.

An Apple II will lose data whenever it is forced to ignore the Communications Interface to either process the incoming data or write it to an I/O device like a disk drive or printer.

This problem is solved by buffering the incoming data. You can do this by:

- 1) Requesting fixed size blocks of data from the remote machine - Reading in all of one block and processing it before requesting the next one.
- 2) Writing a program to control the data flow from the remote device with XON (control S) and XOFF (control Q). The strategy is to receive data until the program's memory buffer is almost full and transmit an XOFF to halt the data flow. Process the data and transmit an XON to resume the transfer. Not all external devices understand XON/XOFF handshaking. Be sure to check your device.

When attempting to use a remote terminal from Applesoft, the output appears on one line of the terminal's screen. To avoid this problem, use the Communications Card Print routine on page 28 of the Communications Interface Card manual. If you are using DOS 3.2 or later you must modify this routine

with a POKE 845,110 before saving it to disk.

Modifying the default parameter settings on the Communications card is described on page 27 of the Communications Interface Manual. But please note that the PR#s and IN#s commands do not initialize the interface, they only reset the I/O vectors. It's the first character through the interface that loads the default parameters. So be sure to PRINT or INPUT at least one character before doing the POKES.

Apple Tech Notes

Tech Info Library Article Number:1136



Tech Info Library

Communications Interface Card: Echo Suppression (11/96)

Revised: 11/21/96
Security: Everyone

Communications Interface Card: Echo Suppression (11/96)

Article Created: 19 May 1985
Article Reviewed/Updated: 18 November 1996

TOPIC -----

The Communications Interface allows a BASIC program to communicate with another computer. Normally, the information coming in from the other computer will be displayed on the screen, which is not always desirable. The two routines below will disable the echo feature but you must decide which best fits your program.

DISCUSSION -----

Machine Language

First determine which slot the interface card is in before typing in the software patch. The patch is customized for this slot number and will not work if used with a different configuration. Enter the patch using the values from the table for words in brackets, < >.

SLOT	1	2	3	4	5	6	7
STAT	9E	AE	BE	CE	DE	EE	FE
DATA	9F	AF	BF	CF	DF	EF	FF

Enter the monitor with CALL -155 and type

```
3A0:A9 03
3A2:8D <STAT> C0
3A5:A9 11
3A7:8D <STAT> C0
3AA:A9 B5
3AC:85 38
3AE:A9 03
3B0:85 39
3B2:4C EA 03
```

```
3B5:91 28
3B7:AD <STAT> C0
3BA:10 FB
3BC:AD <DATA> C0
3BF:09 80
3C1:60
3C2:00 00 00 00 00
```

To check your typing, type "3A0L", and compare your listing to the one for slot 2 shown below.

```
03A0-   A9 03      LDA   #$03
03A2-   8D AE C0   STA   $C0AE
03A5-   A9 11      LDA   #$11
03A7-   8D AE C0   STA   $C0AE
03AA-   A9 B5      LDA   #$B5
03AC-   85 38      STA   $38
03AE-   A9 03      LDA   #$03
03B0-   85 39      STA   $39
03B2-   4C EA 03   JMP   $03EA
03B5-   91 28      STA   ($28),Y
03B7-   AD AE C0   LDA   $C0AE
03BA-   10 FB      BPL   $03B7
03BC-   AD AF C0   LDA   $C0AF
03BF-   09 80      ORA   #$80
03C1-   60        RTS
03C2-   00        BRK
03C3-   00        BRK
03C4-   00        BRK
03C5-   00        BRK
03C6-   00        BRK
```

Now return to BASIC by typing 3D0G

Save the patch to disk BSAVE PATCH, A\$3A0, L\$21:

Using the patch

The first time you use the interface you must load the patch into memory and initialize the interface. This can be done from a BASIC program by adding the following lines.

```
100 PRINT D$;"BLOAD PATCH": CALL 928  (loads patch and turns off echo)
200 PRINT D$;"IN#0"                  (will re-enable the Apple keyboard)
300 CALL 938                          (reconnects the interface)
```

Video Echo

The video echo can be stopped by fooling the interface into thinking it is in full duplex terminal mode, as running the following BASIC program demonstrates.

```
10 SLOT = 2
20 PRINT CHR$(4);"PR# SLOT"
30 PRINT
40 POKE 1912 + SLOT,145
50 PRINT "THIS WON'T ECHO"
60 POKE 1912 + SLOT,11
70 PRINT "THIS WILL ECHO"
90 PRINT CHR$(4);"PR# 0"
```

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1137



Tech Info Library

Communications Interface Card: Manual Errata (11/96)

Revised: 11/21/96
Security: Everyone

Communications Interface Card: Manual Errata (11/96)

=====

Article Created: 19 May 1985
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Listed below are corrections to the Communications Interface card manual
030-0008-01.

DISCUSSION -----

Corrections
=====

Page 17

The lower case info only applies to TERMINAL modes and the method to use it is not obvious. Also, the POKE 1784+n,160 causes the lower case to be displayed as FLASHING. POKE 1784+n,224 will cause lower case to be INVERSE.

Page 24

DATAMOVER will not work with Applesoft. It will require a complete re-write of the program.

Page 28

The Communications Card Print Routine was written when the only available DOS was version 3.1. POKE 845,110 will fix it to work with DOS 3.2 or DOS 3.3.

Page 36

The modification for 4800 baud in the manual is missing a wire. Add a wire from pin 15 of A1 to pin 15 of A2. Chip A1 is still not required.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96. Apple Computer, Inc.

Tech Info Library Article Number:1138



Tech Info Library

Communications Interface Card: Terminal Mode (11/96)

Revised: 11/21/96
Security: Everyone

Communications Interface Card: Terminal Mode (11/96)

=====
Article Created: 19 May 1985
Article Reviewed/Updated: 18 November 1996

TOPIC -----

The following BASIC program will initialize the Communication Interface and enter into terminal mode.

DISCUSSION -----

This is the same as using IN#2<CTRL-A><CTRL-F>. The BASIC program can set up non-standard parity options and perform automatic sign-on functions before entering terminal mode.

```
10 SLOT = 2
20 ST = 17: REM This is the status from page 27.
30 CN = 192 + SLOT
40 N0 = 16 * SLOT
50 POKE 2040,CN
60 POKE 1784 + SLOT,32
70 POKE 1912 + SLOT,ST
80 POKE 2040 + SLOT,ST
90 POKE 16242 + N0,3
100 POKE 16242 + N0,ST
110 POKE 768,72: POKE 769,72: POKE 770,72
120 POKE 771,169: POKE 772,152
130 POKE 773,160: POKE 774,192 + SLOT
140 POKE 775,162: POKE 776,16 * SLOT
150 POKE 777,76: POKE 778,165: POKE 779,192 + SLOT
160 CALL 768
170 REM NOW IN TERMINAL MODE...
```

Receiving Lower Case

The lower case information on page 17 of the Communications Interface Card

..TIL01141-Communications_Interface_Card-Terminal_Mode_11-96.pdf

manual is only effective in terminal mode. To display lower case characters in inverse you need to type in the following:

```
POKE 1784+slot,224  
IN# slot  
CTRL-A CTRL-F
```

Apples with lower case display capability can receive true ASCII after typing in:

```
POKE 1784+slot,0  
IN# slot  
CTRL-A CTRL-F
```

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1141



Tech Info Library

Lisa 7/7: Upgrade to OS 3.1 w/Pascal Workshop 3.0 on hard disk

Revised: 10/17/94
Security: Everyone

Lisa 7/7: Upgrade to OS 3.1 w/Pascal Workshop 3.0 on hard disk

=====

To upgrade Lisa 7/7 Office System software to 3.1 if the hard disk already contains both the Lisa 7/7 Office System 3.0 and Pascal Workshop 3.0:

1. While in the Workshop environment, insert the Release 3.1 Office System 2 diskette into the microdrive.
2. From the Workshop command line, type R.
3. When asked which file you wish to run, type: " <-lower-StartUpdate".
4. Press the RETURN key.
5. You are then guided through the process of updating the system libraries. After answering a series of questions, follow the prompts to insert the necessary disks.
6. Since the update process changes the libraries on the startup disk,
 - a. Restart the Lisa when you've completed step 5.
 - b. Replace the LisaWrite and LisaProject tools and stationary pads on the hard disk with the updated versions.

Copyright 1985, Apple Computer, Inc.

Tech Info Library Article Number:1143



Tech Info Library

Using Apple Computers in Hospital Environments (10/94)

Revised: 10/17/94
Security: Everyone

Using Apple Computers in Hospital Environments (10/94)

Article Created: 01 July 1985
Article Reviewed/Updated: 17 October 1994

TOPIC -----

Do you have any information on electrical or environmental considerations when using Apple equipment in hospital environments?

DISCUSSION -----

To dispense with any electricity that may stray from the circuits in the unit, computers are electrically grounded, which lets this excess electricity pass from the system through the case of the computer itself. This flow to the grounded case is called current leakage.

While current leakage in Apple computers is usually low, this flow of electricity to the grounded case may be high enough to disturb equipment that is important to a patient's stability or to generate a spark that could ignite an explosion in an oxygen-rich environment, like an oxygen tent.

Computers used in a hospital environment have different current leakage acceptable levels under different circumstances, such as non-patient use, patient monitoring, and patient connection.

Current leakage is measured in microamps (μ a) and occurs between the hot or positive AC line and the green wire (ground).

Situation	Current Leakage Acceptable Levels (μ a)
-----	-----
Non-patient office work	less than 500
Patient monitoring	less than 100
Connected directly to the patient	less than 10

These requirements are for the safety of both hospital personnel and patients.

The maximum current leakage allowed by the UL specification is 0.5 milliamps

(ma). Apple Computer monitors meet this UL specification.

Note: Apple Computer does not test Apple equipment for hospital AAMI/ANSI compliance certifications. However, depending on an individual institution's certification requirements, Apple equipment may be able to be used in certain work areas. Before installing equipment, Apple customers need to check the hospital's certification requirements for the work area where the equipment is to be installed.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94 Apple Computer, Inc.

Tech Info Library Article Number:1144



Tech Info Library

AppleWorks IIe: Using codes for special text styles

Revised: 7/1/85
Security: Everyone

AppleWorks IIe: Using codes for special text styles

=====

The word processor section of AppleWorks, when running on a IIe with Super Serial Card and Imagewriter, can produce text which is centered, underlined, boldfaced and superscripted.

Failures can occur, however, when:

1. The text file omits the codes to turn off the underline, boldface and superscript styles. This problem usually occurs when a carriage return is placed to turn off the styles.
2. The three special features are NOT turned off the order opposite from the order in which they were turned on. This occurs, for example, when the codes BB +B UB are followed by text and then +E BE UE. The codes BB +B UB should be followed by some text and then the codes UE +E BE.

The product manager has received reports of this problem.

Apple Technical Communications

Tech Info Library Article Number:1151



Tech Info Library

AppleWorks: Rounding Techniques

Revised: 10/20/86
Security: Everyone

AppleWorks: Rounding Techniques

=====

AppleWorks' spreadsheet provides different rounding techniques that can be used either to display or calculate numbers to varying decimal places. Choose the technique below that best applies to your situation and the version of AppleWorks you are using.

There are two ways of truncating numbers. The first, called the "integer" of a number, merely drops any decimal value the number might have. (The integer of 2.56 is 2.) The second type, called "rounding", changes the number to the closest value with the desired precision. For example, 2.56, rounded to the nearest integer, is 3. 2.56 rounded to the nearest tenth is 2.6.

AppleWorks can accommodate both types of calculations. All versions of AppleWorks include the INT function, which results in the integer of a number. A cell with the formula "@INT(3.12)" will display 3.

A ROUND function is available in AppleWorks 2.0 only. It accepts two parameters; the value to be rounded, and the number of decimal places of precision. The second argument (number of decimal places) is converted to an integer, and must be in the range from -15 to +15, inclusive. If the number of decimal places is 1, then the value is rounded to the nearest tenth. If the number of decimal places is -1, the value is rounded to the nearest multiple of 10. The formula "@ROUND(5.4613,1)" will result in the value 5.5, since one decimal place has been requested.

A rounding effect can also be forced by using the spreadsheet layout options. Choosing a fixed value format alters the spreadsheet to display only the number of decimal places requested. It does not change the value contained by the cell, so that dependent calculations will continue to use the more precise value.

Situations sometimes occur in AppleWorks that cause incorrect (or unexpected) values to appear. For example, if the value 1.17 is entered into cell A1, and cell A2 uses the formula @INT(A1*100)/100, then A2 would be expected to display the value 1.17. Problems with binary/decimal conversion make A2's value 1.16. To correct this, use the formula @INT(A1*100+.000001)/100 in cell A2, which delivers 1.17. This type of correction will work with all versions

of AppleWorks.

These anomalies normally appear only as the result of calculations, as in the above example. In those cases, use a formula like the one above to bring the answer into agreement with expectations. The formula should be of this type:

```
@INT(cell * n + .000001) / n
```

where "cell" represent the cell with the number or calculation to be massaged, and "n" represents a power of 10. If you wish to have two decimal places displayed in the answer, use n = 100. N = 1000 will give results to thousandths place, n = 10 is appropriate for one decimal place, etc. The value ".000001" isn't absolute; it just needs to be a very small value relative to the value in "cell".

Apple Technical Communications

Tech Info Library Article Number:1152



Tech Info Library

Configuring the ImageWriter to the Apple IIfc

Revised: 8/10/87
Security: Everyone

Configuring the ImageWriter to the Apple IIfc

=====

Both Imagewriters are shipped with their switch settings configured to work on the Apple IIfc.

To work with the Apple IIfc, the Imagewriter's switch settings should be:

```
SW1: 8 7 6 5 4 3 2 1
      | | | | |X|X| | | CLOSED
      |X|X|X|X| | |X|X| OPEN
```

Switch 5 of SW1 may be open when the Imagewriter is shipped)

```
SW2:      4 3 2 1
          | | |X|X| CLOSED
          |X|X| | | OPEN
```

The position of SW2's switch 4 doesn't matter, since it's unused.

Tech Info Library Article Number:1153



Tech Info Library

AppleWorks: Seeing more categories in a database document

Revised: 7/1/85
Security: Everyone

AppleWorks: Seeing more categories in a database document

=====

In database documents, there are two 'screen formats', or ways of seeing the information on the screen: the multiple record format and the single record format. The multiple record format displays the categories across the screen from left to right. While a touch of the tab key moves the cursor to the right to the next category, you can't see the information in the categories that aren't already displayed.

The single record format can display categories that the multiple record format doesn't display. To see this format, hold down the Open Apple key and touch the Z key. In this format, the categories initially appear at the left side of the screen in a list.

The other option is to go to the Report Format. Then you can scroll back and forth using the arrow keys.

Apple Technical Communications

Tech Info Library Article Number:1154



Tech Info Library

LisaDraw: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

LisaDraw: Specifications (Discontinued)

=====

I. LisaDraw: A6D0300 (Discontinued)

--Includes: LisaCalc, LisaProject, LisaGraph, LisaList, LisaWrite,
LisaTerminal and the Lisa Office System.

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-7631

1. Maximum Drawing Size: 32 sq. feet; about 60 pages

2. Palette Selections:

- A. Rectangles: with and without rounded corners
- B. Circles and ellipses
- C. Lines:
 - a. Horizontal, vertical and diagonal
 - b. Thicknesses: fine, narrow, medium, wide
 - c. 36 patterns
 - d. Shades: black, grey, white
 - e. Arrowhead feature: one or both ends
- D. Arcs
- E. Polygons
- F. Freehand
- G. 36 patterns: for filling objects or defining shade of lines

3. Text Editing:

- A. Add text to any part of drawing
- B. Cut, Copy and Paste; same as in other Lisa applications

4. Graphics Editing:

- A. Move any object or shape
- B. Place objects in front of or behind others
- C. Shrink or expand any object yet maintain its shape

- D. Reshape freehand curves, arcs and polygons
- E. Automatically smooth curves
- F. Copy or delete any object
- G. Change pattern of shading inside a shape or object
- H. Rotate objects: left, right, horizontal, vertical

5. Colors and Shades:

- A. 36 shades (for objects, text, lines)
- B. 8 printable colors (Cannon Ink Jet Printer required to print colors)

6. Alignment Aids:

- A. Grids:
 - a. Displayable on screen in various sizes
 - b. Able to align objects to grid
- B. Rulers:
 - a. Horizontal and vertical
 - b. Increments: inches, centimeters, or custom
- C. Align middles, centers, either side, top or bottom of object
- D. Align to Auto-Grid
- E. Measure distance between two points or the size of objects
- F. Group shapes or objects to move, copy or delete them together

7. Zoom

- A. Reduce to Fit
- B. Reduce 70%

8. Typestyles:

- A. Variety of fonts and sizes available
- B. Bold, italic, underline, outline, shadow or any combination

9. Features:

- A. Undo function: cancels effects of last operation
- B. Revert To Previous Version: undoes all changes made since document was last saved
- C. Display more than one document on the screen at the same time

10. Special Features:

- A. Move LisaGraph and LisaProject charts into LisaDraw for further customization
- B. LOCK allows you to protect objects from accidental editing

11. Printing:

- A. Prints in horizontal (landscape) or vertical (portrait) formats
- B. Prints single or multiple copies
- D. Printers supported:
 - 1. Apple Dot Matrix Printer

..TIL01155-LisaDraw-Specifications_Discontinued.pdf

2. Apple Imagewriter: narrow or wide carriage
 3. Apple Daisy Wheel Printer
 4. Cannon Ink Jet Printer
- E. Background printing: prints one or more documents while displaying another

12. Documentation: Reference guide (including tutorial).

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Tech Info Library Article Number:1155



Tech Info Library

Macintosh Pascal: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Macintosh Pascal: Specifications (Discontinued)

=====

I. Macintosh Pascal: M0523

--Includes: Master and backup diskette
Macintosh Pascal User's Guide
Macintosh Pascal Reference Manual
Macintosh Pascal Technical Appendix

1. Compatibility:

- A. Conforms to IEEE Numerics Standard (SANE)
- B. Compatible with Lisa Pascal:
 - Most differences arise from extensions to or generalizations of LisaPascal features: differences are documented.
- C. Compatible with American National Standard Pascal

2. Environment:

- A. Utilizes the Macintosh interface: windows, mouse cursor positioning, cutting and pasting, pull-down menus
- B. Interactive and interpretive: you don't have to recompile your program each time you modify it.

3. Maximum Size:

To minimize disk I/O, the system uses the greatest amount possible of RAM memory to keep Macintosh Pascal resident.

- A. 128K Macintosh: 35K or 500 lines
 - Shared amongst the program text, variables, pseudo code representation, debugging information, and libraires.
- B. 512K Macintosh or Macintosh XL: 64K or 1000 lines
 - Limited by pointers.

4. Error Checking:

- A. Bug Dialog Box: displayed when program encounters a bug
- B. Step Feature: executes program line by line
 - a. Automatic
 - b. Manual
- D. Syntax Scan
- F. Thumbs-down Symbol: displayed when syntax or run-time errors are discovered
- G. Trace: shows what statements are being executed

5. Editing Features:

- A. Enables user to stop the program, look at the variables, change the variables, then resume execution of the program
- B. Enables user to set break points

6. Libraries:

- A. Supports predefined libraries accessed via a uses-clause

7. Windows:

- A. Edit: for entering or modifying your program
- B. Text: for text input and output
- C. Drawing: for displaying graphics
- D. Instant: execute any valid Pascal statement anytime
- E. Observe: the current value of keyed-in expressions, usually variable names, appear in the window whenever the program stops.

8. File Access:

- A. Open (instead of reset or rewrite): Open a file for random read/write access to it
- B. Seek procedure: set for random access to file components

6. Special Features:

- A. SANE (Standard Apple Numerics Environment)
- B. Access to all QuickDraw routines, as well as the mouse, sound driver and other Macintosh ROM routines
- C. Change window size, modify the cursor, interact with the mouse and keyboard, perform file I/O, etc
- D. Search function
- F. Otherwise clause in case statement
- G. Automatic indentation of program text and boldfacing capabilities
- H. Macintosh Pascal works on the Macintosh XL with MacWorks.
Some functions, such as the sound driver, aren't supported.

NOTE: Though you can access the Macintosh Toolbox with the InLine function, this function is neither documented nor supported; furthermore, careless or erroneous use of the Inline function can be fatal to your diskettes or data. For documentation on the Toolbox, see "Inside Macintosh".



Tech Info Library

DuoDisk: Data damage caused by rebooting with OA-CTRL-RESET

Revised: 9/30/88
Security: Everyone

DuoDisk: Data damage caused by rebooting with OA-CTRL-RESET

=====

This article last reviewed: 1 July 1985

If you reboot with OA-CTRL-RESET, you can cause damage to data on a diskette in a DuoDisk. Software manufactured by PFS and Electronic Arts is especially prone to such damage. If a unit exhibits only this problem, check the part number on the analog board. Boards with part numbers 676-X101 and 676-X102 may have this problem. Macro is presently fixing all boards as they come in for repair.

The fix is to take the two capacitors labelled C29 and C30, found at locations B1 and A1, and cut them off the board. To complete the SRO form properly, use adjustment part number 011-7025 and write "DuoDisk capacitor fix" in the comment section.

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Tech Info Library Article Number:1157



Tech Info Library

LaserWriter: Using it with an IBM PC XT and Microsoft Word 2.0

Revised: 3/4/90
Security: Everyone

LaserWriter: Using it with an IBM PC XT and Microsoft Word 2.0

=====

This article last reviewed: 1 July 1985

This configuration does NOT support Diablo 630 Emulation on the LaserWriter;
to use the IBM PC XT with the LaserWriter, search this database for
"SUPERSPOOL".

I. IBM PC XT

1. Memory: 256K
2. Serial Interface: RS-232
3. Disk: DOS Version 2.1 or a further revision
 - A. DOS 2.1
 - B. DOS file: MODE.COM
4. Disk: Microsoft Word Utilities
 - A. File: MSSETUP.PS
 - B. File: APPLASER.PRD
5. Disk: Microsoft Word Version 2.00 (for IBM)
 - A. Copy onto this disk the file "APPLASER.PRD" from the Microsoft Word Utilities Disk.
6. File: Boot file
 - A. This file must be on either of two disks:
 1. On the program disk for Microsoft Word Version 2.00 for IBM. Copy onto this disk the file "MSSETUP.PS" from the Microsoft Word Utilities disk and the file "MODE.COM" from the DOS disk.

or

2. On a separate "boot" disk to precede the Microsoft Word program disk. To create this separate boot disk, either:
 - a. Make a duplicate disk of DOS 2.1 and copy onto this duplicate disk the file "MODE.COM" from DOS and the file "MSSETUP.PS" from the Microsoft Word Utilities disk.
 - or b. Format a disk by issuing the command "/S" and copy onto this disk DOS 2.1, the file "MODE.COM" from DOS, and the file "MSSETUP.PS" from the Microsoft Word Utilities disk.
- C. Load drive A of the IBM PC XT with the program disk from step 4.A.1 or boot disk from step 4.A.1.a or 4.A.1.b.
- D. Power on the IBM.
- E. Type the following lines. They will be the boot file. The lines are:

```
copy con autoexec.bat.  
mode com1:9600,n,8,1  
copy mssetup.ps com1:
```
- F. Hold down the Control Key and type "Z". Then touch the Return key. This closes the boot file "autoexec.bat" and copies it to the diskette in drive A.

II. The Connection

1. Turn off the Laserwriter.
2. DISconnect AppleTalk.
3. Get a standard 25-pin RS-232 cable and a modem eliminator cable.
4. Connect the standard RS-232 cable to the IBM PC XT communication port 1.
5. Connect the modem eliminator cable to the free end of the RS-232 cable.
6. Connect the the free end of the modem eliminator cable to the 25-pin connector on the Laserwriter.
7. If the IBM PC is on, power it off. Then turn it back on. This power off and on is necessary when the communication port is being used.

III. Laserwriter

1. Set the Mode Switch on the Laserwriter to 9600.

IV. Initializing the Laserwriter and IBM PC XT for operating Microsoft Word

1. Turn on the LaserWriter; it will print a page at start up as a test document.
2. Insert the disk with the boot file in drive A of the IBM PC XT.
3. Boot the IBM PC XT.
4. The LaserWriter will print "Ready for Microsoft Word Output".

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Tech Info Library Article Number:1158



Tech Info Library

Apple Writer IIe under ProDOS: Underlining center justify text

Revised: 7/15/86
Security: Everyone

Apple Writer IIe under ProDOS: Underlining center justify text

=====

If you center justify a line of text and use the backslash command to underline it, the leading spaces will also be underlined.

The work around is to use the Control-V sequence outlined in the second part of the article "Apple Writer IIe: How to underline words".

Here are the keystrokes if you are using an ImageWriter:

Underline

1. Begins: CTRL-V ESC X CTRL-V
2. Ends: CTRL-V ESC Y CTRL-V

Apple Technical Communications

Tech Info Library Article Number:1160



Tech Info Library

C. Itoh ProWriter 8510 BCD printer: Using it with an Apple IIC

Revised: 7/9/85
Security: Everyone

C. Itoh ProWriter 8510 BCD printer: Using it with an Apple IIC

=====

The default switch settings of the ProWriter at time of purchase do not allow the printer to print successfully from a IIC. In order to solve this problem, you will need to reset some of the switches on the ProWriter--in some cases to non-standard settings. The most important switches to reset are those that deal with 7 or 8 data input, RS232-C protocol, and RDY/Busy signals. Once these are set properly, you should be able to use a normal printer cable with good results. The switch settings need to be as follows:

X = "OPEN"
O = "CLOSED"

Switch 1

1-OPEN
2-CLOSED
3-OPEN
4-OPEN
5-CLOSED (Processing of DC1 or DC3 signal is not necessary)
6-OPEN
7-OPEN
8-OPEN

Switch 2

1-CLOSED (Prints zero with a slash through it)
2-OPEN
3-OPEN
4-OPEN
5-OPEN
6-CLOSED (Set to ignore 8th bit so it will work correctly)
7-CLOSED
8-OPEN

Switch 21

1-OPEN (1 stop bit)

2-CLOSED
3-OPEN (NONE Parity)
4-CLOSED
5-OPEN
6-OPEN (8-Bit. This is important setting)
7-OPEN (RDY/BUSY)
8-OPEN

Switch 22

1-OPEN
2-OPEN (9600 Baud. All of these are important settings)
3-OPEN
4-OPEN

Switch 23

1-CLOSED (RS232-C)
2-OPEN
3-OPEN
4-CLOSED (3,4,5 are set to RS232-C)
5-OPEN
6-OPEN

Switch 24

1-CLOSED (RDY Busy)
2-OPEN
3-OPEN
4-CLOSED
5-CLOSED
6-OPEN
7-OPEN
8-CLOSED

--AppleWorks Printer Setting:

All the codes for the Apple ImageWriter work correctly in the ProWriter except for Proportional 2, subscripts and superscripts. Select ImageWriter as the printer you want to print to, but call it a "C.Itch."

Apple Technical Communications

Tech Info Library Article Number:1161



Tech Info Library

LisaGraph: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

LisaGraph: Specifications (Discontinued)

=====

I. LisaGraph: A6D0300 (Discontinued)

--Includes: LisaCalc, LisaProject, LisaDraw, LisaList, LisaWrite,
LisaTerminal and the Lisa Office System.

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-7631

1. Graph Types:

- A. Bar
- B. Line
- C. Mixed bar/line
- D. Clustered bar (up to 8 bars per cluster)
- E. Scatter
- F. Pie

2. Maximum Size:

- A. Data Points: More than 2,000
- B. Plots up to 9 columns (sets) of data

3. Titles:

- A. Graph title and subtitle
- B. X and Y axis title
- C. Footnotes and legends
- D. Free-floating: text may be placed anywhere on graph

4. Data Entry:

- A. Simple table for data entry
- B. Copy and paste data from LisaCalc and LisaList

5. Editing:

- A. Cut, Copy, and Paste: same as in other Lisa applications
- B. Editing of data within cells
- C. Edit graph titles
- D. Insert new or delete row or column in data table
- E. Paste into LisaDraw for further customizing

6. Formatting:

- A. Grid lines: on or off
- B. Legends: on or off
- C. Graph sizes: 1/4, 1/3, 1/2 or full page
- D. Axis: ranges and increments created manually or automatically
- E. Table:
 - 1. Variable width columns
 - 2. Left, right or center alignments
 - 3. Integer, decimal, scientific or money formats

7. Typestyles:

- A. Table: A variety of fonts available:
- B. Titles: A variety of fonts available plus bold, italic, underlined, shadow, hollow or any combination of styles

8. Performance:

- A. Time required to replot: usually less than one second

9. Special Features:

- A. Undo function: cancels effects of last operation
- B. Revert To Previous Version: undoes all changes made to the graph since it was last saved
- C. Display more than one document on the screen at the same time
- D. Enlarge or shrink viewing areas for graph or data-entry table
- E. Enter text anywhere on the screen
- F. Copy graph and Paste into LisaDraw for further embellishments

10. Printing:

- A. "What you see is what you get" fidelity
- B. Print graph and/or table
- C. Print in horizontal or vertical formats
- D. Print single or multiple copies
- E. Works with many printers:
 - a. Apple Dot Matrix Printer
 - b. Apple Imagewriter: narrow or wide carriage
 - c. Apple Daisy Wheel Printer
 - d. Cannon Ink Jet Printer
- F. Background printing: enables you to print one or more documents while working on another

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11. Documentation: Reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1162



Tech Info Library

LisaProject: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

LisaProject: Specifications (Discontinued)

=====

I. LisaProject: A6D0300 (Discontinued)

--Includes: LisaCalc, LisaDraw, LisaGraph, LisaList, LisaWrite,
LisaTerminal and the Lisa Office System.

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-76311.

Charts:

- A. Scheldule
- B. Resource
- C. Task

2. Tables:

- A. Resource Cost Entry
- B. Task Cost Entry
- C. Cash Flow
- D. Task

3. Maximum Capacity:

- A. Task Boxes:
 - a. Quantity: 1,000
 - b. Duration: 199 days
 - c. Title: 50 characters
- B. Size: 32 square feet, Approx. 60 pages
- C. Resources:
 - a. Quantity: May enter hundreds per project or task
 - b. May be assigned to simultaneous tasks

4. Performance: Charts immediately redrawn when data is entered or changed

5. Costing:

- A. Fixed job cost assigned to a task, and/or
- B. Accumulative resource costs

6. Date/Calendar Options:

- A. Task dates: early and late start, early and late finish dates
- B. Vacation Days: up to 40
- C. Work Days: up to 7 per week
- D. Displayed Date: month/day/year
- E. Current date displayed in Resource and Task charts

7. Edit Options:

- A. Cut, Copy, or Paste: same as in other Lisa applications
- B. Proportionally shrink or expand task boxes or charts
- C. Enter titles and subtitles directly on the chart

8. Zoom:

- A. Reduce 70% or
- B. Reduce to fit

9. Typestyles:

- A. Variety of fonts, sizes and styles available
- B. Bold, italic, underline or any combination

10. Special Features:

- A. Move a LisaProject chart into LisaDraw to customize it further
- B. UNDO function cancels effects of last operation
- C. View more than one document on the screen at once
- D. Scroll horizontally or vertically
- E. Revert to Previous Version undoes all changes made to the document since it was last saved

11. Printing:

- A. "What you see is what you get" fidelity
- B. Automatic page breaks
- C. Print one or multiple copies
- D. Print whole document or selected pages
- E. Print in horizontal or vertical format
- F. Choose from many printers:
 - a. Apple Dot Matrix Printer
 - b. Apple Imagewriter: normal or wide carriage
 - c. Apple Daisy Wheel Printer
 - d. Cannon Ink Jet Printer
- G. Background printing: enables you to print one or more documents while working on another

12. Documentation: Complete reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1163



Tech Info Library

MacProject: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

MacProject: Specifications (Discontinued)

=====

This article last reviewed: 3 July 1985

I. MacProject: M0525

--Includes: MacProject manual
Program and backup diskette
Guided Tour cassette tape and diskette

1. Charts:

- A. Schedule
- B. Resource Timeline
- C. Task Timeline
- D. Task Cost Entry
- E. Resource Cost Entry
- F. Cash Flow Table
- G. Project Table

2. Maximum Capacity:

- A. Task Boxes:
 - a. 128K Macintosh: 200
 - b. Macintosh 512K or XL: 2,000
 - c. Title: up to 63 characters
- B. Resources:
 - a. Per task: 6
 - b. Per project: 50
 - c. May be assigned to unlimited number of tasks
- C. Size: 94 x 48"
- D. Holidays: unlimited
- E. Project time span: 11 years

3. Date/Calendar Options:

- A. Timeline scale: 1 minute, 30 min., 1 hr., 1 day, 1 or 2 weeks,

1 month or 1 quarter.

- B. Duration scale: minutes, hours, days, weeks, months or fractional durations: e.g., 1.5 days
- C. Work hours: up to 24 per day
- D. Work days: up to 7 per week
- E. Costs:
 - a. Fixed-one-time costs
 - b. Accumulating-resource costs
- F. Cash-flow table: tracks money period by period

4. Editing:

- A. Annotation: the user can annotate all of the chart
- B. Cut, Paste, Copy, Clear: same as with other Macintosh applications
- C. Autoscroll: facilitates selecting more than one screenfull
- D. Cut and Paste, into:
 - a. MacPaint: 1 screen full at a time
 - b. MacWrite: 1 screen full at a time
 - c. MacDraw: 1 vertical page width
 - d. Another MacProject: entire document
- E. Proportionally expand or shrink task boxes
- F. Able to select multiple task boxes

5. Typesyles: A variety of fonts, sizes and styles available

6. Printing:

- A. Print whole document or selected pages
- B. Print one or multiple copies
- C. Print in horizontal or vertical formats

7. Special Features:

- A. Recalculates the entire project after every change
- B. Smart redraw: only redraws the dates that have changed
- C. Capable of using the 15" Imagewriter
- D. MacProject works on the Macintosh XL with MacWorks
- E. Start and finish dates (early and late) for each project task as well as for the entire project calculated automatically
- F. Critical path distinguishable by highlighted task boxes

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Tech Info Library Article Number:1165



Tech Info Library

MacTerminal: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

MacTerminal: Specifications (Discontinued)

=====

I. MacTerminal: M0521

--Includes: MacTerminal Manual
Program and back up diskette

1. Terminals Emulated:

- A. VT100/VT52
- B. TTY
- C. ANSI
- D. IBM 3278 (when used with AppleLine or Apple Cluster Controller)

2. Maximum Size: Dependent upon available storage space

3. Transmission:

- A. Speed (baud): 50, 75, 110, 134.5, 150, 200, 300, 600, 1200,
1800, 2000, 2400, 3600, 4800, 9600, 19200
- B. Asynchronous communication
- C. Full- or half-duplex

4. Terminal Settings:

- A. Character sets: United States, United Kingdom
- B. Line widths: 80 or 132 columns
- C. Status Lights: on/off
- D. Auto Repeat: on/off
- E. Auto Wraparound: on/off
- F. New Line: on/off
- G. On-line/Local option
- H. Answerback Message

5. Compatibility Settings:

- A. Supports either the modem or printer port

- B. Bits per character: 7 or 8
- C. Parity: Even, Odd, None
- D. Xon/Xoff

6. File Transfer Options:

- A. Text
- B. MacBinary
- C. XModem Text
- D. MacTerminal 1.1
- E. Straight XModem

7. Special Features:

- A. Cut and Paste text to or from MacTeminal
- B. Supports full Mac-to-Mac file transfer capability enabling you to send any Macintosh document to another Macintosh document or application using XModem protocol
- C. Dialog boxes and forms simplify the steps in configuring the program to communicate with other terminals
- D. Save data with the option Record Lines Off Top; scroll back through the data (not available in 3278 mode)
- E. Margin bell
- F. Supports Upper- and lower-case characters
- G. Print a selected area
- H. Reset to an empty document configured as when saved last
- I. Tab ruler
- J. MacTerminal works on the Macintosh XL with MacWorks
- K. Supports the Apple 300 and 1200 modems as well as most features of Hayes compatible modems

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Tech Info Library Article Number:1166



Tech Info Library

LisaList: Specifications (Discontinued)

Revised: 9/20/93
Security: Everyone

LisaList: Specifications (Discontinued)

=====

I. LisaList: A6D0300

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-7631

--Includes: LisaCalc, LisaDraw, LisaGraph, LisaWrite, LisaTerminal,
LisaProject and the Lisa Office System.

1. Maximum Document Size: 50% of available storage space
2. Maximum Record (row) Size: 990 bytes
3. Maximum Number of Fields (columns) per Record: 100
4. Data Types:
 - A. Text (default)
 - B. Number
 - C. Date
 - D. Money
 - E. Time
 - F. Social Security number
 - G. Phone number
 - H. Zip code
5. Entering/Formatting Data:
 - A. Checked for proper data type
 - B. Automatically formatted
 - C. Formats may be changed (data type cannot be); previously entered data is refomattted
6. Editing:

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- A. Add or delete columns
- B. Cut, Paste, Copy or Clear: cells or records
- C. Reorder columns
- D. Vary column width
- E. Make columns you don't want in a particular report invisible
- F. Rename any or all columns

7. Sorting:

- A. Sort all data types in ascending or descending order
- B. Multiple sort fields may be specified

8. Searching:

- A. Criteria specified in a search table
- B. Search on multiple criteria
- C. Criteria:
 - a. equal to, not equal to
 - b. greater than, greater than or equal to
 - c. less than, less than or equal to
 - d. between

9. Typestyles:

- A. Variety of sizes available

10. Features:

- A. Undo function: cancels effects of last operation
- B. Revert To Previous Version: undoes all changes made to the graph since it was last saved
- C. Display more than one document on the screen at the same time

11. Special Features:

- A. Built-in file-recovery mechanism: protects data from power fluctuations and media failures

12. Printing:

- A. "What you see is what you get" fidelity
- B. Variety of type sizes available
- C. Horizontal or vertical formats
- D. Single or multiple copies
- E. Works with the following printers:
 - a. Apple Dot Matrix Printer
 - b. Apple Imagewriter: normal or wide carriage
 - c. Apple Daisy Wheel Printer
 - d. Canon Ink Jet Printer
- F. Background printing: enables you to print one or more documents while working on another

13. Documentation: Reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1167



Tech Info Library

LisaWrite: Specifications (Discontinued)

Revised: 9/20/93
Security: Everyone

LisaWrite: Specifications (Discontinued)

=====

I. LisaWrite: A6D0300

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
801) 752-7631

--Includes: LisaCalc, LisaDraw, LisaGraph, LisaList, LisaTerminal,
LisaProject and the Lisa Office System.

1. Maximum Document Size: depends on available disk space

2. Text Displayed:

A. 31 lines by 86 characters: with 8 Point, 15 pitch typestyle

3. Editing:

A. Inserting Text: select location with the mouse and type

B. Edit any text length:

a. Single characters, words or paragraphs

b. Entire documents

C. Cut, Copy, Paste and Delete

4. Search:

A. Search or search and replace

B. Global or selective

C. Optional "Wildcards"

5. Dictionary:

A. Capacity:

a. Standard dictionary: 80,000 words (not editable)

b. Personal dictionary: depends on available memory

6. Formatting:

- A. Margin justification: left, center, right and justify
- B. First-line margin for outdenting or indenting paragraphs
- C. Line spacing: single, line and a half, double or triple
- D. Spacing between paragraphs can be varied independently
- E. Tabs: flush left, flush right, centered or decimal
- F. Tab fill patterns: periods, dashes or underlines
- G. Headers and footers:
 - a. Can be multiple lines long
 - b. Can be placed anywhere on the page
 - c. Optional page number
- H. Page breaks: automatic or manual
- I. "Conditional page": protects blocks of text or table from being broken across pages

7. Scrolling:

- A. Next line
- B. Next screenful
- C. Go directly to any part of document

8. Special Features:

- A. Preview Function: displays the document as it will print
- B. Undo function: cancels effects of last operation
- C. Revert To Previous Version: undoes all changes made to the graph since it was last saved
- D. Display more than one document on the screen at the same time
- E. Split-Screen Feature: split the screen vertically or horizontally

9. Typestyles:

- A. Variety of fonts and sizes available
- B. Bold, italic, underline or any combination of styles
- C. All styles available in subscripts and superscripts

10. Printing:

- A. Maximum width:
 - a. Wide Carriage Imagewriter: 14"
 - b. Narrow Carriage Imagewriter: 14" in horizontal mode
- B. "What you see is what you get" fidelity
- C. Print in horizontal or vertical formats
- D. Print single or multiple copies
- E. Background printing enables you to print one or more documents while working on another
- F. Works with the following printers:
 - a. Apple Dot Matrix Printer
 - b. Apple ImageWriter: normal or wide carriage
 - c. Apple Daisy Wheel Printer
 - d. Canon Ink Jet Printer

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11. Documentation: Reference guide which includes a tutorial

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1168



Tech Info Library

MacWrite 4.5: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

MacWrite 4.5: Specifications (Discontinued)

=====

This article last reviewed: 3 July 1985

I. MacWrite 4.5:

--Includes: MacWrite Manual
MacWrite diskette

A. Maximum Capacity Dependent upon available storage space

1. 128K Macintosh
 - a. 500 paragraphs
 - b. 2950 characters per paragraph
 - c. 1 return per paragraph
 - d. 60 pages
2. 512K Macintosh or Macintosh XL
 - a. 2047 paragraphs
 - b. 2950 characters per paragraph
 - c. 1 return per paragraph
 - d. 250 pages

B. Maximum Viewing Area:

1. Macintosh XL: 8-1/4"
2. Macintosh 128 or 512K: 7-1/8"

C. Typestyles:

1. Variety of fonts, sizes and styles available
2. Maximum font changes per line: no limit

D. Editing:

1. Inserting text: select location with the mouse and type
2. Edit any text length:
 - a. Single characters and words
 - b. Entire document
3. Search & Replace whole or partial words

E. Ruler Options:

1. Right, center, left and full-justification
2. Six lines per inch option (standard typewriter spacing)
3. Smallest scale of the ruler: 1/8"
4. Maximum number of tabs per line: 10
 - a. Decimal or
 - b. Regular left flush
5. Minimum space between tabs: 3/16"
6. Indent or outdent paragraphs
7. Margins:
 - a. Minimum left: 1"
 - b. Maximum right: 8 1/8"
 - c. Cannot be within 2" of one another
 - d. Cannot be within 3/8" of a tab

F. Header/Footers:

1. Size: up to 7 lines, approximately 1/3 of a page
2. Automatic pagination: able to set starting number

G. Page Layout:

1. Title page option: no header or footer on the first page
2. Scrolling:
 - a. single line
 - b. page, or
 - c. go to a specific page
3. Page breaks: automatic or manual

H. Printing Options:

1. Print whole document or selected pages
2. One or multiple copies
3. Horizontal or vertical formats
4. Imagewriter: 50% reduction option
5. LaserWriter: 25% reduction to 400% enlargement option
6. Macintosh display and Imagewriter printing are both bit-mapped, so the display accurately previews Imagewriter printing.

I. Special Features:

1. Page location recorded on vertical elevator
2. Accepts graphics or text from other Mac programs
3. Option to save document as text only: doesn't contain format or font information
4. Undo function cancels effects of last operation
5. MacWrite works on the Macintosh XL with MacWorks.

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Tech Info Library Article Number:1169



Tech Info Library

LisaTerminal: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

LisaTerminal: Specifications (Discontinued)

=====

I. LisaTerminal: A6D0300 (Discontinued)

--Includes: LisaCalc, LisaDraw, LisaGraph, LisaWrite, LisaList,
LisaProject and the Lisa Office System.

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-76311

1. Terminals Emulated:

- A. VT100/VT52
- B. TTY
- C. 3278 (when used with Apple Cluster Controller or AppleLine)

2. Maximum Size:

- A. Document: 1500 lines (approx. 20 pages)
- B. Copy and Paste limit: 10 pages

3. Transmission Speed (baud):

- A. Serial Ports A or B: 50, 75, 110, 134.5, 150, 200, 300, 600,
1200, 1800, 2400, 4800, 9600
- B. Serial Port B: 3600, 19200

4. Set-up Options:

- A. Parity: Even, odd or none
- B. Full- or half-duplex transmission
- C. Xon/Xoff
- D. Manual or automatic dialing (supported on Apple 300 or 1200 and
Hayes-compatible modems)
- E. Auto-repeat on/off
- F. Auto-new line on/off

- G. Wraparound on/off
- H. Answer-back message on/off
- I. Margin bell
- J. On-line/local
- K. Serial Port A or B

5. Page Layout Options:

- A. Cursor: Block or bar shape
- B. Background: White or black
- C. 80 or 132 columns
- D. Status lights on/off
- E. Characters: Upper- and lowercase
- F. Tabs and rulers

6. Terminal Control:

- A. Function keys (such as RETURN, TAB, ESC)
- B. Cursor control codes (such as NUL, ENQ, FF, DEL)
- C. Supports all VT100 and VT52 function codes
- D. Special graphic character codes

7. Special Features:

- A. Supports communication while you use other Office System documents
- B. Cut and Paste text from and to other Lisa applications
- C. Dialog boxes and forms simplify the steps in configuring the program to communicate with other terminals.
- D. Save data with the Record Lines Off Top option; scroll back through the data (not available in 3278 mode)

8. Documentation: Reference Guide

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1171



Tech Info Library

LisaCalc: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

LisaCalc: Specifications (Discontinued)

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I. LisaCalc: A6D0300 (Discontinued)

Available from Sun Remarketing,
P. O. Box 4059, Logan, Utah 84321
(801) 752-7631.

--Includes: LisaDraw, LisaList, LisaGraph, LisaWrite, LisaTerminal,
LisaProject and the Lisa Office System.

1. Maximum Size:

- A. Dimensions: 255 rows by 255 columns
- B. Visible: 15 columns (8 characters each) by 29 rows
- C. Memory (recommended limit): 400 blocks

2. Precision and Accuracy:

- A. Standard IEEE numerics for calculations
- B. 15 digits for high-precision calculations

3. Editing:

- A. Cut, Copy, Paste and Clear
- B. Insert new rows or columns
- C. Copy values or formulas from or into other models

4. Formatting:

- A. Left, right and center justification
- B. Variable column widths: 1 to 80 characters
- C. Numbers:
 - a. Integer, decimal, and exponential
 - b. Variable number of digits after decimal or exponent
- D. Money: commas, dollar signs, cents
- E. Negative money values may be displayed in brackets

F. Fill Pattern

5. Functions:

- A. Addition, subtraction, multiplication, division
- B. Sum, average, minimum, maximum, count, exponent
- C. NPV, compound interest factor, annuity factor
- D. Absolute value, integer portion, round
- E. Log, natural log, square root, sum of squares
- F. Sin, asin, cos, acos, tan, atan
- G. Lookup
- H. Integer division with remainder
- I. Boolean: and, or, not, if-then-else
- J. Equal, not equal
- K. Greater and less than, greater than or equal, less than or equal
- L. NA, error

6. Date/Calendar:

- A. Specify dates as mm/dd/yy
- B. Specify date parts as a number of days, months or years
- C. Add, subtract and compare dates of date parts
- D. Many functions work with dates or date parts

7. Calculation Features:

- A. Automatic or manual:
 - Calculates until convergence is achieved

8. Data Exchange:

- A. Move data and models between LisaCalc documents
- B. Move data and text into LisaGraph and LisaWrite

9. Special Features:

- A. "Protection" guards cells from being changed
- B. Circle Missing Values: cells that are referenced in a formula but do not contain valid data are highlighted
- C. Up to 6 vertical or horizontal splits of the window

10. Features:

- A. Undo function: cancels effects of last operation
- B. Revert To Previous Version: undoes all changes made to the document since it was last saved
- C. Display more than one document on the screen at the same time
- D. Horizontal and vertical scrolling

11. Typestyles:

- A. Variety of sizes available

12. Printing:

- A. "What you see is what you get" fidelity
- B. Fit as many as 132 columns on an 8 1/2 x 11-inch page
- C. Automatic or manual page breaks
- D. Print formulas or values
- E. Print in horizontal or vertical formats
- F. Print one or multiple copies
- G. Print whole drawing or selected pages
- H. Background printing enables you to print one or more documents while working on another
- I. Works with the following printers:
 - a. Apple Dot Matrix Printer
 - b. Apple Imagewriter: normal or wide carriage
NOTE: Only version 3.1 of the Office System makes full use of the wide-carriage ImageWriter, letting you print on 14" x 11" paper.
 - c. Apple Daisy Wheel Printer
 - d. Canon Ink Jet Printer

13. Documentation: Reference guide which includes a tutorial.

Copyright 1985, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1172



Tech Info Library

Macintosh 68000 Development System: Specs (Discontinued)

Revised: 9/24/93
Security: Everyone

Macintosh 68000 Development System: Specs (Discontinued)

=====

I. Programming Tools:

A. Mouse-based 68000 Macro Assembler

B. Editor: window-based, can examine and modify any text file, such as BASIC, MacWrite, C, as well as assembly source files

C. Linker

-- Strips out dead code for creating smaller applications

D. Debugger:

-- Window-based

E. Utilities: for manipulating icons, fonts and resources

F. Executive Processor

-- Automates editing, assembler, and linker functions

G. System definition files

-- Symbolically references ROM routines and data structures

H. Resource Compiler

-- Defines application-specific resources

II. Capacity:

A. Editor: file sizes limited only by disk space

III. Special Features:

A. Symbolic debugger: can be driven by a second Macintosh

- A significant benefit when the machine is being debugged since the program uses less space (Debugging Cable included).

- Debugger support for all 128K ROM calls.

B. Multiple windows display memory contents in various formats including instruction and symbolic disassembly

C. Macintosh toolbox and operating system trap calls are fully supported with macros and equate files

D. Editor:

- handles multiple files concurrently
- supports Undo and up to 9 Windows
- supports up to 9 Windows

E. Fully supports all ToolBox ROM calls.

F. Full support for HFS

- A Path Manager allows users to customize the way MDS applications search for files in HFS folders.

G. New equate and trap files which allow full access to the 128K ROM found in the Macintosh Plus and the Macintosh 512K enhanced (described in the recently published Inside Macintosh Volume IV).

IV. Package:

1. Development System Diskettes (single-sided)
2. User's Manual and Update
3. Programmer's Reference Manual
4. Debugging cable

V. Notes:

MDS 2.0 software is shipped on three single-sided Macintosh disks and will work on any Macintosh or Macintosh XL with at least 512K of RAM. Macintosh 128K owners who do not choose to get a memory upgrade can continue to use MDS 1.0.

MDS is now available from Consulair Corp.

The Macintosh 68000 Development System can be used in conjunction with "Inside Macintosh," a comprehensive technical description of the Macintosh ROM, user-interface considerations, and programming guidelines available from Addison-Wesley.

Apple Technical Communications

Tech Info Library Article Number:1173



Tech Info Library

Okidata Microline 92A printer: Using it with a IIC

Revised: 7/9/85
Security: Everyone

Okidata Microline 92A printer: Using it with a IIC

=====

Before you attempt to use an Okidata Microline 92A printer with an Apple IIC, be aware that the configuration of the printer at shipment is such that the Apple IIC is initially unable to recognize whether the printer is busy. In other words, if you attempt to send text to the printer as it arrives from the factory, all text from your Apple IIC will indeed be sent, but only the text that first fills the printer buffer will actually be printed (about 2K). The remaining text will be lost.

This problem stems from the fact that the printer sends a "Supervisory Send Data (SSD)" signal when it needs to tell the Apple IIC to stop sending data--usually when the printer buffer is full and needs to be emptied before it can receive any more. If the IIC doesn't recognize that SSD signal and stop sending data, that data is lost. And, in fact, the IIC DOES ignore the SSD signal: it's used to looking at the "Data Terminal Ready" (DTR) signal to determine when and when not to send data. The Okidata printer, however, only uses the DTR signal to tell the Apple IIC when it's not on-line, when its power is off, or when it's out of paper--not when it's busy.

The solution to this problem is quite straightforward: simply connect the "busy signal" of the printer to the DTR signal of the IIC by making sure that "SP1" and "SP2" on the serial interface card in the rear inside of the printer are both set to SIDE B. (They are connected to the two leftmost pins of the connector.) This procedure switches the two signals so that the printer will operate correctly with the IIC. For further details, please refer to the Okidata manual, p. A-17, under 'Jumper Plug Functions'.

NOTE: To further enhance the printing capabilities of the printer, we suggest that you set the interface protocol on the serial card in the printer to "Printer Ready/Busy" (Centronics Unblocked) (SW9=OFF, SW10=OFF, SW11=ON). Doing so allows the IIC to access the 2K buffer in the printer, allowing the printer to print faster than if you used the "Printer Ready/Busy" (OKI Simplex Busy) protocol. When using the Centronics Unblocked protocol, there will be times when the printer will temporarily stop to fill its buffer with text before continuing printing. This is normal.

--Serial Interface Settings:

No changes need to be made to the Serial Interface settings. The defaults work perfectly.

--AppleWorks Printer Setting:

Printer codes for utilizing the features of this printer are as follows:

4 characters per inch	---->	CTRL-_
10 characters per inch	---->	CTRL-^
12 characters per inch	---->	CTRL-
17 characters per inch	---->	CTRL-]

6 lines per inch	---->	ESC-6
8 lines per inch	---->	ESC-8

Boldface Begin	---->	ESC-T
Boldface End	---->	ESC-I

Subscript Begin	---->	ESC-L
Subscript End	---->	ESC-M

Superscript Begin	---->	ESC-J
Superscript End	---->	ESC-K

Underline Begin	---->	ESC-C
Underline End	---->	ESC-D

Correspondence Quality	---->	ESC-1	These two codes may have to be exchanged for Bold Begin/End
Data Processing Quality	--->	ESC-0	

Apple Technical Communications

Tech Info Library Article Number:1174



Tech Info Library

Epson FX-80 printer: Using it with a IIC

Revised: 7/9/85
Security: Everyone

Epson FX-80 printer: Using it with a IIC

=====

Most Epson FX-80 printers are built to operate with parallel computers. In order for them to work with the Apple IIC, the Epson Intelligent Serial Interface Card must be installed in the printer. The default setting for baud rate on this card, however--19200 BPS--needs to be changed to 9600 BPS in order for the printer to communicate with the IIC.

Set the following switches on the SIC as shown below in order to change the card's baud rate to 9600 BPS:

SW1-5 = OFF
SW1-6 = ON
SW1-7 = OFF
SW1-8 = OFF

Apple Technical Communications

Tech Info Library Article Number:1176



Tech Info Library

Apple Scribe Printer: Using it with a IIfc

Revised: 7/9/85
Security: Everyone

Apple Scribe Printer: Using it with a IIfc

=====

Scribes are shipped configured to work with the Apple IIfc. The switches are as follows:

1-OFF	(OFF = up position)
2-OFF	
3-OFF	
4-OFF	
5-OFF	
6-OFF	
7-OFF	
8-OFF	

Apple Technical Communications

Tech Info Library Article Number:1177



Tech Info Library

Apple II: Transferring Data to a Macintosh Without AFE (10/94)

Revised: 10/18/94
Security: Everyone

Apple II: Transferring Data to a Macintosh Without AFE (10/94)

Article Created: 09 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

How can I transfer information from my Apple II to my Macintosh without Apple File Exchange or Macintosh PC Exchange?

DISCUSSION -----

The best way to transfer data files from an Apple IIe to a Macintosh, and vice versa, is to use Apple File Exchange (AFE) or Macintosh PC Exchange. However, AFE requires that the Apple II data first be put on 3.5" disks. If that isn't feasible, there's another way:

1. Connect the serial ports of the two computers, using a Macintosh Imagewriter cable. In the case of the Apple IIe, the connection is made a Super Serial Card. The Apple IIc, Apple IIgs, and all Macintosh computers have built-in serial ports.
2. Point the jumper block on the Super Serial Card to MODEM.
3. Run Access II (or comparable application) on the Apple II and MacTerminal (or comparable application) on the Macintosh.
4. Set one system up to send a file and the other to receive a file. Make sure both systems are set for the same baud rate, data bits, and so forth.

Sample Software Setup:

Apple II

TTY Mode
Line Feed + Carriage Return
8 Bits

Macintosh

TTY Mode
New Line
8 Bits

Xon/Xoff
9600 Baud
No Parity
Half Duplex
Normal Video
Wraparound

Xon/Xoff
9600 Baud
No Parity
Local Echo
Underline Cursor
Wraparound
80 Column
OnLine
Auto repeat
Modem Connection

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1178



Tech Info Library

Communications Interface Card: Initializing with POKEs (11/96)

Revised: 11/21/96
Security: Everyone

Communications Interface Card: Initializing with POKEs (11/96)

Article Created: 09 July 85
Article Reviewed/Updated: 18 November 1996

TOPIC -----

The following describes the use of POKEs instead of PR# or IN# commands to initialize the Communications Interface.

DISCUSSION -----

Neither the PR# nor IN# commands in Applesoft and Integer Basic initialize the Communications Interface. This situation can cause problems if you need to modify the parameters of the interface for your application.

The ROM on the Communications Interface card, upon receiving the first character, sets all parameters to their default settings. So, after you've POKEd the parameter you want, the first character you send will cause the ROM to overwrite all the parameter locations just set up.

To correct this, send a character through the card and then change the parameter locations by means of the following POKEs. (Please refer to the Communications Interface Card manual for additional information about what each POKE does.)

Replace all occurrences of "s" in the BASIC program below with the number of the slot that the Communications Interface Card is plugged into.

```
10 POKE 1784+s,32      lower case, page 17
20 POKE 1912+s,0       video echo, page 17
30 POKE 2040+s,17      STAT, page 27
40 POKE -16242+s*16,3   reset ACIA, page 27
50 POKE -16242+s*16,17 status, page 27
```

The next list of POKEs will replace the PR# and IN# commands. You must use these POKEs in order to benefit from the previous POKEs. You should use the CALL 1002 if you will be doing DOS commands while the interface is enabled.

..TIL01180-Communications_Interface_Card-Initializing_with_POKEs_11-96.pdf

If speed is of the essence, don't use CALL 1002 until after the data transfer is complete, since DOS slows down I/O. These POKEs must all be on one command line separated by colons to work in command mode. They can have separate line numbers in a program.

```
60 POKE 54,5          PR#s
70 POKE 55,192+s
80 POKE 56,7          IN#s
90 POKE 57,192+s
100 CALL 1002
```

The normal way to reset the I/O to the Apple video and keyboard from within a program is:

```
900 D$ = CHR$ (4): REM CTRL-D
910 PRINT D$;"PR#0"
920 PRINT D$;"IN#0"
```

This will only work after a PRINT and will be ignored after a GET or PRINT terminated with a comma or semicolon. To avoid having to do an extra PRINT, use:

```
900 CALL -375 : REM THIS IS IN#0
910 CALL -365 : REM THIS IS PR#0
920 CALL 1002 : REM THIS RECONNECTS DOS
```

Video Echo

Do not allow video echoing while sending information to the interface. Your program or variables may be damaged if video echo is not disabled for lines more than 40 characters long.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1180



Tech Info Library

NEC Pinwriter P2 printer: Using it with a IIfc (10/94)

Revised: 10/18/94
Security: Everyone

NEC Pinwriter P2 printer: Using it with a IIfc (10/94)

Article Created: 09 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

Is it possible to use an NEC Pinwriter P2 printer with my Apple IIfc?

DISCUSSION -----

The NEC printer works well with the Apple IIfc. Connecting it is quite simple; one minor adjustment may need to be made, though, to the printer as it comes from the factory. Switch 2-6 of the dip switches located inside the printer (underneath the printhead) should be set in the ON position for 7-bit data, which allows the printer to function correctly with AppleWorks and BASIC and most other programs.

NOTE: If you plan on using the graphic capabilities of this printer, you may have to change the 2-6 switch back to the OFF position for an 8-bit data format.

The recommended switch settings for most applications are:

SW1-1 = OFF	SW2-1 = OFF
SW1-2 = OFF	SW2-2 = OFF
SW1-3 = OFF	SW2-3 = OFF
SW1-4 = OFF	SW2-4 = OFF
SW1-5 = ON	SW2-5 = ON
SW1-6 = ON	SW2-6 = ON
SW1-7 = OFF	SW2-7 = ON
SW1-8 = OFF	SW2-8 = OFF

The dip switches on the P2/P3-7 Serial Interface (Model 6307) should be as follows:

SW1-1 = OFF	SW2-1 = ON SW3-1 = ON
SW1-2 = ON	SW2-2 = OFF SW3-2 = OFF

SW1-3 = OFF	SW2-3 = ON SW3-3 = OFF
SW1-4 = ON	SW2-4 = OFF SW3-4 = OFF
SW1-5 = OFF	SW2-5 = OFF SW3-5 = OFF
SW1-6 = ON	SW2-6 = OFF SW3-6 = OFF
SW1-7 = OFF	SW2-7 = OFF SW3-7 = ON
SW1-8 = OFF	SW2-8 = OFF SW3-8 = OFF

AppleWorks Printer Setting

The NEC printer is fully compatible with AppleWorks. When you add the printer as custom printer in the Printer Information section of AppleWorks, the print codes should be as follows:

5 CPI = CTRL-R ESC-h	(CPI = Characters per inch)
6 CPI = CTRL-R ESC-e	
8 CPI = CTRL-R ESC-Q	
10 CPI = CTRL-T ESC-h	
12 CPI = CTRL-T ESC-e	
17 CPI = CTRL-T ESC-Q	

Bold Begin = ESC-!
Bold End = ESC-"

Underline Begin = ESC-X
Underline End = ESC-Y

Subscript Begin = ESC-G CTRL-A
Subscript End = ESC-Z

Superscript Begin = ESC-G CTRL-@
Superscript End = ESC-Z

8LPI = ESC-B
6LPI = ESC-A

Set the printer specifications in AppleWorks not to have a Line Feed after every RETURN.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1182



Tech Info Library

Apple Cluster Controller: Pinouts (10/94)

Revised: 10/18/94
Security: Everyone

Apple Cluster Controller: Pinouts (10/94)

Article Created: 09 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

What are the pinouts and functions for the Apple Cluster Controller?

DISCUSSION -----

Apple Cluster Controller (ACC):

A. Asynchronous Direct Port Plug (port acts as a modem/DCE)

DB-25				
Connector	Function	Mnemonic	Data/Signal Direction	
1	Ground			
2	Transmit Data	(Tx)	In	
3	Receive Data	(Rx)	Out	
4	Request to Send	(RTS)	In	
5	Clear to Send	(CTS)	Out	
6	Data Set Ready	(DSR)	Out	
7	Ground			
8	Data Carrier Detect	(DCD)	Out	
20	Data Terminal Ready	(DTR)	In	

B. Modem Port Plug (port acts as a terminal/DTE)

DB-25				
Connector	Function	Mnemonic	Data/Signal Direction	
1	Ground			
2	Transmit Data	(Tx)	Out	
3	Receive Data	(Rx)	In	
4	Request to Send	(RTS)	Out	

..TIL01183-Apple_Cluster_Controller-Pinouts_10-94.pdf

5	.....	Clear to Send	(CTS)	In
6	.....	Data Set Ready	(DSR)	In
7	.....	Ground		
8	.....	Data Carrier Detect	(DCD)	In
20	.....	Data Terminal Ready	(DTR)	Out

NOTES:

1. Macintosh XL users: connect the Apple Cluster Controller to port A.
2. If you configure you ACC port with the Modem Port Plug (for DTE) to communicate with any Apple except a Macintosh, use Modem Eliminator cable part #590-0166-A in line with your Apple serial cable part #590-0037.
3. To connect a Macintosh to a port configured with the Modem Plug, construct your own cable as Apple doesn't manufacture one. Alternatively, use the Asynchronous Direct Plug and the Macintosh printer cable part #590-0169.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1183



Tech Info Library

AppleLine: Pinouts (10/94)

Revised: 10/18/94
Security: Everyone

AppleLine: Pinouts (10/94)

Article Created: 12 May 1986
Article Reviewed/Updated: 18 October 1994

TOPIC -----

What are the pinouts and functions for the AppleLine?

DISCUSSION -----

DB-25

Connector	Mnemonic	Signal Name, Data/Signal Direction
-----------	----------	------------------------------------

1	SNG	Shield ground
2	TXD, Tx	Transmit Data, Out
3	RCD, Rx	Receive Data, In
4	RTS	Request to Send, Out
5	CTS	Clear to Send, In
6	DSR	Data Set Ready, In
7	GND	Ground
8	DCD	Data Carrier Detect, In
9		No connection
10		No connection
11		No connection
12	CH	Data signal rate selector, In
13		No connection
14		No connection
15		No connection
16		No connection
17		No connection
18		No connection
19		No connection
20	DTR	Terminal Ready Signal, Out
21		No connection
22	CE	Ring indicator, In
23		No connection

24	.....	No connection
25	.....	No connection

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1184



Tech Info Library

ProFile: Formatting Compatibility (10/94)

Revised: 10/18/94
Security: Everyone

ProFile: Formatting Compatibility (10/94)

=====

Article Created: 09 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

For what operating systems is the Apple ProFile compatible?

DISCUSSION -----

ProFiles can be formatted for two main types of operating systems:

1. the Lisa Operating System for the Lisa

or

2. ProDOS for the Apple II, and SOS for the Apple III.

ProFiles are formatted at the factory with the Apple III SOS format and contain the Apple III System Utilities program. This format is completely compatible with the Apple II ProDOS format, and so can be used on either the Apple II or Apple III; additionally, these ProFiles can be used without difficulty on the Macintosh XL (running Lisa or Macintosh software).

Once a ProFile has been formatted by Lisa software, it will not be able to work any longer on an Apple II or III.

ProFiles don't need any special software to function with these systems other than the respective system formatters which accompany each system's operating system utilities, regardless of what system it was used on previously.

NOTES:

1. The Pascal ProFile Manager will not format a ProFile; the ProFile must already be formatted with ProDOS.
2. If you're unable to initialize a Profile for use with an Apple II or

..TIL01185-ProFile-Formatting_Compatibility_10-94_(TA29187).pdf

Apple III after it's been used with a Macintosh XL, check with a Level II service center: the ProFile may need reformatting.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1185



Tech Info Library

Apple II and II+: Memory typically available to users

Revised: 7/9/85
Security: Everyone

Apple II and II+: Memory typically available to users

=====

After startup, Applesoft's FRE(0) statement reports the same amount, 48K, of free memory in the II Plus, the Apple IIe with 64K, and the Apple IIe or IIC with 128K. No matter how much the maximum memory of the CPU is, you will never have more than 48K of memory available to you, since the microprocessor lets BASIC have DIRECT access to only 48K in Apple II family computers with memory configurations equal to or greater than 48K.

This discrepancy stems both from the microprocessor's memory limit and from the demand placed on the system by the software. The Apple's 6502 microprocessor can directly access only 64K of memory (address 65536 (\$FFFF)). Some of the 64K has to be loaded with system software: the monitor, Applesoft, I/O, stacks, keyboard, vectors, and text display. The Apple's system monitor and Applesoft language routines reside in upper memory from \$D000 to \$FFFF. I/O ROM locations span from \$C000 to \$CFFF. Finally, the system uses \$0000 to \$07FF for its stack, keyboard input, system vectors and text display. This amount of software leaves you with 47103 bytes (the memory space between \$0800 and \$BFFF) that you can directly access through BASIC.

The user can then decide to give more of this memory to an operating system and high resolution graphics. For example, if you use DOS 3.3, you relinquish approximately 10.5K, the memory space from \$9600 to \$BFFF. Similarly, high resolution graphics page 1 or 2 takes another 8K for each page.

--> Adding more memory for the user

Adding memory allows you to load operating systems not dependent on BASIC; it also lets you take advantage of the full 64K from assembly language programs. Apple II and II+ users can add 16K to a 48K configuration if they install a RAM card in slot #0.

In the IIe, this 16K "RAM card" is built onto the motherboard and is addressed in the same way as the card in the II and II+; that's why there's no slot #0 on the Apple IIe. This additional 16K actually overlays the upper 16K of memory only by bank-switching between the ROM and RAM.

..TIL01187-Apple_II_and_IIplus-Memory_typically_available_to_users.pdf

Apple Technical Communications

Tech Info Library Article Number:1187



Tech Info Library

AppleWorks: Using it on the Apple II and Apple II Plus

Revised: 2/13/87
Security: Everyone

AppleWorks: Using it on the Apple II and Apple II Plus

=====

Videx makes 80-column boards and patch program disks that allow Appleworks to operate on an Apple II or II Plus.

A Videx card gives a normal Apple II or Apple II Plus the ability to run AppleWorks. The AppleWorks diskettes must also be modified with a special patch program in order to run on the Apple II or II Plus.

There are some technical considerations, though:

- a. The user must have purchased the Videx Ultraterm Card or the Videoterm Card with the Inverse Option chip.
- b. The shift key modification must also be in place; if it isn't, you can perform the modification yourself by referring to the manual.
- c. The program requires AppleWorks 1.3 to utilize the Apple RAM card. Titan and Legend RAM cards are supported with AppleWorks versions 1.1 and 1.2.

Videx Inc.
1105 NE Circle Blvd.
Corvallis, OR 97330
503 / 758-0521@

Applied Engineering, best known for its RamWorks board for the Apple IIe, also makes "RamFactor", a memory board for the Apple II, Apple II Plus, IIe, and Apple IIGS.

RamFactor comes with a set of patch disks for AppleWorks versions 1.2 and 1.3 and another set for 2.0. Patch disks from Videx are not required.

Technical requirements for an Apple II Plus are:

- a. 64K main memory in either:
 1. 48K + 16K language cardor

2. Applied Engineering Transwarp Accelerator

- b. 80 column card with inverse video capability
- c. Shift key wire from keyboard to main board (a common modification)
- d. RamFactor board with at least 256K (minimum configuration)
- e. One or more disk drives.

Such an Apple II Plus system has no trouble running AppleWorks 1.3.

The following key substitutions apply:

Apple II Plus	AppleWorks
Escape	Open Apple
Control-J	Up
Control-K	Down

Apple Technical Communications

Tech Info Library Article Number:1188



Tech Info Library

UniDisk: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

UniDisk: Specifications (Discontinued)

=====

This article last reviewed: 9 July 1985

I. Technical Specifications

1. Recording Media

- a. Disk diameter: 5.25 inches
- b. Recording surfaces: 1
- c. Tracks per surface: 35

2. Capacities

- a. Formatted data capacity: 140 kilobytes, 16 sectors
 - 1. ProDOS: 137 KB
 - 2. Pascal: 137 KB
 - 3. DOS 3.3: 124 KB

3. Characteristics

- a. Seek/settle time (track to track): 30 milliseconds maximum
- b. Drive-motor start time: 0.5 seconds maximum
- c. Mechanism same as drive for Duodisk, IIc drive, and Disk IIc

4. Power Consumption

- a. +12 VDC with a tolerance of 0.6 V (plus or minus)
 - 1. Maximum ripple 120mV peak to peak
 - 2. 0.8 A typical
 - 3. 1.6 A maximum
- b. -12 VDC with a tolerance of 0.6 V (plus or minus)
 - 1. Maximum ripple 120mV peak to peak
 - 2. 0.01 A typical
 - 3. 0.02 A maximum
- c. +5 VDC with a tolerance of 0.25 V (plus or minus)
 - 1. Maximum ripple 120mV peak to peak

2. 0.2 A typical
3. 0.4 A maximum

5. Head positioning: Adjusted to a tolerance of 0.002 inches (plus or minus) maximum deviation from ideal on track

6. Environmental Characteristics

- a. Operating temperature:
 1. 50 to 115 degrees Fahrenheit
 2. 10 to 46 degrees Celsius
- b. Operating humidity: 20% to 80% (noncondensing)
- c. Maximum wet bulb:
 1. 85 degrees Fahrenheit
 2. 29.4 degrees Celsius

7. Drive Dimensions

	inches	millimeters
a. Length	8.50	216.0
b. Width	6.37	162.0
c. Height	3.13	79.6

	pounds	kilograms
d. Weight	4.62	2.1

8. Connection

For each controller card connected to a Unidisk, a second Unidisk drive can be "daisy chained" or connected to the back of the first.

II. System Configuration

1. Controller Card and

- a. Apple II
- b. Apple II Plus
- c. Apple IIe
- d. Apple IIGS

III. Package

1. Order number:
 - a. A9M0104: Unidisk drive with controller card
 - b. A9M0105: Unidisk drive

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Tech Info Library Article Number:1189



Tech Info Library

Extended 80-Column Text/AppleColor Card: Specs (11/96)

Revised: 11/18/96
Security: Everyone

Extended 80-Column Text/AppleColor Card: Specs (11/96)

Article Created: 09 July 1985
Article Reviewed/Updated: 14 November 1996

TOPIC -----

This article provides technical specifications for the Extended 80 column/Text card for the Apple IIe. This product has been discontinued and is no longer available from Apple.

DISCUSSION -----

Technical Specifications
=====

Output

The card has a DB-15 connector which is compatible with the cable supplied with AppleColor Monitor 100.

Signals available support XRGB and negative sync. For 16 Apple colors: A summing network, like that built into the Apple Color Monitor 100, must follow to obtain Apple colors

Without summing network, colors may be limited to primary and secondary, differentiated only in intensity.

+5 volts DC for powering adapter devices for other monitors; 4 text colors: amber, green, blue, or white, and inverse and flashing text in white only are all supported.

Switches

For color display of text.

Software compatibility

IIf software included for BASIC and Double high-resolution graphics modes. Soft switches are the same as those on the Extended 80-Column Text Card.

Composite video compatibility

Composite video connector cannot be used simultaneously with RGB video connector, it must be used in lieu of an RGB monitor.

A diskette of machine-language driver software included with card supports the following video modes:16 colors: 140 by 192, 2 colors: 560 by 192, 16 colors: 140 by 192 with 80-column text

The card provides compatibility with composite video output, RGB video output and supports 15 Ampersand routines usable from Applesoft BASIC.

Memory

64K on card total available memory after installation 128K

System Requirements

Apple IIe with available Auxiliary Connector

High-resolution color video display such as the AppleColor Monitor 100 or other RGB (Red, Green, Blue) color monitors.

Package

-
1. Card: Extended 80-Column Text/AppleColor
 2. Diskette: DOS 3.3 and ProDOS double high-resolution driver software with complete demonstration software.
 3. Manual: Extended 80-Column Text/AppleColor Card.
 4. Cable assembly with DB-15 connector
 5. Cards: Warranty and product registration

Article Change History:

14 Nov 1996 - Revised formatting.

14 Feb 1995 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1190



Tech Info Library

High-Density Diskettes: Which Drives Support Them (10/94)

Revised: 10/18/94
Security: Everyone

High-Density Diskettes: Which Drives Support Them (10/94)

=====

Article Created: 16 November 1987
Article Reviewed/Updated: 18 October 1994

TOPIC -----

In what Apple floppy disk drives can I use high-density diskettes?

DISCUSSION -----

High-density diskettes (1.44MB only) are suitable for use in Apple SuperDrive (formerly Apple FDHD).

High-density diskettes are NOT suitable for use with:

- Macintosh 400K drives
- Macintosh 800K drives
- Apple II 3.5-inch drives

High-density diskettes are physically different from double-density diskettes and are tested to a different specification. The coating on a high-density diskette is thinner for higher data-packing density. Use in 400K or 800K drives is unreliable and can cause data loss.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1192



Tech Info Library

Macintosh: Directory size

Revised: 7/17/85
Security: Everyone

Macintosh: Directory size

=====

Since the Macintosh's directory uses variable amounts of storage space to maintain file names, it's possible to run out of "disk space" to store file names when there is plenty of storage space for the data itself. In fact, you can run out of directory space just by changing the name of a file to a longer one.

To free up all available storage space for your files: 1) shorten the names of your files as much as possible, and then 2) move all documents to another diskette, then erase the original diskette and move the documents back onto it.

NOTE: Some third-party applications don't handle this situation in a very friendly manner: the system may bomb due to the lack of directory space and not inform you why it bombed. If you suspect that lack of directory space may be your problem--that is, if your disk is fairly full--perform the two steps described above before you assume the problem is something else.

Apple Technical Communications

Tech Info Library Article Number:1200



Tech Info Library

Macintosh 400K Disk Drive: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Macintosh 400K Disk Drive: Specifications (Discontinued)

=====

This article last reviewed: 17 July 1985

I. Capacity

A. Unformatted disk space	437.5 K bytes
B. Formatted disk space	409.6 K bytes
C. Burst TRANSFER RATE	489.6 K bits per second

II. Access time

milliseconds

A. Track to track	15
B. Average*	415
C. Settling time	15
D. Head load time	60
E. Average latency	50

* Average access time = $1/3 \times (\text{Track Nos.}) \times (\text{Track to track}) + (\text{Settling Time})$

III. Functional

A. Rotational speed(s)	394, 429, 472, 525, 590 RPM
B. Recording density (inside track)	7610 BPI
C. Track density	135 TPI
D. Cylinders	80
E. Tracks	80
F. R/W heads	1
G. Encoding method	APPLE GCR
H. Component life	5 years
I. Media life	over 3 million passes track
H. Diskette Interchange	20,000 times minimum
J. Soft Read Error	1 per billion bits read
K. Hard Read Error	1 per trillion bits read
L. Seek Error	1 per billion seeks

IV. Heat Dissipation

A. Operating mode (head load)	7.5 W
B. Standby mode	3.3 W

V. Physical Dimensions

	inches	millimeters
A. Height	2.0	51
B. Width	4.0	102
C. Depth	5.1	130

	pounds	grams
D. Weight	1.5	65

VI. Power requirements

A. +12 Volts DC +/-5%	0.1V p-p	Max Ripple 0.1 V (max)
B. +5 Volts DC +/-5%	0.05V p-p	Max Ripple 0.1 V (max)

VII. Environmental limits (Operating)

	degrees Fahrenheit	Celsius
A. Temperature	40-140	5-45
B. Humidity	20% to 80% relative humidity (no condensation)	

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Tech Info Library Article Number:1203



Tech Info Library

ProFile interface card for Apple III: Pinouts (10/94)

Revised: 10/18/94
Security: Everyone

ProFile interface card for Apple III: Pinouts (10/94)

Article Created: 17 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

What are the pinouts for the Apple /// ProFile Interface Card?

DISCUSSION -----

The pinouts for the ProFile card are as follows:

1	PHI	13	XD7
2	GND	14	GND
3	TRw	15	PSTRB (low = true)
4	GND	16	BSY/INT (low = true)
5	XD0	17	CMD (low = true)
6	XD1	18	RPARITY (low = true)
7	(not used)	19	GND
8	XD2	20	GND
9	GND	21	CRES (low = true)
10	GND	22	XD3
11	XD5	23	XD4
12	XD6	24	GND
		25	CDET (low = true)

The cable to the ProFile is pin-to-pin straight through.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1204



Tech Info Library

Sharp Electronics Corp.

Revised: 7/16/93
Security: Everyone

Sharp Electronics Corp.

=====

Article Created: 16 November 1987
Article Reviewed/Updated: 16 July 1993

Sharp Electronics Corp.

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Company Profile:
Hardware and software, specializing in all realms of computerized products.

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Tech Info Library Article Number:1205



Tech Info Library

Lisa Office System 3.1: Installing with BASIC Workshop 3.0

Revised: 7/17/85
Security: Everyone

Lisa Office System 3.1: Installing with BASIC Workshop 3.0

=====

BASIC Workshop 3.0 is fully compatible with Lisa Office System Release 3.1.

If you wish to install the Office System 3.1 and BASIC Workshop 3.0:

1. Back up your documents currently stored on the hard disk.
2. Install the Office System 3.1. Follow the steps in Chapter 6 of the Lisa Office System manual. Select Erase, then select Share if you wish to share the hard disk with Macintosh software.
3. Install BASIC Workshop 3.0. Follow the steps in Chapter 1 of the Workshop manual. Select Don't Erase when prompted.

NOTE: Running StartUpdate is not required for the BASIC Workshop; as a matter of fact, running it will cause an error to be displayed. Although you must run StartUpdate to update Pascal 3.0, doing so will not harm BASIC.

Apple Technical Communications

Tech Info Library Article Number:1207



Tech Info Library

Macintosh Pascal: Variable-reference parameter

Revised: 7/17/85
Security: Everyone

Macintosh Pascal: Variable-reference parameter

=====

The variable-reference parameter in a Macintosh Pascal RESET, REWRITE or OPEN command is a reference to the file being accessed. The syntax of these commands is:

```
RESET(F,P)
REWRITE(F,P)
OPEN(F,P)
```

where F is the variable-reference and P is the pathname of the file being accessed. For example, the command `Open(TheFile,'Volume1:Inventory')` opens the file 'Inventory' on the diskette named 'Volume 1'. That command also sets the variable-reference 'TheFile' so that it refers to that particular file, 'Volume1:Inventory'. Thereafter, commands such as `Get(TheFile)`, `Put(Thefile)` and `Close(TheFile)` all access this file, 'Volume1:Inventory'.

Apple Technical Communications

Tech Info Library Article Number:1212



Tech Info Library

Apple IIGS: Installing Pascal on the RAM Disk

Revised: 10/18/94
Security: Everyone

Apple IIGS: Installing Pascal on the RAM Disk

=====

This article last reviewed: 17 November 1987

To install Pascal on the Apple IIGS RAM disk, so that the system can start up from Pascal:

1. Enter the Control Panel and set the size of the RAM disk. (800K is suggested.)
2. Turn off the power to the Apple IIGS, then on again. This clears the RAM disk and resets its size.
3. Start up Pascal.
4. Use the FORMATTER program to format the RAM disk for Pascal. (RAM disk is device #5.)
5. Use the Filer to copy all files over to the RAM disk.
6. Go back to the Command level, and exit Pascal by pressing Q.
7. Quickly press Open-Apple, Control, and Escape all at once to enter the Classic Desk Accessories menu. This must be done before the Apple IIGS has a chance to start up from a floppy drive.
8. Enter the "Slots" section of the Control Panel, and select the RAM Disk as the start-up device.
9. Exit the Control Panel and Classic Desk Accessories menu. The Apple IIGS will continue its start-up procedure, restarting from the RAM Disk. And it will start up from the RAM disk every time -- until you either re-format the RAM Disk or turn off the computer.

Copyright 1987, Apple Computer, Inc.

Tech Info Library Article Number:1213



Tech Info Library

Apple II Peripheral Cards: How Pascal identifies (2/97)

Revised: 2/12/97
Security: Everyone

Apple II Peripheral Cards: How Pascal identifies (2/97)

=====

Apple II Peripheral Cards: How Pascal identifies (2/97)

Article Created: 27 July 1985
Article Reviewed/Updated: 12 Feb 1997

TOPIC -----

This article discusses how Pascal v1.1 identifies peripheral cards.

DISCUSSION -----

Pascal 1.1 uses four firmware bytes to identify the peripheral card. Both the identifying bytes and the branch table are near the beginning of the \$Cs00 ROM space (where s = slot). The identifiers are listed in Table A-2.

Address	Value
\$Cs05	\$38 (like the old Serial Interface Card)
\$Cs07	\$18 (like the old Serial Interface Card)
\$Cs0B	\$01 (like Generic Signature of new FW cards)
\$Cs0C	\$ci (like Device Signature; see below)

Table A-2. Bytes Used for Device Indentification

The first digit, c, of the Device Signature byte indentifies the device class as listed in Table A-3.

Digit	Class
\$0	reserved
\$1	printer
\$2	joystick or other X-Y input device
\$3	serial or parallel I/O card

\$4	modem
\$5	sound or speech device
\$6	clock
\$7	mass storage device
\$8	80-column card
\$9	network or bus interface
\$A	special purpose (none of the above)
\$B-F	reserved for future expansion

Table A-3. Device Class Digit

The second digit, i, of the Device Signature byte is a unique identifier for the card, assigned by Apple Developer Technical Support. For example, in the Device Signature of the SSC--\$31--the 3 signifies that the device is a serial or parallel I/O card; the 1 is Apple Developer Technical Support's unique identifier for that card.

Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1214



Tech Info Library

SANE: Technical product description (1 of 2) (10/94)

Revised: 10/18/94
Security: Everyone

SANE: Technical product description (1 of 2) (10/94)

=====
Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

This article describes the Standard Apple Numeric Environment (SANE).

DISCUSSION -----

I. Introduction

Apple supports SANE on several current products and plans to support SANE on future products. SANE gives you access to numeric facilities unavailable on almost any computer of the early 1980's--from microcomputers to extremely fast, extremely expensive supercomputers. The core features of SANE are not exclusive to Apple; rather they are taken from Draft 10.0 of Standard 754 Binary Floating-Point Arithmetic [10] as proposed to the Institute of Electrical and Electronics Engineers (IEEE). Thus SANE is one of the first widely available products with the arithmetic capabilities destined to be found on the computers of the mid-1980's and beyond.

The IEEE Standard specifies standardized data types, arithmetic, and conversions, along with tools for handling limitations and exceptions, that are sufficient for numeric applications. SANE supports all requirements of the IEEE Standard. SANE goes beyond the specifications of the Standard by including a data type designed for accounting applications and by including several high-quality library functions for financial and scientific calculations.

IEEE arithmetic was specifically designed to provide advanced features for numerical analysts without imposing an extra burden on casual users. (This is an admirable but rarely attainable goal: text editors and word processors, for example, typically suffer increased complexity with added features, meaning more hurdles for the novice to clear before completing even the simplest tasks.) The independence of elementary and advanced features of the IEEE arithmetic was carried over to SANE.

II. Data Types:

SANE provides three APPLICATION data types (single, double, and comp) and the ARITHMETIC type (extended). Single, double, and extended store floating-point values and comp stores integral values.

The EXTENDED type is called the arithmetic type because, to make expression evaluation simpler and more accurate, SANE performs all arithmetic operations in extended precision and delivers arithmetic results to the extended type. SINGLE, DOUBLE, and COMP can be thought of as space-saving storage types for the extended-precision arithmetic. (In this article, we shall use the term EXTENDED PRECISION to denote both the extended precision and the extended range of the extended type.)

All values representable in single, double, and comp (as well as 16-bit and 32-bit integers) can be represented exactly in extended. Thus values can be moved from any of these types to the extended type and back without any loss of information.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1215



Tech Info Library

SANE: Technical Product Description (2 of 2) (10/94)

Revised: 10/18/94
Security: Everyone

SANE: Technical Product Description (2 of 2) (10/94)

=====
Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

This article describes the Standard Apple Numeric Environment (SANE).

DISCUSSION -----

III. Choosing a Data Type:

Typically, picking a data type requires that you determine the trade-offs between:

- * fixed - or floating-point form
- * precision
- * range
- * memory usage
- * speed

The precision, range, and memory usage for each SANE data type are shown in the table of SANE types below. Effects of the data types on performance (speed) vary among the implementations of SANE.

Most accounting applications require a counting type that counts things (pennies, dollars, widgets) exactly. Accounting applications can be implemented by representing money values as integral numbers of cents or mils, which can be stored exactly in the storage format of the COMP (for computational) type. The sum, difference, or product of any two comp values is exact if the magnitude of the result does not exceed $2^{63} - 1$ (that is, 223,372,036,854,775,807). This number is larger than the U.S national debt expressed in Argentine pesos. In addition, comp values (such as the results of accounting computations) can be mixed with extended values in floating-point computations (such as compound interest).

Arithmetic with comp-type variables, like all SANE arithmetic, is done

internally using extended-precision arithmetic. There is no loss of precision, as conversion from comp to extended is always exact. Space can be saved by storing numbers in the comp type, which is 20 percent shorter than extended. Non-accounting applications will normally be better served by floating-point data formats.

IV. Values Represented:

The floating-point storage formats (single, double and extended) provide binary encodings of a SIGN (+ or -), an EXPONENT, and a SIGNIFICAND. A represented number has the value

$$\pm \text{significand} \times 2^{\text{exponent}}$$

where the significand has a single bit to the left of the binary point (that is, $0 \leq \text{significand} < 2$).

V. Range and Precision of SANE Types:

The table below describes the range and precision of the numeric data types supported by SANE. Decimal ranges are expressed as chopped two-digit decimal representations of the exact binary values.

SANE DATA TYPES				
TYPE CLASS	APPLICATION			ARITHMETIC
Type Identifier	Single	Double	Comp	Extended
Size (bytes:bits)	4:32	8:64	8:64	10:80
Binary exponent range				
Minimum	-126	-1022	---	-16383
Maximum	127	1023	---	16383
Significand precision				
Bits	24	53	63	64
Decimal digits	7-8	15-16	18-19	19-20
Decimal range (approximate)				
Min negative	-3.4E+38	-1.7E+308	9.2E18	-1.1E+4932
Max neg norm	-1.2E-38	-2.3E-308		-1.7E-4932
Max neg denorm	-1.5E-45	-5.0E-324		-1.9E-4591
Min pos denorm	1.5E-45	5.0E-324		1.9E-4591
Min pos norm	1.2E-38	2.3E-308		1.7E-4932
Max positive	3.4E+38	1.7E+308	9.2E18	1.1E+4932
Infinitive	Yes	Yes	No	Yes
NaNs	Yes	Yes	Yes	Yes

Usually numbers are stored in a normalized form, to afford maximum precision for a given significant width. Maximum precision is achieved if the high order bit in the significand is 1 (that is, $1 \leq \text{significand} < 2$).

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1216



Tech Info Library

ProDOS Assembler Tools: Technical product description

Revised: 4/8/91
Security: Everyone

ProDOS Assembler Tools: Technical product description

=====

The ProDOS Assembler Tools is designed for programmers who want to write assembly-language programs for the Apple II, II+, IIC, IIE or IIE enhanced. All five of these computers are based on the 6502 microprocessor, whose command set is supported by the Assembler Tools. Before you attempt using the Tools, we recommend that you be fairly familiar with BASIC or Pascal on the Apple computer system and that you read one or more books on 6502 assembly-language programming.

The ProDOS Assembler Tools include four programming tools that will help you create and execute assembly-language programs to run on any Apple II computer. These tools are the Editor, the Assembler, the Bugbyter debugger, and the Relocating Loader:

- Use the EDITOR to create and modify program source files and to store them on disk. You can also use the Editor to edit ProDOS EXEC files and BASIC program source files.
- Use the ASSEMBLER to generate an executable program.
- Use the BUGBYTER debugger to test and verify the execution of your programs. Also use the Bugbyter to help you locate and fix any errors that might creep into your programs.

Further details can be found in the ProDOS Assembler Tools User's Manual.

Apple Technical Communications

Tech Info Library Article Number:1217



Tech Info Library

Apple IIC Serial Loopback Cable: Pinouts (10/94)

Revised: 10/18/94
Security: Everyone

Apple IIC Serial Loopback Cable: Pinouts (10/94)

=====

Article Created: 27 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

This article describes the pinouts for the IIC serial loopback cable.

DISCUSSION -----

Below are the pin configurations for the Apple IIC serial loopback cable:

Modem port		Printer port
1	to	5
5	to	1
2	to	4
4	to	2

Ground the connector shields together.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1218



Tech Info Library

Apple IIGS: Graphics Modes (10/94)

Revised: 10/18/94
Security: Everyone

Apple IIGS: Graphics Modes (10/94)

=====

Article Created: 23 October 1986
Article Reviewed/Updated: 18 October 1994

TOPIC -----

What are the available graphics modes available on the Apple IIgs?

DISCUSSION -----

The Apple IIGS can perform graphics under a number of different types of graphics displays: Lo-res and Hi-res modes found on all Apple II systems, the double Hi-res mode available on the Apple IIe and IIc, and new Super Hi-Res modes.

Both Lo-res and Hi-res modes are unchanged from the Apple II, and the manual "Applesoft on the IIGS" shows the commands for using those modes. The IIGS ROM doesn't have routines for the use of double Hi-res graphics; a programmer must add assembler routines that will properly draw lines, locate points, etc., in double Hi-res mode. Commercially available packages include these routines.

Only on the Apple IIGS performs in Super Hi-Res graphics modes with a resolution of 320 X 200 or 640 X 200. Using 320 X 200 mode permits a full 16 colors per line. 640 X 200 mode can also use 16 colors per line, but each pixel is limited to a choice of 4 of the 16 colors. Both modes are supported by the Apple IIGS QuickDraw II tools. To make programming easier, screen memory is mapped contiguously in Super Hi-Res mode.

320 X 200 Super Hi-Res mode

Each line of pixels in 320 mode is associated with a table of 16 entries that correspond to the 16 colors to be shown on that line. Each entry represents one of the possible 4096 colors available on the Apple IIGS. There may be as many as 16 color tables defined, permitting 256 colors on the screen at one time.

Within each line, a byte determines two pixels' colors. The high 4 bits of a byte contain a number from 0 to 15, which is used as an offset into the color

table for that line. The pixel mapped to that memory location will have the color found at the appropriate table location. Similarly, the low 4 bits of that byte will determine the color of the adjacent pixel.

Pixels in 320 mode are almost square. The aspect ratio in this mode is 5:6 on an Apple Monochrome Monitor, an AppleColor Monitor, or an Apple RGB Monitor.

640 X 200 Super Hi-Res Mode

640 mode also allows 16 colors per line, but each pixel is limited to one of four colors (this mode is sometimes called Limited 16 Colors). As in 320 mode, each line addresses one of up to 16 color tables. However, each pixel in the line is represented by only 2 bits, so that each byte contains information about 4 pixels.

To represent 4 adjacent pixels, bits 7 and 6 choose from among colors 0 through 3 in the appropriate color palette, bits 5 and 4 choose colors 4 through 7, bits 3 and 2, from colors 8 through 11, and the last two bits choose from colors 12 through 15. Therefore, each pixel can be one of four colors, but there may be a total of 16 colors on each line.

The pixel aspect ratio in 640 mode is 5:12 on an Apple monitor, so that each pixel's height is approximately twice the width.

Color Fill Mode

The Apple IIGS can also use 320 X 200 mode with color fill. If this mode is chosen, the color zero (0) takes on a special meaning. A pixel with color 0 will have the same color as the preceding pixel, so that a series of bytes with value 80 00 00 would all be shown in the color represented by the eighth entry in the color palette. Using 0 to represent no color change limits the selection to only 15 colors per line, but does save time for the programmer.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1225



Tech Info Library

Apple III and ProFile: Running Them on an Inverter (10/94)

Revised: 10/18/94
Security: Everyone

Apple III and ProFile: Running Them on an Inverter (10/94)

=====

Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

Can I run my Apple /// and ProFile on an inverter?

DISCUSSION -----

The Apple III and ProFile may both be run on an inverter that produces either a square or a sinusoidal wave.

The Apple III itself works on an inverter without any problems, as long as the inverter has sufficient current capacity. The Apple III has a switching power supply and will therefore tolerate power fluctuations and line noise without any trouble, as long as it's receiving a minimum of 95 volts.

The ProFile, on the other hand, is somewhat more sensitive to power fluctuations and line noise. If you use your ProFile with an inverter that produces a square wave, take care that:

1. Make sure that the inverter can supply at least 8 amps, since 5 amps is the minimum power required to start up the ProFile.
2. If you wish to use square-wave power, which is by nature quite noisy, use a noise suppression kit so that no unnecessary noise reaches the ProFile power supply and prevents the ProFile from coming Ready. Your noise suppressor must have a minimum capacity of 10 amps.

NOTE:

You can avoid the necessity of noise suppressors by running your ProFile on DC power if you wish. To do so, however, you will need to regulate the +12V from a car battery, as well as generate and regulate +5V and -12V.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1226



Tech Info Library

Enhanced IIE: What to do When Interrupts Don't Work (10/94)

Revised: 10/18/94
Security: Everyone

Enhanced IIE: What to do When Interrupts Don't Work (10/94)

=====
Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

I notice that interrupts no longer function on my Enhanced IIE, is there a workaround?

DISCUSSION -----

Interrupts pass through the 80-column firmware in the Enhanced IIE, and so interrupts will not work if you have no 80-column card installed. There are three ways to solve the problem:

1. Install an 80 column-card
2. Make sure your disk contains ProDOS 1.1.1
3. If neither of the above solutions seem to work, use the BASIC command
POKE 49162,0 to fool your IIE into thinking that it contains an
80-column card.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1227



Tech Info Library

Apple III+: External Drive Adapter Pin Configuration (10/94)

Revised: 10/18/94
Security: Everyone

Apple III+: External Drive Adapter Pin Configuration (10/94)

Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

The following is a wiring diagram of the Apple III+ external disk drive adapter.

DISCUSSION -----

Apple III+ (DB-25)	Disk (26 Pin)
1	13,15,17,19
2	1,3,5,7
3	16
4	1,3,5,7
5	10
6	18
7	11,12
8	22
9	1,3,5,7
10	1,3,5,7
11	14
12	20
13	NC
14	26
15	2
16	4
17	6
18	8
19	13,15,17,19
20	13,15,17,19
21	23
22	21

23	9
24	11,12
25	24

-->DB-25:

Viewing the adapter from the AIII+, Pin 13 should be removed to prevent damage to the Apple III+.

1	2	3	4	..	..	..	..	12	13
14	15	16	..	..	..	..	24	25	

-->26 Pin:

Viewing the adapter from the drive:

25	23	21	19	.	.	.	5	3	1
26	24	22	20	.	.	.	6	4	2

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1228



Tech Info Library

Apple Daisy Wheel Printer: Compared to Qume Sprint 11 (10/94)

Revised: 10/18/94
Security: Everyone

Apple Daisy Wheel Printer: Compared to Qume Sprint 11 (10/94)

=====

Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

Is the Apple Daisy Wheel Printer the same as the Qume Sprint 11?

DISCUSSION -----

The Apple Daisy Wheel Printer (DWP) bears a superficial resemblance to the Qume Sprint 11 Plus. In fact, the Apple DWP is manufactured by Qume to our own custom specifications. As such, there are very few interchangeable parts between the DWP and Qume Sprint 11 Plus.

Perhaps the greatest difference between the Apple DWP and most other daisy wheel printers is that our print wheels contain 130 characters, rather than the normal 96. Our print wheels are therefore larger and contain characters at different locations on the wheel from most other wheels.

To operate successfully, then, the Apple DWP requires different hardware, a special print head, and special control software.

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1233



Tech Info Library

ImageWriter: Interface Specifications (8/94)

Revised: 10/18/94
Security: Everyone

ImageWriter: Interface Specifications (8/94)

=====

Article Reviewed/Updated: 31 August 1994

TOPIC -----

This article gives the interface specifications for the Apple Imagewriter printer.

NOTE: This product is discontinued and is no longer available.

DISCUSSION -----

1. Data Input Form:
 - 7-bit or 8-bit serial: 1 start bit
 - 7 or 8 data bits
 - 1 stop bit (no parity bit)
2. Data Input Codes:
 - Characters: ASCII, 8- or 7- bit
 - Graphics: 8-bit binary
3. Transmission Speed: 300, 1200, 2400, or 9600 baud
4. Input Buffer Size: 1K bytes
5. Printer Connector: DB-25 male, or equivalent
6. Mating Connector: DB-25S female, or equivalent
7. Printer Pin Out

Pin No.	Symbol	Description	Direction
1	FG	Frame Ground	
2	SD	Send Data	Output
3	RD	Receive Data	Input
4	RTS	Request to Send	Output

7	SG	Signal Ground
14	FAULT	FaultOutput
20	DTR	Data Terminal Ready Output

8. Signal Description

9. Frame Ground: Grounding line for circuit protection.

10. Send Data: Serial dot transmission line to the computer from the printer. False when no data is being sent; true when data is being sent.

11. Receive Data: Serial data transmission line to the printer from the computer. False when no data is being sent; true when data is being sent.

12. Request to Send: Output signal from the printer; true when the printer is turned on.

13. Fault: Output signal from the printer. False when the printer is deselected; true when selected.

14. Data Terminal Ready: Output signal from the printer. True when the printer is on and able to receive data; false when unable to receive data.

15. Signal Levels:

RD: Maximum +15 Volts, minimum +5 Volts.

SD, RTS, DTR, and FAULT signal levels: Normal +7 Volts.

16. Protocol

The printer is capable of two types of data protocol: XON/XOFF or Data Terminal Ready (DTR). The DTR protocol uses the DTR signal to indicate the printer state. The XON/XOFF protocol uses the serial ASCII codes for XON and XOFF.

Article Change History:

31 Aug 1994 - Removed "Discontinued" from title. Updated and reviewed.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1234



Tech Info Library

Apple III: Interfacing a LaserWriter and III E-Z Pieces (10/94)

Revised: 10/18/94
Security: Everyone

Apple III: Interfacing a LaserWriter and III E-Z Pieces (10/94)

Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

The following describes the connection between III E-Z Pieces on the Apple III and the LaserWriter.

DISCUSSION -----

I. Apple III:

A. Driver: .RS232

1. Data Configuration Block:

0	1	2	3	4	5	6	7	8	9	A	B
--	--	--	--	--	--	--	--	--	--	--	--
0E	00	00	00	00	80	13	11	DF	84	50	00

No parity is set automatically in the Printer Mode.

II. The Connection

1. Cables

- Connect Modem Eliminator Cable (Part #590-0166) to the connector on the back panel of the Apple III.
- Connect the Serial and Communications Cable (Part #590-0037) to the connector on the Laserwriter.
- Connect the remaining ends of the two cables together.
- Here is a diagram of the connection:

From:					To:
Apple III					LaserWriter
Back panel Serial Port					
DB-25 connector					DB-25 connector
signal	-	pin	wiring	pin	- signal
Frame Ground	1		<->	1	Frame Ground
Tx	2		<->	3	Rx (Receive Data)
Rx	3		<->	2	Tx (Transmit Data)
RTS	4		<->	4	RTS (Ready To Send)
Signal Ground	7		<->	7	Signal Ground
DTR	20		<->	20	Tx (Transmit Data)

III. LaserWriter

1. Set the Selector Switch on the LaserWriter to "Special". This can be done without turning off the printer. In Diablo 630 emulation mode the LaserWriter uses 9600 baud, XON/XOFF protocol, and no parity.

IV. Verification

1. To verify the connection, turn on the III, video monitor, and LaserWriter. Boot III E-Z Pieces and choose "Other Activities" from the Main Menu. Add a custom printer, naming it LaserWriter.

Use these settings for this custom printer:

- | | |
|---------------------------------------|------------|
| 1. Needs line feeds after each Return | No |
| 2. Accepts top-of-page commands | Yes |
| 3. Stop at end of each page | No |
| 4. Platen width | 8.0 inches |
| 5. Printer codes | Yes |

The printer codes for the Diablo Emulation are in the LaserWriter Technical Description. If you specify no printer codes, the typeface will default to Courier standard, 12 characters per inch, monospaced.

2. Return to the Main Menu and try to print a document.
3. Be aware that when you use the 3E-Z Pieces command OA-H (for hard copy), you will have to print a document using OA-P before you may use the OA-H command again. This is because the command OA-H does not issue the form feed the LaserWriter needs to clear its Diablo emulation settings.

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1235



Tech Info Library

Apple IIC: Using it With Direct Current (10/94)

Revised: 10/18/94
Security: Everyone

Apple IIC: Using it With Direct Current (10/94)

=====
Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

Can I run my Apple IIC from a dc power supply, bypassing the Apple power supply?

DISCUSSION -----

To power the Apple IIC with a source of direct current, you must:

1. Use a 7 pin DIN connector.
2. Check the DC power source for the proper voltage level, +9 to +20 volts DC.
3. Use wire rated for 1.2 amps (regular lamp cord is fine) to:
 - a. Connect the positive terminal lead of the power source to pins 5 and 6
 - b. Connect the negative terminal lead of the power source to pins 2, 3, and 4. Pins 2 and 3 are signal ground; pin 4 is chassis ground.

Please refer to the Apple IIC Reference Manual for more information on "The External Power Connector".

Article Change History:
18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1985-94, Apple Computer, Inc.

Tech Info Library Article Number:1236



Tech Info Library

Applesoft: Editing files

Revised: 7/27/85
Security: Everyone

Applesoft: Editing files

=====

These keystrokes can be used to edit Applesoft files on a IIe, Enhanced IIe, IIc, and (to a limited degree, depending on what keys are available) on a II or II+ in 40- or 80-column display mode.

<CTRL>X	Cancel an input line
<ESC>E	Clear from cursor to the end of the line
<ESC>F	Clear from cursor to the end of the text window
<ESC>@	Clear entire text window and home cursor to top left of screen
Left Arrow, <CTRL>H	Backspace (As you backspace over each character, Applesoft removes it from memory.)
<ESC>B	Left cursor one position at a time
<ESC>Left Arrow, <ESC>J	Left cursor one position with repeat mode
<ESC>A, Right Arrow, <CTRL>U	Right cursor one position at a time
<ESC>K, <ESC>Right Arrow	Right cursor one position with repeat mode
<ESC>C, Down Arrow, <CTRL>K	Down cursor one line at a time
<ESC>M, <ESC>Down Arrow	Down cursor one line with repeat mode
Up Arrow, <CTRL>J	No effect in Applesoft
<ESC>D	Up cursor one line at a time
<ESC>I, <ESC>Up Arrow	Up cursor one line with repeat mode

Notes:

1. Keys you press with the Escape key may be either upper- or lowercase.
2. To get out of the repeat (Escape) mode, press the space bar. Pressing any other key will also get you out of Escape mode, except the escape keys A, B, C, D, I, J, K, M, E, F, @, or the arrows; so, to avoid confusion, get into the safe habit of pressing the space bar.
3. About the right arrow key and POKE 33,33, it is a fact that, once you start editing a statement, you must use the right arrow key for two functions: to re-establish the statement in memory and to save your edits to memory.

The first consequence of this fact arises when you edit statements that are longer than 40 columns: Applesoft breaks the lines automatically and puts blanks after each break to display the statement conveniently as multiple lines. As you use the right arrow key to edit a multi-line statement, Applesoft inconveniently puts those spaces into memory. So, since you are more interested in efficient editing than readable display, issue an immediate POKE 33,33 statement; this prevents Applesoft from putting in spaces.

The second consequence is that, before you edit the statement in any way, you must get the cursor to the beginning of the statement, which is the first digit of the statement number. Once you get the cursor at the beginning, you can start editing, moving the cursor with the right arrow key and typing your edits to change the statement in memory. So, before editing a particular statement, get the cursor to the beginning of the statement as follows:

- a. Issue a LIST (statement number) command, which will display the entire statement--for example, LIST 100.
- b. Press <ESC>.
- c. Press the arrow keys to position the cursor over the first digit of the statement number.
- d. Press the space bar to get out of Escape mode.
- e. Start editing.

For a longer explanation of Applesoft editing, refer to the Applesoft Tutorial, pages 73-86.

Apple Technical Communications

Tech Info Library Article Number:1239



Tech Info Library

Macintosh: Connecting to a DEC VAX (2/95)

Revised: 2/2/95
Security: Everyone

Macintosh: Connecting to a DEC VAX (2/95)

Article Created: 22 July 1985
Article Reviewed/Updated: 2 February 1995

TOPIC -----

Is it possible to connect a Macintosh to a DEC VAX computer?

DISCUSSION -----

You can connect your Macintosh to a VAX computer from DEC (Digital Equipment Corporation), either directly or via a modem, and use a terminal emulator with the VT100 tool to access the VAX. Below are the pinouts for the cable you'll need to make if you decide to connect directly.

Mini DIN-8 to RS-232

The Macintosh Mini DIN-8 port pins have the following correspondent functions required to use them for RS-232:

DIN-8			
Pin#	Function	RS-232	Pin#
1	HSKo (Handshake input)	DTR	20
2	HSKi (Handshake output)	DCD	8
3	TxD- (Transmit data, negative going component)	TXD	3
4	GND (Chassis/Signal ground)	GND	7
5	RxD- (Receive data, negative going component)	RXD	2
6	TxD+ (Transmit data, positive going component)	GND	7
7	GPi (General-Purpose input)	NC	
8	RxD+ (Receive data, positive going component)	GND	7

DB-9 to DB-25

	Macintosh	VAX	
	DTE	DCE	
signal (in/out)	DB-9	DB-25	signal (in/out)

Gnd Chassis ground	*1	1	Gnd Chassis ground
Rx+ Receive data,positive going component	*8		
Gnd Signal ground	3	7	Gnd Signal ground
Tx- (in) Transmit data, negative going component	5	2	Tx (out) Transmit data
+12V +12-Volt line	6	20	DTR (in) Data Terminal Ready
HSK (in) Handshake	7	6	DSR (out) Data Set Ready
Rx- (out) Receive data, negative going component	9	3	RxD (in) Receive data
	2		no connection
	4		no connection

* NOTE: There are many variations on connecting pins 1, 3 and 8, but the basic intent is to bring all three of those pins to ground on the Macintosh side. Connect Signal Ground to Chassis Ground if you want a slightly better noise margin.

If this configuration doesn't work, try these additional cable connections:

+12V +12-Volt line	6	4	RTS (in) Request to Send
HSK (in) Handshake	7	8	DCD (out) Data Carrier Detect
HSK (in) Handshake	7	5	CTS (out) Clear to Send

Article Change History:

02 Feb 1995 - Added Mini Din-8 to DB-25 pinouts.

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1240



Tech Info Library

Laserjet Printer: Using it with AppleWorks (10/94)

Revised: 10/18/94
Security: Everyone

Laserjet Printer: Using it with AppleWorks (10/94)

Article Created: 22 July 1985
Article Reviewed/Updated: 18 October 1994

TOPIC -----

How can I print to my HP printer from AppleWorks?

DISCUSSION -----

In configuring Apple IIe to an H.P. Laserjet Printer, you will need the following equipment:

1. H.P. Laserjet Printer
2. Apple Super Serial Card
3. Male to Female Standard RS-232C Cable

Set the dip switches on the Super Serial Card as follows:

SW1:	1	2	3	4	5	6	7	SW2:	1	2	3	4	5	6	7
ON				X		X	X	ON	X			X	X		
OFF	X	X	X		X			OFF	X	X			X	X	
	1	2	3	4	5	6	7		1	2	3	4	5	6	7

From AppleWorks main menu, choose:

5. Other Activities
7. Specify Information on your Printer
2. Add a Printer
11. Custom Printer

Specify the slot from which the printer will be accessed, and then make the following further specifications:

1. Needs line feed: YES
2. Accepts top of page: YES

3. Stop at end of page: NO

4. Platen width: 8

5. Printer codes:

a. Characters per inch (CPI)

	CPI	Code
1.	10	Escape (s10H
2.	12	Escape (s12H
3.	15	Escape (s15H
4.	17	Escape (s17H

b. Lines per inch (LPI)

	LPI	Code
1.	6	Escape &l6D
2.	8	Escape &l8D

c. Underlining: Choose 'Printer has start/stop underline commands'

--Begin: Escape &dD
--End: Escape &d@

d. Boldface

--Begin: Escape (s3B
--End: Escape (s0B

e. Subscript

--Begin: Escape &a+25V
--End: Escape &a-25V

f. Superscript

--Begin: Escape &a-25V
--End: Escape &a+25V

Article Change History:

18 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1242



Tech Info Library

Super Serial Card: Cable for Okidata 82A, 83A, 92, 93A (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Okidata 82A, 83A, 92, 93A (11/96)

Article Created: 27 July 1985
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below is the information needed to connect the Super Serial card to an Okidata 82A, 83A, 92 or 93A printer.

DISCUSSION -----

82A and 83A Cable

Super Serial Card (SSC)	Cable	Printer Connector
Frame Ground .....(FG)..... 1	<----->	1.....(FG)
Transmit Data (Tx) 2	<----->	3.....(Rx)
Receive Data (Rx) 3		
Request to send (RTS) 4		
Clear To Send (CTS) 5		
Data Set Ready (DSR) 6	<----->	11
Signal Ground .....(SG)..... 7	<----->	7.....(SG)
Data Carrier Detect (DCD) 8		
Secondary Clear To Send (SCTS) ... 19		
Data Terminal Ready (DTR) 20		

82A and 83A Dip Switch Settings

FRONT		BACK	
1 - OPEN		1 - CLOSED	
2 - OPEN		2 - CLOSED	
3 - OPEN		3 - OPEN	
4 - OPEN		4 - CLOSED	
5 - CLOSED		5 - OPEN	
6 - OPEN		6 - CLOSED	

- 7 - OPEN
- 8 - CLOSED

* Jumper blocks should be in position A. Refer to Okidata owners manual for more information on the jumper blocks.

92 & 93A Cable

The 92 & 93A high-speed serial interface may be connected to the Super Serial Card by means of a standard Apple serial cable.

92 and 92A Printer Setup

Set the printer to 9600 baud, 8 data bits and no parity. Check the owners manual for this information.

Super Serial Card Setup

Set the Super Serial Card's dip switches as you would for the ImageWriter, except for switch 1-7, which should be set to OFF for secondary clear-to-send.

* For more information refer to Tech Info Library article "Super Serial Card: Configuring for ImageWriter I".

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1244



Tech Info Library

Okidata 82 & 83 series printers: Using them with an Apple IIf

Revised: 7/27/85
Security: Everyone

Okidata 82 & 83 series printers: Using them with an Apple IIf

=====

The Okidata 82 and 83 series printers come with a standard parallel interface and a low-speed serial interface on the same board. You may use your IIf to run the printer from either interface, as follows:

-->Running the printer from the serial interface:

You may connect the IIf to the printer by means of the standard IIf serial cable. Since the interface in the IIf doesn't support all the handshaking signals provided by common serial interfaces, though, the data send rate must be slowed to 300 baud or less in order to keep the buffer from overflowing during printing. To configure the IIf's serial port for the same speed, change the Product Identification Number on the System Utilities disk, and then boot from that disk whenever you wish to print to the Okidata.

NOTE: This option makes for VERY slow printing. You may wish to purchase a high-speed serial interface to speed things up; the cost of such an interface ranges from \$100 to \$150.

-->Running the printer from the parallel interface:

The only way to run the Okidata parallel from the IIf is to obtain a serial-to-parallel converter.

Apple Technical Communications

Tech Info Library Article Number:1245



Tech Info Library

AppleWorks: Not enough room on disk to save file

Revised: 4/9/91
Security: Everyone

AppleWorks: "Not enough room on disk to save file"

=====

When attempting to resave a previously-saved file on AppleWorks, you may occasionally be told that there is "Not enough room on disk" to comply with your request, even though you've made only minor changes to the file. The cause of the problem has to do with how Appleworks saves files.

AppleWorks saves the new copy of a file before deleting the old copy. Therefore, if the file you wish to save is 12K long (for example), you must have at least 12K of additional space available on the disk to which you wish to save. If that space is not available, you will get the error message.

The remedy is simply to free up a bit more space by deleting a file or two.

Apple Technical Communications

Tech Info Library Article Number:1246



Tech Info Library

Apple IIC: Defeating the keyboard's repeat function

Revised: 8/5/85
Security: Everyone

Apple IIC: Defeating the keyboard's repeat function

=====

Certain users, such as those with physical disabilities, can find it advantageous to defeat the repeat function of the Apple IIC keyboard so that it's easier to use. The following procedure defeats the repeat function without changing the keyboard in any other way.

WARNING: The following procedure voids the warranty on the Apple IIC.

1. Open case of Apple IIC
2. Remove top cover of Apple IIC. Do not remove the logic board from the base or remove the disk drive.
3. Lift the keyboard and set it back on top of disk drive.
4. Locate the IOU chip (Part number 344-0021). It's the 40 pin IC to the right of the keyboard socket at location E14.
5. Carefully remove the IC.
6. Locate the small dot or indentation on the corner of the IC. That's PIN 1. Count to pin 31. (Pins 1 to 20 are all on the same side; pins 21 to 40 are all on the other side.)
7. Carefully bend out pin 31 from the side of the IC. This unhooks the AKD line from the IOU.
8. Carefully insert the IOU back into its socket making sure that pin 31 is the only one not inserted into its hole and that no other pins are bent.
9. Test the Apple IIC before you put the cover back on.
10. If it all works, reassemble the IIC.

Try the repeat function; it should no longer operate.

Apple Technical Communications

Tech Info Library Article Number:1247



Tech Info Library

AppleWorks: Some cells lost in row.... error

Revised: 8/5/85
Security: Everyone

AppleWorks: "Some cells lost in row...." error

=====

Apple Works allocates a fixed amount of RAM space on a row-by-row basis for each row, allowing you to fill any given row with single digit values or small formulae. AppleWorks may not, however, allow you to fill the entire row with these small amounts of data because of the limited amount of RAM. Also, as a result of the limited RAM, the larger the amount of data for each cell, the fewer available cells per row. AppleWorks has an easier time with lots of large values and complex formulae stored vertically.

The overall size of the entire spreadsheet, then, isn't the problem--the layout is. Avoid the problem by planning your spreadsheet in a more columnar fashion, making it tall, not wide.

Apple Technical Communications

Tech Info Library Article Number:1248



Tech Info Library

Macintosh System 4.1: Summary of Changes (3 of 3)

Revised: 2/23/89
Security: Everyone

Macintosh System 4.1: Summary of Changes (3 of 3)

=====

This article last reviewed: 17 November 1987

This is a part 3 of a summary of the changes made in the Macintosh System version 4.1.

Patches

-
- The Macintosh II Palette Manager is added. Among other things, it allows applications to display multiple windows simultaneously, even when they don't all use the same 256 colors.
 - System 4.1 corrects problems that occurred when using pointers to unlocked records.
 - System 4.1 fixes TextEdit problems with scrolling and justification.
 - The TextEdit changes added to the Macintosh SE and Macintosh II ROMs are also patched into the Macintosh Plus. These changes support TextEdit runs and style changes within a TextEdit record. See Inside Macintosh Volume V for details.
 - A SysEnvirons trap is added for applications to use to check on information concerning the hardware and System the application is running under.
 - The SCSI Select timeout is increased to 250 milliseconds.
 - The SCSI routines added to the Macintosh SE and Macintosh II are added to the System file.
 - External file systems can handle non-Macintosh volumes on disk drives designated for Macintosh volumes.
 - Macintosh Plus patches include changes to SANE routines.

Windows

- The standard document window defproc (WDEF 0) and rounded-corner window defproc (WDEF 1) check the identity of the Macintosh on which it is being used and supports drawing window structures in color when appropriate. Both defprocs have version number 10.

Miscellaneous System Resources

- "cctl" is the system default control colorTable.
- "cicn" is the Color Mac icon used on startup.
- Color dialogs are found in "dctl" resources.
- The new resource "mitq" holds information for MakeITable about the amount of memory to allocate for internal temporary structures.
- The system default window colorTable is found in "wctl".

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Tech Info Library Article Number:1249



Tech Info Library

LaserWriter: Printing long documents from an IBM PC

Revised: 3/4/90
Security: Everyone

LaserWriter: Printing long documents from an IBM PC

=====

This article last reviewed: 29 September 1987

As part of the revision that took place in PostScript that is in the 2.0 ROMs, DTR handshaking was implemented. Any LaserWriter that shows 2.0 on the test page supports hardware handshaking on either DB connector. Realize that this is only available in Interactive or Diablo mode.

Characters are sometimes missing from long documents printed by a LaserWriter with the older ROMs when the LaserWriter is in in Diablo 630 Emulation mode and connected to an IBM PC. The characters are missing because the two devices support different protocols. The IBM PC only supports hardware handshaking; the Laserwriter with ROM's before 2.0, XOn/XOff handshaking.

If you do not want to upgrade the LaserWriter ROMs, there are two workarounds: an intermediary device and a spooling program.

1. Intermediary device

Use a Quadram Buffer Box as an intermediary device between the IBM PC AT and the LaserWriter. The Quadram will do the necessary protocol conversion.

2. Spooling program

Use a spooling program to command the IBM PC to redirect the output for the LaserWriter to a communications port and set the handshaking to XOn/XOff. One such program, Superspool, comes with AST multi-function boards.

The Superspool command

```
superspl lpt1:=com1:/rate=9600,n,8,1/on=xon/off=dcd,cts,dsr/m=4
```

redirects printer output to communications port 1, sets the communications port for 9600 baud, no parity, 8 data bits, 1 stop bit, turns on XON/XOFF handshaking, turns off all hardware handshaking, and sets aside 4K bytes of memory for a print buffer.

This command should be used instead of MODE commands which redirect the printer output and set the communications parameters.

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Tech Info Library Article Number:1251



Tech Info Library

Macintosh Office: Glossary of standard terms

Revised: 5/11/89
Security: Everyone

Macintosh Office: Glossary of standard terms

=====

For general clarity and consistency, use these Macintosh Office terms in the contexts demonstrated:

Disk Server: Another name for a large disk, usually a multi-MegaByte Winchester. You can access it like a floppy or microdisk. A disk server cannot intelligently control of file access or disk space allocation. Users control allocation via a master disk.

File Server: An intelligent controller for dynamically allocating and de-allocating disk space as needed by the user. Additionally, it can perform functions similar to those associated with Electronic Mail: it can lock a file from a user and, while one user has a file open, it can allow read access but not write access to other users.

Comm Server: An intelligent controller for communicating with other systems or networks over a telecommunications link. It can handle conversions for speed, protocol, and limited file formats.

Gateway: A way for AppleTalk to communicate with another type of network through a direct connection between both types. Decnet and Wangnet are examples of other types of networks. The gateway involves conversions for speed, protocol, and limited file formats.

Bridge: A way for two AppleTalk networks to communicate via a direct connection. No conversions for speed or protocol are involved.

Half-Bridge: A way for two AppleTalk networks to communicate via a telecommunications link. A conversion for speed occurs; there are no conversions for protocol or file format.

Apple Technical Communications

Tech Info Library Article Number:1253



Tech Info Library

Apple IIC: Pinouts & Switch Settings To Hayes Modem (9/95)

Revised: 9/21/95
Security: Everyone

Apple IIC: Pinouts & Switch Settings To Hayes Modem (9/95)

Article Created: 5 August 1985
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Following are the pinouts and switch settings for interfacing an Apple IIC and Hayes modem.

DISCUSSION -----

Begin_Table

Pinouts:

Hayes Modem		Apple IIC
2	<->	4
3	<->	2
6	<->	1
7	<->	3
20	<->	5

Modem switch settings for 1200 baud:

1	2	3	4	5	6	7	8
down	up	down	up	down	down	up	down

300 baud: Same settings

These settings are not for the Hayes 2400 Baud Modem.

End_Table

..TIL01255-Apple_IIc-Pinouts_and_Switch_Settings_To_Hayes_Modem_9-95.pdf

Article Change History:

19 Sep 1995 - Reformatted to meet current standards.

Support Information Services

Apple Technical Communications

Tech Info Library Article Number:1255



Tech Info Library

Access II: Volume Not Found error

Revised: 5/25/89
Security: Everyone

Access II: "Volume Not Found" error

=====

When formatting a disk under Access II, make sure that you enter the volume name in UPPER CASE. Version 1.0 does allow you to enter a volume name in lower case, but a disk formatted with a lower-case volume name can't be accessed. After attempting to access such a disk, you'll get a "Volume Not Found" error, even though the attempt was made with a valid volume name and correct pathname syntax.

This problem was fixed in later versions of Access II.

Apple Technical Communications

Tech Info Library Article Number:1256



Tech Info Library

IEEE-488 Interface Card: Product Description (11/96)

Revised: 11/21/96
Security: Everyone

IEEE-488 Interface Card: Product Description (11/96)

Article Created: 05 August 1996
Article Reviewed/Updated: 14 November 1996

TOPIC -----

This article describes the Apple IEEE-488 Interface Card. This card has been discontinued and is no longer available from Apple.

DISCUSSION -----

Technical Specifications
=====

As a Listener/Talker/Controller, the Apple IEEE-488 Interface card provides a fully compatible subset of the IEEE-488 standard. (Its only limitation is that it cannot pass control to another IEEE-488 controller.)

The interface card can also function as a device on the IEEE-488 bus. With a user-defined program, the card can be used to attach non-IEEE-488-compatible instruments to the bus.

General Purpose Instrument Bus Commands

WRITE	Write Data Out
WRITECNT	Write Data Out with Count
READ	Read Data In
READCNT	Read Data In with Count
XFER	Transfer Data
TRIGR	Group Execute Trigger
CLRAL	Clear All Devices
CLEAR	Clear Selected Devices
REMAI	Remote Enable All
LLKAL	Local Lockout All Devices
LOCAL	Local Mode All Devices
LOCDV	Local Mode Selected Devices

SRQD	Service Requested
SPOOL	Serial Poll
PPOLL	Parallel Poll
PPENB	Parallel Poll Enable
PPDIS	Parallel Poll Disable
PPDIS	Parallel Poll Disable
PPUAL	Parallel Poll Unconfigure All Devices
DEVICE	Controller Device Number
LINEFEED	Line Feed Control
EOS	End of String Character
SCREEN	Screen Control
ABORT	Clear All Interfaces
UNTALK	Universal Untalk

Device Capabilitie

SH1, AH1, T3, L1, DC1, DT1, C1, C2, C3, C4, C25.

Operating Life

To increase operating life, devices on the bus not in use should be turned off. However, proper operation of the bus requires some of the devices be turned on. The rule of thumb is the computer plus at least half of the devices connected to it must be powered on.

Software

The following software is supported by on-board, ROM-based firmware and signal protocol on the bus is handled by the resident software.

1. BASIC
2. Assembly macro commands
3. Pascal and FORTRAN through assembly language routines

Maximum Devices

Per card: 14

Maximum cards

Per computer: 7

Package

=====

Apple IEEE-488 Interface Card terminates in standard IEEE-488 socket.

..TIL01258-IEEE-488_Interface_Card-Product_Description_11-96.pdf

Back-panel bracket connects to Apple case ground (for low RFI systems)

Instruction manual includes GPIB connections, listener addresses, talker addresses, secondary addresses, and control codes.

System Configuration

=====

Apple II or Apple II Plus with a minimum of 32K RAM and available expansion slot.

Apple IIe system with an available expansion slot.

Article Change History:

14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1258



Tech Info Library

Access II: Common problems with recording files

Revised: 5/25/89
Security: Everyone

Access II: Common problems with recording files

- =====
1. Start the recording by pressing CTRL-R. When through recording, you must press CTRL-R again to stop recording and to close the file properly so that other programs can read it.
 2. While in recording mode, Access II may display a file error message, such as "Disk Full" or "Bad Pathname". "Bad Pathname" means that you must get to the setup menu's option to Change Recording File Name and start a new recording file with a valid ProDOS Pathname.

To avoid the error message "Disk Full" in systems with two drives, use a blank disk in the second disk drive as the volume of the recording file. To avoid the error in systems with one drive, make and use a copy of the program disk, first removing from the copy the unnecessary sample files and 40- or 80-column files. NEVER attempt to record onto a program disk or a copy of one if the disk contains very little room.

3. If you unsuccessfully attempt to use "Receive A File", the sending computer may not be using the XModem protocol required by that feature. If the sending machine is indeed not using Xmodem, you must create a recording file and record the file from terminal mode.
4. If a recording file cannot be read by another program, the file is probably not properly closed, as described in (1) above; or, there may be control characters in the recorded file that the program simply cannot deal with.

Apple Technical Communications

Tech Info Library Article Number:1260



Tech Info Library

EtherTalk Interface Card: General Troubleshooting (Part 2 of 2)

Revised: 1/30/92
Security: Everyone

EtherTalk Interface Card: General Troubleshooting (Part 2 of 2)

=====

This article last reviewed: 16 November 1987

o TWO-CARD TEST

Materials Required:

MacTest II diskette
Macintosh II
Known-good EtherTalk Interface Card
Terminator kit (077-0256)
Thin Net Test Cable (077-0257)

Procedure:

1. If you are not using a known-good Macintosh II to test the EtherTalk Interface Card, start up MacTest II and run the logic, drive, and monitor tests. (See Section 3, Diagnostics, of the Macintosh II Technical Procedures.) Complete any needed repairs before you continue.

2. Turn the Macintosh II power off.

3. Put on your grounded wriststrap and set the EtherTalk Interface Card on the grounded workbench pad. Set the jumper on both EtherTalk Interface Cards for thin cable, and install the cards in the Macintosh II. (See the "Setting the Jumper", later in this article.)

NOTE: Record the slot numbers used by the card under test and by the known-good card. The slot numbers are 1 (which is next to the power supply) through 6 (which is farthest from the power supply).

4. Assemble and install the loopback cable as follows:

a) Select two T-connectors and two terminators from the terminator kit (Figure

2). For each T-connector, connect the female end of one terminator to one of the male ends on the T-connector.

b) Connect each end of the thin net test cable to the remaining male end on each T-connector.

c) Locate the male connector on each EtherTalk Interface Card. Join the remaining female connector on each T-connector to the connector on each card.

5. To start the diagnostic, insert the MacTest II diskette into drive one (right), and turn on the power. (For MacTest II operating instructions, see Section 3, Diagnostics, of the Macintosh II Technical Procedures.)

6. Select the two-card test as follows:

a) Pull down the Options menu and select Test Selections.

b) Click on the EtherTalk Interface Card check box until an X is displayed in the check box. In the box to the right of the test name, enter the expansion slot number for the card under test.

c) Click on the known-good card check box until an X is displayed in the check box. In the box to the right of the test name, enter the expansion slot number for the known-good card.

d) Click OK. (You may want to turn off all other tests to reduce testing time.)

7. Click on the Start button.

NOTE: If you did not install the loopback cable in Step 4, or if you did not install it properly, MacTest II displays a window asking you to install the connector. Turn the power off (to reset the EtherTalk Interface Card), install the loopback cable as described in Step 4, and continue this procedure at Step 5.

MacTest II runs until the test passes, or until a failure is detected. If the test fails, MacTest II displays a window with troubleshooting instructions. For additional information, see Section 3, Troubleshooting.

o SETTING THE JUMPER

1. Locate the jumper and see if it is set for thick cable or thin cable.

2. If the jumper is set for thick cable, remove the jumper, and install it in the position for thin cable. (Do not forget to reset it before you return it to the customer.)

Section 3 Troubleshooting

o CONTENTS

- 3.1 Using the Flowchart
- 3.2 Troubleshooting Flowchart

o USING THE FLOWCHART

The flowchart includes references to notes on this page. These notes provide additional instructions or referrals to other procedures.

Starting at the top of the flowchart, answer the questions and proceed down the chart. When you arrive at a rectangular box containing a list of actions, perform the actions in the sequence listed. Upon completion of each action, test again to see if the action corrects the problem. If the problem remains, reinstall the original module before you go to the next action.

o TROUBLESHOOTING FLOWCHART

1. Refer to Section 2, Diagnostics.
2. If you suspect intermittent problems, repeat the test several times.

Copyright 1987 Apple Computer, Inc.

Tech Info Library Article Number:1261



Tech Info Library

Apple Hardware: Radio and Television Interference

Revised: 6/22/92
Security: Everyone

Apple Hardware: Radio and Television Interference

=====

Article Created: 9 August 1985
Article Last Reviewed: 19 June 1992
Article Last Updated:

TOPIC -----

This article contains information on troubleshooting radio and television interference.

DISCUSSION -----

Apple equipment generates and uses radio-frequency energy. If the equipment is not installed and used properly, that is, in strict accordance with FCC instructions, it may cause interference with radio and television reception.

All Apple equipment has been tested and complies with the limits for a Class B computing device in accordance with the specifications in Subpart J, Part 15 of FCC rules. These rules are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation, especially if you use a 'rabbit-ear' television antenna.

It's not difficult to determine whether your computer is causing interference: simply turn it off. If the interference stops, your equipment is indeed the culprit. To further isolate the problem, disconnect all peripheral devices and their input/output cables one at a time. (Connect or disconnect peripheral devices only after powering them, and the system, off.) If any disconnection causes the interference to stop, the problem is either the peripheral device or its I/O cable. Peripherals usually require shielded I/O cables; for Apple peripheral devices, you can obtain the proper shielded cable from your dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

If your computer causes interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Realign the TV or radio antenna until the interference stops.
- Move the computer farther from the TV, radio, or antenna.
- Plug the computer into an outlet that is on a different electrical circuit than the TV or radio.
- Consider installing a rooftop television antenna with coaxial cable lead-in between the antenna and TV.

If necessary, you should consult your dealer or an experienced radio or television technician for additional suggestions. You may find helpful the following booklet, prepared by the Federal Communications Commission,

"How to Identify and Resolve Radio-TV Interference Problems"
U.S. Government Printing Office
Washington, DC 20402

(Stock number 004-000-00345-4.)

Copyright 1985, 1987 Apple Computer, Inc.

Tech Info Library Article Number:1262



Tech Info Library

16K RAM / Language Cards: Alternate Suppliers

Revised: 4/9/91
Security: Everyone

16K RAM / Language Cards: Alternate Suppliers

=====

1. Saturn RAM Expansion Card

- Expands memory by 32K or 64K and functions as a language card.
- Includes software:
 - 1. RAMEXPAND and MOVEDOS memory enhancers
 - 2. PSEUDODISK disk emulation for:
 - a. DOS
 - b. Pascal
 - c. CP/M (64K only).
- Minimum Configuration Requirements: Apple II; Apple II+; Apple IIe
- Source:
 - Titan Technologies Inc.
 - 310 W. Ann Street
 - Ann Arbor, MI 48104
 - (313) 662-8542

2. Micro-Design 16K RAM Card

- Minimum Configuration Requirements: Apple II; Apple II+; Apple IIe
- Source:
 - Micro-Design
 - 6301-B Manchaca Road
 - Austin, TX 78745
 - (512) 441-7890
 - (800) 531-5002

3. Supercom 16K RAM Card

..TIL01263-16K_RAM_-Language_Cards-Alternate_Suppliers.pdf

- Increases memory to 64K and allows a user to run CP/M-80 software requiring 44K-56K.
- Permits a user to write programs in FORTRAN, Pascal, LISP and BASIC under the UCSD p-System.
- Minimum Configuration Requirements; Apple II; Apple IIe
- Source:

ADT Enterprises
P.O. Box 1500 #315
Corona Del Mar, Ca. 92625
(714) 760-7065

4. Apricorn 16K RAM / Language Card

- Source:

Apricorn
7050 Convoy Court
San Diego, CA 92111
(619) 569-9483

5. Microtek 16K RAM / Language Card

- Source:

Personal Computer Products
11590 West Bernardo Court
San Diego, CA 92127
(619) 485-8411

6. Legend Industries RAM card products

- 3 RAM card products
- Source:

Legend Industries, Ltd.
2220 Scott Lake Road
Pontiac, MI 48054
(313) 674-0953

7. Prometheus Products 16K & 128K RAM cards

- Source:

Prometheus Products, Inc.
45277 Fremont Blvd.
Fremont, CA 94538
(415) 490-2370

8. R.H. Electronics 16K RAM card

-- Source:

R.H. Electronics, Inc.
(805) 688-2047 ext. 4709

Apple Technical Communications

Tech Info Library Article Number:1263



Tech Info Library

Lisa Pascal 3.0: Can't copy protected file; error 1130

Revised: 8/9/85
Security: Everyone

Lisa Pascal 3.0: Can't copy protected file; error 1130

=====

Due to a problem in the Lisa Pascal 3.0 Workshop, the File Manager will not copy a file having the copy protection attribute set (i.e., a file attribute of P); instead, the Filer returns error 1130. The workaround for copying a protected program is to use the Generic Install program, merely a generic version of the Office system and Workshop install programs.

Apple Technical Communications

Tech Info Library Article Number:1267



Tech Info Library

Macintosh External Drives: Proper Location Next to Compact Macs

Revised: 3/31/94
Security: Everyone

Macintosh External Drives: Proper Location Next to Compact Macs

=====

Article Created: 9 August 1985
Article Reviewed/Updated: 2 September 1993

TOPIC -----

Does it matter where I put my external floppy drive? I have a Macintosh Plus and because of space considerations, I'd like to put the drive on top of the Macintosh.

DISCUSSION -----

The power supply board, in your Macintosh Plus, is located on the left side of the computer and emits radio frequency interference (or RFI). RFI can damage the software in your external drives if you place them too near the power supply--to the left of your Macintosh Plus, for example, or on top of it. Such damage manifests itself in diskette read errors such as "Unable to recognize diskette" or "The file is damaged".

Placing drives on top of your Macintosh Plus is especially unwise: the drives will block the cooling vents, which for your Macintosh means overheating and a shortened lifespan. The proper place for external drives is to the right of the Macintosh. This information applies to all earlier and current compact Macintosh models.

Article Change History:
31 March 1994 - Reviewed and updated formatting.

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Tech Info Library Article Number:1268



Tech Info Library

EtherTalk Interface Card: General Troubleshooting (Part 1 of 2)

Revised: 1/30/92
Security: Everyone

EtherTalk Interface Card: General Troubleshooting (Part 1 of 2)

=====

This article last reviewed: 16 November 1987

Section 1 Basics

o INTRODUCTION

The EtherTalk Interface Card allows you to connect a Macintosh II to an Ethernet local area network.

When the EtherTalk Interface Card is installed and connected to the Ethernet cable, you can send and receive files over the Ethernet network using the A/UX operating system or the EtherTalk Installer software.

Section 2 Diagnostics

o CONTENTS

- 2.2 Introduction
- 2.3 One-Card Test
- 2.3 Materials Required
- 2.3 Procedure
- 2.5 Two-Card Test
- 2.5 Materials Required
- 2.5 Procedure
- 2.8 Setting the Jumper

o INTRODUCTION

MacTest II provides a one-card test and a two-card test for the EtherTalk Interface Card. The two-card test uses a known-good card in addition to the suspect card, and tests communications between the two cards.

Both tests check the functional areas of the suspect card independently. The two-card test also checks to see if each of the functional areas works properly with the other functional areas.

If possible, always run the two-card test. The one-card test cannot locate all problems. If the customer reports that the card cannot transmit or receive data, and if the card passes the one-card test, you need to run the two-card test.

NOTE: Neither test checks the DB-15 connector (which is used for thick Ethernet cable) on the EtherTalk Interface Card.

o ONE-CARD TEST

Materials Required:

- MacTest II diskette
- Macintosh II
- Terminator kit (077-0256)

Procedure:

1. If you are not using a known-good Macintosh II to test the EtherTalk Interface Card, start up MacTest II and run the logic, drive, and monitor tests. (See Section 3, Diagnostics, of the Macintosh II Technical Procedures.) Complete any needed repairs before you continue.)

2. Turn the Macintosh II power off.

3. Put on your grounded wriststrap and set the EtherTalk Interface Card on the grounded workbench pad. Set the jumper on the EtherTalk Interface Card for thin cable and install the card in the Macintosh II. (See the Setting the Jumper, in the article EtherTalk Interface Card: General Troubleshooting (Part 2 of 2) in the Technical Information Library.)

4. Assemble and install the loopback connector as follows:

- a) Select a T-connector and two terminators from the terminator kit. Connect the female end of each terminator to one of the male ends on the T-connector, and give the female connector barrel a twist to the right to secure the connection.

- b) Locate the male connector on the EtherTalk Interface Card, and join the female connector on the T-connector to the connector on the card.

5. To start the diagnostic, insert the MacTest II diskette into drive one (right), and turn on the power. (For MacTest II operating instructions, see Section 3, Diagnostics, of the Macintosh II Technical Procedures.)

6. If you do not know what expansion slot the EtherTalk Interface Card is in, pull down the Options menu and select Configuration. Note the expansion slot number of the EtherTalk Interface Card for use in Step 7.

7. Pull down the Options menu and select Test Selections. Click on the EtherTalk Interface Card check box until an X is displayed in the check box, and then enter the expansion slot number in the box to the right of the test name. (You may want to turn off all other tests to reduce testing time.) Then click on OK.

8. Click on the Start button.

NOTE: If you did not install the loopback connector in Step 4, or if you did not install it properly, MacTest II displays a window asking you to install the connector. Turn the power off (to reset the EtherTalk Interface Card), install the connector as described in Step 4, and continue this procedure at Step 5.

MacTest II runs until the test passes or until a failure is detected. If the test fails, MacTest II displays a window with troubleshooting instructions. For additional information, see Section 3, Troubleshooting.

IMPORTANT

For the two-card troubleshooting section, setting the jumper section, and the rest of the General Troubleshooting Procedures, refer to the article "EtherTalk Interface Card: General Troubleshooting (Part 2 of 2)".

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Tech Info Library Article Number:1270



Tech Info Library

Lisa Office System 3.1: Canon Inkjet Doesn't Print All Styles

Revised: 7/30/87
Security: Everyone

Lisa Office System 3.1: Canon Inkjet Doesn't Print All Styles

=====

A problem in Lisa Office System 3.1 prevents the Canon Inkjet from printing in typestyles other than plain text: styles such as bold and hollow are printed as plain. Color options, such as red backgrounds and black outlines, also don't print. The only workaround is to use Office System 3.0 software.

Tech Info Library Article Number:1271



Tech Info Library

Lisa 2: Failing To Respond On Large AppleTalk Networks

Revised: 11/9/88
Security: Everyone

Lisa 2: Failing To Respond On Large AppleTalk Networks

=====

This article last reviewed: 9 November 1988

A number of Lisa 2s--not 2/10s--were produced with pull-up and pull-down resistors on the input line of the serial port that AppleTalk uses. These resistors can create a problem for Lisas that are part of large AppleTalk networks, such as one 1800' long and containing 32 nodes. In such complex networks, these Lisas can fail to "hear" messages addressed to them and consequently can fail to respond.

To remedy the situation:

- On the Lisa I/O board, part #690-0117, cut the trace running pin 3 of RP4 (the resistor pack located to the left of the batteries).

- Remove R38 (the 10K ohm resistor located above the upper left-hand corner of the battery pack).

The pull-up/down resistors are now disabled; the Lisa will now respond properly to the network.

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Tech Info Library Article Number:1272



Tech Info Library

Macintosh XL: Wrong characters displayed on screen when typing

Revised: 8/9/85
Security: Everyone

Macintosh XL: Wrong characters displayed on screen when typing

=====

On occassion, a Macintosh XL running MacWorks Revision B will display the wrong keys when you type on the keyboard: the keyboard seems to function as if the bottom row were shifted to the right by one key. For instance, when you type an "N", an "M" may be displayed on the screen instead. The remedy is simple: merely unplug the keyboard and plug it back in again.

Apple Technical Communications

Tech Info Library Article Number:1273



Tech Info Library

Monitors: An Explanation of Contrast and Brightness

Revised: 5/25/89
Security: Everyone

Monitors: An Explanation of Contrast and Brightness

=====

This article last reviewed: 16 November 1987

Brightness -

Brightness adjusts the overall level of the screen. The relationship between the level of white and black, or of colors, does not change; that is, white is still white, black is still black, and yellow is still yellow. It either dims or brightens the entire screen. There is very little change in the screen when the brightness is adjusted.

Contrast -

The contrast adjustment controls the overall gain of the video amplifier. Adjusting the contrast to its maximum "on" position will make the whites appear whiter and the blacks appear blacker. Contrast will make both white and black (also colors, if applicable) move toward each other, i.e. makes the relationship between the white level and the black level change. Turning the contrast down will tend to make both the whites and the blacks look grey. You will see a large swing from very light to very dark when adjusting contrast (the screen will appear to get darker or lighter).

Example -

Consider a room that is painted half black and half white. It has two controls, one for brightness and one for contrast.

If the brightness control is adjusted, it acts like a light dimmer, controlling whether the amount of light in the room brightens or darkens. However, the black half of the room stays black and the white half of the room stays white. There is just less light in the room.

If the contrast control is adjusted, the relationship between the black and white colors of the room actually changes. When the contrast is turned down, the white half of the room will actually become greyer or move toward black, and the the black half of the room will become greyer or move towards white;

making it harder to differentiate between black and white, as they both now look the same (grey). Turning the contrast up will make a greater difference between the black and white colors, which makes it easier to differentiate between black and white.

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Tech Info Library Article Number:1274



Tech Info Library

Apple IIC: Setting serial port 2's firmware from BASIC (1 of 2)

Revised: 3/10/86
Security: Everyone

Apple IIC: Setting serial port 2's firmware from BASIC (1 of 2)

=====

If DOS or ProDOS is in RAM, you can access the firmware of serial port 2 from BASIC using the list of command codes below.

- To change a firmware setting when the port is in terminal mode, issue a CTRL-D (hex 04), IN#2, the command character CTRL-A, and the command code.
- To change a firmware setting when the port is in non-terminal or local mode, issue a CTRL-D (hex 04), IN#2 or PR#2, the command character CTRL-A, and the command code.
- To change the firmware setting without DOS or ProDOS, leave CTRL-D out of the string and issue the IN#2 or PR#2, command character, and code.

As soon as you issue the command character, the serial port firmware displays a flashing question mark cursor to indicate that it's awaiting a command code. If you press RETURN, you get the current video cursor again. You do not have to press RETURN after command codes.

Subsequent input and output are routed to the modem (or other communications device) connected to serial port 2 until the next IN# commands that the input be routed to another port. You can therefore issue the CTRL-D and IN#2 and then a string of command codes, each beginning with the command character CTRL-A, to change more than one setting of the port firmware.

We recommended two substitutes to the command character CTRL-A: CTRL-V and CTRL-W. To make the substitution, issue the current command character and follow it with the substitute command character, e.g. CTRL-A CTRL-V.

For example, to set the port and startup AppleWorks:

1. Write a program to set the Apple IIC port and end the program with the line:

```
50 D$=CHR$(4)
100 PRINT D$;"-APLWORKS": REM Launch AppleWorks
```

2. Save the program as STARTUP on the AppleWorks startup disk.
3. Rename the file /APPLEWORKS/APLWORKS.SYSTEM as /APPLEWORKS/APLWORKS to match the named file in line 100 in step 1 above.
4. Copy the file BASIC.SYSTEM to the AppleWorks startup disk.
5. Boot the AppleWorks startup disk. STARTUP will set the port and then pass control to AppleWorks.

Apple Technical Communications

Tech Info Library Article Number:1275



Tech Info Library

Apple IIC: Setting serial port 2's firmware from BASIC (2 of 2)

Revised: 3/10/86
Security: Everyone

Apple IIC: Setting serial port 2's firmware from BASIC (2 of 2)

=====

--Modem Port Command Codes:

1. Line width
 - a. Code: A number from 1 through 255 followed by a carriage return.
 - b. Code: A number from 1 through 255 followed by the letter N. This form of the command code also means that output will not be echoed to the screen.
 - c. To turn off automatic generation of carriage return, either:
 1. use the Z command,
 2. use the System Utilities Disk.

2. Baud rate

Code	Rate
1B	50
2B	75
3B	110 (109.92)
4B	135 (134.58)
5B	150
6B	300
7B	600
8B	1200
9B	1800
10B	2400
11B	3600
12B	4800
13B	7200
14B	9600
15B	19200

3. Data format

Code	Data bits	Stop bits
0D	8	1

1D	7	1
2D	6	1
3D	5	1
4D	8	2
5D	7	2
6D	6	2
7D	5	2

4. Echo output on the screen

Code	Effect
I	Output is echoed on the screen.

5. Line feed after carriage return.

Code	Effect
K	A line feed is not sent after a carriage return.
L	A line feed is sent after a carriage return.

6. Parity

Code	Parity
0P	None
1P	Odd
2P	None
3P	Even
4P	None
5P	MARK (1)
6P	None
7P	SPACE (0)

7. Terminal Mode

Code	Effect
T	Enter Terminal Mode. Use this command after IN#2 only. If you follow this command by PR#2, the Apple IIC will echo input to output. If the other device does so too, the first character entered will loop endlessly, locking up the system. Use CTRL-RESET to get out.
Q	Quit terminal mode.

8. Reset

Code	Effect
R	Reset port 2 and exit from serial port 2 firmware.

9. Break

Code	Effect
------	--------

S	Send a 233 millisecond BREAK character.
---	---

10. Ignore

Code	Effect
------	--------

Z	Zap (ignore) further command characters until CTRL-Reset. NOTE: Do not format output or insert carriage returns into output stream.
---	--

11. Terminal mode command codes from remote devices

Code	Effect
------	--------

CTRL-T	If IN#2 is already in effect, this command puts the Apple IIC in terminal mode, just as does the local command T.
--------	---

CTRL-R	This command undoes the remote terminal mode command. If IN#2 and PR#2 are in effect, the remote keyboard and display become the input and output devices of the local Apple IIC.
--------	---

WARNING: Apple IIC firmware DOES NOT allow you to use control characters B, C, H, I, J, L, M, or Y: doing so may cause unpredictable effects.

Apple Technical Communications

Tech Info Library Article Number:1276



Tech Info Library

MacTest 6.0: Wrong Error Number During Test Of External Drive

Revised: 11/9/88
Security: Everyone

MacTest 6.0: Wrong Error Number During Test Of External Drive

=====

This article last reviewed: 9 November 1988

MacTest 6.0 displays an erroneous error number during the external drive test when it's run for the first time. You can perform a valid test without rebooting simply by running the external drive test a second time.

Follow these steps when you want to use MacTest 6.0:

1. Boot MacTest 6.0 on either a 512K or 128K Macintosh. Run all tests by choosing Start.
2. If all is well, Pass will be highlighted. Choose Select Test, then specify that only the external drive test be run.
3. Click on Start. MacTest will return a Failed message with the number 50010.0004.
4. Click on Start again. This time the drive test should run properly. If the external drive is good, the test will indicate "Pass"; if the test returns a "Failed" message again, the drive is indeed faulty.

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Tech Info Library Article Number:1277



Tech Info Library

Disk II: Specifications (Discontinued)

Revised: 9/14/93
Security: Everyone

Disk II: Specifications (Discontinued)

=====

This article last reviewed: 16 August 1985

I. Technical Specifications

A. Format

1. Sectoring: Soft (hard-sectored disks may be used)
2. Recording Surfaces: 1
3. Tracks per surface: 35
4. Sectors per track: 16
5. Bytes per sector: 256

B. Capacity

1. Formatted data capacity: 140K
 - a. 16 sector
 - b. Under: Pascal, DOS 3.3, and ProDOS
2. Available data capacity:
 - a. 16 sector
 - b. 137K under Pascal
 - c. 124K under DOS 3.3 and ProDOS

C. Characteristics

1. Head movement time:
 - a. 25 milliseconds track to track
 - b. 600 milliseconds across all tracks
2. Head load time: 50 milliseconds

3. Average rotational delay: 100 milliseconds

D. Packaging

1. Controller: Printed circuit board that plugs into one of the expansion slots.
 - a. Drives per controller: 2

2. Drive dimensions:

	inches	centimeters
a. Height:	3.25	8.3
b. Width:	5.75	14.6
d. Depth:	8.0	20.3
	pounds	kilograms
e. Weight:	3.0	1.36

3. Power source for drives: Apple system power supply

II. System Configuration

A. Apple II, II Plus, IIe, or Enhanced IIe

1. Recommended minimum memory: 32K
2. Controller card

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Tech Info Library Article Number:1278



Tech Info Library

Printer Paper: Correlating Thickness with Weight

Revised: 5/17/89
Security: Everyone

Printer Paper: Correlating Thickness with Weight

=====

Though paper is usually be ordered by its "weight", Apple printer manuals often specify a required type of paper by its thickness. The following table will help you determine, from the paper's thickness, the proper weight of paper to order.

Weight	Thickness	Thickness
(Pounds)	Original	Original + 3 Copies
	(Inches)	(Inches)
12	0.0025	0.01
15	0.0029	0.0116
18	0.0036	0.0144
20	0.0040	0.016

NOTE: This table lists thicknesses of only one typical sample of tractor paper; thicknesses of other types of paper, such as NCR paper, may be different.

Apple Technical Communications

Tech Info Library Article Number:1279



Tech Info Library

Apple II Plus: How to Identify a Revision 7 Motherboard?

Revised: 11/20/87
Security: Everyone

Apple II Plus: How to Identify a Revision 7 Motherboard?

=====

This article last reviewed: 19 November 1987

Here's how to determine whether an Apple II Plus has a revision 7 motherboard or a pre-revision 7 motherboard:

- Look at the motherboard's part number. As you face the front of the computer, it's in the upper-left corner of the motherboard. The number begins with nnn-nnnn.
- If the part number ends with 07, or with A, B, or C -- the motherboard is revision 7. Otherwise, it's pre-revision 7.

Tech Info Library Article Number:1281



Tech Info Library

ProDOS Assembler: INA and DEA commands

Revised: 4/9/91
Security: Everyone

ProDOS Assembler: INA and DEA commands

=====

Two of the new mnemonics available for use with the 65C02 are INA and DEA: Increment Accumulator and Decrement Accumulator. The ProDOS Assembler does not recognize these mnemonics. Therefore, after using the x6502 directive to support the 65C02 command, you must use the mnemonics INC and DEC without any parameters if you want to increment or decrement the accumulator. INC and DEC will assemble into the object code that uses the machine instructions associated with INA and DEA.

Apple Technical Communications

Tech Info Library Article Number:1282



Tech Info Library

LOGO: Converting files to LOGO II

Revised: 9/5/85
Security: Everyone

LOGO: Converting files to LOGO II

=====

Apple LOGO is out in two versions: Apple LOGO and LOGO II. The later LOGO II does read conversions of program files of the earlier Apple LOGO. The CONVERT utility makes these conversions; CONVERT is on the ProDOS System Utilities and IIc Utilities Disks.

Keep in mind, however, these two facts:

1. Some commands are different in the later version, LOGO II. You must check each line of the file converted from Apple LOGO for commands that LOGO II does not recognize. If LOGO II doesn't know how to do an Apple LOGO command, you will have to update the command to the appropriate LOGO II command.
2. The converted files may contain references to the names of LOGO procedures that have different names in LOGO II. There may also be references to procedures that perform functions you do not want performed. These problems with names came with the addition of new built-in procedures or primitives in LOGO II. Again, as with the commands, you must check each line of the converted file for procedure name references that are erroneous or unintentional.

Apple Technical Communications

Tech Info Library Article Number:1283



Tech Info Library

WPL: Using it to personalize form letters

Revised: 9/5/85
Security: Everyone

WPL: Using it to personalize form letters

=====

You can use WPL to personalize a form letter directly from the keyboard. Use the following sample Applewriter WPL program: it inserts text into a form letter or contract, allowing you to enter names, dates and other data into a preset form. The program then prints the final form with all the new data in place.

```
NY
L filename,D2
PIN Enter Date:   =$A
F/(DATE)/$A/A
PIN Enter Date:   =$B
F/(NAME)/$B/A
PIN Enter Sales Order #:   =$C
F/(SONU)/$C/A
PIN Enter Customer #:   =$D
F/(CUNU)/$D/A
PIN Enter Due Date:   =$A
F/(DUOT)/$A/A
PNP
```

Notes:

1. You're only allowed four variables in WPL (\$A,\$B,\$C,\$D). If you need more than four variables, simply use them over. \$A, for example, is assigned twice in the preceding program: once with the date, and then again with the due date.
2. There is a 64-character limit for each variable. Refer to your WPL manual for more information on programming in WPL.
3. The second line in the program is written for the DOS version of AppleWriter. For the SOS version, change the second line to L .D2/filename. For the ProDOS version, change it to: L /volumename/filename.

Below is a sample letter that demonstrates the way to set up a form to use with the WPL program shown above.

(DATE)

Dear (NAME)

Customer Number: (CUNU)

It has come to our attention that you have overpaid the invoice sent to you on sales order number (SONU). We will send you a check or credit your account for the overpayment. Please let us know by (DUDT) whether you would like a check or have your account credited.

Sincerely,

Freddy Friendly

Account Manager

Note that, as in the program AUTOLETTER in the WPL manual, the replacement strings (DATE), (NAME), (SONU), (CUNU), and (DUDT), must be exactly the same in both the program and the form letter.

Apple Technical Communications

Tech Info Library Article Number:1284



Tech Info Library

Macintosh 128K & 512K: Specifications (Discontinued)

Revised: 9/26/95
Security: Everyone

Macintosh 128K & 512K: Specifications (Discontinued)

=====

Date Created: 16 June 1985
Article Reviewed/Updated: 26 September 1995

TOPIC -----

This article provides specifications for the Macintosh 128K and 512K.

DISCUSSION -----

MICROPROCESSOR

- Motorola MC68000, 32-bit architecture, 8 (7.8336) MHz clock speed

MEMORY

- 128K or 512K of RAM (Random Access Memory)
- 64K of ROM (Read Only Memory)

DISK DRIVE

- One built-in 400K disk drive. Optional external 400K disk drive.

SCREEN

- Built-in 9-inch diagonal, 512 by 342-pixel high-resolution bit-mapped monochrome display

INTERFACES

- Mouse port, DB-9 connector
- One eight-bit keyboard bus, 300 baud, RJ11 connector for Macintosh keyboard
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally), DB-9 connector
- External Disk Drive interface
- Sound port for external audio amplifier or headphones

CLOCK/CALENDAR

- CMOS custom chip with 4.5 volt battery backup (Eveready No. 523 or equivalent)

ELECTRICAL REQUIREMENTS

- Line voltage: 105 to 125 volts AC
- Line frequency: 50 to 60 hertz
- Maximum power: 60 watts

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: -40 to 122 degrees F (-40 to 50 C)
- Relative humidity: 5% to 90% relative humidity
- Altitude: 15,000 feet (4615 meters)

SIZE AND WEIGHT

- Height: 13.5 inches (34.6 cm)
- Width: 9.7 inches (24.6 cm)
- Depth: 10.9 inches (27.6 cm)
- Weight: 16 lb. 8 oz. (7.5. kg)

Article Change History:

26 Sep 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:1285



Tech Info Library

ImageWriter: MacWrite Form Feed Feature

Revised: 2/24/92
Security: Everyone

ImageWriter: MacWrite Form Feed Feature

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This article last reviewed: 16 September 1985

The Finder 4.1 update disk includes Imagewriter code that was revised and released in March 1985. When MacWrite starts to print documents with the "no breaks between pages option", MacWrite assumes that the pinch rollers are at the starting edge of the paper. The paper is rolled backward from this standard starting position whenever there is information in the top half-inch of the page, as is the case with labels, or when the "no breaks between pages " option is in effect. When the starting edge of the paper is rolled backward, this starting edge may slip out from between the pinch rollers and the platen; the edge of the paper may then cause a jam when it's moved forward as printing continues.

The Finder 4.1 disk, therefore, includes special new Imagewriter code that sends a form feed to the Imagewriter before MacWrite begins to print. This puts extra paper beyond the pinch rollers so that the Imagewriter can back up the paper without losing of control of it.

To avoid the form feed, either don't enter information in the top half-inch of the page or don't select "no breaks between pages", selecting "normal pages" instead.

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Tech Info Library Article Number:1286



Tech Info Library

ImageWriter General Troubleshooting

Revised: 1/30/92
Security: Everyone

ImageWriter General Troubleshooting

=====

This article last reviewed: 23 November 1987

DESCRIPTION:

Follow this procedure to determine whether the IW is functional.

YOU WILL NEED:

1. Apple IIe computer
2. Super Serial Card
3. Printer cable
4. the Level I Tech Procedures
5. ImageWriter User's Manual
6. Pencil and paper

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures.
2. If location for IW controls are needed, refer to the User's Manual.

CHECK 1: PRE-PRINT

- 1.1 Disconnect the printer cable at the back of the IW.
- 1.2 Check that the top panel is installed correctly.
- 1.3 Check that paper is installed.
- 1.4 Turn the platen knob.

PROB: The platen binds or doesn't turn consistently.

FIX: Pull off the platen knob and check for obstructions in the gears

- 1.5 Move the carriage to its rightmost position.

PROB: The carriage binds or doesn't move consistently.

FIX: Check that:

- * carrier wire is strung properly or out of tension specification as described in the Tech Procedures.

- * carrier bar is not too worn and is coated with thin

film of oil (oil type specified in the Tech Procedures).

CHECK 2: POWER ON INITIALIZATION

As you turn on the printer, check for 2.1, 2.2, 2.3, and 2.4.

- 2.1 The power lamp lights.
- 2.2 The platen should rotate one line backward and then one line forward.
- 2.3 The carriage should move smoothly to its leftmost position and stop.
- 2.4 The SEL lamp lights.

If any of the above do not occur as described, search on "HTS and ImageWriter and Initialization". The document you will obtain contains fixes for IW power on initialization problems.

CHECK 3: SELF TEST

To initiate Self Test: turn the printer off, and press Form Feed while you turn it back on. The printer should begin printing CHARACTER SETS.

If the printer prints character sets and the print quality is good, go to CHECK 4.

If the printer doesn't print character sets or the print quality is poor, search on "HTS and Imagewriter and Self Test". The document you will obtain contains fixes for IW Self Test problems.

CHECK 4: HOST PRINT

- 4.1 Turn off the printer, write down the customer's Super Serial Card and printer DIP switch configurations. Set the DIP switches as shown below:
(Note: Op = open, Cl = closed, up = On, dn = Off)

IW	_____SW2_____				_____SW1_____							
	Cl	Cl	Op	Op	Op	Op	Op	Op	Cl	Cl	Op	Cl
	1	2	3	4	1	2	3	4	5	6	7	8

S/S Card	_____SW1_____							_____SW2_____							MODEM/TERM
	Off	Off	Off	On	Off	On	On	On	Off	Off	On	On	Off	Off	jumper plug
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	to term

- 4.2 Remove all peripheral cards from the IIe. Install the Super Serial card in slot 1. Connect the IW to the S/S card via the printer cable. Turn on the IW (make sure cover is installed). Turn on the IIe and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Type the program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
```

```
30 PRINT CHR$(I);:NEXT I:PRINT
40 NEXT A
50 PR#0
60 END
```

4.3 Type RUN and press the <RETURN> key. The printer should print out about 100 character sets like the one shown below. If it does, the IW communicates with the computer OK.

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

If the printout is not OK, look below for problems.

- * If you get a SYNTAX ERROR on the computer, you may have mis-typed a line. To correct the syntax error perform the following:
 - (1) Type LIST and press <RETURN>. The program should appear on the screen.
 - (2) Examine the program for accuracy. Spaces, colons, etc. are important.
 - (3) To correct a line, simply retype the line and press <RETURN>. LIST again to make sure the correction is OK.
- * If nothing happens on the printer or the computer, press the RESET key while you press the CONTROL key. Then LIST your program as described above in the SYNTAX ERROR explanation to look for typing errors.
- * If no syntax errors occurred and the cursor is blinking again, then the program has probably run OK. Search on HTS and IMAGEWRITER and COMMUNICATIONS the document you will obtain contains fixes for IW hardware communications problems.

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Tech Info Library Article Number:1287



Tech Info Library

ImageWriter Power On Initialization Problems

Revised: 11/7/88
Security: Everyone

ImageWriter Power On Initialization Problems

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This article last reviewed: 11 Novmber 1988

DESCRIPTION:

When the printer is turned on, it should automatically perform a series of electromechanical operations that initialize it before printing.

The following table is composed of fixes for typical problems which may occur during power-on initialization.

YOU WILL NEED:

1. the Level I Tech Procedures
2. ImageWriter User's Manual

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures.
2. If a replacement doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
3. If location for IW controls are needed, refer to the User's Manual.

INSTRUCTIONS

1. Turn on the IW, it should perform the following initialization actions:
 - (1) Light the Power lamp.
 - (2) Rotate the platen one line backwards and then one line forwards.
 - (3) Move the carriage to its leftmost position and stop.
 - (4) Light the SEL lamp.
2. If a problem occurs, find it below and perform the corresponding FIX.

- - - - -

PROB: The power lamp doesn't light when the IW is turned on.

FIX: Recheck for the problem after each of the following steps:

- (1) Check that power is turned on.
- (2) Check that the power cord is plugged in.
- (3) Check the power fuse at the back of the printer.
 - * If it is burned out, replace it and turn power on again.

* If the fuse blows a second time, replace components in this order (recheck for the problem after each replacement):

- a. CPU PC board
- b. Carrier motor
- c. Transformer
- d. power switch
- e. carrier motor
- f. transformer

(4) If the fuse is OK, swap the power cord.

(5) Check the three fuses on the CPU board and replace any if blown.

(6) Replace components in this order (recheck for the problem after each replacement): power switch, carrier motor, transformer.

PROB: When the printer is turned on, the platen doesn't rotate one line backward and then one line forward.

FIX: Recheck for the problem after each of the following steps:

(1) Pull off the platen knob and check for obstructions in the gears

(2) Check for loose connectors as you follow the procedure to replace the main logic PCB (found in the Tech Procedures binders).

* If you find a loose connector, don't replace the main logic PCB but instead install the connector securely.

* If you don't find a loose connector, replace the main logic PCB.

(3) Replace the mechanical assembly.

PROB: As the printer is turned on, the printer doesn't move the carriage smoothly from its rightmost to its leftmost position and stop.

FIX: Recheck for the problem after each of the following steps:

(1) Check if the carrier wire is strung properly.

(2) Check for loose connectors as you follow the procedure to replace the main logic PCB (found in the Tech Procedures binders).

* If you find a loose connector, don't replace the main logic PCB but instead install the connector securely.

* If you don't find a loose connector, replace the main logic PCB.

(3) Replace the carrier motor.

PROB: There is a burning odor, erratic carrier motion, or erratic platen rotation when the printer is turned on.

FIX: Recheck for the problem after replacing each of the following parts:

(1) CPU PC board

(2) Carrier motor

(3) Mechanical assembly

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Tech Info Library Article Number:1288



Tech Info Library

ImageWriter Self Test Problems

Revised: 11/7/88
Security: Everyone

ImageWriter Self Test Problems

=====

This article last reviewed: 1 November 1988

DESCRIPTION:

This table is composed of fixes for typical Imagewriter Self Test problems.

YOU WILL NEED:

1. Level I Tech Procedures
2. Imagewriter User's Manual

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures.
2. If a replacement doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
3. If locations for ImageWriter controls are needed, refer to the User's Manual.

INSTRUCTIONS:

1. To initiate Self Test, press Form Feed while you turn on the printer.

* The printer should repeatedly print out end to end CHARACTER SETS like the one shown below. If it does and the print quality is good, the IW has passed Self Test.

!#\$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}

2. Find the problem below and perform the appropriate FIX.

- - - - -

PROB: There is a burning odor, or erratic carrier motion, or erratic platen rotation.

FIX: Recheck for the problem after replacing each of the following parts:

- (1) CPU PC board
- (2) Carrier motor

(3) Mechanical assembly

PROB: The printer doesn't repeatedly print sets of characters when Self Test is initiated.

FIX: Perform the following steps. Retry Self Test if a problem is found.

- (1) Check that the top cover is seated properly. If it isn't, close it. Then press SEL and re-try self-test.
- (2) Check if the PE lamp is lit on switch panel. If it is, reload the paper and try self-test.
- (3) Check the connectors between the carrier and carrier motor and the CPU PC board. If any of the connectors are loose, connect them.
- (4) Replace the CPU PC board.
- (5) Replace the carrier motor.

PROB: The printer prints character sets when Self Test is initiated but the print quality is poor.

FIX: Find your print quality problem in the tables below.

* DOTS MISSING

- (1) Make sure the dot head is in place.
- (2) Make sure the dot head is not clogged with dirt.
- (3) Make sure the dot head connector is properly plugged into CPU PC board.
- (4) Check impression control lever properly set. Push it away from you to its forwardmost position if using a single sheet of paper.
- (5) Replace the dot head.
- (6) Replace the CPU PC board.

* PRINT TOO LIGHT OR OF VARYING INTENSITY

- (1) Check that the impression control lever's position is properly set. If using a single sheet of paper, push the lever away from you to its forwardmost position.
- (2) Substitute a new ribbon cartridge.
- (3) Check if ribbon wire tension is too loose and adjust as necessary.
- (4) Adjust intensity pot located under the clear plastic sheet that covers the configuration switches. Locate VR2 IMPRES and adjust for optimum print density.
- (5) Replace the ribbon cartridge.
- (6) Replace the dot head.
- (7) Replace the CPU PC board.

* HORIZONTAL SPACING PROBLEM

- (1) Check if carrier wire is strung properly or out of tension specification.
- (2) Replace the carrier wire.
- (3) Replace the carrier motor.
- (4) Replace the CPU PC board.

* CHARACTERS DO NOT ALIGN VERTICALLY

Locate VR1 ALIGN under the clear plastic sheet that covers the configuration switches. Adjust for optimum vertical alignment.



Tech Info Library

ImageWriter Hardware Communication Problems

Revised: 11/7/88
Security: Everyone

ImageWriter Hardware Communication Problems

=====

This article last reviewed: 1 November 1988

DESCRIPTION:

This table is composed of typical Imagewriter communication problems and fixes. If your problem matches a symptom, perform the appropriate fix.

YOU WILL NEED:

1. Apple IIe computer
2. Super Serial Card and printer cable
3. Level I Tech Procedures
4. Imagewriter User's Manual
5. Pencil and paper

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures.
2. If a replacement doesn't fix the problem, reinstall the original module/part before proceeding with the procedure.
3. If location for IW controls are needed, refer to the User's Manual.

INSTRUCTIONS: In order to isolate a hardware communications problem, you first need to eliminate the possibility of a software or DIP switch configuration problem. To do this perform the following:

1. Turn off the printer, write down the customer's Super Serial Card and printer DIP switch configurations. Set the DIP switches as shown below:
(Note: Op = open, Cl = closed, up = On, dn = Off)

IW-SW2				IW-SW1							
Cl	Cl	Op	Op	Op	Op	Op	Op	Cl	Cl	Op	Cl
1	2	3	4	1	2	3	4	5	6	7	8

SSC-SW1							SSC-SW2							
Off	Off	Off	On	Off	On	On	On	Off	Off	On	On	Off	Off	MODEM/TERM jumper
1	2	3	4	5	6	7	1	2	3	4	5	6	7	block to TERM

2. Remove all peripheral cards from the IIe. Install the Super Serial card in slot 1. Connect the IW to the S/S card via printer cable
Turn on the IW (make sure cover is installed). Turn on the IIe and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Type the program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
30 PRINT CHR$(I);:NEXT I:PRINT
40 NEXT A
50 PR#0
60 END
```

3. Type RUN and press the <RETURN> key. The printer should print out about 100 character sets like the one shown below. If it does, the IW communicates with the computer OK.

```
!#$%&'()*+,-./0123456789;:<>?@ABCDEFGHIJKLMN O PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

If the printout is not OK, look below for problems.

- * If you get a SYNTAX ERROR on the computer, you may have mis-typed a line. To correct the syntax error perform the following:
 - (1) Type LIST and press <RETURN>. The program should appear on the screen.
 - (2) Examine the program for accuracy. Spaces, colons, etc. are important.
 - (3) To correct a line, simply retype the line and press <RETURN>. LIST again to make sure the correction is OK.
- * If nothing happens on the printer or the computer, press the RESET key while you press the CONTROL key. Then LIST your program as described above in the SYNTAX ERROR explanation to look for typing errors.
- * If no syntax errors occurred and the cursor is blinking again, then the program has probably run OK so check for the problems below:

PROB: The printer does not print a set of characters.

FIX: Recheck for the problem after each of the following steps. If no problem is found, go to step 4.

- (1) Check that the computer is properly powered on and initialized.
- (2) Check that the SEL light is on. If it's not, press SEL and try to print from the computer again using the program above. If it prints while the SEL light is off, replace the switch panel.
- (3) Make sure that the interface cable between the printer and the

computer is connected and secured at both ends.

(4) Replace main logic PCB.

PROB: The printer prints a set of characters but print quality is poor.

FIX: Do a word search for "Imagewriter and HTS and Self Test Problems" to obtain the print quality FIX.

4. Reset the DIP switches to the customer's original configuration. Then refer to the User's Manual and the Appendix in the Imagewriter section of the Tech Procedures to see if the customer's DIP switch configuration caused the problem.

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Tech Info Library Article Number:1290



Tech Info Library

ImageWriter II Pin Out

Revised: 11/7/88
Security: Everyone

ImageWriter II Pin Out

=====

This article last reviewed: 01 November 1988

8 Pin MCC 422/423 Signal

- | | |
|---|-------------------------------------|
| 1 | Data Terminal Ready (DTR) |
| 2 | Data Set Ready (DSR) |
| 3 | Transmit Data minus (TxD-) RS232 TD |
| 4 | Signal Ground (SG) |
| 5 | Receive Data minus (RxD-) RS232 RD |
| 6 | Transmit Data plus (TxD+) |
| 7 | Not Connected |
| 8 | Receive Data plus (RxD+) |

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Tech Info Library Article Number:1291



Tech Info Library

Disk II PROBLEM/CURE: Repeated Calibration (Constant Clacking)

Revised: 1/30/92
Security: Everyone

Disk II PROBLEM/CURE: Repeated Calibration (Constant Clacking)

=====

This article last reviewed: 28 April 1988

PROBLEM DESCRIPTION: When booting a known good system disk, the drive continually tries to calibrate at track 0. This causes a loud click clacking sound.

CAUSE: Recalibration is normal whenever a disk is booted. Then track 0 is read into memory. If the computer cannot read from track 0, the head is recalibrated again and again, until it succeeds in reading.

If the computer cannot read information on track 0; either the head is not arriving exactly at track 0, or something in the signal path is broken.

POSSIBLE CURE/S

- The disk speed is wrong - Perform D-Speed adjustment in Tech Procedures
- Track 0 stop is missing or bent - Replace the mechanical assembly
- The head is defective - Replace the mechanical assembly
- The stepper motor is malfunctioning - Replace the mechanical assembly
- Collet hub is out of adjustment - Check adjustment as specified in Tech Procedures

If problem is still not found, search on HTS, the disk drive's product name and GENERAL to obtain the General Troubleshooting procedure for the disk drive.

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Tech Info Library Article Number:1292



Tech Info Library

Apple III Hardware: 5-volt Confidence RAM Test

Revised: 11/9/88
Security: Everyone

Apple III Hardware: 5-volt Confidence RAM Test

=====

This article last reviewed: 9 November 1988

There is a Confidence RAM Test for Apple IIIs on the Confidence Disk and the Dealer Diagnostic Disk. With this test, you can locate bad chips on a 5-volt board.

--> NOTE: Before running the Confidence RAM test, remove all peripheral cards from the Apple III, especially any ProFile interface cards and Grappler printer cards.

The test results show the bank, address, and test expectations and actual performance. For example, after the test, say the console displays:

BNK 82, ADR 37AF, EXP 40, GOT 48.

To locate the bad chip, you must translate these results into a map that corresponds to the 2 banks of 16 chips on the memory board.

1. The bad chip is in bank 2. The bank number comes from the last digit of the BNK field.

BANKS: 0, 1, 2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BANKS: 3, 4, 5, 6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

2. The bad chip is in the right side of the bank. The side is determined by the range into which the address--37AF, the number in the ADR field--falls.

ADDRESS RANGE:
4000-7FFF

ADDRESS RANGE:
2000-3FFF
8000-9FFF

BANKS: 0, 1, 2	x	x	x	x	x	x	x	x	X	X	X	X	X	X	X
----------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

ADDRESS RANGE:

ADDRESS RANGE:

4000-7FFF

2000-3FFF

8000-9FFF

BANKS: 3, 4, 5, 6 x x x x x x x x x x x x x x x x

3. The bad chip is D5. The bad chip shows up in the comparison of the binary representation of the hexadecimal values in the fields EXP and GOT, which contain the test expectations and performance. Any difference between the two indicates where to find the bad chip or chips.

hexidecimal binary hexidecimal binary hexidecimal binary

0	0000				
1	0001	6	0110	B	1011
2	0010	7	0111	C	1100
3	0011	8	1000	D	1101
4	0100	9	1001	E	1110
5	0101	A	1010	F	1111

EXP = 40 (hexadecimal) = 01000000 (binary)

GOT = 48 (hexadecimal) = 01001000 (binary)

EXP = 40 (hexadecimal) = 0 1 0 0 0 0 0 0 (binary)

GOT = 48 (hexadecimal) = 0 1 0 0 1 0 0 0 (binary)

ok ok ok ok ! ok ok ok

ADDRESS RANGE:

2000-3FFF

BANK 1 x x x x x x x x x x x x x X x x x

In the chip location number D5, the letter comes from the letter of the banks of chips on the memory board:

LETTER: D

BANKS: 0, 1, 2 x x x x x x x x x x x x X x x x

LETTER: C

BANKS: 3, 4, 5, 6 x x x x x x x x x x x x x x x

The number comes from the number of the chip on the memory board:

NUMBER: 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2

LETTER: D x x x x x x x x x x x x X x x x (BANKS 0, 1, 2)

C x x x x x x x x x x x x x x x (BANKS 3, 4, 5, 6)

Replace the bad memory chip(s) and run the test again. If the system fails the memory board test, exchange the memory board itself. If that dosen't help, exchange the main logic board.

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Tech Info Library Article Number:1294



Tech Info Library

Apple III Hardware: 12-volt Confidence RAM Test

Revised: 11/9/88
Security: Everyone

Apple III Hardware: 12-volt Confidence RAM Test

=====

This article last reviewed: 9 November 1988

A Confidence RAM Test for Apple IIIs is on the Confidence Disk and the Dealer Diagnostic Disk. With this test, you can locate bad chips on a 12-volt board.

--> NOTE: Before running the Confidence RAM test, remove all peripheral cards from the Apple III, especially any ProFile interface cards and Grappler printer cards.

The test results show the bank, address, and test expectations and actual performance. For example, after the test, say the console displays:

BNK 82, ADR 67AF, EXP 40, GOT 48.

To locate the bad chip, you must translate these results into a map that corresponds to the 3 banks of 16 chips on the memory board.

1. The bad chip is in bank 2. The bank number comes from the last digit of the BNK field.

BANK: 0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BANK: 1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
BANK: 2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

2. The bad chip is in the right side of the bank. The side is determined by the range that the address, 67AF, the number in the ADR field, falls into.

	ADDRESS RANGE:	ADDRESS RANGE:													
	2000-3FFF	4000-7FFF													
	8000-9FFF														
BANK 0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	ADDRESS RANGE:	ADDRESS RANGE:													
	0800-0FFF	0000-07FF													

	1800-1FFF	1000-17FF
	C000-C7FF	A000-BFFF
	D000-D7FF	C800-CFFF
	E000-FFFF	D800-DFFF
BANK 1	x x x x x x x x x	x x x x x x x

	ADDRESS RANGE:								ADDRESS RANGE:							
	2000-5FFF								6000-9FFF							
BANK 2	x	x	x	x	x	x	x	x	X	X	X	X	X	X	X	X

3. The bad chip is in location number B5. The bad chip shows up in the comparison of the binary representation of the hexadecimal values in the fields EXP and GOT, which contain the test expectations and performance. Any difference between the two is a map of where to find the bad chip or chips.

hexidecimal	binary	hexidecimal	binary	hexidecimal	binary
0	0000				
1	0001	6	0110	B	1011
2	0010	7	0111	C	1100
3	0011	8	1000	D	1101
4	0100	9	1001	E	1110
5	0101	A	1010	F	1111

```
EXP = 40 (hexadecimal) = 01000000 (binary)
GOT = 48 (hexadecimal) = 01001000 (binary)
```

```

EXP = 40 (hexadecimal) = 0 1 0 0 0 0 0 0 (binary)
GOT = 48 (hexadecimal) = 0 1 0 0 1 0 0 0 (binary)
                        ok ok ok ok ! ok ok ok

```

ADDRESS RANGE:
6000-9FFF

BANK 2 x x x x x x x x x x x x x X x x x

In the chip location number B5, the letter comes from the letter of the banks of chips on the memory board:

LETTER: D
BANK: 0 x x x x x x x x x x x x x x x x x x

LETTER: C
BANK: 1 x x x x x x x x x x x x x x x x

LETTER: B
BANK: 2 x x x x x x x x x x x x X x x x

The number comes from the number of the chip on the memory board:

NUMBER: 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
LETTER: D x x x x x x x x x x x x x x x (BANK 0)

C	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	(BANK 1)
B	x	x	x	x	x	x	x	x	x	x	x	x	X	x	x	x	(BANK 2)	

Replace the bad memory chip(s) and run the test again. If the system fails the memory board test, exchange the memory board itself. If that dosen't help, exchange the main logic board.

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Tech Info Library Article Number:1295



Tech Info Library

AppleWriter WPL: Using AUTOLETTER to print mailing labels

Revised: 9/27/85
Security: Everyone

AppleWriter WPL: Using AUTOLETTER to print mailing labels

=====

You can use AppleWriter to print out mailing labels, using the address list of the WPL program AUTOLETTER that resides on the AppleWriter master diskette. Modify AUTOLETTER so that it reads as follows:

```
START    PSX1
LOOP     NY
        L .D1/FORMLLETTER
        B
        F/(ADDRESS)//
        Y$
        L .D1/ADDRS!<(X)>!<N
        PGO FOUND
        PGO QUIT
FOUND    PNP
        PSX +1
        PGO LOOP
QUIT     PIN Done at address (X) (press return)
        NY
```

1. Save this as AUTOLABELS on the disk with the form letter and address list.
2. Press CTRL-N, type y, and press RETURN.
3. Type in the following four lines, which show carriage returns:

```
(ADDRESS)]
]
]
]
```

4. Save this file as FORMLLETTER on the disk with AUTOLABELS.
5. Press CTRL-N, type y, and press RETURN.
6. Make sure that your printer parameters are set at the following:

Printed Lines (PL)=4
Page Interval (PI)=4

The rest of the printer parameters must be set in accordance with the printer you are using.

You can now run the AUTOLABELS program in the same way you run any WPL program.

Remember, the file to run is AUTOLABELS, not AUTOLETTER. Make sure that the disk with AUTOLABELS, FORMLETTER AND ADDRS is in the internal drive on an Apple III or in the current prefix volume on a IIe or IIc.

Apple Technical Communications

Tech Info Library Article Number:1296



Tech Info Library

Apple II Pascal: Disk directory structure

Revised: 9/27/85
Security: Everyone

Apple II Pascal: Disk directory structure

```
=====

Const
  maxdir=    77;  {Maximum number of entries in directory}
  vidleng=    7;  {Number of characters in volume ID}
  tidleng=   15;  {Number of characters in title ID}
  fblksize= 512;  {Standard disk block length}
  dirblk=     2;  {Directory starts at this disk-block address}

TYPE
  datarec=
    PACKED RECORD
      month: 0..12;  {0 implies meaningless data}
      day:   0..31;  {Day of the month}
      year:  0..100; {100 implies the dated volume is temporary}
    END {datarec};

  vid=
    string[vidleng];

  dirrange=
    0..maxdir;

  tid=
    string[tidleng];

  filekind=
    {untyped, xdskfile, codefile, textfile, infofile, datafile,
     graffile, fotofile, securedir};

  direntry=
    PACKED RECORD
      dfirstblk: integer; {1st physical disk address}
      dlastblk: integer;  {Points at block following last used block}
      CASE DFKind: filekind of
        Securedir, untypedfile: {Only in dir[0] - this is volume info}
          [Filler1: 0..2048; {waste 13 bits for compatability}
           dvid:     vid;    {name of disk volume}
        else
          ;
```

```
    deovblk:    integer;      {last block in volume}
    dnumfiles:  dirrange;     {number of files in directory}
    dloadtime:  integer;      {Time of last access}
    dlastboot:  daterec];     {Most recent date setting}

    xdskfile, codefile, textfile, infofile, datafile,
    graffile, fotofile:      {regular file info}
    [filler2:    0..1024;     {waste 12 bits for compatability}
    status:      boolean;     {for filer wildcards}
    dtid:        tid;         {title of file}
    dlastbyte:   1..fblksize; {Number of bytes in files last block}
    daccess:     daterec];     {date of last modification}
    END; {case dfkind; direntry}
```

```
directory =
    ARRAY[dirrange] of direntry;
```

To use this information, do a UNITREAD on the desired volume.

For example,

```
PROGRAM ShowHow;
```

All of the above declarations plus:

```
VAR
    DirInfo: Directory;
    UnNum: Integer

BEGIN
    UnNum:=4;
    UNITREAD(UnNum,DirInfo,SIZEOF(DirInfo),2);
END.
```

This program reads the directory information on volume 4 and stores it in the Directory variable DirInfo. The last parameter, 2, indicates to UNITREAD to start reading with block 2, where the directory information starts.

With Pascal 1.3, you can chain to and from the filer and thereby easily handle files within programs.

Pascal Technote #4

Tech Info Library Article Number:1297



Tech Info Library

Apple II, II+, IIe, IIc: ASCII characters, values & keystrokes

Revised: 10/23/86
Security: Everyone

Apple II, II+, IIe, IIc: ASCII characters, values & keystrokes

=====

The following table contains the ASCII codes generated by pressing a key or combination of keys on the Apple II, Apple II Plus, Apple IIe, Apple IIc, and Enhanced Apple IIe. The character names come from the American Standard Code for Interchange of Information. Certain peripherals or programs or functions, such as the BASIC function CHR\$, may require the decimal values; certain peripherals or programs may require the hexadecimal values as well.

The fourth column in the table below is for simple keystrokes or those made with the SHIFT key held down; the fifth and sixth columns are for those made either with the CTRL key held down or with both the SHIFT and CTRL keys held down simultaneously.

NOTE: An asterisk next to keystrokes or character names means that the Apple II and Apple II Plus can't generate that character from its keyboard. The double asterisk indicates a special case.

The comments column defines the non-printing ASCII characters.

Char	Dec	Hex	Keystrokes		Holding down:	Comments
			Regular		CTRL SHIFT-CTRL	
NUL	00	00			@ **	null character
SOH	01	01		a	A	start of header
STX	02	02		b	B	start transmission
ETX	03	03		c	C	end of text
EOT	04	04		d	D	end of transmission
ENQ	05	05		e	E	enquire
ACK	06	06		f	F	acknowledge
BEL	07	07		g	G	bell
BS	08	08	Left-arrow	h	H	back space
HT	09	09	Tab	i	I	horizontal tab
LF	10	0A	Down-arrow	j	J	line feed
VT	11	0B	Up-arrow	k	K	vertical tab
FF	12	0C		l	L	form feed
CR	13	0D	Return	m	M	carriage return
SO	14	0E		n	N	shift out

SI	15	0F		o	O	shift in
DLE	16	10		p	P	data link escape
DC1	17	11		q	Q	device C 1
DC2	18	12		r	R	device C 2
DC3	19	13		s	S	device C 3
DC4	20	14		t	T	device C 4
NAK	21	15	Right-arrow	u	U	negative acknowledge
SYN	22	16		v	V	synchronous idle
ETB	23	17		w	W	end of text block
CAN	24	18		x	X	cancel
EM	25	19		y	Y	end of medium
SUB	26	1A		z	Z	start subroutine
ESC	27	1B	Escape	[*	{ *	escape
FS	28	1C		\ *	| *	file separator
GS	29	1D		] *	} *	group separator
RS	30	1E			^	record separator
US	31	1F			_ *	unit separator
SP	32	20	Space Bar			space
!	33	21				
"	34	22				
#	35	23				
\$	36	24				
%	37	25				
&	38	26				
'	39	27				
(	40	28				
)	41	29				
*	42	2A				
+	43	2B				
,	44	2C				
-	45	2D				
/	47	2F				
0	48	30				
1	49	31				
2	50	32				
3	51	33				
4	42	34				
5	43	35				
6	44	36				
7	45	37				
8	46	38				
9	57	39				
:	58	3A				
;	59	3B				
<	60	3C				
=	61	3D				
>	62	3E				
?	63	3F				
@	64	40				
A	65	41				
B	66	42				
C	67	43				
D	68	44				

E	69	45
F	70	46
G	71	47
H	72	48
I	73	49
J	74	4A
K	75	4B
L	76	4C
M	77	4D
N	78	4E
O	79	4F
P	80	50
Q	81	51
R	82	52
S	83	53
T	84	54
U	85	55
V	86	56
W	87	57
X	88	58
Y	89	59
Z	90	5A
[*	91	5B
\ *	92	5C
] *	93	5D
^	94	5E
_ *	95	5F
` *	96	60
a	97	61
b	98	62
c	99	63
d	100	64
e	101	65
f	102	66
g	103	67
h	104	68
i	105	69
j	106	6A
k	107	6B
l	108	6C
m	109	6D
n	110	6E
o	111	6F
p	112	70
q	113	71
r	114	72
s	115	73
t	116	74
u	117	75
v	118	76
w	119	77
x	120	78
y	121	79

z		122	7A	
{	*	123	7B	
|	*	124	7C	
}	*	125	7D	
~	*	126	7E	
DEL	*	127	7F	Delete

* The Apple II and Apple II Plus can't generate
that charcter from the keyboard.

** Use SHIFT-P.

Apple Technical Communications

Tech Info Library Article Number:1298



Tech Info Library

ColorMonitor IIC, ColorMonitor IIE: Specs (Discontinued)

Revised: 9/14/93
Security: Everyone

ColorMonitor IIC, ColorMonitor IIE: Specs (Discontinued)

=====

I. Technical Specifications

A. Picture Tube

1. 14-inch diagonal (13 inch view)
2. Dot pitch: 0.52mm
3. High contrast (black matrix)

B. Input Signal:

1. Composite (NTSC) only
2. Synchronous negative
 - 1.0 +/- 0.5-volts peak to peak
 - internally terminated with 75 ohm resistor.
3. Input connector: RCA (phono) jack

C. User Controls:

1. Front:
 - Power switch
 - High resolution (white only) button
 - Brightness
 - Contrast
 - Color (hue intensity)
 - Tint
2. Rear:
 - Vertical size
 - Vertical hold
 - Horizontal hold
3. Side: Power switch of ColorMonitor IIC

D. Scanning Frequencies

	Horizontal Scan	Vertical Scan
1. NTSC/60	15.734 kHz	60 Hz

2. NTSC/50-PAL/50 15.659 kHz 50 Hz

E. Color Reference Frequency

1. NTSC/60 Hz: 3.579545 MHz
2. NTSC/50 Hz: 3.562456 MHz
3. PAL/50 Hz: 4.433618 MHz

F. Video Bandwidth

	Text Video (Monochrome)	Graphics Video (Color)
1. NTSC	8.0 MHz	3.0 MHz
2. PAL	8.0 MHz	3.8 MHz

G. Physical Dimensions:

1. Weight: 27.56 lbs (12.5kg) maximum

	inches IIE/IIc	centimeters IIE/IIc
2. Width:	14.4/13.4	36.7/34.0
3. Height:	12.4	31.5
4. Depth:	14.4	36.5

H. Power Consumption:

1. 50 watts normal at 120VAC
2. 75 watts maximum
3. Fuse Protection:
 - The monitor contains internal power line fuse protection.
This fuse should be replaced with the same type by a
qualified service technician.

I. Input Voltage

	Model	Operating Range	Power Frequency
1.	120v	108-132	50-60 Hz
2.	220v	198-242	50-60 Hz
3.	240v	216-264	50-60 Hz

NOTE: Input voltage is not adjustable within the monitor.

J. Environment:

	Degrees	
	Fahrenheit	Celsius
1. Operating:	41 to 86	5 to 30
2. Storage:	-31 to 140	-35 to 60

II. System Configuration

A. ColorMonitor IIE:

1. Apple II
2. Apple II Plus
3. Apple IIE

B. ColorMonitor IIC: Apple IIC

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Tech Info Library Article Number:1299



Tech Info Library

ImageWriter II: Specifications

Revised: 6/28/94
Security: Everyone

ImageWriter II: Specifications

=====

This article last reviewed: 29 September 1987

I. Technical Specifications

A. Printing Specifications:

1. Method: Impact dot matrix, logic seek (line by line)
2. Maximum Speed (characters per second at characters per inch):
 - a. Draft mode: 250 cps @ 10 cpi
 - b. Correspondence mode: 180 cps @ 10 cpi
 - c. Near Letter Quality mode: 45 cps @ 10 cpi
3. Maximum Line Length: 8 inches
4. Paper Feed Direction: Forward and reverse
5. Maximum Line Feed Speed: 24 lps @ 6 lpi
6. Paper Feed Method:
 - a. friction
 - b. friction/pin-feed
7. Ribbon:
 - a. Black ribbon
 - continuous fabric
 - 13 by 13000mm
 - Capacity: 2 million characters
 - b. Color ribbon
 - Four colors: magenta, cyan, yellow, black
 - continuous
 - 21 by 18000mm

B. Character Specifications:

1. Dot Matrices for each Character Format:

	dots wide	dots high
a. Standard:	7	8
b. Draft:	12	8
c. Near Letter Quality:	16	16
d. Custom:	16 max.	8 max.

-- Custom fonts are user-programmable and loaded down to the ImageWriter II.

2. Standard Character Sets:

- a. ASCII (alphanumeric and symbols): 96
- b. European language characters: 28
- c. Mouse Text characters: 32

3. Vertical Dot Spacing: 1/72 of an inch

4. Horizontal Pitches and Graphic Densities:

	Characters per inch	Characters per line	Dots per inch (approx)
a. 17	136	136	136
b. 15	120	120	120
c. 13.4	107	107	107
d. 12	96	96	96
e. 10	80	80	80
f. 9	72	72	72
g. Proportional-1	variable	160	160
h. Proportional-2	variable	144	144

5. Line Spacing:

- 1/144 to 99/144 of an inch
- selectable in increments of 1/144 of an inch

C. Paper Specifications

1. Width:

- 3.5 to 9.5 inches pin to pin (pin feed),
- 10 inches maximum

2. Thickness:

- 0.002 - 0.011 inch or 0.05 - 0.28 millimeters
- Original + 3 copies maximum

3. Types:

- a. Single sheets
- b. Pin-feed paper
 - 4.0 to 9.5 inches between hole centers

D. Power Specifications:

1. Options:

- a. American 120 VAC +/- 10%, 60 Hz; amp requirements (maximum

power utilization): 2 amps

b. Universal:

1. 100 VAC +/- 10%, 50/60 Hz
2. 120 VAC +/- 10%, 50/60 Hz
3. 140 VAC +/- 10%, 50/60 Hz
4. 200 VAC +/- 10%, 50/60 Hz
5. 220 VAC +/- 10%, 50/60 Hz
6. 240 VAC +/- 10%, 50/60 Hz

2. Consumption:

- a. Operating: 180 watts maximum
- b. Standby: 20 watts maximum

E. Interface Specifications:

1. Data Input Form: RS-232 8-bit asynchronous serial

- 1 start bit
- 8 data bits
- 1 stop bit (no parity)

2. Data Input Codes:

- a. Characters: ASCII, 8- or 7-bit
- b. Graphics: 8-bit binary

3. Transmission speeds: 300, 1200, 2400, or 9600 baud

4. Input Buffer Size: 2K bytes, 32K bytes with 32K Memory Option

5. Connections: Mini-circular connector, 8-pin socket or equivalent

6. Cable Connector: Mini-circular connector, 8-pin plug or equivalent

F. Physical Dimensions:

1. Weight: 25 pounds (11.36 kilograms)

inches millimeters

2. Width: 17.0 431.8

3. Height: 12.0 304.8

4. Depth: 5.0 127.0

G. Environmental Specifications:

1. Ambient Temperature:

Degrees

Fahrenheit Celsius

a. Operating: 50 to 104 10 to 40

b. Storage: -40 to +116 -40 to 40

2. Humidity:

- a. Operating: 20% to 95% relative humidity, noncondensing
- b. Storage: 10% to 95% relative humidity, noncondensing

3. Acoustics, Operating:

- 55 dBa maximum sound pressure at by-stander position
(as defined in American National Standard document
ANSI S1.29-1979)

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Tech Info Library Article Number:1300



Tech Info Library

ImageWriter II: Pinouts & Switch Settings

Revised: 9/27/85
Security: Everyone

ImageWriter II: Pinouts & Switch Settings

Switch settings:

```

                                     Switch SW1
                                     1   2   3   4   5   6   7   8
Character Sets:
  English (US)      Off Off Off
  Italian           On  Off Off
  Danish            Off On  Off
  English (UK)      On  On  Off
  German            Off Off On
  Swedish           On  Off On
  French            Off On  On
  Spanish           On  On  On
Page length:
  66 lines (11 inch)      Off
  72 line (12 inch)      On
Perforation skip
  inactive              Off
  active                On
Character Pitch:
  160 DPI (Proportional) Off Off
  12 CPI                On  Off
  17 CPI                Off On
  10 CPI                On  On
Auto linefeed after CR:
  Enable                                On
  Disable                             Off
                                     1   2   3   4   5   6   7   8
                                     Switch SW2
                                     1   2   3   4
Baud Rate:
  300      Off Off
  1200     On  Off
  2400     Off On
```

9600	On	On		
Data Protocol:				
XON/XOF			On	
DTR			Off	
Option card				
Disabled				Off
(No option card)				
Enabled			On	
	1	2	3	4

KEY: Off = Open; On = Closed

WARNING: DO NOT CHANGE DIP switches SW 2-5 and SW 2-6: they control the timing of the firing of the hammer and are therefore preset at the factory.

Pinouts:

Pin No.	Symbol	Description	Direction
1	DTR	Data Terminal Ready	Output
2	DSR	Data Set Ready	Input
3	TxD-	Transmit Data-	Output
4	SG	Signal Ground	
5	RxD-	Receive Data-	Input
6	TxD+	Balanced Transmit+	Output
7	NC	No Connection	
8	RxD+	Balanced Receive+	Input
Shield	PG	Protective Ground	

Apple Technical Communications

Tech Info Library Article Number:1301



Tech Info Library

Omnis: Printing Labels With ImageWriter

Revised: 11/20/87
Security: Everyone

Omnis: Printing Labels With ImageWriter

=====

This article last reviewed: 18 November 1987

To print labels from Omnis 3 or Omnis 3 Plus to any type of ImageWriter, you must set up the application to override form feeds. (It's not necessary to modify the printer driver.)

1. Go into Report Parameters and change the lines per page from the default value of 66 lpp to 0 lpp.
2. In the report layout, for every record, define the report to have as many lines as you desire on the label (at six lines per inch).
3. When setting label (page) size, make sure the size specified is the same distance from the top of one label to the top of the next.

Tech Info Library Article Number:1302



Tech Info Library

Apple Personal Modem: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple Personal Modem: Specifications (Discontinued)

=====

I. Technical Specifications

A. FCC registration Number: BCG794-12381-DM-E

B. Ringer Equivalence Number: 0.4B

-- The total number of ringer equivalence numbers on any one telephone line may not exceed 5.0.

C. Self-test:

-- The modem executes a brief self-test when first powered up, and sounds a short "BEEP" if all tests pass. This test and response cannot be disabled.

D. Data format

1. Protocol: Asynchronous

2. Character Length:

a. 7 data bits:

1. Stop bits: 1 or 2

2. Parity: Odd, even, fixed: mark, space, or none

b. 8 data bits:

1. Stop bits: 1 or 2

2. No parity

4. Mode: Full duplex with echo back

E. Transmission speeds:

1. 1200 baud

a. Tolerance in character asynchronous format (DTE data rate):

1. Plus 1.0%

2. Minus 2.5 %

b. Tolerance in modulation rate: Plus or minus 0.01%

-- Frequency Shift Keying (FSK) signal modulation

2. 0-300 baud

-- Phase Shift Keying (PSK) signal modulation

-- Data and handshaking modes

-- Automatic adjustment to correct baud rate for receiving

-- Bell System Tech Reference 412145 - 103 / 212A modem specification

F. Interface: RS-232-C, with mini-circular 8-pin connector

G. Operating modes:

1. Auto or manual dial (including redial)

a. Tone: DTMF (Dual Tone Multi-Frequency - "Touch Tone")

1. Frequency tolerance: +/- 1/0%

2. Tone Balance: Within 3dB

b. Pulse (Rotary)

1. Dialing Rate: 10 pps

2. Dialing Duty Cycle = 40%/60% Mark/Break Ratio

2. Auto or manual answer

H. Receiver Dynamic Range: -10 to -45 dBm full duplex

I. Transmitter level:

-- -10dB, fixed

-- as per FCC Interconnect Specification, Part 68

J. Environmental specifications:

	Degrees	
	Fahrenheit	Celsius
1. Operating:	13 to 13	0 to 45
2. Storage:	-4 to 149	-20 to 65

K. Line monitoring:

1. Audio

-- Adjustable volume

2. Software

-- Prints status messages to computer

3. Visual

-- A single small indicator on the modem lights when the unit is

"on line", or communicating with another modem. It serves the function of a RS-232 DCD (Data Carrier Detect) status indicator.

L. Connectors:

1. Two RJ-11 modular telephone jacks

-- Either jack can be connected to the telephone line, since the modem internally configures itself when it detects the telephone system voltage so that the other jack can be used for a telephone set.

2. Detachable head AC plug

3. Mini-circular 8-pin jack

M. Compatibilty

1. Complete set of Hayes modem command instructions

II. System Configuration

A. Computer

1. Apple II, Apple II+, or Apple IIe

-- with Super Serial Card or compatible serial interface

2. Apple IIc with a serial number of 510,000 or lower

-- Contact Authorized Apple Dealer for information on a free upgrade.

3. Apple IIc with a serial number greater than 510,000

4. Apple III, Macintosh, Macintosh XL, or Lisa

5. A computer with an RS-232 port

B. Interface cable

-- Shielded cable from Apple (using any other type of cable might violate the FCC specification (Class B, Part 15)).

1. For Apple II, Apple II+, IIe, III, or Macintosh XL: 590-0331

2. For Apple IIc: 590-0332

3. For Macintosh = 590-0333

C. Standard single-line telephone outlet with RJ-11 modular jack

D. Appropriate communications software:

1. Access II
2. MacTerminal
3. Hayes-compatible programs

Apple Technical Communications

Tech Info Library Article Number:1303



Tech Info Library

Apple Personal Modem: Supported RS-232 data lines

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Supported RS-232 data lines

=====

Mini-		Direction	RS-232	
DIN	Function		Pin	
1	Data Set Ready (DSR)	From Modem	6	CC
2	Data Term Ready (DTR)	To Modem	20	CD
3	Receive Data (RXD)	From Modem	3	BB
4	Signal Ground		7	AB
5	Transmit Data (TXD)	To Modem	2	BA
6	Signal Ground		7	AB
7	Data Carrier Detect (DCD)	From Modem	8	CF
8	Not connected (n.c.)			

Apple Technical Communications

Tech Info Library Article Number:1304



Tech Info Library

Apple Personal Modem: The commands and what they do

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: The commands and what they do

=====

The Apple Personal Modem uses the Hayes instruction set--that is, the modem has a microprocessor inside it that controls all the functions of the unit. Any of the operating parameters, such as full/half duplex or number of rings before answer, can be set by a short command sequence; you can use similar command sequences for resetting and dialing. The modem also allows you to define certain text controls, such as line feed, carriage return, and escape characters, a very useful feature for defining specific terminal emulation for file transfer.

Command Instruction

AT	The command prefix
A	Answer command
A/	Again (repeat last) command
B	Balance (Transmit Carrier Level) command
C	Transmitter Carrier On / Off command
,	Pause (Value in S8 Register) command
D	Dial command
E	Local Echo (In Command Mode) command
F	Full Duplex (Local Echo in Data Mode) command
H	On-Hook (Terminate Call / Hang Up) command
I	Inquiry (Troubleshooting) command
M	Monitor Speaker command
O	On-Line (Used with +++ command)
P	Pulse Dialing Mode command
+++	Escape command
Q	Quiet (Response Codes) command
R	Reverse Mode (Originate to Answer Only) command
S	Set Register command (see following table)
;	Return to Command Mode
T	Touch-Tone Dialing Mode command
V	Verbalize (Verbal or Terse) Responses command
X	Extend Result Codes Set command
Z	Zap (Reset) command

Registers: Default

S0	Auto-Answer	
S1	Ring Counter	
S2	Escape Character	
S3	Carriage Return Character	
S4	Line Feed Character	
S5	Backspace Character	
S6	Initial Wait	
S7	Carrier Wait	30 seconds (range 1-255 seconds)
S8	Define Pause	
S9	Carrier Detect Response Time	0.6 seconds (non-adjustable)
S10	Disconnect Timing	
S11	Touch Tone Speed	
S12	Escape Code Guard Time	
S16	Self-Test Mode;	
	Analog Loopback Test	

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Tech Info Library Article Number:1305



Tech Info Library

Hard Disk 20: Specification (Discontinued)

Revised: 9/14/93
Security: Everyone

Hard Disk 20: Specification (Discontinued)

=====

This article last reviewed: 27 September 1985

I. Technical Specifications

A. Storage Characteristics

1. Data Capacity: 20,769,280 Bytes (formatted)
2. Data Surfaces: 4
3. Heads per surface: 1
4. Blocks
 - a. Total: 39,040
 - b. Size: 532 bytes
 1. 512 bytes user data
 2. 20 bytes system data
5. Tracks
 - a. Per surface: 305
 - b. Spacing: 600 tracks per inch
6. Sectors
 - a. Per Track: 32
 - b. Per Surface: 9760

B. Drive Characteristics:

1. Average seek time: 85 milliseconds
2. Head-to-disk transfer rate: 7.5 million bits per second
3. Rotational speed: 2744 RPM
4. Drive startup time: 15 seconds

5. Drive spin-down time: 25 seconds

6. Stepper motor

C. Power Requirements:

1. Line voltage: 85 to 270 volts AC, RMS

2. Frequency: 47 to 64 Hz

3. Power: 30 watts

4. Amp requirements (maximum power utilization): 0.25 amps

D. Environmental Characteristics:

1. Temperature:

	Degrees	
	Fahrenheit	Celsius

a. Operating:	50 to 104	10 to 40
---------------	-----------	----------

b. Storing:	-104 to 122	-40 to 50
-------------	-------------	-----------

2. Relative Humidity: 20% to 80% (noncondensing)

3. Altitude: -1000 to 10,000 feet

E. Interface:

-- Transfer Rate: 500 Kilobits per second (serial)

1. DB-19 connector (to Macintosh External Disk Drive port)

2. Expansion port: DB-19 connector

-- Compatible with Macintosh external disk drive

F. Physical Specifications

1. Weight: 7 pounds (3.2 kilograms)

	inches	millimeters
--	--------	-------------

2. Width:	9.7	246
-----------	-----	-----

3. Height:	3.1	78.5
------------	-----	------

4. Depth:	10.5	266
-----------	------	-----

II. System Configuration

The Hard Disk 20 with Startup Disk can be used with any Macintosh 512K, Macintosh 512Ke, Macintosh Plus, or Macintosh SE.

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Tech Info Library Article Number:1306



Tech Info Library

Apple UniDisk 3.5: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple UniDisk 3.5: Specifications (Discontinued)

=====

Article Created: 27 Septemebr 1985

I. Technical Specifications

A. Recording Media:

1. Disk diameter: 3.5 inches
2. Recording surfaces: 2

WARNING: Disks used in UniDisk 3.5 must contain certified
DOUBLE-SIDED media.

3. Tracks per surface: 80

B. Capacities:

1. Formatted data: 800 kilobytes
2. Unformatted data: 1,246 kilobytes

C. Driver Characteristics:

1. Access Time:
 - a. Seek time (track to track): 6 milliseconds maximum
 - b. Settle time: 30 milliseconds maximum
 - c. Drive-motor start time: 600 milliseconds maximum
2. Transfer Rate: 500 Kilobits
3. Eject time: 2 seconds maximum

D. Power Consumption:

1. +12 volts

- a. Standby: 10 microamps
- b. Typical: 120 milliamps
- c. Peak: 600 milliamps during eject

2. +5 volts

- a. Standby: 170 milliamps
- b. Typical: 360 milliamps

E. Head Position Tolerance: Plus or minus 0.035 mm

F. Environmental Requirements:

1. Temperature:

	Degrees	
	Fahrenheit	Celsius
a. Operating:	40 to 120	5 to 50
b. Nonoperating:	40 to 140	-40 to 60

2. Humidity: 5% to 90%

- a. Maximum wet bulb temperature: 85 F, 29 C
- b. No condensation

G. Physical Dimensions:

	inches	millimeters
1. Length:	7.87	200
2. Width:	4.72	120
3. Height:	2.01	51

II. System Configuration:

A. Apple IIc

- A second UniDisk 3.5 can be plugged into the first
- An additional Disk IIc can be plugged into the first (or second) UniDisk 3.5

B. Apple II, Apple II Plus, Apple IIe

- With UniDisk 3.5 Apple IIe Accessory Kit
- A second UniDisk 3.5 can be plugged into the first.

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Tech Info Library Article Number:1307



Tech Info Library

Apple FORTRAN: Installing and using it on an Apple IIe

Revised: 10/21/85
Security: Everyone

Apple FORTRAN: Installing and using it on an Apple IIe

=====

To install Apple FORTRAN on an Apple IIe with 2 drives and 64K, you will need these diskettes:

1. FORTRAN diskettes:

- a. FORT1:
- b. FORT2:

2. Pascal diskettes:

- a. APPLE1:
- b. APPLE2:

--> Installing FORTRAN

1. Put APPLE1: in drive 1 and FORT1: in drive 2.
2. Turn on the Apple.
3. When the command line comes up, type F for Filer.
4. Type T for Transfer to transfer the following files from APPLE1: to FORT1:. Respond to the question Transfer what file?, by typing

APPLE1:?,FORT1:\$

Answer Y to the question to transfer files:

SYSTEM.APPLE
SYSTEM.PASCAL
SYSTEM.MISCINFO

5. Leave APPLE1: in drive 1.
6. Replace FORT1: with FORT2: in drive 2.

7. Type T for Transfer to transfer the following files from APPLE1: to FORT2:. Respond to the question Transfer what file?, by typing

APPLE1:?,FORT2:\$

Answer Y to the question to transfer files:

SYSTEM.EDITOR
SYSTEM.FILER
SYSTEM.CHARSET

8. Leave FORT2: in drive 2.

9. Replace APPLE1: with APPLE2: in drive 1.

10. Type T for Transfer to transfer the following file from APPLE2: to FORT2:. Respond to the question Transfer what file?, by typing

APPLE2:SYSTEM.LINKER,FORT2:\$

11. Leave FORT2 in drive 2.

12. Replace APPLE2: with FORT1: in drive 1.

13. Type T for Transfer to transfer the following files between FORT2: and FORT1:. Respond to the question Transfer what file?, by typing

FORT2:SYSTEM.LIBRARY,FORT1:\$
FORT1:FORTLIB.CODE,FORT2:\$

14. At the conclusion of the transfer process, FORT1: and FORT2: should contain the following files:

a. FORT1:

1. SYSTEM.APPLE
2. SYSTEM.PASCAL
3. SYSTEM.MISCINFO
4. SYSTEM.LIBRARY

b. FORT2:

1. SYSTEM.COMPILER
2. SYSTEM.LINKER
3. SYSTEM.EDITOR
4. SYSTEM.FILER
5. SYSTEM.CHARSET
6. FORTLIB.CODE1

You can check this by typing L for list, put FORT1: in drive 1 and FORT2: in drive 2. Respond to the question Dir listing of what vol? by typing

#4: (for drive 1)
#5: (for drive 2).

15. Make Backup diskettes. Refer to the Apple FORTRAN manual, page 159.

--> Using FORTRAN

1. Place FORT1: in disk drive #4: (slot 6, drive 1), and FORT2: in disk drive #5: (slot 6, drive 2). Please note at this point that diskette FORT1: will always be your boot or system diskette.

2. Turn on your Apple.

3. When the command line appears, type E to select the Edit option.

4. When this message appears:

```
>EDIT
NO WORKFILE IS PRESENT. FILE?  (<RET> FOR NO FILE <ESC-RET> TO EXIT)
```

Press RETURN for new file.

5. When this prompt line appears:

```
>EDIT: A(DJST C(PY D(LETE F(IND I(NSRT J(MP R(PLACE Q(UIT X(CHNG Z(AP
```

Type I for Insert.

6. When this prompt line appears:

```
>INSERT: TEXT[<BS> A CHAR, <DEL> A LINEII<EXT> ACCEPTS, <ESC> ESCAPES]
```

Type in this demo program starting with the FORTRAN comment line:

```
C FORTAN DEMO.
```

The format, punctuation, and spelling must be exactly as shown.

The indentation of the lines is important in FORTRAN. The indented lines must start in column seven.

```
          1          2
123456789012345678901234
C FORTAN DEMO
      DO 10 I = 1, 10
10    WRITE (*,'(I5)')I
      WRITE (*,'(I5)')I
      END
```

7. Type Control-C at end by holding down the control key first and typing C.

8. Type Q for Quit.

9. Type U to update the system work file

10. Now type R to Run the program

11. Respond to the question Listing File? by typing CONSOLE:

WARNING: If you are using Pascal 1.2, you will get an error message saying that the version numbers are incompatible. You must run the FORTRANFIX program.

To get the FORTRANFIX program, see the article FORTRAN: Using Fortran 1.0 with Pascal 1.2.

To use the FORTRANFIX program:

1. At the command line, type X for Execute.
2. Respond to the question, Execute what file? by typing
 - a. the volume name of the volume the program is on
 - b. one colon at the end of the volume name
 - c. the name of the program, FORTRANFIX
 - d. a carriage return

for example, FORT0:FORTANFIX<cr>

3. Follow the directions as they appear on the console.

Apple Technical Communications

Tech Info Library Article Number:1308



Tech Info Library

Apple DMP: Connecting It With An IBM PC, XT, AT, PS/2

Revised: 11/9/88
Security: Everyone

Apple DMP: Connecting It With An IBM PC, XT, AT, PS/2

=====

This article last reviewed: 9 November 1988

To configure the Apple Dot Matrix Printer (DMP) with an IBM PC, use the standard IBM PC parallel interface and cable to the DMP with the standard switch settings. The Apple Dot Matrix Printer has a Centronics-style 36-pin parallel printer connector. This connector is also used on all IBM parallel printers manufactured for use with the IBM PC or PS/2 product lines.

The cable needed is the IBM Parallel Printer Cable, available from IBM authorized dealers.:

Switch 1	8	7	6	5	4	3	2	1
	0	0	0	0	0	0	0	0

Switch 2	8	7	6	5	4	3	2	1
	0	0	1	0			0	0

Key: 1 = Switch Closed; 0 = Switch Open

The DMP does not use the third and fourth switches on the second bank of switches; it doesn't matter how those two are set.

Use the IBM PC parallel interface compatible with Centronics printers.

IMPORTANT: You must clip off pin 16 on the DB-25 pin cable of the interface card. The printer will only print about one page and then start printing garbage if you don't clip off pin 16, which carries the signal Init Printer.

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Tech Info Library Article Number:1309



Tech Info Library

Macintosh: Tech Info Articles (2/97)

Revised: 2/18/97
Security: Everyone

Macintosh: Tech Info Articles (2/97)

=====

Article Created: 20 November 1987
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article gives instructions on how to obtain Macintosh technical information articles.

DISCUSSION -----

Macintosh technical information can be found at the following World Wide Web sites.

Technotes: <http://devworld.apple.com/dev/technotes.shtml>

Technical Support & Reference: <http://devworld.apple.com/dev/techsupport.shtml>

Developer Notes: <http://devworld.apple.com/dev/dnotes3.shtml>

Technical Info Library: <http://til.info.apple.com/til/til.html>

Some of these sites may require a username and password, if so, there are instructions on how to obtain a username and password.

Article Change History:
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1310



Tech Info Library

ProDOS and DOS from BASIC

Revised: 10/21/85
Security: Everyone

ProDOS and DOS from BASIC

=====

The following guidelines apply equally to DOS, the predecessor of ProDOS.

Using a ProDOS command from a BASIC program extends the capability of your programs in several ways. For example, you might use deferred execution ProDOS commands to automatically display a disk's catalog, to save a backup copy of records in a file, or to save an unfinished game so you can continue it later.

To use a ProDOS command from a program, use the BASIC statement PRINT followed by the string you want to print. In this case, the string will contain a ProDOS command. To indicate that you're printing a ProDOS command rather than text, type the control character CTRL-D as the first character of the string.

This is the general form:

```
PRINT CTRL-D "ProDOS command"
```

--> ProDOS and DOS from Integer BASIC

In Integer BASIC, there is only one way to get a CTRL-D into your program: type CTRL-D right after you type the quote marks that begin the string you want to print:

```
10 PRINT "CATALOG" (There is a CTRL-D between " and C.)
```

The CTRL-D is there, although you can't see it.

CAUTION: Using the right arrow key to copy a BASIC statement will NOT copy invisible control characters. In effect, the right arrow key deletes control characters.

--> ProDOS and DOS from Applesoft

To get a CTRL-D into your program with Applesoft, you can use (1) the method above, or (2) the Applesoft CHR\$ function in the expression CHR\$(4). "4" is the argument the CHR\$ function takes to return CTRL-D in a one-character ASCII string. Set any string variable to CHR\$(4) at the

beginning of your program and print that string variable before each ProDOS command. This gives you the advantage of seeing the CTRL-D in your code and the convenience of fixing it in only one place if you've declared it improperly. Using the variable in a PRINT statement, CTRL-D from a CHR\$ functions looks like this:

```
5 REM VALID ONLY WITH APPLESOFT
10 D$=CHR$(4)
20 PRINT D$;"CATALOG"
```

The string variable name is D as a reminder of the control character it contains.

You can omit the semicolon. The semicolon after D\$ is optional. When your program has many ProDOS commands in PRINT statements, you'll save typing time and memory space by omitting the semicolon. Without a semicolon, line 20 looks like this:

```
20 PRINT D$"CATALOG"
```

There are three things you should watch out for while using ProDOS commands from Applesoft programs

1. Be sure you have only one ProDOS command per PRINT statement
2. Be sure a carriage return is the last character printed before printing a CTRL-D. If the statement before a ProDOS command ends with a semicolon, a tab character, or a comma, the ProDOS command will not go to the ProDOS command interpreter. When your program unexpectedly prints a ProDOS command instead of executing it, look for a program statement that ends with a semicolon

If you set your D\$ variable to precede CTRL-D with a carriage return (i.e., 10 D\$=CHR\$(13)+CHR\$(4)), this D\$ WILL CAUSE PROBLEMS WHEN YOU WRITE OR APPEND TEXT, INTRODUCING UNWANTED CARRIAGE RETURNS.

3. Remember that some ProDOS commands work only in programs. The ProDOS commands that can be issued only in deferred execution are APPEND, OPEN, POSITION, READ, and WRITE.

Apple Technical Communications

Tech Info Library Article Number:1311



Tech Info Library

Racal-Vadic VA212LC modem: Using it with Apple Computers

Revised: 2/10/93
Security: Everyone

Racal-Vadic VA212LC modem: Using it with Apple Computers

=====

Article Created: 21 October 1985

Article Change History

02/09/93 - UPDATED

- Racal-Vadic changed name to Racal Datacom.

Modem type:

AT&T 103/212A series; 1200 or 300 bps

Instruction set used:

None.

Hardware configuration:

Five front panel status indicators. Modem is answer-only, with external dial telephone needed to originate call. Control buttons on front select either voice or data mode/voice mode disables answer operation.

Software configuration:

No software controls for modem.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software,;Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

NOTE: This modem cannot originate calls - external telephone is needed if user wishes to dial out.

Racal-Vadic is now Racal Datacom.

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Tech Info Library Article Number:1312



Tech Info Library

Anderson Jacobson AJ 1259 modem: Using it with Apple Computers

Revised: 10/21/85
Security: Everyone

Anderson Jacobson AJ 1259 modem: Using it with Apple Computers

=====

Modem type:

Vadic 3400 and AT&T 103/212A series; 1200 (2 modes), 0-300 bps.

Instruction set used:

None.

Hardware configuration:

Eight LED indicators and two switches on front panel give modem/data status and control modem functions. Telephone set is needed to originate calls using telephone for dialing. Once number has been dialed, modem is selectable to either high speed (Vadic 3400 or AT&T 212) or low speed modes.

Software configuration:

No command structure..

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with

modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

NOTE: External telephone is needed for dialing called numbers.

Apple Technical Communications

Tech Info Library Article Number:1313



Tech Info Library

Anderson Jacobson AJ 1235 acoustic data coupler/modem

Revised: 10/21/85
Security: Everyone

Anderson Jacobson AJ 1235 acoustic data coupler/modem

=====

Modem type:
AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:
None.

Hardware configuration:
Four LED indicators and two switches on front panel give modem/data status and control modem functions. Modem runs off of external plug-in power supply. Acoustic coupler is needed to originate calls using external telephone for dialing. Once number has been dialed, modem is selectable to either direct or acoustic telephone connection.

Software configuration:
No command structure..

Interface type:
RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):
Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:
Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:
Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:
MacTerm or other terminal software; Macintosh to Imagewriter cable with

modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

NOTE: External telephone is needed for dialing called numbers.

Apple Technical Communications

Tech Info Library Article Number:1314



Tech Info Library

LaserWriter: Issues About Using It with a VAX

Revised: 3/4/90
Security: Everyone

LaserWriter: Issues About Using It with a VAX

=====

This article last reviewed: 6 January 1988

If you wish to use a LaserWriter as a spooled printer from a VAX 780, spooling PostScript files, here are some problems you may encounter:

When you connect the printer to the VAX, each PostScript file gets appended with an EOT character to reset the printer. The EOT is echoed by the printer to the VAX. The VAX sends back a BEL character, which is often in the midst of the next job's PostScript commands. The printer flags this modified command as an error and flushes the rest of the job. The reset EOT, at the end of that job, repeats the confusion.

If the EOT is omitted, the printer's Job Timeout period elapses and it sends error messages to the VAX's spooler, which further confuses it.

There is no way to suppress the printer's acknowledgement. From the PostScript Language Reference Manual: "Certain character codes serve special purposes, such as Control-D to mark end-of-file. The server performs a job by reading and executing a PostScript program from the serial channel. When it reads the end-of-file character and the program terminates, the server sends an end-of-file character, and ends the job, and starts a new one."

Q. Can the printer's timeout messages be suppressed?

A. The printer's timeout and job flush message is being generated by the LaserWriter in response to the Control-G from the spooler. The LaserWriter's PostScript command interpreter does not understand the Control-G and generates an error. And, unfortunately, the spooler does not know the printer is in a timeout/flush mode and continues to send data to the printer. Error messages from the LaserWriter are generated spontaneously and are directed to the standard output file and can not be suppressed.

Q. Is it possible to switch to and from the Diablo emulation mode via Postscript commands, or can an emulation program be download as part of a job?

A. Yes, you can change the LaserWriter into Diablo 630 mode from PostScript mode. Below is a short PostScript routine that places the LaserWriter into Diablo 630 emulation mode for the remainder of the job (until ^D is received). This is the same Diablo emulation that can be selected with the side-panel switch setting, except for one limitation: when Diablo mode is selected from software, the serial port remains sensitive to the seven control characters ^C^D^T^S^Q and CR,LF. Diablo 630 output uses some of these codes, so the potential for problems is fairly high.

The Diablo emulator has some limitations, such as portrait mode only. If you want to get landscape printing, to change the type size or lines-per-page, or to emulate some other daisywheel printer, search this database under POSTSCRIPT AND DAISYWHEEL EMULATOR to get a generalized PostScript program that provides a framework for building any daisywheel emulator.

```
--
%!
%PostScript code to call Diablo emulator from AppleTalk or serial input stream
% This code should go on the front of a Diablo file.
```

```
/doDiablo {/printpageflag false def
    {statusdict begin
        62 eescratch fontname
        61 eescratch dup 0 eq {pop 1} if fontname
        60 eescratch
        59 eescratch
                                /diablo load
    end
    exec
} stopped pop
printpageflag {showpage} if
    } def

/fontname {$idleTimeDict begin
    dup ROMnames length ge {pop 0} if
    ROMnames exch get
end
    } def
```

```
doDiablo
```

```
--
```

Q. The printer is connected via a serial 9600-baud line and may be shared by PCs via either a manual switch or a "smart" Logical connection printer sharer. Is there a better way to make this connection?

A. You may want to consider using DTR for the handshake, which eliminates the need for two-way communications with the LaserWriter. This way, the spooler can neither confuse nor be confused with extra control characters. To use DTR on the LaserWriter, the LaserWriter's ROMs must be rev 2.0.

TRADEMARK NOTICE:

PostScript is a trademark of Adobe Systems Incorporated

Diablo 630 is a trademark of Xerox Corp.

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Tech Info Library Article Number:1315



Tech Info Library

Lisa Pascal: Printing text from a program

Revised: 10/21/85
Security: Everyone

Lisa Pascal: Printing text from a program

=====

Here is an example illustrating printing from a Pascal program:

```
program Print__Output;  
  var OutFile: text;  
  
begin  
  Rewrite (OutFile, '-printer'); {Declare the printer as a file named OutFile}  
  Writeln (OutFile, 'This is a test.') {Output goes to the printer}  
  Close (Outfile) {Close the file "printer"}  
end. {Print_Output}
```

Apple Technical Communications

Tech Info Library Article Number:1316



Tech Info Library

LisaTest 2.2: Errors When Testing Macintosh Hard Disks

Revised: 11/9/88
Security: Everyone

LisaTest 2.2: Errors When Testing Macintosh Hard Disks

=====

This article last reviewed: 9 November 1988

Under the following situations, LisaTest 2.2 can't test a hard disk formatted for Macintosh software:

1. If a Macintosh-formatted hard disk is attached to the system when you startup LisaTest 2.2. (The system will hang.)
2. If you connect your Macintosh-formatted ProFile after booting LisaTest, and afterwards choose test ProFile. (Error message #3 is displayed.)

Two later releases of LisaTest fix this problem:

1. LisaTest Version 3.0, which can test Macintosh-formatted hard disks.
2. Macintosh XL/Lisa Modification Test Version 1.0, which can test Macintosh-formatted hard disks and contains the square pixel screen driver for use on those Lisas or Macintosh XLs that have the Macintosh XL Screen Kit installed in them.

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Tech Info Library Article Number:1317



Tech Info Library

LisaGraph: Coefficient of Determination

Revised: 7/30/87
Security: Everyone

LisaGraph: Coefficient of Determination

=====

In the LisaGraph 7/7manual, the bottom paragraph on page 82 states:

"Lisa places a number near the end point of the line on the right side of the chart, called the correlation coefficient or confidence factor (r-squared)."

This value placed at the end of the regression line is actually the r-square value or the coefficient of determination.

Tech Info Library Article Number:1318



Tech Info Library

Anchor Signalman Express modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Anchor Signalman Express modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series, 1200/300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Eight LED indicators on front panel give modem and data status. Internal back-up battery provides RAM power for auto-dial number storage in memory. Modem runs off of external +12V plug in power supply. Built-in speaker with front panel volume control is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (with serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with
modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for
hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1319



Tech Info Library

Anchor Volksmodem 12 modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Anchor Volksmodem 12 modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:

Limited HAYES Compatible with only the S0 through S5 register functions supported.

Hardware configuration:

Two LEDs on the modem's front indicate HS (high-speed, 1200 bits/sec) and CD (carrier detect) functions. Modem runs off of +12V plug in power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor-controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 signal interface with unique five pin DIN connector; full duplex operation. Special Anchor Volkscable cables allow connection to all Apple computers.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; Anchor cable type A-12 for hardware connection.

Apple IIc:

Access II or other terminal software; Anchor cable type H for hardware connection.

Apple III:

Access III or other terminal software; Anchor cable type A-12 for hardware connection.

Macintosh:

..TIL01320-Anchor_Volksmodem_12_modem-Using_it_with_all_Apples.pdf

MacTerm or other terminal software; Anchor cable type G for hardware connection.

Macintosh XL:

MacTerm or other terminal software; Anchor cable type A-12 for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1320



Tech Info Library

Anderson Jacobson AJ 1212-AD1 modem: Using it with all Apples

Revised: 8/22/94
Security: Everyone

Anderson Jacobson AJ 1212-AD1 modem: Using it with all Apples

=====

Article Created: 21 October 1985
Article Reviewed/Updated: 22 August 1994

TOPIC -----

This article describes the Anderson Jacobson AJ 1212-AD1 modem and how it can be used with a variety of Apple computers.

DISCUSSION -----

Modem type:
AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:
Proprietary Anderson Jacobson command control structure.

Hardware configuration:

Eight LED indicators and six switches on front panel give modem/data status and control modem fuctions and tests. Modem runs off of external plug-in power supply. Non-volatile memory retains stored numbers and configuration data. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor-controlled intelligent modem with stored number, auto-dial, and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface
(with serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem
eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware
connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem
eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware
connection.

NOTE: Pull-down functions of MacTerm will not work, since they're Hayes
instruction set commands. Typing in the correct command will work,
though; refer to the modem commands provided in the user manual.

Article Change History:

22 Aug 1994 - Revised formatting.

Support Information Services

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Tech Info Library Article Number:1321



Tech Info Library

ARK 24K modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

ARK 24K modem: Using it with all Apples

=====

Modem type:

AT&T 103, 113 / 212 Series with 2400, 1200, 600, 0-300 bps.

Instruction set used:

Hayes command set or ARK command set with additional HELP commands available.

Hardware configuration:

Ten front panel control switches and ten LED indicators give modem, data, and test result status. Lithium battery backed-up RAM retains auto-dial number storage and modem configuration data in memory. Modem runs off of 117VAC, 60 Hz.

Software configuration:

Microprocessor controlled intelligent modem with 1K transmit data buffer, number storage, auto-dial and auto-answer functions. Terminal data speed independent of modem speed.

Interface type:

Synchronous and asynchronous RS-232 DB-25S (DCE) connectors, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

..TIL01323-ARK_24K_modem-Using_it_with_all_Apples_(TA30139).pdf

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1323



Tech Info Library

Cermetek 1200 Modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Cermetek 1200 Modem: Using it with all Apples

=====

Modem type:

AT&T 103 / 212A series; 1200, 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Seven LED indicators on front panel give modem and data status. Front panel switches allow voice or data operation. Call progress circuits detect dial, busy, ring-back, modem answer, or human voice. Modem runs off 117VAC, 60Hz.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

..TIL01324-Cermetek_1200_Modem-Using_it_with_all_Apples_(TA30147).pdf

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1324



Tech Info Library

Cermetek APPLE-MATE 1200: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Cermetek APPLE-MATE 1200: Using it with all Apples

=====

Modem type:

AT&T 103 / 212A series; 1200, 300, 0-110 bps.

Instruction set used:

HAYES command set compatible with terminal emulator firmware on card.

Hardware configuration:

Plug-in modem board for the Apple II, IIe series computers. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with internal ROM terminal emulator firmware (addressing card initiates program), number storage, auto-dial and auto-answer functions.

Interface type:

RJ-11 telephone interface.

Modem interface packages, by computer:

Apple II+ or IIe:

Built-in terminal software; RJ-11 telephone cable interface for hardware connection.

Apple IIc:

Not useable.

Apple III:

Not useable.

Macintosh:

Not useable.

Macintosh XL:

Not useable.

..TIL01325-Cermetek_APPLE-MATE_1200-Using_it_with_all_Apples_(TA30155).pdf

Apple Technical Communications

Tech Info Library Article Number:1325



Tech Info Library

Cermetek Security Modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Cermetek Security Modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 300, 0-110 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Seven LED indicators on front panel give modem and data status. Front panel switches allow voice/data operation and password locking. Four levels of security offered--none, password validation, password validation with callback, or password validation with call-back on a second phone line. Call progress circuits detect dial, busy, ring-back, modem answer, or human voice. Internal RAM has back-up power for number retention up to one year (no power condition). Modem runs off of 117VAC, 60Hz.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions. Security codes provided for up to 25 different users with call audit for security monitoring.

Interface type:

RS-232 DB-25S (DCE) connector, full duplex operation. Two phone lines supported for password call-back on second ('secure') line.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1326



Tech Info Library

Datec PAL 212 modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Datec PAL 212 modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:

Limited implementation of the HAYES command set. Only the S0, S2 and S7 registers are used, as well as other abbreviations in the command control structure.

Hardware configuration:

Five LED indicators on front panel give modem and data status. Modem runs off of external plug-in power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment). for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1327



Tech Info Library

Datec PAL 212SA modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Datec PAL 212SA modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Ten LED indicators on front panel give modem and data status. Internal memory allows up to 10 user phone numbers to be stored. Modem runs off of external plug-in power supply. Internal jumpers and switches allow the modem to be hard-wired to any specific configuration otherwise supported by the command set. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software;. straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with

modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1328



Tech Info Library

Datec PAL 212SC modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Datec PAL 212SC modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps..

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Rack-mounted (up to 16 units per rack) or stand-alone modem has ten LED indicators on front panel that give modem and data status. Non-volatile memory for number and configuration data storage. Modem runs off of external or rack power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with

modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1329



Tech Info Library

Datec PAL 212SD modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Datec PAL 212SD modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps..

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Rack-mounted (up to 16 units per rack) or stand-alone modem has ten LED indicators on front panel that give modem and data status. Password access control for security. Non-volatile memory for password, phone number, and configuration data storage. Modem runs off of external or rack power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with password, number storage, auto-dial, and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

..TIL01330-Datec_PAL_212SD_modem-Using_it_with_all_Apples_(TA30161).pdf

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1330



Tech Info Library

MICROCOM Era2 modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

MICROCOM Era2 modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 300, 0-110 bps.

Instruction set used:

Microcom Era2 terminal emulator and modem control software.

Hardware configuration:

Plug-in modem board for the Apple II, IIe series computers. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple II+ or IIe:

MICROCOM Era2 software, RJ-11 telephone cable interface.

Apple IIc:

Not useable.

Apple III:

Not useable.

Macintosh:

Not useable.

Macintosh XL:

Not useable.

Apple Technical Communications

Tech Info Library Article Number:1333



Tech Info Library

MICROCOM MACMODEM 2400: Using it With All Apples

Revised: 8/3/93
Security: Everyone

MICROCOM MACMODEM 2400: Using it With All Apples

=====

Article Created: 21 October 1985

- Modem type:
AT&T 103/212A series; 2400, 1200, 300, 0-110 bps.
- Instruction set used:
Hayes compatible Macmodem software provides all modem control functions.
- Hardware configuration:
Six LED indicators on front panel give modem and data status. Modem plugs into Macintosh Communications port, and terminal software provides auto-dial number storage. Modem runs off of 17VAC plug in power supply. Built-in speaker is used to monitor operation and diagnostics.
- Software configuration:
Computer controlled intelligent modem with number storage, auto-dial and auto-answer functions.
- Interface type:
Macintosh DB-9 connector, full duplex operation.

Modem interface packages, by computer:

- Apple IIe:
Not useable.
- Apple IIc:
Not useable.
- Apple III:
Not useable.
- Macintosh:
MICROCOM MACMODEM terminal software, with the modem providing the cable for hardware connection.

- Macintosh XL:
MICROCOM MACMODEM terminal software, with a DB-9 to DB-25 adapter needed to connect the modem cable to the Macintosh XL port for hardware connection.

Copyright 1985, Apple Computer, Inc.

Tech Info Library Article Number:1335



Tech Info Library

Penril AD 300/1200 modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Penril AD 300/1200 modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 300, 0-110 bps.

Instruction set used:

Fully HAYES or PENRIL Auto-Dialer compatible.

Hardware configuration:

Eight LED indicators on front panel give modem and data status. Auto-dial sequence, phone number, and log-on macro storage in RAM memory. Modem runs off of external plug in power supply.

Software configuration:

Microprocessor controlled intelligent modem with number storage, macro sequence, auto-dial, and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1336



Tech Info Library

Prometheus ProModem 1200: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Prometheus ProModem 1200: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200 or 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Twelve LED characters and eight LED indicators on front panel give call, modem, and data status. Internal back-up battery provides back-up power for clock/calender, modem configuration, and auto-dial number storage in memory. Modem runs off of 117VAC, 60 Hz.

Software configuration:

Microprocessor controlled intelligent modem with clock / calender set, help menu, number storage, auto-dial, and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with

modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1337



Tech Info Library

Prometheus ProModem 1200A: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Prometheus ProModem 1200A: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 300, 0-110 bps.

Instruction set used:

HAYES command set compatible with terminal emulator firmware on card.

Hardware configuration:

Plug-in modem board for the Apple II, IIe series computers. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with internal ROM terminal emulator firmware (addressing card initiates program), auto-dial, and auto-answer functions.

Interface type:

RJ-11 four telephone interface (two provided).

Modem interface packages, by computer:

Apple II+ or IIe:

Built-in terminal software; RJ-11 telephone cable interface (two provided-- one for user telephone) for hardware connection

Apple IIc:

Not useable.

Apple III:

Not useable.

Macintosh:

Not useable.

Macintosh XL:

Not useable.

..TIL01338-Prometheus_ProModem_1200A-Using_it_with_all_Apples_(TA30194).pdf

Apple Technical Communications

Tech Info Library Article Number:1338



Tech Info Library

Prometheus ProModem 1200M: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Prometheus ProModem 1200M: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200 or 0-300 bps.

Instruction set used:

Fully HAYES compatible with ProCom-M Macintosh software package.

Hardware configuration:

Twelve LED characters and eight LED indicators on front panel give call, modem, and data status. Internal back-up battery provides back-up power for clock / calender, modem configuration, and auto-dial number storage in memory. Modem runs off of 117VAC, 60 Hz. Same as Prometheus ProModem 1200 except for added cable and software.

Software configuration:

Microprocessor controlled intelligent modem with clock / calender set, help menu, number storage, auto-dial, and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation. Special cable provided for Macintosh interface.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Designed for Macintosh. See Prometheus ProModem 1200.

Apple IIc:

Designed for Macintosh. See Prometheus ProModem 1200.

Apple III:

Designed for Macintosh. See Prometheus ProModem 1200.

Macintosh:

ProCom-M terminal software; Macintosh to ProModem 1200M cable provided for hardware connection.

Macintosh XL:

ProCom-M terminal software; Macintosh to ProModem 1200M cable provided for hardware connection. DB-9 to DB-25 cable adapter needed for connection.

Apple Technical Communications

Tech Info Library Article Number:1339



Tech Info Library

Prometheus 300C modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Prometheus 300C modem: Using it with all Apples

=====

Modem type:
AT&T 103 series; 300 bps.

Instruction set used:
Fully HAYES compatible.

Hardware configuration:
Plug-in modem designed to attach to the rear of the Apple IIc. Powered by the Apple IIc. Built-in speaker allows data and modem status monitoring.

Software configuration:
Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:
RJ-11 telephone interface.

Modem interface packages, by computer:

Apple IIe (Super Serial card):
Apple IIc only.

Apple IIc:
ProCom-A terminal interface software provided with modem--direct attachment to rear of Apple IIc case.

Apple III:
Apple IIc only.

Macintosh:
Apple IIc only.

Macintosh XL:
Apple IIc only.

Apple Technical Communications



Tech Info Library

Racal-Vadic 1200V modem: Using it with all Apples

Revised: 2/10/93
Security: Everyone

Racal-Vadic 1200V modem: Using it with all Apples

=====

Article Created: 21 October 1985

Article Change History

02/09/93 - UPDATED

- Racal-Vadic changed name to Racal Datacom.

Modem type:

AT&T 103 / 212A series; 1200 or 300 bps

Instruction set used:

Maxwell 'GEORGE' or HAYES command and instruction sets.

Hardware configuration:

One front panel status indicator. All status and command responses are on the user's screen. Very similar to the Apple Modem 1200 in both operation and function.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

NOTE:

Pull-down functions of MacTerm will not work as they are Hayes instruction set commands. Keying in the correct command will work--refer to the modem commands provided in the user manual.

Racal-Vadic is now Racal Datacom.

Copyright 1985, 1993, Apple Computer, Inc.

Tech Info Library Article Number:1341



Tech Info Library

Racal-Vadic 300V modem: Using it with all Apples

Revised: 2/10/93
Security: Everyone

Racal-Vadic 300V modem: Using it with all Apples

=====

Article Created: 21 October 1985

Article Change History

02/09/93 - UPDATED

- Racal-Vadic changed name to Racal Datacom.

Modem type:

AT&T 103 series; 300 bps

Instruction set used:

Maxwell 'GEORGE' or HAYES command and instruction sets.

Hardware configuration:

One front panel status indicator. All status and command responses are on the user's screen. Very similar to the Apple Modem 300 in both operation and function.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

NOTE: The pull-down commands on the Macintosh or Macintosh XL are written for Hayes compatible modems and will not work if the "George" command set is being used. Line by line commands will work--refer to the user manual for the correct sequence and format.

Racal-Vadic is now Racal Datacom.

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Tech Info Library Article Number:1342



Tech Info Library

TEKCOM TC-212AD modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

TEKCOM TC-212AD modem: Using it with all Apples

=====

Modem type:

AT&T 103/212A series; 1200, 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Two LED indicators on front panel give modem and data status. Modem runs off of external plug in power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1343



Tech Info Library

Ven-Tel 1200PLUS modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Ven-Tel 1200PLUS modem: Using it with all Apples

=====

Modem type:

AT&T 103 / 212A series; 1200, 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Eight LED indicators on front panel give modem and data status. Modem runs off of external plug in power supply. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1344



Tech Info Library

Ven-Tel 2400PLUS modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Ven-Tel 2400PLUS modem: Using it with all Apples

=====

Modem type:
AT&T 103/212A series; 2400, 1200, 0-300 bps.

Instruction set used:
Fully HAYES compatible.

Hardware configuration:
Eight LED indicators on front panel give modem and data status. Modem runs off of external plug in power supply. Non-volatile memory stores one number that can be auto-dialed by pressing a front panel button or by computer command. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:
Microprocessor controlled intelligent modem with number storage, auto-dial, and auto-answer functions.

Interface type:
RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):
Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:
Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:
Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1345



Tech Info Library

Western DataCom WORLDCom 200 modem: Using it with all Apples

Revised: 10/21/85
Security: Everyone

Western DataCom WORLDCom 200 modem: Using it with all Apples

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Modem type:

AT&T 103/202/212A series; 1200 FDX, 1200 HDX, 0-300 bps.

Instruction set used:

Fully HAYES compatible.

Hardware configuration:

Three LED indicators on front panel give modem status. The modem is capable of dual speed operation, necessary for Europe and Austrailia phone systems. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RS-232 DB-25S (DCE) connector, full or half duplex operation.

Modem interface packages, by computer:

Apple IIe (Super Serial card):

Access II or other terminal software; straight through DB-25 cable interface (serial card configured as DTE equipment) for hardware connection.

Apple IIc:

Access II or other terminal software; Apple IIc to Imagewriter cable with modem eliminator cable for hardware connection.

Apple III:

Access III or other terminal software; straight through DB-25 cable for hardware connection.

Macintosh:

MacTerm or other terminal software; Macintosh to Imagewriter cable with modem eliminator cable for hardware connection.

Macintosh XL:

MacTerm or other terminal software; straight through DB-25 cable for hardware connection.

Apple Technical Communications

Tech Info Library Article Number:1346



Tech Info Library

ZOOM/MODEM ILe: Using it with all Apples

Revised: 10/21/85
Security: Everyone

ZOOM/MODEM ILe: Using it with all Apples

=====

Modem type:

AT&T 103 series; 300 / 110 bps.

Instruction set used:

Either ZOOM or HAYES command set compatible with jumper selection on card.

Hardware configuration:

Plug-in modem board for the Apple II, ILe series computers. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with auto-dial and auto-answer functions.

Interface type:

RJ-11 telephone interface.

Modem interface packages, by computer:

Apple II+ or ILe:

ZOOM or HAYES software, RJ-11 telephone cable interface.

Apple IIc:

Not useable.

Apple III:

Not useable.

Macintosh:

Not useable.

Macintosh XL:

Not useable.

Apple Technical Communications

Tech Info Library Article Number:1347



Tech Info Library

ZOOM/MODEM IIe Plus: Using it with all Apples

Revised: 10/21/85
Security: Everyone

ZOOM/MODEM IIe Plus: Using it with all Apples

=====

Modem type:

AT&T 103 series; 300 / 110 bps.

Instruction set used:

Either ZOOM or HAYES command set compatible with jumper selection on card.

Hardware configuration:

Plug-in modem board for the Apple II, IIe series computers. On-board memory stores up to 16 phone numbers. Added file transfer with XMODEM protocols and printer control with full text editor. Built-in speaker is used to monitor operation and diagnostics.

Software configuration:

Microprocessor controlled intelligent modem with number storage, file transfer, auto-dial, and auto-answer functions.

Interface type:

RJ-11 telephone interface.

Modem interface packages, by computer:

Apple II+ or IIe:

ZOOM or HAYES software, RJ-11 telephone cable interface.

Apple IIc:

Not useable.

Apple III:

Not useable.

Macintosh:

Not useable.

Macintosh XL:

Not useable.

..TIL01348-ZOOM-MODEM_Ile_Plus-Using_it_with_all_Apples_(TA30253).pdf

Apple Technical Communications

Tech Info Library Article Number:1348



Tech Info Library

EtherTalk Card: Pinouts

Revised: 7/1/92
Security: Everyone

EtherTalk Card: Pinouts

=====

Article Created: 18 November 1987
Article Last Reviewed: 25 June 1992
Article Last Updated:

TOPIC -----

What are the pinouts of the Apple EtherTalk Card?

DISCUSSION -----

The EtherTalk Card conforms to the physical media standards set forth in the IEEE 802.3 specification. It also conforms to the pinout specifications of Ethernet transceiver cables set forth in "The Ethernet" standards published by Digital, Intel, and Xerox -- the original developers of Ethernet. Standard Ethernet cabling works just fine.

Here are the pinouts for Ethernet thick cabling:

1 - Shield	9 - Collision Presence (-)
2 - Collision Presence (+)	10 - Transmit (-)
3 - Transmit (+)	11 - Reserved
4 - Reserved	12 - Receive (-)
5 - Receive (+)	13 - Power
6 - Power Return	14 - Reserved
7 - Reserved	15 - Reserved
8 - Reserved	

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Tech Info Library Article Number:1353



Tech Info Library

Multiplan: Why Some File Names Don't Appear in Scrolling Window

Revised: 2/11/88
Security: Everyone

Multiplan: Why Some File Names Don't Appear in Scrolling Window

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This article last reviewed: 27 January 1988

Microsoft Multiplan, versions 1.0, 1.01, and 1.02, have no inherent limit as to the NUMBER of names that they hold, only the SIZE of the name file. That is, many small names will store as well as a shorter list of long names -- up to the limit of available memory.

Under some high memory-use conditions, however, the Name scroll-box or the Link scroll-box can hold only the FIRST 45 NAMES. The rest are there, and remain active, but the scroll-box will only show the first 45.

Tech Info Library Article Number:1359



Tech Info Library

ASCII Control Characters

Revised: 11/7/88
Security: Everyone

ASCII Control Characters

=====

This article last reviewed: 1 November 1988

Code sets provide a means of electronically expressing and communicating characters. There are three types of characters:

1. Alphabetic characters are the letters of the alphabet and special characters like <, *, @, ?, ", etc.
2. Numeric characters are numbers.
3. Control characters are unique characters that communicate specific functions (e.g., form feed, carriage return, escape, etc.) to a receiving unit.

Each character in a code set is expressed by a unique binary code. Morse code is an example of a code set. Each Morse character has a unique combination of dots and dashes that equate to the ones and zeros in a binary code.

Most people understand alphabetic and numeric characters. However, many people are not as familiar with control characters, so the following discussion will explain the control characters in more detail.

ASCII Control characters are used for five main functions:

1. COMMUNICATION CONTROL FUNCTIONS - SOH, STX, ETX, EOT, ENQ, ACK, NAK, DLE, SYN, ETB
2. CODE EXTENSION FUNCTIONS - Shift Out, Shift In, Escape
3. FORMAT EFFECTOR FUNCTIONS - Backspace, Tabs, Line Feed, Form Feed, Carriage Return
4. INFORMATION SEPARATOR FUNCTIONS - File Separator, Group Separator, Record Separator, Unit Separator

5. APPLICATION-DEFINED FUNCTIONS - Device Control 1 through 4, Bell

1. Communication Control Functions

These characters are mainly used in synchronous transmission character oriented protocols (such as Bisynchronous).

Since data communication between personal computer systems is usually asynchronous, we won't discuss the function of these characters here.

2. Code Extension Function

Code extension (ce) characters such as escape <ESC> are embedded in text to enable devices to recognize device-specific control codes not included in the code set.

The most commonly used ce character is <ESC>. It notifies a receiving unit that the character or characters following it are to be interpreted as a control code. A sequence of characters that starts with an <ESC> and makes up a control code is popularly called an "escape sequence."

For example, it might be desirable that a printer change the size of characters in the middle of a printing job. Since this function is not common to all types of equipment, an ASCII control character has not been assigned for it. Therefore many printer manufacturers have had to create escape sequences for this purpose.

When a printer receives and recognizes the ESC character, it interprets the following characters (up to the next RETURN character) as a control code, and (in our example) changes its print size accordingly.

Escape sequences are manufacturer-specific, so different devices may have different control codes to accomplish the same function (although there are ANSI standards which many conform to).

3. Format Effector Function

Format effector (FE) characters (for instance, carriage returns, line feeds) are embedded in the text sent to output devices like printers, CRT terminals, etc. These characters give these devices instructions on how to physically format the text when it is output.

4. Information Separator Function

Information separator (IS) characters allow the receiving unit to group the received data into a database hierarchy (file to group to record to unit, etc.).

5. Application-Defined Function

After all of the desired characters for a code set have been defined, there may be several codes (unique combinations of bits) left over. These codes are available for whatever purpose the designer may wish to assign them.

..TIL01373-ASCII_Control_Characters_(TA30410).pdf

For example, in ASCII the DC1 and DC3 (Device Control) application defined codes are often used to start and stop data in the XON/XOFF flow control protocol (for more info on flow control protocols search on HTS and flow control).

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Tech Info Library Article Number:1373



Tech Info Library

Seven-Bit or Eight-Bit ASCII

Revised: 11/7/88
Security: Everyone

Seven-Bit or Eight-Bit ASCII

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This article last reviewed: 1 November 1988

Each character in the ASCII code set is transmitted as a unique eight bit binary code.

The ASCII standard doesn't actually define the eighth bit of the code, so many vendors in the industry have recognized two kinds of ASCII: eight bit ASCII and seven bit ASCII with a parity bit (a transmission-error-detecting scheme).

The first seven bits of a character are the same for seven bit or eight bit ASCII; only the purpose of the eighth bit will change.

Eight bit ASCII has the eighth bit permanently assigned to a constant binary one or zero state.

Seven bit ASCII uses the eighth bit as a parity bit. This means that the eighth bit indicates the odd or even status of the sum of the seven bits in the character.

If the transmitting station has selected seven bit even parity, then for every character in which the sum of the lower seven bits (the real ASCII character) is odd, the transmitting station will make the eighth bit a 1. This makes the sum of all eight bits in the character even.

If the sum of the lower seven bits is already even, the transmitting station will leave the eighth bit a 0 so that the sum of the character will stay even.

The receiving station's equipment will check the sum of each character received to see that it is even. If it isn't, the receiving station's equipment will detect an error in data transmission.

Selecting eight bit ASCII, no parity, causes the transmitting station not to generate parity bits and the receiving station not to check parity. In this case a transmission error would not be detected by the equipment even if one occurred.

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Tech Info Library Article Number:1374



Tech Info Library

Flow Control Protocols (XOn/XOff or DTR)

Revised: 11/7/88
Security: Everyone

Flow Control Protocols (XOn/XOff or DTR)

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This article last reviewed: 1 November 1988

Data is usually transmitted much more rapidly than it can be processed. This is why devices allocate memory to buffer space. Buffers are used to collect the received data as it comes in. However, many transmissions are quite a bit larger than the buffer space allocated. What is needed is a way for the receiving station to tell the transmitting station to stop and start transmitting as its buffer fills and is emptied. This is the purpose of flow control protocols.

We'll discuss the two most popular methods of flow control used in personal computer systems.

1. XON/XOFF - is a very popular method of flow control between asynchronous full duplex devices (for more info on asynchronous data transfers search on HTS and Asynchronous; for more info on full duplex search on HTS and Duplex). In full duplex, both communicating devices can send each other data at the same time. When the receiver's buffer starts getting too full, it sends an XOFF (which is most often an ASCII DC3 character; for more information on ASCII control characters search on HTS and ASCII Control Characters). The Transmitter sees the XOFF and stops its transmission. When the receiver is ready for more data it sends the transmitter an XON (most often an ASCII DC1 character). The transmitter sees the XON and resumes transmission. This process goes on until the transmission is complete.

2. DTR (also called hardware handshaking) - can be used in full or half duplex RS232 communications. DTR is an RS232 control signal which normally indicates that a DTE device is online (for more info on DTEs and DCEs, search on HTS and RS232). However, many manufacturers use it for flow control. When the receiver's buffer starts getting too full, it turns off its DTR signal. The transmitter stops sending data. When the receiver is ready for more data it turns its DTR back on. The transmitter resumes transmission. This process goes on until the transmission is complete.

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Tech Info Library

RS-232: DTEs, DCEs and Pin Signal Sequences

Revised: 11/7/88
Security: Everyone

RS-232: DTEs, DCEs and Pin Signal Sequences

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This article last reviewed: 1 November 1988

NOTE: Throughout this discussion acronyms will be used in place of full names. Since all knowledgeable data communications personnel use these acronyms, you should practice using them.

DTE and DCE

According to the RS-232 standard, all devices involved in data communications can be classified into two groups:

DTE - Data Terminal Equipment: those devices that originate the data or are its final destination. Examples would be computers, printers, tape drives, etc.

DCE - Data Communications Equipment: those devices whose function it is to communicate the data between the DTEs. Examples would be modems, data multiplexers, and digital service units.

The RS-232 cabling between a DTE and a DCE is straight through. That is, pin 1 from the male DTE connector goes to pin 1 on the female DCE connector, pin 2 goes to pin 2, and so on. If a pin is an output for a DTE, then it is an input for a DCE (and vice versa).

RS-232 PIN GROUPS (three main groups)

1. CONTROL pins carry signals that indicate and control the state of the DTE/DCE interface.
2. DATA pins carry data signals.
3. CLOCK pins carry the clock signals necessary for synchronous data communications.

Because Half Duplex has to control line direction, it requires more RS-232 pins. The following is the sequence of RS-232 signals which are usually used for Half Duplex.

HALF DUPLEX SIGNAL SEQUENCE

Sequence	Pin	Full Signal Name	Output From	Input To
(1)	20	Data Terminal Ready (DTR)	DTEs	DCEs
(2)	6	Data Set Ready (DSR)	DCEs	DTEs
(3)	4	Request to Send (RTS)	Tx DTE	Tx DCE
(4)	8	Rx'd Line Sig Detect (DCD)	Rx DCE	Rx DTE
(5)	5	Clear to Send (CTS)	Tx DCE	Tx DTE
(6)	2	Tx Data (TD)	Tx DTE	Tx DCE
(7)	3	Receive Data (RD)	Rx DCE	Rx DTE
Constant	7	Signal Ground (SG)	n/a	n/a

Fortunately, most Apple products use Full Duplex and so require fewer pins. The following is the sequence of RS-232 signals which are often used for Full Duplex.

FULL DUPLEX SIGNAL SEQUENCE

Sequence	Pin	Full Signal Name	Output From	Input To
(1)	20	Data Terminal Ready	DTEs	DCEs
(2)	6	Data Set Ready	DCEs	DTEs
(3)	2	Tx Data	Tx DTE	Tx DCE
(3)	3	Receive Data	Rx DCE	Rx DTE
Constant	7	Signal Ground	n/a	n/a

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Tech Info Library Article Number:1376



Tech Info Library

Full Duplex And Half Duplex And Echoplex

Revised: 11/10/88
Security: Everyone

Full Duplex And Half Duplex And Echoplex

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This article last reviewed: 1 November 1988

NOTE: Throughout this discussion both terminals and personal computers running terminal emulator software will be referred to as terminals. The term modem denotes any DCE device.

BANDWIDTH

The wires used to connect the average telephone to the American telephone system can be viewed as a river with information barges on it. The river's width is limited and cannot be made wider. Similarly, the telephone wire has a limited frequency bandwidth.

FULL DUPLEX (for modems and other data transmission devices)

A Full duplex modem can simultaneously transmit and receive on a connection. In other words, the river is divided into two channels in which information barges may travel in both directions at the same time. But some maneuvering room is required on either side of both barges to prevent collisions. This is also true of the telephone line; some of the bandwidth is needed to separate the transmit and receive channels. This space is then wasted and cannot be used to carry information. As a result in most full duplex modems have relatively slow data transmission rates.

HALF DUPLEX (for modems and other data transmission devices)

Half duplex modems, on the other hand, use almost the entire bandwidth and so waste very little space. But because there is not then room for two channels, the information may only move one direction at a time. This means that time must be taken after each transmission to "turn around" the line, and extra interface signals are required to control which station is transmitting.

ECHOPLEX

Echoplex is a feature designed into many modems. It enables the modem to reflect characters back to the terminal it serves, even while transmitting them to the phone line (if a phone connection has been made). With echoplex, a user can see whether his computer is communicating to the modem simply by typing a few characters. If the modem has the echoplex feature (Apple modems

do), then the modem will return the typed characters to the screen. This tells the user that the data has transferred from the terminal to the modem without error.

TERMINAL FULL AND HALF DUPLEX

Sometimes terminals (and terminal emulator software such as Access III) have options for terminal full-duplex or terminal half-duplex to allow the terminals to support modems both with and without echoplex.

TERMINAL HALF DUPLEX

Terminal half duplex supports non-echoplex modems. This selection on a terminal causes the characters typed to be displayed regardless of whether or not the modem returns the characters.

If terminal half duplex is selected when using an echoplex modem, there will be two of every character typed: one from the terminal's keyboard and one from the modem.

If the modem doesn't have echoplex, it won't echo characters back to the terminal. So the only way the user can see what is being typed is if terminal half duplex is selected.

TERMINAL FULL DUPLEX

Terminal full duplex causes the terminal to display only the characters received from the modem (which may be those the modem has received from a remote modem accross a phone connection as well as those the modem is echoing back to the terminal).

NOTE: Many people think that selecting terminal full duplex means that full duplex communication will occur across the phone connection, modem-to-modem, but this is not so. Actually the terminal full duplex option is there only to enable the terminal to support an echoplex modem.

Terminal Full Duplex enables the user to check communication between the terminal and the echoplex modem by allowing him to ensure that the characters displayed are the same as those typed.

If terminal full duplex is used with a modem or other device that does not perform echoplex, then the user will not be able to see what is typed because the characters will not be echoed back.

The table below shows the indications that will occur when the wrong terminal duplex selection is made at a terminal.

"SYMPTOM"	"PROBLEM"
CHARACTERS TYPED ARE NOT DISPLAYED WITH ECHOPLEX MODEM	MODEM NOT FUNCTIONING OR NOT CONNECTED
CHARACTERS TYPED ARE NOT DISPLAYED WITH NON-ECHOPLEX MODEM	TERMINAL SHOULD BE IN HALF DUPLEX
TWO OF EVERY CHARACTER TYPED IS	TERMINAL SHOULD BE IN FULL DUPLEX

DISPLAYED

BECAUSE MODEM IS ECHOPLEX

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Tech Info Library Article Number:1377



Tech Info Library

RS232 Modem Eliminator Cables

Revised: 11/18/93
Security: Everyone

RS232 Modem Eliminator Cables

Article Reviewed/Updated: 18 November 1988

NOTE: The following discussion describes the pin crossover process necessary to produce a cable type modem eliminator. There are also electronic devices called modem eliminators. These devices do not necessarily perform the same function as a modem eliminator cable.

NOTE: For reasons specific to their applications, some interfaces use other pins than those we discuss here. You should be aware that there are a lot of different pin configurations out there.

Modem eliminator cables are designed to rectify the problems that occur when two RS232 DTEs are connected directly, without intervening DCEs.

RS232 was originally designed for DTE to DCE communications.

DTE to DCE cable connections are pin to pin (pin 1 of the DTE is connected straight through to pin 1 on the DCE, 2 to 2, etc.).

However, most devices (except modems) installed locally (e.g., personal computers and printers in the same room) are DTEs, and DTEs won't communicate when connected by a straight through cable.

Here is one reason why: Data Terminal Ready (pin 20) (which tells the DCE that the DTE is online) is an output from the DTE and an input to the DCE. If two DTEs were connected with a straight through cable, the DTR output from the first DTE would go straight to the DTR input of the second DTE. Besides not working, this could also cause problems in the interface electronics.

Similarly, Data Set Ready (pin 6) is an output from the DCE and an input for the DTE. If two DTEs are trying to communicate with a straight through cable, the DSR input from the first DTE would go to the DSR input of the second DTE. Connected like this, neither DTE would output a signal onto the pin, so neither would know if its connected device was online.

Other pins cause similar problems in straight-through DTE connections.

So you can see that the RS232 interfaces of two DTEs are not compatible if connected with a straight-through cable and no intervening DCEs.

A modem eliminator cable simply jumpers signals from the pins of one DTE connector to compatible pins on the other, so that each DTE interface thinks it's talking to a DCE interface. Let's look at a typical signal exchange below.

1. DTE #1 raises DTR on pin 20. The modem eliminator jumpers DTR from pin 20 of DTE #1's connector (a DTE output) to DSR on pin 6 of DTE #2's connector (a DTE input).

We'll assume that DTE #2 was already on, so DTR on pin 20 of its connector was already active and DTE #2 is expecting a DSR from its DCE. DTE #2 sees the DTR from DTE #1 as the expected DSR.

The modem eliminator also jumpers DTR from pin 20 of DTE #2 to pin 6 of DTE #1 so that DTE #1 believes that its DCE is on-line too.

2. The modem eliminator routes TD (Transmit Data) from pin 2 (a DTE output) of each DTE to the opposite connector's RD (Receive Data) on pin 3 (a DTE input).

3. When a DTE wants to transmit, it simply shifts data out onto TD (pin 2) of its connector.

The modem eliminator cable routes the data to the RD on pin 3 of the destination DTE. Of course, in basic full duplex both DTEs may do this at the same time without the need for any other control signals.

HALF DUPLEX

In Half Duplex communications, Request to Send (pin 4), Clear to Send (pin 5), and Data Carrier Detect (properly called Received Line Signal Detect, pin 8) are required to control the direction of transmission. Some modem eliminators have these pins jumpered as well to accomodate local connection of "Half Duplex" DTE devices.

NOTE: When troubleshooting an RS-232 problem, it is always a good idea to check the connectors on the DTE and DCE to find out which signal pins are used. Then read the documentation to determine how they are being used. If it turns out that pins are connected but not used by the device, then those pins should be disconnected.

Apple RS232 Modem Eliminator Cable Pinout

PC DB9	Printer DB25
1	4
2	2
3	3
4	5&6

5	7
6&8	20
7	8
9	NC

PC	Printer
DB25	DB25
1	1
2	3
3	2
4	5
5	4
6	8&20
7	7
8&20	6

PC	Printer
DB 25	DB9 (LW Pro)
1	5
2	2
3	3
4	8
5	7
6	1&4
7	5
8&20	6

PC	Printer
DB9	DB9
1&4	6
2	3
3	2
5	5
6	1&4
7	8
8	7

Article Change History:

18 November 1993 - Updated with correct pinout information

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Tech Info Library Article Number:1378



Tech Info Library

RS-232 Marks/Spaces and Cable Length/Grounding

Revised: 11/7/88
Security: Everyone

RS-232 Marks/Spaces and Cable Length/Grounding

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This article last reviewed: 1 November 1988

MARKs and SPACEs

All RS-232 signals (except grounds) will be above + 3 volts or below - 3 volts (commonly + or - 12 volts). The area between + 3 volts and - 3 volts is called the transition region.

No RS-232 signal (excluding ground) should ever be stationary at a voltage in the transition region. If one is found between + 3 volts and - 3 volts, it is a definite indication of a problem.

A high RS-232 voltage (between + 3 volts and + 25 volts) is called a SPACE.

A low voltage (between - 3 volts and - 25 volts) is called a MARK.

All Control and Clock signals are SPACEs when ON and MARKs when OFF.
All Data signals are SPACEs when a logic ZERO and MARKs when a logic ONE.

CABLE LENGTH

One of the problems in an RS-232 installation is determining the length of cable to be used. This is because capacitance increases with cable length and increased capacitance can eventually degrade the signal to the point where it will cause the loss of data integrity.

The RS-232 standard very conservatively recommends that the maximum length of cable be 50 feet (unless special low capacitance cable is used) and that its total capacitance be limited to 2500 uf or less. However, this length can usually be doubled, tripled, and more depending on the BPS rate (the higher the BPS rate used, the shorter the cable may have to be).

If a cable is over 50 feet and a length problem is suspected, try using a lower BPS rate. If the problem goes away, then try using a shorter or lower capacitance cable at the higher data rate. If the problem doesn't reappear then it must have been the longer cable.

CABLE GROUNDING

If long cables (over 50 feet) are used, the cable should be shielded. In this case the shield, SG (pin 7), and CG (pin 1) should be grounded to the chassis on only one side of the interface (either the DTE or DCE).

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Tech Info Library Article Number:1379



Tech Info Library

ImageWriter DIP Switch Settings (2/95)

Revised: 2/9/95
Security: Everyone

ImageWriter DIP Switch Settings (2/95)

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Article Created: 23 October 1985
Article Reviewed/Updated: 21 December 1994

TOPIC -----

This article contains the DIP switch settings for the ImageWriter printer.

DISCUSSION -----

FACTORY DEFAULT

SW2	1	2	3	4
.	Open	Open	Closed	Closed

SW1	1	2	3	4	5	6	7	8
.	Closed	Closed	Closed	Closed	Closed	Open	Closed	Closed

CHARACTER SETS

English (US) -> SW1-1:Open, SW1-2:Off, SW1-3:Off
English (UK) -> SW1-1:Closed, SW1-2:Closed, SW1-3:Closed
Italian -> SW1-1:Closed, SW1-2:Open, SW1-3:Open
German -> SW1-1:Open, SW1-2:Open, SW1-3:Closed
Swedish -> SW1-1:Closed, SW1-2:Open, SW1-3:Closed
French -> SW1-1:Open, SW1-2:Closed, SW1-3:Closed
Spanish -> SW1-1:Closed, SW1-2:Closed, SW1-3:Closed

PAGE LENGTH

72 Line -> SW1-4:Closed
66 Line -> SW1-4:Open

EIGHTH DATA (PARITY) BIT

Ignore -> SW1-5:Closed

Recognize -> SW1-5:Open

NOTE:

For parity explanation search on HTS and SEVEN OR EIGHT BIT ASCII)

CHARACTER PITCH

Pica (10 characters per inch) -> SW1-6:Open, SW1-7:Open

Elite (12 characters per inch) -> SW1-6:Closed, SW1-7:Open

Ultracondensed (17 characters) -> SW1-6:Open, SW1-7:Closed

Elite proportional -> SW1-6:Closed, SW1-7:Closed

ADD LINE FEED AFTER CARRIAGE RETURN

yes -> SW1-8:Open

no -> SW1-8:Closed

BPS (BAUD) RATE

300 -> SW2-1:Open, SW2-2:Open

1200 -> SW2-1:Closed, SW2-2:Open

2400 -> SW2-1:Open, SW2-2:Closed

9600 -> SW2-1:Closed, SW2-2:Closed

FLOW CONTROL PROTOCOL

XON/XOFF -> SW2-3:Closed

DTR -> SW2-3:Open

NOTE:

For flow control explanation search on HTS and FLOW CONTROL.

EXPLANATIONS

ADD LINE FEED AFTER CARRIAGE RETURN is used when the device sending data to the printer is not already sending a carriage return after every line of data (check application software on computer or interface PCB DIP switch positions). If the device is already sending a carriage return after every line, setting this

..TIL01380-ImageWriter_DIP_Switch_Settings_2-95_(TA30460).pdf

switch will cause the ImageWriter to generate a line feed, resulting in two carriage returns after every line.

Article Change History:

09 Feb 1995 - Added factory default settings.

21 Dec 1994 - Corrected switch settings.

Support Information Services

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Tech Info Library Article Number:1380



Tech Info Library

ImageWriter PROBLEM/CURE: Prints Garbage After 1/4 Page

Revised: 1/30/92
Security: Everyone

ImageWriter PROBLEM/CURE: Prints Garbage After 1/4 Page

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This article last reviewed: 28 April 1988

PROBLEM DESCRIPTION: ImageWriter prints OK during Self Test. When a Macintosh is used with certain software, the first several lines also print OK, but after about a quarter of a page is printed, the ImageWriter pauses, and then prints garbage.

CAUSE: The application may be using DTR handshaking flow control protocol (for more info search on HTS and FLOW CONTROL). If so, it needs pin 20 DTR from the IW to be connected to pin 7 on the Mac.

CURE: Check the cable for 5 pins. If it doesn't have 5 pins, chances are DTR from the IW is not connected to the Mac so the application doesn't know when the IW's print buffer has filled. If the cable doesn't have 5 pins, obtain cable P/N 590-0169. Also confirm that IW DIP switch SW2-3 is open to select DTR handshake. If problem still not found, search on ImageWriter General Troubleshooting.

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Tech Info Library Article Number:1382



Tech Info Library

ImageWriter: Continously Prints Us During Self Test

Revised: 11/7/88
Security: Everyone

ImageWriter: Continously Prints "U"s During Self Test

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This article last reviewed: 01 November 1988

PROBLEM DESCRIPTION: The ImageWriter continuously prints the character "U" when print is initiated by Self Test.

CAUSE: Possible software problem or malfunctioning power supply regulator transistor.

CURE: 1. Power off IW, disconnect it from the computer, then press form feed while you turn it back on. This should cause the printer to perform its SELF TEST (a standalone printout of character sets). If it is a software problem, the power on reinitialization will cure it and the SELF TEST printout will occur. If it's a hardware problem Us will be printed during the SELF TEST. If the latter is the case, go to step 2.

2. Replace transistor assembly 970-0082. If problem is still not found, search on ImageWriter General Troubleshooting.

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Tech Info Library Article Number:1383



Tech Info Library

ImageWriter PROBLEM/CURE: Head Buzzes in Home Position

Revised: 1/30/92
Security: Everyone

ImageWriter PROBLEM/CURE: Head "Buzzes" in Home Position

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This article last reviewed: 28 April 1988

PROBLEM DESCRIPTION: When the ImageWriter is turned on, the power light comes on and the carriage moves to the left, but the select light doesn't come on. The head may vibrate or "buzz" in the home position. Pushing the select button has no effect. Closer inspection shows that the carriage cannot be moved as far to the left as it should be.

CAUSE: The detector plate located below the front guide rail on the left side of the ImageWriter is misaligned or malfunctioning.

CURE: Inspect the detector plate. If it is not straight, adjust it and clean it. You will need a small Phillips screwdriver to do this. If the adjustment does not help, remove the top cover of the ImageWriter and replace the sensor assembly. If problem still not found, search on ImageWriter General Troubleshooting.

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Tech Info Library Article Number:1384



Tech Info Library

ImageWriter PROBLEM/CURE: No Select Light

Revised: 1/30/92
Security: Everyone

ImageWriter PROBLEM/CURE: No Select Light

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This article last reviewed: 28 April 1988

BEFORE YOU START: Familiarize yourself with the ImageWriter Technical Procedures. Be sure to follow proper ESD procedures.

#1 - PROBLEM DESCRIPTION: When powered on the ImageWriter SEL lamp does not come on.

CAUSE: The magnetic cover interlock may be malfunctioning.

CURE: Check the magnet on the cover and the switch in the printer body to see that they are installed securely and aligned properly. If they are, replace the switch.

#2 - PROBLEM DESCRIPTION: The ImageWriter prints one line, returns to the left margin and the printer deselects. If the Select switch is pressed the printer prints another line, returns to the left and the printer deselects again.

CURE: The right margin switch is causing this problem. Replace the right margin switch.

If the problem is still not found, search on ImageWriter General Troubleshooting.

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Tech Info Library Article Number:1385



Tech Info Library

Super Serial Card: DIP Switch Settings

Revised: 11/7/88
Security: Everyone

Super Serial Card: DIP Switch Settings

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This article last reviewed: 1 November 1988

"PRINTER MODE"

MODE SELECTION

Printer Mode -> SW1-5:Off, SW1-6:On
SIC P8 Emulation Mode -> SW1-5:On, SW1-6:Off
SIC P8A Emulation Mode -> SW1-5:Off, SW1-6:Off

SPECIAL SWITCHES

Interrupts OFF -> SW2-6:Off
Interrupts On -> SW2-6:On
Normal Clear to Send -> SW1-7:On, SW2-7:Off
Second Clear to Send -> SW1-7:Off, SW2-7:On

BPS (BAUD) RATE

undefined -> SW1-1:On, SW1-2:On, SW1-3:On, SW1-4:On
50 -> SW1-1:On, SW1-2:On, SW1-3:On, SW1-4:Off
75 -> SW1-1:On, SW1-2:On, SW1-3:Off, SW1-4:On
109.92 (110) -> SW1-1:On, SW1-2:On, SW1-3:Off, SW1-4:Off
134.58 (135) -> SW1-1:Off, SW1-2:Off, SW1-3:On, SW1-4:On
150 -> SW1-1:On, SW1-2:Off, SW1-3:On, SW1-4:Off
300 -> SW1-1:On, SW1-2:Off, SW1-3:Off, SW1-4:On
600 -> SW1-1:On, SW1-2:Off, SW1-3:Off, SW1-4:Off
1200 -> SW1-1:Off, SW1-2:On, SW1-3:On, SW1-4:On
1800 -> SW1-1:Off, SW1-2:On, SW1-3:On, SW1-4:Off
2400 -> SW1-1:Off, SW1-2:On, SW1-3:Off, SW1-4:On
3600 -> SW1-1:Off, SW1-2:On, SW1-3:Off, SW1-4:Off
4800 -> SW1-1:Off, SW1-2:Off, SW1-3:On, SW1-4:On
7200 -> SW1-1:Off, SW1-2:Off, SW1-3:On, SW1-4:Off
9600 -> SW1-1:Off, SW1-2:Off, SW1-3:Off, SW1-4:On
19200 -> SW1-1:Off, SW1-2:Off, SW1-3:Off, SW1-4:Off

DATA FORMAT

8 data, 1 stop -> SW2-1:On

8 data, 2 stop -> SW2-1:Off

LINE WIDTH/VIDEO

40/video on -> SW2-3:On, SW2-4:On

72/video off -> SW2-3:On, SW2-4:Off

80/video off -> SW2-3:Off, SW2-4:On

132/video off -> SW2-3:Off, SW2-4:Off

DELAY AFTER <CR> OUT

none -> SW2-2:Off

32ns -> SW2-2:On

GEN <LF> AFTER <CR>

yes -> SW2-5:On

no -> SW2-5:Off

"COMMUNICATIONS MODE"

MODE SELECTION

Communications Mode -> SW1-5:On, SW1-6:On

SPECIAL SWITCHES

Interrupts OFF -> SW2-6:Off

Interrupts On -> SW2-6:On

RS-232-C Signals -> SW1-7:On, SW2-7:Off

BPS RATE (same as above in "PRINTER MODE")

DATA FORMAT

8 data, 1 stop -> SW2-1:On, SW2-2:On

7 data, 1 stop -> SW2-1:On, SW2-2:Off

8 data, 2 stop -> SW2-1:Off, SW2-2:On

7 data, 2 stop -> SW2-1:Off, SW2-2:Off

PARITY (for info search on ASCII and PARITY)

none -> SW2-4:On

odd -> SW2-3:On, SW2-4:Off

even -> SW2-3:Off, SW2-4:Off

GEN <LF> AFTER <CR> (same as above in "PRINTER MODE")

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Tech Info Library Article Number:1387



Tech Info Library

Disk III Analog PCB Troubleshooting

Revised: 1/30/92
Security: Everyone

Disk III Analog PCB Troubleshooting

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DESCRIPTION: Use this procedure only if a Disk III Analog PCB problem is confirmed. To obtain the procedure to confirm a Disk III problem, search on "HTS and Disk III and General".

YOU WILL NEED:

1. The following Disk III Analog PCB chips:
 - * IC 2003 (APN 327-2003)
 - * IC 74LS125 (APN 305-0125)
 - * IC CA3146 (APN 351-3146)
 - * IC 3470 (APN 355-3470)
 - * IC 74LS74 (APN 305-0074)
 - * IC 74LS32 (APN 305-0032)
2. Disk alignment aid
3. Level I Tech Procedures binders

BEFORE YOU START:

1. Refer to the Technical Procedures if removal/replacement or adjustment procedures are needed.
2. Before replacing a component on the Analog PCB, make sure that the power is off and remove the Analog PCB.
3. If replaced module/part doesn't fix the problem, reinstall the original module/part.

INSTRUCTIONS:

1. Remove the problem drive's case to expose the Analog PCB.
2. Examine the Analog PCB for:
 - * R32 at location D1 missing (send to Apple)
 - * IC 74LS74 at location E1 missing (replace)
 - * Jumper wires soldered to back (send to Apple)
 - * Damage (e.g., burns, cracks, etc.) if board is beyond repair, throw it away. Examine each chip and its socket.

- * If repair is possible but it can't be made by replacing a socketted chip send the Analog PCB to Apple.

3. Find the PROBLEM below and perform appropriate FIX.

PROB: Known good internal Disk III in test bed Apple III won't boot when the problem drive is installed externally

FIX: Recheck for the problem after each of the following steps

- (1) Replace IC 2003 at location C4
- (2) Replace IC 3470 at location B1 and IC 74LS125 at location G2 then if it boots, perform the comparator offset adjustment
- (3) Replace IC 3146 at location A3
- (4) Replace IC 74LS74 at location E2
- (5) Send the Analog PCB to Apple

PROB: Drive will not perform the D-Speed adjustment

FIX: Recheck for the problem after each of the following steps

- (1) Replace IC 3470 at location B1 and IC 74LS125 at location G2 then perform the comparator offset adjustment
- (2) Replace IC 3146 at location A3
- (3) Replace IC 2003 at location C4
- (4) Replace IC 74LS74 at location E2
- (5) Replace IC 74LS32 at location F1
- (6) Send the Disk III Analog PCB to Apple

PROB: Drive does not come on.

FIX: Recheck for the problem after each of the following steps

- (1) Replace IC 2003 at location C4
- (2) Replace IC 74LS125 at location G2
- (3) Send the Disk III Analog PCB to Apple

PROB: Drive with the problem Analog PCB installed reads but doesn't write

FIX: Recheck for the problem after each of the following steps

- (1) Replace IC 74LS125 at location G2
- (2) Replace IC 2003 at location C4
- (3) Replace IC 3146 at location A3
- (4) Send the Disk III Analog PCB to Apple

PROB: Drive writes when the disk is protected

FIX: Recheck for the problem after each of the following steps

- (1) Replace IC 74LS125 at location G2
- (2) Send the Analog PCB to Apple

PROB: None of the symptoms above match those of the problem

FIX: Recheck for the problem after each of the following steps

- (1) Perform the D-Speed adjustment
- (2) Replace IC 3470 at location B1 and IC 74LS125 at location G2 then perform the comparator offset adjustment
- (3) Replace all socketted chips one at time
 - * IC 2003 at location C4
 - * IC 3146 at location A3
 - * IC 74LS74 at location E2
 - * IC 74LS32 at location F1
- (4) Every chip on the PCB has been replaced. If it still doesn't

work, send the Analog PCB to Apple.

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Tech Info Library Article Number:1392



Tech Info Library

Duodisk General Troubleshooting

Revised: 1/30/92
Security: Everyone

Duodisk General Troubleshooting

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DESCRIPTION:

By following this procedure you can isolate a malfunction on the Duodisk and determine whether or not it is functional.

YOU WILL NEED:

1. "Known good" Apple IIe computer
2. Two DOS formatted 5 1/4 disks (one write protected the other not)
3. "Known good" Duodisk controller PCB - IN SLOT 6
4. 2 copies of DAP (Drive Acceptance Program) (APN 077-8101) - it is copyable
5. DDD (Digital Diagnostic Disk) (APN 689-8024)
6. Level I Tech Procedures

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures
2. If a replaced module/part doesn't fix a problem, reinstall the original module/part.
3. If the analog card proves to be problem, search on "HTS and Duodisk and Analog" for the analog card troubleshooting procedure.
4. After repair, check drive with "other" DAP disk (original may be damaged).

INSTRUCTIONS:

1. Connect the problem Duodisk to the controller in the Apple IIe.
2. Boot the DAP disk in LEFT drive.

a. First screen shows 2 drives and 2 arrow keys.

b. You run the program with the 2 arrow keys.

c. If drive booted OK, go to step 3; if not, check for problems below.

PROB: Won't boot. Drive comes on but I/O errors occur

FIX: Recheck for the problem after each of the following steps

(1) Try other DAP disk.

(2) Try reading a file from the other drive on the Duodisk. If it

fails, replace analog card.

- (3) Perform Dspeed adjustment in Tech Procedures (you'll need to use a known good drive in addition to the problem drive to make this adjustment). If the problem drive won't adjust, replace analog card
- (4) Examine the head. If dirty, clean it with solution of 80% denatured alcohol and 20 % distilled water (for more info search on Disk Drive Preventive Maintenance); if the head is scored replace the mechanical assembly containing the head.
- (5) Replace interface cable
- (6) Replace disk mechanical on the problem drive
- (7) Replace analog card

PROB: Won't boot. Drive doesn't come on.

FIX: Recheck for problem after each of the following steps

- (1) Boot from other drive on Duodisk. If it fails, replace analog card.
- (2) Replace interface cable
- (3) Replace disk mechanical
- (4) Replace analog card

PROB: Drive makes unacceptable noise

FIX: Replace disk mechanical

3. Press "LEFT" arrow to select "LEFT" drive for test.
4. Screen asks you to install WRITE-PROTECTED blank disk into drive. After you do, press the RIGHT arrow to continue running the test...drive whirs. Read IMPORTANT below.

IMPORTANT: If a failure occurs during the following steps, the drive under test will be crossed out and the number(s) above the crossed out drive will indicate which test(s) failed. If this happens, go to the end of this procedure find the Test #(s) that failed and perform the appropriate repair action.

5. The changing arrows on the screen tell you to remove the WRITE-PROTECTED disk and install NON-WRITE-PROTECTED blank disk into drive. After you do, press RIGHT arrow to continue running the test...drive whirs test numbers change as tests are performed.
6. After a minute or so and while drive is still whirring, screen asks you to install DDD disk. After you do, PRESS the RIGHT ARROW to continue tests...drive continues to whir, DDD disk change screen leaves, etc.
7. The drive stops whirring and the screen asks you to remove the DDD disk, this is the end of the test and indicates that the LEFT drive is OK so press the LEFT arrow once to go back to the first screen, then press RIGHT arrow to select RIGHT drive for test and go back to step 4.

If a failure occurred in the procedure above, find the Test #(s) that failed

and perform the appropriate repair action.

TEST# - REPAIR ACTION

- 1 Make sure test was done using proper disks (i.e., DOS 3.3 formatted,
 blank, write protected/non-write protected).
 Replace disk mechanical
 Replace analog card
 Send to Apple
- 2 Adjust D-Speed
 Replace analog card
 Replace disk mechanical
 Send to Apple
- 3 Replace analog card
 Replace disk mechanical
 Send to Apple
- 4 Rerun test (test 4 failure can indicate bad DDD disk)
 Replace disk mechanical
 Send to Apple
- 5 Replace disk mechanical
 Send to Apple
- 6 or 7 Replace disk mechanical
 Send to Apple

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Tech Info Library Article Number:1394



Tech Info Library

DMP General Troubleshooting

Revised: 11/7/88
Security: Everyone

DMP General Troubleshooting

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This article last reviewed: 1 November 1988

DESCRIPTION:

Follow this procedure to determine that the DMP is functional.

YOU WILL NEED:

1. Apple IIe computer
2. Apple IIe Parallel Interface Card
3. Printer cable
4. The Level I Tech Procedures
5. DMP User's Manual
6. Pencil and paper

BEFORE YOU START:

1. For replacement or adjustment procedures, refer to the Technical Procedures.
2. If a replaced module/part doesn't fix the problem, reinstall the original module/part.
3. For locations of DMP controls, refer to User's manual.

CHECK 1: PRE-PRINT

- 1.1 Disconnect the printer cable at the back of the DMP
- 1.2 Check that the top panel is installed correctly
- 1.3 Check that paper is installed
- 1.4 Turn the platen knob

PROB: The platen binds or doesn't turn consistently.

FIX: Remove the carrier cover and paper cover, use pen-light to examine the platen gears for obstructions.

- 1.5 Move the carriage to its rightmost position.

PROB: The carriage binds or doesn't move consistently

FIX: Check if carrier wire is strung properly or out of tension specification as described in Tech Procedures.

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PROB: The carriage does not return to the leftmost position.
FIX: Clean the end of travel sensor.

CHECK 2: POWER ON INITIALIZATION

As you turn on the printer, check for the conditions in 2.1, 2.2, 2.3, and 2.4.

If any do not occur as described, search on "HTS and DMP and Initialization". The document you will obtain contains fixes for DMP power-on problems.

- 2.1 The power lamp should come on.
- 2.2 The platen should rotate one line backward and then one line forward.
- 2.3 The carriage should move smoothly to its leftmost position and stop.
- 2.4 The SEL lamp should come on.

CHECK 3: SELF TEST

If conditions described in 3.1 and 3.2 do not occur as described, go back to the AppleLink Word Search Screen and enter "HTS and DMP and Self Test". The document obtained will contain FIXes for DMP Self Test problems.

- 3.1 Turn on the printer while pressing the TOF switch. The printer should begin printing CHARACTER SETS.
- 3.2 If print quality is good, go to CHECK 4.

CHECK 4: HOST PRINT

4.1 Turn off the printer, write down the customer's configuration of the DIP switches in the printer, then set the DIP switches as shown below:

(Note: Op = open, Cl = closed, Nu = not used)

SW1								SW2							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Op	Op	Op	Op	Op	Op	Op	Op	Op	Op	Nu	Nu	Op	Cl	Cl	Op

4.2 Install the Parallel Interface Card in slot 1. Connect the DMP to the card via printer cable. Turn on the DMP (make sure cover is installed). Turn on the IIe and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Type the program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
30 PRINT CHR$(I);:NEXT I:PRINT
40 NEXT A
```

```
50 PR#0
60 END
```

4.3 Type RUN and press the <RETURN> key. The printer should print out about 100 character sets like the one shown below. If it does, the DMP communicates with the computer OK.

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

If it doesn't, look below for problems.

* If you get a SYNTAX ERROR on the computer, you may have mis-typed the line.

To correct the syntax error perform the following:

- (1) Type LIST and press <RETURN>. The program should appear on the screen.
- (2) Examine the program for accuracy. Spaces, colons, etc. are important.
- (3) To correct a line, simply retype the line and press <RETURN>. LIST again to make sure the correction is OK.

* If nothing happens on the printer or the computer, press the RESET key while you press the CONTROL key. Then LIST your program as described above in the SYNTAX ERROR explanation to look for typing errors.

* If no syntax errors occurred and the cursor is blinking again; then the program has probably run OK. If the printout is not satisfactory, search on "HTS and DMP and COMMUNICATIONS". The document you will obtain contains fixes for DMP hardware communications problems.

4.4 If the printer has performed correctly, perform the following:

- (1) Return the DMP DIP switches to the customer's configuration, then refer to the DMP User's manual to check that the customer's DIP switch configuration is right for his requirements.
- (2) Perform the Periodic Maintenance procedure in Technical Procedures/DMP tab/section 1.

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Tech Info Library Article Number:1396



Tech Info Library

DMP Power On Initialization Problems

Revised: 11/7/88
Security: Everyone

DMP Power On Initialization Problems

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This article last reviewed: 1 November 1988

DESCRIPTION:

When the printer is turned on it should automatically perform a series of electro-mechanical operations to initialize itself before printing.

The following table is composed of FIXES for typical PROBLEMS which may occur during power-on initialization.

YOU WILL NEED:

1. Level I Technical Procedures
2. Pen-light

BEFORE YOU START:

1. Refer to the Technical Procedures if removal/replacement or adjustment procedures are needed.
2. If a replacement module/part doesn't fix the problem, reinstall the original module/part.

INSTRUCTIONS:

1. When you turn on the DMP, it should initialize itself as follows:
 - (1.1) light the Power lamp.
 - (1.2) rotate the platen one line backwards and then one line forwards.
 - (1.3) move the carriage to its leftmost position and stop.
 - (1.4) light the Select lamp.

2. Find your PROBLEM below and perform the corresponding FIX.

- - - - -

PROB: The power lamp does not light when the DMP is turned on.

FIX: Recheck for the problem after each of the following steps:

- (1) Check that power is turned on.
- (2) Check that the power cord is plugged in.
- (3) Check the power fuse at the back of the printer.
If it is burned out, replace it and turn power on again. If the fuse blows a second time, replace

components in this order:

- * Regulator Transistor
- * CPU PC board
- * Carrier Motor
- * Transformer

(4) Check the two fuses on the CPU board and replace if blown.

(5) Replace the following components. Recheck for the problem after each replacement.

- * Power cord
- * Power switch
- * CPU PC board
- * Carrier Motor
- * Transformer

PROB: The platen does not rotate one line backward and then one line forward when the printer is turned on.

FIX: Recheck for the problem after each of the following steps:

- (1) Remove the carrier cover and the paper cover. Use the pen-light to examine the gears for obstructions.
- (2) Check for loose connectors as you follow the procedure to replace the main logic PCB found in the Tech Procedures.
 - * If you find a loose connector, don't replace the main logic PCB but instead install the connector securely.
 - * If you don't find a loose connector, replace the main logic PCB.
- (3) Replace the mechanical assembly

PROB: The DMP does not move the carriage smoothly from its rightmost to its leftmost position and stop as the printer is turned on.

FIX: Recheck for the problem after each of the following steps:

- (1) Check if carrier wire is strung properly.
- (2) Check for loose connectors as you follow the procedure to replace the main logic PCB found the Technical Procedures
 - * If you find a loose connector, don't replace the main logic PCB but instead install the connector securely.
 - * If you don't find a loose connector, replace the main logic PCB.
- (3) Replace the Carrier motor.

PROB: There is a burning odor, erratic carrier motion, or erratic platen rotation when the printer is turned on.

FIX: Check for the problem after replacing each of the following parts. If the problem remains, leave the part installed and replace the next part:

- (1) CPU PC board
- (2) Carrier motor
- (3) Mechanical assembly
- (4) Transformer
- (5) When the problem no longer occurs, reinstall the parts that you've replaced and recheck for the problem. If another problem occurs, reperform this procedure.

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Tech Info Library Article Number:1397



Tech Info Library

DMP Self Test Problems

Revised: 11/7/88
Security: Everyone

DMP Self Test Problems

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This article last reviewed: 1 November 1988

DESCRIPTION:

This table is composed of fixes for typical DMP Self Test problems.

YOU WILL NEED:

The Apple Service Level I Technical Procedures

BEFORE YOU START:

1. Refer to the Technical Procedures if removal/replacement or adjustment procedures are needed.
2. If a replacement module/part doesn't fix the problem, reinstall the original module/part.

INSTRUCTION:

1. Press the Form Feed switch while you turn on the DMP, the printer should print a line of characters (one character set).
2. Find your PROBLEM below and perform the corresponding FIX.

- - - - -

PROB: There is a burning odor, erratic carrier motion, or erratic platen rotation.

FIX: Recheck for the problem after replacing each of the following parts:

- (1) CPU PC board
- (2) Carrier motor
- (3) Mechanical assembly
- (4) Transformer

PROB: The printer doesn't print a character set when Self Test is initiated.

FIX: Perform the following steps. Retry the Self Test if a problem is found.

- (1) Check that the top cover is seated properly. If it isn't, close it. Then press SEL and retry self-test.
- (2) Check if PE lamp is lit on switch panel. If it is, reload paper
- (3) Check the connectors between the carrier and carrier motor and the

CPU PC board. If any of the connectors are loose, connect them.

- (4) Replace the CPU PC board.
- (5) Replace the Carrier motor.

PROB: The printer prints a character set when Self Test is initiated but the print quality is poor.

FIX: Find your print quality problem in the tables below.

* DOTS MISSING

- (1) Make sure dot head is in place.
- (2) Make sure dot head is not clogged with dirt.
- (3) Make sure dot head connector is plugged properly in CPU board.
- (4) Check impression control lever properly set. Push it away from you to its forwardmost position if using single sheet of paper.
- (5) Replace the Dot head.
- (6) Replace the CPU PC board.

* PRINT TOO LIGHT OR VARYING INTENSITY

- (1) Check impression control lever properly set. Push it away from you to its forwardmost position if using single sheet of paper
- (2) Substitute new ribbon cartridge.
- (3) Check if ribbon wire tension is loose and adjust as necessary.
- (4) Adjust intensity pot located under the clear plastic sheet that covers the configuration switches. Locate VR2 IMPRES and adjust for optimum print density.
- (5) Replace the Ribbon cassette.
- (6) Replace the Dot head.
- (7) Replace the CPU PC board.

* HORIZONTAL SPACING PROBLEM

- (1) Check if carrier wire is strung properly or out of tension specification.
- (2) Replace the Carrier wire.
- (3) Replace the Carrier motor.
- (4) Replace the CPU PC board.

* CHARACTERS DO NOT ALIGN VERTICALLY BETWEEN LINES

Locate VR1 ALIGN under the clear plastic sheet that covers the configuration switches. Adjust for optimum vertical alignment.

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Tech Info Library Article Number:1398



Tech Info Library

DMP Hardware Communication Problems

Revised: 11/7/88
Security: Everyone

DMP Hardware Communication Problems

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This article last reviewed: 1 November 1988

DESCRIPTION:

This table is composed of typical DMP communication problem symptoms and their fixes. If your problem matches up with one of the symptoms perform the appropriate fix.

YOU WILL NEED:

1. Apple IIe computer
2. Apple IIe Parallel Interface Card
3. Printer cable
4. Level I Tech Procedures
5. DMP Operators Guide

INSTRUCTION:

- * Refer to the Technical Procedures if removal/replacement or adjustment procedures are needed.
 - * If a replacement module/part doesn't fix the problem, reinstall the original module/part.
 - * In order to isolate a hardware communications problem, you first need to eliminate the possibility of a software or DIP switch configuration problem. To do this perform the following.
1. Turn off the printer, write down the customer's configuration of the DIP switches in the printer then set the DIP switches as shown below: (Note: Op = open, Cl = closed, Nu = not used)

SW1								SW1							
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
Op	Op	Op	Op	Op	Op	Op	Op	Op	Op	Nu	Nu	Op	Cl	Cl	Op

2. Install the Parallel Interface Card in slot 1. Connect the DMP to the card via printer cable. Turn on the DMP (make sure cover is installed).

..TIL01399-DMP_Hardware_Communication_Problems_(TA30596).pdf

Turn on the IIE and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Type the program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
30 PRINT CHR$(I);:NEXT I:PRINT
40 NEXT A
50 PR#0
60 END
```

3. After you type RUN and press the <RETURN> key. The printer should print out about 100 character sets like the one shown below. If it does, the DMP communicates with the computer OK.

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMN OPQRSTUVWXYZ[\]^_`abcdefghijklmno
pqrstuvwxyz{|}
```

If it doesn't, look below for problems.

- * If you get a SYNTAX ERROR on the computer, you may have mis-typed a line. To correct the syntax error perform the following:
 - (1) Type LIST and press <RETURN>. The program should appear on the screen.
 - (2) Examine the program for accuracy. Spaces, colons, etc. are important.
 - (3) To correct a line, simply retype the line and press <RETURN>. LIST again to make sure the correction is OK.
- * If nothing happens on the printer or the computer, press the RESET key while you press the CONTROL key. Then LIST your program as described above in the SYNTAX ERROR explanation to look for typing errors.
- * If no syntax errors occurred; the cursor is blinking again; then the program has probably run OK. If the printout is not satisfactory, look below for your problem.

SYMPTOM: The printer does not print a set of characters.

FIX: Recheck for the problem after each of the following steps. If no problem is found, go to step 3.

- (1) Check that the computer is properly powered on and initialized.
- (2) Check if SEL light is on. If it's off, press SEL and try printing under computer control with the program in step 2. If it prints while light is off, replace the switch panel.
- (3) Make sure that the interface cable between the printer and the computer is connected and secured at both ends.
- (4) Check DMP user's manual for correct setting of configuration switches.
- (5) Replace main logic PCB.

..TIL01399-DMP_Hardware_Communication_Problems_(TA30596).pdf

SYMPTOM: The printer prints a set of characters but print quality is poor.

FIX: Do a word search for "DMP and HTS and Self Test Problems" to obtain the print quality fix.

4. Reset the DIP switches to the customer's original configuration. Then check to see if the customer's DIP switch configuration or software configuration for the application he was using caused the problem.

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Tech Info Library Article Number:1399



Tech Info Library

Monitor II Prob/Cure:Vert or Horiz Line or Dot in Display Center

Revised: 11/7/88
Security: Everyone

Monitor II Prob/Cure:Vert or Horiz Line or Dot in Display Center

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This article last reviewed: 02 November 1988

PROBLEM DESCRIPTION: After the Monitor II has had a chance to warm up, there is a vertical line or a horizontal line or dot going through the center of the display.

WARNING: Turn off and unplug the monitor whenever the case is removed.

CAUSE: 1. The yoke assembly may be bad or misconnected.
2. The electronics module may be bad.

CURE: 1. Check that the gray/brown wires going from the yoke to the electronics module are properly connected.
2. If these wires are properly connected, replace the yoke. Then install the case and turn on the Monitor and check for the faulty display.
3. If the display is still faulty, replace the electronics assembly.

If the above cure doesn't solve your problem, refer to the Tech Procedures to obtain the general troubleshooting procedure for this product.

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Tech Info Library Article Number:1400



Tech Info Library

Asynchronous DataComm (Stop Bits and Framing Errors)

Revised: 11/7/88
Security: Everyone

Asynchronous DataComm (Stop Bits and Framing Errors)

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This article last reviewed: 2 November 1988

BACKGROUND

In RS232 there are two data pins, one for transmit and one for receive. One of two possible voltages on a data wire will express the state of the bit being transferred. In RS-232 the logic zero is assigned the positive voltage and the logic one is assigned the negative voltage.

When no data is being transferred on the data wire it is considered to be in an idle condition. In the idle condition the data wire has the same voltage that is used to express a one.

Inside both the transmitting and receiving units are electronic devices called clock circuits, which produce signals called "clock pulses" or clocks. The frequency of the clock signal is dependent on the BPS or Baud rate being used for the transmission. In synchronous data transfers, clock signals accompany the data being transferred.

In asynchronous data transfers, clock signals are used only on the "inside" of the sending and receiving units. This article discusses asynchronous data transmission only.

To make it easy for the receiving unit to know how many bits are coming, every asynchronous data transfer contains a set number of bits. Each transfer contains one byte of data plus a start bit and one or more stop bits.

START BIT

In an asynchronous data transfer, the receiving unit needs a change in voltage on the data wire to notify it that data is coming. The sending unit does this by preceding every character transmitted with a start bit (a logic zero; positive voltage in RS-232). After the sending unit does this it uses eight clock pulses to clock eight bits on to the data wire.

Once the receiving unit senses the start bit, it knows that data will follow. So, it clocks the data in from the data wire.

STOP BIT

In asynchronous data transfers the receiving unit will always wait a period of time after the eighth bit is clocked in before it will again allow itself to detect a start bit on the data wire. This period is divided into bit times, the same length as those used for the transmitted data bits. Since they signify the end of the character transmission, these bit times are called stop bits.

The number of stop bits (usually one or two) can often be selected when configuring application software, interface boards, and DIP switches. If all three places give the option for selecting stop bits, they should all be set to the same value. During the stop bit, the sending unit should maintain the data wire at the negative (idle) voltage level. At this time, the receiving unit will sample the data wire.

If both the sending unit and receiving unit are at the same BPS (BAUD) rate, then after it has finished clocking in the data from the sending unit, the receiving unit should see the stop bit's negative (idle) voltage level.

If the receiving unit sees a positive voltage at this time, then it knows that it and the sending unit are out of synchronous so it generates a framing error.

NOTE: A framing error commonly occurs when the sending and receiving units are at different BPS or BAUD rates.

CHARACTER MODE ASYNCHRONOUS

Character mode asynchronous data transfers occur one byte (character) at a time, with each transfer separated by idle time. Character mode is used for interactive communications, as when a personal computer user in terminal mode communicates with a bulletin board.

BLOCK MODE ASYNCHRONOUS

Block mode asynchronous data transfers have no idle time between character transmissions. The sending unit packs the asynchronous data transfers end to end with no idle time (except for the stop bit). A block mode asynchronous data transfer is used for things like file transfers, where a large mass of already existing data is sent.

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Tech Info Library Article Number:1401



Tech Info Library

Disk Drive Preventive Maintenance

Revised: 11/7/88
Security: Everyone

Disk Drive Preventive Maintenance

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This article last reviewed: 2 November 1988

PROTECT YOUR MEDIA

Sometimes "disk drive problems" are really media problems, caused by the way the customer stores his disks. Make sure your customers know to keep disks away from dust, heat, electromagnetic inducing devices such as power supplies, CRTs, magnets, and the power/sweep PCB on the left side of a Macintosh.

YOU WILL NEED

1. Q-tips
2. Solution of 80% denatured alcohol and 20% deionized or distilled water

INSTRUCTIONS

The following preventive maintenance procedures should be performed whenever a repair or adjustment is done on a disk drive.

DISK II AND DISK III

1. Remove the cover and clean the guide rails (the metal shafts that the head slides on) with the alcohol/water solution. Do not use grease.
2. Inspect the head for worn or dull spots in the ceramic. If you find any, replace the assembly containing the head.
3. Clean the head with the alcohol/water solution.
4. Remove the bottom of the drive and inspect the disk drive belt for cracks, slippage, and elasticity (should not be dry and cracked). Replace if necessary.
5. Move the head assembly back and forth along its full length of travel. Check for blockage and smooth easy movement.

DUODISK AND UNIDISK

1. Remove the cover, the shield(s) and the analog PCB. Then perform steps 1 through 5 as explained in DISK II AND DISK III above.
2. Locate the spring connected to the head drive band. Make sure that it is holding the band reasonably taut.

APPLE IIc DISK DRIVE

1. Remove the disk drive from the Apple IIc and remove the mechanical assembly from the disk drive. Then perform steps 1 through 5 as explained in "DISK II AND DISK III", above.
2. Locate the spring connected to the head drive band. Make sure that it is holding the band reasonably taut.

MAC EXTERNAL DRIVE

No preventive maintenance is required on this drive. However, it is recommended that it be used only on the right hand side of the Macintosh. This helps keep any electro-magnetic interference from the power/sweep PCB from affecting disk drive operation.

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Tech Info Library Article Number:1402



Tech Info Library

ImageWriter II Initial Checks

Revised: 11/7/88
Security: Everyone

ImageWriter II Initial Checks

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This article last reviewed: 2 November 1988

NOTE: Remove the Option Card if one is installed. Check the DIP switches after removal. SW2-4 should be open/off with the card out.

This initial check table deals with minor problems such as a loose cable, bad ribbon cartridge (color or black), incorrectly set DIP switches, etc. The items on this list should always be checked before you begin actual troubleshooting.

INITIAL CHECKS

Check for the problems below. If your problem isn't listed in or solved by the initial checks, search on IMAGEWRITER II GENERAL TROUBLESHOOTING.

SYMPTOM	CHECK
Error lamp blinks	-Is carrier cover securely in place? -If left margin error occurs while printing, it may be a software problem: try other software.
Select off, Error on	-No paper or paper improperly inserted?
No printing or garbled printing	-Is the interface cable between the printer and computer loose or disconnected? -Check DIP switches: SW2-1 and SW2-2 should be closed for 9600 BPS SW2-3 should be open for DTR handshaking (DTR is a popular form of data flow control; for more info on flow control search on HTS and FLOW CONTROL). SW2-4 should be open if no option card is installed and closed if an option card is installed.

Software-specific problem	<ul style="list-style-type: none">-Try a known good piece of software.-Contact the Software Manufacturer to see if the program supports the IW II.
Prints okay for a while then garbage	<ul style="list-style-type: none">-Set DIP switch 2-3 to the correct serial protocol.-Check that cable is securely installed.
Overprinting	<ul style="list-style-type: none">-Check that the program being used is set for the correct line spacing and line length.
Light printing	<ul style="list-style-type: none">-Change ribbon cartridge.-Try different settings of the impression control lever (four positions).

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Tech Info Library Article Number:1403



Tech Info Library

ImageWriter II General Troubleshooting

Revised: 7/22/88
Security: Everyone

ImageWriter II General Troubleshooting

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This article last reviewed: 20 February 1989

DESCRIPTION:

Follow this procedure to determine whether the ImageWriter II is functional.

YOU WILL NEED:

1. Apple IIe computer
2. Super Serial Card
3. Printer cable
4. Level I Tech Procedures for ImageWriter II
5. ImageWriter II User's Manual
6. Pencil and paper
7. Color ribbon for the ImageWriter II

A NOTE ABOUT THE RED ERROR LIGHT:

If the ERROR LIGHT stays lit: Check and make sure that the printer is not out of paper. The paper-out switch or main CPU PCB might be defective if the printer has paper inserted properly.

The ERROR LIGHT blinks at regular intervals: Check to make sure that the cover is securely fastened and that the magnet is still in place (located under the front right of the cover). Sometimes the magnet becomes loosened and falls out. Also, check to make sure that a paper jam has not occurred.

The ERROR light blinks irregularly: Check DIP switch 4 on Switch 2. DIP switch 4 should be set to the "closed" position if the AppleTalk Card or Memory Card is installed. Otherwise DIP switch 4 should be set to "open".

BEFORE YOU START:

1. If replacement or adjustment procedures are needed, refer to the Tech Procedures.

2. If location for IW II controls is needed, refer to the User's Manual.
3. Install the color ribbon on the printer.

CHECK 1: PRE-PRINT

- 1.1 Disconnect the printer cable at the back of the IW II.
- 1.2 Remove the AppleTalk Option card
- 1.3 Check that the top panel is installed correctly.
- 1.4 Check that paper is installed.
- 1.5 Turn the platen knob.

PROB: The platen binds or doesn't turn consistently.

FIX: Take off the top cover, pull off the platen knob and check for obstructions in the gears

- 1.6 Move the carriage back and forth along its full length of travel.

PROB: The carriage binds or doesn't move consistently.

FIX: Check if carrier belt is properly installed.
Check for obstructions. "Very" lightly lubricate the carrier shaft with tellus lubrication oil.

CHECK 2: POWER ON INITIALIZATION

As you turn on the printer, check for NORMAL PRINTER ACTIONS below.

NORMAL PRINTER ACTION

IF NOT THEN

The power lamp lights.

Search on HTS and ImageWriter II and Power/Carrier problems

The carrier should move slowly to its leftmost position then rapidly to its center position

Search on HTS and ImageWriter II and Power/Carrier Problems

The platen should rotate one line backward and one forward

Search on HTS and ImageWriter II and Line Feed Problems

The ribbon frame assembly should tilt down about two lines and then up to become level again.

Search on HTS and ImageWriter II and Color Select Problems

The SEL lamp lights.

Search on HTS and ImageWriter II and Communication Problems

CHECK 3: SELF TEST

To initiate Self Test: turn the printer off and press Form Feed while you turn it back on. The printer should print:

SELF TEST

ROMREV

DIP switch settings

RAM XX AT On or OFF

and then begin printing lines of CHARACTER SETS in alternating colors.

If the Self Test occurs as described above and the print quality is good, go to CHECK 4.

If the printer doesn't print character sets or the print quality is poor, search on "HTS and Imagewriter II and Self Test". The document you will obtain contains fixes for IW II Self Test problems.

CHECK 4: HOST PRINT

4.1 Turn off the printer, write down the customer's Super Serial Card and printer DIP switch configurations. Set the DIP switches as shown below:

(Note: Op = open, Cl = closed, up = On, dn = Off)

IW II-SW1								IW II-SW2					
Op	Op	Op	Op	Op	Cl	Op	Op	Op	Op	Cl	Cl	N/A	N/A
1	2	3	4	5	6	7	8	1	2	3	4	5	6

SSC-SW1							SSC-SW2						
Off	Off	Off	On	Off	On	On	On	Off	Off	On	On	Off	Off
1	2	3	4	5	6	7	1	2	3	4	5	6	7

MODEM/TERM jumper
block to TERM

NOTE: Dip switches 2-5 and 2-6 on the printer are preset at the factory. They control the timing of the firing of the hammer. Do not move these switches unless a hammer firing adjustment is being done. Refer to ImageWriter II Technical Procedures for more information.

4.2 Remove all peripheral cards from the IIe. Install the Super Serial card in slot 1. Connect the IW II to the S/S card via printer cable. Turn on the IW II (make sure cover is installed). Turn on the IIe and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Type the program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
40 PRINT CHR$(I);:NEXT I:PRINT
50 NEXT A
60 PR#0
70 END
```

4.3 After you type RUN and press the <RETURN> key. The printer should

print out about 100 character sets like the one shown below. If it does, the IW II is OK.

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

If it doesn't, look below for problems.

* If you get a SYNTAX ERROR on the computer, you may have mis-typed a line.

To correct the syntax error perform the following:

- (1) Type LIST and press <RETURN>. The program should appear on the screen.
- (2) Examine the program for accuracy. Spaces, colons, etc. are important.
- (3) To correct a line, simply retype the line and press <RETURN>. LIST again to make sure the correction is OK.

* If nothing happens on the printer or the computer, press the RESET key while you press the CONTROL key. Then LIST your program as described above in the SYNTAX ERROR explanation to look for typing errors.

* If no syntax errors occurred; the cursor is blinking again; then the program has probably run OK so there must be a problem with the printer. Search on "HTS and Imagewriter II and Communications". The document you will obtain contains fixes for IW II hardware communications problems.

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Tech Info Library Article Number:1404



Tech Info Library

ImageWriter II:Carriage Problems and Cures

Revised: 1/30/92
Security: Everyone

ImageWriter II:Carriage Problems and Cures

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This article last reviewed: 23 November 1987

#1: Carriage Hums and Won't Move at Power On

PROBLEM DESCRIPTION: When the printer is powered on, the carriage should move to the far left and then back to the center of its travel. With this problem, the carriage doesn't move at all at power on.

CAUSE: Printer is shipped with plastic tubes on the carriage shaft to hold the carriage stationary and so prevent damage. It is not easy to see that these tubes are just shipping fixtures so sometimes they aren't removed at installation.

CURE: If plastic tube shipping fixtures are installed, remove them from the carriage shaft.

#2:Carriage Moves to the Right at Power Up

PROBLEM DESCRIPTION: Carriage moves to the right instead of the left at power up.

CAUSE: The CPU PCB may be defective.

CURE: Replace the CPU PCB with a known good one.

#3:DEAD PRINTER

PROBLEM DESCRIPTION: When you power up the printer the carriage doesn't move at all.

CAUSE: it could be a defective Driver PCB; it could be a

defective CPU PCB.

CURE: 1. If the LEDs are not lighting, replace the Driver PCB.
2. If the LEDs are lighting, replace the CPU PCB.

#4: AFTER POWER UP CARRIAGE MOVES LEFT BUT DOESN'T CENTER

PROBLEM DESCRIPTION: When the printer is turned on, the Carriage moves to the left but does not return to the center.

CAUSE: The end of travel switch mounted under the Carriage Assembly may be bent or malfunctioning.

CURE: Power off the unit. Remove the top cover and slide the Carriage Assembly to the right. Set the printer on its right side and locate the switch under the Carriage Assembly. Make sure that it is not bent. If it isn't, push the switch and check for (a) or (b) below:

(a) IF THE SWITCH HESITATES TO GO IN AND RETURNS VERY SLOWLY, then it's probably stuck. Spray contact cleaner on the switch while you press it a few times. Do this until it operates freely.
Recheck for the problem.

(b) IF THE SWITCH OPERATES FREELY BUT THE CARRIAGE STILL WON'T CENTER AT POWER UP, the problem could be the CPU, switch, Carriage Assembly, ribbon cable, or power supply. Refer to the Tech Procedures for the troubleshooting procedure to isolate the problem to one of these modules.

#5:DESCRIPTION

When the printer is turned on, the power light should come on.

YOU WILL NEED:

1. Level I Tech Procedures for ImageWriter II
2. ImageWriter II User's Manual

BEFORE YOU START:

1. If a replacement doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
2. For location of IW II module/parts, refer to the Level I Tech Procedures.

INSTRUCTIONS

1. Move the carriage back and forth along its full length of travel.

PROB: The carriage binds or doesn't move consistently.

FIX: Check if carrier belt is installed properly

Check for obstructions in the gears

2. Turn on the IW II. The power lamp should come on and the carriage should move slowly to its leftmost position, then rapidly to its center position.

PROB: The power lamp doesn't light when the IW II is turned on or the carriage does not operate properly.

FIX: Recheck for the problem after each of the following steps:

- (1) Check that power is turned on.
- (2) Check that the power cord is plugged in.
- (3) Replace the operation panel.
- (4) Check the 5 amp and 1 amp fuses on the Drive PCB
 - * If either is burned out, replace it and turn power on again.
 - * If the fuse blows a second time, replace components in this order
(recheck for the problem after each replacement):
 - a. Drive PCB
 - b. Carrier motor
 - c. Transformer
- (5) If the fuse is OK, swap the power cord.
- (6) Replace components in this order (recheck for the problem after each replacement): transformer, drive PCB, filter board, 2 amp fuse on the filter board, power switch.

PROB: There is a burning odor, erratic carrier motion, or erratic platen rotation when the printer is turned on.

FIX: Recheck for the problem after replacing each of the following parts:

- (1) Drive PCB
- (2) Main CPU PCB
- (3) Carrier motor
- (4) Flexible cable
- (5) PCB interconnection cable
- (6) Interface cable

If the above cures don't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1405



Tech Info Library

ImageWriter II Line Feed Problems

Revised: 1/30/92
Security: Everyone

ImageWriter II Line Feed Problems

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This article last reviewed: 04 February 1988

YOU WILL NEED:

1. Level I Tech Procedures for ImageWriter II
2. ImageWriter II User's Manual
3. Digital Multi-meter

BEFORE YOU START:

1. If a replacement module/part doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
2. For location of IW II parts, refer to the Level I Tech Procedures.
3. After each of the steps in this procedure, perform the IW II Self Test to see if the problem has been repaired. To initiate Self Test turn the printer off and press Form Feed while you turn it back on.

INSTRUCTIONS

1. To check the paper feed mechanism, insert paper, take off the top cover, pull off the platen knob, check for obstructions in the gears, and look to make sure the gears to the left of the platen mesh properly. If defective module/parts are found, replace them.

2. Turn off the printer and check the Form Feed and Line Feed switches on the operation panel as follows. If either proves defective, replace the operation panel.

2.1 Set the digital multi-meter to measure 200 ohms resistance.

2.2 Place the probes on pin 12 and pin 13 of the operation panel connector. The reading should show no connection (1).

2.3 Depress the Form Feed switch. The reading should show continuity (0.00).

2.4 Place the probes on pin 11 and pin 13 of the operation panel connector. The reading should show no connection (1).

2.5 Depress the Line Feed switch. The reading should show continuity (0.00).

3. Replace the Drive PCB

4. Turn off the printer and check the paper feed motor as follows. If it proves defective, replace it.

4.1 Set the digital multi-meter to measure 200 ohms resistance.

4.2 At the cable connector end (disconnected from the drive PCB), check the resistance values between pins 6 and 4, 6 and 2, 5 and 1, and 5 and 3 (pin 1 is the black wire). The value for each reading should be approximately 22 ohms.

4.3 Check the resistance values between pins 3 and 1; and 2 and 4. The value for each reading should be approximately 44 ohms.

5. Replace the Main CPU PCB.

PROBLEM/CURE:IMAGEWRITER II

--Line Feed Problems Cause Power Supply to Smoke--

PROBLEM DESCRIPTION: The line feed function is not working properly (too much friction) and/or a component on the power supply module may have burned up.

CAUSE: The line feed motor may have shorted a winding. This can cause components on the power supply and the CPU PCBs to be destroyed.

CURE: Remove the motor from the printer and try to turn its pulley. Check for (a) and (b) below:

(a) "If the pulley turns hard", then the windings are burned out so replace the bad line feed motor and recheck for the problem.

-If the printer still does not work after the replacement of the Line Feed motor, the original bad motor may have damaged the Power Supply and CPU PCBs. In this case try replacing one or the other or both of these modules.

(b) "If the pulley turns freely", then most likely the motor is good. Inspect the Power Supply for burned components, etc.

-If burned or discolored components are found on the Power Supply, replace the Power Supply.

-If the Power Supply appears to be OK, replace the CPU PCB.

If the above cures don't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1406



Tech Info Library

ImageWriter II Color Select Problems

Revised: 11/7/88
Security: Everyone

ImageWriter II Color Select Problems

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This article last reviewed: 2 November 1988

YOU WILL NEED:

1. Level I Tech Procedures for ImageWriter II
2. ImageWriter II User's Manual
3. Digital Multi-meter
4. Color ribbon for the ImageWriter II

BEFORE YOU START:

1. If a replacement module/part doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
2. For location of IW II module/parts, refer to the Level I Tech Procedures.
3. The other functions on the printer must be working before this procedure can be performed. To check out the other functions, try printing a file from the IIf.

INSTRUCTIONS

1. Press the FORM FEED switch on the IW II as you turn on the printer. The printer should print:

SELF TEST

ROMREV

DIP switch settings

RAM XX AT On or OFF

and then begin printing lines of CHARACTER SETS in alternating colors.

If the printout shows color select problems, continue with this procedure below.

2. Examine the color ribbon assembly (printer should be off). Verify that

the black tabs on the ribbon plate are riding on the spiral ridge of the ribbon cam. Check the ribbon cam for looseness. Also check the copper tab mounted behind and below the ribbon cam. When the cam is all the way up, the vertical ridge on the cam should hit the tab. If the color ribbon assembly is loose, the ribbon cam position is misaligned. For color printing adjustment procedures turn to Section 4, Adjustments, in the Tech Procedures. For more location info, see the illustrated parts diagrams in the Tech Procedures.

3. Replace the Drive PCB.
4. Turn off the printer and check the flexible cable and the ribbon motor as follows. If the check shows a problem, replace the flexible cable first and retry the check. If the problem remains, replace the ribbon motor.

NOTE: If part location information is needed, refer to the illustrated parts list in the Tech Procedures.

4.1 Detach the flexible cable from the drive PCB.

4.2 Set the digital multimeter to measure 200 ohms resistance.

4.3 On the flexible cable, check the resistance values between pins 3 and 7, 5 and 7, 4 and 8, and 6 and 8. The value for each reading should be approximately 120 ohms.

4.4 Check the resistance values between pins 3 and 5, and 4 and 6. The value for each reading should be approximately 240 ohms.

5. Replace the Main CPU PCB
6. Reset the DIP switches to the customer's original configuration. Then refer to the User's Manual and the Appendix in the Imagewriter II section of the Tech Procedures to see if the customer's DIP switch configuration caused the problem.

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Tech Info Library Article Number:1407



Tech Info Library

ImageWriter II Self Test Problems

Revised: 11/7/88
Security: Everyone

ImageWriter II Self Test Problems

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This article last reviewed: 2 November 1988

YOU WILL NEED:

1. Level I Tech Procedures for ImageWriter II
2. ImageWriter II User's Manual
3. ImageWriter II color ribbon
4. Digital multimeter

BEFORE YOU START:

1. Install the color ribbon on the IW II.
2. If replacement or adjustment procedures are needed, refer to the Tech Procedures.
3. For location of IW II controls, refer to the User's Manual.
4. The printer must be able to perform a normal "power on initialization" before it can perform a Self Test. If you are unsure that your printer can do this, search on HTS and IMAGEWRITER II and GENERAL. Perform the HTS ImageWriter II General troubleshooting procedure. If the printer fails Self Test in that procedure, return here for instructions.

INSTRUCTIONS:

To initiate Self Test: turn the printer off, and press Form Feed while you turn it back on. The printer should print:

SELF TEST

ROMREV

DIP switch settings

RAM XX AT (On or OFF)

..TIL01408-ImageWriter_II_Self_Test_Problems_(TA30678).pdf

and then begin printing CHARACTER SETS something like the one below in alternating colors.

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

- * If the Self Test occurs as described above and the print quality is good, the printer is OK.
- * If the print quality is poor, search on HTS and IMAGEWRITER II and PRINT QUALITY.
- * If the printout shows a color select problem, search on HTS and IMAGEWRITER II and COLOR SELECT.
- * If the printout shows a problem other than color select or print quality, perform the steps below:
 1. Turn the printer off and check the Form Feed switch on the operation panel as follows. If it proves defective, replace the operation panel.
 - 1.1 Set the digital multimeter to measure 200 ohms resistance.
 - 1.2 Place the probes on pin 12 and pin 13 of the operation panel connector. The reading should show no connection (1).
 - 1.3 Depress the Form Feed switch. The reading should show continuity (0.00).
 2. Turn the printer off and check the flexible cable and the Head PCB as follows. If check shows a problem, replace the flexible cable and Head PCB.
 - 2.1 Detach the flexible cable from the drive board.
 - 2.2 Locate the home position switch (under the left hand side of the ribbon carrier on the Head PCB).
 - 2.3 Set the digital multimeter to measure 200 ohms resistance.
 - 2.4 Place the probes on pin 10 and pin 12 on the flexible cable.
 - 2.5 Push the home position switch on the Head PCB. The reading should be 0.00 when the switch is depressed. When the switch is released, the reading should be 1.
 3. Replace the Drive PCB
 4. Manually move the carrier back and forth. If it will not move, visually

inspect the following. If you find a defective module/part, replace it.

4.1 Check the ribbon cartridge to be sure the ribbon is wound when the knob is turned in the direction of the arrow.

4.2 Check the carrier shaft and carrier belt for damage and foreign materials.

4.3 Check the ribbon wire for dislocation and damage.

4.4 Perform carrier shaft maintenance (see Section 1, Basics in the ImageWriter II tab of the Tech Procedures).

5. Replace the Main CPU PCB.

6. Replace the Carrier motor.

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Tech Info Library Article Number:1408



Tech Info Library

ImageWriter II Print Quality Problems

Revised: 11/7/88
Security: Everyone

ImageWriter II Print Quality Problems

=====

This article last reviewed: 2 November 1988

YOU WILL NEED:

1. Level I Tech Procedures for ImageWriter II
2. ImageWriter II User's Manual

BEFORE YOU START:

1. If a replacement module/part doesn't fix the problem, reinstall the original module/part before continuing with the procedure.
2. For location of IW II module/parts or adjustment procedures, refer to the Level I Tech Procedures.

INSTRUCTIONS:

1. Check the paper guide positioning adjustment.
2. Turn off the printer and replace the flexible cable.
3. Check the print head as follows. If it proves defective, replace it.
 - 3.1 Set the digital multimeter to measure 200 ohms resistance.
 - 3.2 Remove the print head and place it PCB side down with the edge connectors facing you. Place one probe on each side of the first edge finger on the right side of the print head. The resistance value should be approximately 3 ohms.
4. Replace the Drive PCB.
5. Replace the Main CPU PCB.

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Tech Info Library Article Number:1409



Tech Info Library

ImageWriter II: Correcting Communications Problems (1/97)

Revised: 1/24/97
Security: Everyone

ImageWriter II: Correcting Communications Problems (1/97)

=====

Article Created: 2 November 1988
Article Reviewed/Updated: 23 January 1997

TOPIC -----

This article describes how to ensure an ImageWriter II printer is functional. This article is designed for service providers who have access to the Level I Tech Procedures for the ImageWriter II printer. However, you can perform the functionality check without the Tech Procedures.

DISCUSSION -----

YOU WILL NEED:

1. Apple IIe computer
2. Super Serial Card
3. Printer cable
4. Level I Tech Procedures for ImageWriter II
5. ImageWriter II User's Manual
6. Pencil and paper

BEFORE YOU START:

- If replacement or adjustment procedures are needed, refer to the Tech Procedures.
- For location of IW II controls, refer to the User's Manual.

INSTRUCTIONS:

1. Connect the printer cable at the back of the IW II.
2. Remove the AppleTalk Option card
3. Check that the top panel is installed correctly.
4. Check that paper is installed.
5. Turn off the printer, write down the customer's Super Serial Card and printer DIP switch configurations. Set the DIP switches as shown below:

(Note: Op = open, Cl = closed, up = On, dn = Off)

IW II	SW1								SW2					
	Op	Op	Op	Op	Op	Cl	Op	Op	Cl	Cl	Op	Op	Cl	Op
	1	2	3	4	5	6	7	8	1	2	3	4	5	6

S/S Card	SW1							SW2							MODEM/TERM
	Off	Off	Off	On	Off	On	On	On	Off	Off	On	On	Off	Off	jumper
	1	2	3	4	5	6	7	1	2	3	4	5	6	7	to term

Note:

On the ImageWriter II, DIP switch 4, on SW2 is OPEN if Localtalk Option card is not installed, and CLOSED if the LocalTalk Option card is installed.

6. Remove all peripheral cards from the IIe. Install the Super Serial card in slot 1. Connect the IW II to the S/S card using a printer cable. Turn on the IW II (make sure cover is installed). Turn on the IIe and press the RESET key while you press the CONTROL key (DO NOT BOOT A DISK). The cursor should blink.

Enter the BASIC program exactly as shown below.

```
10 PR#1
20 FOR A = 1 TO 100
30 FOR I = 32 TO 126
40 PRINT CHR$(I);:NEXT I:PRINT
50 NEXT A
60 PR#0
70 END
```

Enter RUN and press the <RETURN> key. The printer should print out about 100 character sets something like the one shown below:

```
!#$%&'()*+,-./0123456789:;<>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}
```

* If you get a syntax error on the computer, you may have mis-typed a line. To correct the syntax error perform the following:

- 1) Type LIST and press <RETURN>. The program should appear on the screen.
- 2) Examine the program for accuracy. Spaces, colons, etc. are important.
- 3) To correct a line, simply retype the line and press <RETURN>.
- 4) LIST again to make sure the correction is OK.

* If the IW II prints characters when the program runs, the printer is functional.

* If it doesn't and there is no syntax error on the computer, check for the problems below:

PROB: The printer does not print a set of characters.

FIX: Recheck for the problem after each of the following steps. If no problem is found, go to step 4.

- (1) Check that the computer is properly powered on and initialized.
- (2) Check that the SEL light is on. If it's not, press SEL and try to print from the computer again using the program above. If it prints while the SEL light is off, replace the switch panel.
- (3) Make sure that the interface cable between the printer and the computer is connected and secured at both ends.
- (4) Replace Main CPU PCB.
- (5) Replace printer internal connector cable.

PROB: The printer prints a set of characters but print quality is poor.

FIX: Do a word search for HTS and IMAGEWRITER II and PRINT QUALITY to obtain the print quality FIX.

7. Reset the DIP switches to the customer's original configuration. Then refer to the User's Manual and the Appendix in the ImageWriter II section of the Tech Procedures to see if the customer's DIP switch configuration caused the problem.

Article Change History:

24 Jan 1997 - Corrected DIP settings.

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Tech Info Library Article Number:1410



Tech Info Library

Macintosh 128K, 512K and Plus : Prints All Us to ImageWriter

Revised: 1/30/92
Security: Everyone

Macintosh 128K, 512K and Plus : Prints All "U"s to ImageWriter

=====

Article Created: 24 October 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: When the print to the ImageWriter is started by the Macintosh in question, the ImageWriter prints all "U"s. The ImageWriter performs the Self-Test OK and works fine with other Macintoshes and computers. This problem occurs with all applications.

CAUSE: The Macintosh is confused.

CURE: Verify that the customer is using "Choose Printer version 1.5" or greater. Previous versions had problems setting ports correctly. If "Choose Printer" revision is OK, do the following:

1. Turn the Macintosh and printer off and on again and recheck for this problem.
2. If the problem remains after step 1, clear Parameter RAM. You can do this by disconnecting the battery inside the Macintosh for about 10 seconds to help the Macintosh forget its improper port configuration. If the problem still is not cured, search on "Macintosh General Troubleshooting".

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Tech Info Library Article Number:1411



Tech Info Library

Macintosh 128K, 512K, Plus: ID = 02 Errors From External Drive

Revised: 1/30/92
Security: Everyone

Macintosh 128K, 512K, Plus: ID = 02 Errors From External Drive

=====

Article Created: 24 October 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Using external drive on left side of Macintosh gets 02 errors.

CAUSE: Drive could be getting RFI interference from power/sweep PCB inside of Mac.

CURE: Use the external drive on the right side of the Mac. If problem still not saved, search on Macintosh General Troubleshooting.

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Tech Info Library Article Number:1412



Tech Info Library

Macintosh 128K, 512K, Plus: Distorted Video/Scorched Components

Revised: 7/17/92
Security: Everyone

Macintosh 128K, 512K, Plus: Distorted Video/Scorched Components

=====

Article Created: 24 October 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Left side of Video display stretched with vertical line overlapped. Also often very discolored L2 and/or C2 on power/sweep PCB.

CAUSE: Possible blown flyback circuitry on power/sweep PCB.

CURE: Replace power/sweep PCB. If problem still not found, search on Macintosh General Troubleshooting.

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Tech Info Library Article Number:1413



Tech Info Library

Macintosh : Bomb and ID=02 Errors On Older Macintosh

Revised: 7/17/92
Security: Everyone

Macintosh : Bomb and ID=02 Errors On Older Macintosh

=====

Article Created: 24 October 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Getting random "Bomb and ID=02" errors on the Macintosh.

CAUSE: Static charge on the old type of CRT is arcing, causing errors.

CURE: Locate the band holding the CRT to the front of the Macintosh. If the band has black tape around it, then it is the old CRT and this fix could work. If an old CRT, put the electrical insulating washers between the front of the Macintosh and each screw holding the CRT band. If the problem still is not saved, search on "Macintosh General Troubleshooting" for additional information.

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Tech Info Library Article Number:1414



Tech Info Library

Parallel Interface Card: Product Description (11/96)

Revised: 11/22/96
Security: Everyone

Parallel Interface Card: Product Description (11/96)

Article Created: 24 October 85
Article Reviewed/Updated: 19 November 1996

TOPIC -----

This article describes the Apple II Parallel Interface card and includes other related information.

DISCUSSION -----

DB-25 Connector Pinout

DB-25

Connector	Signal Name
1.....	Data In, Bit 0
2.....	Signal Ground
3.....	Data In, Bit 2
4.....	Signal Ground
5.....	Data Out, Bit 0
6.....	Data Out, Bit 1
7.....	Blocked
8.....	Data Out, Bit 2
11.....	Data Out, Bit 5
12.....	Data Out, Bit 6
13.....	Data Out, Bit 7
14.....	Data In, Bit 4
15.....	Strobe Out
16.....	Acknowledge In
17.....	Data In, Bit 1
18.....	Data In, Bit 7
19.....	Data In, Bit 5
20.....	Signal Ground
21.....	Data In, Bit 6
22.....	Data Out, Bit 3
23.....	Data Out, Bit 4

24.....Signal Ground
25.....Data In, Bit 3

Switch Settings =====

Strobe Length -----

1 microsecond	-> SW1-1:Off, SW1-2:Off, SW1-3:Off
3 microseconds	-> SW1-1:On, SW1-2:Off, SW1-3:Off
5 microseconds	-> SW1-1:Off, SW1-2:On, SW1-3:Off
7 microseconds	-> SW1-1:On, SW1-2:On, SW1-3:Off
9 microseconds	-> SW1-1:Off, SW1-2:Off, SW1-3:On
11 microseconds	-> SW1-1:On, SW1-2:Off, SW1-3:On
13 microseconds	-> SW1-1:Off, SW1-2:On, SW1-3:On
15 microseconds	-> SW1-1:On, SW1-2:On, SW1-3:On

Strobe Polarity -----

Positive -> SW1-4:Off
Negative -> SW1-4:On

Ack Polarity -----

Positive -> SW1-5:Off
Negative -> SW1-5:On

Firmware Select -----

Parallel (LF) -> SW1-6:Off
Centronics (No LF) -> SW1-6:On

Interrupts -----

Disable -> SW1-7:Off
Enable -> SW1-7:On

Interrupts should be enabled for the Apple III and disabled for the Apple II.

Switch Setting Explanations -----

Different peripherals (non-Apple printers, etc.) may use I/O signals that have different duration and polarity. The STROBE LENGTH, STROBE POLARITY, and ACK POLARITY switch settings on the Parallel Interface Card (2PIC) give you the flexibility to communicate with these other devices. For the I/O signal characteristics of the device you are connecting with, read its manual.

Controlling Bit 8

The following program enables you to control bit 8, used by some printers to select expanded or normal print mode or to enable alternate or graphics character sets. DOS 3.2 or DOS 3.3 is required to use this routine, which also works in the Apple III in Emulation mode.

Determine which slot your interface card is in and the corresponding slot code from the table. Replace "<slot>" with the slot number and "<code>" with the code when typing in the program.

slot	1	2	3	4	5	6	7
code	C1	C2	C3	C4	C5	C6	C7

Enter the monitor with Call -155 and type:

```
3B0:A9 <slot>
:20 95 FE
:A9 80
:20 ED FD
:A9 C5
:85 36
:A9 03
:85 37
:4C EA 03
:29 7F
:0D CD 03
:4C 02 <code>
:80
```

To check your typing, type: 3B0L

Compare your listing to the one below configured for slot 1.

03B0-	A9 01	LDA	#\$01
03B2-	20 95 FE	JSR	\$FE95
03B5-	A9 80	LDA	#\$80
03B7-	20 ED FD	JSR	\$FDED
03BA-	A9 C5	LDA	#\$C5
03BC-	85 36	STA	\$36
03BE-	A9 03	LDA	#\$03
03C0-	85 37	STA	\$37
03C2-	4C EA 03	JMP	\$03EA
03C5-	29 7F	AND	#\$7F
03C7-	0D CD 03	ORA	\$03CD
03CA-	4C 02 C1	JMP	\$C102
03CD-	80	???	

Enter 3D0G to return to Basic.

Save the driver to disk by typing: BSAVE CEN 730, A\$3B0, L\$1E

Load the driver and initialize the interface before using the printer. From command mode, type:

```
BLOAD CEN 730
Call 944
```

Or from a program: 100 Print D\$;"BLOAD CEN 730" : Call 944, assuming that D\$ is a CTRL-D.

To switch back to the video monitor for output type: PR#0
or in a program enter: 200 Print D\$;"PR#0"

To reconnect the printer, all that is required is: Call 954, or from a program:
300 Call 954

To set normal print mode, type POKE 973,0; type POKE 973,128 to set the expanded print mode POKE.

Cable Pinouts

Here is a sample pinout for an Apple II parallel card to a parallel printer.

20-Pin DIL Connector (Female)	Amphenol Connector (Male)
1 -----	14
2 -----	10
8 -----	1
10 -----	2
11 -----	3
12 -----	4
13 -----	5
14 -----	6
15 -----	7
16 -----	8
17 -----	9
20 -----	16

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1415



Tech Info Library

ImageWriter 15 PROBLEM/CURE: Prints Only 8 Wide in Self Test

Revised: 1/30/92
Security: Everyone

ImageWriter 15 PROBLEM/CURE: Prints Only 8" Wide in Self Test

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: During Self Test (initiated by turning on printer while pressing Form Feed) the ImageWriter 15 prints character sets only 8 inches wide (it should print test 15 inches wide).

CAUSE: ImageWriter 15 may have the wrong motherboard installed.

CURE: Locate the position for IC 22. If there is a chip installed at that position, then the PCB is for the ImageWriter 15. If not, then the PCB is for the ImageWriter 8.

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Tech Info Library Article Number:1416



Tech Info Library

Parallel/Centronics Card Pin-Out

Revised: 11/7/88
Security: Everyone

Parallel/Centronics Card Pin-Out

=====

This article last reviewed: 2 December 1988

These two cards although different in name, are virtually identical apart from those differences outlined below.

PIN OUTS (same for both cards)

20 Pin Header	Signal Name
1.....	Ground - Pin 1 and 20 must be used.
2.....	ACK (Handshake)
8.....	Strobe out
10.....	Bit 0 (LSB)
11.....	Bit 1
12.....	Bit 2
13.....	Bit 3
14.....	Bit 4
15.....	Bit 5
16.....	Bit 6
17.....	Bit 7 (MSB)
20.....	Ground - Pin 1 and 20 must be used

NOTE: The differences between the two cards are as follows.

CENTRONICS:

The Centronics card is supplied with the PROM P9 (341-0019) installed and does NOT add a linefeed after carriage return. The Jumper block is pre-configured for negative STROBE and positive acknowledge (ACK) signals.

PARALLEL:

The Parallel card is supplied with the PROM P1 (341-0005) installed and does

..TIL01418-Parallel-Centronics_Card_Pin-Out_(TA30783).pdf

add a linefeed after carriage return. With this card you must wire the jumper block yourself. For further information please refer to page 6 of the card's manual.

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Tech Info Library Article Number:1418



Tech Info Library

Apple IIC: External Pinouts (6/94)

Revised: 6/24/94
Security: Everyone

Apple IIC: External Pinouts (6/94)

=====

Article Created: 10 October 1985
Article Reviewed/Updated: 24 June 1994

TOPIC -----

This article describes the pinouts of the Apple IIC computer.

DISCUSSION -----

Joystick

- 1- GAMESW1 Switch input 1 (sometimes called paddle button 1).
- 2- +5V total current drain from this pin must not exceed 100mA.
- 3- GND System ground.
- 4- Not Used for hand controller.
- 5- PDL0 hand controller input. Must be connected to a 150K ohm variable resistor connected to +5V.
- 6- N.C. Not connected.
- 7- GAMESW0 Switch input 0 (sometimes called paddle button 0).
- 8- PDL1 hand controller input; must be connected to a 150K ohm variable resistor connected to +5V.
- 9- Not used with hand controller.

DB-15 Video Expansion Connector

- 1- TEXT Video text signal from TMG; set to inverse of GR, except in double high-resolution mode.
- 2- 14M 14M master timing signal from the system oscillator.
- 3- SYNC* Displays horizontal and vertical synchronization signal from IOU pin 39.
- 4- SEGB Displays vertical counter bit from IOU pin 4; in text mode, indicates second low-order vertical counter; in graphics mode, indicates low-resolution.
- 5- 1VSOUND One-volt sound signal from pin 5 of the audio hybrid circuit

(AUD).

- 6- LDPS* Video shift-register load enable from pin 12 of TMG.
- 7- WNDW* Active area display blanking; includes both horizontal and vertical blanking.
- 8- +12V Regulated +12 volts DC; can drive 300mA.
- 9- PRAS* RAM row-address strobe from TMG pin 19.
- 10- GR Graphics mode enable from IOU pin 2.
- 11- SEROUT* Serialized character generator output from pin 1 of the 74LS166 shift register.
- 12- NTSC Composite NTSC video signal from VID hybrid chip.
- 13- GND Ground reference and supply.
- 14- VIDD7 From 74LS374 video latch; causes half-dot shift high.
- 15- CREF Color reference signal from TMG pin 3; 3.58 MHz.

Note: The signals at the DB-15 on the Apple IIC are not the same as those at the DB-15 end of the Apple III, Apple IIGS, and Macintosh II. Do not attempt to plug a cable intended for one into the other.

Several of these signals, such as the 14 MHz, must be buffered within about 4 inches of the back panel connector--preferably inside a container directly connected to the back panel.

Printer/Modem port

The serial ports on the Apple IIC are standard 5 pin DIN, however, they are not labeled as standard DIN. Therefore, when looking at the back of the Apple IIC, the pinouts are as follows:

5 Pin DIN	Position	Signal Name
1.....	4 O'Clock ...	Data Terminal Ready
2.....	5 O'Clock ...	Transmit Data
3.....	6 O'Clock ...	Signal Ground
4.....	7 O'Clock ...	Receive Data
5.....	8 O'Clock ...	Data Set Ready

PINOUT EXPLANATION

Pin 1 (DTR) becomes active when the IIC is ready to go on line.

Pin 2 (TD) conveys serial data sent from the IIC.

Pin 3 (SG) is used to provide a common ground reference for the electronics in both the IIC and the device it is connected to.

Pin 4 (RD) receives serial data sent from the device to the IIC it is connected to.

Pin 5 (DSR) is asserted by the device the IIC is connected to when it is ready to go on line.

NOTE:

The serial ports on an Apple IIC are essentially identical, the pin connections being the same on both. The main difference being that the printer port is pre-configured for 9600 baud and the communication port is preconfigured for 300 baud. The printer port appears to the software as slot 1, the communication port as slot 2. The settings of these ports can be changed with the Apple IIC System Utilities disk. Please see the System Utilities manual for precise details.

CHARACTERISTICS AT STARTUP

The Apple IIC's ports are configured with keyboard commands instead of DIP switches. After power-up, the IIC sets the printer port to the default configuration given below:

9600 baud

8 data bits and no parity.

2 stop bits.

80 chars per line LF after CR Command character is CTRL-I

Hardware (DTR flow control protocol) handshake.

External Floppy Drive Connector

The Apple IIC external disk drive port is a DB-19 connector. The signals available at the port are as follows:

1 - GND	10 - WRPROT
2 - GND	11 - SEEKPH0
3 - GND	12 - SEEKPH1
4 - GND	13 - SEEKPH2
5 - +12V	14 - SEEKPH3
6 - + 5V	15 - /WRREQ
7 - +12V	16 - NC
8 - +12V	17 - /DR2
9 - /EXTINT	18 - RDDATA
	19 - WRDATA

For more info on how to change a port's configuration, refer to the Apple IIC
Technical Reference Manual.

Article Change History:

24 Jun 1994 - Added complete pinout information for the IIC, revised
formatting.

Support Information Services

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Tech Info Library Article Number:1419



Tech Info Library

Apple IIC: Video Port Pin-Out

Revised: 11/7/88
Security: Everyone

Apple IIC: Video Port Pin-Out

=====

This article last reviewed: 02 November 1988

This port requires an external PAL modulator to connect to a TV set. It is NOT an RGB port, to connect to an RGB monitor an external piece of hardware is required.

PIN OUTS

15 Pin			
Connector	Signal	Description	
1	TEXT	.....	Video text signal from GLU
2	14M	.....	14MHz Timing signal from master oscillator
3	SYNC	.....	Display synchronisation signal from IOU pin 39.
4	SEGB	.....	Display Vertical counter bit from IOU pin 4.
5	1VSOUND	..	1v sound signal.
6	LDPS	.....	Video shift Register load enable.
7	WNDW	.....	Active area display blanking.
8	+12v	.....	Regulated +12v.
9	PRAS	.....	Ram row address strobe.
10	GR	.....	Graphics mode enable.
11	SEROUT	...	serialized character generator output.
12	NTSC	.....	Composite NTSC video signal.
13	GND	Ground.
14	VIDD7	Causes half dot shift if high.
15	CREF	Colour reference signal

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Tech Info Library Article Number:1420



Tech Info Library

Apple III Port C: RS-232-C Serial Interface And Serial Card 3

Revised: 11/10/88
Security: Everyone

Apple III Port C: RS-232-C Serial Interface And Serial Card 3

=====

This article last reviewed: 2 November 1988

PINOUTS

DB-25 Connector	Signal Name
1	Shield Ground
2	Transmit Data (Tx)
3	Receive Data (Rx)
4	Request To Send (RTS)
5	Clear To Send (CTS)
6	Data Set Ready (DSR)
7	Signal Ground
8	Data Carrier Detect (DCD)
20	Data Terminal Ready (DTR)

NOTE:

Serial Card 3 has a modem eliminator button, when this button is "in" the above pin outs are correct. If the button is "out" this has the effect of a modem eliminator cable being installed.

Apple III Port C: RS-232-C Serial Interface & Serial Card 3 "Driver"

DATA CONFIGURATION BLOCKS

The following table explains how to configure the driver for the RS232 port using the System Configuration Program in the Apple III System Utilities (remember, to set the slot number).

DCB \$00 = BAUD RATE
For BAUD RATE - Set \$00 DCB to:

110	- \$03
134.5	- \$04
300	- \$06

600	-	\$07
1200	-	\$08
1800	-	\$09
2400	-	\$0A
4800	-	\$0C
9600	-	\$0E

DCB \$01 = DATA FORMAT

For Bits Parity - Set \$01 DCB to:

Bits	Parity	
8	none	- \$00
7	odd	- \$22
7	even	- \$26
7	MARK	- \$2A
7	SPACE	- \$2E
6	odd	- \$42
6	even	- \$46
6	MARK	- \$4A
6	SPACE	- \$4E

DCB \$02 thru \$04 = PRINTER DELAYS

Using this driver to connect to a printer may require that you set the delay time then observe the printer while it actually performs the function you want it to delay after (i.e., Carriage Return, Line Feed, Form Feed). If the delay is not adequate you will have to reset it. The delays are given in the range of \$00 to \$FF characters which specify the number of characters that would be sent during the delay specified. After the CR, LF, or FF the RS 232 driver will wait for the time it would take to transmit the amount of characters specified before it sends the following character.

DCB 02 = Delay After Carriage Return

DCB 03 = Delay After Line Feed

DCB 04 = Delay After Form Feed

DCB \$05 thru \$0B = FLOW CONTROL

For protocol - Set \$05 \$06 \$07 \$08 \$09 \$0A \$0B DCBs to:

none	-	\$00						\$00
XON/XOFF	-	\$80	\$13	\$11	\$DF	\$84		\$00
ENQ/ACK	-	\$40	\$05	\$06			\$50	
ETX/ACK	-	\$40	\$03	\$06			\$50	
DTR HW Hndshk-		\$00			\$DF	\$84		\$80

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Tech Info Library Article Number:1421



Tech Info Library

Apple III Universal Parallel Interface Card (UPIC)

Revised: 11/7/88
Security: Everyone

Apple III Universal Parallel Interface Card (UPIC)

=====
This article last reviewed: 2 November 1988

DI=Data In
DO=Data Out

PIN OUTS

20 Pin Connector

Pin Number	Signal	Pin Number	Signal
1	Signal Ground	11	Port A output D01
2	Acknowledge input	12	Port A output D02
3	Port B input DI0	13	Port A output D03
4	Port B input DI1	14	Port A output D04
5	Port B input DI2	15	Port A output D05
6	Port B input DI3	16	Port A output D06
7	Port B input DI4	17	Port A output D07
8	Strobe output	18	Port B input DI6
9	Port B input DI5	19	Port B input DI7
10	Port A output D00	20	Signal Ground

40 Pin Connector

1	Port B output D00	21	Port A output D01
2	Port B output D01	22	Port A output D02
3	Port B output D02	23	Port A output D03
4	Port B output D03	24	Port A output D04
5	Port B output D04	25	Port A output D05
6	Port B output D05	26	Port A output D06
7	Port B output D06	27	Port A output D07
8	Port B output D07	28	Port B input DI6
9	Pin removed	29	Port B input DI7
10	Pin removed	30	Signal Ground

11	Signal Ground	31	Pin removed
12	Acknowledge input	32	Pin removed
13	Port B input DI0	33	Data ready output
14	Port B input DI1	34	Signal ground
15	Port B input DI2	35	Signal ground
16	Port B input DI3	36	Signal ground
17	Port B input DI4	37	Signal ground
18	Strobe output	38	Data ready ACK in
19	Port B input DI5	39	Signal ground
20	Port A output DO0	40	Signal ground

DATA CONFIGURATION BLOCK

Commonly used configurations for the driver .PRINTER on the SOS 1.3 Update diskette are listed in the following table.

Printer	Device configuration block (DCB) values				
	ERRMASK	ERRSTAT	AUTOLF	CTRLWRD	TIMEOUT
	00	01	02	03	04
Centronics 779/700	E0	C0	40	00	0A
Centronics 730/737	C0	C0	00	00	5A
Anadex DP-8000	E0	C0	00	00	5A
Printronic P300	E0	C0	00	00	0A
C.Itoh 8510A	E8	C8	40	00	0A
IDS 440/445/460	60	40	00	00	5A
Epson MX-80	E8	C8	00	00	0A
TI 810	E8	C0	00	00	0A
Any printer connected					
with Apple II cable	00	00	00	00	00

For further information on the Data Configuration Block please refer to page 19 onwards of the Universal Parallel Interface card manual.

NOTE:

The driver .PARALLEL is used for two way communications i.e. for input and output, when using the 40 pin connector. This driver has a three byte configuration block. Please refer to pages 29 onwards in the UPIC manual for more information.

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Tech Info Library Article Number:1422



Tech Info Library

Apple ///: Color Video Port Pinouts (2/95)

Revised: 2/14/95
Security: Everyone

Apple ///: Color Video Port Pinouts (2/95)

Article Created: 28 October 1985
Article Reviewed/Updated: 14 February 1995

TOPIC -----

This article provides a description of the Apple /// color video port.

DISCUSSION -----

DB-15 Connector Signal Description

- | | | |
|----|-------------------|--|
| 1 |Shield Ground | - Establishes electrical ground. |
| 2 |XRGB4 | - One of 4 RGB outputs. Pins 2, 5, 9, & 10 are TTL outputs with instantaneous color information. A linear-weighted sum of these four signals will form a true 16 color RGB video signal. |
| 3 |SYNC | - Composite negative synchronous signal. |
| 4 |PDI | - Not used |
| 5 |XRGB1 | - See pin 2 (one of 4 RGB outputs) |
| 6 |GND | - Power & Signal Ground |
| 7 |-5V | - Maximum load 200 mA |
| 8 |+12V | - Maximum load 500 mA |
| 9 |XRGB2 | - See pin 2 (one of 4 RGB outputs) |
| 10 |XRGB8 | - See pin 2 (one of 4 RGB outputs) |
| 11 |BWVID | - NTSC B&W Composite video with negative going sync, 1 volt peak to peak into a 75 ohm load. |
| 12 |NTSC | - NTSC Color video with negative going sync, 1 volt peak to peak into a 75 ohm load. |
| 13 |GND | - Power & Signal Ground |
| 14 |-12V | - Maximum load 200 mA |
| 15 |+5V | - Maximum load 1 Amp. |

Article Change History:

14 Feb 1995 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1423



Tech Info Library

Macintosh 128K, 512K: Connector Pinouts

Revised: 7/17/92
Security: Everyone

Macintosh 128K, 512K: Connector Pinouts

=====

Article Created: 2 November 1988
Article Last Reviewed: 1 July 1992
Article Last Updated: 1 July 1992

Macintosh Mouse Connector

Pin	Name	Description, Notes
1	CGND	Chassis ground
2	+5V	See hardware Description, Notes for power limits
3	CGND	Chassis ground
4	X2	Horizontal movement line (connected to VIA PB4 line)
5	X1	Horizontal movement line (connected to SCC DCDA- line)
6	N-C	Not connected
7	SW-	Mouse button line (connected to VIA PB3)
8	Y2	Vertical movement line (connected to VIA PB5 line)
9	Y1	Vertical movement line (connected to SCC DCDB- line)

Macintosh Keyboard Connector

Pin	Name	Description, Notes
1	CGNB	Chassis ground
2	KBD1	Keyboard clock
3	KBD2	Keyboard data
4	+5V	

Macintosh External Drive Connector

Pin	Name	Description, Notes
1	CGNB	Chassis ground

2	CGND	Chassis ground
3	CGND	Chassis ground
4	CGND	Chassis ground
5	-12V	
6	+5V	
7	+12V	
8	+12V	
9	N-C	Not connected
10	PWM	Regulates speed of the drive
11	CA0	Control line to send commands to the drive
12	CA1	Control line to send commands to the drive
13	CA2	Control line to send commands to the drive
14	LSTRB	Control line to send commands to the drive
15	WrReq-	Turns on the ability to write data to the drive
16	HdSel	Control line to send commands to the drive
17	Enbl2-	Enables the Rd line (else Rd is tristated)
18	Rd	Data actually read from the drive
19	Wr	Data actually written to the drive

Macintosh RS422 9 Pin Communications Connectors

The following pin connections apply to the interfaces for both the serial communications modem port and the serial printer port on the Macintosh 128K and 512K. If the device being connected to the Macintosh uses RS422 the cable must have pins 4 and 8. If the device uses RS-232 pins 4 and 8 are not necessary.

DB-9 Connector Pin	Signal Name		Comments
	RS-232:	RS-422:	
1	GND	GND	Ground
2	Not used	+5V	Don't use this one; it may be converted into output handshake in later equipment
3	GND	GND	Ground
4	Tx+	Tx+	Transmit Data, positive going component
5	Tx-	Tx-	Transmit data, negative going component
6	+12V	+12V	Use this one only to detect Macintosh power on, not as a power source.
7	DSR	HSK	Handshake input. Signal name depends on the mode: Used for Flow Control or Clock in.
8	Rx+	Rx+	Receive Data, positive going component
9	Rx-	Rx-	Receive Data, negative going component

NOTE:

Macintosh uses pin 7 as an input when communicating to printers in order

to determine whether the printer is ready to receive data (DTR hardware handshaking). Macintosh uses software handshaking for connecting to remote computers or terminals.

The signal range for RS-422 communication is 2 to 6 volts. Refer to EIA Standard RS-422 available from:

EIA Engineering Department
2001 Eye St. N.W.
Washington, D.C. 20006

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Tech Info Library Article Number:1424



Tech Info Library

Dot Matrix (DMP) Pin-Out and Switch Settings

Revised: 1/30/92
Security: Everyone

Dot Matrix (DMP) Pin-Out and Switch Settings

=====

This article last reviewed: 02 November 1988

PIN OUTS

Amp	Pin No.	Signal Name	Amp	Pin No.	Signal Name
	1	..... Data STB (-ve)	19	.....	Ground (TP pin 1)
	2	..... Data 1	20	.....	Ground (TP pin 2)
	3	..... Data 2	21	.....	Ground (TP pin 3)
	4	..... Data 3	22	.....	Ground (TP pin 4)
	5	..... Data 4	23	.....	Ground (TP pin 5)
	6	..... Data 5	24	.....	Ground (TP pin 6)
	7	..... Data 6	25	.....	Ground (TP pin 7)
	8	..... Data 7	26	.....	Ground (TP pin 8)
	9	..... Data 8	27	.....	Ground (TP pin 9)
10	.....	ACK (-ve)	28	.....	Ground (TP pin 10)
11	.....	Input Busy	29	.....	Ground (TP pin 11)
12	.....	Paper Empty	30	.....	Ground (TP pin 31)
13	.....	Select	31	.....	Input Prime (-ve)
14	.....	Ov	32	.....	Fault (-ve)
15	.....	no connection	33	.....	Ov
16	.....	Ov	34	.....	no connection
17	.....	Chassis Ground	35	.....	no connection
18	.....	+5v	36	.....	Input Busy

Note: TP = Twisted Pair cable

Dot Matrix (DMP) Switch Settings

CHARACTER SETS:

English (US) -> SW1-1:Open, SW1-2:Open, SW1-3:Open
English (UK) -> SW1-1:Closed, SW1-2:Closed, SW1-3:Open
Italian -> SW1-1:Closed, SW1-2:Open, SW1-3:Open

German -> SW1-1:Open, SW1-2:Open, SW1-3:Closed
Swedish -> SW1-1:Closed, SW1-2:Open, SW1-3:Closed
French -> SW1-1:Open, SW1-2:Closed, SW1-3:Closed
Spanish -> SW1-1:Closed, SW1-2:Closed, SW1-3:Closed

PAGE LENGTH:

72 Line -> SW1-4:Closed
66 Line -> SW1-4:Open

SELECT CODES:

Ignore -> SW1-5:Closed
Respond -> SW1-5:Open

ON BUFFER OVERFLOW:

Line feed -> SW1-6:Closed
No line feed -> SW1-6:Open

PRINT:

On CR,LF,VT,FF -> SW1-7:Closed
After CR only -> SW1-7:Open

LINE FEED:

Add LF after CR -> SW1-8:Closed
No LF after CR -> SW1-8:Open

ZERO CHARACTER:

Slash zero -> SW2-1:Closed
Do not slash zero -> SW2-1:Open

INPUT BUFFER:

One line only -> SW2-2:Closed
3k bytes -> SW2-2:Open

SWITCHES SW2-3 AND SW2-4 HAVE NO FUNCTION

CHARACTER SPACING:

Elite proportional -> SW2-5:Closed
Pica fixed width -> SW2-5:Open

8TH DATA BIT: (for more info, search on HTS and PARITY)

Ignore -> SW2-6:Closed
Recognize -> SW2-6:Open

ON POWER ON: (enables Select line on power up).

Select -> SW2-7:Closed
Deselect -> SW2-7:Open

PRINT:

Unidirectional -> SW2-8:Closed
Bidirectional -> SW2-8:Open

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Tech Info Library

ImageWriter Printer Configuration Table

Revised: 1/30/92
Security: Everyone

ImageWriter Printer Configuration Table

=====

This article last reviewed: 02 November 1988

System	SW-1	SW-2	CABLE REQUIRED
	12345678	1234	Part Number
Apple III	11001100	1100	590-0029 and 590-0037B
Macintosh	11001100	1100	590-0169
Lisa/Macintosh XL	11001100	1100	590-0029 and 590-0037B
Apple IIc	11001100	1100	590-0191A
Super Serial	11001100	1100	590-0037B
High Speed Serial	11001100	0011	590-0037B

NOTE: 0 = OFF = OPEN
1 = ON = CLOSED

Apple III Driver Configuration

Driver	Data Configuration Block											
	0	1	2	3	4	5	6	7	8	9	A	B
RS232	0E	00	00	00	00	00	13	11	DF	84	50	80
PRINTER	0E	00	00	00	00							

Super Serial Card Configuration

	1	_2_	_3_	_4_	_5_	_6_	_7_
SW1	Off	Off	Off	On	Off	On	On
SW2	On	Off	Off	Off	On	Off	Off

NOTE: Jumper block should be pointing towards terminal.

High Speed Serial Card Configuration

_____	|_1_|_2_|_3_|_4_|_5_|_6_|_7_|
Switches	On Off On On Off Off Off

NOTE: The High Speed card must have the PROM P8 installed.

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Tech Info Library Article Number:1427



Tech Info Library

Dot Matrix Printer Configuration Table (7/94)

Revised: 7/13/94
Security: Everyone

Dot Matrix Printer Configuration Table (7/94)

Article Created: 28 October 1985
Article Reviewed/Updated: 13 July 1994

TOPIC -----

This article details the Dot Matrix Printer configuration table.

DISCUSSION -----

System	SW-1	SW-2	CABLE REQUIRED
	12345678	12345678	Part Number
Apple III	11001010	00000110	590-0042B
Macintosh	N/A	N/A	N/A
Lisa/Macintosh XL	11001010	00000110	590-0042B
Apple IIc	N/A	N/A	N/A
Centronics Card	11001011	00000110	57-30360
2PIC	11001010	00000110	590-0042B

NOTE: 0 = OFF = OPEN
1 = ON = CLOSED

Apple III Driver Configuration

Driver	Data Configuration Block															
	_0	_1	_2	_3	_4	_5	_6	_7	_8	_9	_A	_B				
PRINTER	60	40	00	00	64											

Parallel Interface Card (2PIC) Configuration

Switch Bank	_1	_2	_3	_4	_5	_6	_7
SW1	Off	Off	Off	On	On	Off	Off

Article Change History:

13 Jul 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:1428



Tech Info Library

Apple Interface Cable Pin-Outs

Revised: 1/30/92
Security: Everyone

Apple Interface Cable Pin-Outs

=====

This article last reviewed: 02 November 1988

(MODEM ELIMINATOR)

P/N 590-0029

P/N 590-0037-B

DB25 Connector (Male)	DB25 Connector (FeMale)	DB25 Connector (Male)	DB25 Connector (Male)
1 -----	1	1 -----	1
2 -----	3	2 -----	2
3 -----	2	3 -----	3
4 & 5 -----	8	4 -----	4
6 -----	20	5 -----	5
7 -----	7	6 -----	6
8 -----	4 & 5	7 -----	7
20 -----	6	8 -----	8
		20 -----	20

* This connection is to be found in the supplied cable but is not actually required when you make your own cable.

(MACINTOSH TO MODEM)

P/N 590-0169

P/N 590-0197-A

DB9 Connector (Male)	DB25 Connector (Male)	DB9 Connector (Male)	DB9 Connector (Male)
1 -----	1	1 -----	8
3 -----	7	3 -----	3
5 -----	3	5 -----	9
7 -----	20	6 -----	6
9 -----	2	8 -----	1
		9 -----	5

P/N 590-0191-A

P/N 57-30360

5 Pin Din DB25 Connector

(Male)	(Male)
1 -----	6
2 -----	3
3 -----	7
4 -----	2
5 -----	20

20 Pin DIL Connector AMP36 Amphenol Connector

(Female)	(Male)
1 -----	14
2 -----	10
8 -----	1
10 -----	2
11 -----	3
12 -----	4
13 -----	5
14 -----	6
15 -----	7
16 -----	8
17 -----	9
20 -----	16

P/N 590-0042-B (DMP)

Mac to V.24 modem

DB25 Connector AMP36
(Male) (Male)

2 -----	19
5 -----	2
6 -----	3
8 -----	4
11 -----	7
12 -----	8
13 -----	9
15 -----	1
16 -----	10
18 -----	35
19 -----	12
21 -----	13
22 -----	5
23 -----	6
24 -----	16
25 -----	32

DB-9 DB-25
(Male) (Male)

1 -----	1
2 -----	4&20
3 -----	7
5 -----	2
7 -----	6
9 -----	3

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Tech Info Library Article Number:1429



Tech Info Library

ImageWriter: First Printed Line Squeezed Into 1/2 Line

Revised: 11/10/88
Security: Everyone

ImageWriter: First Printed Line Squeezed Into 1/2 Line

=====

This article last reviewed: 2 November 1988

PROBLEM DESCRIPTION: When print is initiated, the text of the first line is compressed.

CAUSE: When you tear paper from an older printer, the platen gears may be pulled 1/2 line or so out of alignment -- so that they are between two sprocket positions. This is a normal occurrence and doesn't mean that the printer is broken. During the print head's first pass after this has occurred, the platen will not be positioned properly. At the next pass (the printer may perform several passes for one line of print), the Line Feed motor is activated which turns the platen causing the platen gears to realign for the rest of the print.

CURE: Before printing, turn off the printer and then turn it back on again. This will cause the printer to perform its power-on initialization cycle which activates the Line Feed motor, thereby realigning the platen gears before the print is initiated.

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Tech Info Library Article Number:1430



Tech Info Library

Apple IIc : Won't Boot

Revised: 4/6/93
Security: Everyone

Apple IIc : Won't Boot

=====

Article Created: 19 December 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: The Apple IIc won't boot.

CAUSE: Two possible causes:

1. Power Supply RFI interfering with the disk drive's ability to read data from disks.
2. Color Monitor RFI interfering with disk drive's ability to read data from disks.

CURE: 1. Check the Technical Procedures "Power Supply Retrofit" to determine if the unit has a Type 1 power supply. If it is Type 1, follow the procedure to install the shield P/N 612-5004 onto the power supply.

2. Check for head shield on internal disk drive. If missing, install per March 1986 Technical Procedures update. A May Service & Support Notice will explain how to obtain reimbursement for this procedure.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1431



Tech Info Library

H-Series ColorMonitor IIC/e P/C: F901 Fuse Keeps Blowing

Revised: 1/30/92
Security: Everyone

H-Series ColorMonitor IIC/e P/C: F901 Fuse Keeps Blowing

=====

This article last reviewed: 15 December 1987

NOTE: Check the serial number. This fix is only for:
ColorMonitor IIEs with S/N less than Y029000
and
IIC ColorMonitors with S/N less than Y048650.

PROBLEM DESCRIPTION: F901 (3.15 amp fuse) on the main logic PCB
of H-Series ColorMonitor IIC and IIEs is blown.

CAUSE: A "special" medium blow higher ampere rating fuse needs to
be installed.

CURE: Contact your local support center and ask them to send you an
upgrade fuse kit.

If this cure does not resolve the problem, go to the Tech Procedures
to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1432



Tech Info Library

Macintosh 128K, 512K: Pinouts to PRC terminal box

Revised: 8/5/92
Security: Everyone

Macintosh 128K, 512K: Pinouts to PRC terminal box

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH	PRC TERMINAL BOX
-----------	------------------

1-----	GROUND-----	1
5-----	TDX-----	2
7-----	RTX-----	3
	RQS-----	4
	CTS-----	5
	DSR-----	6
3 or 8	SG-----	7
7-----	RLSD-----	8
6-----	DTR-----	20

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Tech Info Library Article Number:1433



Tech Info Library

Macintosh 128K & 512K: Pinouts to Appleline

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to Appleline

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH	APPLELINE
1-----	1
5-----	3
6-----	6
7-----	20
9-----	2
	4,5,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1434



Tech Info Library

Macintosh 128K & 512K: Pinouts to Hayes SmartModem

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to Hayes SmartModem

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH HAYES SMART MODEM

1-----FRM GRND----1
3 OR 8-----SIG GRND---7
5-----TD-----2
6-----+12 DTR-----20
7-----DCD-----8
9-----RD-----3

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Tech Info Library Article Number:1437



Tech Info Library

Macintosh 128K & 512K: Pinouts to Apple Daisywheel

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to Apple Daisywheel

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH	APPLE DAISYWHEEL
3 AND 8-----SG-----7	
7-----20	
9-----RXD-----2	
5-----TXD-----3	
	4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1438



Tech Info Library

Macintosh 128K & 512K: Pinouts to Brother printer

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to Brother printer

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH	BROTHER
3 AND 8-----SG-----7	
7-----20	
9-----RXD-----2	
5-----TXD-----3	
	4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1439



Tech Info Library

Macintosh 128K, 512K: Pinouts to Comrex CR-1 and CR-2

Revised: 8/5/92
Security: Everyone

Macintosh 128K, 512K: Pinouts to Comrex CR-1 and CR-2

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH COMREX CR-1 AND CR-2

3 AND 8-----SG-----7
7-----20
9-----RXD-----2
5-----TXD-----3
4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1440



Tech Info Library

Macintosh 128K & 512K: Pinouts to NEC 2010

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to NEC 2010

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH	NEC 2010
3 AND 8-----SG-----7	
7-----20	
9-----RXD-----2	
5-----TXD-----3	
	4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1441



Tech Info Library

Macintosh 128K & 512K: Cable to Qume Letter Pro 20 & Sprint II

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Cable to Qume Letter Pro 20 & Sprint II

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH QUME LETTER PRO 20 SERIES AND QUME SPRINT II

3 AND 8-----SG-----7
7-----20
9-----RXD-----2
5-----TXD-----3
4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1442



Tech Info Library

Macintosh 128K & 512K: Pinouts to Transtar 140

Revised: 8/5/92
Security: Everyone

Macintosh 128K & 512K: Pinouts to Transtar 140

=====

Article Created: 7 November 1985
Article Last Reviewed: 4 August 1992
Article Last Updated:

MACINTOSH TRANSTAR 140.

3 AND 8-----SG-----7
7-----20
9-----RXD-----2
5-----TXD-----3
 4,5,6,8: Jumpered

Copyright 1985 Apple Computer, Inc.

Tech Info Library Article Number:1443



Tech Info Library

Lisa/Macintosh XL: Cable structure to Hayes SmartModem

Revised: 11/7/85
Security: Everyone

Lisa/Macintosh XL: Cable structure to Hayes SmartModem

=====

MACINTOSH XL	HAYES SMART-MODEM
--------------	-------------------

1-----	1
2-----	2
3-----	3
7-----	7
20-----	20

Clinton Computer, MD

Tech Info Library Article Number:1444



Tech Info Library

Lisa/Macintosh XL: Cable structure to Comrex CR-IIE

Revised: 11/7/85
Security: Everyone

Lisa/Macintosh XL: Cable structure to Comrex CR-IIE

=====

MACINTOSH XL	COMREX CR-IIE
2-----	2
7-----	7
6-----	20
	4,5,6,8: Jumpered

Clinton Computer, MD

Tech Info Library Article Number:1445



Tech Info Library

Apple IIC: Cable structure to Nec 2015 Spinwriter

Revised: 11/7/85
Security: Everyone

Apple IIC: Cable structure to Nec 2015 Spinwriter

=====

APPLE IIC	NEC 2015 SPINWRITER
-----------	---------------------

2-----	3
3-----	7
4-----	2
5-----	19
	4,5,6,8: Jumpered

NEC Dip switch settings:

Switch series 1: all off except #8
Switch series 2: all off
Switch series 3: all off except #4,6,7,8.

Clinton Computer, MD

Tech Info Library Article Number:1447



Tech Info Library

Apple IIC: Cable structure to Olympia RO

Revised: 11/7/85
Security: Everyone

Apple IIC: Cable structure to Olympia RO

=====

APPLE IIC	OLYMPIA RO
-----------	------------

2-----	3
3-----	7
4-----	2
5-----	4

NOTE: Use factory dip swich settings for printer.

Clinton Computer, MD

Tech Info Library Article Number:1448



Tech Info Library

Apple IIC: Cable structure to Okidata 92 Serial Adapter

Revised: 11/7/85
Security: Everyone

Apple IIC: Cable structure to Okidata 92 Serial Adapter

=====

APPLE IIC	OKIDATA 92 SERIAL ADAPTOR
-----------	---------------------------

4-----	2
2-----	3
	4,5: Jumpered
	6,20: Jumpered
3-----	7
5-----	11

Clinton Computer, MD

Tech Info Library Article Number:1449



Tech Info Library

Apple IIC: Cable structure to Comrex CR-II

Revised: 11/7/85
Security: Everyone

Apple IIC: Cable structure to Comrex CR-II

=====

APPLE IIC	COMREX CR-II
-----------	--------------

1-----	6,5,8
3-----	7
5-----	20

Dip switch settings for COMREX:

Switch series 1: all closed
Switch series 2: all closed except 3

Clinton Computer, MD

Tech Info Library Article Number:1450



Tech Info Library

Apple IIC: Cable structure to Lex Modem

Revised: 11/7/85
Security: Everyone

Apple IIC: Cable structure to Lex Modem

=====

APPLE IIC	LEX MODEM
-----------	-----------

1-----	6
2-----	2
3-----	7
4-----	3
5-----	5

Clinton Computer, MD

Tech Info Library Article Number:1451



Tech Info Library

Apple III: Cable structure to Olympia RO

Revised: 11/7/85
Security: Everyone

Apple III: Cable structure to Olympia RO

=====

APPLE III	OLYMPIA RO
-----------	------------

1-----	1
3-----	2
4-----	6
7-----	7

Clinton Computer, MD

Tech Info Library Article Number:1452



Revised: 9/16/86
Security: Everyone

=====

2-----3
6-----20
7-----7

Tech Info Library Article Number:1453



Tech Info Library

EtherTalk: Some New Third-party EtherTalk Products for 1988

Revised: 1/13/88
Security: Everyone

EtherTalk: Some New Third-party EtherTalk Products for 1988

=====

This article last reviewed: 7 January 1988

The Release 3.0 of the Kinetics FastPath Manager implements EtherTalk/AppleTalk protocols with FastPath. This implementation includes a new load file, named 'etalkgw.srec' which includes EtherTalk support and the combined gateway code. This upgrade includes 3.0 PROMs for the FastPath with enhanced reliability and performance. The upgrade also includes a new network diagnostic/traffic application called 'LANRanger.' EtherTalk/AppleTalk protocol support is also available for the Etherport SC and SE products in a software upgrade for both the SC and SE manager (Release 2.0.). The new software is included with all new Kinetics products.

Alisa System's version of AppleTalk for VMS (Release 1.6) operates with the EtherTalk card for directly connected Macintosh IIs on Ethernet. Release 1.6 also operates with the new Kinetics software managers. A new version of the AlisaTalk file server (Release 3) supports 'remote terminal' function.

In addition, 3Com is said to be working on a new Mac 3+ driver for the EtherTalk card which allows direct connectivity for the Macintosh II under Macintosh OS and the 3Com 3Server using 3Com's implementation of the XNS protocol on Ethernet. This software will be unbundled, allowing a purchaser of an Apple EtherTalk card to buy the software separately.

Tech Info Library Article Number:1454



Tech Info Library

Font/DA Mover: Pre-3.6 Versions Are Not MultiFinder Compatible

Revised: 8/7/91
Security: Everyone

Font/DA Mover: Pre-3.6 Versions Are Not MultiFinder Compatible

=====

Article Created: 87 December 1987
Article Last Reviewed: 2 February 1991
Article Last Updated: 2 February 1991

TOPIC -----

My copy of Font/DA Mover 3.6 works fine when I run it under the Finder, but I have problems when MultiFinder is on.

DISCUSSION -----

Font/DA Mover 3.6 (included with System Tools 5.0) is compatible with MultiFinder. However, the MultiFinder "User's Guide" recommends turning MultiFinder off when your application or desk accessory isn't behaving properly under Font/DA Mover versions earlier than 3.6. The manual specifically recommends turning MultiFinder off when you install or remove fonts or desk accessories. Note that the warning applies only to versions of Font/DA Mover earlier than 3.6.

We recommend you upgrade to a 6.0.x release of Macintosh system software that is compatible with your computer. This would include the current version of the Font/DA Mover. If you want to upgrade to System 7, you won't need Font/DA Mover at all.

See the Tech Info Library for additional guidelines on using MultiFinder and FontDA Mover.

Copyright 1987, 1991 Apple Computer, Inc.

Tech Info Library Article Number:1455



Tech Info Library

Apple III UPIC: Cable structure to IDS Series printers

Revised: 9/16/86
Security: Everyone

Apple III UPIC: Cable structure to IDS Series printers

=====

APPLE III UPIC	IDS SERIES PRINTERS (PARALLEL DB-25)
----------------	--------------------------------------

1, 20-----	7
2-----	22
8-----	3
9-----	24
10-----	14
11-----	13
12-----	12
13-----	11
14-----	10
15-----	9
16-----	15

Apple Technical Communications

Tech Info Library Article Number:1457



=====

Tech Info Library Article Number:1458



Tech Info Library

Apple III: Cable structure to C. Itoh 1550 (serial)

Revised: 9/16/86
Security: Everyone

Apple III: Cable structure to C. Itoh 1550 (serial)

=====

APPLE III C.ITOH 1550 (SERIAL)

2-----3
3-----2
6-----20
7-----7
20-----6

Apple Technical Communications

Tech Info Library Article Number:1459



Tech Info Library

Apple III: Cable structure to Comrex CR-1 (serial)

Revised: 9/16/86
Security: Everyone

Apple III: Cable structure to Comrex CR-1 (serial)

=====

APPLE III	COMREX CR-1 SERIAL
-----------	--------------------

2-----	3
3-----	2
6-----	20
7-----	7
20-----	6

Comrex CR-1 Dip switch settings:

Switch series 1: all open except #4
Switch series 2: all open except #6,7

Apple Technical Communications

Tech Info Library Article Number:1460



Tech Info Library

Apple III: Cable structure to Hayes SmartModem

Revised: 4/9/91
Security: Everyone

Apple III: Cable structure to Hayes SmartModem

=====

APPLE III	HAYES SMART-MODEM
-----------	-------------------

2-----	2
3-----	3
7-----	7
20-----	20

Apple Technical Communications

Tech Info Library Article Number:1461



Tech Info Library

Apple III: Cable structure to HI Plot Plotter

Revised: 9/16/86
Security: Everyone

Apple III: Cable structure to HI Plot Plotter

=====

APPLE III	HI PLOT PLOTTER
-----------	-----------------

2-----	3
3-----	2
6-----	6,16
7-----	7

NOTE: Apple Serial Driver should be set for 2400 Baud, XOn/XOff, 8 bits, no parity, 1 stop bit.

Apple Technical Communications

Tech Info Library Article Number:1462



Tech Info Library

Converting CADAM or IGES Output to a Macintosh

Revised: 7/28/93
Security: Everyone

Converting CADAM or IGES Output to a Macintosh

=====

Article Created: 1 December 1987
Article Reviewed/Updated: 27 July 1993

Lockheed's CADAM system and McDonnell-Douglas' Unigraphics can save files in IGES format. You can then use any of several IGES-to-Macintosh converters to get the file into a Macintosh. (You can also connect directly to the CADAM system using a Tektronix 4014 emulator, such as VersaTerm-Pro.)

The CADMOVER utility (from Kandu Software Corp.) can convert:

- IGES -> Minicad and MiniCad -> IGES
- IGES -> DXF
- IGES -> MacDraw
- IGES -> PICT
- IGES -> MSC/pal

Three Macintosh CAD packages that support IGES file format:

- MGM Station Professional (from Micro CAD/CAM, Inc.)
- EZ-Draft (from Bridgeport Machines, Inc.)
- Minicad (from Diehl Graphsoft, Inc.)

Article Change History:

- 26 July 1993 - Company title updated from Bridgeport Macnines to Bridgeport Machines, Inc.
- 24 March 1988 - Updated for technical accuracy.

Copyright 1993, Apple Computer Inc.

Tech Info Library Article Number:1463



Tech Info Library

Super Serial Card: Cable for NEC Printers (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for NEC Printers (11/96)

Article Created: 07 November 1985
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts and switch settings for connecting the Super Serial card to a Nec 3510 Spinwriter printer.

DISCUSSION -----

NEC 3510 Spinwriter

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Receive Data (Rx)	3	<----->	3	
Signal Ground .....(SG).....	7	<----->	7	
Data Terminal Ready (DTR)	20	<----->	19	

Super Serial Card dip switch settings

SW1: all off except #4,6,7
SW2: all off except #1,3,4

NEC dip switch settings

* Switches located on inside on G9NA5 board: ALL OFF

* The other dip switches are located in a cluster, and should be set as follows:

|	|X|	|X|	|	|	|	|	|	|X|	|	|	|	|	|X|X|	|	|X|	UP
|X|	|X|	|X|X|X|X|	|X|X|	|X|	|X|X|X|X|	|	|	|	|X|	|						DOWN

NEC 5510/7710, 5515/7715, 5520/7720, 5525/7725

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1.....	(FG)
Transmit Data (Tx)	2	<----->	3.....	(Rx)
Receive Data (Rx)	3			
Request to send (RTS)	4	<----->	5.....	(CTS)
Clear To Send (CTS)	5			
Data Set Ready (DSR)	6	<----->	19.....	(SCTS)
Signal Ground .....(SG).....	7	<----->	7.....	(SG)
Data Carrier Detect (DCD)	8			
Secondary Clear To Send (SCTS) ...	19			
Data Terminal Ready (DTR)	20	<----->	6 & 8.	(DSR) & (DCD)

Printer dip switches

SW1 1 - OPEN
 2 - CLOSED
 3 - OPEN
 4 - OPEN
 5 - CLOSED
 6 - OPEN
 7 - CLOSED
 8 - OPEN

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1464



Tech Info Library

Super Serial Card: Cable for US Robotics Password Modem (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for US Robotics Password Modem (11/96)

Article Created: 07 November 1985
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a US Robotics Password Modem.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Modem Connector
Frame Ground	(FG)..... 1			
Transmit Data	(Tx) 2	<----->	2	
Receive Data	(Rx) 3	<----->	3	
Request to send	(RTS) 4			
Clear To Send	(CTS) 5			
Data Set Ready	(DSR) 6			
Signal Ground	(SG)..... 7	<----->	7	
Data Carrier Detect	(DCD) 8			
Secondary Clear To Send	(SCTS) ... 19			
Data Terminal Ready	(DTR) 20	<----->	20	

Super Serial Card dip switch settings

SW1: all up except 1 (down)
SW2: all up except 6,7 (down)

* Set Super Serial Card configuration block to Terminal.

Modem dip switches settings

* Dip switch settings for Modem: ALL DOWN

Article Change History:

21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1465



Tech Info Library

Super Serial Card: Cable for Smith-Corona TP-1 (11/96)

Revised: 11/21/96
Security: Everyone

Super Serial Card: Cable for Smith-Corona TP-1 (11/96)

Article Created: 07 November 1985
Article Reviewed/Updated: 21 November 1996

TOPIC -----

Listed below are the cable pinouts for connecting the Super Serial card to a Smith-Corona TP-1.

DISCUSSION -----

Super Serial Card (SSC)	Pin	Cable	Pin	Printer Connector
Frame Ground .....(FG).....	1	<----->	1	
Transmit Data (Tx)	2	<----->	2	
Receive Data (Rx)	3	<----->	3	
Request to send (RTS)	4	<----->	4	
Clear To Send (CTS)	5	<----->	5	
Data Set Ready (DSR)	6	<----->	6	
Signal Ground .....(SG).....	7	<----->	7	
Data Carrier Detect (DCD)	8	<----->	8	
Data Terminal Ready (DTR)	20	<----->	20	

Article Change History:
21 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-96, Apple Computer, Inc.

Tech Info Library Article Number:1466



Tech Info Library

CCS-7710: Cable for Nec 3510 and 5510 Spinwriter (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Nec 3510 and 5510 Spinwriter (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Nec 3510 or 5510 Spinwriter printers.

DISCUSSION -----

Nec Spinwirter 3510

CCS-7710		NEC 3510 SPINWRITER
3	<----->	3
4	<----->	19
7	<----->	7
		6,8,20: Jumpered

Nec Spinwriter 5510

CCS-7710		NEC 5510 SPINWRITER
3	<----->	3
4	<----->	19
7	<----->	7
		5,6,8,20: Jumpered

CCS 7710 dip switch settings for Nec 5510

All down except #3

NEC 5510 dip switch settings

All down except #4,7,8

NEC 510 front panel switch settings

Speed=h, parity=m, dup=f, set to remote.

* These cable are for use with the Apple IIe computer.

Article Change History:

28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1468



Tech Info Library

CCS-7710: Cable for C.Itoh Starwriter F10 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for C.Itoh Starwriter F10 (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the C.Itoh Starwriter F10 (serial) printer.

DISCUSSION -----

CCS-7710	C.ITOH STARWRITER F10 (SERIAL)
----------	--------------------------------

2 <----->	2
3 <----->	3
7 <----->	7
4 <----->	20

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1470



Tech Info Library

CCS-7710: Cable for TI-820 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for TI-820 (1/97)

=====
Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the TI-810 printer.

DISCUSSION -----

CCS-7710	TI-820
3 <----->	3
7 <----->	7
11 <----->	4,5,6,20

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1471



Tech Info Library

CCS-7710: Cable for Apple Daisywheel printer (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Apple Daisywheel printer (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the pinouts for connecting the CCS-7710 interface card to the Apple Daisywheel printer.

DISCUSSION -----

CCS-7710	APPLE DWP
----------	-----------

2 <----->	2
3 <----->	3
4 <----->	20
5 <----->	5
6 <----->	6
7 <----->	7
8 <----->	8
20 <----->	4

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1472



Tech Info Library

CCS-7710: Cable for Comrex CR-1 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Comrex CR-1 (1/97)

=====

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Comrex CR-1 printer.

DISCUSSION -----

CCS-7710	COMREX-CR-1
----------	-------------

3 <----->	3
4 <----->	20
7 <----->	7
8 <----->	8

CCS-7710 dip switch settings

All closed except #3

CR-1 dip switch settings

TOP BANK: all open except 4
BOTTOM BANK: all closed

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.



Tech Info Library

CCS-7710: Cable for Daisywriter (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Daisywriter (1/97)

=====

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Daisywriter printer.

DISCUSSION -----

CCS-7710 DAISYWRITER (50 pin connector)

3 <-----> 3
7 <-----> 6
4 <-----> 49

CCS-7710 dip switch settings

All on except #1

Daisywriter dip switch settings

TOP BANK: all off except #1
CENTER BANK: all off except #8,
BOTTOM BANK: all off except #2

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1474



Tech Info Library

CCS-7710: Cable for Datasouth DS-180 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Datasouth DS-180 (1/97)

=====
Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Datasouth DS-180 printer.

DISCUSSION -----

CCS-7710	DATASOUTH DS-180
----------	------------------

2	<-----> 2
3	<-----> 3
7	<-----> 7
4	<-----> 20

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1475



Tech Info Library

CCS-7710: Cable for IDS Printers (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for IDS Printers (1/97)

=====

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the IDS 400 or 500 series printers.

DISCUSSION -----

CCS-7710	IDS 400 AND 500 SERIES
----------	------------------------

2	<-----> 2
3	<-----> 3
7	<-----> 7
4	<-----> 20

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1476



Tech Info Library

CCS-7710: Cable for Olivetti ET-121 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Olivetti ET-121 (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Olivetti ET-121 printer.

DISCUSSION -----

CCS-7710	OLIVETTI ET-121
----------	-----------------

2 <----->	2
3 <----->	3
5 <----->	6
7 <----->	7

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1477



Tech Info Library

CCS-7710: Cable for C.Itoh Prowriter (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for C.Itoh Prowriter (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the C.Itoh Prowriter printer with serial board.

DISCUSSION -----

CCS-7710	C.ITOH PROWRITER (Serial board)
----------	---------------------------------

2 <----->	2
3 <----->	3
7 <----->	7
4 <----->	20

CCS-7710 dip switch settings

All up except #4

C.ITOH dip switch settings

Switch Bank 1: all open except #2
Switch Bank 2: all open except 6,7

Serial board dip switch settings

21: all open except #4
22: all open
23: all open except 1,5
24: all closed except #2,3,6,7

* This cable is for use with the Apple IIe.

Article Change History:

28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1478



Tech Info Library

CCS-7710: Cable for Silver-Reed EXP-550 (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Silver-Reed EXP-550 (1/97)

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Silver-Reed EXP-550 printer.

DISCUSSION -----

CCS-7710	SILVER-REED EXP-550
----------	---------------------

2 <----->	2
3 <----->	3
4 <----->	20
7 <----->	7

CCS-7710 dip switch settings

All down except #3

Silver-Reed dip switch settings

Left Bank: all off
Right Bank: all off except #2,5,8

* This cable is for use with the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.



Tech Info Library

CCS-7710: Cable for Hayes Smart Modem (1/97)

Revised: 1/28/97
Security: Everyone

CCS-7710: Cable for Hayes Smart Modem (1/97)

=====

Article Created: 11 July 1985
Article Reviewed/Updated: 28 January 1997

TOPIC -----

Listed below are the cable pinouts for connecting the CCS-7710 interface card to the Hayes Smart Modem.

DISCUSSION -----

CCS-7710	HAYES SMART MODEM
----------	-------------------

2	<-----> 3
3	<-----> 2
4	<-----> 5
5	<-----> 4
6	<-----> 20
7	<-----> 7
8	<-----> 8
20	<-----> 6

* This is a general purpose Null-Modem cable for this interface and the Apple IIe.

Article Change History:
28 Jan 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1985-97, Apple Computer, Inc.

Tech Info Library Article Number:1480



Tech Info Library

Orange Micro, Inc. (6/95)

Revised: 4/3/97
Security: Everyone

Orange Micro, Inc. (6/95)

=====

Article Created: 1 December 1987
Article Reviewed/Updated: April 3, 1997

Orange Micro, Inc.

1400 North Lakeview Ave.
Anaheim, CA 92807

714-779-2772 (Main/Local Phone Number)

714-779-9332 (Fax)

Company Profile:

Hardware and software, specializing primarily in interface cards including PCI (Peripheral Component Interconnect) cards, such as their Orange PC 400 Series MS-DOS and OS/2 Coprocessors.

Article Change History:

06 Jun 1995 - Added new product information.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1481



Tech Info Library

AppleWorks: Incorrect volume names cause retrieval problems

Revised: 11/12/85
Security: Everyone

AppleWorks: Incorrect volume names cause retrieval problems

=====

If you're having problems retrieving files in Appleworks, make sure that the copies of the Appleworks Startup and Program disk are both named /APPLEWORKS, and that your data disk is not named /APPLEWORKS. Appleworks uses that disk name to identify its program disk, so it can be confused by a program disk without the name /APPLEWORKS, or a data disk with that name.

Apple Technical Communications

Tech Info Library Article Number:1482



Tech Info Library

AppleWorks: Special Printer Codes for the Okidata 92

Revised: 8/10/87
Security: Everyone

AppleWorks: Special Printer Codes for the Okidata 92

=====

Following are the special Appleworks printer codes for the Okidata 92:

Function	Keystrokes (commas are separators)
CPI 10	Ctrl-^
CPI 12	Ctrl-\
CPI 17.1	Ctrl-]
Boldface Begin	Esc,T
Boldface End	Esc,I
Superscript Begin	Esc,J
Superscript End	Esc,K
Subscript Begin	Esc,L
Subscript End	Esc,M
Start Underline	Esc,C
End Underline	Esc,D
Correspondence Quality	Esc,1
Standard Quality	Esc,0

ComputerCraft Technical Support, Houston

Tech Info Library Article Number:1483



Tech Info Library

Color Monitor: Pinouts for Rev. O & Rev. A Cables (9/95)

Revised: 9/19/95
Security: Everyone

Color Monitor: Pinouts for Rev. O & Rev. A Cables (9/95)

Article Created: 12 November 1985
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Following are the pinouts for both the Rev. O and Rev. A cables (DB15 to CN8)
for the Color Monitor:

DISCUSSION -----

Begin-Table

REV O	REV A
-----	-----
DB15---Molex-8	DB15---Molex-8
1---4	1---1
2---1	2---2
3---5	3---3
4---2	4---4
5---3	5---5
6---7	6---6
7---6	7---7

End_Table

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.

Support Information Services

Apple Technical Communications

Tech Info Library Article Number:1484



Tech Info Library

Macintosh: Licensing the ImageWriter Driver Source Code

Revised: 10/4/89
Security: Everyone

Macintosh: Licensing the ImageWriter Driver Source Code

=====

This article last reviewed: 26 September 1989

The ImageWriter source code has been made available to developers in order to encourage development and support of complementary products for the Macintosh. Note that the source code will be distributed on an "as is" basis: Apple will NOT be providing technical support for it.

To receive the code, you must submit a one page proposal that describes why you need the software. This proposal must be approved before Apple can grant a license. Upon approval, you will be sent a software license agreement. You must pay a one-time licensing fee to receive the source code.

To license the source code, contact Apple Software Licensing. Search on Software Licensing for address information.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1485



Tech Info Library

MacWorks: Which Lisa boot ROMs to use

Revised: 8/15/86
Security: Everyone

MacWorks: Which Lisa boot ROMs to use

=====

The same boot ROMs recommended for Lisa software are fine for systems running MacWorks. In addition, square pixel ROMs are available for systems running only MacWorks XL. They are:

SYSTEM	CPU	I/O	Sq PIXELS (CPU-I/O is the same)
Lisa 2/10-Mac XL	F, H	D (88)	A3
Lisa 2	D, H	B (A8)	A3

Although MacWorks has been thoroughly tested with the earlier ROMs, consider upgrading them if a system with earlier ROMs shows illogical errors, such as locked disk errors when initializing a disk, which may occur after loading new system files.

Apple Technical Communications

Tech Info Library Article Number:1486



Tech Info Library

Lisa and Macintosh XL: Restoring Corrupted Parameter Memory

Revised: 7/30/87
Security: Everyone

Lisa and Macintosh XL: Restoring Corrupted Parameter Memory

=====

In the Lisa 2, Lisa 2/5, and Macintosh XL (Lisa 2/10), parameter memory settings are stored in two locations:

parameter RAM on the I/O board, and
the hard disk used for system boot.

In all Lisas and Macintosh XLs, parameter memory in the RAM is held by standby power as long as the machine is plugged in. Only the Lisa 2s and 2/5s have batteries to maintain parameter memory when the unit is unplugged.

The state of parameter memory at any one time depends on which of the following five configurations is true:

1. Configuration:

Neither the system disk nor the RAM has valid settings, such as when the system comes out of the box.

State of Parameter Memory:

The parameter memory will be set when the software is loaded.

2. Configuration:

The RAM does not have valid settings but the disk has, such as after the system is unplugged.

State of Parameter Memory:

The settings on the disk will be copied to RAM during startup.

3. Configuration:

RAM has valid settings but the disk does not, such as when loading software from an old system to a new disk.

State of Parameter Memory:

The settings in RAM will be copied to disk during startup.

4. Configuration:

RAM and the disk have dissimilar valid settings.

State of Parameter Memory:

The settings in RAM overwrite the settings saved on disk.

5. Configuration:

RAM and the disk have identical valid settings.

State of Parameter Memory:

Nothing happens to parameter memory during startup.

Understanding these five possible configurations will help you track down certain problems that may occur with Preferences. For example, if you make the mistake of installing the unofficial Revision C of MacWorks (configuration 1), Preferences somehow gets corrupted in RAM. Under configurations 2 and 3, this corrupted information is copied to the disk. When another disk is started up (configuration 4), the corrupted RAM information is copied onto this disk as well. As a result, there may be no uncorrupted copy of Preferences on any of your disks by the time you notice the problem.

Workaround 1:

1. Unplug the system with the corrupted RAM.
2. Start up MacWorks XL Revision D.

Parameter settings will be copied from MacWorks XL Revision D to RAM, as in Configuration 2 above.

Workaround 2:

1. Unplug the system with the corrupted RAM.

On a Lisa 2 or 2/5:

- a. Leave the system unplugged overnight, or
 - b. Take the I/O board out of the system, turn the battery switch to off, and leave the system for several hours.
2. Find a Profile with a working Lisa OS (Office System or Workshop).
 3. Install a 2-port parallel card in one of the expansion slots.

4. Plug the system back in and start up from the Profile.
5. Select Preferences and make the appropriate changes.
6. Turn the system off.
7. Without unplugging the system (VERY IMPORTANT - just disconnect the Profile from the parallel card), start up the system from the disk with the copy of the corrupted RAM. This copies the parameter memory from RAM onto the disk, restoring the disk copy of RAM.

Tech Info Library Article Number:1490



Tech Info Library

Apple IIGS: Memory Location of Disassembler

Revised: 1/21/88
Security: Everyone

Apple IIGS: Memory Location of Disassembler

=====

This article last reviewed: 6 January 1988

The Apple IIe's 20-line LIST routine (it begins at address \$FE5E) is not supported in the Apple IIGS.

In the Apple IIGS, a similar location remains a part of the disassemble LIST routine. It is \$F8D0, the INTSDP Display disassembled instruction routine, which displays one instruction pointed to by the program counter. (The \$F8D0 routine is looped through 20 times in the Apple IIe LIST routine.) \$F8D0 can be used in a similar routine on the Apple IIGS.

You may wish to review the Apple IIe routine in order write your own LIST routine. For further information, see the Apple IIGS Firmware Reference Manual and the Apple IIe Technical Reference Manual.

Tech Info Library Article Number:1497



Tech Info Library

Kandu Software Corp.

Revised: 4/3/97
Security: Everyone

Kandu Software Corp.

=====

Article Created: 12/01/87
Article Reviewed: 07/12/93
Article Updated: 04/02/97

Kandu Software Corp.

131 Great Falls St.
Falls Church, VA 22046

703-532-0213

703-533-0291 Fax

Company Profile:
Software, primarily CAD utilities.

Article Change History: 07/12/93 Address changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1498



Tech Info Library

MacWorks XL: Encountering Error -96 During Hard Disk Install

Revised: 7/30/87
Security: Everyone

MacWorks XL: Encountering Error -96 During Hard Disk Install

=====

If you see error -96 during the Hard Disk Install of MacWorks XL, try to initialize the hard disk using either Lisa Workshop or Lisa 7/7 software. If that initialization fails, you must replace the hard disk unit of the Lisa or Macintosh XL.

Tech Info Library Article Number:1499



Tech Info Library

Bridgeport Machines, Inc.

Revised: 7/6/93
Security: Everyone

Bridgeport Machines, Inc.

=====
Article Created: 12/01/87
Article Last Reviewed: 07/06/93
Article Last Updated: 07/06/93

Bridgeport Machines, Inc.

500 Lindley St.
Bridgeport, CT 06606

203-367-3651

800-243-4292 (Fremont,CA)

Company Profile:
Software, specializing primarily in CAD software, milling machine

Article Change History: 07/06/93 Name information added, New Product
Information Added

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:1500



Tech Info Library

LaserWriter: Getting high-quality output

Revised: 9/21/87
Security: Everyone

LaserWriter: Getting high-quality output

=====

This article last reviewed: 22 December 1985

When using the LaserWriter to produce camera ready copy, you can improve the results if you follow these guidelines.

Paper:

Use a stock with a smooth finish, such as standard photocopy paper. (Use 16-20 pound stock.) The paper should be white and not glossy. Most offset printers have paper with these characteristics in stock.

Toner density:

LaserWriter cartridges vary in darkness according to how frequently they have been used. For best results, you should avoid using a cartridge that is too black: the increased density fills serifs. We suggest that you print somewhat light. The control knob on the LaserWriter offers some control over density.

After replacing an old cartridge with a new one, you should print several pages to bring the toner up to a good consistent black.

If the LaserWriter prints darker on one part of the page than on another, remove the toner cartridge and roll it gently back and forth to more evenly redistribute the toner.

Tech Info Library Article Number:1502



Tech Info Library

Diehl Graphsoft, Inc.

Revised: 4/3/97
Security: Everyone

Diehl Graphsoft, Inc.

=====
Article Created: 12/01/87
Article Reviewed: 07/07/93
Article Updated: 04/02/97

Diehl Graphsoft, Inc.

10270 Old Columbia Rd.
Suite 100
Columbia, MD 21046

410-290-5114

410-290-8050 Fax

Company Profile:
Diehl Graphsoft, Inc., software, specializing primarily in CAD
software.

Article Change History: 07/07/93 Address Changed, Phone Information Changed

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1503



Tech Info Library

Claris Corporation

Revised: 4/3/97
Security: Everyone

Claris Corporation

=====

Article Created: 1 December 1987
Article Reviewed/Updated: April 3, 1997

Claris Corporation

5201 Patrick Henry Dr.
P.O. Box 58168
Santa Clara, CA 95052-8168

800-735-7393 24-hr Touch-Tone Answer
800-800-8954 24-hr Automated Fax Answer Line
800-544-8554 Upgrades
800-325-2747 (Customer Service for disk replacements, manuals, etc.)

408-987-7000 Main Office
408-727-8227 Customer Relations
408-727-9054 Technical Support (Macintosh)
408-727-9004 Technical Support (Windows)
408-727-8227 Customer Assistance & Sales
408-544-8554 Alexander & Lord Upgrade Orders

America Online: CLARIS

CompuServe: GO CLARIS

Internet:
<http://www.claris.com>
<ftp.claris.com>

Company Profile:
Software, specializing in publishing productivity software applications for
Macintosh and Windows computers.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1505



Tech Info Library

Jazz: Using it with Finder 4.1

Revised: 11/22/85
Security: Everyone

Jazz: Using it with Finder 4.1

=====

Jazz is shipped with the older version of the Finder (1.1). You can use Finder 4.1 with Jazz if you like, you should not run into any problems. To change to the newer version of the finder, make a copy of the original Jazz Startup Disk that came in your Jazz package and install the new finder on it either by replacing the Finder with 4.1 version or by running Apples Finder Update program.

Note: When replacing the Finder you should startup your Mac with the disk with the newer Finder and then put in the Jazz Startup Disk. Finder 4.1 comes with the Choose Printer desk accessory, which is necessary for the LaserPrinter.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1506



Tech Info Library

Jazz: Communicating with the Apple Modem

Revised: 11/22/85
Security: Everyone

Jazz: Communicating with the Apple Modem

=====

When using Jazz communications with an Apple modem you cannot use the settings 7 Data Bits and NONE Parity - The modem will not dial. You should use 7 and EVEN or 8 and NONE. On our Apple 1200 modem we use the DIP switch settings of 1-DOWN 2-UP 3-UP.

Note: When trying to dial from a business phone that requires a 9 to get out remember to put it in your modem settings. Example 9,6172379898 this would be how you type in the number for a long distance call from a business phone.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1507



Tech Info Library

Jazz: Transferring files from AppleWorks

Revised: 7/30/87
Security: Everyone

Jazz: Transferring files from AppleWorks

=====

Users have reported success transferring files from AppleWorks into Jazz using a Macintosh file translation program called "First Port". You change your files from DIF files into SYLK files, which Jazz can then Convert into a spreadsheet.

First Port
Desktop Software
Princeton, N.J.
609/924-7111

Lotus does not support this product so you will need to contact Desktop Software if you need help turning your DIF file to SYLK. When you have a SYLK file move it onto a copy of your Jazz startup disk. You will need the file Convert on your disk. This file came on the Jazz Startup Disk that came with your Jazz package. Start Jazz and choose Convert desk accessory. Select your SYLK file, click on SYLK option in the box that will appear and then click on Convert. Your file will automatically open up as a Jazz worksheet, which you can then paste into your Jazz database or word processing.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1508



Tech Info Library

Jazz: Using Control Characters in Communications

Revised: 7/30/87
Security: Everyone

Jazz: Using Control Characters in Communications

=====

You will need to hold down the Command and Shift keys while you type the control characters you need.

Examples:

Control C	Command Shift C	Used when logging on to CompuServe etc.
Control S	Command Shift S	Used to stop scrolling on CompuServe.
Control Q	Command Shift Q	Used to start scrolling on CompuServe.

See page 274 of the Jazz Handbook for a complete listing of Control Characters.

Note: On compuServe you need to hold down the shift key while typing a backspace.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1509



Tech Info Library

Using InterBridges on X.25: Packet Traffic & Initializing Info

Revised: 1/13/88
Security: Everyone

Using InterBridges on X.25: Packet Traffic & Initializing Info

=====

This article last reviewed: 16 November 1987

For those using InterBridges to connect an AppleTalk network to an X.25 backbone, this article concerns the rate and size of packet traffic generated by the idle polling of InterBridges across the net, as well as some information on how to initialize this polling.

During the first 30 seconds of polling time, approximately 5-6 packets are transferred between InterBridges. These packets are in ZIP (Zone Information Protocol). The first one is a ZIP bringup packet that comes out of each of the connected ports. ZIP bringup is followed by a ZIP GetZoneList or GetMyZone packet. The GetZoneList is followed by a GetZoneList Reply packet. A newly started InterBridge sends out a ZIP Query for information on packets whose addresses are not yet in its Zone Information Table (ZIT). This ZIP query also is answered with a ZIP reply packet.

The packets range in size: 8 bytes for a ZIP GetZoneList, 45 bytes for a ZIP bringup, 13 bytes plus 32 bytes for each zonename for a ZIP reply packet, and for a GetZoneList Reply there would be 9 bytes and 32 bytes for each zone name. The first group of bytes contain the LAP (Link Access Protocol) header, the DDP (Datagram Delivery Protocol) header, and the ZIP (Zone Information Protocol) header. This holds true for takedown, bringup, query, and reply packets. The ZIP GetzoneList and GetZoneList Reply packets use ATP (AppleTalk Transaction Protocol) header and user bytes. These transactions take place with each connected port. There are 2 AppleTalk ports and 2 Serial ports on the InterBridge. After the initial polling, 1 packet gets transmitted every ten seconds maintains the connection while idling.

To start the bridges communicating, simply turn one on. The InterBridge polls its nearest neighbor, asks it to update its own internal table of zones, then gives the neighbor bridge its zone information. If a bridge happens to be turned off, the bridge's zone table gets rebuilt at power on, which, from that point on, it maintains on its own. Applications communicating over AppleTalk request the zone information from the InterBridge for the user. Bridges periodically update their tables, and upon receiving a new zone address or a

packet referencing an unnamed zone address with a name, the bridge updates its table to reflect the new zone name and address.

There is a problem that may cause some applications not to function on this type of network. Since InterBridges use ZIP, which is "best effort" protocol, this means checking for timeouts and proper data handling must be handled by the application. Some applications, notably AlisaTalk running on a VAX, will time out if delays are very long across the network. These programs operate at the mercy of any other traffic on the X.25 net.

Tech Info Library Article Number:1510



Tech Info Library

Jazz: Using the numeric keypad within the Worksheet

Revised: 11/22/85
Security: Everyone

Jazz: Using the numeric keypad within the Worksheet

=====

The down arrow key on the numeric keypad will move the cell selection to the right when entering data in the Jazz worksheet. The return key on the main keypad will move the cursor down. Users entering a column of numbers can highlight the column heading (A, B, D, ect.) this will select the entire column. The down arrow will be forced to operate correctly when the entire column is highlighted. In the Jazz database the down arrow key on the numeric keypad will move the cell selection down.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1511



Tech Info Library

LaserWriter: Shelf Life of Toner Cartridge (11/95)

Revised: 11/17/95
Security: Everyone

LaserWriter: Shelf Life of Toner Cartridge (11/95)

=====

Article Created: 22 November 1985
Article Reviewed/Updated: 16 November 1995

TOPIC -----

What is the shelf life of LaserWriter toner cartridges?

DISCUSSION -----

The shelf life of LaserWriter toner cartridges is approximately 2 years. The end label of each toner cartridge has an expiration date:

Use Before 19XX."

The two-year shelf life of the cartridge is designed to ensure that the print quality will meet Apple's specifications for the expected life of the cartridge.

In other words, the cartridge should be able to withstand storage under the conditions specified on the toner cartridge box and then be able to meet print quality specifications for the rated life of the cartridge.

Since all of our toner cartridges ship in airtight and light-proof bags they are protected from light, humidity, and chemicals such as ammonia-based cleaners that might shorten the life of the cartridge. The one environmental variable that can be controlled is the temperature. Room temperature (+/- 10 degrees F) is an ideal storage environment.

Over time toner tends to settle in the toner bin and may form clumps. These clumps may affect the print quality if they are not broken up prior to use. If you are going to store cartridges beyond the normal shelf life, you should occasionally rock the toner cartridges back and forth to help redistribute the toner and break up any clumps that may be forming. There is no recommended guideline for this, but every six months should be sufficient.

Apple cannot guarantee that the print quality will meet the Apple specifications if the cartridges are stored beyond their normal shelf life.

Color LaserWriter 12/600 PS Shelf Life

=====

The shelf life of the Color LaserWriter 12/600 PS toner cartridge is also 2 years. There is a date code imprinted on each cartridge's box and consists of 6 alphanumeric characters. The first character indicates the last digit of the year, and the second character provides the month that the cartridge was produced. The month date codes are as follows:

A = January
B = February
C = March
D = April
E = May
F = June
G = July
H = August
I = September
J = October
K = November
L = December

Toner Life

=====

For information on how long toner cartridges last once they are installed in a LaserWriter printer, look in the Tech Info Library for the article titled "LaserWriter: Toner Cartridge Life".

Article Change History:

16 Nov 95 - Added Color LaserWriter 12/600 PS information.
05 Apr 93 - Revised to include additional information.
03 Feb 93 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:1514



Tech Info Library

AppleLine: Interface Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

AppleLine: Interface Specifications (Discontinued)

- =====
1. Interface Form: RS 232C with hardware handshaking
 2. Data Form: Asynchronous serial ASCII
 3. Byte Length: 7 or 8 bits
 - switch selectable (see 12.a.)
 4. Transmission Format:
 - a. Start signal: 1 bit
 - b. Stop signal: 0, 1, 1.5, or 2 bits
 - Switch selectable (see 12.c.)
 5. Parity: None, Odd, or Even
 - switch selectable (see 12.b.)
 6. Transmission speed: 75, 150, 300, 600, 1200, 2400, 4800, or 9600 baud
 - switch selectable (see 12.d.)
 7. Input buffer capacity: 255 bytes
 8. Interface connector: DB-25SA-J4
 - standard 25-pin RS232
 9. Pin assignments:

Pin	Assignment
a. 1:	Protective ground
b. 3:	Data input (from computer)
c. 4:	+12 VDC
d. 7:	Data return (signal ground)

e. 20: Data terminal ready (to computer)

10. Signal levels:

a. On (Space): +5 V to +15 V

b. Off (Mark): -15 V to -5 V

11. Signal load impedance: 3000 to 7000 ohms

12. DIP Switch assignments:

										ON OFF
	1	2	3	4	5	6	7	8		
a. Data length (data bits):										
1. 7 bits									On	
2. 8 bits									Off	
									1	
b. Parity:										
1. No Parity									Off	
2. Parity									On	
3. Odd									On	
4. Even									Off	
									2	3
c. Stop Bit:										
1. None						On	On			
2. 1						Off	On			
3. 1.5						On	Off			
4. 2						Off	Off			
						4	5			
d. Baud Rate:										
1. 75						Off	Off	Off		
2. 150						Off	Off	On		
3. 300						Off	On	Off		
4. 600						Off	On	On		
5. 1200						On	Off	Off		
6. 2400						On	Off	On		
7. 4800						On	On	Off		
8. 9600						On	On	On		
						6	7	8		

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Tech Info Library Article Number:1515



Tech Info Library

Hard Disk Install: Using it with MacWorks XL

Revised: 11/22/85
Security: Everyone

Hard Disk Install: Using it with MacWorks XL

=====

Earlier versions of the Hard Disk Install program may display the message "Hard Disk Install 1.1 must be used with MacWorks XL". Use the version that comes with the Rev. D disk in the finished goods box of MacWorks XL.

Apple Technical Communications

Tech Info Library Article Number:1517



Tech Info Library

MPW: Sample Pascal Program of Linked Function

Revised: 12/1/87
Security: Everyone

MPW: Sample Pascal Program of Linked Function

=====

This article last reviewed: 24 November 1987

Here is a sample of a linked function compiled as a code resource:

```
{ $S Wally }
```

```
Unit StrayProcedure;
```

```
Interface
```

```
function Test(t:integer):Integer;
```

```
Implementation
```

```
Function Test(t:Integer):Integer;
```

```
begin
```

```
Test:=t*2;
```

```
end;
```

```
end.
```

{ This sample unit shows how to use MPW Pascal to create a 68000 function that can stand alone. This technique can be used to create stand alone procedures and functions. Here are the commands that you use to compile and link this unit, as well as a disassembly of the resultant file:

```
pascal test
```

```
link -o steve -rt CODE=2 -sn Wally=Main test.o
```

```
dumpcode steve -rt CODE=2
```

File: steve, Resource 2, Type: CODE, Name: Main

Offset of first jump table entry: \$00004E56

Segment is \$00000020 bytes long, and uses 0 jump table entries

```
000000: 302E 0008      '0...'      MOVE.W    $0008(A6),D0
000004: E340           '.@'        ASL.W     #$1,D0
000006: 3D40 000A      '@...'      MOVE.W    D0,$000A(A6)
00000A: 4E5E          'N^'        UNLK      A6
00000C: 205F          ' _'        MOVEA.L   (A7)+,A0
00000E: 544F          'TO'        ADDQ.W    #$2,A7
000010: 4ED0          'N.'        JMP       (A0)
000012: D445          '.E'        ADD.W     D5,D2
000014: 5354          'ST'        SUBQ.W    #$1,(A4)
000016: 2020          ' '        MOVE.L    -(A0),D0
000018: 2020          ' '        MOVE.L    -(A0),D0
00001A: 0000 8000      '....'      ORI.B     #$00,D0
```

}

Tech Info Library Article Number:1519



Tech Info Library

Abaton C-Scan: Software Compatibility List

Revised: 1/18/93
Security: Everyone

Abaton C-Scan: Software Compatibility List

Article Created: 1 December 1987

Article Change History

1/15/93 - UPDATED
 • Abaton is now Everex Systems.
11/25/87 - REVIEWED
 • For accuracy.

Abaton C-Scan is compatible with the following software:

Page Layout	Paint Programs
-----	-----
MacPublish	FullPaint
Pagemaker	GraphicWorks
Ready,Set,Go!	ImageStudio
Scoop	LaserPaint
XPress	MacPaint
	SuperPaint
Draw Programs	Word Processing
-----	-----
CricketDraw	FullWrite
Illustrator	MacText
MacDraft	MacWrite
MacDraw	Word
	WriteNow
Other	

MORE	

This information provided by Abaton (now Everex Systems). Apple Computer, Inc., is not responsible for the contents of this article.

Abaton Technology Corporation

Tech Info Library Article Number:1521



Tech Info Library

Lisa: Two Port Parallel Card Pinouts

Revised: 7/30/87
Security: Everyone

Lisa: Two Port Parallel Card Pinouts

=====

Two Port Parallel Card
661-93138

PIN	NAME	PIN	NAME
1	GND	14	GND
2	GND	15	PSTRB
3	RW	16	BSY
4	GND	17	CMD
5	DDO	18	PARITY
6	DD1	19	OCD
7	N.C.	20	GND
8	DD2	21	CRES
9	GND	22	DD3
10	GND	23	DD4
11	DD5	24	GND
12	DD6	25	CHK
13	DD7		

The meanings of the individual signals on the interface are:

D0-D7: Eight bidirectional data lines. Bit D7 is the MSB.

DRW: This line is driven high by the Lisa to indicate that data is expected to be input on the data lines. It is driven low to indicate that data is being output.

PARITY: Bidirectional line which must be configured on the basis of the data currently on the data lines to give odd parity.

PSTRB: Processor strobe line used as a signal by the Lisa to indicate valid data being output.

CMD: This line is asserted by the Lisa to indicate that a command has been placed on the data lines.

..TIL01522-Lisa-Two_Port_Parallel_Card_Pinouts_(TA31598).pdf

BSY: This line is asserted by the peripheral to indicate to the Lisa that it is busy and unable to process commands on the interface.

OCD: The Lisa monitors this line. If it is high, it is assumed that no device is connected to the interface.

CRES: This line is asserted by the Lisa when the peripheral is to be reset to its power-on state.

CHK: This signal may be used to interrupt the CPU in the event that a fault condition has occurred in the device connected to the interface.

NOTE: These pinouts apply to both the upper and lower connector of a two port parallel card installed in a Lisa or Macintosh XL.

Tech Info Library Article Number:1522



Tech Info Library

DAP (Drive Acceptance Program) Documentation

Revised: 1/30/92
Security: Everyone

DAP (Drive Acceptance Program) Documentation

=====

This article last reviewed: 15 December, 1987

NOTE: The DAP (Drive Acceptance Program) is an obsolete diagnostic. It has been replaced with the Apple 5.25 Inch Drive Diagnostic. Refer to the Disk Drives Technical Procedures for complete information on the current Apple 5.25 Inch Drive Diagnostic.

The following article describes how the DAP works and what it is designed to do. For a description of how to run the DAP test or what to replace if a failure occurs, search on "HTS and GTS and the disk drive product name".

TEST SEQUENCE AND DESCRIPTION

1. WRITE PROTECT TEST (the digit 1 appears above the selected drive) -

When the right arrow key is detected, several things happen on the screen. The diskette icon is erased, the drive door icon flashes to a closed position, and the IN.USE lamp icon lights as the first test begins. The digit "1" appears above the drive to indicate the test step.

The write protect test reads and saves a copy of sector 5 on track 16 of the test diskette. This helps prevent accidental data loss if the wrong diskette is accidentally inserted. The write-protect test does not bother with the write-protect switch since this may differ in various drives and controllers. Rather, it attempts to write a sector and then reads the sector back. If the read detects the data pattern written, the drive is failed in step one. In the case of failure (i.e. the write is successful) the original sector is re-written to the diskette. If writing does occur, the big "X" fail sign is overlayed on the drive image. This same indication is used for failure of any of the remaining tests.

2. WRITE AND READ TEST -

A. SPEED (The digit 2 appears): The first write test makes 16 D-SPEED passes over track 30. The test is self-adjusting, allowing a variance of ± 26 WOZ counts for Apple II+, IIe and IIC systems, and ± 10 WOZ counts for the Apple III in emulation mode. (If the test fails at the beginning of the test, the drive circuitry may be unable to read/write.)

B. WRITE AND VERIFY TRACKS 31,32,33 (The digit 3 appears): The write test writes patterns to all sectors of tracks 31,32,33 and then attempts to read the track. After each read it compares the read data pattern to the pattern written to verify a good write and read.

3. DYSAN DDD DISKETTE TESTS -

A. SPIN ECCENTRICITY (spindle wobble, collet problems; displays digit 4): Tests tracks 21 and 24. An even amount of error has been encoded on each of these DDD tracks. A properly centered head should read each sector with equal ease or difficulty. Irregularity here generally indicates collet problems or possibly spindle wobble. The program allows for some errors. If the test shows more failures than the limit allows, the user will be prompted to re-insert the DDD. On Disk II and Disk III drives it is best if the DDD is "double clamped". Failure here can also indicate excess noise from nearby equipment or a worn DDD diskette.

B. RADIAL ALIGNMENT (head properly centers on track; displays digit 5): This test reads tracks 0, 5, 16, 19, 30 and 32. Each of these tracks has been encoded with errors which are progressively further from the center track (by one mil) with each sector. A properly aligned drive will have a diminishing ability to read sectors and a perfectly positioned head will be unable to read the sectors furthest away from the center of the track. (Since the Digital Diagnostic Diskette checks alignment at six locations, it is possible that the error will not be detected with the Disk Alignment Aid.)

C. HYSTERISIS (physical slope in arm motion; displays digit 6): This test calibrates the drive, reads tracks 5 and 30, goes to track 34 and then reads tracks 30 and 5. A properly adjusted and functioning drive will not develop more than ± 2 mils of error on reads when the head moves from the opposite direction. Errors discovered here are due to physical slop or wear in the hardware. Failure of this test can often indicate that the guide rails need cleaning.

D. AZIMUTH (ability of head to detect data with 21-42 minutes of error in the angle of data placement; displays digit 7): This test calibrates and moves to track 34. This track has been encoded with data written with angular error which alternates direction with each sector and increases from 21 to 42 minutes of error. The inability to read this data indicates a faulty head. In most cases all sectors are read easily by the heads in Apple drives.

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Tech Info Library

III E-Z Pieces: Using it on an Apple III with Catalyst

Revised: 9/27/91
Security: Everyone

III E-Z Pieces: Using it on an Apple III with Catalyst

=====

Article Created: 5 December 1985
Article Last Reviewed: 27 September 1991
Article Last Updated: 27 September 1991

TOPIC -----

The following information provides information on using III Easy Pieces on an Apple III with Catalyst.

DISCUSSION -----

You may move III Easy Pieces version 1.0 (Haba Systems Inc.) to a hard disk for use with Catalyst. These instructions assume you are moving III Easy Pieces to a ProFile (with driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install III Easy Pieces on a different hard disk.

COPY PROCEDURE:

1. Boot the Catalyst diskette (if you haven't already).
2. From the Catalyst main menu, select the System Utilities Program.
3. Enter "F" for FILE HANDLING COMMANDS.
4. Enter "M" for MAKE A NEW SUBDIRECTORY.
5. Enter "THREE.EP" with a default size of 25 files.
6. Press "ESCAPE".
7. Enter "C" for COPY FILES.
8. Copy all files from the III EASY PIECES BOOT disk to the subdirectory "THREE.EP/" except for the following:

SOS.KERNEL SOS.DRIVER

To do this, type ".D1/" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied

in this way. When all files are marked, press RETURN.

9. Copy all files from the PROGRAM disk in the same manner as above to the subdirectory "THREE.EP".

10. When all files have been copied, press ESCAPE.

ADDING III EASY PIECES TO THE CATALYST MENU

1. Return to the Catalyst main menu.

2. Select the Catalyst Editor.

3. Enter "E" to edit the menu.

4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.

5. You will be asked for the display name of this program, enter "THREE EP"

6. Enter "THREE.EP/SOS.INTERP" as the interpreter path name.

7. You will be asked if you want "EXTRA DRIVERS". Press RETURN.

8. Press RETURN for standard character set.

9. Press RETURN for the normal screen.

10. Press RETURN for the default keyboard.

11. Enter "/PROFILE/THREE.EP" for the initial prefix.

12. Enter "0" for the "Max Files Allowed..." question.

13. Press RETURN for the program path.

14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.

15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "Y".

16. Exit to the Catalyst main menu by entering "Q".

As of September 27, 1991, Apple Computer, Inc. cannot locate a current phone number for Haba Systems. We believe they have gone out of business.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1524



Tech Info Library

Access III: Installing it on a hard disk

Revised: 12/5/85
Security: Everyone

Access III: Installing it on a hard disk

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You may move ACCESS III (Apple) to the hard disk. This will allow you to access it with greater ease than using floppy diskettes. Parts of this installation procedure require a limited knowledge of the BASIC language.

COPY PROCEDURE:

- 1) Boot the CATALYST disk (If you haven't already).
- 2) From the main CATALYST menu, select the System Utilities Program.
- 3) Press "F" for File Handling Commands.
- 4) Press "M" for Make a New Subdirectory.
- 5) Enter ".PROFILE/CATALYST/APPLCOM".
- 6) Press RETURN to accept the default size of 25 files.
- 7) Press ESCAPE.
- 8) Put the PROGRAM diskette in the internal drive.
- 9) Press "C" to Copy files.
- 10) Copy all files on your PROGRAM diskette except for the following:
SOS.KERNEL SOS.DRIVER SOS.INTERP SYSTEM.MISCINFO
- 11) To do this, type ".D1/" and press the up arrow key.
- 12) A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked press RETURN.
- 13) Enter ".PROFILE/CATALYST/APPLCOM/=" as the name of the destination file.
- 14) When all files have been copied, press ESCAPE.

ADDING ACCESS III TO THE CATALYST MENU

- 1) Enter the number for CATALYST EDIT.
- 2) Enter "1" to add an entry to the menu.
- 3) Enter the number of the menu entry you want ACCESS III to precede.
- 4) You will be asked for the display name of this program. Enter "ACCESS III".
- 5) Enter CATALYST/BASIC for the interpreter path name.
- 6) Press RETURN for the character set pathname.
- 7) Press RETURN for standard character set.
- 8) Press RETURN again to use the default keyboard.

- 9) Enter ".PROFILE/CATALYST" as the default prefix.
- 10) Enter "3" for the "Max files allowed..." question. It is suggested that the QUIT option be used to exit to BASIC then use the double apple escape to exit to the CATALYST main menu.
- 11) Enter ".PROFILE/CATALYST/APPLCOM,ACCESS3" when you are asked for the program path.(This will give you a BAD PATH error but ignore it).
- 12) You will be asked if this entry is correct. If it is, enter "Y", or just press RETURN. You will be allowed to insert another entry. Since you do not want to do this, enter "0" to exit to the main menu.
- 13) Enter "7" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
- 14) Exit to the CATALYST main menu by entering "0".

ADDITIONAL INSTRUCTIONS

To complete the installation of ACCESS III you must modify the short Basic program "ACCESS3" which is located on the PROGRAM diskette. To do this you must have access to Apple Business Basic or a program that BASIC can be invoked from.

- 1) Boot Apple Business Basic.
- 2) Load ".PROFILE/CATALYST/APPLCOM/ACCESS3".
- 3) List "ACCESS3".
- 4) Delete lines 10 and 15.
- 5) Change line 20 to read "INVOKE".PROFILE/CATALYST/APPLCOM/ACCESS3.INV".
- 6) Add line 25 "PREFIX\$= ".PROFILE/CATALYST".
- 7) Delete line 40.
- 8) Save ".PROFILE/CATALYST/APPLCOM/ACCESS3".

Now ACCESS III is completely configured for CATALYST.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1525



Tech Info Library

AppleWorks: RamWorks Card Needs Larger Memory Capacity (9/95)

Revised: 9/19/95
Security: Everyone

AppleWorks: RamWorks Card Needs Larger Memory Capacity (9/95)

Article Created: 5 December 1985
Article Reviewed/Updated: 19 September 1995

TOPIC -----

This article describes how to interface Catalyst With An Apple II, AppleWorks & RamWorks IIe 80-column Card.

DISCUSSION -----

This technical note describes the procedure to correctly interface the above products to allow larger memory capacities with the AppleWorks application.

What You Need

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Before you begin, be sure you have the following:

1. ProDOS users disk.
2. Desktop Expander disk from Applied Engineering.
3. AppleWorks startup and program disks.
4. Catalyst disk.

Procedure

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Step 1

Boot the Desktop Expander disk and follow the instructions. This will modify your AppleWorks disk so that it can use the additional memory of the Ramworks board IIe card.

Step 2

Create a subdirectory on your hard disk using Apple's ProDOS Users disk called

" /PROFILE/AW"

Step 3

Copy all of the files from the AppleWorks Startup and Program disks to the subdirectory you just created.

Step 4

Once the files have been copied, start up your Catalyst disk and select the Catalyst Editor.

Step 5

Move the cursor to the point where you wish to add your AppleWorks program and press "A".

Step 6

Type "APPLEWORKS" for the program name.

Step 7

Type "AW/APLWORKS.SYSTEM" for the interpreter pathname.

Step 8

Type "AW" for the initial prefix.

Step 9

Press RETURN for the program path.

Step 10

You will be asked if all items are correct. Answer "Y" and press ESCAPE to exit to the main menu.

Step 11

Enter "U" to update the INTERPS2E file.

Step 12

Exit to the Catalyst main menu by entering "Q".

When you select the AppleWorks program from the main menu you will notice that you now have 101K available for data storage.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Article Change History:

19 Sep 1995 - Reformatted to meet current standards.

Support Information Services

Quark Tech Support

Tech Info Library Article Number:1526



Tech Info Library

BPI: Installing it on Catalyst for the Apple III (1 of 2)

Revised: 12/5/85
Security: Everyone

BPI: Installing it on Catalyst for the Apple III (1 of 2)

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These instructions assume you have Version 2.0 or greater of BPI and that you have installed it on the ProFile according to the BPI Manual. This will allow you to place all of the programs for BPI on the ProFile and eliminate any need for the floppy disks. The BPI General Accounting Software uses most of the 256K of memory available in the Apple III. Catalyst 2.0 is designed to have all of the necessary drivers, Apple III Pascal options, and graphics space allocated so all the application programs can work. Therefore, since the memory space is limited, the SOS.DRIVER file must be kept to a minimum and NO graphics drivers can be installed. The following driver list should be adequate:

.CONSOLE	.QUARKCOM
.PRINTER or .SPOOL	.UNUSED 1-6
.CATALYST	
.PROFILE	

NOTE: You may conserve an additional 6K of memory by selecting the QUIT option from the SYSTEM UTILITIES main menu. This will take you to the Pascal Command Line. Select "O" and a menu will be displayed. Select option "B" and make the Apple II disk routines NOT resident. Once this is completed, press "Q" to quit.

These instructions assume you are moving BPI to a ProFile (with the driver name of .ProFile), and that Catalyst is installed. Substitute the name of your hard disk driver for .PROFILE if you wish to install BPI on another brand of hard disk.

COPY PROCEDURE:

1. Make certain that there is a .ProFile driver installed on the System utilities disk.
2. Boot the System Utilities disk.
3. Press "F" for File Handling Commands.
4. Press "M" to Make a New Subdirectory.
5. Enter ".PROFILE/BPI/BPI.TRAPOFF".
6. Press RETURN to accept the default size of 25 files.
7. Press ESCAPE.

8. Press "M" to Make a New Subdirectory.
9. Enter ".PROFILE/BPI/INSTALL".
10. Enter "3" when it asks for the number of files.
11. Press ESCAPE.
12. Put the BPI SYSTEM diskette in the internal drive.
13. Press "C" to Copy Files.
14. Copy the files SYSTEM.STARTUP and SYSTEM.STAR.LIB from your BPI SYSTEM diskette to the subdirectory ".PROFILE/BPI/=".

To do this, type ".D1" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

15. Put the BPI INSTALL diskette in the internal drive.
16. In the same manner as above, copy the files SYSTEM.STARTUP, SYSTEM.STAR.LIB, and BPI.CNF from your BPI INSTALL diskette to the subdirectory ".PROFILE/BPI/INSTALL/=".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1527



Tech Info Library

BPI: Installing it on Catalyst for the Apple III (2 of 2)

Revised: 12/5/85
Security: Everyone

BPI: Installing it on Catalyst for the Apple III (2 of 2)

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ADDING BPI TO THE CATALYST MENU

1. Boot the Catalyst diskette.
2. Select the Catalyst Editor in the Catalyst main menu.
3. Enter "E" to edit the Menu.
4. Place the cursor to the position you want the menu entry location for BPI to be.
5. Press "A". You will be asked for the display name of this program. Enter "BPI".
6. Enter "CATALYST/PASCAL" for the interpreter pathname.
7. Press RETURN for the extra drivers question.
8. Press RETURN to use the default character set pathname.
9. Press RETURN for the standard character set.
10. Press RETURN again to use the default keyboard.
11. Press RETURN to accept the default prefix.
12. Press RETURN for the "Max Files Allowed..." question. This will allow the program to be exited only by the QUIT option in BPI. This procedure is suggested due to the fact that files and/or data may be lost if the double Apple escape option is used. You may exit to the Catalyst main menu by entering "Q" from the Pascal command line.
13. Enter "BPI/SYSTEM.STARTUP" when you are asked for the program path.
14. You will be asked if this entry is correct. If it is answer "Y". You will be allowed to insert another entry. You do want to do this, enter "1" to add the next program.
15. Place the cursor to the position you want the menu entry location for BPI}Install.
16. Press "A". You will be asked for the display name of the program. Enter "BPI Install".
17. Enter "CATALYST/PASCAL" for the interpreter pathname.
18. Press RETURN for extra for the extra drivers question.
19. Press RETURN to use the default character set pathname.
20. Press RETURN for the standard character set.
21. Press RETURN again to use the default keyboard.
22. Press RETURN to accept the default prefix.
23. Enter "0" for the "Max Files Allowed..." question .
24. Enter "BPI/INSTALL/SYSTEM.STARTUP" when you are asked for the program path.
25. You will be asked if this entry is correct. If it is answer "Y". You will

be allowed to insert another entry. You do not now want to do this, enter "0" to exit the program.

26. Enter "5" to update the "INTERPS" file. When you are asked if you want to recalculate the load address, enter "N".

27. Exit to the CATALYST main menu by entering "Q".

Additional Instructions

1. Choose the option for BPI Install. Once you are at the BPI System Installation Menu, choose option 1, "Check System Device Status. The BPI Install program finds the new subdirectory and modifies itself to run from the ProFile rather than from the internal drive. End the Install program by entering "5". The following message will appear:

Current System Does Not Match System Data On Disk

Press RETURN to clear the message, and follow the instructions on the screen to insert the BPI Install and System Disks. This MUST be done. When this process is finished, you will be returned to the Catalyst 2.0 main menu. BPI is now set to begin execution.

RECOMMENDATIONS

1. Always exit BPI through the main menu by selecting "End BPI Systems". Do not end data entry by turning off the machine. This will insure the integrity of your data files.

2. Keep your drivers in the SOS.DRIVER to a minimum. If this is not done, a "stack overflow error" may occur and BPI will not work.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1528



Tech Info Library

Catalyst: Using it with an Apple III and QC Hard Disk

Revised: 12/5/85
Security: Everyone

Catalyst: Using it with an Apple III and QC Hard Disk

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Catalyst will take full advantage of the QC hard disk provided that minor modifications to the .CATALYST device driver are made. A partial discussion of this modification is located on page 4-9 of the QC manual. Below are additional steps that must be completed in order to insure complete compatibility.

PREREQUISITES:

Catalyst for the Apple III

Special DCB values in the .CATALYST device driver are required in order for the Catalyst for the Apple III to take advantage of this feature. The first 6 bytes (0-5) are device specific and can be determined by following the instructions on page 4-9 of the QC manual. The bytes are assigned as follows:

BYTE	ASSIGNMENT
0	Slot Number
1	Unit Number
2	Device Type
3	Device Subtype
4	Manufacturer ID (low byte)
5	Manufacturer ID (high byte)

Bytes 6-17 are checksum bytes. Their values must correspond to the following:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x	0S	UU	TT	ST	MM	MM	00	8F	97	8A	91	93	23	17	17	F6
1x	00	B8														

EXAMPLE OF THE ".CATALYST "DRIVER DCB USING THE QC-10 DEVICE ".Q1":

00 00 F1 AA 23 00 00 8F
97 8A 91 93 23 17 17 F6
00 B8

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1529



Tech Info Library

Catalyst: Integrating it for an Apple III and Corvus Omnidrive

Revised: 12/5/85
Security: Everyone

Catalyst: Integrating it for an Apple III and Corvus Omnidrive

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Either a single user or an multi user system may be integrated with the Catalyst for the Apple III provided that the items below are completed. It is assumed that you have initialized your Corvus hard disk, with the SOS format, according to the Corvus Disk System Installation Guides and have performed the following:

1. Update firmware.
2. Generation of a Constellation II system.
3. Addition of the Constellation Utilities.
4. Creation of a volume.
5. Creation of a "User"
6. Grant "User" access to the volume.

For the purposes of these instructions, a Catalyst volume was created, formatted, and mounted on .C2.

Once you have set up your Corvus drive for use, it will be necessary for you to add the Corvus device drivers (.C1-.C6 .CRDW .CORBOOT) to your Catalyst disk. To do this, use the System Configuration Program within Apple's System Utilities to read the device drivers of your Catalyst program disk into memory. Once this is completed, add the Corvus drivers contained in the files A3DRV.BOOT.CODE and A3DRV.SOS.CODE to the existing driver file. These files may be found on the Corvus A3C2.2 diskette. If you are unfamiliar with the procedures necessary to complete the above, consult your Apple Standard Device Drivers Manual for details.

NOTES ON THE MODIFICATION OF THE CATALYST SOS DRIVER FILE

1. In order for Catalyst to work along with the Constellation boot driver .CONSTBOOT it is necessary to remove the Quark .CONSOLE driver and replace it with an Apple .CONSOLE driver. The Apple .CONSOLE driver may be found on any Apple System Utilities Disk. In doing this, the Double Apple ESCAPE option within Catalyst will be disabled which will force you to quit each application installed on the Catalyst by use of a QUIT menu option within each application. The replacement of the Quark .CONSOLE driver will also make Quark's printer spooler Discourse unusable. Discourse uses special attributes

of Quark's .CONSOLE driver that are unavailable with the Apple driver.

2. RECOMMENDATION: The Catalyst SOS.DRIVER file contains 18 device drivers with 18K of space remaining. It is possible to add the Constellation II drivers to the Catalyst, however, it may cause a \$01 error. This is due to the fact that the driver file, once the Corvus drivers are added, approaches the maximum memory limit. To avoid this, refer to the section in the Catalyst manual dealing with "EXTRA DRIVERS". The following drivers may be deleted to keep the driver list on the Catalyst disk to a minimum:

.AUDIO .RS232 .GRAFIX .PRINTER .FMTD-1 through 4

In order for Catalyst to recognize the Corvus Device it is necessary to modify the .CATALYST Device Configuration Block (DCB).

3. When setting up the .CATALYST driver DCB, Byte 01 will vary depending upon the Corvus driver you are using. For example, .C2 has a unit number of "01". If you wish to use this device, Byte 01 in the Catalyst DCB must be set to "01". Device .C3 has a unit number of "02". If you wish to use this device, Byte 01 in the Catalyst DCB must be set to "02". The .C1 device is the System Manager and is not to be used by Catalyst.

Example of the .CATALYST DCB using the .C2 device, slot 4:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x -	04	01	F1	01	02	00	00	8F	97	8A	91	93	23	17	17	F6
1x -	00	B8														

Once steps 1-3 have been completed, Generate a New System on your Catalyst Boot disk.

SCENARIO

Assuming that the above procedures have been performed, booting the Catalyst disk will activate the driver .CONSTBOOT. The Constellation main menu will appear. Type the user name you created for your Catalyst volume and your password. The Catalyst will now boot through the built in drive and you will be presented with the Catalyst main menu.

You may at this point install the Catalyst system, by following the instructions on page 2-6 of your Catalyst manual.

ERRORS:

SYSTEM FAILURE \$05 - The Catalyst contains a Quark .CONSOLE driver. Use the Apple System Utilities to delete it and replace it with an Apple .CONSOLE DRIVER.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1530



Tech Info Library

Catalyst: Integrating it for a Ile and Corvus ProDOS Omnidrive

Revised: 12/5/85
Security: Everyone

Catalyst: Integrating it for a Ile and Corvus ProDOS Omnidrive

=====

The information below assumes that you are totally familiar with the commands and terminology of the Corvus ProDOS System Manager and the constellation system that was included with your Corvus Omnidrive. Incidentally, the instructions below are also compatible with any copy protected software application. Any problems with this installation of the Catalyst system should be referred to Quark Technical Support.

NOTE: Most protected software will only run from slot #6. In most cases, the Transporter card must be in slot #7 and the floppy controller card will reside in slot #6. When creating and mounting volumes, do so on logical drive 1. (eg. slot 5, drive 1.)

PROCEDURE

1. Boot the Corvus System Manager software. At the prompt, type "A2MGR" and press RETURN.
2. Create a ProDOS "user" and format it using the PRODOS FILER. Once the "user" has been created, give it write access to a volume that is to be used for data storage.
3. Boot the Corvus. You will be presented with a prompt stating "NO .SYSTEM FILE PRESENT"
4. Press CONTROL RESET which will take you to the monitor level. An asterisk "*" prompt will appear.
5. Place the Catalyst disk in the floppy drive with the write protect tab removed. Press the 6 key, the CONTROL key, and the P key (read 6 control P) and RETURN. You will be presented with the Catalyst menu . At this point follow the instructions in the Catalyst manual starting with step 5 to complete the Catalyst installation.

NETWORK NOTES:

Catalyst will accept any ProDOS compatible mass storage device including those that support a network environment provided that the user purchase separate copies of software that is copy protected for each node of the network. For example, if you have a Corvus Omninet system with six work stations using VisiCalc, it will be necessary to purchase six separate VisiCalc

packages and six Catalyst packages in order to use the Omninet with in the guidelines of the agreement. Under NO circumstances will two or more Catalyst packages be sold with identical serial numbers. This will necessitate the creation of a separate volume within the network for each network node. This volume will contain the copy protected programs used by Catalyst.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1531



Tech Info Library

Great Plains Accounting: Using it on an Apple III with Catalyst

Revised: 12/5/85
Security: Everyone

Great Plains Accounting: Using it on an Apple III with Catalyst

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You may move Great Plains Accounting software to the hard disk provided that you have version 3.00.

WARNING: Great Plains assumes that you are using a hard disk with a device driver named ".PROFILE". If you are using another brand of hard disk, rename the device driver accordingly.

Begin by following the LOAD TO HARD DISK PROCEDURE for the ProFile outlined on page 2-4 of the Great Plains module manual of your choice. Complete all steps, then follow along below. Do not continue on to "ENTERING COMPANY DATA" yet.

NOTE: As you copy the Great Plains files to your hard disk from GPS1 you will be asked if you wish to replace the file .PROFILE/SYSTEM.MISCINFO. Answer "NO" to this question. The file will be skipped by System Utilities.

COPY PROCEDURE:

1. Boot your CATALYST disk (if you haven't already.)
2. Select the Catalyst Editor in the Catalyst main menu.
3. Enter "4" to move Great Plains to the hard disk.
4. You will be asked to put the disk containing the interpreter in the internal disk drive and press the space bar. Insert the Great Plains BOOT disk and press the space bar.
5. You will be asked for the hard disk pathname of the interpreter. Enter "CATALYST/GRTPLN.INTERP".
6. The Great Plains interpreter will be copied to your hard disk.

ADDING GREAT PLAINS ACCOUNTING SOFTWARE TO THE CATALYST MENU

1. Select the Catalyst Editor in the Catalyst main menu.
2. Enter "E" to edit the menu.
3. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to add a program entry
4. You will be asked for the display name of this program. Enter "GREAT PLAINS".

5. Enter "CATALYST/GRTPLN.INTERP" as the interpreter pathname.
6. You will be asked for a list of any extra drivers this program requires.
Press RETURN.
7. Press RETURN for the character set pathname.
8. Press RETURN for standard character set.
9. Press RETURN again to use the default keyboard.
10. Press RETURN to accept the default prefix.
11. Press RETURN for the "Max Files Allowed... question. This will allow the program to be exited only by the QUIT option of Great Plains. This procedure is suggested due to the fact that files and /or data may be lost if the double Apple escape option is used.
12. Press RETURN for the program path.
13. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Then press ESCAPE again to exit to the main menu.
14. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
15. Exit to the CATALYST main menu by entering "Q".

Once these steps have been completed, select the number for Great Plains from the CATALYST menu. When the welcome screen appears,press RETURN and continue the installation process outlined on page 2-6 of the Great Plains manual.

NOTE: Multi-company operation of the Great Plains Accounting package can be accomplished by deleting GRTPLN.DATA from the main directory level of your ProFile. This will force Great Plains to look for that file on .D1. In this way you can create a separate boot diskette for each company as outlined in the appendix of your manual and swap disks as necessary prior to invoking Great Plains via Catalyst.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1532



Tech Info Library

Pascal 1.2 128K Development System: Using it with a QC Hard Disk

Revised: 12/5/85
Security: Everyone

Pascal 1.2 128K Development System: Using it with a QC Hard Disk

=====

If you are fortunate enough to own the Pascal 1.2 development system you can access all features of it from your QC hard disk. The 128K development version is REQUIRED.

It is assumed that you are familiar with the Pascal development system and the workings of the Apple II Pascal Software supplied with your QC hard disk.

PROCEDURE

1. Create a development version of the Apple Pascal II software disk using the procedure on page 1-4 of the Quark Hard Disk Drive Pascal II Users Manual. In addition to these steps, it is necessary to convert the software from a 64K development version to a 128K development version. To do this place the APPLE3 Pascal disk in the disk drive and T(ransfer "APPLE3:128K.APPLE" and "APPLE3:128K.PASCAL" to "QUARK:SYSTEM.APPLE" and "QUARK:SYSTEM.PASCAL" on the Apple II Pascal software disk. When asked to remove old files, answer "Y".
2. Make a copy of the APPLE1 disk and convert this disk to a 128K development version by T(ransferring APPLE3:128K.APPLE and APPLE3:128K.PASCAL to APPLE1:SYSTEM.APPLE and APPLE1:SYSTEM.PASCAL. When asked to remove old files answer "Y".
3. Boot the newly modified Apple IIPascal Software disk.
4. From the main menu select the VOLUME MANAGER.
5. Select CREATE VOLUMES and make a PASCAL II volume on your QC hard disk that is 800 blocks in size. Mount this volume with Read/Write access by pressing RETURN at the prompt "OK to allow unrestricted access to this volume?".
6. Return to the VOLUME MANAGER main menu and select EDIT CURRENT MOUNTS.
7. Set up the newly created Pascal II volume to currently mount on unit #5. Mount this volume with Read/Write access by pressing RETURN at the prompt "Mount with Read/Write access?".
8. Return to the VOLUME MANAGER main menu and select QUIT.
9. Select RENAME VOLUME and change the volume name to anything you wish.
10. Return to the Pascal QC Hard Disk Utilities menu and select QUIT TO PASCAL.
11. Insert the 128K APPLE1 in the disk drive and select F(iler.
12. Select T(ransfer. Copy the entire contents of APPLE0, APPLE1, APPLE2, and APPLE3 to "#5:=". Certain files, particularly SYSTEM.APPLE and SYSTEM.PASCAL and SYSTEM.COMPIILER are duplicated throughout these disks. When asked to remove

old files, answer "N".

13. Place the APPLE3 disk in the disk drive. T(ransfer the files "APPLE3:128K.APPLE" and APPLE3:128K.PASCAL" to "#5:SYSTEM.APPLE" and #5:SYSTEM.PASCAL". When asked to remove old files, answer "Y".

14. Insert the Apple II Pascal Software disk in the disk drive and T(ransfer "QUARK:=" to "#5:=". When asked to remove old files answer "N".

FINISHING UP

1. Boot the Apple II Pascal Software disk and select VOLUME MANAGER.
2. Select EDIT CURRENT MOUNTS. Mount your Pascal II volume on unit #4 by selecting "1" and pressing RETURN. Respond to the prompt "Mount which volume?" by typing the name of your Pascal II volume and pressing RETURN. Mount this volume with Read/Write access by pressing RETURN at the prompt "Mount with Read/Write access?".
3. Return to the VOLUME MANAGER main menu and select EDIT AUTOMATIC MOUNTS.
4. Auto mount your Pascal II volume on unit #4 by selecting "1". Respond to the prompt "Mount which volume?" by typing the name of your Pascal II volume and pressing RETURN. Mount this volume with Read/Write access by pressing RETURN at the prompt "Mount with Read/Write access?".
5. Reboot the Apple IIPascal Software disk. You will notice that after the initial boot, all files are being accessed from the QC hard disk. Surprise.... You will be able to access both Apple II Pascal Software files from your hard disk and by quitting to Pascal, will be able to access all Pascal development tools without rebooting.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1533



Tech Info Library

Word Juggler: Printer Filters

Revised: 12/5/85
Security: Everyone

Word Juggler: Printer Filters

Below are many of the common printers that are available on the market and the printer filters supplied with the Word Juggler software that support the various features of those printers. Some filters are designed with the specific printers in mind, while other filters are matched to the printer taking into consideration the features of the device.

PRINTER	FILTER	TYPE
QUME SPRINT 5	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
QUME SPRINT 7	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
QUME SPRINT 9	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
QUME SPRINT 11	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
DIABLO 630	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
DIABLO 620	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
XEROX 1630	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
IBM 75	OTHER WITH BACKSPACE	STANDARD
NEC 3510	NEC 35x0/55x0/77x0	STANDARD
NEC 3520	NEC 35x0/55x0/77x0	STANDARD
NEC 3530	NEC 35x0/55x0/77x0	STANDARD
NEC 5510	NEC 35x0/55x0/77x0	STANDARD
NEC 5520	NEC 35x0/55x0/77x0	STANDARD
NEC 5530	NEC 35x0/55x0/77x0	STANDARD
NEC 7710	NEC 35x0/55x0/77x0	STANDARD
NEC 7720	NEC 35x0/55x0/77x0	STANDARD
NEC 7730	NEC 35x0/55x0/77x0	STANDARD
SPINWRITER	NEC 35x0/55x0/77x0	STANDARD
NEC 3515	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
NEC 3525	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
NEC 5515	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
NEC 5525	APPLE LQP/DIABLO XEROX/QUME/NEC	STANDARD
NEC 7715	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD

..TIL01534-Word_Juggler-Printer_Filters_(TA31692).pdf

NEC 7725	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
NEC 8023A	NEC 8023A AND C.ITOH 1550	USER
ANADEX 9500 RODUCTS P80	DATA PRODUCTS	USER
DATA PRODUCTS P132	DATA PRODUCTS	USER
DAISYWRITER	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
GEMINI 10X	EPSON FX & RX	USER
GEMINI 15X	EPSON FX & RX	USER
POWERTYPE	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
RADIX-10/15	WJ.RADIX (AVAIL ON DISK FROM QUARK)	
EPSON MX-80	EPSON MX	USER
EPSON MX-100	EPSON MX	USER
EPSON MX-80GP	EPSON FX & RX	USER
EPSON MX-100GP	EPSON FX & RX	USER
EPSON FX-80	EPSON FX & RX	USER
EPSON FX-100	EPSON FX & RX	USER
EPSON RX-80	EPSON FX & RX	USER
OKIDATA 92/93	OKIDATA 84,83 & 82	USER
IMAGEWRITER	APPLE DMP & IMAGEWRITER	USER
COMREX CR-1	OTHER W/O BSP NO AUTO LF	STANDARD
COMREX CR-2	APPLE LQP/DIABLO/XEROX/NEC	STANDARD
MANNESMANN	EPSON FX & RX	USER
TALLY SPIRIT 80		
SILVER REED EXP 550	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
PRIMAGES I	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
BROTHER HR-15	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
DYNAX DX-15	APPLE LQP/DIABLO/XEROX/QUME/NEC	STANDARD
DTC 380Z	DTC 380	USER
PANASONIC KXP1090	EPSON FX & RX	USER
PANASONIC KXP1091	EPSON FX & RX	

Press the right-arrow key as many times as necessary to select the filter that you desire.

All USER filters can be accessed from the Word Juggler UTILITIES menu. To select a USER filter, follow along below:

1. Proceed to the TEXT ENTRY MODE by pressing RETURN from the Word Juggler MAIN MENU.
2. With the Word Juggler (REMOVE THE WRITE PROTECT TAB) installed in the disk drive press CLOSED APPLE and "1".
3. From the UTILITIES menu select option "5" INSTALL USER PRINTER FILTER.
4. Select from the menu the USER filter that matches your printer from the list above and press RETURN. The filter will be automatically copied to your Word

..TIL01534-Word_Juggler-Printer_Filters_(TA31692).pdf

Juggler disk.

5. Press "0" to exit to the Word Juggler TEXT ENTRY MODE.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Tech Support

Tech Info Library Article Number:1534



Tech Info Library

Matrix Instruments, Inc.

Revised: 7/13/93
Security: Everyone

Matrix Instruments, Inc.

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Article Created: 12/01/87
Article Reviewed: 07/13/93
Article Updated: 07/13/93

Matrix Instruments, Inc.

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Orangeburg, NY 10962

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Company Profile:
Hardware, primarily graphics products, medical and computer graphics.

Article Change History: 07/13/93 Phone number removed

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Tech Info Library Article Number:1535



Tech Info Library

Monochrome Monitor General Troubleshooting

Revised: 1/30/92
Security: Everyone

Monochrome Monitor General Troubleshooting

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This article last reviewed: 15 December 1987

USING THE SYMPTOM CHART

Find the symptom that best describes how the defective monitor appears and then try the recommended actions in the order listed. If the first corrective action does not solve the problem, put back the original module or part before trying the next action.

Symptom	Corrective Action
No power (LED doesn't light)	1. Check fuse; replace if blown. If it blows again, replace transformer. 2. Replace transformer. 3. Replace power switch.
No raster	1. Check that video cable is securely connected. 2. Adjust the external brightness control on the back of the case. 3. Adjust the contrast control. 4. Check that all connectors are secure on the CRT board and the main logic board. 5. Replace main logic board. 6. Replace CRT.
One vertical raster line appears	1. Replace main logic board. 2. Replace CRT assembly.
Raster deformed	Replace CRT assembly.

Wavy picture	Replace main logic board.
Spot remains with unit off	Replace main logic board.
Brightness range abnormal	1. Replace main logic board. 2. Replace power transformer.
Raster size small, picture abnormally bright	Replace main logic board.
No vertical synchronization	Replace main logic board.
Screen bright, no picture	Replace main logic board.
15 or more seconds for picture to appear	Change CRT assembly.
Picture appears and disappears	1. Replace main logic board. 2. Replace CRT assembly.
Out of focus	See "Focus" in Section 3, Adjustments*
Won't focus	1. Replace main logic board. 2. Replace CRT.
Narrow raster	Replace main logic board.
Picture compressed or stretched out	Replace main logic board.
Picture tears	See "Horizontal Synchronization" in Section 3, Adjustments*
Image reversed (after servicing)	Yoke connector (P4) is plugged in backwards.

Image inverted
(after servicing)

Yoke connector (P3) is plugged in backwards.

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Tech Info Library Article Number:1538



Tech Info Library

PROFS: Limits on Cut and Paste

Revised: 8/21/89
Security: Everyone

PROFS: Limits on Cut and Paste

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This article last reviewed: 7 January 1988

The message editor on PROFS accepts only two lines of text. Any additional text is automatically looped back to the top line of the screen. PROFS' Note editor allows up to 16 lines of text before looping to the top of the screen after the 16th carriage return.

The PROFS help message states that to type into further screens, an F10 (next page) or F4 (add line) key is required. This seems to mean that the user can paste only 16 lines of text at a time, followed by a next-page or add-line function key before continuing. There is a possible fix that includes modifying a font to show the character represented by a command-[. That character followed by a 0, if pasted every 16 lines, would do a next-page PF10.

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Tech Info Library Article Number:1540



Tech Info Library

JAZZ: Transferring JAZZ Word Processing Documents to MacWrite

Revised: 12/10/85
Security: Everyone

JAZZ: Transferring JAZZ Word Processing Documents to MacWrite

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JAZZ Word Processing Documents can be transferred to MacWrite. This can be very important if you are writing a long document and begin to run out of memory in JAZZ. To move a JAZZ Word Processing Document into MacWrite choose Save As from your File menu in JAZZ and click on Text Only and then Save. This will save your document as text only, which MacWrite will be able to read. Just transfer the text only file from your JAZZ startup disk to the MacWrite disk and you will be able to open it.

Note: When saving a document as text only you will lose formatting.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1541



Tech Info Library

JAZZ: Doing a Query Sort by Date in the Database

Revised: 12/10/85
Security: Everyone

JAZZ: Doing a Query Sort by Date in the Database

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It is possible to do a query sort by date in the database. An example would be to find all students born between June 21,1985 and July 24,1985. To do this the following formula would be used in the Database Query-

```
>DATE(85,6,21)#AND#FIELDNAME<DATE(85,7,24)
```

Insert your own field name for FIELDNAME.

This formula can be used for invoice dates, sales dates, ect. Just make sure to put the dates in the same format in the query as in the Field Format for the field in the database.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1542



Tech Info Library

JAZZ: Getting Rid of 0's in the Database Report

Revised: 12/10/85
Security: Everyone

JAZZ: Getting Rid of 0's in the Database Report

=====

If you would like to not print out 0's in your Database Report when the contents of a field is 0 a formula must be used.

=IF(ISBLANK(FIELD 1)," ",FIELD 1)

This formula should be used in the Record Detail line of your Show Definition on the Database Report. Insert your own field names for FIELD 1.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1543



Tech Info Library

JAZZ: Frozen Margins in Word Processing

Revised: 12/10/85
Security: Everyone

JAZZ: Frozen Margins in Word Processing

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When using JAZZ Word Processing you must turn off the Tab Wells after using them. After you click on a regular or decimal tab well, the tab well turns black, now you can click anywhere on the bottom half of the ruler to insert a tab. Just make sure to go back and click on the tab well to turn it white after you have finished or it will freeze your margins.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1544



Tech Info Library

ImageWriter II: New Logic Boards

Revised: 1/30/92
Security: Everyone

ImageWriter II: New Logic Boards

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This article last reviewed: 20 November 1987

Problem:

After exchanging the the logic board in an ImageWriter II the error light comes on and the select light stays off. The printer does not respond to the computer or to a self test command.

Cure:

All of the logic boards being shipped as exchange modules are the new Revision A boards. The Revision A boards are compatible with both the old mechanical paper out sensor and the new optical paper out sensor. Switch 3 on the logic board must be configured properly for the type of paper out sensor used on the printer. Jumper pins 1 and 2 for the mechanical sensor and pins 2 and 3 for the optical sensor. Refer to the ImageWriter II Technical Procedures for more information.

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Tech Info Library Article Number:1546



Tech Info Library

Jazz Word Processing: Printing Pages After Page 7

Revised: 7/30/87
Security: Everyone

Jazz Word Processing: Printing Pages After Page 7

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It has been reported that there is sometimes a problem printing a range of pages after page 7 in JAZZ word processing (ex. Print pages 9-12). Sometimes when trying to print a range of pages it will start printing at the beginning of the file. A solution is to copy and paste the pages you want to print into a new Word Processing document and then print that document. Also, you can always choose Save As from your file menu and click on Text Only -- then MacWrite can read your file. This can also be helpful when a document gets too long for the JAZZ Word Processor.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1547



Tech Info Library

Jazz: Formatting Columns & Rows in JAZZ (Running Out of Memory)

Revised: 7/30/87
Security: Everyone

Jazz: Formatting Columns & Rows in JAZZ (Running Out of Memory)

=====

Do not format Columns and Rows in JAZZ. JAZZ uses up some RAM memory for every cell you format, so if you format a Column with 8,192 cells you will rapidly run out of RAM memory. If you think you have formatted a column in the Worksheet, you should choose Select All from your Edit menu. Look in the cell Selection Box it will say (ex. A1..G56), but if it says (A1..G8192) you know you have formatted a column. The same problem will occur if you format rows- if the cell Selection Box says A1..IV52, you know you have formatted a Row. When you have formatted a Row or Column you should choose Disable Undo desk accessory and then click on the Column or Row heading and turn the Column or Row black. Now, choose Format from the Range menu and choose Default as the formatting choice.

Choose Select All from the Edit menu again to make sure your Worksheet is back down to the proper size.

Note: If you think you have formatted a Row or Column in a small Worksheet it is often quicker to click and drag over the part of the Worksheet you are using and then choose Copy from the Edit menu. Close the Worksheet you were working on and open a new one and then paste in the contents of the old one.

Hint: Check the About JAZZ desk accessory frequently while using JAZZ it will let you see how much RAM is still available. Also, save your Worksheets every 15 minutes so that if you get into a problem you will not lose too much work.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1548



Tech Info Library

Jazz: Mailing Labels with Jazz on the Apple Imagewriter

Revised: 12/10/85
Security: Everyone

Jazz: Mailing Labels with Jazz on the Apple Imagewriter

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Here are some guidelines for the number of lines that can fit on a mailing label:

Small Label	12ptNY	4 lines
	10ptNY	5 lines
Corporate Label	12ptNY	12 lines
	10ptNY	16 lines

If the number of lines per label exceeds the guidelines, a double line appears indicating that the information cannot fit on one mailing label, but will fit on two. Once you have established an incorrect mailing label in a word processing document, you must reconstruct your correct mailing label in a new document. These directions are for use on the Imagewriter only, if you are using a LaserWriter you will not have the choice of mailing labels in your Page Set-up menu.

1. When printing mailing labels with Jazz, the ImageWriter prints a label, drops a few spaces and then reverses itself to print the next label. This action often catches the label and causes a paper jam. To avoid this, adjust the platen on the ImageWriter (pg. 21 ImageWriter Manual).
2. If you are printing many labels you can choose Draft from the Page Setup menu and the labels will not reverse itself when printing, thereby reducing the chance of jamming.
3. When "Hotviewing" the name and address in your word processing document make sure you don't hit the return key at the end of the last line or the cursor will move down a line and JAZZ might think you have too many lines of text. You will get one blank label between each good one if you have done this. To get rid of the blank label between each good one you must start again with a new Word Processing Document.
4. Many people forget the last step when doing mailing labels. The last step is to go back to your database on last time and select the records you would like to use to for labels. There are three ways to select records. The first is to

choose Select All from the Edit menu. The second is to use a query in the database to select certain records (example- people in a certain state). The third way to select records is by highlighting a few.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1549



Tech Info Library

Jazz: JAZZ Cable Pin Settings to Connect Mac with PC's and VAX

Revised: 12/10/85
Security: Everyone

Jazz: JAZZ Cable Pin Settings to Connect Mac with PC's and VAX

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The following tables are pin outs if you would like to make your own cables to transfer files directly from your PC to the Mac at speeds of 4800 and 9600 Baud.

Mac to IBM (or other serial devices)

Mac	IBM
RS-442A	RS-232C
(9 Pin Male)	(25 Pin Female)
1-----	1
3-----	7
5-----	3
7-----	20
9-----	2

Mac to VAX or Modem (Hayes)

Mac	VAX or Modem
(9 Pin Male)	(25 Pin Male or Female)
1-----	1
2-----	20
3-----	7
5-----	2
7-----	5
9-----	3

You can make your own adapter cables from parts commonly available at Radio Shack or other electronic parts suppliers.
See also 123 to JAZZ and Symphony to JAZZ

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Lotus Development Corporation

Tech Info Library Article Number:1550



Tech Info Library

ImageWriter LQ General Troubleshooting (Part 1 of 3)

Revised: 1/30/92
Security: Everyone

ImageWriter LQ General Troubleshooting (Part 1 of 3)

=====

This article last reviewed: 20 November 1987

NOTE: Detailed instructions for Take-Apart can be found in the Technical Procedures.

INTRODUCTION

Before starting, read the section titled "Preliminary Checks". Items listed here do not require any disassembly, tools, or special setups and can save you time and your customer money when troubleshooting the ImageWriter LQ.

If the suggestions in "Preliminary Checks" do not correct the problem, proceed to the appropriate symptom/cure chart.

How to Use the Symptom/Cure Chart:

First locate the symptom that comes closest to the symptom describing the problem; then perform the first corrective action on the solution list. If that corrective action does not fix the problem, proceed to the next action. If you replace a module and find that the problem remains, reinstall the original module before proceeding.

If a step asks you to test something, the procedure can be located elsewhere in this section.

If a tested component is defective, replace it. If it is not defective, proceed to the next action listed.

PRELIMINARY CHECKS

The following chart lists common problems that have simple solutions. Checking for these problems when you begin troubleshooting can save you time and effort.

Power light off, no carrier movement
1. Try another electrical outlet.

2. International units only: Verify the setting of the voltage selector.
3. Replace the power cord.

Error light blinks

Close the front cover.

Error light on, Select light off

No paper is inserted or is improperly inserted.

No printing

1. Make sure the printer is selected.
2. Verify that the interface connections to the printer are secure.
3. Verify the DIP switch settings.

Garbled printing

1. Verify the DIP switch settings.
2. Verify that the interface connections to the printer are secure.

Software-specific problem

Try using a known-good piece of software.

No communication with option card installed

Verify that DIP switch 2 position 4 is set to ON.

Paper feed difficulties (binding, tearing, etc.)

1. Verify the setting of the paper thickness lever.
2. Check, and if necessary, clear the paper path.

Torn Paper

1. Verify the setting of the paper thickness lever.
2. Verify that the paper-feed lever is set to the type of paper being used.
3. Verify that the paper is correctly installed and, if using tractor feed paper, that the sprocket holes are properly engaged on the tractor sprockets.

Printing too light

1. Verify the setting of the paper thickness lever.
2. Replace the ribbon.

Printing too dark

Verify the setting of the paper thickness lever.

SYMPTOM/CURE CHART

Power Problems

Power light off and no carrier motion

1. Test the primary fuse. If defective, replace it.
2. Test the three secondary fuses. If any are defective, replace the defective one(s).
3. Test the power switch. If defective, replace it.
4. Replace the main board.
5. Replace the transformer.

6. Replace the noise filter PCA.

Communication Problems

No printing or garbled printing

Perform the printer self-test. If the self-test passes, run the diagnostics to test the main board. If the self-test fails, replace the main board.

Carrier Problems

Carrier moves at power on, but doesn't return to home position

1. Test the home position switch. If defective, replace it.
2. Perform the "Home Position Switch Adjustment".
3. Replace the main board.

Power light on, no carrier motion

1. Check, and if obstructed, clear the carrier area.
2. Test the carrier motor. If defective, replace it.
3. Replace the main board.

Paper Feed Problems

No paper feed

1. Check the paper feed gear train and clear it if it is obstructed.
2. Test the paper-handling change switch. If defective, replace it.
3. Test the paper feed motor. If defective, replace it.
4. Replace the main board.

Paper bail doesn't automatically open and close

1. Test the auto-load solenoid. If defective, replace it.
2. Replace the main board.

For more ImageWriter LQ troubleshooting information see the following articles:

ImageWriter LQ General Troubleshooting (Part 2 of 3)

ImageWriter LQ General Troubleshooting (Part 3 of 3)

Refer to the Technical Procedures for the take apart instructions.

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Tech Info Library Article Number:1551



Tech Info Library

Installing Aladin On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Aladin On Catalyst For The Apple III

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You may move Aladin (Advanced Data Institute) version 2.6 to a hard disk for use with Catalyst.

If you are using a ProFile hard disk in slot 4 with a volume name of "/PROFILE", most of your work has been done for you by the folks at ADI. Simply follow the installation instructions entitled "APPLE III STARTUP PROCEDURE" on page S-10 - S-14 of the Aladin product manual. Once these steps have been completed, follow along below.

If you are using your Catalyst with a different brand of hard disk, You must add the device drivers of the hard disk you are using to the Aladin BOOT disk using the System Configuration Program of your System Utilities. After this has been done, then you may precede with the "APPLE III STARTUP PROCEDURE" in the Aladin manual and follow along below.

COPY PROCEDURE

In addition to the automatic installation provided to you by Aladin, three additional files must be copied to the hard disk to allow you to use Aladin without having to insert the BOOT disk at startup. In this example, the volume name of the hard disk is "/P". If your hard disk volume name is different, substitute it for "/P".

1. Boot the Catalyst disk (if you haven't already).
2. From the Catalyst main menu, select the System Utilities Program.
3. Enter "F" for FILE HANDLING COMMANDS.
4. Enter "C" for COPY FILES.
5. Copy the file "SYSTEM.STARTUP" from the Aladin BOOT disk to the subdirectory "/P/ALADIN".

To do this, type ".Dl/" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar

over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

6. Copy the files ALADIN3.INFO and ALADIN.CODE to "/P/=" using the procedure above.

7. When these files have been copied, press ESCAPE.

ADDING ALADIN TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor in the Catalyst main menu.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to add a program entry.
5. You will be asked for the display name of this program, enter "ALADIN".
6. Enter "CATALYST/PASCAL" as the interpreter pathname.
7. You will be asked for a list of any extra drivers this program requires. Enter ".PRINTER"
8. Press RETURN for the character set pathname.
9. Press RETURN for standard character set.
10. Press RETURN again to use the default keyboard.
11. Press RETURN to accept the default prefix.
12. Enter "3" for the "Max Files Allowed...." question. This will allow the program to be exited by holding down both Apple keys and pressing ESCAPE. (The value 3 suppresses the DISK FILES OPEN warning).
13. Enter "ALADIN/SYSTEM.STARTUP" when you are asked for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main menu.

If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Then press ESCAPE again to exit to the main menu.

15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".

16. Exit to the CATALYST main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1552



Tech Info Library

Installing Apple Speller On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Apple Speller On Catalyst For The Apple III

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You may move Apple Speller III to the hard disk for use with Catalyst. These instructions assume you are moving Apple Speller III to a ProFile (with a driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install Apple Speller III to a different hard disk.

COPY PROCEDURE:

1. Boot the Catalyst diskette.
2. From the Catalyst main menu select the System Utilities Program.
3. Enter "F" for File Handling Commands.
4. Enter "M" for Make a New Subdirectory.
5. Enter "CATALYST/SPELL".
6. Enter "25" as the subdirectory size.
7. In the same manner, create the subdirectory: "DICTIONARY" with room for 25 files.
8. Press "ESCAPE".
9. Enter "C" for copy files.
10. Copy all files on the Apple Speller III PROGRAM disk to the subdirectory "CATALYST/SPELL" except for the following:

SYSTEM.MISCINFO SYSTEM.PASCAL SOS.KERNEL SOS.INTERP and SOS.DRIVER

To do this, type ".D1/" and press the up arrow key. A list of files is displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked press RETURN.

11. Enter "R" to rename a file.
12. Change the name of "SYSTEM.LIBRARY" to "SYSTEM.STAR.LIB" and "SYSTEM.STARTUP" to "START.CODE".
13. After all files have been copied and renamed, copy ALL files from disks DICTIONARY 1 and DICTIONARY 2 to the subdirectory "DICTIONARY".

ADDING APPLE SPELLER III TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor in the Catalyst main menu.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to add a program entry.
5. You will be asked for the display name of this program, enter "APPLE SPELLER".
6. Enter "CATALYST/PASCAL" as the interpreter pathname.
7. You will be asked for a list of any extra drivers this program requires. Press RETURN.
8. Press RETURN for the character set pathname.
9. Press RETURN for standard character set.
10. Press RETURN again to use the default keyboard.
11. Press RETURN to accept the default prefix.
12. Enter "3" for the "Max Files Allowed...." question. This will allow the program to be exited by holding down both Apple keys and pressing ESCAPE. (The value 3 suppresses the DISK FILES OPEN warning).
13. Enter "CATALYST/SPELL/START.CODE" when you are asked for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main menu.
If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Then press ESCAPE again to exit to the main menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the CATALYST main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1553



Tech Info Library

Installing Appleworks 1.2 On Catalyst 2.1

Revised: 12/10/85
Security: Everyone

Installing Appleworks 1.2 On Catalyst 2.1

=====

With the release of Appleworks 1.2, some changes in the installation procedure must be made. These instructions also assume that you have installed Catalyst properly and that you have a hard disk with the volume name of "/PROFILE". To install the new version, follow along below.

1. Boot the Catalyst disk (if you haven't already).
 2. From the Catalyst main menu, select the Filer.
 3. Press "F" for File Commands.
 4. Press "L" for List ProDOS Directory.
 5. Place the Appleworks BOOT disk in drive 1.
 6. Enter "/APPLEWORKS".
 7. A listing of all the files on the Appleworks disk will appear. Check for the filename "QUARK.INSTALL". If the file exists, continue with the next step. If the file DOES NOT exist, go to step 13.
 8. Press the ESCAPE KEY two times. Press "Q". This should place you in the Catalyst main menu.
 9. From the main Catalyst menu, select the Catalyst Editor.
 10. Select option 6.
 11. Select option 5 to install "Miscellaneous Manufacturers" programs. Follow the directions on the screen. Appleworks will be installed automatically for you.
 12. When the process is completed, you will be returned to the Catalyst Editor.
- Select option 7 to quit.
13. Press the RETURN key. Press the ESCAPE key.
 14. Press "M" for Make a New Subdirectory.
 15. Enter "/PROFILE/AW".
 16. Press ESCAPE.
 17. Place the Appleworks BOOT disk in drive 1.
 18. Press "C" to Copy Files.
 19. For Source Pathname enter "/APPLEWORKS/=" and press RETURN.
 20. For Destination Pathname enter "/PROFILE/AW/="
 21. Hit "RETURN" when you are prompted to do so.
 22. Place the Appleworks PROGRAM disk in drive 1.
 23. For the Source Pathname enter "/APPLEWORKS/=" and press RETURN.

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24. For the Destination Pathname Enter "/PROFILE/AW/=" and press RETURN.
25. Press Return when you are prompted to do so.
26. Press Escape two times. Press "Q".

ADDING APPLEWORKS 1.2 TO THE CATALYST MAIN MENU

1. Boot the Catalyst disk.
2. Select the Catalyst Editor.
3. Enter 1 to Edit the Catalyst Menu.
4. Place the cursor to the position that you want the Appleworks menu entry to occur.
5. Press "A". You will be asked for the display name of this program. Enter "Appleworks".
6. For the Interpreter Pathname enter "/PROFILE/AW/APLWORKS.SYSTEM".
7. For the Prefix enter "/PROFILE/AW"
8. Press RETURN for Program Pathname.
9. You will be asked if this entry is correct. If it is answer "Y".
10. Press the ESCAPE key.
11. Enter "5" to update the Interpreter file.
12. Exit to the Catalyst main menu.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1554



Tech Info Library

Installing Backup III on Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Backup III on Catalyst For The Apple III

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You may move BACKUP III (Apple) to the hard disk. This will allow you to access it with greater ease than using floppy disks.

COPY PROCEDURE

- 1) Boot the CATALYST diskette (if you haven't already).
- 2) From the main CATALYST menu, select the Systems Utilities Program.
- 3) Press "F" for File Handling Commands.
- 4) Press "M" for Make a New Subdirectory.
- 5) Enter ".PROFILE/CATALYST/BU3".
- 6) Press RETURN to accept the default size of 25 files.
- 7) Press ESCAPE.
- 8) Put the BACKUP III PROGRAM diskette in the internal drive.
- 9) Press "C" to copy files.
- 10) Copy SYSTEM.STARTUP from the BACKUP III PROGRAM disk to ".PROFILE/CATALYST/BU3/SYSTEM.STARTUP".
- 11) Press ESCAPE.

ADDING BACKUP III TO THE CATALYST MENU

- 1) Enter the number for CATALYST EDIT.
- 2) Enter "1" to add an entry to the menu.
- 3) Enter the number of the menu entry you want BACKUP III to precede.
- 4) You will be asked for the display name of this program. Enter BACKUP III.
- 5) Enter "CATALYST/PASCAL" for the interpreter pathname.
- 6) Press RETURN for the character set pathname.
- 7) Press RETURN for standard character set.
- 8) Press RETURN again to use the default keyboard.
- 9) Press RETURN to accept the default prefix.
- 10) Enter "3" for the "Max Files Allowed..." question.
- 11) Enter ".PROFILE/CATALYST/BU3,SYSTEM.STARTUP" when you are asked for the program path.
- 12) You will be asked if this entry is correct. If it is, enter "Y", or just press RETURN. You will be allowed to insert another entry. Since you do not

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want to do this, enter "0" to exit to the main menu.

13) Enter "7" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".

14) Exit to the CATALYST main menu by entering "0".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1555



Tech Info Library

Installing Apple Business Graphics on an Apple III

Revised: 12/10/85
Security: Everyone

Installing Apple Business Graphics on an Apple III

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You may move APPLE BUSINESS GRAPHICS to the hard disk. This will allow you to access it with greater ease than by using a floppy. However, because of the particular copy protection scheme used for APPLE BUSINESS GRAPHICS, you will have to install the APPLE BUSINESS GRAPHICS diskette in the internal drive before using it.

The .GRAFIX driver must be installed on your CATALYST disk. Additionally, 16K of graphics space must be allocated in Pascal. If you get the message "INSUFFICIENT GRAPHICS SPACE ALLOCATED" when trying to invoke BUSINESS GRAPHICS, you may allocate graphics space by pressing "O" from the Pascal command line. Then press "A", then "C", then "Q". Pascal will be restarted. Enter "0" to return to CATALYST. You may then re-enter BUSINESS GRAPHICS successfully.

NOTE:

In order for BUSINESS GRAPHICS to work with CATALYST, the file SYSTEM.LIBRARY that is located on the BUSINESS GRAPHICS MASTER disk MUST be installed on the root directory of your profile. If you already have the Apple Pascal language installed in conjunction with CATALYST, this procedure will not be necessary.

COPY PROCEDURE:

- 1) Boot the CATALYST diskette.
- 2) From the main CATALYST menu, select the Systems Utilities Program.
- 3) Press "F" for File Handling Commands.
- 4) Press "M" for Make a New Subdirectory.
- 5) Enter .PROFILE/CATALYST/BG.
- 6) Press RETURN to accept the default size of 25.
- 7) Press ESCAPE.
- 8) Put the APPLE BUSINESS GRAPHICS MASTER diskette in the internal drive.
- 9) Press "C" for Copy Files.
- 10) Copy all files from your APPLE BUSINESS GRAPHICS MASTER diskette except for the following:
 - SYSTEM.PLOT
 - SYSTEM.MISCINFO
 - SYSTEM.PASCAL

SYSTEM.LIBRARY

- 11) To do this, type ".D1/" and press the up arrow key.
- 12) A list of files is displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked press RETURN.
- 13) Enter ".PROFILE/CATALYST/BG/=" for the name of the destination file.
- 14) Copy the SYSTEM.LIBRARY from the APPLE BUSINESS GRAPHICS MASTER diskette.
- 15) Enter ".PROFILE/CATALYST/BG/PLOT.LIB" as the destination file.
- 16) When the copy is complete, insert the BUSINESS GRAPHICS DATA disk in the built in drive.
- 17) Enter ".D1/=H.TEXT" as the source file name.
- 18) Enter ".PROFILE/CATALYST/BG/=H.TEXT" as the destination file name.

If you have the Apple Pascal language installed on your ProFile in conjunction with CATALYST, skip to step 21.

- 19) Make a second copy of the file SYSTEM.LIBRARY.
 - 20) Enter ".PROFILE/SYSTEM.LIBRARY" as the destination file name.
 - 21) When all files have been copied press ESCAPE.
- ADDING APPLE BUSINESS GRAPHICS TO THE CATALYST MENU

- 1) Enter the number for CATALYST EDIT.
- 2) Enter "1" to add an entry to the menu.
- 3) Enter the number of the menu entry you want BUSINESS GRAPHICS to precede.
- 4) You will be asked for the display name of this program. Enter BUS. GRAFIX.
- 5) Enter CATALYST/PASCAL for the interpreter pathname.
- 6) Press RETURN for the character set pathname.
- 7) Press RETURN for standard character set.
- 8) Press RETURN again to use the default keyboard.
- 9) Press RETURN to accept the default prefix.
- 10) Enter "3" for the "Max Files Allowed..." question.
- 11) Enter "/*.PROFILE/CATALYST/BG,SYSTEM.STARTUP" when you are asked for the program path. This will generate a bad path error but ignore it.
- 12) You will be asked if this entry is correct. If it is answer "Y". You will be allowed to insert another entry. Since you do not want to do this, enter "0" to exit to the main menu.
- 13) Enter "7" to update the INTERPRETER file. When you are asked if you want to recalculate the load address, enter "N".
- 14) Exit to the CATALYST main menu by entering "0".

In order to access the HELP files you transferred to your ProFile you must set the default prefix within BUSINESS GRAPHICS by doing the following.

- 1) Boot BUSINESS GRAPHICS.
 - 2) From the main menu type: "SET DEFAULT VOL .PROFILE/CATALYST/BG" and press return.
- Now BUSINESS GRAPHICS will use that subdirectory as a source for your work files and for its program and help files.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

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Quark Technical Support

Tech Info Library Article Number:1556



Tech Info Library

Installing Datafax On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Datafax On Catalyst For The Apple III

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You may move DataFax (Link Systems) to a hard disk for use with Catalyst. These instructions assume you are moving DataFax to a ProFile (with driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install DataFax on a different hard disk.

COPY PROCEDURE:

1. Boot the Catalyst diskette (if you haven't already).
2. From the Catalyst main menu, select the System Utilities Program.
3. Enter "F" for FILE HANDLING COMMANDS.
4. Enter "M" for MAKE A NEW SUBDIRECTORY.
5. Enter "CATALYST/DATAFAX" with a default size of 25 files.
6. Press "ESCAPE".
7. Enter "C" for COPY FILES.
8. Copy all files from the PROGRAM disk to the subdirectory "CATALYST/DATAFAX/=" except for the following:

SYSTEM.MISCINFO SYSTEM.PASCAL

To do this, type ".D1/" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

9. When all files have been copied, press ESCAPE.

ADDING DATAFAX TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.

4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.
5. You will be asked for the display name of this program, enter "DATAFAX".
6. Enter "CATALYST/PASCAL" as the interpreter path name.
7. You will be asked if you want "EXTRA DRIVERS". See page 3-9 of the Catalyst manual for input instructions.
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Press RETURN for initial prefix.
12. Enter "3" for the "Max Files Allowed..." question.
13. Enter "CATALYST/DATAFAX/SYSTEM.STARTUP" program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "Y".
16. Exit to the Catalyst main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1557



Tech Info Library

Installing Desktop Plan on Catalyst for the Apple III (9/95)

Revised: 9/21/95
Security: Everyone

Installing Desktop Plan on Catalyst for the Apple III (9/95)

Article Created: 10 December 1985
Article Reviewed/Updated: 21 September 1995

TOPIC -----

This article contains a setup file from Visiscorp on how to use their product, Desktop Plan, on a hard drive equipped Apple /// computer.

DISCUSSION -----

You may move DESKTOP PLAN (VISICORP) to the hard disk. This will allow you to access it with greater ease than using the floppy diskettes.

COPY PROCEDURE:

1. Boot the CATALYST diskette.
2. From the main CATALYST menu, select the Systems Utilities Program.
3. Press "F" for File Handling Commands.
4. Press "M" for Make a New Subdirectory.
5. Enter ".PROFILE/CATALYST/PLAN".
6. Press RETURN to accept the default size of 25.
7. Press ESCAPE.
8. Put the DESKTOP PLAN PROGRAM diskette in the internal drive.
9. Press "C" for Copy Files.
10. Copy all the files from this diskette to ".PROFILE/CATALYST/PLAN".
11. After all the files have been copied from the PROGRAM diskette, put the DESKTOP PLAN SYSTEM diskette in the internal drive.
12. Copy all the files from this diskette EXCEPT for the following:
SOS.KERNEL SOS.DRIVER SOS.INTERP to ".PROFILE/CATALYST/PLAN".
13. To do this, type ".D1" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked press RETURN.
14. When all files have been copied press ESCAPE.

ADDING DESKTOP PLAN TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.
5. You will be asked for the display name of this program, enter "DESK TOP PLAN"
6. Enter "CATALYST/BASIC as the interpreter path name.
7. You will be asked if you want "EXTRA DRIVERS", press RETURN.
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Enter ".PROFILE/CATALYST as the initial prefix.
12. Enter "3" for the "Max Files Allowed..." question.
13. Enter ".PROFILE/CATALYST/PLAN.HELLO" for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the Catalyst main menu by entering "Q".

ADDITIONAL INSTRUCTIONS:

The following instructions are for a ProFile named ".PROFILE". If your hard disk is named something else you will have to alter the instructions accordingly.

1. Select DESKTOP PLAN from the CATALYST menu.
2. Change the PROGRAM VOLUME NAME to: "PROFILE/CATALYST/PLAN". This will tell DESKTOP PLAN to look for all of its files under that volume name.
3. Once the volume name has been changed press RETURN.
4. Enter today's date and press RETURN.
5. Perform step #6 on page A-10 of the DESKTOP PLAN manual changing the "VOLUME NAME- PROGRAMS" from "PLAN" to "PROFILE/CATALYST/PLAN".
6. Perform step #7 on page A-10 of the DESKTOP PLAN manual.

You will now be able to access all files from your ProFile.

This article provides information about a non-Apple product. Apple Computer, Inc. is not responsible for its content. Please contact the vendor for additional information.

Article Change History:

21 Sep 1995 - Updated format.

Support Information Services

Quark Technical Support

Tech Info Library Article Number:1558



Tech Info Library

Installing Graph 'N' Calc On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Graph 'N' Calc On Catalyst For The Apple III

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You may move Graph 'n Calc (Desk Top Computer Software Inc.) to the hard disk. This will allow you to access it with greater ease than using floppy disks. These instructions assume you are moving Graph 'n' Calc to a ProFile (with a driver name .PROFILE). Substitute the name of your hard disk driver for ".PROFILE" if you wish to install Graph 'n' Calc on a different hard disk.

COPY PROCEDURE

1. Boot the CATALYST diskette (if you haven't already).
2. From the main CATALYST menu, select the Systems Utilities Program.
3. Press "F" for File Handling Commands.
4. Press "M" for Make a New Subdirectory.
5. Enter ".PROFILE/GNC".
6. Press RETURN to accept the default size of 25 files.
7. Press ESCAPE.
8. Put the Graph'n' Calc "GNC1" diskette in the internal drive.
9. Press "C" to copy files.
10. Copy all files from your "GNC1" disk to ".PROFILE/GNC/=" except for the following:

SOS.KERNEL SOS.INTERP SOS.DRIVER

To do this, type ".D1" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

11. Copy all files from "GNC2" to the same subdirectory using the procedure above.
12. When all files have been copied, Press ESCAPE.

ADDING GRAPH 'N' CALC TO THE CATALYST MENU

1. Return to the Catalyst main menu.

2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.
5. You will be asked for the display name of this program, enter "GNC".
6. Enter "CATALYST/BASIC as the interpreter path name.
7. You will be asked if you want "EXTRA DRIVERS", enter ".GRAFIX"
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Enter ".PROFILE/GNC" initial prefix.
12. Enter "0" for the "Max Files Allowed..." question.
13. Enter ".PROFILE/GNC/HELLO for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the Catalyst main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1559



Tech Info Library

Installing Lazarus III On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Lazarus III On Catalyst For The Apple III

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You may move Lazarus III to the hard disk. This will allow you to access it with greater ease than using floppy disks. These instructions assume you are moving Lazarus III to a ProFile (with a driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install Lazarus on a different hard disk.

NOTE: Lazarus III uses quite a bit of computer memory. Due to this a "STACK OVERFLOW" error may occur when invoking it from Catalyst. To avoid this condition, make the Apple II disk routines in the Pascal NOT resident by selecting "OPTIONS" from the Pascal Command Line.

COPY PROCEDURE

1. Boot the CATALYST diskette (if you haven't already).
2. From the main CATALYST menu, select the Systems Utilities Program.
3. Press "F" for File Handling Commands.
4. Press "M" for Make a New Subdirectory.
5. Enter ".PROFILE/CATALYST/LAZARUS".
7. Press ESCAPE.
8. Put the LAZARUS PROGRAM diskette in the internal drive.
9. Press "C" to copy files.
10. Copy only the SYSTEM.STARTUP file from your PROGRAM disk to ".PROFILE/CATALYST/LAZARUS/SYSTEM.STARTUP"
11. When this file has been copied, Press ESCAPE.

ADDING LAZARUS III TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.
5. You will be asked for the display name of this program, enter "LAZARUS III".
6. Enter "CATALYST/PASCAL" as the interpreter path name.

7. You will be asked if you want "EXTRA DRIVERS". Press RETURN.
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Press RETURN for the initial prefix.
12. Enter "3" for the "Max Files Allowed..." question.
13. Enter ".PROFILE/CATALYST/LAZARUS/SYSTEM.STARTUP" for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the Catalyst main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1560



Tech Info Library

Manual Installation Of Programs On Catalyst 3.0 (9/95)

Revised: 9/21/95
Security: Everyone

Manual Installation Of Programs On Catalyst 3.0 (9/95)

Article Created: 10 December 1985
Article Reviewed/Updated: 21 September 1995

TOPIC -----

This article describes the process for installing software to be used with an Apple /// computer running VisiCorp's product, Catalyst 3.0.

DISCUSSION -----

With the release of Catalyst 3.0 some programs will need to be manually installed, until the manufacturer of the program has a Catalyst Desktop file for their program.

1. Boot the Catalyst disk (if you haven't already).
2. Open the floppy disk icon and select the System Utilities program.
3. Press "7" for Identify and Catalog a Disk.
4. Place the BOOT disk for the Program in drive 1.
5. Select Slot 6 Drive 1 and press Return.
6. Press RETURN to list file to the display.
7. A listing of all the files on the BOOT Disk disk will appear. Check for the filename "Catalyst.Desktop". If the file exists, follow the procedure for coping a program as discribed in the Catalyst manual.
8. Check for a file whose name ends in ".system". If the file is "BASIC.SYSTEM" Follow the Proceedure in the Catalyst Manual for installing BASIC Programs.
9. Write down the name of the System file _____.
10. Press the ESCAPE key.
11. Insert the disk you want to want install the program on. If the disk you want copy the program to is a hard disk, make sure that System Utilities can access it.
12. Select Option 8 for Advanced Operations.
13. Select Option 2 to Create Directory.
14. For Path Name enter the "/" name of disk "/" name of the directory.
EXAMPLE ("/PROFILE/AW" is the directory we use use for AppleWorks).
15. Press the ESCAPE key twice.

16. Select option 1 to Copy Files.
17. For Source use Slot 6 Drive 1.
18. For Destination use the Directory Path Created in Step 14.
19. Copy all Files.
20. If there is a second disk copy the files from the disk using steps 16-19.
21. Select option 2 to Delete a File.
22. For Path Name enter the Directory Path in step 14 plus "/PRODOS".
23. Select option 9 to exit.

ADDING THE PROGRAM TO THE CATALYST DESKTOP.

1. Boot the Catalyst disk.
2. Insert the disk installing program to. If you are using a hard disk check to see that an icon for the hard disk displayed on the Desk Top. If the hard disk is not available restart the system using the procedure specified by the hard disk manufacture.
3. Select ADD A PROGRAM FROM THE MISCELLANEOUS menu. NOTE IF DURING THE ADD A PROGRAM PROCEDURE YOU PRESS THE RETURN KEY YOU WILL EXIT ADD A PROGRAM. TO FINISH ENTERING THE PROGRAM INFORMATION SELECT GET INFO FROM THE FILE MENU.
4. For Program Title enter the name of the program and press the TAB key.
5. For System File enter the name of the System file Specified in step 9 above and press the TAB key.
6. For Prefix enter the name of the Directory created in step 14 above and press the TAB key.
7. For Program Path press the TAB key.
8. If everything is correct Click on the OK box.

This article provides information about a non-Apple product. Apple Computer, Inc. is not responsible for its content. Please contact the vendor for additional information.

Article Change History:

21 Sep 1995 - Updated Format.

Support Information Services

Quark Technical Support

Tech Info Library Article Number:1561



Tech Info Library

Installing Microcourier On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Microcourier On Catalyst For The Apple III

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You may move MicroCourier to a hard disk for use with Catalyst. These instructions assume you are moving MicroCourier to a ProFile (with driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install MicroCourier on a different hard disk.

COPY PROCEDURE:

2. From the Catalyst main menu, select the System Utilities Program.
3. Enter "F" for FILE HANDLING COMMANDS.
4. Enter "M" for MAKE A NEW SUBDIRECTORY.
5. Enter "CATALYST/COURIER" with a default size of 25 files.
6. Press "ESCAPE".
7. Enter "C" for COPY FILES.
8. Copy all files from the PROGRAM disk to the subdirectory "CATALYST/COURIER/="

To do this, type ".D1/" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

9. When all files have been copied, press ESCAPE.

ADDING MICROCOURIER TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to ADD a program entry.
5. You will be asked for the display name of this program, enter "MICROCOURIER"
6. Enter "CATALYST/PASCAL" as the interpreter path name.

7. You will be asked if you want "EXTRA DRIVERS". Enter ".RS232".
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Press RETURN for initial prefix.
12. Press RETURN for the "Max Files Allowed open ..." question. This will allow the program to be exited only by the QUIT option in Microcourier. This procedure is suggested due to the fact that files and /or data may be lost if the double Apple escape option is used.
13. Enter "CATALYST/COURIER/SYSTEM.STARTUP" for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the Catalyst main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1562



Tech Info Library

Installing Quickfile on Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Quickfile on Catalyst For The Apple III

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You may move QUICKFILE (APPLE) to the hard disk. This will allow you to access it with greater ease than by using a floppy.

COPY PROCEDURE:

- 1) Boot the CATALYST diskette.
- 2) From the main CATALYST menu, select the Systems Utilities Program.
- 3) Press "F" for File Handling Commands.
- 4) Press "M" for Make a New Subdirectory.
- 5) Enter ".PROFILE/CATALYST/QF".
- 6) Press RETURN to accept the default size of 25 files.
- 7) Press ESCAPE.
- 8) Put the QUICKFILE PROGRAM diskette in the internal drive.
- 9) Press "C" for Copy Files.
- 10) Enter ".D1/SYSTEM.STARTUP" as the source file name.
- 11) Enter ".PROFILE/CATALYST/QF/QF" as the destination file name.
- 12) Enter ".D1/SYSTEM.LIBRARY" as the next source file name to copy.
- 13) Enter ".PROFILE/CATALYST/QF/QF.LIB" as the name of the destination file.
- 14) When these files have been copied, hold down both APPLE keys and press ESCAPE to return to the CATALYST menu.

ADDING QUICKFILE TO THE CATALYST MENU

- 1) Enter the number for Catalyst Edit.
- 2) Enter "1" to add an entry to the menu.
- 3) Enter the number of the menu entry you want QUICKFILE to precede.
- 4) Enter QUICKFILE as the display name.
- 5) Enter CATALYST/PASCAL as the interpreter pathname.
- 6) Press RETURN for the character set pathname.
- 7) Press RETURN for standard character set.
- 8) Press RETURN again to use the default keyboard.
- 9) Press RETURN to accept the default prefix.
- 10) Enter "3" for the "max files allowed..." question.
- 11) Enter "CATALYST/QF,QF" when you are asked for the program path. (This will give a bad path error but ignore it.)
- 12) You will be asked if this entry is correct. If it is, enter "Y", or just press RETURN. You will be allowed to insert another entry. Since you do not

want to do this, enter "0" to exit to the main menu.

13) Enter "7" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".

14) Exit to the CATALYST main menu by entering "0".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1563



Tech Info Library

Installing Thinktank On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Thinktank On Catalyst For The Apple III

=====

You may move ThinkTank (Living Videotext) to the hard disk. This will allow you to access it with greater ease than using floppy disks. These instructions assume you are moving ThinkTank to a ProFile (with a driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install ThinkTank on a different hard disk.

COPY PROCEDURE

1. Boot the CATALYST diskette (if you haven't already).
2. From the main CATALYST menu, select the Systems Utilities Program.
3. Press "F" for File Handling Commands.
4. Press "M" for Make a New Subdirectory.
5. Enter ".PROFILE/CATALYST/THINKTANK"
6. Press RETURN to accept the default size of 25 files.
7. Press ESCAPE.
8. Put the THINKTANK PROGRAM diskette in the internal drive.
9. Press "C" to copy files.
10. Copy all files from your PROGRAM disk to ".PROFILE/CATALYST/THINKTANK/=" except for the following:

SYSTEM.STARTUP SYSTEM.MISCINFO SYSTEM.PASCAL

To do this, type ".D1" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked, press RETURN.

11. When all files have been copied, Press ESCAPE.

ADDING THINKTANK TO THE CATALYST MENU

1. Return to the Catalyst main menu.
2. Select the Catalyst Editor.
3. Enter "E" to edit the menu.
4. Use the up and down arrow keys to position the inverse bar over the entry

you want the program to precede. Press "A" to ADD a program entry.

5. You will be asked for the display name of this program, enter "THINKTANK".
6. Enter "CATALYST/PASCAL" as the interpreter path name.
7. You will be asked if you want "EXTRA DRIVERS". Press RETURN.
8. Press RETURN for standard character set.
9. Press RETURN for the normal screen.
10. Press RETURN for the default keyboard.
11. Press RETURN for the initial prefix.
12. Enter "3" for the "Max Files Allowed..." question.
13. Enter ".PROFILE/CATALYST/THINKTANK,TANK.CODE" for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.
15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
16. Exit to the Catalyst main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1564



Tech Info Library

Installing Versaform On Catalyst For The Apple III

Revised: 12/10/85
Security: Everyone

Installing Versaform On Catalyst For The Apple III

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You may move VersaForm version 1.3 Release 2 (Applied Software Technology) to a hard disk for use with Catalyst. These instructions assume you are moving VersaForm to a ProFile (with driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install VersaForm on a different hard disk.

COPY PROCEDURE:

1. Boot the Catalyst diskette (if you haven't already).
2. From the Catalyst main menu select the Systems Utilities Program.
3. Enter "F" for File handling commands.
4. Enter "M" for Make a new subdirectory.
5. Enter "CATALYST/VF"
6. Enter "50" for the subdirectory size.
7. In the same manner, create the subdirectorys:"CATALYST/VFD" and "CATALYST/VF/WORK" also with room for 50 files.
8. Press "ESCAPE".
9. Enter "C" for Copy Files.
10. Copy all the files on diskette #1 to the subdirectory "CATALYST/VF/=" except for the following:

SYSTEM.MISCINFO SYSTEM.PASCAL SYSTEM.LIBRARY
SYSTEM.STARTUP BJTERM and BJSTART.CODE

To do this, type ".D1/" and press the up arrow key. A list of files is displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all files are marked press RETURN.

11. After all files have been copied, repeat step 10 for disks #2, #3, and #4.

.

NOTE: The files "RMSG2", "RMSG1", "RMSG0" and "CPCMENU" are duplicated on disk 4. When System Utilities asks if the previous copy of these files on the ProFile should be deleted, respond with "N".

12. Copy all files on diskette #5 to the subdirectory "CATALYST/VFD/=".

13. Copy "BJSTART.CODE" from the 3 DRIVE/HARD DISK boot diskette to "BJSTART.CODE".
14. Copy "SYSTEM.LIBRARY" from the 3 DRIVE/HARD DISK boot diskette to the following files:

```
BJSTART.LIB
CATALYST/VF/DESIGN.LIB
CATALYST/VF/FILING.LIB
CATALYST/VF/REPORT.LIB
CATALYST/VF/CPRINT.LIB
CATALYST/VF/PF.LIB
```

Additional Instructions

In order for VersaForm to find all of its files on your hard disk you must modify all the directory names within the program.

1. Boot the "3 DRIVE/HARD DISK" diskette.
2. Select option "7" (Exit to Pascal).
3. Type "X" for X(ecute from the Pascal Command Line.

NOTE: If you are using a hard disk other than ProFile, substitute the VOLUME name of your hard disk for /PROFILE in steps #4, #12, and #16.

4. Type "/PROFILE/CATALYST/VF/BJSETUP" in response to "Execute what file?".
5. Enter "5" for Customize existing configuration.
6. Press "RETURN" for the "*BJTERM" question.
7. Enter "N" in response to "Reconfigure function keys?".
8. Enter "N" in response to "Reconfigure dummy data character?".
9. Enter "N" in response to "Reconfigure reverse video?".
10. Enter "Y" or "N" to Reconfigure printer characteristics as required.
11. Enter "Y" to Reconfigure volume/directory names.
12. Set Program volume/directory names as follows:

```
Design program      = /PROFILE/CATALYST/VF
Filing program      = /PROFILE/CATALYST/VF
Report program      = /PROFILE/CATALYST/VF
Copy/Prnt program   = /PROFILE/CATALYST/VF
Rptwrk disk         = /PROFILE/CATALYST/VF/WORK
Default files vol   = /PROFILE/CATALYST/VFD
```

13. Enter "N" for Diagnostic mode.
14. Enter "Y" to write new configuration to disk.
15. Since you do not want to write copies of the configuration to separate disks, enter "N" for this question.
16. VersaForm will ask you to write the default configuration file you have just created to a location on your hard disk Enter "/PROFILE/BJTERM" for the pathname requested.
17. Enter "Y" or "N" for Listing configuration to printer as required.

ADDING VERSAFORM TO THE CATALYST MENU

1. Select the Catalyst Editor in the Catalyst main menu.

2. Enter "E" to edit the menu.
3. Use the up and down arrow keys to position the inverse bar over the entry you want the program to precede. Press "A" to add a program entry.
4. You will be asked for the display name of this program. Enter "VersaForm".
5. Enter "CATALYST/PASCAL" as the interpreter pathname.
6. You will be asked for a list of any extra drivers this program requires. Press RETURN.
7. Press "RETURN" for Character set path.
8. Press "RETURN" for Normal screen.
9. Press "RETURN" to use the default Keyboard.
10. Press "RETURN" to accept the default Initial prefix.
11. Press "RETURN" for the "Max files allowed ..." question. This will allow the program to be exited only by the QUIT option in VersaForm. This procedure is suggested due to the fact that files may be lost if the double Apple escape option is used. You may exit to the Catalyst main menu by typing "Q" from the Pascal Command Line.
12. Enter "BJSTART.CODE" when you are asked for the program path.
13. You will be asked if this entry is correct. If it is, answer "Y" then press ESCAPE to exit to the main menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When all items are correct, press ESCAPE. Then press ESCAPE again to exit to the main menu.
14. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "N".
15. Exit to the CATALYST main menu by entering "Q".

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1565



Tech Info Library

Installing VisiSchedule On Catalyst 2.0 For The Apple III

Revised: 12/10/85
Security: Everyone

Installing VisiSchedule On Catalyst 2.0 For The Apple III

=====

You may move VisiSchedule to a hard disk for use with Catalyst 2.0, but you will be required to keep the VisiSchedule Program disk in the internal drive. These instructions assume you are moving VisiSchedule to a ProFile (with driver name .PROFILE). Substitute the name of your hard disk driver for .PROFILE if you wish to install VisiSchedule on a different hard disk.

COPY PROCEDURE:

1. Boot the Catalyst diskette (if you haven't already).
2. From the Catalyst main menu, select the System Utilities Program.
3. Enter "F" for FILE HANDLING COMMANDS.
4. Enter "M" for MAKE A NEW SUBDIRECTORY.
5. Enter ".PROFILE/CATALYST/VISISCHEDULE" with a default size of 25 files.
6. Press "ESCAPE".
7. Enter "C" for COPY FILES.
8. Copy the SOS.INTERP file from the VISISCHEDULE BOOT disk to the file ".PROFILE/CATALYST/VISISCHEDULE/INTERPRETER".

To do this, type ".D1/" and press the up arrow key. A list of files are displayed in a box. The up and down arrow keys allow you to move an inverse bar over the name of your choice. Pressing the right arrow key marks the file so as to include it in the copy process. Mark all files to be copied in this way. When all the appropriate files are marked, press RETURN. Then enter ".PROFILE/CATALYST/VISISCHEDULE/INTERPRETER" for the file to copy to and press return.

9. Copy the SYSTEM.STARTUP file from the VISISCHEDULE PROGRAM disk to the file ".PROFILE/CATALYST/VISISCHEDULE/SYSTEM.STARTUP".
10. When all files have been copied, press ESCAPE and return to the main menu.
13. Enter "*.PROFILE/CATALYST/VISISCHEDULE,SYSTEM.STARTUP" for the program path.
14. You will be asked if this entry is correct. If it is, enter "Y" then press ESCAPE to exit to the main edit menu. If you made any mistakes during entry, enter "N". You may then enter the number of the item you wish to correct. When

all items are correct, press ESCAPE. Press ESCAPE again to exit to the main edit menu.

15. Enter "5" to update the INTERPS file. When you are asked if you want to recalculate the load address, enter "Y".

16. Exit to the Catalyst main menu by entering "Q".

When you first select VISISCHEDULE from the Catalyst Main Menu, it will prompt you to install the VISISCHEDULE program disk in the internal drive. Do so and the program should run perfectly.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1566



Tech Info Library

Changes in Word Juggler for the Apple II (vers. 2.7 or greater)

Revised: 12/10/85
Security: Everyone

Changes in Word Juggler for the Apple II (vers. 2.7 or greater)

=====

Word Juggler for the Apple II (version 2.7 or greater) differs from the older versions in two primary ways; by the elimination of the hardware modification and the addition of a number of enhancements to the program. The following list is a summary of all of the changes.

Enhancements to the program

New HELP feature

While editing a document, Open-Apple "?" will display a list of topics that, when selected, explain the various features of Word Juggler. Note that this replaces the old HELP command key (CONTROL V).

40 / 80 column support

Word Juggler for the Apple II will work in 40 columns on both the Apple IIe and the Apple IIc. When used on the Apple IIe, Word Juggler will use the 80 column card in the auxiliary slot if it is available. When used on the Apple IIc, Word Juggler checks the 40/80 column switch when the program is booted, and then reacts accordingly.

When used in the 40 column mode, Word Juggler changes in a few minor ways:

- o The main menu changes slightly.
- o The file name does not appear on the status line.

Main menu changes

- o Purge is now Delete.
- o Define Prefix is now Prefix.

Printer cards

- o When used on the Apple IIc, the printer card is permanently set to Super Serial to accommodate the two ports on the Apple IIc.
- o When used on the Apple IIc, the printer card must be used in Slot 1 or 2.

MOVE and COPY commands

Word Juggler now allows you to use the FIND and ^ FIND commands when prompted to "Move cursor to start (or end) of block and press space", in addition to the normal cursor movement keys.

FIND and ^ FIND commands

Hitting RETURN when prompted with "Find what?" will find the next occurrence of the string that was last searched for.

Titles and Page variables

The TEXT LINE/COL command now allows greater flexibility in choosing where on the page a title or page number can appear. In addition to specifying the absolute column number, titles or page numbers may appear on the left or right margin, centered between the margins, or alternating between the margins (which is useful when printing manuals)

Changes in the keystrokes

Because there is no keyboard enhancer included with Word Juggler version 2.7, some of the keystrokes had to be altered.

- o The Open Apple key is used to access the editing commands (instead of the CONTROL key used in the older versions).
- o The "overstrike" feature is no longer available.

Cursor Movement

	Used to be:	Now is:
o Previous Page	SHIFT Up-Arrow	Open-Apple Up-Arrow
Previous Word	SHIFT Left-Arrow	Open-Apple Left-Arrow
Next Word	SHIFT Right-Arrow	Open-Apple Right-Arrow
Next Page	SHIFT Down-Arrow	Open-Apple Down-Arrow
o Beginning of Document	CONTROL SHIFT Up-Arrow	Open-Apple E
Beginning of Line	CONTROL SHIFT Left-Arrow	Open-Apple S
End of Line	CONTROL SHIFT Right-Arrow	Open-Apple D
End of Document	CONTROL SHIFT Down-Arrow	Open-Apple X
o Straight Up	CONTROL Up-Arrow	Open-Apple CONTROL E
Straight Left	CONTROL Left-Arrow	Open-Apple CONTROL S
Straight Right	CONTROL Right-Arrow	Open-Apple CONTROL D
Straight Down	CONTROL Down-Arrow	Open-Apple CONTROL X
o Start of next line	CONTROL RETURN	Open-Apple RETURN
o Tab Set (and Clear)	SHIFT (and CONTROL) TAB	Open-Apple TAB
o Tab Inserting Spaces	SHIFT CONTROL TAB	Open-Apple Space

Printout Formatting Commands

The following commands not labeled on the command strip are now different:

Used to be:	Now is:
-------------	---------

- | | | |
|----------------|------------------|----------|
| o Else | ESCAPE CONTROL = | ESCAPE E |
| o 15 Pitch | ESCAPE CONTROL 4 | ESCAPE F |
| o Ragged Left | ESCAPE CONTROL 2 | ESCAPE R |
| o Triple Space | ESCAPE CONTROL 7 | ESCAPE T |

Margin Settings

Both the Top Margin and the Left Margin commands are now counted from "0" instead of "1".

Printout Enhancement Commands and Special Functions

Printout enhancements (such as bold and underline) and special functions (such as Lexicheck and Terminus) are now accessed with the Solid-Apple key instead of the Open-Apple key. Additionally, Print Form has changed from Open-Apple "." to Solid-Apple "2".

Variables are also entered with the Solid-Apple key.

Using Word Juggler with the Keyboard Enhancer

If you have a keyboard enhancer already installed and prefer to use the old commands, simply create a document called "OLD.COMMANDS" on the Word Juggler diskette and reboot. (It doesn't matter what is in this document, it just needs to be on the diskette.) This will allow Word Juggler to function almost the same as the earlier versions, while still having access to all of the program enhancements.

The functions that will behave differently are:

- o Help will still be accessed as Open-Apple "?".
- o Margins are still counted from "0" instead of from "1".
- o Print Form will change from Open-Apple "." to Open-Apple "2".

New features of Word Juggler 2.8

- o Print to Disk option - Allows incorporation of Word Juggler files with other program applications including terminal communications while retaining the original format of the document. This feature may be accessed by pressing Closed-Apple "9".

- o Built in Terminal Program - A scaled down telecommunication package based on Quark's TERMINUS program. This option is able to transmit and receive documents with as much ease as you would expect from a true telecommunications product. It will not, however, support any of TERMINUS' advanced transmission modes such as binary or compressed options.

The package allows you to define 4 Protocols, as opposed to Terminus' 16 Protocols. Furthermore, the Protocols support only two macros each, (the autodial and logon macros) while Terminus' Protocols can support up to 28 user-definable macros each.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support



Tech Info Library

Word Juggler for the Apple II Print To Disk Option

Revised: 12/10/85
Security: Everyone

Word Juggler for the Apple II Print To Disk Option

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The print to disk option in Word Juggler sends the formatted image of your document to a diskette file just as it would appear on your screen when you use the DISPLAY DOCUMENT feature. This print file is a standard ProDOS text file. Although the actual Word Juggler formatting commands (CENTER, JUSTIFY, etc.) are not written to this file, your text will appear formatted to their specifications.

This feature is accessed from the TEXT ENTRY MODE of Word Juggler with the command Solid-Apple "9". When selected, you will be presented with four prompts:

First page to print? - Enter the starting number to appear in your file. Press RETURN if you wish to start with page 1. Note that in this context, page number does not refer to the page numbers that appear on the output, but rather to the sequential number of the page.

Last page to print? - Enter the last page to appear in your file. Press RETURN if you wish to print to the end of the document.

Remove control codes from output? - If you answer "Y" (or press RETURN) to this question, the file sent to disk will not contain any printer escape code sequences. This is necessary if you wish to transmit the document using a telecommunications package. The escape codes may be interpreted by another computer in a variety of different ways causing errors in transmission or reception.

If you answer "N" to this question, all printer escape sequences will be saved to disk in addition to the text. This will allow you to print the file with all printer enhancements included, such as bold and underline.

Pathname? - Enter the name of the file to hold the format

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

..TIL01568-Word_Juggler_for_the_Apple_II_Print_To_Disk_Option_(TA31972).pdf

Quark Technical Support

Tech Info Library Article Number:1568



Tech Info Library

Apple II Memory Expansion Card: Diagnostics (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Memory Expansion Card: Diagnostics (11/96)

Article Created: 16 December 1985
Article Reviewed/Updated: 15 November 1996

TOPIC -----

This article describes the Apple II Memory Expansion Card diagnostics. These procedures can be used for any RAM configuration.

DISCUSSION -----

Always verify the card size and the positioning of the ICs before running the internal diagnostics.

A card failure is indicated if the internal diagnostics will not run. In that case, remove the RAM, install them on an exchange module, and retest.

1. Install the Memory Expansion Card in any slot except 3 in a known good Apple IIe. No disk drive is necessary.
2. Power on the Apple IIe.

The words Apple II will be displayed at the top of the screen. The prompt and cursor will be displayed on the screen in the upper left hand corner.

3. Enter CALL -151 and press RETURN. The monitor prompt, *, will appear.
4. Verify which slot the Memory Expansion Card is in by entering cX0AG, where X is the slot number, and press RETURN.
5. The following display will appear. Verify the card size (RAM configuration) which appears is the actual size for the card installed (in this case a 256K card is installed). The dots appear on the screen as the card is tested. The test will repeat until an error is encountered or the ESC key is pressed.

MEMORY CARD TEST

ESC TO EXIT

TEST WILL TAKE 45 SECONDS

Seconds: 45 90 135 180

CARD SIZE = 256K

Card size: 256K 512K 768K 1024K

PASSES = 0001

....

....

....

....

....

....

CARD OK

Error Code Interpretation

The Memory Expansion Error Code Chart in the December 1985 mailing was incorrect. This article and the January 1986 mailing contain a corrected chart.

If an error is found during the internal diagnostic it will be displayed in one of the following formats: ADDRESS ERROR XXYYYY-ZZ or DATA ERROR XXYYYY-ZZ. There are, in fact, 4 error situations: address error, data error, non-existent RAM error, and card size error.

Address Error

An address error usually indicates a card failure. Remove all the customer's RAM, install them on an exchange module, and run the test again.

Data Error

Data errors usually indicate a RAM failure. The ZZ in the error code specifies the section of the card where the error took place. The XX in the error code specifies the suspected faulty RAM within that section. Ignore the YYYY.

Memory Expansion Error Code Chart

RAM locator Section
in specified section of card
 || ||
 XYYYYY-ZZ
 ||||
 ignore

Range of RAM Locator in specified

Card section	Chip number	Card section	Chip number	Card section
ZZ		XX		ZZ
10	C1	0C - 0F	A1	01
	C2	08 - 0B	A2	
	C3	04 - 07	A3	
	C4	00 - 03	A4	
20	C5	0C - 0F	A5	02
	C6	08 - 0B	A6	
	C7	04 - 07	A7	
	C8	00 - 03	A8	
40	C9	0C - 0F	A9	04
	C10	08 - 0B	A10	
	C11	04 - 07	A11	
	C12	00 - 03	A12	
80	C13	0C - 0F	A13	08
	C14	08 - 0B	A14	
	C15	07 - 04	A15	
	C16	00 - 03	A16	

To locate DATA ERROR 08000 - 40 using the chart,

The bad chip is in section 40.

Card section	Chip number
ZZ	
40	C9
	C10
	C11
	C12

The bad chip is located where the RAM locator falls into the range that includes 08.

Range of RAM Locator in specified

Card section	Chip number	Card section
ZZ		XX
40	C10	08 - 0B

The position of the bad chip is C10. Replace the RAM chip on the card.

A x x x x x x x x x x x x x x x x

B x x x x x x x x x x X x x x x x x

C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Re-run the diagnostic.

Non-Existent RAM Error

Any other section ZZ codes, for example 0B, 0E, FC, and so on, usually indicate a card failure. Remove all RAM and install it on an exchange module.

Other error codes might point to a RAM chip which is not installed, for example, if a 256K Memory Expansion Board gave an error of 0C0000 - 40, change the RAM which is installed in that section. If the test still gives the same error message, change the RAM in the adjoining sections.

Card Size Error

If the actual card size does not correspond to the card size listed on the built-in diagnostic, you will need to exchange eight RAMs. For example, if the card size indicated on the internal diagnostic is 768K, and the actual RAM on the card is 1 megabyte, remove the RAM at locations A1, C1, A5, C5, A9, C9, A13, and C13. Reinstall known good RAM and run the diagnostics.

If the card size is now correct, there may be one or more bad ICs among the RAM removed. Replace the removed RAM one at a time, testing after each installation, until the bad RAM is located.

If the card size is still incorrect, this will indicate a card failure. Remove all the RAM and install it on an exchange module and retest.

Article Change History:

15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1569



Tech Info Library

SuperPILOT: Command syntax

Revised: 12/16/85
Security: Everyone

SuperPILOT: Command syntax

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The SuperPILOT manual shows commands inconsistently: no spaces, one space, and two spaces. The following example of the KEEP command shows the correct use of spaces.

```
K:1,E* ;#(%A) : #(TIM(0))
      | |
      SPACES
```

Apple Technical Communications

Tech Info Library Article Number:1571



Tech Info Library

Macintosh II: Custom Video Extension Cable

Revised: 7/1/92
Security: Everyone

Macintosh II: Custom Video Extension Cable

=====

Article Created: 7 January 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

How can I make a custom video extension cable for a Macintosh II?

DISCUSSION -----

To make a custom video extension cable for a Macintosh II, you'll need a cable with a 75-ohm impedance value (usually RG59U standard coaxial video cable). Each line can be tied to the appropriate pin at the connector and the shield connected to the signal ground pin.

- Impedance: 75 ohm
- signal strength: 13.33 amps, 1 volt

The video signal can extend as far as 1,000 feet (though there is some color loss at this distance). The signal should be reliable up to 50 feet. The distance is limited by the loss of signal strength through cable resistance.

For more information on pinouts and cabling, search under "Macintosh II video signals".

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Tech Info Library Article Number:1572



Tech Info Library

Apple IIGS BASIC: Availability, Features and Specifications

Revised: 1/15/88
Security: Everyone

Apple IIGS BASIC: Availability, Features and Specifications

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This article last reviewed: 6 January 1988

Apple IIGS BASIC, available through APDA (Apple Programmer's and Developer's Association), is a RAM-based BASIC language for the Apple IIGS. Apple IIGS BASIC requires at least 512K RAM and one 3.5" disk drive.

Differences between Apple IIGS BASIC and Applesoft BASIC

Apple IIGS BASIC is entirely RAM-based. It doesn't rely on Applesoft at all. GS BASIC has additional commands, and many of the Applesoft commands do different things in GS BASIC. Some Applesoft commands (PR#, IN#, and HGR, for example) don't appear in GS BASIC at all.

Because GS BASIC and Applesoft files are stored differently on the disk, they are not interchangeable. GS BASIC is designed to run under ProDOS 16, whereas Applesoft can run only under ProDOS 8.

Summary of Apple IIGS BASIC Features

- Includes all standard BASIC commands.
- Provides access to external routines, which allow a BASIC programmer to call the Apple IIGS's ToolBox routines (QuickDraw II, Menu Manager, Window Manager, Sound Manager, etc.).
- Can define and call library routines. These are loaded with the INVOKE command, and called with the PERFORM and EXFN commands.
- Permits formatted program listings. Users can specify how much space appears between a line number and the first statement, and the amount of indenting to perform when listing program statement within a loop.
- Contains built-in constants and variables, such as PI, VPOS and HPOS.
- Enhances the GOTO, GOSUB, and ON xxx commands by allowing the programmer

to specify destination by labels instead of line numbers.

- Allows programmers to define specific procedures that are called with the PROC command. Not only does the PROC command perform the same functions of AppleSoft's GOSUB, but it also lets the programmer pass local parameters.
- Enhances the looping capabilities of Applesoft with the following looping structures:

```
IF..THEN..ELSE
FOR..NEXT..STEP
DO..WHILE..UNTIL
```

- Implements PRINT USING and INPUT USING.
- Gives the programmer the variable types Integer, Real, String, Double Real, Double Integer, and Long Integer.
- Has a powerful line editor.
- Includes some primitives (built-in low-level commands) that let the user interact with the ToolBox routines. The commands Eventdef, Menudef, and Taskpoll are included in GS BASIC itself because they provide a tying bind between the ToolBox and BASIC line numbers.

Variable Specifications

```
-----
Real:          (+ or - 1.7E38) (less than 1.5E-45 equals 0)
Double real:   (+ or - 1.7E308) (less than 5.0E-324 equals 0)
Integer:       (%) (2 bytes) (-32768 to 32767)
Double integer: (@) (4 bytes) (-2147483648 to 2147483647)
Long integer:  (&) (8 bytes) (-9223372036854775808 to 9223372036854775807)
String:        ($) 255 characters
Arrays:        (!)
```

Tech Info Library Article Number:1574



Tech Info Library

Alisa Systems Inc. (12/95)

Revised: 4/3/97
Security: Everyone

Alisa Systems Inc. (12/95)

=====

Article Created: 15 January 1988
Article Reviewed/Updated: April 3, 1997

Alisa Systems Inc.

221 East Walnut St.
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Pasadena, CA 91101

800-992-5472 (Customer Support only)

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WWW: <http://www.alisa.com>

Company Profile:
Software, specializing in networking, primarily micro-to-mainframe
connectivity.

Support Information Services

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Tech Info Library Article Number:1575



Tech Info Library

Hewlett Packard Company (HP)

Revised: 4/5/95
Security: Everyone

Hewlett Packard Company (HP)

=====

Article Created: 15 January 1988
Article Reviewed/Updated: 5 April 1995

Hewlett Packard Co.

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Palo Alto, CA 94304

415-857-1501

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208-323-2551 (HP Customer Support Center - Printer Support)

303-339-7009 (HP Fulfillment Center)

Fax: 415-857-5518

Fax: 800-333-1917 (All products)

Online Services:

BBS: 208-344-1691 (HP Download Service: 1- Parity: N Data Bits:
8 Stop Bits: 1)

CompuServe: HP Peripherals forum (GO HPPER)
Library 9

Internet: ftp-boi.external.hp.com
IP address - 192.6.71.2
Name - Anonymous
Password - Send User Identification

Company Profile:

Hardware, including Apple-compatible printers and scanners.

Support Information Services

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Tech Info Library Article Number:1577



Tech Info Library

Installing QC Hard Disk Drivers onto Catalyst 3.0.

Revised: 12/16/85
Security: Everyone

Installing QC Hard Disk Drivers onto Catalyst 3.0.

=====

The following steps are necessary in order to use a QC Hard Disk with Catalyst 3.0 (UniDisk 3.5) version.

Items Neccesary:

- A. Catalyst 3.0
- B. ProDOS/SOS diskette supplied with the QC Hard Disk.

1. Boot the Catalyst 3.0 disk. Select SYSTEM UTILITIES.
2. Select RENAME FILES.
3. Rename the file "CATSTART.SYSTEM" on the Catalyst 3.0 disk to "CATSTART.QUARK."
4. Return to the System Utilities Main menu and select COPY FILES.
5. Copy the files DRIVER.SYSTEM and QC.DRIVER from the ProDOS/SOS disk to the Catalyst 3.0 disk.

Reboot the Catalyst. The QC Hard Disk will now be seen as a Catalyst device.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1579



Tech Info Library

Configuring Catalyst for the Apple III for the 10 Meg ProFile.

Revised: 12/20/85
Security: Everyone

Configuring Catalyst for the Apple III for the 10 Meg ProFile.

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You will need the following diskettes- Apple System Utilities, ProFile 10 Driver disk, and the Catalyst Master and Backup.

1. Boot the System Utilities disk.
2. Select System Configuration Program from the menu.
Note- (To exit from the following procedures to this Menu press the ESCAPE key.)
3. Select Read a Driver File.
 - a. Insert the ProFile Driver disk and press RETURN.
4. Select Edit Driver Parameters.
 - a. Select .ProFile and press RETURN.
 - b. Write down following information from the screen.
Unit number _____
Device type _____
Device subtype _____
Manufacturer ID Left two digits (High Byte) _____
Manufacturer ID right two digits (Low Byte) _____
 - c. press the Escape key twice.
5. Select Read a Driver File.
 - a. Insert the Catalyst master disk and press RETURN.
6. Select Edit Driver Parameters.
 - a. Select the second ProFile driver in the list and press RETURN. (The first driver in the list should be the new ProFile driver).
 - b. Write down the slot number _____
 - c. Select the first ProFile driver in the list and press RETURN.
 - d. Check the value of the slot number to see if matches the number above in step 6b. If it does not match. Press the Escape key twice and select Change System Parameters. Select option 2 then the first ProFile driver and press RETURN. When asked for driver slot enter the number from step 6b.If the slot numbers are the same go to the next step.
7. Select Delete A Driver.
 - a. Select the second ProFile driver in the list and press RETURN.
8. Select Edit Driver Parameters.
 - a. Select the Catalyst Driver and press RETURN.
 - b. Select option 6 (Configuration Block Data).

The Configuration Block Data is set up as follows:

BYTE	CODE	ASSIGNMENT
ØØ	OS	SLOT NUMBER
Ø1	UU	UNIT NUMBER
Ø2	TT	DEVICE TYPE
Ø3	ST	DEVICE SUBTYPE
Ø4	MM	MANUFACTURER ID (Low Byte)
Ø5	MM	MANUFACTURER ID (High Byte)

Byte Ø6 is the Directory buffering byte. Due to design of this new ProFile driver however, Directoy buffering as metioned in Appendix B of the Catalyst manual is no longer supported. Therefore the value of Byte Ø6 must be ØØ.

Bytes Ø7 - 11 are Checksum bytes. Their values must correspond to the following:

	Ø	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
ØX	OS	UU	TT	ST	MM	MM	ØØ	8F	97	8A	91	93	23	17	17	F6
1X	ØØ	B8														

c. Check values on the screen against the values listed in step 4b. If any of the values do not match use cursor keys to select the it and enter the correct value.

d. When all the values match press the Escape key.

e. Press the Escape Key twice.

9. Select Generate New System

a. Remove the write protect tab from the Catalyst Master disk.

b. Insert the Catalyst Master disk in the internal disk drive.

c. The cursor should be at .D2/SOS.DRIVER enter .D1/SOS.DRIVER and press RETURN.

d. After you recieve the message SYSTEM GENERATION COMPLETE. Press the ESCAPE key and re-install the write protect tab on the Catalyst Master disk.

10. Now boot the the Catalyst Master disk.

a. Check to see that the all programs and devices (Printers, Modem's, ...) work as they were before.

b. If everything is working correctly select System Utilities from the Catalyst Menu.

11. Select System Configuration Program from the menu.

a. Select Read a Driver file. Insert the Catalyst Master disk in the internal disk drive if it is not already there and press RETURN.

b. Press the Escape key.

12. Select Generate new System

a. Remove the write protect tab from the Catalyst Backup disk.

b. Remove the Catalyst Master disk and insert the Catalyst Backup disk in the internal disk drive.

c. The cursor should be at .D2/SOS.DRIVER enter .D1/SOS.DRIVER and press RETURN.

d. After you recieve the message SYSTEM GENERATION COMPLETE. Press the ESCAPE key and re-install the write protect tab on the Catalyst Backup disk.

10. Now boot the the Catalyst Backup disk.

a. Check to see that the all programs and devices (Printers, Modem's, ...) work as they did before.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1580



Tech Info Library

ImageWriter LQ General Troubleshooting (Part 2 of 3)

Revised: 1/30/92
Security: Everyone

ImageWriter LQ General Troubleshooting (Part 2 of 3)

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This article last reviewed: 20 November 1987

NOTE: Detailed instructions for Take-Apart can be found in the Technical Procedures.

Printing Problems

Dots missing

1. Replace the print head.
2. Replace the main board.
3. Replace the print head to relay PCB cables.
4. Replace the relay PCB to main logic cables.

Printing continues on a paper-out condition

1. Test the paper-out sensor. If defective, replace it.
2. Replace the main board.
3. Replace the paper detect sensor.

Carrier moves but no printing

1. Replace the main board.
2. Replace the print head.

Nothing printed, the carrier doesn't move, and the power light is on
Perform the printer self-test. If the self-test passes, see Preliminary Checks, No Printing.

If the self-test fails, replace the main board.

Garbage printed

Replace the main board.

Printing too light

1. Perform the "Print Head Gap Adjustment".

2. Perform the "Platen Gap and Parallelism Adjustment".

Printing too dark

1. Perform the "Print Head Gap Adjustment".
2. Perform the "Platen Gap and Parallelism Adjustment".

Printing continues with front cover open

1. Test the cover-open sensor. If defective, replace the control panel PCA.
2. Replace the main board.

Color Printing Problems

Color bleeding

1. If the bleeding is consistent across the page, perform the "Color Ribbon Home Position Adjustment".
2. If the bleeding increases or decreases across the page, perform the "Color Ribbon Parallelism Adjustment".

Wrong color printed

1. Test the color ribbon detect switch. If defective, replace the color ribbon motor assembly.
2. Test the color ribbon home position switch. If defective, replace the color ribbon motor assembly.
3. Test the color ribbon motor. If defective, replace the color ribbon motor assembly.
4. Replace the main board.

Only one color is printed

1. Test the color ribbon motor. If defective, replace the color ribbon motor assembly.
2. Replace the main board.

Other Problems

Control Panel switches don't work

1. Test the control panel switches. If defective, replace the control panel PCA.
2. Replace the main board.

TESTING THE PRIMARY AND SECONDARY FUSES

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Remove the fuse to be tested and place a probe at each end of the fuse. The resistance of the fuse should be 0 ohms. If the resistance is not 0 ohms, replace the fuse.

o TESTING THE POWER SWITCH

Materials Required: Digital multimeter, Needle nose pliers

Procedure

1. Turn off the printer and remove the main cover.
2. Remove the power switch from the case by pressing the two plastic tabs at the sides of the switch with needlenose pliers while pushing the switch out of the case.
3. Connect the multimeter between the two white wires of the power switch and toggle the switch on and off.

When you turn the power switch on (1), the resistance should be 0 ohms.

When you turn the switch off (0), the resistance should be infinite.

If the resistances are not as indicated, replace the power switch.

4. Repeat step 3 for the black wires.

TESTING THE HOME POSITION SWITCH

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the home position switch cable from main board connector CN10.
3. Connect the multimeter between pins 1 and 2 of the removed connector and toggle the home position switch with your finger.

When you depress (close) the home position switch, the resistance should be 0 ohms. When you release (open) the switch, the resistance should be infinite. If the resistances are not as indicated, replace the home position switch.

TESTING THE CARRIER DRIVE MOTOR

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the carrier motor cable from main board connector CN5.
3. Connect the multimeter between the pins of the removed connector listed below and verify that resistances are as shown.

Pins to measure	Resistance (Ohms)
1 and 3	1.3
1 and 5	1.3
2 and 4	1.3
2 and 6	1.3
3 and 5	2.6
4 and 6	2.6

If the resistances are not as shown, replace the carrier motor.

For more ImageWriter LQ troubleshooting information see the following articles:

ImageWriter LQ General Troubleshooting (Part 1 of 3)

ImageWriter LQ General Troubleshooting (Part 3 of 3)

Refer to the Technical Procedures for the take apart instructions.

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Tech Info Library Article Number:1581



Tech Info Library

Using DOS 3.3 with Catalyst 2.1 (1 of 5)

Revised: 12/16/85
Security: Everyone

Using DOS 3.3 with Catalyst 2.1 (1 of 5)

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CHAPTER 1 INTRODUCTION OVERVIEW

DOS 3.3 BASIC and its associated Volume Manager (both supplied on your Catalyst diskette VERSION 2.1) may be used to access your DOS BASIC programs directly from your hard disk and have access to "DOS 3.3 volumes" on the hard disk.

The DOS 3.3 Volume Manager is used to create standard ProDOS files which appear as DOS 3.3 volumes to DOS 3.3 BASIC. To access these files, they must be "mounted" and formatted as a floppy diskette within your hard disk. All accesses to the hard disk on which you mounted the ProDOS file are then made to that file.

The Volume Manager also allows you to create a file (named MOUNTS3.3) which tells DOS 3.3 which slot/drive pair to run the startup program (HELLO) from, what ProDOS files to mount on selected slot/drive pairs, and whether or not to reserve room for DOS when you initialize a file or diskette.

When DOS 3.3 is selected from the Catalyst menu, it reads the MOUNTS3.3 file from the directory specified by the current ProDOS prefix. If no MOUNTS3.3 file is found, the following assumptions are made:

- DOS 3.3 will look for its startup program on slot 6, drive 1. If a HELLO program is not found there, you will receive an I/O error.
- No hard disk DOS volumes will be mounted for access.
- The INIT command will reserve room for DOS when you initialize a file or diskette.

The instructions below explain how to install DOS 3.3 BASIC and its associated Volume Manager on your hard disk through the Catalyst Editor program. The Volume Manager may then be used to create volumes on the hard disk for use by DOS 3.3, and to create the MOUNTS3.3 file to enable access to those volumes.

RESTRICTIONS:

1. Catalyst version 2.1 is necessary in order to use the DOS 3.3 option.

2. Copy protected DOS 3.3 programs can not be used.
3. ProDOS files (disk volumes) no larger than 800 sectors (200K) can be created, thus DOS program applications requiring more than 800 sectors can not be used.

INSTALLATION

To install DOS 3.3 BASIC and its associated Volume Manager under Catalyst, perform the following procedure:

1. Select the Catalyst Editor from the Catalyst menu.
2. When the Catalyst Editor main menu comes up, select the "Install program" option.
3. From the list of Program manufacturers, select the entry for "Apple Computer, Inc.".
4. Select the entry for "DOS 3.3 BASIC" from the list of Apple programs.
5. You are then prompted to insert the boot diskette of the program to install in the disk drive. Insert the Catalyst PROGRAM diskette in the disk drive, and then press the space bar.
6. DOS 3.3 BASIC and its associated Volume Manager (MAKE.MOUNTS) will then be copied from your Catalyst PROGRAM diskette to the CATALYST2E subdirectory on your hard disk. You are then returned to the Catalyst Editor main menu.
7. Enter "E" to Edit the Catalyst menu.
8. Using the up and down arrow keys, position the inverse bar over the "DOS 3.3 BASIC" entry which now appears on your menu. Type "A" to Add a program entry.
9. Enter "DOS Volume Manager" for the menu Display name.
10. Enter "CATALYST2E/BASIC." for the Interpreter path.
11. Press RETURN for the Initial prefix.
12. Enter "CATALYST2E/MAKE.MOUNTS" for the Program path.
13. If all the above has been entered correctly, press RETURN when asked "Is all this correct?". Otherwise, enter "NO" and fix the incorrect entry.
14. Press ESCAPE to return to the Catalyst Editor main menu. Enter "U" to Update the INTERPS2E file.
15. Enter "Q" to Quit from the Catalyst Editor.

NOTE: Since the ProDOS Prefix for the DOS 3.3 BASIC entry is automatically set to "CATALYST2E" by the above installation process, DOS will expect its MOUNTS3.3 file to be in that subdirectory.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1582



Tech Info Library

Using DOS 3.3 with Catalyst 2.1 (2 of 5)

Revised: 12/16/85
Security: Everyone

Using DOS 3.3 with Catalyst 2.1 (2 of 5)

CHAPTER 2

THE DOS 3.3 VOLUME MANAGER

If you have performed the above installation procedure, you may select the DOS 3.3 Volume Manager program directly from your Catalyst menu. Alternatively, you may select ProDOS BASIC and execute the program named MAKE.MOUNTS on your Catalyst diskette by typing "RUN /volume name of your hard disk/CATALYST2E/MAKE.MOUNTS".

1. Catalog

The first entry on the DOS Volume Manager main menu allows you to obtain a standard catalog of files on your hard disk or a floppy diskette. You are prompted to enter the pathname of the directory for which the catalog is to be displayed. In order to freeze the display, press CONTROL "S". Pressing CONTROL "S" again will allow the display to continue.

2. Create DOS 3.3 Volume

The second entry on the DOS Volume Manager main menu allows you to create a ProDOS file which can be used as a DOS 3.3 volume. When you select the "Create DOS 3.3 Volume" option, you are asked to enter the pathname of the new DOS 3.3 volume. Any standard ProDOS pathname may be entered such as "/P/CATALYST2E/DOS".

Next you are requested to enter the size of the volume. Volume size is specified in units of "sectors", where one sector is equivalent to 256 bytes or characters of storage.

The size you specify will depend on what you intend to use the volume for and how much room is left on your hard disk. Volumes must be at least 288 sectors (72K) in size, and may be no larger than 800 sectors (200K). The size you specify will be automatically rounded up to the nearest multiple of 16 sectors (4K). A standard floppy diskette contains 560 sectors (140K).

ADDITIONAL INFORMATION CONCERNING CREATING DOS 3.3 VOLUMES

Once the DOS 3.3 volume has been created and the size has been specified, you must mount it using the Edit Mounts option within Edit mount file for DOS 3.3 application described in part 4 of this chapter in order to grant access

to it.

Last but not least, you must initialize the DOS 3.3 volume in order to be able to store information to it. In order to do this, select DOS 3.3 BASIC from the Catalyst main menu. at the prompt "]" type INIT HELLO. The DOS 3.3 volume that you have previously mounted will be initialized for DOS 3.3.

3. Delete DOS 3.3 Volume

The third entry on the DOS Volume Manager main menu allows you to selectively remove previously defined DOS 3.3 volumes from your hard disk. All storage associated with a DOS 3.3 volume is released when IT is deleted. The freed storage is then available for use by any subsequent volume definitions.

Actually, you may delete any ProDOS file, not just DOS 3.3 volumes. When you select the "Delete DOS 3.3 Volume" option, you are asked to enter the pathname of the volume to delete. Any standard ProDOS pathname may be entered.

Note that deleting a DOS 3.3 volume does not remove it from any place where it may have been mounted. Your system may still contain a MOUNTS3.3 file with a reference to the deleted volume. Such a reference will be ignored, however.

4. Edit Mount File for DOS 3.3 Application

The fourth entry on the DOS Volume Manager main menu is used to create a new or edit an existing MOUNTS3.3 file for DOS 3.3 BASIC.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1583



Tech Info Library

Using DOS 3.3 with Catalyst 2.1 (3 of 5)

Revised: 12/16/85
Security: Everyone

Using DOS 3.3 with Catalyst 2.1 (3 of 5)

CHAPTER 2a

When DOS 3.3 BASIC is run, it reads the MOUNTS3.3 file from the directory specified by the current ProDOS prefix, and uses that information to determine on which slot/drive pair to look for its startup program (HELLO), what ProDOS files (DOS 3.3 volumes) to mount on selected slot/drive pairs, and whether or not to reserve room for DOS when you initialize a file or diskette.

When you select the "Edit Mount File for DOS 3.3 Application" option, you are asked to enter the name of the subdirectory containing your MOUNTS3.3 file. When you installed DOS 3.3 a MOUNTS3.3 file was created for you in the CATALYST2E subdirectory. If no MOUNTS3.3 file is found in another subdirectory you specify, you are asked if one should be created. If you enter a negative response, you are returned to the DOS Volume Manager main menu.

If the MOUNTS3.3 file is found (or if you request a new file should be created), you are presented with a display listing some of the file's attributes, including its location, the slot/drive which will be used to find the startup program (HELLO), and whether or not tracks will be reserved for DOS when you initialize diskettes or ProDOS volumes.

Also shown is a menu of options which allow you to set the HELLO program location, change the DOS track allocation for diskettes or DOS 3.3 volumes, and edit the mounts for your MOUNTS3.3 file. Pressing ESCAPE at this menu will return you to the DOS Volume Manager main menu.

If you select the "Edit mounts" option instead, you are presented with a list of all slot and drive combinations, and the DOS 3.3 volume currently associated with each pair.

You may mount DOS 3.3 volumes in any location except those slot/drive pairs occupied by a floppy diskette controller card which are noted with a "Disk II" entry. NOTE: The MOUNTS3.3 file can only work with one startup program (HELLO) located on a slot/drive pair at a time. You may, however, mount up to 12 DOS 3.3 volumes under it for access. In order to run a HELLO program from another mounted DOS 3.3 volume, you must select the SET HELLO PROGRAM LOCATION from the EDIT MOUNTS FILE FOR DOS 3.3. APPLICATION menu.

To edit the entry for a particular slot/drive pair, simply select the desired entry when asked, "Edit which mount?". You will then be asked for the "New mount file path". If you don't want any DOS 3.3 volume mounted on the selected slot/drive pair, simply press RETURN. Otherwise, enter the pathname for the DOS 3.3 volume you wish to mount. You will be warned if the name of the DOS 3.3 volume you supply cannot be found.

When you are finished editing the mounts, press ESCAPE and you will be returned to the menu of options for editing your MOUNTS3.3 file. If no further changes are desired, press ESCAPE again, and you are returned to the DOS Volume Manager main menu.

5. Quit

The last entry on the DOS Volume Manager main menu is used to exit the program. To return to the Catalyst menu, type "BYE".

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Quark Technical Support

Tech Info Library Article Number:1584



Tech Info Library

Using DOS 3.3 with Catalyst 2.1 (4 of 5)

Revised: 12/16/85
Security: Everyone

Using DOS 3.3 with Catalyst 2.1 (4 of 5)

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CHAPTER 3 COPYING DOS 3.3 APPLICATIONS TO THE HARD DISK

Many DOS 3.3 applications can be used with this system provided that the entire application can be installed in 800 sectors or less and it is not copy protected. A quick and easy way to copy applications to the hard disk is to first copy the Apple II File Developer (FID) program to a DOS volume on the hard disk, and then execute the program. To do this, perform the following procedure.

1. Select the DOS 3.3 Volume Manager from the Catalyst menu.
2. Select Create DOS 3.3 Volume from the menu and create a DOS 3.3 volume under the CATALYST2E subdirectory that is 800 sectors in size. This will give you enough room to copy the rest of the Apple System Master files to the volume if you wish. For this example we will use a pathname of /P/CATALYST2E/DOS. Remember that the only MOUNTS3.3 file that exists at this time that can be associated with the new DOS 3.3 volume is located in the subdirectory CATALYST2E. If you wish to locate the DOS 3.3 volume elsewhere, you will have to create a MOUNTS3.3 file for that location by using the Edit Mount File for DOS 3.3 Application option.
3. Once the DOS 3.3 volume has been created, press ESCAPE to return to the DOS 3.3 Volume Manager menu. It is now necessary to edit the MOUNTS 3.3 file for the newly created volume. Select Edit Mount File for DOS 3.3 Application from the menu. You will be asked for the subdirectory containing the MOUNTS3.3 file. Type /P/CATALYST2E and press RETURN.
4. For this exercise, we will mount the DOS 3.3 volume on slot 5, drive 1. Select EDIT MOUNTS from the menu. A list of all slot/drive pairs will be displayed. Select number 9 (slot 5, drive 1) from the menu and enter /P/CATALYST2E/DOS which is the pathname of the DOS 3.3 volume you have created. The volume will be mounted.
5. Press ESCAPE to return to the Edit Mount File for DOS 3.3 Application menu. If you will notice, the BASIC startup program is being run from slot 6,

drive 1. Since your newly created DOS 3.3 volume is mounted on slot 5, drive 1, you will have to change this. Select Set HELLO Program Location from the menu and change the slot/drive location to Slot 5, Drive 1.

6. Escape back to the DOS 3.3 Volume Manager menu and select QUIT.

7. At the "]" prompt, type INIT HELLO. The DOS 3.3 volume that you created and mounted will now be formatted for DOS 3.3. To prove this, type CATALOG. A listing with the file HELLO will be displayed.

8. Place your Apple SYSTEM MASTER disk in drive 1. Type CATALOG S6,D1" and press RETURN. Press RETURN until you arrive at the bottom of the catalog. At the prompt"]" type "BRUN FID" and press RETURN.

9. Select COPY FILES. At the prompt SOURCE SLOT? type "6", for DRIVE? type "1". For DESTINATION SLOT? type "5". For DRIVE? type "1". For FILENAME? type "FID".

10. The copy program FID will be copied to your hard disk. You may now access it from the hard disk by selecting DOS 3.3 from the Catalyst main menu and at the prompt "]" type "BRUN FID". You may now copy ANY non copy protected DOS 3.3 application to your DOS 3.3 volume.

In order to access DOS 3.3 applications from your hard disk, you may do one of two things:

A.

1. Select DOS 3.3 BASIC from your Catalyst menu.
2. At the BASIC prompt "]" type CATALOG.
3. Run the application as you would from a floppy disk. ie."] RUN filename".

B.You may create a Catalyst menu entry for each DOS 3.3 application.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1585



Tech Info Library

Using DOS 3.3 with Catalyst 2.1 (5 of 5)

Revised: 12/16/85
Security: Everyone

Using DOS 3.3 with Catalyst 2.1 (5 of 5)

CHAPTER 4

MAKING CATALYST ENTRIES FOR DOS APPLICATIONS

You may now wish to make Catalyst menu entries for your individual DOS BASIC applications.

Each application which appears in your Catalyst menu must have an associated MOUNTS3.3 file describing the volumes to be mounted for that application (including the volume on which the application resides).

To make the Catalyst menu entry for your DOS BASIC application, perform the following procedure:

1. Select the Catalyst Editor from the Catalyst menu.
2. When the Catalyst Editor main menu comes up, select the "Edit Catalyst menu" option.
3. Using the up and down arrow keys, position the inverse bar over the menu entry you wish your program entry to precede. Type "A" to Add a program entry.
4. Enter the menu Display name for your application.
5. Enter "CATALYST2E/DOS3.3" for the Interpreter path.
6. Enter the prefix where the MOUNTS3.3 file for your application resides.
7. Press RETURN for Program path.
8. If all the above has been entered correctly, press RETURN when asked "Is all this correct?". Otherwise, enter "NO" and fix the incorrect entry.
9. Press ESCAPE to return to the Catalyst Editor main menu. Enter "U" to Update the INTERPS2E file.
10. Enter "Q" to Quit from the Catalyst Editor.

Note that the above Catalyst menu entry will simply execute the DOS 3.3 BASIC interpreter, passing it a specific prefix for a MOUNTS3.3 file.

The MOUNTS3.3 file referenced should be set up to mount the DOS 3.3 volume on which your application resides, and reference it as the startup volume. Since DOS always expects its startup program to be named HELLO, your application should have this name as well.

For example, if you wish to run the application CHECKBOOK from Catalyst, first

..TIL01586-Using_DOS_3-3_with_Catalyst_2-1_5_of_5.pdf

copy the file to the DOS 3.3 volume you created using FID. From the BASIC prompt "]" type "RENAME CHECKBOOK,HELLO".

NOTE: Binary files are excluded from the above discussion. In order to run a binary application, boot DOS 3.3 from the Catalyst menu and at the BASIC prompt "]" type BRUN filename.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1586



Tech Info Library

Catalyst 3.0, Apple IIfc, and the CPU IIfc clock

Revised: 12/20/85
Security: Everyone

Catalyst 3.0, Apple IIfc, and the CPU IIfc clock

=====

At the present time, the Catalyst 3.0 is totally incompatable with any clock driver designed for the IIfc. The end result of combining the two applications results in destroying the Catalyst 3.0 system file rendering the disk unbootable.

CPU has been contacted regarding this matter.

Users who experience this problem may have their Catalyst disk recopied by Quark for \$10.00.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1589



Tech Info Library

Catalyst 3.0 And Color Monitors

Revised: 10/14/88
Security: Everyone

Catalyst 3.0 And Color Monitors

=====

This article last reviewed: 29 September 1988

Catalyst currently does not support monitors that do not have a monochrome mode
Catalyst also does not support the Telex "Peacock" IIC interface with a
monochrome monitor.

Some of the problems seem to be caused by the Double-High-Resolution graphics
being turned off or disabled. Catalyst 3.0 must have the Double-High-Resolution
jumper installed on the 80 column card. Or the display will be totally
unreadable.

(NOTE: In cases where the the color bleed is the problem, switch to monochrome
mode.)

Recommended Color configurations:

Apple IIe

CARD	MONITOR	TYPE
Apple RGB 80 column	Apple Color 100	RGB
Apple Extended 80 column	Apple Color Monitor IIE	High Res Composite

Apple IIC

CARD	MONITOR	TYPE
N/A	Apple Color Monitor IIC	High Res Composite

NOTE: Apple Computer Inc. is not responsible for the contents of this
article.

Quark Technical Support

Tech Info Library Article Number:1590



Tech Info Library

Catalyst 3.0 and Memory Cards.

Revised: 12/20/85
Security: Everyone

Catalyst 3.0 and Memory Cards.

=====

There are currently two types of memory cards for the Apple II family of computers. First is the new Apple II Memory card from Apple Computer Inc. The other type is the RamWorksII, Z-Ram, and Multiram type cards. The latter cards are manufactured by Applied Engineering and Checkmate Technology Inc.

Catalyst 3.0 recognizes the Apple II memory card as a Ram disk when it boots. This due to the way this card is designed. The card can be installed into any slot in the Apple except for the Auxiliary slot for the 80 column card. This card looks like a disk drive to the system.

The Cards that install extra memory into the Auxiliary slot requires a program be run to tell the system that the memory is available. Due to this requirement Catalyst 3.0 does not know that the Ram disk exists. These cards install the extra memory as banks of memory thus requiring software to access it.

Features of Catalyst and Ram disks.

Catalyst will work with both types of Ram disks. However the the automatic program load features of Catalyst are only supported by the Apple II Memory board. The other Ram disks will be displayed on the desktop as a 5.25" diskette. These Ram disks can be accessed just like any other diskette. One note of Caution if a failure or power loss occurs any data in the Ram disk will be lost. For maximum speed the Catalyst System file should be copied to the Ram disk.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1591



Tech Info Library

Installing Word Juggler version 2.9 on Catalyst 2.1

Revised: 12/20/85
Security: Everyone

Installing Word Juggler version 2.9 on Catalyst 2.1

=====

Due to a new format in the QUARK.INSTALL file present within Word Juggler 2.9 it is necessary to use MISCELANEOUS MANUFACTURERS option within the Catalyst Editor to sucessfully install it instead of using the Quark option. Using this procedure forces Catalyst to use the new QUARK.INSTALL instead of the one built into Catalyst 2.1.

Procedure:

Boot Catalyst 2.1
Select Catalyst Editor
Select Install Program
Select Miscelaneous Manufacturers
Put the Word Juggler 2.9 disk in the drive
Follow instructions on the screen.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1592



Tech Info Library

IIc Monitors PROBLEM/CURE: Intermittent Flashing Screen

Revised: 1/30/92
Security: Everyone

IIc Monitors PROBLEM/CURE: Intermittent Flashing Screen

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: Video display intermittently appears and disappears.

CAUSE: RCA connectors on either end of the video cable from the monitor to the computer may not be making good contact.

CURE: Slightly crimp (squeeze with a pair of pliers) the shield part of the RCA connector on the video cable on both ends so that it makes slightly tighter fit on the monitor and the computer.
(DO NOT OVERCRIMP; it must be snug only).

If this cure does not resolve the problem, go to the Tech Procedures to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1593



Tech Info Library

Omnis 3+ Multi-user on the Corvus Network

Revised: 11/16/87
Security: Everyone

Omnis 3+ Multi-user on the Corvus Network

=====

This article last reviewed: 16 November 1987

1) Multi-user Omnis 3+

Omnis 3+ multi-user version is a true multi-user program and will allow several users to access the same data simultaneously. The record-locking facility in Omnis 3+ automatically prevents two or more users from attempting to modify the same information at the same time, but allows an unlimited number of users to read the same information. The same copy of multi-user Omnis 3+ may be used to access different databases simultaneously. These features are built in and are transparent to both the user and the developer.

In order to use the multi-user version of Omnis 3+, care must be taken in installing Omnis 3+ and in configuring the network environment. Failure to properly install Omnis 3+ or correctly configure the network may result in the inability to run Omnis 3+ in the multi-user environment. In most cases, it could also result in the corruption or loss of data.

2) The Network

Multi-user Omnis 3+ may be installed on Corvus disk drives residing on the Corvus Omninet using the Contellation III (Release 2 or later) Network Software for the Macintosh. If you have the wrong system software, do not attempt to install Omnis 3+, call your dealer or Corvus to obtain the correct software.

We have assumed at this point that you have properly installed the network software and have physically connected your network together.

3) Volumes

There are four types of volumes in the Corvus environment: Private, Public, Controlled, and Uncontrolled. The following is a brief description of each,

additional information is available in your Corvus manuals and/or guides.

Private - can only be mounted by the owner; can be mounted as either read/write or read-only

Public - can be mounted read-only by any user; can only be mounted read/write by the owner

Controlled - can be mounted read/write by any one user; additional users may only have read-only access

Uncontrolled - can be mounted read/write or read-only by any user at any time; this is the type of volume used by Omnis 3+ shared files since all users must be able to both read and write simultaneously

4) Recommended Volume Configuration

Each user must have his or her own private volume which contains the Macintosh system documents (System, Finder, etc.) since these documents cannot be shared. The Omnis3.info file should also reside in this volume inside your system folder. Single-user applications can also be stored in this volume. The Omnis 3+ Utilities is a single-user application and should be stored in a private volume.

An uncontrolled volume should contain the Omnis 3+ program. The size of this volume is determined by the multi-user applications that are to be stored in this volume. Print resource documents (LaserWriter and LaserWriter Prep) must also be in this volume. The ImageWriter driver can also be stored in this volume, but care has to be taken to make sure that only one user at a time tries to print using this driver since it is a single-user resource. Loss of data may occur if more than one person tries to print using this resource.

A second uncontrolled volume should be created to contain the Omnis 3+ libraries and data files. This volume should be made as large as the anticipated size of all the data files. If possible, the volume should have enough free space to hold a copy of the largest anticipated data file in case a data reorganization is necessary.

5) Omnis 3+ Multi-user Considerations

Always maintain backup copies of all libraries and data files.

No other copy of Omnis 3+ should be available to the user of a multi-user version of Omnis 3+. Loss of data may occur if a user tries to access a database that is already being used by another copy of Omnis 3+.

Creation of new libraries or data files must be done through the Utilities in a private volume.

Omnis 3+ multi-user cannot automatically extend the size of the library or the data file. When the space allocated to the files have been used up, the user

will get messages that will inform them that the file is full. Use the Omnis 3+ Utilities to increase the size of the library or data file. At this point, it is recommended that all other users be logged off.

Omnis 3+ multi-user stores internal semaphore flags in the library to keep track of which records are being accessed. If Omnis 3+ or the network is interrupted while executing a multi-user application, a semaphore lock-up or corruption may occur. This will result in abnormal behavior while using the Omnis 3+ multi-user application. If this happens, there are two ways to clear the semaphore table:

Reboot Omnis 3+ while holding down the "Command-S" keys. Keep holding the keys down until the application has successfully launched.

Mount the volume which contains the library in a private volume and launch the Utilities program. Select the library with the corrupted semaphore table and go into "Library Utilities". Delete the semaphore table. This is the format labelled "WORK999". This will cause Omnis 3+ to re-create a new semaphore table when the library is launched. Mount the volume as an uncontrolled volume and launch the library.

Note: Apple Computer, Inc. is not responsible for the contents of this article.
Blyth Software

Tech Info Library Article Number:1594



Tech Info Library

Interleaf, Inc.

Revised: 4/3/97
Security: Everyone

Interleaf, Inc.

=====
Article Created: 01/15/88
Article Last Reviewed: 07/09/93
Article Last Updated: 04/02/97

Interleaf, Inc.

Prospect Place
9 Hillside Ave.
Waltham, MA 02154

617-290-0710
617-290-4990

800-666-5323
800-688-5151 (Customer Support)

Fax: 617-290-4943

Company Profile:
Specializing in publishing software that provides integration for mini, micro,
and mainframe environments.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:1595



Tech Info Library

ImageWriter and DMP: 5 A Fuse Keeps Blowing (Dead Printer)

Revised: 1/30/92
Security: Everyone

ImageWriter and DMP: 5 A Fuse Keeps Blowing (Dead Printer)

=====

This article last reviewed: 10 October 1990

NOTE: You will need an ohm-meter for this procedure.

PROBLEM DESCRIPTION: Printer has no line feed, carriage movement, or dot fire because the 5 Amp fuse is blown. After the fuse is replaced and Self Test is tried, the fuse blows again.

CAUSE: Probably either the line feed or carriage stepper motor has shorted a winding, causing the fuse to blow.

CURE: TO CHECK THE LINE FEED MOTOR (DMP and IW have same stepper motors)

1. Remove the logic PCB, disconnect plug CN1 (line feed stepper motor connector for both DMP and ImageWriter).
2. Measure for approximately 65 ohms between the following pins with an ohm-meter: 6 to 2, 6 to 4, 5 to 1, and 5 to 3.
3. If any measurement is significantly less than 65 ohms, that probably means that a winding is shorted in the line feed motor and it should be replaced. (The DMP's line feed stepper motor is not listed as a replacement part. However, the line feed stepper motor for the ImageWriter will also work for the DMP. ImageWriter line feed stepper motor P/N is 699-0109).

TO CHECK THE CARRIAGE MOTOR

1. Remove the logic PCB, disconnect plug CN3 (Carriage stepper motor connector for both DMP and ImageWriter).
2. Measure for approximately 10 ohms between the following pins with an ohm-meter: 6 to 2, 6 to 4, 5 to 1, and 5 to 3.

3. If any measurement is significantly less than 10 ohms, that probably means that a winding is shorted in the line feed motor and it should be replaced.

IF BOTH STEPPER MOTORS CHECK OUT

There is probably a short on the main PCB so replace it.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1597



Tech Info Library

ImageWriter and ImageWriter II: Prints Out Hex Codes

Revised: 11/10/88
Security: Everyone

ImageWriter and ImageWriter II: Prints Out Hex Codes

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: When normal ASCII text is sent to the printer for a print it is printed in hexadecimal form (something like the hex dump below).

```
00 AF E3 5F 3D FF FF FF EF AF 5D 3E 5F FF FF FF FF FF
7F 9E 7A 4F FF FF FF FF 3F 12 1F 3F 23 23 DF EF AF 3D 5E
```

CAUSE: 1. If the Select button is accidentally pressed when the printer is turned on (something that is very easy to do with the IW II), the printer will print all text sent to it in hex.

2. Sometimes if the computer is turned off and on while connected to the printer, the printer may receive a glitch that it interprets as a command from its host (the computer) to print in hexadecimal.

CURE: In either case, turning off the printer and then turning it back on again will cause it to return to all default settings (including normal print mode).

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Tech Info Library Article Number:1598



Tech Info Library

LaserWriter P/C: Green LED Flashes Long While Then Goes Out

Revised: 1/30/92
Security: Everyone

LaserWriter P/C: Green LED Flashes Long While Then Goes Out

=====

This article last reviewed: 29 April 1987

PROBLEM DESCRIPTION: The 47 Ohm socketed resistor on the fuser safety PCB may be blowing.

CAUSE: The fuser bulb in the fuser assembly is not making good contact. The 47 Ohm resistor on the fuser safety PCB, which acts as a fuse, will blow to protect the rest of the fuser circuitry. Sometimes the fuser bulb is shaken out of good contact during shipment or the fuser resistor just fails. It does not necessarily mean that any other part on the fuser has failed.

CURE: Make sure that the fuser bulb is securely installed. Then replace the 47 ohm fuse/resistor on the fuser safety PCB.

If the above cure does not solve your problem, refer to the LaserWriter Printer Technical Procedures for the general troubleshooting procedure.

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Tech Info Library Article Number:1599



Tech Info Library

Apple IIe: Locks Up With Extended 80 Column Card in AppleWorks

Revised: 1/30/92
Security: Everyone

Apple IIe: Locks Up With Extended 80 Column Card in AppleWorks

=====

Article Created: 19 December 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: The computer may work fine in other applications but fails with AppleWorks using the extended 80 column card.

CAUSE: The MMU (P/N 344-0010) chip may have failed.

CURE: Replace the MMU or logic board if MMU not available.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1600



Tech Info Library

ImageWriter II: Ribbon Positioned Below Printhead (No Print)

Revised: 1/30/92
Security: Everyone

ImageWriter II: Ribbon Positioned Below Printhead (No Print)

=====

This article last reviewed: 1 September 1987

PROBLEM DESCRIPTION: When a properly operating printer is powered on, the carriage should move to the far left and then back to center of its travel. After this the black plastic cam at the right front of the ribbon platform turns causing the platform to its lowest position and then return to its top position (used for black print). With this problem, the ribbon platform moves to its lowest position but does not return to the top position so when the print starts, the ribbon is positioned below the printhead resulting in no ink transfer to the paper.

CAUSE: During the power up sequence described above, the lower front lip on ribbon cartridge is catching on the left brass washer securing the clear plastic paper guide to the carrier assembly.

CURE: Bend the washer down or file it back.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

Compliments: Lauri Fischer (formerly Marshman) FSE

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Tech Info Library Article Number:1601



Tech Info Library

Macintosh XL : After Hard Disk is Swapped It Won't Boot

Revised: 1/30/92
Security: Everyone

Macintosh XL : After Hard Disk is Swapped It Won't Boot

=====

Article Created: 20 December 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: After swapping the hard disk assembly (Widget), the hard disk will not boot or is not recognized as being attached to system. But the hard disk will boot if the hard disk assembly is removed while leaving the cables connected.

CAUSE: 1. The hard disk/micro disk assembly fits snugly into the Mac XL's cabinet. A number of screws terminate inside the disk assembly mounting area. These two factors make it very easy to accidentally damage the grey flat cable or the drive power cable when sliding the disk drive assembly into the XL.

2. A screw projects from the right of the main body of the Lisa cabinet into the Disk Drive cavity. On some Lisas, this screw interferes with a comfortable installation of the drive cage forcing the right rear lip of a metal shield on the HDA down. This stresses the motherboard on the HDA causing potentiometers on the HDA's PCB to misadjust.

CURE: 1. Replace the hard disk's grey flat cable. When reinstalling the disk drive assembly, remove the XL's top to help you to guide the assembly into its mounting place without damage.

2. Cut off the offending screw and if permanent visible damage has occurred to the PCBs, replace the HDA.

If this cure does not resolve the problem, go to the Tech Procedures to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1602



Tech Info Library

Apple Software and Hardware Diagnostic Part Numbers (9/95)

Revised: 9/7/95
Security: Everyone

Apple Software and Hardware Diagnostic Part Numbers (9/95)

Article Created: 20 December 1985
Article Reviewed/Updated: 7 September 1995

TOPIC -----

The article contains the most recent part numbers for all Apple diagnostics.

DISCUSSION -----

Begin_Table

PRODUCT	P/N	REV	DESCRIPTION
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APPLE TECHSTEP: Available Accessories

Z077-8668	Power Adapter, Apple TechStep, Europe
X077-8668	Power Adapter, Apple TechStep, Australia
JA077-8668	Power Adapter, Apple TechStep, Japan
B077-8668	Power Adapter, Apple TechStep, U.K.
699-0578	Carrying Case, Apple TechStep
590-4512	Cable, Stereo, Apple TechStep
590-4501	Cable, ADB, 2-meter
590-0623	Cable, SCSI, Apple TechStep
077-8405	Cable Wrap Kit, Apple TechStep
590-0552	Cable, Mini-Din 8, 2-Meter
077-8668	Power Adapter, Apple TechStep, U.S.

Service Parts Available for the Apple TechStep

661-0703	Assy, TechStep w/o Port or ROM Packs
076-0574	Port Pack, Apple TechStep
661-0150	ROM Pack, CPU Tests, Vol. 1, v1.01
661-0157	ROM Pack, SCSI HD Tests, v1.0
661-0147	ROM Pack, CPU Tests, Vol. 2, v1.0
661-0148	ROM Pack, CPU Tests, Vol. 3, v1.0

661-0149 ROM Pack, CPU Tests, Vol. 4, v1.0

APPLE II FAMILY DIAGNOSTICS STARTER KIT

077-8313 Apple II Diagnostics and Updates--REQUIRED
(includes starter kit and one year of updates)

CONTENTS OF APPLE II FAMILY DIAGNOSTICS STARTER KIT

077-0100 B Apple II Product Diagnostic, (5.25)
077-0217 A Apple II Peripheral Diskette, (5.25)
077-0232 E Apple IIe,IIc Diagnostic 4.0, (5.25)
077-0233 H Apple IIe,IIc,IIc Plus,IIGS, IIGS 1MB
Diagnostic 4.1, (3.5)
077-0234 F Apple IIGS, IIGS 1MB Diagnostic 4.1, (3.5)
077-0274 C Apple II Hard Disk Test 1.0 and
SCSI Card Test 2.1 (5.25)
077-0316 A Apple II Video Overlay Card Diagnostic, 1.0 (5.25)
077-0340 C Apple II Hard Disk Test 1.0 and
SCSI Card Test 2.1 (3.5)
077-8148 A Apple IIc Loopback Cable
077-8219 C SCSI Loopback Test Card
077-8324 A Apple 5.25 Floppy Drive Test Assembly,
Version 1.0 (replaces 077-8216)
590-0552 A Cable, APM/ImageWriter II to
Apple IIGS/Macintosh Plus
661-91097 A Apple IIe 80 Col/64K Card
686-0027 A Profile Limited Data Recovery
Program 2.0, (5.25)

NOTE: Subscriptions are Non-Refundable.

APPLE II FAMILY DIAGNOSTIC RENEWAL

011-7077 Renewal, Apple II Family Diagnostic
Updates--REQUIRED

The Apple II Family diagnostics included in this package cover the
following products:

CPUs: Apple II, Apple II+, Apple IIe, Apple IIc, Apple IIc Plus,
Apple IIGS.

Monitors: Monitor II, Monitor IIc, Monitor ///, AppleColor Monitor 100,
AppleColor Composite Monitor, ColorMonitor IIe/IIc, Apple
Monochrome Monitor, AppleColor RGB Monitor, Flat Panel Display.

Drives: ProFile, Disk II, Disk ///, DuoDisk, UniDisk-Apple 5.25 Drive,
Disk IIc, UniDisk 3.5, Apple 3.5, Hard Disk 20SC.

Printers: Daisy Wheel Printer, Dot Matrix Printer, ImageWriter,
ImageWriter II, Scribe, Silentype.

Other: Apple II Memory Expansion Card, Apple II SCSI Card, Apple IIGS

Memory Expansion Card, Apple II Workstation Card, Apple IIc
Memory Expansion Card, Apple II Keyboards and Mice.

MACINTOSH FAMILY DIAGNOSTICS STARTER KIT

077-8312 Macintosh Diagnostics and Updates--REQUIRED
(Includes starter kit and one year of updates)
NOTE: This part number replaced 632-0582 as
of November 14, 1988

CONTENTS OF MACINTOSH FAMILY DIAGNOSTICS STARTER KIT

073-0301 Macintosh Family Diagnostics Reference Guide
073-0326 MacTest Pro Diagnostics User Guide
073-0368 MacTest Pro Diagnostics Reference Guide
077-0370 MacTest Pro-Application & Modules Nonbootable Disk
077-0070 MacTest Pro-Macintosh CPU Tests, Vol. 1A
077-0071 MacTest Pro-Macintosh CPU Tests, Vol. 1B
077-0371 MacTest Pro-Macintosh CPU Tests, Vol. 2
077-4221 MacTest Pro-Macintosh CPU Tests, Vol. 3
077-0372 MacTest Pro-PowerBook Tests, Vol. 1
077-0400 MacTest Pro-PowerBook Duo Tests, Vol. 1
077-0082 MacTest Pro-Power Macintosh CPU Tests, Vol. 1
077-0083 MacTest Pro-Power Macintosh Upgrade Card Tests
077-0220 MacTest 7.0
077-0243 MacTest SE
077-0244 MacTest II/IIx
077-0251 MacTest SE/30
077-0270 MacTest IICx/IICi
077-0329 MacTest Portable
077-0359 MacTest MP
077-0360 MacTest CL
077-0258 Macintosh Peripherals Tests, Vol. 1
077-0323 Macintosh Peripherals Tests Vol. 2
077-0363 Macintosh Peripherals Test, Vol.3
077-0268 Macintosh Hard Disk Test
077-0362 Macintosh 16"/21" Color Display Patterns
077-0322 Connect Test
077-0328 Modem Test
077-0242 NodeCheck
072-8220 AppleCAT LaserWriter Quick Reference
077-0247 AppleCAT LaserWriter Test
077-8209 AppleCAT LaserWriter Test Adapter Cable
077-8319 LaserWriter II Test Connector
689-0045 Using Your ImageWriter LQ
590-0552 Cable, APM/ImageWriter II to Apple IIGS and Mac Plus
678-5064 CD Rom Test Disc
678-5059 Caddy - Compact Disc
077-8219 SCSI Loopback Test Card
690-8132 Inter•Poll, Network Administrator's Utility
077-8129 DB9 Serial Port Plug (Set of 2)
590-0169 DB9m to Din 25m Cable
590-0553 MINI DIN 8M to DB9F Adapter Cable
077-0673 Blank 800K Diskette

077-0674 Blank 1.4 Diskette

MACINTOSH FAMILY DIAGNOSTIC RENEWAL

011-7091 Renewal, Macintosh Family Diagnostic
Updates--REQUIRED

The Macintosh Family diagnostics included in this package cover the following products:

CPUs: Macintosh, Macintosh Plus, SE, SE/30, Macintosh Classic/Classic II Color Classic, Macintosh II/IIx/fx/IICx/IIci/IIsi/IIvx/IIvi/IIvm Macintosh LC, LC II, LC III, LC 475, LC 520, LC 550, LC 575, Performa Series, Macintosh Quadra 605, 610, 650, 660AV, 700, 800, 840AV, 900, 950, Macintosh Centris 610, 650, 660AV, Apple Workgroup Server 60/80/95, PowerBook 100/140/145/145B/160/ PowerBook Duo 210, 230, 250, 270c, Macintosh Portable, Apple Macintosh TV, Power Macintosh 6100/60, 6100/60AV, 7100/66, 7100/66 AV, 8100/80, 8100/80 AV

Diskette

Drives: Macintosh 800K, Apple 3.5, Apple PC 5.25, 1.4MB SuperDrive

SCSI

Drives: Hard Disk 20, Hard Disk 20SC, 40SC, 80SC, 160SC, 400SC, 500SC, 1 GB; DDS-DC Drive, AppleCD SC, AppleCD SC Plus, AppleCD 150, AppleCD 300

Comm/

Network: LocalTalk, EtherTalk Card, AppleFax Modem, Portable Data Modem 2400, Apple Data Modem 2400, Ethernet NB Card, Int'l XP 2400, PowerBook FAX/Data Modem, Macintosh Express Modem

Printers: LaserWriter, LaserWriter Plus, LaserWriter II, ImageWriter LQ

Scanners: Apple Scanner, Apple OneScanner

Displays: 12-inch RGB displays; 12-inch Monochrome display; High Res Monochrome Monitor; High Res RGB Monitor; Macintosh 13-inch Color Display; Portrait Display; 16-inch Color Display; Two-Page Monochrome Display; 21-inch Color Display; Macintosh SE/30 Display; Macintosh Classic Display; Macintosh Classic II Display; Color Compact Macintosh Displays; Macintosh Portable Display; PowerBook Displays, 14" AudioVision Display, Basic Color Display

Video

Cards: Macintosh II Video Card, Macintosh II Display Card 8•24; 8•24 GC Card, 2-Page Monochrome Display Video Card, Portrait Display Video Card, Monochrome Video Card, High Res RGB Video Card, 4•8 Video Card, Apple High Performance Video Card, Apple AV Card

Other

Cards: Mac SE PC Drive Card, Macintosh II PC Drive Card, Mac IIci Cache Card, Apple IIe Card, Workgroup Server PDS Card, Power Macintosh

Upgrade Card

STARTER KIT HARDWARE DIAGNOSTIC TOOLS SOLD SEPARATELY:

Apple II Family:

077-0325 A Apple 5.25 Floppy Drive Test Reference Diskette

Apple IIe:

077-8219 C SCSI Loopback Test Card

Apple IIc:

077-8148 A Apple IIc Loopback Cable

Apple IIGS:

077-0317 A Apple II Video Overlay Card
Diagnostic; 1.0 (3.5)

077-8219 C SCSI Loopback Test Card

590-0552 A Cable, APM/ImageWriter II to
Apple IIGS/Mac Plus

Macintosh Family:

076-8354 A SIMM Removal Tool

Macintosh Plus:

077-8129 A DB 9 serial port plug (set of 2)--REQUIRED

077-8219 C SCSI Loopback Test Card

590-0552 A Cable, APM/ImageWriter to Apple IIGS and Mac Plus

Macintosh SE & SE/30:

077-8219 C SCSI Loopback Test Card

077-8265 A MINI DIN 8 Serial Loopback Plug

590-0551 A DB9M to MINI DIN 8M Cable

590-0553 B MINI DIN 8M to DB9F Adapter Cable

Macintosh II/IIX/IIfx:

076-0341 A IWM/SWIM IC Extraction Tool

077-8219 C SCSI Loopback Test Card

077-8264 A Macintosh II BUS Master Card

077-8265 A MINI DIN 8 Serial Loopback Plug

590-0551 A DB9M to MINI DIN 8M Cable

590-0553 B MINI DIN 8M to DB9F Adapter Cable

Macintosh IICx/IIci:

076-0341 A IWM/SWIM IC Extraction Tool

077-8219 C SCSI Loopback Test Card

077-8265 A MINI DIN 8 Serial Loopback Plug

590-0551 A DB9M to MINI DIN 8M Cable

590-0553 B MINI DIN 8M to DB9F Adapter Cable

Macintosh Portable:

590-0552 A Cable, APM, ImageWriter to Apple IIGS/Mac Plus

AppleColor Hi-Res RGB Monitor:

126-6605 A 330µF, 25V, Jitter Adjustment

AppleCD Products:

678-5064 A CD ROM Test Disc 2.0

LaserWriter/LaswerWriter Plus:

076-8354 A SIMM Removal Tool

077-8209 A AppleCAT LaserWriter Test Adapter Cable

LaserWriter II:

076-8354 A SIMM Removal Tool

077-8319 A LaserWriter II Test Connector

HARDWARE AND SOFTWARE DIAGNOSTIC TOOLS NOT INCLUDED IN STARTER KITS:

NOTE: The following tools listed as required are NOT included in the Diagnostic Starter Kits and Updates. Although not included, they are REQUIRED for support of the product listed.

Apple IIe:

890-5124 Loopback Plug, Communications Protocol Card

Apple III:

077-0009 A Clock Calibration Kit--REQUIRED

077-0013 B Apple/// Diagnostic Diskette--REQUIRED

Apple III Plus:

077-0032 A Apple/// Plus Dealer Diagnostic Diskette--REQUIRED

LISA:

077-8043 A Video Align Graticule, Lisa 1.0

077-8102 A Lisa Test for Lisa 1.0

077-8124 C Lisa 2/Macintosh XL Diag. 3.0--REQUIRED

077-8169 A Video Align Graticule for Mac XL/Lisa 2.0--REQUIRED

Macintosh XL:

077-0206 A Screen Mod. Kit Diagnostic 1.0--REQUIRED

Mac Plus:

077-0135 @ Macintosh Voltage Test Cable

077-8222 A SCSI Loopback Card to Mouse Port Cable

Macintosh II/IIx/IIfx/IIcx/IIci:

077-0104 A Twinax Cable w/DB 15 Connector

077-0105 A Twinax T-Connector

077-0106 A Twinax Terminator

077-0107 A Coax Cable

077-0109 A Token Ring Adaptor Cable

077-0256 * EtherTalk: Terminator Kit

077-0257 * EtherTalk: Thin Net Test Cable

Cluster Controller:

077-8156	A	DataLine Monitor ROM Pack-Utilities
077-8157	A	DataLine Monitor ROM Pack-SNA
077-8158	A	DataLine Monitor ROM Pack-BSC

AppleLine:

970-0879	A	Loopback Plug--REQUIRED
----------	---	-------------------------

LaserWriter/Plus:

076-0121	A	Power Checker, Laser--REQUIRED
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LaserWriter II:

076-0121	A	Power Checker, Laser--REQUIRED
----------	---	--------------------------------

Color Plotter:

686-0020	A	Apple Plotter Interface Test
----------	---	------------------------------

Apple Scanner:

077-8300		Apple Scanner Service Test Chart
----------	--	----------------------------------

End_Table

@ Recommended for Stocking

* These tools are required only if you support the EtherTalk Card

Article Change History:

07 Sep 1995 - Made minor corrections.

04 May 1995 - Corrected minor problem; reformatted.

27 Jun 1994 - Updated information, revised formatting.

Support Information Services

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Tech Info Library Article Number:1603



Tech Info Library

Hard Disk 20 P/C: First Time Start-Up = Init Failed

Revised: 1/30/92
Security: Everyone

Hard Disk 20 P/C: First Time Start-Up = "Init Failed"

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: When initializing a Hard Disk 20 with a known good Mac, the Mac displays an "Init Failed" message.

CAUSE: The HD 20 may have a failed Controller PCB.

CURE: Replace the modules in this order:

1. Controller PCB
2. Analog PCB/HDA Module

If this cure does not resolve the problem, go to the Technical Procedures to obtain a General Troubleshooting procedure.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1604



Tech Info Library

Apple 800K Drive Mechanism and Cable Compatibility

Revised: 9/16/88
Security: Everyone

Apple 800K Drive Mechanism and Cable Compatibility

=====

This article last reviewed: 6 January 1988

Drive and Cable Compatibility Chart

(YES = Compatible NO = Not Compatible)

	APPLE 3.5 MECHANISM Part # 661-0345 MFD-51W-03 red on silver label	800K DRIVE MECHANISM Part # 661-0305 MFD-51W or 51W-10 black on silver label
INTERNAL MACINTOSH	Yes- w/ yellow internal drive cable part # 590-0437	Yes- w/ red internal drive cable part # 590-0167
EXTERNAL 800 K DRIVE	YES	YES
UNIDISK 3.5 DRIVE	YES	YES
APPLE 3.5 DRIVE	YES	NO

NOTES:

1. If an Apple 3.5 Drive mechanism (P/N 661-0345) is installed as an internal Macintosh drive, it will require a YELLOW striped internal cable (P/N 590-0437) in order to operate.

2. If an older version of the Apple 800K Drive mechanism (P/N 661-0305) is installed as an internal Macintosh drive, it will require a RED striped internal flat cable (P/N 590-0167)

in order to operate.

3. It is possible to install the recently released Apple 3.5 Drive mechanism in an external Macintosh 800K Drive or in a UniDisk 3.5 Drive. However, you should NEVER try to install the older verison 800K Drive mechanism in an Apple 3.5 Drive.

4. You can distinguish the Apple 3.5 Drive mechanism (P/N 661-0345) from the older version 800K Drive mechanism (P/N 661-0305) by its Apple and vendor part numbers. Also, each mechanism has a different colored drive label. Refer to the chart above for the details.

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Tech Info Library Article Number:1605



Tech Info Library

ImageWriter II P/C: How to Run LoopBack Self Test

Revised: 1/30/92
Security: Everyone

ImageWriter II P/C: How to Run LoopBack Self Test

=====

This article last reviewed: 29 April 1988

DESCRIPTION: There is a way to test the interface port on the ImageWriter II without requiring a Macintosh.

1. Build a connector with pins 3 and 5 jumpered together (touching no other pins) and pins 1 and 2 jumpered.
2. Press the Print Quality switch while you Power on the IW II.
3. If a failure occurs search on HTS and GTS for the IW II communications troubleshooting procedure.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1606



Tech Info Library

Apple IIf Monitors : Wavy Video Display

Revised: 9/29/90
Security: Everyone

Apple IIf Monitors : Wavy Video Display

=====

Article Created: 19 December 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Video display exhibits a "waving" or
"rippling" effect.

CAUSE: Stand alone power supply manufactured prior to 4584 (i.e.
the 45th week of 1984).

CURE: Check the stand alone power supply date code. If
manufactured prior to 4584, exchange the power supply.

This repair is eligible for warranty coverage to those customers who have
purchased AppleCare for their system. For all others the repair cost
responsibility lies with the customer.

If this cure does not resolve the problem, go to the Tech Procedures
to obtain a General Troubleshooting procedure.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:1607



Tech Info Library

Monitor II PROBLEM/CURE: Picture Rolling

Revised: 1/30/92
Security: Everyone

Monitor II PROBLEM/CURE: Picture Rolling

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: After the Monitor II has had a chance to warm up, the picture just won't stop rolling.

WARNING: Remember to turn off the Monitor II and unplug it whenever the case is removed for the procedure below.

CAUSE: 1. Vertical Hold misadjusted
2. Bad electronics module

CURE: 1. Adjust the Vertical Hold (set must be turned on and operating for this adjustment).
2. If Vertical Hold doesn't fix the problem, replace the electronics module.

If the above cure doesn't solve your problem refer to the Tech Procedures to obtain the general troubleshooting procedure for this product.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1608



Tech Info Library

Monitor II PROBLEM/CURE: Display Shrinks

Revised: 1/30/92
Security: Everyone

Monitor II PROBLEM/CURE: Display Shrinks

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: After the power is on for about 5 minutes, the display shrinks to a 3 inch (approximately) square.

WARNING: Turn off the Monitor II and unplug it whenever the case must be removed for the procedure below.

CAUSE: The regulator is loose or has become damaged from excessive heat.

CURE: Remove the regulator and replace it with a new one. Be sure to use a heat sink compound before tightening down the the regulator to the heat sink.

If the above cure doesn't solve your problem refer to the Tech Procedures to obtain the general troubleshooting procedure for this product.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1609



Tech Info Library

Monitor II P/C: No Display, Faint Display or Fuzzy Display

Revised: 1/29/92
Security: Everyone

Monitor II P/C: No Display, Faint Display or Fuzzy Display

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: After the Monitor II has had a chance to warm up, there is no display or faint display or fuzzy display.

WARNING: Turn off the Monitor II and unplug it whenever the case must be removed for the procedure below.

CAUSE: 1. The video connector is either not plugged in all the way or the video jack may be cracked.
2. The regulator is plugged in upside down or cracked.

CURE: 1. Plug video cable into the jack all the way and make sure the connector is not broken and fits snugly.
2. Replace regulator. Be sure to use heat sink compound before tightening it down.

If the above cure doesn't solve your problem, refer to the Tech Procedures to obtain the general troubleshooting procedure for this product.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1610



Tech Info Library

HD20: Line voltage

Revised: 1/9/86
Security: Everyone

HD20: Line voltage

=====

Appendix A of the HD 20 Manual states that the HD 20 will work on a line voltage of 85 to 270, RMS, 47 to 64 Hz. This means that the HD 20 works without stepdown transformers, automatically switching for the power source voltage range, the 220 volt range being the most common overseas. All you need is an adapter plug for the specific locale.

Apple Technical Support

Tech Info Library Article Number:1611



Tech Info Library

LaserWriter: Slow response time

Revised: 9/21/87
Security: Everyone

LaserWriter: Slow response time

=====

This article last reviewed: 9 October 1986

The LaserWriter takes an especially long time to process the following:

1. Bit mapped fonts
2. Many font/size/style changes whether the fonts are LaserWriter fonts or bit mapped fonts
3. MacDraw with:patterns
4. Landscape orientation with:
 - a. bit mapped fonts
 - b. a clipped image that bleeds off the edge of the page
5. Images using smoothing

The LaserWriter takes a long time to process the following:

1. MacDraw with:
 - a. rotated text
 - b. clipped or cropped images
2. Landscape orientation
3. Bleeds
4. Any text over 20 points
5. Text with center, justified, or flush right
6. Text in outline or or shadow style
7. Any object scaled very tiny

8. Multiple or dashed-line styles

9. Lots of pattern shades (in PageMaker)

NOTE: PostScript errors will almost always be in this format:

%%[Error:_____; Offending Command:_____]%%

where the two blanks are the important words.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Adobe Systems Technical Support

Tech Info Library Article Number:1612



Tech Info Library

Macintosh: Maximum Clipboard Size

Revised: 9/17/87
Security: Everyone

Macintosh: Maximum Clipboard Size

=====

The Clipboard may be written to disk whenever the application requires the memory space, therefore the maximum size of the Clipboard is limited by the available disk space on the startup disk.

A more internal limit to the Clipboard occurs with the Scrap Manager, a set of routines and data types that let Macintosh applications support cutting and pasting using a specially allocated portion of RAM called the desk scrap or scrap, which is not to be confused with the Scrapbook desk accessory.

The desk scrap is initially located in a portion of RAM called the application heap. When starting up an application, the Segment Loader temporarily copies the scrap out of this heap into a portion of RAM called the stack. There is a brief moment when the scrap and a copy of the scrap both exist, the scrap in the heap and the copy in the stack; for this reason, the desk scrap cannot be bigger than half the amount of memory allocated to heap and stack.

The amount of memory allocated to heap and stack varies with each application. However, as RAM increases from 128K to 512K to 1M bytes, larger and larger amounts of RAM can be allocated to heap and stack. In a Macintosh Plus with 1Mbyte of RAM, this allocation could be as big as 800K, giving a possible Clipboard size of 400K, depending, of course, on the application.

After the copy of the scrap is in the stack, the Segment Loader reinitializes the heap, and copies the scrap back from the stack into the heap, where the Scrap Manager can use it for cutting and pasting. A handle to the scrap is stored in low memory.

An application can keep the scrap on disk, which puts a limit of available disk space on top of the limit of one-half the RAM allocated to heap and stack. To use this scrap disk file, two applications would have to have a consistent amount of RAM allocated to their heaps and stacks. The scrap of the first application could be written to disk, left on disk with warnings against dismounting the disk with the scrap file, and the second application could then read the scrap file from disk.

Notes:

..TIL01614-Macintosh-Maximum_Clipboard_Size_(TA32369).pdf

- This description idealizes the application. Keep in mind that real applications often will not handle the clipboard this way.
- Machines with 64K ROMs are limited to a maximum picture size of 32767 bytes.

Tech Info Library Article Number:1614



Tech Info Library

ImageWriter LQ General Troubleshooting (Part 3 of 3)

Revised: 1/29/92
Security: Everyone

ImageWriter LQ General Troubleshooting (Part 3 of 3)

=====

This article last reviewed: 20 November 1987

NOTE: Detailed instructions for Take-Apart can be found in the Technical Procedures.

TESTING THE PAPER-HANDLING CHANGE SWITCH

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the paper-handling change switch cable from main board connector CN18.
3. Connect the multimeter between pins 1 and 2 of the removed connector and alternately depress and release the paper-handling change switch.

When the paper release lever is depressed, the resistance should be 0 ohms. When the lever is released, the resistance should be infinite. If the resistances are not as shown, replace the paper-handling change switch.

TESTING THE PAPER FEED MOTOR

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the paper feed motor cable from main board connector CN6.
3. Connect the multimeter between the pins of the removed connector listed below and verify that resistances are as shown.

Pins to measure	Resistance (Ohms)
1 and 3	20
1 and 5	20
2 and 4	20
2 and 6	20

3 and 5	40
4 and 6	40

If the resistances are not as shown, replace the paper feed motor.

TESTING THE AUTO-LOAD SOLENOID

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the auto-load solenoid cable from main board connector CN8.
3. Connect the multimeter between pins 1 and 2 of the removed connector, and then between pins 2 and 3.

The resistance between pins 1 and 2 and between pins 2 and 3 should be infinite. If the resistances are not as indicated, replace the auto-load solenoid.

TESTING THE PAPER-OUT SENSOR

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the paper-out sensor cable from main board connector CN9.
3. Connect the multimeter between pins 4 and 5 of the removed connector and alternately raise and release the paper-out sensor arm.

When you raise the paper-out sensor arm, the resistance should be 0 ohms. When you release the paper-out sensor arm, the resistance should be infinite. If the resistances are not as indicated, replace the paper-out sensor.

TESTING THE COVER-OPEN SENSOR

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Connect the multimeter between pins 1 and 13 of the removed connector and open and close the front cover.

When you close the front cover, the resistance should be 0 ohms. When you open the front cover, the resistance should be infinite. If the resistances are not as indicated, replace the control panel PCA.

TESTING THE COLOR RIBBON DETECT SWITCH

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the color ribbon assembly cable from main board connector CN7.
3. Connect the multimeter between pins 7 and 8 of the removed connector and alternately depress and release the color ribbon detect switch.

When you depress the color ribbon detect switch, the resistance should be 0 ohms. When you release the switch, the resistance should be infinite. If the resistances are not as indicated, replace the color ribbon detect switch.

TESTING THE COLOR RIBBON HOME POSITION SWITCH

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the color ribbon assembly cable from main board connector CN7.
3. Connect the multimeter between pins 9 and 10 of the removed connector and alternately rotate the front carrier shaft completely forward and then back slightly.

When you rotate the shaft completely toward you, closing the switch, the resistance should be 0 ohms. When you rotate the shaft slightly forward, opening the switch, the resistance should be infinite. If the resistances are not as indicated, replace the color ribbon motor assembly.

TESTING THE COLOR RIBBON MOTOR

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Disconnect the color ribbon assembly cable from main board connector CN7.
3. Connect the multimeter between the pins of the removed connector listed below, and verify that resistances are as shown.

Pins to measure	Resistance (Ohms)
1 and 3	70
1 and 5	70
2 and 4	70
2 and 6	70
3 and 5	140
4 and 6	140

If the resistances are not as indicated, replace the color ribbon motor assembly.

TESTING THE CONTROL PANEL SWITCHES

Materials Required: Digital multimeter

Procedure

1. Turn off the printer and remove the main cover.
2. Place the cover top down on a padded work surface.
3. Connect the multimeter between the pins of the control panel PCA connector listed below and check to see if the resistance reads 0 ohms when the corresponding control panel switch is depressed. Refer to Figure 14 to determine the location of each pin.

Switch	Check pins
Select switch	10 & 13
Print quality switch	9 & 13
Line feed switch	1 & 13
Form feed switch	12 & 13

If any switch fails to show 0 ohms when depressed, replace the control panel PCA.

For more ImageWriter LQ troubleshooting information see the following articles:

ImageWriter LQ General Troubleshooting (Part 1 of 3)

ImageWriter LQ General Troubleshooting (Part 2 of 3)

Refer to the Technical Procedures for the take apart instructions.

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Tech Info Library Article Number:1615



Tech Info Library

Itek Graphix Composition Systems (Division of A. B. Dick Co.)

Revised: 7/9/93
Security: Everyone

Itek Graphix Composition Systems (Division of A. B. Dick Co.)

=====

Article Created: 01/15/88
Article Reviewed: 07/09/93
Article Updated:

Itek Graphix Composition Systems (Division of A. B. Dick Co.)

811 Jefferson Rd.
Rochester, NY 14623-3211

716-475-9050

800-225-4835

Fax: 716-427-2899

Company Profile:
Hardware, specializing in typesetting equipment, printers, and scanners,
presses and plate materials

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:1616



Tech Info Library

MacWorks 3.0: Boot Problem

Revised: 1/9/86
Security: Everyone

MacWorks 3.0: Boot Problem

=====

When booting from the hard drive using MacWorks 3.0 the following Message may appear:

Cannot Build the DeskTop. Unlock the disk! O.K.
When you click O.K. the unit shuts down.

This is the result of a system with an old I/O Rom. Appropriate ROM versions are Mac XL: 88, Lisa 2: A8.

Apple Technical Support

Tech Info Library Article Number:1618



Tech Info Library

Multiplan: Updating the system disk

Revised: 2/11/88
Security: Everyone

Multiplan: Updating the system disk

=====

This article last reviewed: 9 January 1986

Multiplan's System File defaults to New York instead of Geneva for Items on the Desktop. Before updating the Multiplan system disk make a copy the Seattle fonts. Now update the Multiplan system disk, then using font mover put the Seattle fonts back into the Multiplan system file. This restores the Desktop to Geneva font while allowing Multiplan access to the Seattle font.

Tech Info Library Article Number:1619



Tech Info Library

HFS: Size of folders

Revised: 9/1/87
Security: Everyone

HFS: Size of folders

=====

The Hierarchial File System provides faster more efficient management of large volumes. It will determine the size (contents) of a folder only when it is open, therefore size of a folder is displayed as ??K in the directory, unless the Folder is Open on the Desktop then Size will be displayed. Also using Get Info from the File Menu will reveal size.

Apple Technical Support

Tech Info Library Article Number:1620



Tech Info Library

Macintosh XL: Unable to Double Click

Revised: 7/30/87
Security: Everyone

Macintosh XL: Unable to Double Click

=====

Because the Macintosh XL has no battery backup for parameter memory, the Control Panel settings are lost if the system is unplugged. One symptom: the system does not respond to double clicks. It is then necessary to reset the Control Panel settings with the Control Panel desk accessory found in the Apple menu. The double click is controlled by the buttons next to the picture of the mouse in the lower left corner of the Control Panel.

Tech Info Library Article Number:1621



Tech Info Library

EtherTalk: Ethernet-Microwave Link

Revised: 10/4/89
Security: Everyone

EtherTalk: Ethernet-Microwave Link

=====

This article last reviewed: 1 December 1987

It is possible to expand an AppleTalk LAN (using Kinetics FastPath or Apple EtherTalk interfaces) onto Ethernet and from there onto a microwave transmission system. Getting the signals to a microwave system requires some hardware: a multiplexer on each end of the microwave transmit and receive stations, connected down to the Ethernet and back onto AppleTalk with an Ethernet interface.

Another (less expensive) solution is laser technology: infrared laser systems or LED (light emitting diode) systems that can be used for short-haul communication. LED systems operate up to 2 or 3 miles, while laser systems can manage up to 40 miles. This system would work in a similar fashion to the microwave transmission system.

The physical characteristics of microwave and laser communication systems can be limiting. Based on AC technology, microwave transmitters are, in principle, AC generators with a radio frequency spectrum in the 2,000-23,000 megahertz (2-23 GHz) range. Much of this range is reserved for international and special interest communications, and leaves only sections of the possible spectrum for private use. These sections are the 2, 6, 12, 18, 19, and 23 GHz bandwidths, more than enough for most digital communication needs.

Here are some vendors of microwave components and turnkey systems (for a more complete list, contact Datapro Research Corporation):

- AT&T Network Systems
- Avantek
- Digital Microwave Corporation
- Ericsson Radio Systems
- Fujitsu America, Inc.
- Harris Farinon
- International Microwave Corporation

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Tech Info Library

KROY, Inc.

Revised: 4/3/97
Security: Everyone

KROY, Inc.

=====

Article Created: 01/15/88
Article Reviewed: 07/12/93
Article Updated: 04/02/97

KROY, Inc.

14555 N. Hayden Rd.
Scottsdale, AZ 85260

800-729-5769

602-948-2222

602-951-7033 Fax

Company Profile:
Hardware, specializing in architectural sign systems and
lettering machines.

Article Change History: 07/12/93 Fax number changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1624



Tech Info Library

Using MacDraw 1.7 and 1.9 on HyperDrive

Revised: 1/14/86
Security: Everyone

Using MacDraw 1.7 and 1.9 on HyperDrive

=====

When using these versions of MacDraw, I sometimes get a gray screen when launching the application. These specific versions of MacDraw require the Imagewriter File or LaserWriter File resident within the same drawer as the application.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

General Computer Co., Service Documentation

Tech Info Library Article Number:1626



Tech Info Library

Using MacProject 1.0 on a HyperDrive.

Revised: 1/14/86
Security: Everyone

Using MacProject 1.0 on a HyperDrive.

=====

Occasionally I get a gray screen when launching MacProject 1.0.
This version of MacProject requires the Imagewriter File or
LaserWriter File resident within the same drawer as the application.

NOTE: Apple Computer Inc. is not responsible for the contents of this
article.

General Computer Co., Service Documentation

Tech Info Library Article Number:1627



Tech Info Library

Tektronix, Inc.

Revised: 4/3/97
Security: Everyone

Tektronix, Inc.

=====

Article Created: 15 January 1988

Tektronix, Inc., hardware, diversified electronic test and measurement devices, computer graphics, and television systems

Tektronix, Inc.
P. O. Box 500
Beaverton, OR 97077-0001
503-627-7111
800-835-9433
Fax: 503-627-5139

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Tech Info Library Article Number:1629



Tech Info Library

Letraset USA

Revised: 4/3/97
Security: Everyone

Letraset USA

=====

Article Created: 01/15/87
Article Reviewed: 07/12/93
Article Updated:

Letraset USA

40 Eisenhower Drive
Paramus, NJ 07653

800-343-TYPE (8973)

201-845-6100

201-845-0803 (Development) Fax

Company Profile:
Software, specializing primarily in graphics and desktop publishing tools.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1631



Tech Info Library

LaserCount Systems, Inc.

Revised: 4/3/97
Security: Everyone

LaserCount Systems, Inc.

=====

Article Created: 18 Februrary 1991
Article Reviewed/Updated: 14 July 1993

LaserCount Systems, Inc.

c/o BJM, Inc.
2125 Center Ave.
Ft. Lee, NJ 07024

201-461-9313

201-461-6450 Fax

Company Profile:
Software, specializing primarily in time and page-count tracking system applications.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1632



Tech Info Library

Asynchronous LaserWriter Driver 4.0: A Description

Revised: 11/7/91
Security: Everyone

Asynchronous LaserWriter Driver 4.0: A Description

=====

Article Created: 15 January 1988
Article Last Reviewed: 31 October 1991
Article Last Updated: 31 October 1991

TOPIC -----

This article describes Apple's asynchronous LaserWriter driver.

DISCUSSION -----

Apple has an Asynchronous LaserWriter Driver 4.0 that allows remote locations to access a LaserWriter by modem, or access directly-connected printers by the serial port. Its built-in language (called "Asynchronous Connection Language") lets you customize connection scripts.

This driver is available from APDA, the Apple Programmers and Developers Association, and another version is available through Northern Telecom for use with their SL-1 system.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1635



Tech Info Library

MacTerminal: How To Test Keyboard Output

Revised: 1/18/88
Security: Everyone

MacTerminal: How To Test Keyboard Output

=====

This article last reviewed: 4 January 1987

If you are having trouble with the keyboard output (control characters, for example) when using MacTerminal, here are some ways you might isolate the problem:

1. Use the Key Caps desk accessory to make sure your keyboard is working properly.
2. Connect your Macintosh to another Macintosh, using a serial cable.
3. Select the TTY, Local Echo, and Transparent options on the Terminal Settings window, under the Settings menu of the receiving Macintosh.

You will now be able to see if all of the ASCII values are being correctly transmitted.

Tech Info Library Article Number:1640



Tech Info Library

Pascal 1.3: Compatible With IIGS RAM Disk, 3.5 Disk

Revised: 12/2/87
Security: Everyone

Pascal 1.3: Compatible With IIGS RAM Disk, 3.5" Disk

=====

This article last reviewed: 1 December 1987

Pascal 1.3 for the Apple II can be loaded into the RAM disk of an Apple IIGS. Set your RAM size, and it will be formatted when you start up Pascal.

Pascal 1.3 supports 3.5" disk drives. (In fact, it's now distributed on a 3.5" disk in addition to the 5.25" disks.)

Tech Info Library Article Number:1641



Tech Info Library

Computer Friends, Inc.

Revised: 4/3/97
Security: Everyone

Computer Friends, Inc.

=====

Article Created: 12/02/87
Article Reviewed: 07/07/93
Article Updated: 04/02/97

Computer Friends, Inc.

14250 N.W. Science Park Drive
Portland, OR 97229

800-547-3303 (Orders)

503-626-2291

503-643-5379 Fax

MCI Mail: 'Computer Friends'

Telex: 4949559 CF

Company Profile:
Software and hardware, multi media for both PC's and Macintosh

Article Change History: 07/07/93 New Product Information Changed

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1646



Tech Info Library

Apple IIC: Variations in keyboard ROM

Revised: 1/14/86
Security: Everyone

Apple IIC: Variations in keyboard ROM

=====

Apple IIC ROMs generate characters from differing positions on the keyboard, depending on the ROM revision. Some IIC's in Dvorak mode generate the characters from the keyboard positions shown on page 6 of the IIC reference manual and other IIC's generate

Some of the earlier Apple IIC ROM's had errors that caused the keyboard discrepancy. The current and correct version of the the keyboard ROM is 'D'. Page 16 of the IIC manual shows the standard Dvorak layout.

Apple Technical Communications

Tech Info Library Article Number:1647



Tech Info Library

Apple Writer II (ProDOS): Parallel printer interface problems

Revised: 1/14/86
Security: Everyone

Apple Writer II (ProDOS): Parallel printer interface problems

=====

With parallel printer interfaces, the ProDOS version of AppleWriter II has problems somewhat like those in AppleWorks 1.1. Apple Dealers have a patch which upgrades the Apple Writer II software to version 2.1. This upgrade fixes the problems with parallel printer interfaces.

The problems are less obvious with Apple Writer than with AppleWorks because Apple Writer doesn't send as many control codes and formatting commands as AppleWorks.

Apple Technical Communications

Tech Info Library Article Number:1648



Tech Info Library

CONVERT: Revised to eliminate MouseText problems

Revised: 1/14/86
Security: Everyone

CONVERT: Revised to eliminate MouseText problems

=====

Customers reporting problems of receiving MouseText characters in the CONVERT program included on the ProDOS User's Disk should get their disk upgraded through the Media Exchange Program.

Apple Technical Communications

Tech Info Library Article Number:1649



Tech Info Library

DOS 3.3: Loading it on a Profile or Unidisk 3.5

Revised: 1/14/86
Security: Everyone

DOS 3.3: Loading it on a Profile or Unidisk 3.5

=====

Nortic Software at (402)-466-6502 has a program called PROFIX that allows you to place DOS 3.3 on a ProFile and Unidisk 3.5. PROFIX works on both the IIe and IIc and allows multiple DOS volumes to range from 143-400K on each drive.

Apple Technical Communications

Tech Info Library Article Number:1650



Tech Info Library

Graphics Tablet: Internal Cable Pinouts (11/96)

Revised: 11/21/96
Security: Everyone

Graphics Tablet: Internal Cable Pinouts (11/96)

Article Created: 14 January 86
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Listed below are the pinouts for the Graphics Tablet internal cable.

DISCUSSION -----

Stylus Internal Cable Pinout

5-pin Molex	Stylus DB-9
1	5
2	no connection
3	2, 3, 4, 6, 8, 9
4	7
5	no connection

Tablet Internal Cable Pinout

5-pin Connector	Tablet DB-9
1	4
2	5
3	6
4	3
5	9

Article Change History:
18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1651



Tech Info Library

ImageWriter II: Connector cables for all Apples

Revised: 6/16/86
Security: Everyone

ImageWriter II: Connector cables for all Apples

=====

With certain adjustments in software, the cable with order number A2C0311 can perform the same function as the cable with order number A9C0313.

But the cables themselves are different, with different pinouts, and the A2C0311 cable has about eleven intended functions while the A9C0313 cable has three. To keep the differences clear, keep this in mind:

1. The A2C0311 cable is primarily intended to connect the Apple II family to a Personal Modem.
2. The A9C0313 cable is only intended to connect the Apple II family to an ImageWriter II.

You can avoid confusing these cables by using them only for the primary intended functions specified below.

I. Apple IIe Modem-8 Cable

A. Number:

1. Order: A2C0311
2. Part: 590-0331-B

B. Configurations:

1. Primary - from Personal Modem to:
 - a. Apple II
 - b. Apple II Plus
 - c. Apple IIe
2. Secondary - from ImageWriter II or Personal Modem to:
 - a. Apple III
 - b. Macintosh XL
 - c. Lisa
3. Switching:

- a. From Apple Super Serial Card to ImageWriter II
-- SSC jumper block pointing to "TERMINAL"
- b. From Apple Super Serial Card to Personal Modem
-- SSC jumper block pointing to "MODEM"

II. Apple IIe Printer-8 Cable

A. Number:

1. Order: A9C0313
2. Part: 590-0335-A

B. Configurations:

1. From ImageWriter II to:
 - a. Apple II
 - b. Apple II Plus
 - c. Apple IIe

III. Macintosh Peripheral-8 Cable

A. Number:

1. Order: M0185
2. Part: 590-0332-B

B. Configurations:

1. From Macintosh to ImageWriter II or Personal Modem.

IV. Apple IIc Peripheral-8 Cable

A. Number:

1. Order: A2C4312
2. Part: 590-0333-B

B. Configurations:

1. From Apple IIc to ImageWriter II or Personal Modem.

Apple Technical Communications

Tech Info Library Article Number:1652



Tech Info Library

LaserWriter: Using Adhesive Paper With Manual Feed

Revised: 2/12/93
Security: Everyone

LaserWriter: Using Adhesive Paper With Manual Feed

=====

Article Created: 14 January 1986

Article Change History:

02/12/93 - UPDATED
• Vendor information.

There are a several good sources for LaserWriter adhesive media:

Avery (labels, paper, transparencies)
Chart Pack (Drafting Applique Film)
Dennison (labels, paper, transparencies)
James River Corporation (labels, paper, transparencies)

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Note: The LaserWriter II's straight paper cassette path will accomodate labels. However, it is still best to use the manual feed guide on a LaserWriter or LaserWriter Plus. The two main reasons are:

1. Label stock is too thick for the paper cassette.
2. The cassette itself could separate the protective backing from the paper, which could then stick to a roller and wind around it.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:1653



Tech Info Library

Macintosh XL: Connecting it to an ImageWriter II

Revised: 1/14/86
Security: Everyone

Macintosh XL: Connecting it to an ImageWriter II

=====

There are two ways to connect a Macintosh XL to an ImageWriter II.

1. Use cable service part number 590-0331.
2. Use cable service part number 590-0335 (finished goods order number A9C0313) and a modem eliminator cable service part number 590-0166.

Apple Technical Communications

Tech Info Library Article Number:1654



Tech Info Library

Macintosh 128K and 512K: Video Screen Specs (Discontinued)

Revised: 9/27/93
Security: Everyone

Macintosh 128K and 512K: Video Screen Specs (Discontinued)

=====

Article Created: 14 January 1986
Article Reviewed/Updated: 19 June 1992

TOPIC -----

This article contains video screen specifications for the Macintosh 128K and Macintosh 512K.

DISCUSSION -----

I. Power:

A. Input: 115 VAC plus or minus 5% (105V to 125V AC, RMS), 50/60 Hz
(frequency independent)

B. Consumption:

1. 30 Watts under normal viewing conditions
2. 60W including Video

II. Video:

A. Bandwidth: 18 MHz

B. Resolution: 512 by 342 pixels

C. Linearity: 800 TV lines at corners

D. Display capability:

1. Bit-mapped
2. Depends upon application, font, and font size
 - a. 105 columns by 27 rows in MacWrite 4.5 using Courier font at 9 points

E. CRT size: 9 inch diagonal

F. Phosphor: P4 (Aluminized)

G. Display rate: 60.15 Hz

H. Anti-glare treatment

I. External physical dimensions:

1. Width: 9.7 inches
2. Height: 13.5 inches
3. Depth: 10.9 inches
4. Weight: 16 pounds 8 ounces (including CRT)

I. CRT physical dimensions:

1. Height: 4.61 plus or minus 0.225 inches (plus or minus 11 mm)
2. Width: 6.72 plus or minus 0.155 inches (plus or minus 8 mm)
3. In production, the dimensions deviate from ideal at a maximum of 5%. Just as with any other CRT, operating temperatures will cause the image to shrink along the vertical axis. This deviation is probably not large enough to warrant adjustment of the screen.

Copyright 1986, Apple Computer, Inc.

Tech Info Library Article Number:1655



Tech Info Library

Monitor III: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Monitor III: Specifications (Discontinued)

=====

Monitor III

I. Power:

- A. Input: 115 VAC plus or minus 5%, 50/60 Hz (frequency independent)
- B. Consumption: 30 Watts under normal viewing conditions

II. Video:

- A. Bandwidth: 18 MHz
- B. Resolution: 900 TV lines at center
- C. Linearity: 800 TV lines at corners
- D. Display capability: 80 characters per row, 24 rows
- E. CRT size: 12 inch diagonal
- F. Phosphor: P31 (Green)
- G. External physical dimensions:
 - 1. Width: 15.5 inches
 - 2. Height: 10.5 inches
 - 3. Depth: 12.5 inches
 - 4. Weight: 8.5 kilograms (18.7 pounds)

Apple Technical Communications

Tech Info Library Article Number:1656



Tech Info Library

ImageWriter LQ: It Is Upwardly Compatible With ImageWriter II

Revised: 11/22/91
Security: Everyone

ImageWriter LQ: It Is Upwardly Compatible With ImageWriter II

=====

This article last reviewed: 5 January 1987

The ImageWriter LQ is upwardly compatible with the ImageWriter II. All the functions that ImageWriter LQ shares with ImageWriter II are selected by the same commands.

The serial interface for the ImageWriter LQ is the same as for the ImageWriter II with three exceptions:

- The ImageWriter II has a baud rate range of 300, 1200, 2400, 9600. The ImageWriter LQ has a range of 1200, 2400, 9600, 19200.
- The default baud rate for the ImageWriter II is 9600. The default rate for the ImageWriter LQ is 19200.
- The ImageWriter II has a 2K input buffer. The ImageWriter LQ has a 5K input buffer (less the 32K memory option card which can be used in either printer).

Copyright Apple Computer, Inc.

Tech Info Library Article Number:1657



Tech Info Library

Pinpoint: Version 1.1

Revised: 1/20/86
Security: Everyone

Pinpoint: Version 1.1

=====

On the Install side, five files have changed:

PINPOINT.SYSTEM - Driver restructured so as to not wipe out the interrupt vector at \$FFFE. This resolves the incompatibility with Quark Catalyst.

Driver restructured so that when searching for a disk containing sufficient space for work, if Slinky, then automatically accepted.

Install detects whether /RAM has been removed from the device table, and if so, then the bitmap is not modified. This resolves the incompatibility with MouseDesk.

Install - reads "Version 1.1 November 1, 1985".

PINPOINTPROFILE - has been changed to reflect the removal of "Cut and Paste" as an option in the Pinpoint window.

INSTALL.SYSTEM - Cosmetic change to reflect new release date and version.

1. New capability for installing Pinpoint on applications that are not in a root directory. The logic is as follows:

First, all devices are searched for the desired startup program (i.e. APLWORKS.SYSTEM). If it is not located on any disk drive in a root directory, a dialog box appears. It requests for the user to insert the correct disk or press Open-Apple-P to specify explicitly the pathname of the application. If the user presses Open-Apple-P, then he is prompted for the pathname. For instance, if you Appleworks is set up on your profile disk under the APPLEWORKS path, then you would type /PROFILE/APPLEWORKS. The program would then enhance /PROFILE/APPLEWORKS/APLWORKS.SYSTEM.

BIG IMPORTANT NOTE: Quark Catalyst renames the AppleWorks startup filename to "APPLWORKS." from "APLWORKS.SYSTEM". Pinpoint searches for "APLWORKS.SYSTEM", and will not locate the renamed file. If the user is using Quark Catalyst, they must install to the 5.25" floppy diskette.

2. A warning message is now issued if you "Quit" the installation program after having changed some parameters and not installing Pinpoint on any program.

CATALYSTDESKTOP - Cosmetic change to reflect new release number and date. In addition, cut-and-paste references have been removed.

IMAGEWRITER.0 - Imagewriter print driver was changed so as to suppress the "Z" that appeared in GraphMerge preceeding the second graphic image on an Apple IIc.

SCRIBE.0 - Same as above for Scribe.

FLIP SIDE - Several Accessory files have been changed.

CUTANDPASTE.PP - has been removed from version 1.1.

GRAPHMERGE.PP -

Graphmerge now works better with extra RAM and version 1.3 of AppleWorks. Version 1.2 of AppleWorks does not recognize the Memory, so therefore it left it alone. It now recognizes it, and uses it as part of its desktop. This slows down the performance of GraphMerge because it cannot expand. In version 1.0 of Pinpoint, work files were created and rendered unusable because of the memory usage of 1.3. The temporary work files are no longer created. In either case the user cannot really tell that there is a difference.

In addition, when going to Open a document with a memory card intact, the /RAM drive always appeared first. It will now bypass that drive.

DIALER - Now provides a broader support for modem dialing. This is done by broader serial card support.

COMM.PP - Communications has been improved to resolve some problems in release 1.0

1. There is now XON/XOFF support in PLAY mode, so that the user can send information to CompuServe, MCI, etc., correctly.

2. The code has been restructured so that it is more organized and expandable in the future.

3. There is a broader support for modems and interface cards.

4. This version will run more reliably on an enhanced IIc (that is "c" not "e"). The machine check has been improved.

CALENDAR.PP - The calendar was improved to handle the "Disk Full" condition appropriately.

1. Previously, if the disk full condition arose, an invalid pointer was left

in the file. This leads to perpetual "Disk=Error" condition when the disk does not even spin.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1658



Tech Info Library

Pinpoint: Version 1.2

Revised: 1/20/86
Security: Everyone

Pinpoint: Version 1.2

=====

This release of Pinpoint primarily broadens our Modem support base. It now supports the MicroModem IIe and Zoom Telephonics internal modems in the touch tone dialing mode. Please note that version 1.2 does not support the Novation modems as originally planned. The communication package has been, once again, improved dramatically.

Version 1.2 also corrects some printing problems in GraphMerge related to headers/footers and proportional font selections.

Version 1.2 includes a brief BASIC program that can lengthen the phone dialer delay (for rotary dialing) or change the Imagewriter reset (in that Imagewriter 2 does not reset).

A more reliable check for "Something in the slot" has been added for printing. This way the Typewriter will not crash if nothing is installed in the printer slot.

Communications/Dialer changes

The communications package has been enhanced. The XON/XOFF problem described in technical note TN-008 has been corrected. Premature disconnect when pulse dialing has been corrected (TN-014). Possible over-writing of the phone directory when recording has been corrected. Control characters are now filtered out in communications, with the exception of Control-Q.

In addition, the auto-answer mode has been corrected. Previously, a phone call had to be made within about 30 seconds, or it would have given up in despair. In addition, manual dialing can be done for those modems without auto-dialing capability.

Hidden within Version 1.2 is also a whole world of capability that will be addresses in a supplementary disk. This allows the user to define a handshake character, remap characters incoming and outgoing, etc.

Specific Modem Support:

Version 1.0/1.1 worked with an Apple Super Serial card and various external modems, such as:

Apple 300/1200 Baud
All Hayes external
Prometheus 1200 external
Prometheus 300c external
Volksmodem 12 external
Popcom X100

Now, release 1.2 also incorporates:

Hayes Micromodem IIe internal (tone dialing only)
Zoom Modem IIe (tone dialing only)

In addition, Version 1.2 broadens the interface card support beyond the Super Serial card to include:

A.S.T Multi-I/O card
Prometheus Versa Card
C.C.S. I/O card
A.I.O. I/O card
Apple Serial card

The ZAP program

The ZAP program is a very simple BASIC program that allows the user to change two things: his timing delay when dialing via a rotary dial, and the reset of his Imagewriter printer.

The reason for changing the delay for rotary dialing is that rotary dialing takes significantly longer than pulse, and the phone dialer may terminate and go back to the application before even finishing dialing. The user can lengthen this time period.

12345678901234567890123456789012345678901234567890123456789012345678
The reason for the Imagewriter reset disable is that we reset the Imagewriter to its startup values when we are done printing. This change will prohibit the resetting of the printer. This allows people with Imagewriter II's to maintain their near-letter-quality setting throughout.

In order to run the Zap program, the person should startup their copy of Pinpoint Install disk, and select BASIC. Once basic is selected, the user is placed in an immediate command mode. The user should type "-ZAP" followed by return. The user then chooses a menu selection item as shown below:

-ZAP

0. Quit this program
1. Run the Installation program
2. Modify ImageWriter driver for no reset
3. Change Dialer delay

TYPE CHOICE, THEN <RETURN>

Once the user has carried out their zap, they must then re-install Pinpoint on their program.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1659



Tech Info Library

Pinpoint: Auto-copy capability

Revised: 1/20/86
Security: Everyone

Pinpoint: Auto-copy capability

=====

Pinpoint automatically copies desktop accessories from the disk to the RAM drive if:

- (a) your Apple is equipped with the Apple Memory Card, or
- (b) your machine is equipped with the Applied Engineering Z-RAM or RamWorks, or Checkmate MultiRam, your memory is partitioned such that a RAM drive exists while AppleWorks is running, and Pinpoint has been enhanced so as to treat the third party cards as equivalents to the Apple Memory Cards.

If you do not wish certain accessories to be copied to the RAM drive at startup, a "patch" can be applied to a file called "PINPOINTPROFILE" on the installation side of the Pinpoint disk.

The file "PINPOINTPROFILE" contains a description of each desktop accessory installed. This description entails the Accessory name (that appears in the Pop-Up window), the ProDOS system file name, the memory requirements for each accessory, as well as modem and printer parameters. In addition, a flag is set for each accessory that should be copied to the RAM drive at startup.

The file "PINPOINTPROFILE" is 768 bytes long. The last 16 bytes in the file are set to "1" or "0". A "1" means that the accessory should be copied to the RAM drive at startup if a RAM drive is available, a "0" means no. The order corresponds to the order that the accessories appear in the pop-up window.

Assume that we load the "PINPOINTPROFILE" file in memory:

```
BLOAD PINPOINTPROFILE,A$1000  
PRINT PEEK(4848)
```

A "1" would print. This means that the Appointment Calendar accessory (CALENDAR.PP) should be copied to the Ram drive at startup. If this was set to "0", then it would not be.

Once the changes have been made to "PINPOINTPROFILE", the file should be save

back to disk via:

```
12345678901234567890123456789012345678901234567890123456789012345678
BSAVE PINPOINTPROFILE,A$1000,L$300
```

At that point, you can re-install Pinpoint on AppleWorks with the associated changes.

OPTIONALLY, the Ram Enhancement Kit WILL allow you to selectively choose the accessories and ProDOS files that you want to go into RAM.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1660



Tech Info Library

Pinpoint: RAM drive tech notes

Revised: 1/20/86
Security: Everyone

Pinpoint: RAM drive tech notes

=====

If your machine is equipped with the Applied Engineering RamWorks Card, and you are using version 4.3 (or greater) of the Desktop Expander as well as Version 3.3 (or greater) of the Ramdrive software, you can patch Pinpoint so that it automatically copies your desktop accessories to the RamWorks card. This makes the accessories lightning fast.

First, you must run the "Partition" program on the Ramdrive so as to divide memory between AppleWorks and the Ram drive. Pinpoint can use about 192K on the Ram drive if available

Once you have set up your ProDrive and AppleWorks to run with partitioned memory, install Pinpoint on the patched AppleWorks disk.

Next, set up a startup disk with BASIC.SYSTEM on it, as well as PRODRIVE, APLWORKS.SYSTEM, and any other associated files.

The "Startup" program for basic should be as follows:

```
5 PRINT CHR$(4);"PREFIX /APPLEWORKS"
10 PRINT CHR$(4);"BLOAD PRODRIVE"
20 CALL 8192
30 PRINT CHR$(4);"BLOAD APLWORKS.SYSTEM,TSYS,A$2000"
40 FOR I=1 TO 8: READ X: POKE 10367+I,X: NEXT
50 CALL 8192
60 DATA 201,48,240,2,56,96,24,96
```

Pinpoint offers the Ram Enhancement Kit. It is more elaborate, and automates this process quite a bit.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1661



Tech Info Library

Pinpoint: BASIC Programming Considerations

Revised: 1/20/86
Security: Everyone

Pinpoint: BASIC Programming Considerations

=====

Memory Usage

When Pinpoint is installed to operate in conjunction with the ProDOS interpreter BASIC.SYSTEM, it occupies some memory space on the \$300 page. It requires the memory space from \$300 thru \$3BA. This area is not used at all by BASIC, but is often used by small machine language programs. If a small machine language program is loaded here, you will lose control of your machine keyboard.

In addition, a 16K portion of the /RAM drive is reserved for Pinpoint, reducing the block count available on the RAM drive by 32 blocks. The Pinpoint Dispatcher is stored away in the upper 16K of the Extended memory bank.

Key trapping

If your program uses the standard BASIC character reading capability (i.e. Input, Get), then Pinpoint can trap the Solid-Apple-P key. If you call a machine language routine for keyboard input, it will not be intercepted by Pinpoint. If you wish to check the \$C000 strobe in your machine language program, you can call \$32D. It will return the standard result of an LDA \$C000 providing that a Solid-Apple-P has not been hit.

Invoking Pinpoint directly from BASIC

If you wish, you can invoke Pinpoint directly from your program. This would allow you to re-assign the Pinpoint key. Simply CALL 883 from BASIC (JSR \$373 from Machine Language). This will cause the Pinpoint Accessory Menu to appear.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1662



Tech Info Library

Pinpoint 1.0: No XOFF recognition in Play Mode

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0: No XOFF recognition in Play Mode

=====

XON/XOFF

Symptom:

When Pinpoint is in PLAY mode, it reads a file contents and transmits it. Should the reciever issue an XOFF during the process, Pinpoint continues to transmit data. This will result in lost information for the reciever. A stream of ^S (XOFF) characters may appear on the screen.

User Action:

The user is stuck here. He should press the ESC key to pull down the FILE menu, and select "Play File Done".

A Note:

Should Pinpoint be a recording terminal, then an 8K recieve buffer is used to store incoming characters. Once the 8K buffer is full, an XOFF character is sent to the source encouraging them to suspend transmission of data. Pinpoint then flushes the 8K buffer to disk and issues an XON to resume recording.

FIXES:

There is no fix for this that can be applied by the customer. Version 1.1 will remedy this problem by recognizing XOFF from the sending terminal.

Once an XOFF signal has been sent by the host machine, then Pinpoint will hover around waiting for an XON (or an ESCAPE key pressed by the user).

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing



Tech Info Library

LaserWriter: Using non-AppleTalk connectors with AppleTalk

Revised: 4/9/91
Security: Everyone

LaserWriter: Using non-AppleTalk connectors with AppleTalk

=====

With the Macintosh Plus, use the Macintosh Peripheral Cable, M-0185, and connect the 9-Pin end of the M-0185 to the LaserWriter and the Mini-8 end to the Macintosh Plus printer port.

To connect a single Macintosh or Macintosh XL to a LaserWriter without using the AppleTalk connector modules, construct a new cable using the following pinouts:

Macintosh Plus Mini-Circular 8	Macintosh DB-9	Macintosh XL DB-25	Signal	LaserWriter DB-9	Signal
4	3	1	GND	3	GND
6	4	20	TXD+	8	RXD+
3	5	2	TXD-	9	RXD-
8	8	9	RXD+	4	TXD+
5	9	3	RXD-	5	TXD-

Set the LaserWriter's mode switch for "AppleTalk", use the control panel to "Connect" AppleTalk, and use "Chooser" to select the LaserWriter.

CAUTION! To avoid FCC Class B signal violation, this cable should be fully shielded, as the data is at a very high rate and is not attenuated by the connection boxes normally used in AppleTalk.

Apple Technical Communications

Tech Info Library Article Number:1664



Tech Info Library

Pinpoint: RAM CARDS, Compatibility

Revised: 1/20/86
Security: Everyone

Pinpoint: RAM CARDS, Compatibility

=====

Pinpoint, AppleWorks and the Apple Extended Memory Card

Pinpoint will automatically recognize an Apple Extended Memory card installed in an Apple IIe. It will use this memory to speed up access to your desktop accessories. When you program starts up, the desktop accessories will be automatically copied over to the corresponding RAM drive on the expanded memory card. Access to the accessories will be near instantaneous.

It is advisable to start up your AppleWorks program with your accessory disk in the second drive. This way the desktop accessories can be automatically copied to the memory card.

Pinpoint can be modified to prevent certain (or all) desktop accessories from being copied to the RAM disk provided by the memory card. This may be applicable, for instance, if you don't have a modem, and wish not to have the communications package installed in memory. This modification is available from Pinpoint Publishing for a cost of \$8.00, and can be ordered directly either by phone or mail. The product name is "Pinpoint RAM Enhancement Kit".

Pinpoint, AppleWorks and RamWorks/Z-Ram

If you are using the RamWorks or Z-Ram products from Applied Engineering, you will need version 4.3 (or greater) of the Super AppleWorks Desktop Expander. If you are using an earlier version, contact Applied Engineering for the most recent copy. Pinpoint will not run with earlier versions of the AE desktop expander.

Pinpoint can take advantage of the extra memory contained on your memory card if a portion is configured as a RAM drive. This will require the ProDrive software from Applied Engineering. Be sure to use the ProDOS version. By having the RAM drive available while running AppleWorks, Pinpoint will use it for creating necessary temporary files. It will provide access to your desktop accessories much more quickly.

In addition, there is a modification that you can install on Pinpoint so that it automatically copies the desktop accessories to the RAM drive when you start your AppleWorks up. This provides near-instant access to your accessories. In order to use this option with RamWorks or Z-Ram, it is recommended that your machine contains at least 512K. This modification is available from Pinpoint Publishing for a cost of \$8.00, and can be ordered either by phone or Mail. The product name is "Pinpoint RAM Enhancement Kit".

Optionally, you could use the RAMDrive software Ver. 3.3+ to create the RAM drive locking out the appropriate banks for AppleWorks. Bank 0 should be locked out for use by Pinpoint. It is advisable to leave about 3 banks of memory available for use by the Ram drive. You could then use the "COPY.FILES" program provided on the ProDrive disk to copy all or some of the following files:

CALENDAR.PP	- Appointment Calendar
CALCULATOR.PP	- Calculator
COMM.PP	- Communications Window
GRAPHMERGE.PP	- GraphMerge
NOTEPAD.PP	- Notepad
QUICKLABEL.PP	- QuickLabel
TYPEWRITER.PP	- Typewriter

Pinpoint and Checkmate Technologies Board

If you are using the Checkmate MultiRam IIe, you will need version 4.0 (or greater) of the AppleWorks Memory Expander. If you are using an earlier version, contact Checkmate Technologies for the most recent copy. Pinpoint will not run with earlier versions of the memory expander.

Pinpoint can take advantage of the extra memory contained on your memory card if a portion is configured as a RAM drive. This will require the Utility software found on the flip side of the MultiRam disk. Be sure to use the ProDOS Ram drive. By having the RAM drive available while running AppleWorks, Pinpoint will use it for creating necessary temporary files. It will provide access to your desktop accessories much more quickly.

In addition, there is a modification that you can install on Pinpoint so that it automatically copies the desktop accessories to the RAM drive when you start your AppleWorks up. This provides near-instant access to your accessories. In order to use this option with MultiRam, it is recommended that your machine contains at least 512K. This modification is available from Pinpoint Publishing for a cost of \$8.00, and can be ordered either by phone or Mail. The product name is "Pinpoint RAM Enhancement Kit".

Optionally, you could set up the RAM drive yourself, and use the FILER program to copy the following programs to your RAM drive:

CALENDAR.PP	- Appointment Calendar
CALCULATOR.PP	- Calculator
COMM.PP	- Communications Window

GRAPHMERGE.PP	- GraphMerge
NOTEPAD.PP	- Notepad
QUICKLABEL.PP	- QuickLabel
TYPEWRITER.PP	- Typewriter

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1665



Tech Info Library

Pinpoint 1.0/AppleWorks/Catalyst 3.0 Incompatibility

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0/AppleWorks/Catalyst 3.0 Incompatibility

=====

There is a problem using Pinpoint 1.0 installed on AppleWorks run from Catalyst 3.0.

Symptom:

User runs AppleWorks, uses Pinpoint accessories, and everything appears Rosy. When he exits AppleWorks, to return to Catalyst, the Catalyst desktop appears (less any icons), and then the machine hangs. Now since Pinpoint was not being used, and he was in AppleWorks, the user may not think of it as a Pinpoint problem. In addition, since he has already exited AppleWorks, the user will probably perceive it as a Catalyst problem.

User Response:

He must restart the machine via the Control Reset keys.

Resolution:

Version 1.1 has corrected this problem.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1666



Tech Info Library

Pinpoint 1.0/AppleWorks/MouseDesk Incompatibility

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0/AppleWorks/MouseDesk Incompatibility

=====

There is a problem using Pinpoint installed on AppleWorks run from MouseDesk.

Symptom:

MouseDesk removes the /RAM drive and does not install it when AppleWorks gains control. Pinpoint attempts to access the RAM drive and crashes to the monitor before AppleWorks even runs.

User Response:

The user should either

(a) send back the Pinpoint disk to receive a more recent version (this problem has been corrected in Version 1.1).

(b) the user can apply a minor patch to Pinpoint and re-install to AppleWorks.

The patch procedure (Version 1.0 only) is as follows:

1. Backup your Pinpoint disks.
2. Startup your Apple with ProDOS BASIC.
3. Place a copy of the Pinpoint Installation disk in drive 1, slot 6.
4. Type "PREFIX,S6" (less the quotes, of course) terminate each line with the Return key.
5. Type "BLOAD PINPOINT.SYSTEM,TSYS,A\$2000"
6. Type "POKE 9203,96"
7. Type "BSAVE PINPOINT.SYSTEM,TSYS,A\$2000,L15104"

Resolution:

Version 1.1 has corrected this problem.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

..TIL01667-Pinpoint_1-0-AppleWorks-MouseDesk_Incompatibility_(TA32844).pdf

Pinpoint Publishing

Tech Info Library Article Number:1667



Tech Info Library

Pinpoint: GraphMerge/IIc: superflous Z in printout

Revised: 1/20/86
Security: Everyone

Pinpoint: GraphMerge/IIc: superflous "Z" in printout

=====

SYMPTOM:

There is a minor problem when printing multiple graphic images from an Apple IIc with an Imagewriter or Scribe. A superfluous "Z" appears in the printout preceeding the second graphic image (and each one afterwards).

USER RESPONSE:

The user should send back the disk for a free upgrade. Version 1.1 will resolve this problem.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1668



Tech Info Library

Pinpoint 1.0, 1.1: RamWorks/Print Buffer

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0, 1.1: RamWorks/Print Buffer

=====

Symptom:

There is a problem setting the Print Buffer on using the Applied Engineering Super Desktop Expander version 4.5. Once you access a desktop accessory, you can no longer print. For that matter, your machine will hang when attempting printing.

Solution:

Re-Install Desktop Expander without the print buffer option.

Until we work this out with Applied Engineering, the user should disable the print buffer option. This means that they should start again from their original AppleWorks, install AE patches, then Pinpoint.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1669



Tech Info Library

Pinpoint 1.0: Rotary Dialing

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0: Rotary Dialing

=====

Symptom:

The user is attempting to dial a number using a Rotary option, as opposed to the Pulse option. The dialing is not completed.

Solution:

If possible, have the user to switch to pulse dialing in the installation options, and re-install.

If not possible, they have two options. First, have them send back their disk to upgrade to 1.1. This will be corrected in 1.1.

In addition, if they wish to apply an interim solution to version 1.0, the following poke will work:

1. Startup a copy of the Pinpoint installation disk. Select Basic.
2. Type the Following:

```
BLOAD PINPOINT.SYSTEM,TSYS,A$2000
POKE 20124,128          (this number can be up to 255)
BSAVE PINPOINT.SYSTEM,TSYS,A$2000,L15104
```

3. Re-install Pinpoint on their AppleWorks disk.
12345678901234567890123456789012345678901234567890123456789012345678
The "128" above is a delay count before resetting the modem. It's default value is 56. It's maximum value is 255.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1670



Tech Info Library

Pinpoint 1.0: Dialing Long Distance W/Out Equal Access

Revised: 1/20/86
Security: Everyone

Pinpoint 1.0: Dialing Long Distance W/Out Equal Access

=====

Symptom:

Certain communication systems (not Bell, therefore a very minor market share) do not tolerate a "1" preceeding a long distance call. This is typically the case where Equal Access has not yet been supported in the state.

A superfluous "1" preceeds the long distance call. The incorrect number is dialed.

Resolution:

The user can patch Pinpoint to bypass the "1" from being generated. This patch will vary in release 1.1. The patch below is only applicable to version 1.0.

The user should startup the Pinpoint installation disk and select Basic from the menu.

He should then type: (Version 1.0 only)

```
BLOAD PINPOINT.SYSTEM,TSYS,A$2000
POKE 19550,32
BSAVE PINPOINT.SYSTEM,TSYS,A$2000,115104
```

The user should then Re-Install Pinpoint on his AppleWorks.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1671



Tech Info Library

Pinpoint GraphMerge: Problems printing footer messages, page #s

Revised: 1/20/86
Security: Everyone

Pinpoint GraphMerge: Problems printing footer messages, page #s

=====

Problem:

GraphMerge would incorrectly handle page footers in an AppleWorks document. In reality, the footer was handled correctly, but the following line of text from the document would disappear from the document. In addition, the page numbering scheme would be incorrect.

Solution:

1. Have the user send back the disk for version 1.2 or greater, the problem has been resolved.
2. Have the user avoid page numbers and footer messages in the interim.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1673



Tech Info Library

Pinpoint: Using Serial-To-Parallel Translators on IIC

Revised: 1/20/86
Security: Everyone

Pinpoint: Using Serial-To-Parallel Translators on IIC

=====

Sympton:

The user has an Apple IIC and a parallel printer (i.e. Epson or Okidata) hooked up by way of a translator box. The user attempts to print and gets the message "No printer Connected".

Problem:

Pinpoint (version 1.0/1.1/1.2) will not properly handle a parallel printer hooked up to a serial interface by way of a black box. This is because if a parallel printer is selected, it is assumed to be connected to a parallel interface, not a serial interface. The two interfaces handle handshaking differently.

Solution:

Until we come up with a more elaborate scheme for installing printers and interfaces, the pokes below will work. The user should start up the Pinpoint install disk, Select BASIC, and type the following commands. He should then re-install on AppleWorks.

Pokes for versions 1.0/1.1

```
BLOAD PINPOINT.SYSTEM,A$2000,TSYS
POKE 20545,128
POKE 20546,5
BSAVE PINPOINT.SYSTEM,A$2000,TSYS,L15104
```

Then have the customer re-install on AppleWorks.

Poke for version 1.2

```
BLOAD PINPOINT.SYSTEM,A$2000,TSYS
POKE 20552,128
POKE 20553,5
```

BSAVE PINPOINT.SYSTEM,A\$2000,TSYS,L13568

And re-install.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Pinpoint Publishing

Tech Info Library Article Number:1674



Tech Info Library

Apple IIC Upgraded Motherboards: Diagnostics Error (9/95)

Revised: 9/19/95
Security: Everyone

Apple IIC Upgraded Motherboards: Diagnostics Error (9/95)

=====

Article Created: 20 January 1985
Article Reviewed/Updated: 19 September 1995

TOPIC -----

After an exchange of an upgraded Apple IIC motherboard, running old versions of the Apple IIC diagnostics results in an error condition, most frequently error code number 299.

DISCUSSION -----

The older versions of the diagnostics will not work properly with the upgraded motherboards. Use the most current version of Apple IIC diagnostics (at least Rev. C).

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.
09 Nov 1988 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:1675



Tech Info Library

Apple Writer WPL Manual: Erratum

Revised: 1/20/85
Security: Everyone

Apple Writer WPL Manual: Erratum

=====

There is an error on page 110 of the manual for Apple Writer DOS 3.3 disk that runs on the Apple IIe only.

The instructions on running AUTOLETTER2 include the line

```
DO AUTOLETTER2,D1
```

but the appropriate file on the Apple Writer disk is named

```
WPL.AUTOLETTER2.
```

Revise the line in the program to read:

```
DO WPL.AUTOLETTER2,D1 (or the number of the appropriate disk drive)
```

The Apple Writer ProDOS disk doesn't have an AUTOLETTER2 program. Change the program or rename AUTOLETTER1 as appropriate

Apple Technical Communications

Tech Info Library Article Number:1677



Tech Info Library

Lisa Pascal Compilers after v. 3.0: Using real numbers with them

Revised: 1/20/85
Security: Everyone

Lisa Pascal Compilers after v. 3.0: Using real numbers with them

=====

In order to use real numbers with Lisa Pascal compilers with version numbers greater than 3.0, do the following:

1. Include in your program the statement:

```
uses {$U Lisa/SaneLib} SANE
```

2. Link your program with:

```
Lisa/SaneLibAsm
```

Do NOT link your program with IOSFPlib.

Apple Technical Communications

Tech Info Library Article Number:1678



Tech Info Library

Apple IIc External Drive : PR#7 Can't Boot

Revised: 11/10/88
Security: Everyone

Apple IIc External Drive : PR#7 Can't Boot

=====

Article Created: 23 January 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Attempt to boot external disk drive PR#7.
No boot action and the words "AppleTalk Offline" appear at the
bottom of the screen.

CAUSE: You may have a logic board which has ROMs compatible with the
UniDisk 3.5 installed. Using PR#7 to boot the external drive is a feature
which was discontinued in these ROMs to make room for other new
features.

CURE: If you are using a UniDisk 3.5 use PR#5 instead of PR#7. If
you are using any other drive, you can not boot from the external
drive.

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Tech Info Library Article Number:1679



Tech Info Library

DWP Prob/Cure: On Pwr Up, Carriage Jams to Side/Printwheel Spins

Revised: 7/22/88
Security: Everyone

DWP Prob/Cure: On Pwr Up, Carriage Jams to Side/Printwheel Spins

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: When the DWP is turned on, the printwheel spins at high speeds or the carriage jams to the right or left side of the printer.

CAUSE:

1. The drive circuits in the printwheel servo or the carriage servo have blown.
2. If it's an old logic PCB, one of the buses may have broken connection with the PCB.

There are 4 revs of DWP Main Logic PCBs (A1,A2, B, and C). The older rev PCBs (A1, A2, and B), have very fragile busses which are light colored strips mounted lengthwise along the component side of the PCB. If the PCB is flexed lengthwise (even slightly), pins on this bus will break from contact with the PCB. Most often this break is invisible to casual inspection.

One of the most common problems a break on the bus can cause is to prevent a power supply voltage from getting to the encoder PCB. This will cause the encoder PCB to output an error voltage to the servo loop. If it's the printwheel servo loop the printwheel will spin in one direction. If it's the carriage servo, the carriage will slam to one side.

Since it is so easy to break these buses, many well intentioned techs have accidentally damaged PCBs before installing them causing the same symptoms to occur after replacement as were there before.

CURE: "Carefully" replace the logic PCB.

If the above cure doesn't fix the problem, refer to the Tech Procedures to obtain the general troubleshooting for this product.

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Tech Info Library Article Number:1680



Tech Info Library

AppleTalk: Troubleshooting The Network

Revised: 11/2/88
Security: Everyone

AppleTalk: Troubleshooting The Network

=====

This article last reviewed: 6 January 1988

Even with a network as easy to use as AppleTalk, problems can still be tricky (especially as networks grow larger). Here are a few things you can do to isolate, and deal with, most of the problems that occur before calling your local Technical Support Engineer.

AppleTalk problems usually have one of three causes:

- 1) Incompatible System and Finder versions
- 2) Loose connections
- 3) Circular or other improper connection of the network

Making sure your Macintosh users are running from the most current versions of the System and Finder is always important, but when they are networked, it's critical. Go to each Macintosh and use the Get Info command to check the version numbers of both. People who don't use hard disks must update all of their disks containing System Folders. The next thing to check is the integrity of the network connections. If the network includes a LaserWriter or AppleTalk ImageWriter printer, a simple way to isolate the problem is to open the Chooser desk accessory on each Macintosh. If the networked printer shows up in the Chooser, the connection between that Macintosh and the printer is good. By checking systems as you move away from the networked printer, you can discover where the connection is broken and isolate the problem. Remember, AppleTalk must be connected to the printer port.

Diagramming the network is a good idea even before you have problems, but it's also an excellent way of discovering circular or other improper connections. AppleTalk is a "bus" topology network, which simply means that the network should have only two end points and no circular connections. An end point (or terminator) is the last AppleTalk connector on either end of the network. The two terminators should be the only

connections on the network that have only one cable attached.

Because most problems with AppleTalk are related to the three causes mentioned, these troubleshooting tips should help you most of the time. When they don't, it's time to call your local Technical Support Engineer.

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Tech Info Library Article Number:1682



Tech Info Library

ImageWriter II: Paper Feed and Detection Problems(1 of 2)

Revised: 1/30/92
Security: Everyone

ImageWriter II: Paper Feed and Detection Problems(1 of 2)

=====

This article last reviewed: 10 March 1988

#1: ImageWriter II Prob/Cure: Paper Out is Not Detected

PROBLEM DESCRIPTION: The printer indicates that there is paper in the printer even when there isn't any.

NOTE: An ohm-meter will be needed for the following procedure.

CAUSES:

A: Mechanical paper out sensor may be malfunctioning.

CURE: To test the sensor's switch, perform the steps below:

1. Turn the printer off and then on to eliminate any possibility of a software problem. Then recheck for the problem.
2. Follow the procedure in the Tech Procedures to remove the Top Cover to expose the logic PCB.
3. Locate and remove CN9 (a two wire connector on the left side of the PCB as you are facing the front of the printer).
4. Insert paper into the printer and measure the resistance between the two pins on CN9 (the connector that you removed from the PCB). The resistance should be infinite with the paper inserted
5. Continue to measure the resistance between the two pins as you remove the paper. The resistance should be between 0 and 50 ohms with the paper removed.
6. If both resistance checks were OK, the paper out sensor switch is "not" faulty. Replace the logic PCB.

B: Optical paper put sensor may be malfunctioning.

1. CAUSE: Platen may be dirty or covered with ink. The ink build up makes the platen surface reflective which causes platen surface to reflect the light from the optical paper sensor.

CURE #1: Clean the platen surface with a typewriter platen cleaner such as FEDRON (c).

CURE #2: Replace the platen.

- 2: CAUSE: Faulty optical paper out sensor. This might only be noticed when a sheetfeeder is attached to the printer. The printer will work except when the sheetfeeder is added, then the printer won't feed the paper from the sheetfeeder.

CURE: Replace the optical paper out sensor assembly.

- 3: CAUSE: Bad logic board.

CURE: Replace the logic board.

#2: IW I/II Prob/Cure: Error Lamp Blinks When There Are No Jams

NOTE: An ohm-meter will be needed for this procedure.

PROBLEM DESCRIPTION: Cover is correctly installed and there appear to be no paper or print mechanism jams.

CAUSE/s: 1. If the printer is an ImageWriter II, the option card DIP switch may be improperly set or the magnet on the cover may have fallen off.

2. If the printer is an ImageWriter I or II, the magnet on the cover may not be activating the magnetic "cover on" sensor switch.

CURE/s:

ImageWriter II 1. Check the printer to see if a 32K buffer card or an AppleTalk interface card is installed. If either is installed, make sure that option card DIP switch SW2-4 is closed. If neither card is installed, make sure that option card DIP switch SW2-4 is open.

2. Remove the operation panel and confirm that the magnet is properly installed. If the magnet is OK, find the two terminals for the magnetic switch on the non-component side of the PCB. Position the magnet on the paper cover next to the magnetic switch on the component side of the PCB while checking for continuity between the two terminals as the magnet contacts the switch the switch should close and you should read a short. If the switch stays open, it is defective so replace the operation panel.

ImageWriter I - Replace the magnetic reed switch then recheck for the problem. If the problem is fixed, that means that the magnetic "cover on" sensor switch was malfunctioning such that the magnet on the cover could not activate it

#3: ImageWriter II Prob/Cure: Tractor Feed Paper Jams

PROBLEM DESCRIPTION: Paper jams in the ImageWriter II when using tractor feed paper.

CURE/s:

1. Turn the power on so that the head centers prior to feeding the paper.
2. If using tractor feed, DON'T switch the feed setting to friction feed. The platen has overdrive, which maintains tension on the paper by moving the platen faster than the paper so if the paper is still on the tractor feed pins, it would be ripped off.
3. If using tractor feed, check that the paper is feeding in properly with the tractor. It could be catching on the back of the paper guide.
4. If using friction feed and the paper scrunches, insert a new clean sheet before using friction feed.
5. Make sure that drive select is in the proper position. Don't flip it back and forth.
6. If none of the above solves the problem, replace the logic PCB.

#4: ImageWriter II P/C: Pin Feed Paper Jams (scrunches)

PROBLEM DESCRIPTION: Paper is jamming when using pin feed.

CAUSE: Paper is 15-pound or lighter or printer has a failed logic PCB.

CURE: Check the following:

1. Be sure the paper is feeding properly and is not catching on the back of the paper guide.
2. Make sure the switch is positioned to "Tractor Feed."
3. If your are using 15 pound paper, try a different weight paper (heavier than what you are using).
4. Replace the logic PCB.

If this cure does not resolve the problem, go to "ImageWriter II Problem/Cure-Paper Feed and Detection Problems(2 of 2)"

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Tech Info Library Article Number:1683



Tech Info Library

ImageWriter II Problem/Cure: Prints Over Perforation

Revised: 11/10/88
Security: Everyone

ImageWriter II Problem/Cure: Prints Over Perforation

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: When printing to the ImageWriter II, the document seems to go to the next page, prints a few lines, then leaves about 3/4 to 5/8 inch of blank lines and then starts printing again. This condition gets worse as you print until the printer starts to print over the page perforation.

CAUSE: Switch 1-5 may be in the CLOSED position. This switch activates the PERFORATION SKIP function.

CURE: Turn the printer off. Put switch 1-5 in the OPEN position. Turn the printer back on.

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Tech Info Library Article Number:1684



Tech Info Library

Hard Disk 20: Boot From HD20 Locks Up HD20 and Macintosh

Revised: 11/10/88
Security: Everyone

Hard Disk 20: Boot From HD20 Locks Up HD20 and Macintosh

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: When trying to boot from a non-SCSI Hard Disk 20, the system fails to complete its boot. The Macintosh ejects the Sony disk, and both the hard disk and Macintosh locks-up.

CAUSE: The Finder file on the hard disk may be corrupted.

CURE: Try each of the following until the problem is fixed.

1. Replace the HD-20's Finder File:
 - a) Turn on the HD 20. Switch off Macintosh, insert Hard Disk 20 Startup Disk in the internal disk drive, and switch the Macintosh on again.
 - b) When you see the "Welcome to Macintosh" prompt, hold down the mouse button until the Finder is completely displayed (the wristwatch turns into a pointer).
 - c) The Hard Disk 20 Startup disk is now the current startup disk. Display the contents of the System Folder on the HD Start-Up disk. Select the Finder file and go to the "File" option on the menu bar to "Get Info" for revision information on the Finder file. It should be revision 5.0 or better
 - d) Display the contents of the System Folder on the Hard Disk 20 to ensure that the HD 20's Finder and System files are located there. If they aren't, find them on the HD 20 and move them into the HD 20's System Folder.
 - e) If the HD 20 Start-Up disk's Finder file was an acceptable revision, drag it over to the System Folder on the Hard Disk 20, replacing the old HD 20 Finder file.
 - f) Reboot the HD 20 Start-Up disk and recheck for the problem.

If it still exists, go to step 2.

2. Rebuild the HD-20's Desktop:

- a) Simultaneously press the COMMAND, OPTION and TAB keys while you reboot the HD 20 Start-Up disk.
- b) The Finder should ask if you want to initialize the HD-20. Make sure you select "Cancel" for this operation or you will lose all of the data stored on the HD 20.
- c) The Finder will then ask you if you want to rebuild the DeskTop file. Select OK. After the finder rebuilds its desktop, recheck for the problem. If it still exists, go to step 3.

WARNING: If you perform step 3 below, all data will be erased from the Hard Disk 20. This solution should be used as a last ditch effort, for a truly mangled hard disk.

3. Initialize the Hard Disk 20

- a) Press the COMMAND, OPTION and TAB keys while you reboot the HD 20 Start-Up disk.
- b) The Finder should ask if you want to initialize the HD-20. Select "OK". This operation erases all of the data stored on the HD 20.

Note that these methods will cure failures due to software Finder problems and will not get at hardware problems that may be the original cause of the problem. When finished with the above procedure, run the HD 20 Test located on the Startup disk on the hard disk.

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Tech Info Library Article Number:1685



Tech Info Library

MacTest 7.0 PROBLEM/CURE: 500XX and 400XX Errors

Revised: 1/30/92
Security: Everyone

MacTest 7.0 PROBLEM/CURE: 500XX and 400XX Errors

=====

This article last reviewed: 29 April 1988

PROBLEM DESCRIPTION: After upgrading a Macintosh 512K for a Macintosh Plus disk drive, MacTest 7.0 crashes with error 500XX or 400XX (X could be any digit).

CAUSE: The disk may be unformatted or write protected. (This information may also be found in the Technical Procedures binders).

CURE: Find your error code below and perform the appropriate corrective action:

- 40080.0002 Internal disk write protected
- 50080.0002 External disk write protected
- 50070.0001 disk in external drive is not formatted properly

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1686



Tech Info Library

Macintosh Plus: Serial Printer Damages SCSI Port

Revised: 7/22/88
Security: Everyone

Macintosh Plus: Serial Printer Damages SCSI Port

=====

Article Created: 23 January 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: When a serial printer is plugged into the SCSI DB-25 port of a Macintosh Plus, the logic board is damaged and the logic board must be replaced.

CAUSE: Serial printers with DB-25 connectors commonly use the RS-232 electrical interface standard. The DB-25 port on the Macintosh Plus is a SCSI port, not an RS232 port. SCSI is a high speed parallel interface and is not compatible with RS-232. The chips used by the SCSI port in the Mac Plus may be damaged by the RS-232 signals from a serial printer.

CURE: Replace the Mac's logic board. To use a serial RS-232 device with the Mac Plus, use Apple's mini-circular 8 to DB-25 peripheral cable.

If the above cure doesn't fix the problem, refer to the Tech Procedures to obtain the general troubleshooting for this product.

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Tech Info Library Article Number:1687



Tech Info Library

Monitor II: Sparking or Arcing Inside the Monitor

Revised: 1/28/92
Security: Everyone

Monitor II: Sparking or Arcing Inside the Monitor

=====

This article last reviewed: 10 February 1988

PROBLEM DESCRIPTION: Crackling noise coming from inside the monitor's case.

WARNING: If your Monitor II exhibits the problem described above, perform the following two steps before continuing with this procedure.

1. Turn off the Monitor II and unplug it.
2. Discharge the CRT as described in the Tech Procedures binder.

CAUSE: 1. The anode connector may not be seated.
2. The CRT's tip may be broken or cracked.

CURE: 1. Check the anode connector to see that it is properly seated (refer to the Tech Procedures for the anode connector's location).
2. If the CRT's anode connector is broken or cracked, replace the CRT as described in the Tech Procedures binders.

If the above cure doesn't solve your problem refer to the Tech Procedures to obtain the general troubleshooting procedure for this product.

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Tech Info Library Article Number:1688



Tech Info Library

Macintosh : External Drive Failures

Revised: 1/28/92
Security: Everyone

Macintosh : External Drive Failures

=====

Article Created: 27 September 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Intermittent and/or solid failure during
reading and writing to the external drive

CAUSE: The pins on the logic board punch holes in the mylar
covering on the RFI shield on the back of the logic board. When
they penetrate the covering they short to the case.

CURE: 1. Install the latest revision of RFI shield orderable through
Apple Service.
2. If the problem persists, replace the external drive
mechanism.
3. If the problem still persists, refer to the Level I Technical
Procedures.

If this cure does not resolve the problem, go back to the Word Search
screen and search on the product's name and HTS and GTS to obtain a
General Troubleshooting procedure.

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Tech Info Library Article Number:1689



Tech Info Library

(Lisa)Mac XL : LisaTest V.2.2 - Error 3 in Step 7

Revised: 7/17/92
Security: Everyone

(Lisa)Mac XL : LisaTest V.2.2 - Error 3 in Step 7

=====

Article Created: 27 September 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Lisa Test Error number 3 displayed during Step 7 when using version 2.2 indicates a "Parallel Port VIA Interrupt Failure".

CAUSE: The hard disk may be formatted for Macintosh software or have been partitioned for a shared Macintosh and Lisa environment when the 7/7 office system was installed. LisaTest version 2.2 does not operate with these configurations.

CURE: Use LisaTest 3.0 or later for Macintosh formatted hard disks.
Use Mac XL/Lisa Modification Test Version 1.0 or later for Square Pixel Screen Driver.

If this cure does not resolve the problem, go to the Lisa 2/Macintosh XL Technical Procedures, for the troubleshooting procedures for this product.

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Tech Info Library Article Number:1690



Tech Info Library

Macintosh Plus :Developer's Sw. Can Cause Resets

Revised: 4/6/93
Security: Everyone

Macintosh Plus :Developer's Sw. Can Cause Resets

=====

Article Created: 27 September 1985
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: When the developer's switch is installed on the Macintosh Plus, sometimes it will reset spontaneously.

CAUSE: Insufficient clearance between the developer's switch and logic switch on the power/sweep board.

CURE: 1. Remove the developer's switch to determine if it was the cause.
2. If the machine stops resetting spontaneously, file down the developer's switch approximately 1/16 to 1/8 of an inch.
3. Replace the developer's switch onto the machine.

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Tech Info Library Article Number:1691



Tech Info Library

Manzanita Software Systems: Version 5.10 of BusinessWorks

Revised: 1/25/86
Security: Everyone

Manzanita Software Systems: Version 5.10 of BusinessWorks

=====

Manzanita Software Systems released version 5.10 of BusinessWorks on January 22 with two new features:

1) The ability to load onto a RAM card with a minimum of 512K (1mb recommended). BusinessWorks programs are loaded into the RAM card memory, while company data is maintained on the 3 1/2" disk, so there's no chance of loss of data in case of power failure. A variety of RAM cards can be used, including Apple's Memory Expansion Card.

2) The ability to work with Pinpoint from Pinpoint Publishing, Inc. BusinessWorks users can access the Pinpoint desk accessories such as the calculator, calendar, clock, etc., while using BusinessWorks.

BusinessWorks users can get the new version directly from Manzanita Software.

Manzanita Software Systems, (916) 781-3880

Tech Info Library Article Number:1692



Tech Info Library

Lisa Office System 7/7 Version 3.1: Migrating documents

Revised: 6/5/86
Security: Everyone

Lisa Office System 7/7 Version 3.1: Migrating documents

=====

There is only one version of the Migration software and it is intended to be used with Office System 7/7 Version 3.1.

When the Migration software is not properly installed, there are problems of functions not being available, such as the "Make Text File" option in the "File/Print" menu as per page 11 of the Macintosh XL Migration Kit manual. Drag copying the Migration Tool icon off of the second install disk without running the installation as described in the manual is a classic example of an improper installation of the Migration software

First off, make sure to install the Lisa-to-Macintosh application in the Lisa 7/7 or Lisa Workshop environment as per page 5 of the Macintosh XL Migration Kit manual. There are many files, invisible from the desktop, that are loaded during installation. Remember, installation requires you to boot the Lisa from the Install 1 diskette.

If error messages about unavailable functions appear while the Install disk is booting, replace the software with a new copy.

Apple Technical Communications

Tech Info Library Article Number:1693



Tech Info Library

Macintosh: Switching Systems Without Restarting

Revised: 5/17/89
Security: Everyone

Macintosh: Switching Systems Without Restarting

=====

Article Created: 31 January 1986
Article Last Reviewed: 14 July 1992
Article Last Updated: 14 July 1992

NOTE: The information in this article refers to system software versions prior to System 7.0, and is of most use to those using floppy-based Macintoshes.

TOPIC -----

How do I switch system files on the desktop without booting an application?

DISCUSSION -----

Hold down the Command and Option keys and double click on the Finder that you want to activate. The disk that this Finder is on will now be the startup disk.

To make the System and Finder active on the disk that an application resides: hold down the Option key while launching the application by double clicking on it .

As an additional note, holding down the Command and Option keys while double clicking on MultiFinder inside the System Folder allows you to launch MultiFinder without restarting your Macintosh.

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Tech Info Library Article Number:1696



Tech Info Library

Macintosh: Using Print Buffers With ImageWriters

Revised: 8/5/92
Security: Everyone

Macintosh: Using Print Buffers With ImageWriters

=====

Article Created: 31 January 1986
Article Last Reviewed: 4 August 1992
Article Last Updated:

TOPIC -----

The article below is adapted from Dan Cochran's column "Answers from the Mac Team" in MacUser, February 1986, page 117.

DISCUSSION -----

A 32K print buffer has little or no effect when used with the Macintosh printing anything but text in Draft quality. For instance, if all MacWrite needed to do was send out a single byte of information for each character that it wanted to print, a serial buffer with 64K of memory would be able to receive and hold at least 20 pages of material and free up your Macintosh for other work while the printer was busy. If you're content with selecting Draft quality from the Print Dialog box, such a buffer device should work just fine. In Draft mode, the ImageWriter, acting like most serial printers, simply receives a sequence of single character codes (the ASCII set), one code for each character that is to be printed. For example, a typical MacWrite page of Geneva 12-point font will rarely exceed 3000 characters. The ImageWriter II optional buffer can handle the printing of up to 10 such pages in Draft Quality mode.

Because of the way the Macintosh sends information to the printer in the Standard and High Quality modes, a 32K buffer would not be large enough to hold even one page of information. To produce print quality better than Draft, the ImageWriter must receive much more information than simply a one-byte code per character.

Say you select High quality text from the Print dialog box and Tall Orientation from the Page Setup dialog box. This means that the ImageWriter will be printing 160 dots per inch horizontally and 144 dots per inch vertically. For an 8 inch by 10 inch printed page, the Macintosh

has to send enough information to the printer so that it can image $(160*8)*(144*10)$ or 1,843,200 dots. Each dot to be printed takes a bit of information to tell the printer whether the dot is supposed to be black or white. The printer can receive this information in 8-bit words, which, divided into the 1,843,200 dot/bits of the page, results in 230,400 words of memory (approximately 225K) needed in a print buffer device for storing even one page of MacWrite information. A buffer that could handle a 20-page document would need 2 megabytes of memory.

Some third party buffers have enough memory to make them effective print buffers on the Macintosh.

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Tech Info Library Article Number:1697



Tech Info Library

Macintosh: Mini Circular 8 Serial Port Pinouts (6/94)

Revised: 6/24/94
Security: Everyone

Macintosh: Mini Circular 8 Serial Port Pinouts (6/94)

Article Created: 31 January 1986
Article Reviewed/Updated: 23 June 1994

TOPIC -----

What are the pinouts for the mini circular 8 serial ports on the Macintosh Plus and later?

DISCUSSION -----

The two serial ports used on Macintosh computers since the Macintosh Plus are RS-422 mini-circular 8 pin connectors:

Pin	Signal
1	- HSKo (Data Terminal Ready)
2	- HSKi (Clear To Send)
3	- TxD- (Transmit Data -)
4	- GND (Ground)
5	- RxD- (Receive Data -)
6	- TxD+ (Transmit Data +)
7	- GPi (General-Purpose input); connected to SCC Data Carrier Detect (or to Receive/Transmit Clock if the VIA1 SYNC signal is high). Not connected on the Macintosh Plus, Classic, Classic II, LC, LC II, or IIsi.
8	- RxD+ (Receive Data +)

Looking at the end of a MALE mini-circular connector, the pins are:

6 7 8
3 4 5 The space is between pin 4 and 5
1 2

All Macintosh computers since the Macintosh Plus have the same mini-circular 8 pin connectors for their serial ports.

Article Change History:

23 Jun 1994 - Revised formatting and wording.

Support Information Services

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Tech Info Library Article Number:1699



Tech Info Library

80-Column Text Card: Applesoft Control Codes (11/96)

Revised: 11/18/96
Security: Everyone

80-Column Text Card: Applesoft Control Codes (11/96)

Article Created: 1 January 1986
Article Reviewed/Updated: 14 November 1996

TOPIC -----

When you write BASIC programs while the 80-Column Text Card is active, there are a number of functions you can use by pressing the CTRL key in conjunction with another key. Functions activated by pressing these two-key combinations are called control character functions. Some control character functions work when you type them in from the keyboard as well as when used within PRINT statements in BASIC programs.

DISCUSSION -----

Table of Control Character Codes:

Key to Notes codes:

- 1 - Only available when 80-Column Text Card is active
- 2 - Only works from the keyboard, not in a program
- 3 - Only works in a program, doesn't work from the keyboard
- 4 - Not supported under BASIC

Control Character	ASCII Name	Apple IIe Name	ASCII Decimal Code	Notes	What is Executed
-----	----	----	----	-----	-----
CTRL-G	BEL	bell	7		Produces a 1000 Hz tone for 0.1 second
CTRL-H	BS	backspace	8		Moves cursor position one space to the left; from left edge of window, moves to right end of line above.
CTRL-J	LF	line feed	10		Moves cursor position down to next line in window; scrolls if

					needed.
CTRL-K	VT	clear EOS	11	1	Clears from cursor position to the end of the window.
CTRL-L	FF	clear	12	1	Moves cursor position to upper-left corner of window and clears window.
CTRL-M	CR	return	13		Moves cursor position to left end of next line in window; scrolls if needed.
CTRL-N	SO	normal	14	1,3	Sets display format normal.
CTRL-O	SI	inverse	15	1,3	Sets display format inverse.
CTRL-Q	DC1	40-column	17	1,3	Sets display to 40 columns.
CTRL-R	DC2	80-column	18	1,3	Sets display to 80 columns.
CTRL-S	DC3	stop list	19	1,2	Stops sending characters to the display until a key is pressed.
CTRL-U	NAK	quit	21	1,3	Deactivates 80-column Text Card, homes cursor, and clears screen.
CTRL-V	SYN	scroll	22	1	Scrolls the display down one line, leaving the cursor in the current position.
CTRL-W	ETB	scroll up	23	1	Scrolls the display up one line, leaving the cursor in the current position.
CTRL-Y	EM	home	25	1	Moves cursor position to upper-left corner of window (but doesn't clear).
CTRL-Z	SUB	clear line	26	1	Clears the line the cursor position is on.
CTRL-\	FS	forward	28	1	Moves cursor position one space to the right; from right edge window, moves it to left end of line below.
CTRL-]	GS	clear EOL	29	1	Clear line from cursor position to the right edge of the window.
CTRL-^	RS	gotoXY	30	1,4	Using the next two characters, minus 32, as one-byte X and Y values, moves the cursor position to CH=X, CV=Y.

The Apple 80-Column Card in an Enhanced IIe has some additional features documented in the Programmer's Guide to the Enhanced IIe.

Important Information About CTRL-U =====

A "CHR\$(21)" response (Control-U) to a "GET A\$" input statement in a BASIC program may disable the 80-column card on an Apple IIGS, Apple IIe, Apple IIc, and Laser 128 (but not an Apple II Plus with Applied Engineering's Viewmaster 80).

To halt the CONTROL-U function, the CONTROL-U keystroke needs to be trapped on input. Using the "GET A\$" method:


```
10 GET A$  
20 IF A$ = CHR$(21) THEN A$ = "" :REM traps the CONTROL-U, sets it to blank  
30 PRINT A$;  
40 GOTO 10
```

Article Change History:

14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1700



Tech Info Library

Instant Pascal: RGB Color

Revised: 1/31/86
Security: Everyone

Instant Pascal: RGB Color

=====

For the current release of Instant Pascal, the Extended 80 Column Color card is not activated at boot time. This was a deliberate design decision. Double high-res text, even with the 40 column option selected, does not look satisfactory on a Color 100 monitor (or other RGB monitors).

However, for customers who already have RGB monitors and who wish to use Instant Pascal in color, there is a pre-boot workaround to turn on the card. From ProDOS Basic, type and save the following program:

```
10 D$ = CHR$(4)
20 PRINT D$;"PR#3": PRINT
30 POKE 49246,0
40 POKE 49247,0
50 POKE 49246,0
60 POKE 49247,0
70 POKE 49246,0
80 CALL 50688
```

LOAD the program into your IIe and place the Instant Pascal STARTUP disk in the drive configured to Slot 6, Drive 1 and RUN the program. Instant Pascal will function as usual with the addition. Text will be difficult to read.

Apple Technical Communications

Tech Info Library Article Number:1702



Tech Info Library

Instant Pascal: Transferring files to and from Apple II Pascal

Revised: 1/31/86
Security: Everyone

Instant Pascal: Transferring files to and from Apple II Pascal

=====

To transfer source code files from Instant Pascal (IP) to Apple II Pascal, you can make use of AppleWorks to massage the IP file type. Follow these steps:

1. Boot AppleWorks and load the IP source file into the word processor as "an ASCII file from disk."
2. Still using AppleWorks, print the file back to disk as an ASCII file.
3. Boot System Utilities 2.1 and copy the "printed" file from the ProDOS disk to an Apple II Pascal disk.

To transfer source code from Apple II Pascal to Instant Pascal, follow these steps:

1. Boot System Utilities 2.1.
2. Put the Apple II Pascal disk in one drive.
3. Put a ProDOS formatted disk in a second drive.
4. Select the Copy Files option from the System Utilities menu and copy the source code files from the Pascal disk to the ProDOS disk.

-- Note that System Utilities 2.1 supports file copying between two differently formatted disks.
5. The source file on the ProDOS disk will be recognized by Instant Pascal as a "Text" file, but you can open it into the Program window. If you save the file under Instant Pascal, it becomes an "IP" type file.

Apple Technical Communications

Tech Info Library Article Number:1703



Tech Info Library

Instant Pascal: Using the Apple DMP

Revised: 1/31/86
Security: Everyone

Instant Pascal: Using the Apple DMP

=====

If the Apple II is equipped with an Apple Parallel Interface card, printing text to a DMP will work fine. Graphic output requires an Imagewriter, Imagewriter II, or Scribe Printer. Text output is also supported on Okidata and Epson printers.

Apple Technical Communications

Tech Info Library Article Number:1704



Tech Info Library

DuoDisk Problem/Cure: Copy Protected Disk Damaged During Boot

Revised: 1/17/92
Security: Everyone

DuoDisk Problem/Cure: Copy Protected Disk Damaged During Boot

=====

This article last reviewed: 24 February 1988

PROBLEM DESCRIPTION: When inserting a copy protected application or game into the DuoDisk and starting up the Apple II, II+, or IIfx system, the disk fails to boot. The disk may be damaged in the process.

CAUSE: If capacitors C29 and C30 are present on the analog PCB, they can allow unintentional writing to the disk. This problem can be triggered by certain copy protection schemes.

CURE: Clip off the capacitors C29 and C30 at locations B1 and A1 on the Duodisk Analog PCB.

If the above cure doesn't solve the problem, search on HTS and GTS and the product name to obtain the general troubleshooting procedure for the product.

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Tech Info Library Article Number:1705



Tech Info Library

LaserWriter P/C:Smudges 80-90mm From Print's Left Edge

Revised: 1/17/92
Security: Everyone

LaserWriter P/C:Smudges 80-90mm From Print's Left Edge

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: A print is made with a known-good, broken-in toner cartridge. The print is smeared or smudged in one spot or in a vertical column on the page approximately 80 to 90 millimeters (3 to 3 1/2 inches) from the left edge of the page.

CAUSE: 1. The thermoprotector on the fuser assembly may not be positioned improperly on the top fuser roller (see Figure 2-29 on page 2.44 of the LaserWriter Technical Procedures for proper thermoprotector positioning). Over time the toner builds up and because of the heat of the fuser assembly fuses to the thermoprotector. The mass of fused toner increases until it contacts the paper as it is entering the fuser smearing the print.

2. The four screws mounting the feeder guide may be unevenly adjusted causing the feeder guide to bend.

3. The feeder guide may be bent.

4. The paper may be charged with static.

CURE: 1. Check the thermoprotector for improper positioning against the upper fuser roller and toner build-up (refer to the LaserWriter Technical Procedures. Figure 16, item 4, on page 6.32 gives location and Figure 2-29 on page 2.44 for proper thermoprotector positioning). If the thermoprotector does not exhibit these symptoms, go to step 2. If it does, perform the following:

Use MEK (methyl ethyl ketone) copier cleaner/solvent solution (locally purchasable) to clean the thermoprotector. Do not replace the thermoprotector to solve the problem.

2. Completely tighten (DO NOT STRIP) all four screws mounting the feeder guide, back them off about a half turn so that all have approximately equal torque, then recheck for the problem. (refer to the LaserWriter Technical Procedures, Figure 2, item 2, on page 6.9 for location). If the problem remains, go to step 3.

3. Replace the feeder guide. Tighten the screws as described in step 2.

4. Fan the paper to help reduce any static charge that it may have accumulated.

If the above cure doesn't fix the problem, refer to the LaserWriter Tech Procedures to obtain the general troubleshooting procedure for this product.

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Tech Info Library Article Number:1706



Tech Info Library

512K Macintosh 800K External Drive P/C: Sad Mac error 0F0004.

Revised: 1/17/92
Security: Everyone

512K Macintosh 800K External Drive P/C: Sad Mac error 0F0004.

=====

This article last reviewed: 24 February 1988

BACKGROUND: The Apple 800K drive for the Macintosh requires the following software to run on a 128K or 512K Macintosh:

/HD20 Driver File

/System File Revision 3.0 or greater

/Finder File Revision 5.0 or greater.

A Macintosh Plus does not require the above listed software.

PROBLEM DESCRIPTION: Connect 800K external drive to Macintosh 512K (NOT upgraded to a Macintosh Plus). Boot up using Finder 5.0 or greater and System 3.0 or greater. Attempt to read an 800K disk from the external drive: Mac bombs with error ID=4. Attempt to initialize a 400K disk in the 800K external drive: Macintosh displays "Initialization Failed" dialog box. Attempt to boot an 800K disk on the external drive: Macintosh bombs with "sad Mac" error 0F0004.

CAUSE: The system file "Hard Disk 20" (the Hard Disk 20 driver) and the other files listed in "BACKGROUND" (above) are needed for the "old ROM" Macintosh to communicate with volumes (drives) larger than 400K. The necessary files may not be on the startup disk.

CURE: Install the files listed in "BACKGROUND" on your startup disk. If you don't have the files available, contact your local support center for copies. They are free of charge.

If the above cure doesn't fix the problem, refer to the Tech Procedures to obtain the general troubleshooting for this product.

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Tech Info Library Article Number:1707



Tech Info Library

Macintosh Plus : Won't Boot With SCSI Peripheral Off

Revised: 7/17/92
Security: Everyone

Macintosh Plus : Won't Boot With SCSI Peripheral Off

=====

Article Created: 3 February 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: The Macintosh Plus won't boot with a powered off SCSI device connected.

CAUSE: Macintosh Plus boot ROM checks the SCSI port upon boot-up. If there is a SCSI device connected, the Macintosh tries to communicate with it. Of course, if the device is off, it will not respond and the Macintosh Plus will hang while it is waiting for a response from the SCSI device.

CURE: Disconnect the deactivated SCSI device or turn it on.

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Tech Info Library Article Number:1708



Tech Info Library

Apple Chip Service Part Numbers: Trivial Discrepancies

Revised: 11/10/88
Security: Everyone

Apple Chip Service Part Numbers: Trivial Discrepancies

=====

This article last reviewed: 10 November 1988

Quite often customers discover discrepancies in packing lists and actual parts received, most recently with the Apple IIe ROM Enhancement Kit. The story behind this problem also applies to ALL other Apple Chip part numbers, often called the service part number.

If (and only if) there are two chips:

1. when the four final digits of the part numbers are identical

and

2. when the the first three digits of the part numbers are 341 and 342,

then the chip with part number beginning with 342 has been burnt-in and the other has not.

Note: Do not infer that all chips with part numbers beginning with 342 have been burnt-in.

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Tech Info Library Article Number:1710



Tech Info Library

AppleWorks: Standard and Custom Printer Interfaces (1 of 2)

Revised: 8/10/87
Security: Everyone

AppleWorks: Standard and Custom Printer Interfaces (1 of 2)

=====

Versions of AppleWorks earlier than version 1.2 don't allow you to run Appleworks using any other interface card but the Apple Super Serial card. If you wish to use a different interface card, you must upgrade to 1.2 or later versions.

For a new owner of an Apple IIe with AppleWorks, dealers should include only those interface cards that work. The Silentype has its own interface card. Aside from that, there are two interface cards, the Apple II Parallel Interface Card (A2B0021) and the Apple Super Serial Card (A2B0044), that work correctly with all of the printers on AppleWorks' Add a Printer list:

1. Apple Printers
 - a. Dot Matrix Printer (DMP). AppleWorks is set up for the Apple DMP. If you have any other printer, you must set up AppleWorks for it.
 - b. Daisy Wheel Printer (DWP)
 - c. Imagewriter
 - d. Scribe
2. Epson (tm) Printer Series: MX, MX with Graftrax+, RX, and FX
3. Qume (r) Sprint 5 and Sprint 11

For new owners of a IIC, dealers should make sure that the customer's printer is compatible with a IIC running AppleWorks.

For a IIe owner considering AppleWorks, make sure the owner has a configuration compatible with AppleWorks. If the owner doesn't have such a configuration, the owner's only recourse to buy an interface card that is compatible.

--> Using AppleWorks with cards and printers not on the standard list

If you're using a card or a printer not on AppleWorks' standard list, you must add a custom printer to your AppleWorks configuration and specify the characteristics of the card or printer.

To choose the following options, type the number and press the RETURN key.

1. From AppleWorks' main menu, choose "5. Other Activities".
2. From the "Other Activities" menu, choose "7. Specify information about your printer(s)".
3. From the "Printer Information" menu, choose "2. Add a printer".
4. From the "Add a Printer" menu, choose "12. Custom printer".
 - a. Enter the name you wish to use for the printer.
 - b. Press RETURN.
 - c. Apple IIe: Choose the slot of the printer's interface card.
Apple IIc: Choose the port of the printer.
 - d. Press RETURN.
5. Press the ESC key: now the printer has been added to AppleWorks.
6. Now you must give AppleWorks what the printer needs to perform, specifying requirements for:
 1. a line feed after each carriage return,
 2. a top-of-page command,
 3. stopping at the end of each page,
 4. platen width,
 5. interface card settings, and
 6. codes for special functions of the printer.

Items 1 to 4 are self-explanatory and can readily be changed to meet the requirements of different jobs. You can do this from the "Printer Information" menu, choosing the printer you named under "Add a Printer".

7. With the Apple IIe, choose "5. Interface Cards". Now AppleWorks asks for a code to send to the printer interface card to prepare the card for sending data to the printer. Consult the table below for the appropriate keystrokes. (Note that [CTRL-] and the character in the bracket means that you must hold the CTRL key down while you type the character; do not type the brackets.)

Interface card	Code string
Apple Parallel Card (2PIC)	[CTRL-I]80N
Apple Super Serial Card	[CTRL-I]80N
Apple Centronix Parallel Card	[CTRL-I]255N
Grappler Plus	[CTRL-I]0N
Microtek RV-611C	[CTRL-I]255N
Pkaso	[CTRL-I]0N
MPC AP Graph and Graphwriter	[CTRL-I]255N

If your card isn't on this chart, look in the card manual; it should have the code string.

It's important to note that, although some printer manuals give code strings in the form of keystrokes, some other manuals give code strings in numerical form, either decimal (0 to 9) or hexadecimal (0 to F).

AppleWorks won't accept a code string simply typed in as one of these numbers; you must use a keystroke or combination of keystrokes to send the number from the keyboard to AppleWorks. Look up the decimal or hexadecimal form of the number in an Apple II ASCII chart; the appropriate keystrokes are on the right.

Suppose, for example, the manual states that the decimal code string 09464878 initializes the card. On an Apple II ASCII chart, 09 is [CTRL-I], 46 is the eight key, 48 is the zero key, and 78 is capital N; altogether, that's [CTRL-I]80N. To put this into AppleWorks you would:

1. Choose "5. Interface Card"
2. Hold down the CTRL key and type I,
3. Type 80
4. Hold down the SHIFT key and type N
5. Hold down the SHIFT key and type 6; this ends the string with the carat or '^' AppleWorks requires.

Tech Info Library Article Number:1711



Tech Info Library

AppleWorks: Standard and Custom Printer Interfaces (2 of 2)

Revised: 8/10/87
Security: Everyone

AppleWorks: Standard and Custom Printer Interfaces (2 of 2)

=====

8. With the Apple IIc and the Apple IIe, you must give AppleWorks what the custom printer needs to perform special functions. For each special function of the printer, you will have to enter a code using a combination of keystrokes that may not be immediately obvious. If you don't know the codes, have your printer manual nearby, and follow the instructions on pages 252 to 258 of the AppleWorks Reference Manual. Choose the option, perform the keystrokes that send the codes to AppleWorks, and then end the string by typing '^'.

For example, let's configure the custom printer driver to turn on the underline function of the fictitious printer, the ByteSpitter 1000.

1. From AppleWorks' main menu, choose "5. Other Activities".
2. From the "Other Activities" menu, choose "7. Specify information about your printer(s)".
3. From the "Printer Information" menu, choose the name of your custom printer under "Change printer specifications".
4. Choose "6. Printer Codes"
5. From Printer Codes choose "4. Underlining"

By checking with the ByteSpitter 1000 Reference Manual, we know that in order to turn on Underline Mode, the ByteSpitter 1000 requires the character string 'ESC U'. The command to stop underlining is 'ESC N'.

6. From Underlining choose "2. Printer has start/stop underline commands"
7. Choose "1. Underline begin"

The display will then show

Underline Begin

Current control characters are

None

'Type the exact control characters required (^ = End):' appears at the bottom of the screen.

8. Press and release the 'ESC' key

9. Hold down the SHIFT key and type U.

Case is very significant here. If the manual states that the printer needs a capital letter then it must be entered in upper case.

10. Hold down the SHIFT key and type '6' this ends the string with the carat or '^' AppleWorks requires for the end of the command string.

11. Choose "1. Underline end"

The display will then show

Underline End

Current control characters are

None

'Type the exact control characters required (^ = End):' appears at the bottom of the screen.

12. Press and release the 'ESC' key

13. Hold down the SHIFT key and type N.

14. Hold down the SHIFT key and type '6' this ends the string with the carat or '^' AppleWorks requires for the end of the command string.

Press the escape key five times to return to the main menu. To turn on underline in a Word Processing document, position the cursor on the first letter to be underlined, press Open-Apple-O and then type UB (underline begin). Underline will be in effect until the UE (underline end) command is entered or a carriage return is reached.

Try printing a document to your printer. If all is well, you can return to the printer setup portion of AppleWorks at any time and enter keystrokes to change or add codes for the printer's special features: superscripting, subscripting, boldface and different CPI. This information will be stored on the AppleWorks program disk for future use.



Tech Info Library

PostScript: Daisywheel emulator for the LaserWriter (1 of 2)

Revised: 2/8/95
Security: Everyone

PostScript: Daisywheel emulator for the LaserWriter (1 of 2)

Article Created: 2 May 1986
Article Reviewed/Updated: 8 February 1995

TOPIC -----

This article provides PostScript information for building a daisy wheel emulator for the LaserWriter. This information is provided by Adobe Customer Support. Apple Computer Inc. is not responsible for the contents of this article.

DISCUSSION -----

Caution

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

Below is a generalized PostScript program that provides a framework for building ANY daisy wheel emulator. Anyone with knowledge of PostScript will be able to figure out how to customize this program to meet their special needs. Unfortunately the sensitivity to ^C^D^T^S^Q,CR,LF is not avoidable.

```
%!  
%Copyright (c) 1985, Adobe Systems Incorporated, Palo Alto, CA.  
%"Used with permission."  
%This program may be reproduced, used, and sold, as long as the above copyright  
%notice appears in all copies (in any media) and on labels of machine-readable  
%media.  
%  
%Definitions for program "Daisyprint".  
%Last revision: MJF 1/29/86.  
%  
% Generic daisy-wheel emulator. Current parameters are set up for Vanilla.  
% None of the following defs should be changed. Procs and defs that can be  
% safely changed are those in the second half of this program, following the
```



```
% double bar line: =====
% Instructions for use at end of this listing.

/DaisyEmDict 30 dict def
/Daisyprint {DaisyEmDict begin printfile end} def

DaisyEmDict begin %-----

/printfile %main job loop
{ initjob
  CmdDict begin
    {currentfile read %Read one byte at a time.
      %Be sure not to send ^c,^d,^t,^s,^q

      {printchar}{showpage exit} ifelse
    }loop
    popCmdStack end %CmdDict
  }def

/initjob
{ RomanFont setfont
  /linect 1 def
  /charct 0 def
  /CmdDictBase countdictstack 1 add def
  initpage
}def

/initpage
{ orientpage
  LeftMargin FirstLine moveto
  /linect 1 store
  /charct 0 store
}def

%Caution - This program stacks dictionaries. It is therefore wise to use
%"store" rather than "def" to assign new values to old variables.

/printchar %( n -- ) This routine actually does the emulation.
{ dup cmd?
  {doCmd}{emit}ifelse
}def

/cmd? %( n -- b ) Looks for command only in topmost dictionary
{ currentdict exch known }def

/doCmd %as per the topmost dictionary, since doCmd is only invoked
%if cmd? finds the command in the topmost dict.
%default top dict: CmdDict

{load exec} def

/emit %( n -- ) convert char code to printable char, and show it.
{ charct MaxCharCt ge
  { (\\) show CR LF }if
```

```
    workstring dup 0 4 -1 roll put show
    /charct charct 1 add store
  }def

/CmdError      %To handle errors during multi-character command sequences,
               %"emit" is redefined, thanks to dictionary stacking and
               %late-binding.  See /EscDict later on in this listing.

{ popCmdStack emit }def

/popCmdStack    %clean up dict stack after completion or interruption of
               %multi-character command sequences.
               %CmdDictBase was defined in initjob.
               %CmdDict is never popped off the dict stack.

{ countdictstack CmdDictBase sub {end} repeat }def

% Routines to assist page handling -----

/orientpage
{ setlandscape?
  { 8.5 72 mul 0 translate 90 rotate }
  {}
  ifelse
}def

/workstring 1 string def

/CR      % cr only (no linefeed)

{ LeftMargin currentpoint exch pop moveto
  /charct 0 store
}def

/LF      % linefeed without cr -- ff if needed.
        % linect was def'ed in initjob.

{ linect MaxLineCt lt
  { /linect linect 1 add store
    currentpoint LnHt sub moveto }
  { currentpoint pop FirstLine
    FF moveto }
  ifelse
}def

/FF      %showpage and formfeed

{ showpage initpage }def
```

Article Change History:

08 Feb 1995 - Added PostScript caution.

Adobe Customer Support

Tech Info Library Article Number:1713



Tech Info Library

PostScript: Daisywheel emulator for the LaserWriter (2 of 2)

Revised: 2/8/95
Security: Everyone

PostScript: Daisywheel emulator for the LaserWriter (2 of 2)

=====
Article Created: 2 May 1986
Article Reviewed/Updated: 8 February 1995

TOPIC -----

This is part 2 of an article that describes how to build a daisywheel emulator for a LaserWriter printer. This information is provided by Adobe Customer Support. Apple Computer, Inc. is not responsible for the content of this article.

DISCUSSION -----

Caution:
=====

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

%=====

```
% Parameters and procedures defined after this point may be customized
% without harm (?) to the program.
```

```
/setlandscape? false def
/TopOfPage 10.5 72 mul def
/LeftMargin .25 72 mul def
/ysize 11 def %fontsize
/LnHt 11 def %line leading
/MaxLineCt 66 def
/MaxCharCt 80 def
/FirstLine TopOfPage fsize sub def
```

```
%The following three lines define actual fonts, NOT font-finding procedures.
/BoldFont /Courier-Bold findfont fsize scalefont def
/ItalicFont /Courier-Oblique findfont fsize scalefont def
/RomanFont /Courier findfont fsize scalefont def
```

```
/HT      %horiz tab -- typical implementation
        %tab set every 8 spaces, fixed.
{ 8 charct 8 mod sub
  { 32 emit } repeat
}def

%-----
%The following parameters define CmdDict and its sub-dictionaries.
%They can be customized to any extent.

/CmdDict 30 dict def      %May need to be enlarged if you add a lot to it.
CmdDict begin             %Store the defs in CmdDict, rather than clutter
                          %DaisyEmDict with all this stuff.

12 {FF} def
 9 {HT} def
10 {LF CR} def           %Note: The serial port has a "feature" at this time which
                          %forces all Linefeeds, CR-LF pairs, and CR's to appear as
                          %simple LF's to the "read" operator.

13 {CR LF} def           %cr with auto-linefeed
27 {ESC} def

/ESCDict 10 dict def      %May need to be enlarged if you add a lot to it.
/ESC                                     %Handle two-character "escape" sequences.
{ ESCDict begin }def

% Rules for creating Command sub-dictionaries:
%   Sub-dictionaries of CmdDict may be nested to handle multi-character
%   command sequences of arbitrary length.  EscDict is an example, which
%   handles 2-char sequences beginning with "escape".  Note that EscDict
%   is created entirely within the dictionary (CmdDict) which may invoke it.
%   Each sub-dictionary must contain the re-definition of "emit" shown below.
%   This takes care of invoking popCmdStack when a multi-char command
%   becomes unrecognizable in the middle of the sequence.  That's all the
%   error-handling there is, folks!
%   Each leaf in any command sub-dictionary (i.e., the procedure def for
%   any command character that ends a command sequence) must end with
%   an invocation of popCmdStack.
%   That probably isn't clear, so please observe the use of "popCmdStack"
%   in the following defs, and do likewise!
%   Defs that do NOT need to popCmdStack:
%   -- words like ESC which are not "leafs" because they lead on to
%   further sub-dict nesting.
%   -- words in the root command dict, "CmdDict".

EscDict begin            %-----

/emit { CmdError }def
34 { RomanFont setfont popCmdStack }def
33 { BoldFont setfont popCmdStack }def
```

```
      88  { ItalicFont setfont popCmdStack }def
      89  { RomanFont setfont popCmdStack }def

end  %EscDict -----

%=====

end  %CmdDict
end  %DaisyEmDict      %End of program "Daisyprint".

%*****

%Proper format for use:
%
%  Daisyprint CR
%  data data data data .....
%  ...data data ^D ^D

Article Change History:
08 Feb 1995 - Added PostScript caution.

Adobe Customer Support

Tech Info Library Article Number:1714
```



Tech Info Library

Apple IIGS: 5.25 System Utilities

Revised: 10/6/86
Security: Everyone

Apple IIGS: 5.25" System Utilities

=====

To organize a user's disks, the Apple IIGS System Utilities program formats and copies disks and can copy, rename, and delete files, performing most of these functions on 4 of the Apple II operating systems: DOS 3.3, ProDOS, Pascal, and CP/M. Distributed on a 3 1/2" disk, the program works only on the Apple IIGS.

You can create a 5 1/4" floppy disk version of the program using the System Utilities in the following steps:

1. Format a 5 1/4" disk
2. Copy these 5 files from System Utilities to the 5 1/4" disk:
 - a. P8
-- This is ProDOS - found in the SYSTEM sub-directory.
 - b. SYSUTIL.SYSTEM *
 - c. GSSU0 *
 - d. GSSU1 *
 - e. GSSUE1 *

* These 4 files comprise the System Utilities program, and can be found in the SYS.UTILS sub-directory. They must be kept in the same directory.
3. Rename the file 'P8' to 'PRODOS'

System Utilities may now be booted from the floppy disk. The files take up around 180 blocks and leave about 100 blocks for extra file storage.

Apple Technical Communications

Tech Info Library Article Number:1716



Tech Info Library

Macintosh: Erasing Parameter RAM

Revised: 9/17/87
Security: Everyone

Macintosh: Erasing Parameter RAM

=====

Just as Preferences in the Lisa keeps the settings, the Parameter Memory chip or Parameter RAM in the Macintosh maintains system information: Clock, date, and alarm settings, some Control Panel settings, and Serial port configurations.

If necessary, Parameter RAM may be erased entirely:

1. Turn off the Macintosh
2. Unplug the Macintosh
3. Remove the battery (do not try to draw off charge by placing the battery back in upside down)
4. After at least 10 minutes, reinsert battery

Tech Info Library Article Number:1717



Tech Info Library

LaserWriter: Installing it on the HD 20

Revised: 2/6/86
Security: Everyone

LaserWriter: Installing it on the HD 20

=====

When installing the LaserWriter on the HD 20, it is important to follow the directions in the HD 20 manual in the section titled "Installing the LaserWriter". Many people forget to hold down the OPTION key while double clicking on the Install program, an action that avoids System Error 0,0.

Apple Technical Communications

Tech Info Library Article Number:1718



Tech Info Library

Sony Electronics, Inc. (formerly Sony Corporation of America)

Revised: 4/14/95
Security: Everyone

Sony Electronics, Inc. (formerly Sony Corporation of America)

=====

Article Created: 18 January 1988
Article Reviewed/Updated: 14 April 1995

Sony Electronics, Inc.

3300 Zanker Rd
San Jose, CA 95134-1940
Maildrop SJ3A1

408-432-0190
408-432-1600

Computer Peripheral Tech Support:
800-326-9551

Sony Service Parts:
1-800-488-7669

Fax:
408-943-0740

Company Profile:
Formerly Sony Corporation of America, hardware, specializing in communications
and computer peripherals

Article Change History:
14 Apr 1995 - Added 800 service parts phone number.
16 Feb 1995 - Added 800 tech support phone number.

Support Information Services

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Tech Info Library Article Number: 1719



Tech Info Library

Parallel Interface Card: 3rd Party Printers (11/96)

Revised: 11/21/96
Security: Everyone

Parallel Interface Card: 3rd Party Printers (11/96)

Article Created: 06 February 86
Article Reviewed/Updated: 19 November 1996

TOPIC -----

This article discusses connecting the Parallel Interface card to different 3rd party printers.

DISCUSSION -----

Epson FX 80
=====

General Settings

Parallel Interface
8 Data Bits
Linefeeds required

Epson DIP switches

Switch Bank 1	Switch bank 2
1 OFF	1 ON
2 OFF (see notes)	2 ON
3 OFF (see notes)	3 OFF
4 OFF	4 OFF (see notes)
5 OFF (see notes)	
6 ON	
7 ON	
8 ON	

Bank 1

..TIL01720-Parallel_Interface_Card-3rd_Party_Printers_11-96_(TA33301).pdf

Switch 2 is set for open zero character; for slashed zero, turn switch 2 on.
Switch 3 is set for continuous paper; for cut sheet, turn switch 3 on.
Switch 5 is set for normal density printing at power on; for emphasized printing, turn switch 5 on.

Bank 2

Switch 4 is set for computer generated carriage return linefeed; for carriage return only, turn switch 4 on.

Parallel Interface

All switches on the Apple interface card need to be set to factory default settings.

Cable Pinouts

Apple II Parallel	Epson
CABLE SHIELD	---- 1
5	----- 14
6	----- 13
8	----- 12
11	----- 9
12	----- 15
13	----- 16
22	----- 11
23	----- 10
15	----- 3
16	----- 22
4	----- 7
7	----- REMOVE PIN

Centronics 702 or 703

=====

The Centronics printer interface was originally designed to be used with the Centronics microP-1 printer. That printer required a control character to set it into 80-column mode. The firmware on the Centronics printer interface, PROM P9-00, sends a \$1D when ever it receives the <CTRL-I>80N command. This control character is part of a VFU command on a Centronics 702 or 703 and usually deselects the printer. The fix is to send a re-select code, but since the deselected printer doesn't return the Apple's handshake, the reselect will have to be POKEd to the interface, as follows:

```
100 FOR J = 1 TO 5
110 POKE -16256 + 16 * SL, 17
120 NEXT
```

Comrex CR-1 P

=====

Card COMREX CR-1 P

5----- DB0-----2
6----- DB1-----3
8----- DB2-----4
11-----DB5-----7
12-----DB6-----8
13-----DB7-----9
15-----STB-----1
16-----ACK-----10
22-----DB3-----5
23-----DB4-----6
24-----SG----- 16

Dip Switch settings

For Parallel card: All down except 4,5

For Comrex: all down except 8

Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1986-96, Apple Computer, Inc.

Tech Info Library Article Number:1720



Tech Info Library

LaserWriter Plus Upgrade: Description Of Features

Revised: 11/10/88
Security: Everyone

LaserWriter Plus Upgrade: Description Of Features

=====

This article last reviewed: 6 February 1986

Features include:

1. a revised LaserWriter Plus manual,
2. 16 ROMs and socket with jumper block,
3. New LaserWriter driver.

The upgrade consists of 16 512K ROMs and a DIP socket with a jumper block. These are placed into the I/O board by the dealer. Pre-November 1985 production boards do not have the DIP socket and will need to have it installed. Boards built after the cut in date will have a socket and jumper block installed at the factory. Dealers have the option of having the upgrade done by Apple by requesting a service board in advance and then sending in the old board.

The new 512K ROMs contain 7 new fonts in 2 typefaces. The new fonts are:

1. ITC Avante Garde Gothic
2. ITC Bookman
3. Helvetica Narrow
4. New Century Schoolbook
5. Palatino
6. ITC Dingbats, a font of special characters, stars, bullets, etc., in plain style only.
7. ITC Zapf Chancery, a script font, in italic style only.

Fonts 1 through 5 are in plain, bold, italic, and bold italic styles.

All fonts are sublicensed from Adobe Systems.

With the addition of these fonts, the LaserWriter Plus now has 11 built-in fonts with 35 individual typefaces. It's not possible to print Symbol-letters bold on the LaserWriter Plus. The Symbol Bold font was removed from the LaserWriter Plus ROM's to accommodate more fonts.

To speed output, use the new LaserWriter driver with the Macintosh Plus ROMs. LaserWriter 3.0 or greater will facilitate fractional pixels with LaserWriter or LaserWriter Plus. The application must enable this feature in the 128K ROMs.

Also, make sure that you copy LaserWriter fonts into the System File with the Font/DA Mover version 3.0 or later if you are using the the LaserWriter driver version 3.0 or later.

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Tech Info Library Article Number:1721



Tech Info Library

LocalTalk: Alternate Sources For Cable

Revised: 11/2/88
Security: Everyone

LocalTalk: Alternate Sources For Cable

=====

This article last reviewed: 6 February 1986

Many large accounts are installing AppleTalk networks. For custom length LocalTalk cables, there are two resources, Apple dealers and third-party vendors.

Apple dealers have Apple's LocalTalk Custom Wiring Kit. You must consider if the account has the assembly skills required by the kit. Even though this kit was introduced with large installations in mind, it may fall short of fulfilling the account's requirements. Each kit contains the necessary materials to construct 8 cables of varied lengths. Unfortunately, the account must buy a second kit just for its connectors if more than 8 are needed (and the total network does not exceed 1000 feet). Sometimes buying supplementary 10 meter cables solves this problem.

Third-party vendors will accept specifications for custom cables. These cables are pre-assembled and using them requires nothing beyond the usual skills needed for a normal installation. The higher cost of this cable can bring up the cost of total installation, however.

Here are some vendors of custom length cables:

Advanced Electronics Support Products, Inc.
18909 N. E. Fifth Avenue
North Miami, FL 33179
(305) 653-0898

Montrose Corporation - Telephone 415/487-3933

- Telephone numbers as of 4/1/87:
 - 1-800-423-3014 (except California)
 - 1-800-423-4224 (California only)
- Cable lengths same
- PVC Cable Part #CBL6242
- Teflon Cable Part #CBL6228
- Assembly Plugs Part #815-0878A

..TIL01722-LocalTalk-Alternate_Sources_For_Cable_(TA33321).pdf

-Both cabling and assembly plugs now in stock

Belden Corporation - Telephone 1-(800)-Belden-1

-Cable lengths available in 500, 1,000, and 2,000 foot lengths.

-PVC Cable Part #9999

-Teflon Cable Part #8999

-Assembly Plugs Part #815-0878A

-Some cabling now in stock, assembly plugs available.

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Tech Info Library Article Number:1722



Tech Info Library

Macintosh: Bi-directional Printing on an ImageWriter (10/93)

Revised: 10/6/93
Security: Everyone

Macintosh: Bi-directional Printing on an ImageWriter (10/93)

Article Created: 21 April 1986
Article Reviewed/Updated: 6 October 1993

TOPIC -----

This article describes uni-directional and bi-directional printing on the ImageWriter and ImageWriter II.

DISCUSSION -----

ImageWriter (original) - all Driver Versions, cannot be overridden:

High	Bi-Directional	Always
Standard	Uni-Directional	Always
Draft	Bi-Directional	Always

ImageWriter II - with Driver Version 2.0, cannot be overridden:

High	Bi-Directional	Always
Standard	Bi-Directional	Always
Draft	Bi-Directional	Always

ImageWriter II - with Driver Version 2.1, 2.2, 2.3, 2.5, 2.6 or 7.0.1:

High	Bi-Directional	Always
Standard	Uni-Directional	Default
	Bi-Directional	In the Print Dialog box: hold down the OPTION, SHIFT, and CAPLOCKS while clicking OKAY
	Undo Bi-Direct.	In the Print Dialog box: hold down the COMMAND (Feature) key while clicking OKAY
Draft	Bi-Directional	Always

Note: Screen dumps are always Uni-directional.

Article Change History:

6 October 1993 - Added information on driver 7.0.1

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:1728



Tech Info Library

MacWorks: Rebooting without turning the machine off

Revised: 2/7/86
Security: Everyone

MacWorks: Rebooting without turning the machine off

=====

If you wish to reboot in MacWorks without turning the machine off, simply hold down the Command key while pressing the lighted on-off button. This procedure also causes the internal diagnostics to be skipped.

Apple Technical Communications

Tech Info Library Article Number:1734



Tech Info Library

AppleWorks: Printing in color on the ImageWriter II

Revised: 10/12/87
Security: Everyone

AppleWorks: Printing in color on the ImageWriter II

=====

This article last reviewed: 9 October 1987

Apple Works can print in color on the ImageWriter II. To enable color printing, configure a custom printer, and select printer codes that you do not expect to use, e.g. 4 character per inch, superscript start and stop, etc. Define those codes with the escape sequences for the color you wish to implement. For the correct codes, refer to Appendices F and G in the ImageWriter II Owner's Manual and the ImageWriter Quick Reference Card in the rear of same.

A typical set up is as follows:

Code	Effect
CTRL-N	4 CPI
CTRL-O	10 CPI
ESC K 2	5 CPI used for Red
ESC K	6 CPI used for Blue
ESC !	Boldface begin
ESC "	Boldface end
ESC y	Sub begin
ESC z	Sub end
ESC x	Super begin
ESC z	Super end

With this set up, printing a portion of text in red requires the following steps:

1. Move the cursor to the beginnning of the desired text.
2. Select printer options.
3. Choose 5 CPI.
4. When you want to return to black printing, select printer options and choose 10 CPI.

To set the printed text to blue, select printer options and choose 6 CPI.

Don't forget to select printer options and choose 10 CPI to return printing to black.

Use these steps to produce color printing of one word or a couple of words. To make a whole paragraph color, the only command that seems to work consistently is underline. If you configure the underline command as a color, you'll get the whole paragraph in that color. If you configure the superscript-subscript command as a color, you'll only get the first line in color; all subsequent lines will be black. Margins will be wrong if you set up things like 4 CPI for color.

Tech Info Library Article Number:1735



Tech Info Library

ProDOS: Error codes

Revised: 2/12/86
Security: Everyone

ProDOS: Error codes

=====

Code	ProDOS message	Most common cause
2	RANGE ERROR	Command option too small or large
3	NO DEVICE CONNECTED	No device found in specified slot
4	WRITE PROTECTED	Write-protect tab on disk
5	END OF DATA	Read beyond end of file or record
6	PATH NOT FOUND	No file with indicated pathname
7	PATH NOT FOUND	No file with indicated pathname
8	I/O ERROR	Door open or disk not formatted
9	DISK FULL	Too many files on a disk
10	FILE LOCKED	Attempt to write to a locked file
11	INVALID OPTION	Option inappropriate for command
12	NO BUFFERS AVAILABLE	Memory full; file can't be opened
13	FILE TYPE MISMATCH	Disk file wrong type for command
14	PROGRAM TOO LARGE	Apple II's memory too small (CHAIN)
15	NOT DIRECT COMMAND	Command must be in a program
16	SYNTAX ERROR	Bad filename, option, or comma
17	DIRECTORY FULL	Volume directory has 51 files
18	FILE NOT OPEN	Attempt to open a closed file
19	DUPLICATE FILENAME	RENAME, CREATE name already used
20	FILE BUSY	File already open
21	FILE(S) STILL OPEN	Last program didn't close file(s)

Apple Technical Communications

Tech Info Library Article Number:1739



Tech Info Library

Extended 80-Column RGB Card: Color Monitor 100 Pinouts (11/96)

Revised: 11/18/96
Security: Everyone

Extended 80-Column RGB Card: Color Monitor 100 Pinouts (11/96)

Article Created: 19 April 1991
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Does the Extended 80-column card work in the Apple II or Apple II Plus? If not, is there any way to upgrade an Apple II or Apple II Plus to 80-Column?

DISCUSSION -----

The 80-Column Card and Extended 80-Column Card work only in the Apple IIe; they cannot be used in any other computer.

Our databases do not show an 80-column interface for the Apple II or Apple II Plus. There were once several on the market, but the demand for this type of card has almost disappeared. You might still be able to find these 80-column cards through some of the computer remarketing companies, or where use computer equipment is sold.

An alternative is to purchase an Apple IIe or Apple IIGS computer. You need to to contact computer remarketing companies, or look where use computer equipment is sold.

Article Change History:
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1740



Tech Info Library

Macintosh Pascal 1.0: Error ID=02 on 512K with no external drive

Revised: 2/12/86
Security: Everyone

Macintosh Pascal 1.0: Error ID=02 on 512K with no external drive

=====

On a 512K Macintosh with no external drive attached and any Finder (1.1, 4.1, or 5.0), Macintosh Pascal bombs with a system error ID=02 when executing the following Pascal program:

```
program Bomb;
var
  r : real;
  outfile : text;
begin
  rewrite(outfile, 'Data Disk:Sample File');
  r := 0;
  writeln(r : 5 : 2);
  writeln(outfile, r : 5 : 2);
end.
```

Using the step-step feature of Macintosh Pascal, the next line to be executed when the bomb occurs is "r :=);".

To get this error:

1. Insure that the external drive is not connected. The system must have one drive only.
2. Boot with Macintosh Pascal disk.
3. At the desktop, eject the Macintosh Pascal disk.
4. Insert a blank disk and name it "Data Disk".
5. Eject this disk. Do NOT put it in the trash - the disk must still exist on the system.
6. Open Pascal document "Bomb", the program above.
7. Execute the program either with the command "go" or "step-step".

8. Insert the disk "Data Disk" when the message asking for it appears.

This problem has two work arounds:

1. Move the statement "r := 0;"
before the statement "rewrite(outfile, 'Data Disk:Sample File');"
2. As a general practice, place the File definition var FIRST.

Apple Technical Communications

Tech Info Library Article Number:1741



Tech Info Library

MacTerminal 2.0: Issuing Breaks

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0: Issuing Breaks

=====

A Macintosh Plus can run MacTerminal 2.0, but the new Macintosh Plus keyboard cannot produce a "Break" in the same way.

Among others, users of Northern Telecom SL-1 PBX are affected by this change.

To work around the problem:

1. Use the 'Option' key on the new Macintosh Plus keyboard.
 - a. Break (0.2 sec): Option, Enter
 - b. Long Break (2 sec): Option, Shift, Enter
2. For short Break (0.2 sec), use the Apple Cluster Controller's "Attn" on the Pull-Down-Keypad.
3. When using the OLD keyboard: use the Enter key on the Keyboard only. (NOT on the Numeric Keypad):
 - a. 3278 mode: Long Break (2 sec): Shift, Enter
 - b. VT-100 mode:
 1. Break (0.2 sec): Enter
 2. Long Break (2 sec): Shift, Enter

Tech Info Library Article Number:1742



Tech Info Library

Scribe: Printing the apostrophe in letter quality mode

Revised: 2/12/86
Security: Everyone

Scribe: Printing the apostrophe in letter quality mode

=====

When the apostrophe appears in a almost horizontal position on a Scribe printing in letter quality mode, some people feel that:

1. there is something wrong with their Scribe
2. the Scribe has old ROM's which surely have been upgraded to take care of such a noticable problem.

Neither explanation is true. In regular mode, the Scribe prints a conventional apostrophe.

Apple Technical Communications

Tech Info Library Article Number:1743



Tech Info Library

Macintosh Finder 4.1: Maximum of 25 Selected Icons

Revised: 7/19/91
Security: Everyone

Macintosh Finder 4.1: Maximum of 25 Selected Icons

=====

Article Created: 18 February 1986
Article Last Reviewed: 2 February 1991
Article Last Updated:

TOPIC -----

Why does selecting numerous icons under Finder 4.1 produce an error message?

DISCUSSION -----

When you use Finder 4.1 to select and move a group of more than 25 icons to another icon (folder, Trash can, floppy disk, and so on.), the system responds with error ID=02, regardless of the view. You've reached the upper limit.

Copyright 1986,1991, Apple Computer, Inc.

Tech Info Library Article Number:1744



Tech Info Library

ImageWriter I: Problems with ImageWriter II driver version 2.0

Revised: 7/24/91
Security: Everyone

ImageWriter I: Problems with ImageWriter II driver version 2.0

=====

If the ImageWriter I starts printing normally and ends printing nonsense, the printer may be mistakenly driven by the new ImageWriter II driver version 2.0. Do NOT use this new driver with the old ImageWriter; the new driver takes up more space and gives you no new features because the old printer doesn't take color ribbons, doesn't print bidirectionally, and doesn't work with the single sheet feeder.

Apple Technical Communications

Tech Info Library Article Number:1745



Tech Info Library

ImageWriter II: Cable pinouts to Super Serial Card

Revised: 2/18/86
Security: Everyone

ImageWriter II: Cable pinouts to Super Serial Card

=====

Product # A9C0313
Part # 590-0335-A
ImageWriter II Super Serial Card
 Circular 8 DB 25
 1 <----> 20
 2 <----> 6,8
 3 <----> 2
 4 <----> 7
 5 <----> 3
 6 <----> NC
 7 <----> NC
 8 <----> 7
 Shield <----> Shield

Apple Technical Communications

Tech Info Library Article Number:1746



Tech Info Library

LaserWriter: Printing areas differ for printer engine and driver

Revised: 9/21/87
Security: Everyone

LaserWriter: Printing areas differ for printer engine and driver

=====

This article last reviewed: 18 February 1986

While the Canon engine has the capability of printing a 10.9 inch page, the LaserWriter driver sets the maximum image size to less than 10.9 inches. This is a feature of the LaserWriter driver dated February 10, 1986. The date appears in the Get Info window of the driver icon.

Tech Info Library Article Number:1748

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TITLE

Macintosh: System Error Codes Explained

Article ID: 1749
Created: 2/18/86
Modified: 1/11/00

TOPIC

This article explains what some Macintosh system errors actually mean. You can use them to interpret what is happening when your Macintosh gives these errors.

DISCUSSION

Because the Mac OS is a sophisticated, complex operating system, the difficulties a user encounters can be equally complex.

These are examples of some difficulties that may occur:

- A handle can be de-referenced.
- A routine can get a NIL pointer.
- The stack can dip into the heap for just a few cycles and not be caught by the stack sniffer.
- An application can forget to check an error code.

A Macintosh computer usually crashes with a system error code while running under System 6.0.x. Starting with System 7, errors are displayed in a different fashion. Instead of displaying an error code, the system translates the code to the appropriate words, like "Address Error".

Finding out what's wrong involves use of debugging tools, intricate knowledge of Macintosh memory structures, and familiarity with the application itself. Fixing it usually involves recompiling the source code. The table below explains some of the codes.

ID=01 Bus Error

This means the computer tried to access memory that doesn't exist. You can get this error on almost any Macintosh computer. If one of these computers tried to access one or more bytes beyond the total number of bytes in RAM, you see a bus error. You should never see this error on a Macintosh Plus or SE, because address references that are out of bounds "roll over." This means if one of these computers tries to access one byte beyond the total bytes in RAM, it actually accesses the first byte in memory. If you see this error on a Macintosh Plus or SE, it's reporting the wrong error or experiencing hardware failure.

ID=02 Address Error

The Motorola 68000 microprocessor can access memory in increments of one byte (8 bits), one word (16 bits), or one long word (32 bits). The microprocessor can access a byte of information at an odd or even memory address. But it must access a word or long word at an even memory address. So, when the microprocessor attempts to read or write a word or long word at an odd address, you see this error. Since that's a 50/50 proposition when running random code, this one shows up quite often.

ID=03 Illegal Instruction

The computer has a specific vocabulary of machine language instructions it can understand. If a computer tries to execute an instruction that isn't in its vocabulary, you see this error code. It's less likely than error 02, but still very common.

ID=04 Zero Divide Error

This error results if the microprocessor divides two numbers, and the divisor is zero. Sometimes a programmer puts these in as debugging aids, and then forgets to take them out.

ID=05 Range Check Error

Programmers can use an instruction in the Motorola 68000 to check if a number is within a certain range. This error indicates that the number tested isn't in the specified range.

ID=06 Overflow Error

..TIL01749-Macintosh_System_Error_Codes_Explained.pdf

Each number stored in a computer is given a certain amount of space. The larger the number, the more space is needed to represent the number. An overflow condition results if a generated number is too big for its allotted space. A Motorola 68000 instruction tests for an overflow condition, and displays this error if it detects an overflow.

ID=07 Privilege Violation

The Motorola 68000 runs in Supervisor or User mode. The Macintosh computer should always be in Supervisor mode, but sometimes is placed in User mode. Some of the instructions can only be executed in Supervisor mode. If the computer attempts one of these instructions while in User mode, a Privilege Violation error results.

ID=08 Trace Mode Error

A programmer can use a runtime debugger while in Trace mode. This allows tracing through a program one instruction at a time. You see this error if a debugger isn't installed and the 68000 is accidentally placed in Trace mode.

ID=09 and ID=10 Line 1010 & 1111 Trap

There are many routines in the Macintosh ROM that can be called by placing instructions in a program that aren't in the 68000's vocabulary. When the 68000 encounters such an instruction, it looks it up in the instruction table. This table gives the location of routines paired with each instruction. If it finds an entry in the table for the instruction, it branches to the routine. If there's no entry for the instruction, you see one of these errors.

ID=12 Unimplemented Core Routine

A programmer might set breakpoints in parts of a program to inspect for errors. This requires using a debugger. If a debugger isn't installed when a breakpoint occurs, you see this error code.

ID=13 Uninstalled Interrupt

The Macintosh uses an interrupt to identify when devices like keyboards and disk drives need service. Routines must be available in memory to tell the computer how to service the device. If those routines aren't available, you see this error.

ID=15 Segment Loader Error

Macintosh programs are broken up into segments, and each program will always have at least one segment. Multiple segments allow loading parts of the program into memory to provide more room for data in internal RAM. The segment loader is responsible for loading a needed segment into RAM. If the segment loader can't do this, you'll see this error.

ID=17 through ID=24 Missing Packages 0-7

The Macintosh uses packages to do specific tasks. Some of the packages are International Utilities, Binary-Decimal Conversion, Standard File Utilities, and Disk Initialization. These packages are located in the System file. If you get these errors, you probably have a damaged System file. Error codes 15, 16, 26, 27, 30, and 31 also come up when the System file is damaged. Try replacing the System file.

ID=25 Memory Full Error

You've probably run out of RAM. But you can get this error when an earlier error causes the Macintosh to falsely detect an out-of-memory condition.

ID=26 Bad Program Launch

The computer couldn't execute the application opened.

ID=28 Stack Ran into Heap

This is similar to the Memory Full error. It's a good idea to save your work frequently, and keep current backups of your hard disk data. When a system crash does occur, you'll lose less data if you've taken these precautions.

Other error codes can be found in the following Tech Info Library articles:

Article 9804: [**"Mac OS System Error Codes: -299 to -5553"**](#)

Article 9805: [**"Mac OS System Error Codes: 0 to -261"**](#)

Article 9806: [**"Mac OS System Error Codes: 1 to 32767"**](#)

Article 9808: [**"Mac OS System Error Codes: Uncommon Codes"**](#)

Article 16456: [**"Apple Remote Access: Error Codes"**](#)

Article 18173: [**"MacTCP: Error Codes Defined"**](#)

Article 18566: [**"PowerTalk and PowerShare: Error Code Listing"**](#)

Article 19791: [**"Open Transport: Error Codes"**](#)

Troubleshooting System Errors

It's a good idea to save your work frequently, and keep current backup copies of your hard disk data. When a system crash occurs, you'll lose less data if you've taken these precautions.

..TIL01749-Macintosh_System_Error_Codes_Explained.pdf

If you're getting system errors frequently, investigate these possibilities:

- Try to open the document with a current version copy of the application.
- Try opening other documents with the same copy of the application.
- Check to see if the document size exceeds the application size limits.
- Boot your system with extensions off (restart while pressing Shift).
- Any changes (new Control Panels, extensions, and so on.) you've made to the system might give you a clue to the cause of the crashes.
- Make a note of the desk accessories you had open at the time of the crash and exactly what you did before the crash.
- Make a note of the error ID or text, and the version numbers of the application and system software you were using.
- Try to recreate the behavior on another Macintosh computer.
- Perform a clean installation of your system software and try the application again.

EXTENDED Information - Apple Internal Use - Service Providers and Support Professional

Document Information

Product Area: Mac OS System Software

Category: General OS

Sub Category: General Topics

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Tech Info Library

Macintosh Plus SCSI Port: No Termination Power

Revised: 7/16/92
Security: Everyone

Macintosh Plus SCSI Port: No Termination Power

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Article Created: 19 February 1986
Article Last Reviewed: 2 July 1992
Article Last Updated: 2 July 1992

If a Macintosh Plus attached to a SCSI device hangs on power up, make sure that at least one device attached to the SCSI port is powered on.

Most other Macintoshes with the exception of PowerBooks, provide termination power (pin 25). The Macintosh Plus does NOT supply termination power because of power supply limitations. In a situation where the Macintosh Plus and the SCSI device don't boot properly, check with the SCSI device manufacturer to make sure the device is not expecting termination power from the Macintosh Plus.

Note also that even though the SCSI port is a DB-25 connector, it should not be used to connect any other serial or parallel devices. ONLY SCSI DEVICES should be attached to the SCSI port.

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Tech Info Library Article Number:1750



Tech Info Library

Macintosh SCSI: Description (1 of 2)

Revised: 7/1/92
Security: Everyone

Macintosh SCSI: Description (1 of 2)

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Article Created: 18 February 1986
Article Last Reviewed: 19 June 1992
Article Last Updated:

TOPIC -----

This is the first part of a two-part article on the Small Computer Systems Interface (SCSI) used in Macintosh computers.

DISCUSSION -----

History

Small Computer Systems Interface (SCSI or Scuzzy), a second generation development, was submitted to ANSI in 1982 for acceptance as a systems interface between computers and other peripherals. In its first generation, it was known as SASI or Shugart Associates Systems Interface, which Shugart developed for the commercial market between 1980 and 1982, designing it primarily as a system interface for disk drives. While employing the multiuser and bus arbitration of SASI, SCSI adds features and host processors on the bus. SCSI also insures full user device independence and allows the bus to handle differential drivers and receivers, increasing the speed and distance capability of the bus.

The European Computer Manufacturers Association (ECMA) is currently working on their own version of the SCSI document. No specific release date has been mentioned.

Function

With its simple arbitration scheme and well-defined command set, the SCSI bus can form the backbone of multi-processing and smart I/O systems that coordinate as many as eight SCSI adapters and controllers. Each SCSI controller can govern as many as eight peripherals, with an option to expand that number to 2048 (per SCSI controller). The network may be as

long as 25 meters for differentially driven signals or 6 meters long for single-driven devices.

Bus access and user arbitration

Two arrangements can interface the unit with the SCSI bus:

1. 50 pin
 - a. Differential driven signals
 - b. Maximum data transfer rate per user: 4 Megabytes
2. 25 pin
 - b. Single-wire driven signals
 - b. Maximum data transfer rate per user: 1.5 Megabytes

Apple Macintosh Plus supports a data transfer rate of 320 Kbytes/second. The Macintosh also uses a DB-25 connector identical to the RS-232 interface - which may lead to user identification problems in the future.

The network interface specifies the eight data lines (0 to 7) on the SCSI connector as device-ID lines, which serve as user addresses. SCSI resolves bus contention by address priority along with the status of the BSY (busy) and SEL (Select) lines. To initiate a transaction, a device first checks the control lines to determine if the bus is in use. If the BSY and SEL lines are not active, the device sets BSY and its own specified user-ID line (0 to 7). The highest selected line wins bus access, with all the other users deferring.

The ANSI specification does not detail address priority. Generally, assign higher priority to devices that are not fully buffered or that have smaller buffers. Lower priority should go to devices, such as printers, that have large buffers because they can allow deferred bus access to a greater degree than the buffers of limited storage devices.

The highest priority user first asserts its ID. After that, while still maintaining its device-ID line, the user raises the SEL line to signal bus arbitration, then raises the device-ID line of the device it wishes to communicate with, and then drops BSY, whereupon the selected device then raises BSY to complete the sequence. Once the arbitration stage is over, the devices move into either the MESSAGE or the COMMAND stage.

Bus utilization

Like ABLAP protocol, bus arbitration reduces network overhead time by not requiring data transfer between network users. Another measure of efficiency is the channel usage involved in actual data transfer, not in system control or system status, with system degradation increasing as more users try to get on the bus. Results from a test at NCR indicate that SCSI achieves better than 50% channel usage, well above the 30% channel usage designers generally consider as the maximum allowed. These results were obtained in laboratory conditions, but it still appears that SCSI is a great improvement over other data transfer schemes between multiple processors on a common bus.

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Tech Info Library Article Number:1752



Tech Info Library

Macintosh SCSI: Description (2 of 2)

Revised: 6/22/92
Security: Everyone

Macintosh SCSI: Description (2 of 2)

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Article Created: 18 February 1986
Article Last Reviewed: 19 June 1992
Article Last Updated:

TOPIC -----

This is the second part of a two-part article on the Small Computer Systems Interface (SCSI) used in Macintosh computers.

DISCUSSION -----

Concurrent bus activity

SCSI uses 'smart' controllers which can enhance bus usage so that initiators as well as targets can contend for the bus (which is why arbitration is needed in a multiprocessor environment). A target system, through its control unit, may contend to re-establish a connection with an initiator that has requested the target to perform some task. The target system's control unit can relinquish the bus so the unit and the system can make better use of the time it takes to respond to a command from an initiator. Subsequently, once the peripheral is ready to interact with the initiator again, the control unit can contend for the bus. After winning arbitration, the control unit reselects the initiator by raising the proper control lines. In this way, devices like tape drives and printers can temporarily disconnect when their buffers are full, allowing other operations to continue at the same time. This parallel activity is called MULTITHREADED I/O.

Message stage functions

A system must support the full SCSI implementation in order to send messages on the bus. This MESSAGE phase is necessary for setting up local conditions (ie., synchronous data transfer, etc..) for the following COMMAND stage.

The 'Identify' message establishes the physical data path between an initiator and a target. During this process, the initiator's processor on the SCSI bus (called the Host) saves a set of pointers that describe the current buffer location in the Host's memory. If the target then chooses to disconnect to perform its command or task, the saved pointers define the same buffer location when the target re-establishes the connection to the initiator. If either the target or the initiator cannot support messages, the target goes directly to the COMMAND phase. In this case, the target cannot disconnect until the data exchange is complete.

Command stage functions

The SCSI commands provide for many system tasks. The Enquiry command, for example, permits the SCSI system to determine the configuration of I/O processes without having the entire system on the bus go through a system definition regeneration. The I/O device responds to the Enquiry command by telling the initiator what type of device the I/O unit is and how to communicate with it. If the system software implements an Inquiry command as part of its initial booting process, the host can identify the characteristics of all the devices on the system at that time, eliminating a great deal of operator intervention and overhead.

Other commands allow peripheral control units to assign block numbers to the peripherals they control. The Logical Block Addresses (LBAs) usually refer to a single physical sector of a peripheral; however, they may also be part of a physical block or multiple physical blocks. A collection of contiguous logical blocks is known as a Logical Unit (LUN). A LUN can refer to a part of a peripheral (for example, one disk in a multi-disk drive), a single peripheral, or a group of peripherals, depending how the control unit is set up. This means that a control unit needs only to specify a LUN and LBA instead of a drive, cylinder, head, and sector address when addressing a random-access drive.

Data transfer modes

Data transfers between selected devices may be in either asynchronous or synchronous mode. Synchronous data transfer must be specified by both bus users during the command mode, otherwise data transfer mode defaults to asynchronous mode. During asynchronous mode, the REQ(request) and ACK(acknowledge) bus-control signals control the data pacing on a byte-by-byte basis between the two units, with a maximum data rate of 1.5 Mbytes/second. Synchronous data transfers involve a series of REQ commands and data without the immediate receipt of corresponding ACK signals, allowing a faster data transfer rate of up to 4 Mbytes/second. ACK signals sent by the receiving device are used to verify individual data byte transfers, with a pre-established offset between the actual transfer of a specific data byte and its acknowledged receipt. This REQ/ACK offset is part of the synchronous data transfer control agreed to by both parties beforehand.

Sources of further information:

1. Use SCSI devices for multiprocessor, smart-I/O systems; John Lohmeyer,

EDN magazine, January 24, 1985.

2. SCSI bus solves peripheral interface problems; Richard Barrett, MINI-MICRO SYSTEMS, May 1984.
3. Smart Interface standard anticipates needs of future minicomputers; Stephan Ohr, Electronic Design, October 31, 1984.
4. SCSI chip simplifies host-peripherals interface for microcomputer use; Ron Engelbrecht and Harry Mason, Electronic Design, October 31, 1984.
5. Multitasking controller speeds throughput to multiple disks; Robert Snively, Electronic Design, January 26, 1984.

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Tech Info Library Article Number:1753



Tech Info Library

RS-232 Cables: Maximum acceptable length depends on data rate

Revised: 6/17/92
Security: Everyone

RS-232 Cables: Maximum acceptable length depends on data rate

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Article Created: 18 February 1986
Article Last Reviewed: 9 June 1992
Article Last Updated:

TOPIC -----

Is there a way to figure out the maximum length of RS-232 cables?

DISCUSSION -----

The maximum length of RS-232 cables is related to the data rate. Thus, you can calculate maximum cable length based on the data rate. The table below provides the maximum length of RS-232 cables (average cable and special cable) for the various data rates.

Data rate (baud)	Maximum acceptable Feet of average cable	Maximum acceptable Feet of special cable
-----	-----	-----
19200	50	83
9600	100	163
4800	200	326
2400	400	652
1200	800	1304
600	1600	2608
300	3200	5216

Average cable is defined by its capacitance, 50 picofarads (pf) per foot. Special cable is defined by a lower capacitance, 30 pf/foot, which makes special cable more costly.

The top line of the table is defined by interface standard RS-232C. We have made the remaining lines stay within the standard by taking the next highest line and halving the baud rate to double the length.

How the Top Line Was Determined

The RS-232C interface standard was set by and is available from the Electronic Industries Association (EIA), Engineering Department, 2001 Eye St., Washington, D.C., 20006. Several data reference manuals and booklets also contain and explain the standard. Apple uses the EIA RS-232C interface standard for all of its serial printer and communications interface equipments (excluding any parallel interface or item on AppleTalk).

We have used this standard to determine maximum cable length by referring to the specified amount of integrity of the transmission of data through the cable. This amount of integrity is specified in terms of maximum signal distortion at the maximum cable capacitance and at the maximum data rate.

For cables, the standard specifies the following maximum limits:

- Time Data Signal Distortion: 1 millisecond or 4 percent, whichever is greater.
- Cable Capacitance: 2500 picofarads (pf)
- Data Rate: 20,000 bits/sec.

Because the highest supported data rate is 20Khz (only the Macintosh can go as fast as this), there is some "fudging" allowed for cable distance. As no maximum distance between units is called out, all the cable has to do is provide a connection that meets the distortion and capacitance limits while supporting the data rate.

Most data cable has an average capacitance of 50 picofarads per foot. 50 feet of such cable would have a capacitance of 2500 picofarads, the maximum allowable capacitance.

Special, more costly, low-capacitance cable with less than 30 pf/foot would have a capacitance of 2500 pf or less in a length of around 83 feet. Depending on the actual capacitance, the low capacitance cable could be a lot longer, as long as its total capacitance stayed under 2500 pf.

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Tech Info Library Article Number:1754



Tech Info Library

Pascal III: Mapping of SOS error codes

Revised: 2/18/86
Security: Everyone

Pascal III: Mapping of SOS error codes

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Pascal III maps SOS error messages 1 to 5 as Pascal error numbers 123 to 127 because of a numbering conflict.

For example, a user of Great Plains software, a Pascal III-based software package, posted Accounts Receivable and encountered a system crash during the merge or printing of the sorted sales journal. The system reported SOS error 123, so the error was really SOS error 01, Invalid SOS call number.

Apple Technical Communications

Tech Info Library Article Number:1755



Tech Info Library

ProDOS: Saving the LoRes screen image

Revised: 2/18/86
Security: Everyone

ProDOS: Saving the LoRes screen image

=====

ProDOS gives the 'NO BUFFERS AVAILABLE' message when you try to load a file, such as a saved text or LoRes screen image, into already used memory. Since the text screen area is marked as inuse by the system, ProDOS can not load the saved screen shot.

A solution makes that memory show as free while loading the picture:

```
10 A=PEEK(48984) : REM save the current memory bitmap area
20 POKE 48984,192 : REM Tell ProDOS that the Screen memory is not used
30 PRINT CHR$(4);"BLOAD IMAGE,A$400" : REM load in the screen file
40 POKE 48984,A :REM and put the bitmap back the way we found it
```

Apple Technical Communications

Tech Info Library Article Number:1756



Tech Info Library

Super Serial Card: Cable for ImageWriter II and APM (12/96)

Revised: 12/16/96
Security: Everyone

Super Serial Card: Cable for ImageWriter II and APM (12/96)

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Article Created: 18 February 1986
Article Reviewed/Updated: 16 December 1996

TOPIC -----

Listed below are the pinouts for connecting the Super Serial Card to an ImageWriter II printer or Apple Personal Modem.

DISCUSSION -----

ImageWriter II
or
Apple Personal Modem Super Serial Card

Circular 8	DB 25
1 <--->	6,8
2 <--->	20
3 <--->	3
4 <--->	7
5 <--->	2
6 <--->	NC
7 <--->	NC
8 <--->	7
Shield <--->	Shield

For more information, search the Tech Info Library article "ImageWriter II: Connector cables for all Apples".

Article Change History:
16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1757



Tech Info Library

Macintosh Plus: Specifications (Discontinued 10/90)

Revised: 9/27/93
Security: Everyone

Macintosh Plus: Specifications (Discontinued 10/90)

Article Created: 19 February 1986
Article Reviewed/Updated: 19 June 1992

TOPIC -----

This article gives the technical specifications for the Macintosh Plus computer.

DISCUSSION -----

MICROPROCESSOR

- Motorola MC68000, 32-bit architecture, 8 (7.8336) MHz clock speed

MEMORY

- 1 MB of RAM (Random Access Memory), up to 4 MB using 1 MB SIMMs (Single Inline Memory Modules), 150ns or faster
- 128K of ROM (Read Only Memory)

DISK DRIVE

- One built-in 800K disk drive. (Optional external 400K or 800K disk drive.)

SCREEN

- Built-in 9-inch diagonal, 512 by 342-pixel high-resolution bit-mapped monochrome display

INTERFACES

- Mouse port, DB-9 connector
- One eight-bit keyboard bus, 300 baud, RJ11 connector for Macintosh Plus Keyboard
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally), circular Mini DIN-8 connectors
- SCSI interface
- External Disk Drive interface (400K or 800K disk drives)
- Sound port for external audio amplifier or headphones

CLOCK/CALENDAR

- CMOS custom chip with 4.5 volt battery backup (Eveready No. 523 or equivalent)

ELECTRICAL REQUIREMENTS

- Line voltage: 105 to 125 volts AC
- Line frequency: 50 to 60 hertz
- Maximum power: 60 watts

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: -40 to 122 degrees F (-40 to 50 C)
- Relative humidity: 5% to 90% relative humidity
- Altitude: 15,000 feet (4615 meters)

SIZE AND WEIGHT

- Height: 13.6 inches (34.5 cm)
- Width: 9.6 inches (24.4 cm)
- Depth: 10.9 inches (27.6 cm)
- Weight: 16 lb. 8 oz. (7.5. kg)

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Tech Info Library Article Number:1759



Tech Info Library

Macintosh Plus: Using the AppleTalk DB-9 connection module

Revised: 7/16/92
Security: Everyone

Macintosh Plus: Using the AppleTalk DB-9 connection module

=====

Article Created: 19 February 1986
Article Last Reviewed: 2 July 1992
Article Last Updated:

To use the DB-9 AppleTalk connection module (used with Macintosh 128K and 512K models) with the Macintosh Plus you will need to either use the Apple DB-9 to circular 8 adapter cable (part 590-0553 or 590-0341) or make an adapter cable with the following pinouts.

Macintosh Plus: Circular 8 to DB-9 Adapter Pinouts

Circular 8	Signal	DB-9
1	HSKo (+12V)	6
2	HSKi	7
3	TXD-	5
4	GND	3*
5	RXD-	9
6	TXD+	4
7	No Wire	
8	RXD+	8
	GND	1*

* Pins 1 and 3 on the DB-9 end are jumpered together.

The pins on the male end of the circular 8 connector are numbered as shown:

6 7 8
3 4 5
1 2

The pin assignments for the DB-9 connector on the AppleTalk connection module are as follows:

Signal Name	Pins
	DB-9

RXD+	8
TXD+	4
RXD-	9
TXD-	5
Case ground	DO NOT DIRECT CONNECT CASE GROUND TO CABLE SHEILD.

The case ground signal goes from the connector module shell through a ground isolation network in the connector module to the shield of the cable. The ground isolation network isolates grounds and helps prevent ground currents. No further case grounding should be made.

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Tech Info Library Article Number:1760



Tech Info Library

Macintosh Plus: Imagewriter I Cable Pinouts

Revised: 5/27/93
Security: Everyone

Macintosh Plus: Imagewriter I Cable Pinouts

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Article Created: 19 February 1986

Article Change History

- 05/25/93 - CORRECTED
- To update pinouts for the DB-25 to Circular-8 Cable

TOPIC -----

Below is the wiring diagram of the connection between a Macintosh Plus and an Apple Imagewriter I. Cables #1 and #2 may be used together for the connection or custom cable #3 may be constructed.

DISCUSSION -----

CABLE 1

Macintosh Imagewriter Cable
590-0169

		Macintosh		Imagewriter	
		Connector		Connector	
		(DB-9)		(DB-25)	
Comments	Signal Name	Pin	Pin	Signal Name	Comments
Chassis Ground	GND	1	<----> 1	GND	Chassis/Frame Ground
Signal Ground	SGND	3, 8	<--> 7	GND	Signal Ground
Transmit Data	Tx	5	----> 3	Rx	Receive Data
Ready to Send	HSK	7	<---- 20	DTR	Data Terminal Ready
Signal Ground	SGND	8	(Connected to pin 3 on the Macintosh side)		
Receive Data	Rx	9	<---- 2	Tx	Transmit Data

CABLE 2

Macintosh Plus Circular 8 to DB-9 Adapter

699-0372

Circular 8	Signal	DB-9
1	HSKo (+12V)	6
2	HSKi	7
3	TXD-	5
4	GND	3*
5	RXD-	9
6	TXD+	4
7	No Wire	
8	RXD+	8
	GND	1*

* Pins 1 and 3 on the DB-9 end are jumpered together.

The pins on the male end of the circular 8 connector are numbered as shown:

```
  6 7 8
3 4   5
  1 2
```

CABLE 3

Macintosh Plus Circular 8 to DB-25 Custom Cable

Circular 8	DB-25
1 HSKo (+12V)	6 & 8
2 HSKi	20 DTR
3 TXD-	3 RxD
4 GND	7 GND
5 RXD-	2 TxD
6 TXD+	No Wire
7 No Wire	No Wire
8 RXD+	7 GND

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Tech Info Library Article Number:1761



Tech Info Library

Macintosh Plus: Modem 300 & Modem 1200 cable pinouts

Revised: 7/17/92
Security: Everyone

Macintosh Plus: Modem 300 & Modem 1200 cable pinouts

Article Created: 19 February 1986
Article Last Reviewed: 2 July 1992
Article Last Updated:

Below is the wiring diagram of the connection between a Macintosh Plus and an Apple Modem 300 & 1200. Cables 1 and 2 may be used together for the connection or a custom cable 3 may be constructed.

CABLE 1

Macintosh Modem Cable
590-0197

Macintosh Connector (DB-9)			Apple Modem Connector (DB-9)		
Comments	Signal Name	Pin	Pin	Signal Name	Comments
Chassis, frame Ground	GND	1	<--+> 8	GND	Chassis, Frame Ground
Signal Ground	SGND	3	| <--+> 3	SGND	Signal Ground
Output; Transmit Data	TXD	5	<----> 9	RCD	Input; Receive Data
12-Volt Line		6	<----> 6	DTR	
Output; Ready to Send	RTS	7	<----> 7	DCD	Input; Data Carrier Detect
Input; Receive Data	RCD	9	<----> 5	TXD	Output; Transmit Data

NOTE: There are many variations on connecting pins 1, 3 and 8, but the basic intent is to bring all three of those pins to ground on the Mac side. Connect Signal Ground to Chassis Ground if you want a slightly better noise margin.

CABLE 2

Macintosh Plus Circular 8 to DB-9 Adapter
699-0372

Circular 8	Signal	DB-9
1	HSKo (+12V)	6
2	HSKi	7
3	TXD-	5
4	GND	3*
5	RXD-	9
6	TXD+	4
7	No Wire	
8	RXD+	8
	GND	1*

* Pins 1 and 3 on the DB-9 end are jumpered together.

The pins on the male end of the circular 8 connector are numbered as shown:

```
  6 7 8
 3 4 5
  1 2
```

CABLE 3

Macintosh Plus Circular 8 to DB-9 Custom Cable

Circular 8	DB-9
1 HSKo (+12V)	6 DTR
2 HSKi	7 DCD
3 TXD-	9 RCD
4 GND	3,8 SGND,GND
5 RXD-	5 TXD
6 TXD+	No Wire
7 No Wire	No Wire
8 RXD+	8 GND

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Tech Info Library Article Number:1762



Tech Info Library

Apple IIC serial port: Cable pinouts to ImageWriter II and APM

Revised: 5/28/86
Security: Everyone

Apple IIC serial port: Cable pinouts to ImageWriter II and APM

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Product # A2C4312
Part # 590-0333-B

ImageWriter II	Apple IIC
or	5 pin
Apple Personal Modem	Serial Port

Circular 8	DIN 5
------------	-------

1	<--->	1
2	<--->	5
3	<--->	2
4	<--->	3
5	<--->	4
6	<--->	NC
7	<--->	NC
8	<--->	3
Shield	<--->	Shield

Apple Technical Communications

Tech Info Library Article Number:1763



Tech Info Library

Daisy Wheel Printer: Specifications (Discontinued)

Revised: 9/15/93
Security: Everyone

Daisy Wheel Printer: Specifications (Discontinued)

=====

Article Created: 20 February 1986

I. Technical Specifications

- A. Print Speed: 40 characters per second (average)
- B. Interface: Asynchronous Serial (RS-232C) OCITT-V-24
- C. Forms: Single sheet or continuous forms
 - Maximum width: 15 inches (38.1 cm)
- D. Fonts: 130-character "daisy" print wheels in various alphanumeric type styles, including: Courier 10 pitch, Prestige Elite 12 pitch, Gothic 15 pitch, and Executive/Boldface in English, French, German, and many other languages.
- E. Character Spacing in characters per inch (CPI):
 - 1. 10
 - 2. 12
 - 3. 15
 - 4. Proportional spacing
 - Maximum 198 characters per line
- F. Command set:
 - ASCII
 - space, backspace, carriage return, line feed, horizontal tab, form feed, end-of-text, acknowlegde, XON/XOFF
- G. Special Mode Commands:
 - Graphics mode, forward and backward print mode, program mode

for hammer intensity and ribbon movement

H. Weight and Dimensions:

	pounds	kilograms
1. Weight:	37.0	16.8
	inches	centimeters
2. Width:	23.22	59.0
3. Height:	6.87	17.5
4. Depth:	14.84	37.7

II. System Configuration

A. Lisa system

B. Apple III system

C. Apple IIe or Apple II Plus system

-- with Apple II Super Serial Interface Card installed

III. Features

A. Snap-in ribbon cartridge

B. Switch-selectable features:

- horizontal and vertical formatting
- forms length selection
- automatic form feed

Apple Technical Communications

Tech Info Library Article Number:1764



Tech Info Library

HFS: Running applications under the Hierarchial File System

Revised: 9/1/87
Security: Everyone

HFS: Running applications under the Hierarchial File System

=====

Some applications have difficulty accessing their files when stored on an HFS volume. If an application has trouble finding files, try storing the files in one of the following locations:

1. root level
2. system folder
3. in the folder containing the application
4. on a MFS diskette/volume containing the application.

Some applications may not work with the HFS at all. In these cases, contact the software company to find out if there is a workaround or when their product will be revised to work with HFS.

Tech Info Library Article Number:1765



Tech Info Library

HyperCard: Using It With Video Tape

Revised: 5/31/89
Security: Everyone

HyperCard: Using It With Video Tape

=====

This article last reviewed: 5 January 1988

HyperCard can be used for composing interactive videos by doing the following:

1. Use a high end VCR or VTR (3/4 inch tape) that allows you to accurately control tape position.
2. Record frame number information on a frame control track along with the video signal. If the VCR or VTR does not have this feature, HyperCard can not accurately control what is played from the video recorder.
3. Write your own custom HyperCard XCMD commands to control the VCR or VTR.

For further information on compatible VCR or VTR units, search under: Sony Corporation of America.

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Tech Info Library Article Number:1768



Tech Info Library

Apple IIC Numeric Keypad

Revised: 3/3/86
Security: Everyone

Apple IIC Numeric Keypad

=====

Apple makes no numeric keypad for the IIC, but Computers & More has developed an Apple IIC numeric keypad with 10 numerals, period, return(+), minus, tab, left arrow, right arrow, and down arrow. It is installable by any Tech, requiring no soldering and a case modification only if a disconnect plug is desired in the IIC. Retail is suggested at \$ 99.95 with customary margins. A disconnect kit is available for an additional \$ 20.00 . For information and availability contact:

Computers & More
C & M Mfg. Div.
2400 Ave I
Huntsville, Tx 77340
(409)291-6005
10-6 CST
AppleLink address: M2094

Apple Technical Communications

Tech Info Library Article Number:1769



Tech Info Library

Macintosh 512K: Problems installing new drivers on the HD20

Revised: 9/18/87
Security: Everyone

Macintosh 512K: Problems installing new drivers on the HD20

=====

This article last reviewed: 3 March 1986

When you use Installer to install new drivers on an HD20 using a Macintosh 512K, an error is generated ("File System not found on System Tools for..."). This problem may have its origin in HFS. There are three workarounds for it:

1. Drag a copy of the System Folder from the Tools Disk to update the HD20,
2. Move the System file outside of the System Folder when using Installer 2.0, or
3. Use Printer Installation v1.0, part number 690-5075-A.

NOTE: This problem has been fixed in the Macintosh Plus.

Tech Info Library Article Number:1770



Tech Info Library

MacTerminal 2.0: Changes that affect 3278 emulation

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0: Changes that affect 3278 emulation

=====

Following are some of the changes in Macterminal 2.0 that affect 3278 emulation:

1. 25th LINE: For status line. You need, of course, to re-configure your AppleLine.
2. NEW LINE: Now supported! The "Return" key is now NEW LINE. The "Enter" key retains its old function, ENTER.
3. NUMERIC KEYPAD: Remapped to include all 3278 keys--no numeric keys!
4. PASTE in PROFS: Now you can paste data into a PROFS file as well as any other IBM application that does not use line numbering. (Only through an AppleLine, though.) Pasting multi-line text selections into IBM 3278 documents with MacTerminal 1.1 caused ENTER to be sent after each line. This problem has been fixed.
5. RECORD SCREENS: More trap-conditions were added. You still can't see your ISPF screens, but at least in plain TSO you can LIST a file, and it'll be recorded.

NOTE: The selection box for Recording Screens appears under FILE TRANSFER!

6. CURSOR POSITIONING OVERRUN: If you work with a protocol converter that can't handle the big burst of characters sent on cursor positioning (up to 312 chars...), put some DELAY BETWEEN CHARS!
7. DELETE on Pull-Down Keypad: Now sends the right sequence ('7F'). There is no way to produce '1F'.
8. SHIFT-TAB for BackTab has been added.
9. APPLE CLUSTER CONTROLLER: Full support now exists for Pull-Down Keypad.
10. Increased throughput: This is probably more noticable at higher baud

rates, but MacTerminal 2.0 receives and displays characters about 1.5 times more quickly as version 1.1.

Additional MacTerminal 2.0 differences are documented in the Tech Info Library article entitled "MacTerminal 2.0: Differences."

Tech Info Library Article Number:1772



Tech Info Library

Apple Modem 300/1200: Configuring it with the Apple IIe

Revised: 3/3/86
Security: Everyone

Apple Modem 300/1200: Configuring it with the Apple IIe

=====

I. Switch settings

A. For 300 baud:

1. Super Serial Card:

		1	2	3	4	5	6	7			1	2	3	4	5	6	7	
	ON	X			X	X	X	X		ON	X		X	X		X		
SW1										SW2								
	OFF		X	X						OFF		X			X		X	
			1	2	3	4	5	6	7			1	2	3	4	5	6	7

-- Jumper Block to MODEM

2. Modem:

UP				X
DOWN	X			
	1	2	3	
	CD	BC	DTR	

-- Switch 2 can be up or down; it isn't used.

B. For 1200 baud:

1. Super Serial Card:

		1	2	3	4	5	6	7			1	2	3	4	5	6	7	
	ON		X	X	X	X	X	X		ON	X		X	X		X		
SW1										SW2								
	OFF	X								OFF		X			X		X	
			1	2	3	4	5	6	7			1	2	3	4	5	6	7

-- Jumper Block to MODEM

2. Modem:

UP		X	X
DOWN	X		
	1	2	3
	CD	BC	DTR

II. Connection:

A. Cable IIe: Apple Service Part Number 590-0121

Super Serial	Apple
Interface Card	Modem 300/1200
DB-25	DB-9
1	8
2	9
3	5
6	2
7	3
8,5	7
20	6

Apple Technical Communications

Tech Info Library Article Number:1773



Tech Info Library

ImageWriter II: Networking Options Available (1/96)

Revised: 1/30/96
Security: Everyone

ImageWriter II: Networking Options Available (1/96)

Article Created: 03 March 1986
Article Reviewed/Updated: 30 January 1996

TOPIC -----

This article describes the networking options available for the ImageWriter II Printer.

DISCUSSION -----

The LocalTalk option card for the ImageWriter II makes the ImageWriter II a shared resource on an AppleTalk network. The option lets you distinguish individual printers by assigning them unique names using the Namer accessory. If more than one printer of the same name resides on the same network, the option appends a number to the name.

Using the LocalTalk Bridge software, you can also tie your LocalTalk Option Card equipped ImageWriter II Printer to an Ethernet or Token Ring network -- eliminating the need to install a router or repeatedly switch network connections. The LocalTalk Bridge software uses a host computer as a bridge between the LocalTalk portion of a network and either Ethernet, or Token Ring portion of a network.

The Apple LocalTalk Bridge (M3246Z/A) comes with the LocalTalk Bridge software, installer, and User's Guide and has the following requirements:

- A Macintosh or Workgroup Server running Mac OS version 7.0 or later
- At least 70K of RAM
- An available LocalTalk port
- A LocalTalk connector and cable
- An Ethernet connection or Token Ring connection
- Appropriate network cables

Article Change History:
30 Jan 1996 - Corrected information on LocalTalk Bridge.

..TIL01774-ImageWriter_II-Networking_Options_Available_1-96_(TA33729).pdf

22 Jan 1996 - Revised the title to better reflect article contents.

07 Jul 1995 - Updated to include LaserWriter Bridge information.

Support Information Services

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Tech Info Library Article Number:1774



Tech Info Library

Brother HR-15 Printer: Configuring it with an Apple IIC

Revised: 3/3/86
Security: Everyone

Brother HR-15 Printer: Configuring it with an Apple IIC

=====

The Brother HR15 printer requires +15 volts on several of its lines to accept data from the Apple IIC. This voltage is not available on any of the Apple IIC's serial port lines, so the existing cable for the Apple IIC does not work with the Brother HR15 printer.

Companies sell to dealers ready made cables that connect the Brother HR15 printer to the Apple IIC. One such company is Belkin Components (213-644-3184); they suggest a retail cost of \$24.95 for the cable.

If you wish to constuct your own cable, here are the pinouts:

Apple IIC	Brother printer
1	6,8
2	3
3	7
4	2
5	20
Shield	1
	4,5

The switches on the HR15 should be set as follows:

Switch 1 - Rear	Switch 2 - Rear
1-CLOSE	1-CLOSE
2-CLOSE	2-CLOSE
3-CLOSE	3-OPEN (read 8 bits, no parity)
4-CLOSE	4-CLOSE
5-CLOSE	5-CLOSE
6-CLOSE	6-CLOSE
7-CLOSE	7-CLOSE
8-CLOSE	8-CLOSE

The serial port on the Apple IIC should be configured as follows:

PIN 146/1111

Apple Technical Communications

Tech Info Library Article Number:1775



Tech Info Library

Macintosh 512K: Using external 800K drives without a ROM upgrade

Revised: 3/31/92
Security: Everyone

Macintosh 512K: Using external 800K drives without a ROM upgrade

=====

Article Created: 3 March 1986
Article Last Reviewed: 31 March 1992
Article Last Updated: 31 March 1992

TOPIC -----

Will the external 800K drive work on a Macintosh 512K?

DISCUSSION -----

The external 800K drives will work on a Macintosh 512K that does NOT have a ROM upgrade. However, to use the external 800K drive with the Macintosh 512K, copy these three files:

1. System
2. Finder 5.1 or greater
3. Hard Disk 20

to your startup disk from the disk "Macintosh System Update for Macintosh 512K".

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Tech Info Library Article Number:1777



Tech Info Library

Macintosh Plus: Distribution of Features in System File and ROMs

Revised: 5/10/89
Security: Everyone

Macintosh Plus: Distribution of Features in System File and ROMs

=====

To distinguish between the contents of the new ROMs on the Macintosh Plus logic board and the contents of the new System file (3.0 and greater), keep in mind the locations of the following features:

New ROMs only:

1. HD 20 Driver
2. Zoom Box
3. HFS

Both new ROMs and new System file (3.0 and greater):

4. AppleTalk Driver
5. System Font
6. Serial Driver
7. Numerics Package
8. Elementary Functions Package

Features 4 through 8 are contained in BOTH the ROMs and the System file in order to maintain compatibility with the old ROMs.

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Tech Info Library Article Number:1778



Tech Info Library

Mini DIN-8: Serial pinouts for Hayes modems

Revised: 7/17/92
Security: Everyone

Mini DIN-8: Serial pinouts for Hayes modems

=====

Article Created: 3 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

TOPIC -----

What are the cable pinouts for a Macintosh Plus or later connected to a Hayes modem (Mini DIN-8 to DB-25)?

DISCUSSION -----

signal	dir- ection	Macintosh Plus & later		Hayes DCE connector	signal	dir- ection
		Mini	Circular DIN-8			
HSKo (DTR)	out	1		6	DSR	in
				20	DTR	in
HSKi (CTS)	in	2		8	DCD	out
				5	CTS	out
TxD-	out	3		2	TxD	out
Gnd		4		1	Gnd	
		8		7		
RxD-	in	5		3	RxD	in
		6				
		7				
					no connection	
					no connection	

Connect pins:

- 1. Macintosh side of cable: 4 and 8

2. Hayes side of cable:

- a. 6 and 20
- b. 8 and 5
- c. 1 and 7

The pins on the male end of the circular Mini DIN-8 connector are numbered as shown:

```
  6 7 8
 3 4   5
  1 2
```

You could also use the Apple II Printer - Mini DIN-8 Cable (part number 590-0556 or 590-0335), although the pinouts are slightly different.

Below are the pinouts for connecting the Hayes V series 9600 baud modems to the Macintosh with a DIN-8 serial port, direct from Hayes:

Hayes 9600 V	Macintosh
1-7	4-8
2	3
3	5
5	2
4	1

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Tech Info Library Article Number:1780



Tech Info Library

ProDOS Assembler EdAsm 1.1: Loading relocatable files

Revised: 4/9/91
Security: Everyone

ProDOS Assembler EdAsm 1.1: Loading relocatable files

=====

Before you use ProDOS Assembler EdAsm 1.1 or 1.0 to load relocatable routine files, make sure the files are longer than 1K in code.

For example, the following program uses the files RBOOT and RLOAD under the ProDOS environment to load a relocatable routine file READBITS.0, file type REL, 87 bytes long:

```
10 AD=0
20 PRINT CHR$(4);"BRUN RBOOT"
30 AD=USR(0),"READBITS.0"
```

However, when the program runs, the error "No Buffers Available / Break in 30" occurs under BASIC.SYSTEM version 1.1, ProDOS version 1.1.1, and ProDOS EdAsm, release 1.0 dated 15-JAN-84.

To workaroud the problem, insert:

```
DS 1024,$EA
```

at the end of the program.

Apple Technical Communications

Tech Info Library Article Number:1781



Tech Info Library

AppleWorks IIe: Connecting it to a Diablo 620 API printer

Revised: 3/3/86
Security: Everyone

AppleWorks IIe: Connecting it to a Diablo 620 API printer

=====

A. Apple IIe

1. Super Serial Interface Card settings

	1	2	3	4	5	6	7		1	2	3	4	5	6	7
ON		X	X	X		X	X	ON	X	X					X
SW1								SW2							
OFF	X					X		OFF		X	X	X	X		
	1	2	3	4	5	6	7		1	2	3	4	5	6	7

-- Jumper block points to TERMINAL

2. AppleWorks settings

- a. Carriage: 11"
- b. Linefeed after carriage return: YES
- c. Underlining: The Diablo 620 API makes an underlines by printing the character, backspacing one character, and printing the underline.

d. Special Codes

-- Check the printer manual.

	Begin	End
1. Boldface:	Esc W	Esc &
2. Underline:	Esc R	Esc R
3. Superscript:	Esc U	Esc D
4. Subscript:	Esc D	Esc U

5. Proportional Spacing 1: Esc P Esc Q

B. Cabling

Super Serial Interface Card	Diablo 620
DB-25	DB-25
2	2
3	3
6	6
7	7
20	20

C. Diablo 620

1. Switch settings

- 1 - On
- 2 - Off
- 3 - Off
- 4 - On
- 5 - Off
- 6 - Off
- 7 - Off
- 8 - On

-- 1200 baud, no parity, 8 data bits, 1 stop bit

Apple Technical Communications

Tech Info Library Article Number:1782



Tech Info Library

AppleWorks IIe: Connecting a NEC 3510 letter quality printer

Revised: 3/3/86
Security: Everyone

AppleWorks IIe: Connecting a NEC 3510 letter quality printer

=====

A. Apple IIe

1. Super Serial Interface Card settings:

	1	2	3	4	5	6	7		1	2	3	4	5	6	7
ON				X		X	X	ON	X	X					X
SW1								SW2							
OFF	X	X	X		X			OFF		X	X	X	X		
	1	2	3	4	5	6	7		1	2	3	4	5	6	7

-- Jumper block points to TERMINAL

2. AppleWorks settings

a. Carriage: 11"

b. Linefeed after carriage return: YES

c. Underlining: The NEC 3510 LQP makes an underlines by printing the character, backspacing one character, and printing the underline.

d. Special Codes

-- Check the printer manual.

Begin End

1. Boldface: Esc * Carriage Return

2. Underline: Esc - Esc '

3. Superscript: Esc ; Esc :

4. Subscript: Esc : Esc ;

5. Proportional Spacing 1: Esc H Esc I

B. Cabling

Super Serial	
Interface Card	NEC 3510
DB-25	DB-25
2	2
3	3
7	7
19	19

C. NEC 3510

1. Switch settings

a. Front panel

- 1 - Off
- 2 - Off
- 3 - On
- 4 - Off
- 5 - On
- 6 - Off
- 7 - Off
- 8 - Off

b. Back panel

- 1 - Off
- 2 - Off
- 3 - Off
- 4 - Off

-- 9600 baud, no parity, 8 data bits, 1 stop bit

Apple Technical Communications

Tech Info Library Article Number:1783



Tech Info Library

Apple Dot Matrix Printer: Specifications (Discontinued)

Revised: 10/7/93
Security: Everyone

Apple Dot Matrix Printer: Specifications (Discontinued)

=====

I. Technical Specifications

A. Printing method:

- 9-wire impact print head (user-replaceable)
- Logic-seeking, bi-directional printing

B. Print speed in draft mode:

- 120 characters per second
- 70 lines per minute

C. Print modes:

1. High Resolution: 160 x 144 dots per in. (6.2 x 5.6 dots per mm)
2. Normal Resolution: 96 x 72 dots per in. (3.7 x 2.8 dots per mm)
3. Draft

D. Typestyles available:

1. Courier 10 pitch.
2. Prestige Elite 12 pitch
3. Gothic 15 pitch
4. Proportional space: Executive and Modern
5. Modern: 10 pitch, 12 pitch, 1/4 in., 1/3 in.
6. Classic: 1/4 in., 1/3 in.

..TIL01784-Apple_Dot_Matrix_Printer-Specifications_Discontinued.pdf

E. Typefaces available: Regular, Bold, Italic, Shadow, Hollow, Underlined

F. Line spacing:

1. Minimum: 1/144 in.
2. Maximum: 99/144 in.
3. Any value in between, including:
 - 1/6 in. (24/144 in.)
 - 1/8 in (18/144 in.)

G. Controls:

1. Printer Select/Deselect
2. Top-of-form feed
3. "Paper out" indicator

H. Paper accommodated:

1. Single sheets, rolls, fan-fold, or forms
2. Up to 10 in. wide
3. Up to 1/16in. thick

I. Number of copies: Original plus three copies

J. Paper feed method: Friction or sprocket pin feed, loaded from rear top

K. Ribbon: Black fabric, inked

L. Driving method: Stepper motor

M. Weight and dimensions:

- | | | |
|------------|--------|-------------|
| | pounds | kilograms |
| 1. Weight: | 18.7 | 8.5 |
| | inches | centimeters |
| 2. Width: | 15.5 | 39.8 |
| 3. Depth: | 11 | 28.5 |
| 4. Height: | 4.75 | 12.5 |

N. Power requirements:

1. 115V +10% at 60 Hz

2. 100V +10% at 50/60 Hz

3. 220V +10% at 50 Hz

4. 240V +10% at 50 Hz

O. Power consumption:

1. Operating: 180 W maximum

2. Standby: 16W

P. Environmental requirements:

1. Ambient temperature in degrees:

	Fahrenheit	Celsius
a. Operating:	41 to 104	5 to 40
b. Storage:	-77 to +140	-25 to +60

2. Relative humidity:

- a. Operating: 10 - 85%, noncondensing
- b. Storage: 0 - 90%, noncondensing

Apple Technical Communications

Tech Info Library Article Number:1784



Tech Info Library

Macintosh: Cable or Pin Connections to Hayes External Modems

Revised: 6/17/92
Security: Everyone

Macintosh: Cable or Pin Connections to Hayes External Modems

=====

Article Created: 29 January 1988
Article Last Reviewed: 15 June 1992
Article Last Updated:

TOPIC -----

What cable do I use to connect my Macintosh II to a Hayes external modem?
Can you give me information on how to build my own?

DISCUSSION -----

An Apple-manufactured cable, part number A9C0314, connects a Macintosh Plus, Macintosh SE, or Macintosh II to any Hayes external modem. This cable also works with most Hayes-compatible external modems. The cable is listed on product sheets as the Apple II Printer - 8 Cable.

You can also build your own cable with these pin connections:

Mini Din-8 Male	DB-25 Male
-----	-----
1 HSK	20 DTR
3 TXD -	2 RXD
4 GND	7 GND
5 RXD -	3 TXD

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Tech Info Library Article Number:1785



Tech Info Library

Macintosh Plus External 800K Disk Drive: Formatting environments

Revised: 9/18/87
Security: Everyone

Macintosh Plus External 800K Disk Drive: Formatting environments

=====

This article last reviewed: 3 March 1987

Whenever possible, you should update your application disks with the latest System and Finder files.

Below is a list of environments and the consequences for formatting, either in erasing or initializing.

1. Finder 4.1 with System less than 3.0

- a. Initializing: Does not initialize a blank diskette in either drive and displays the message "Init failed".

Using Finder 4.1 with System 2.0, we were able to initialize double-sided disks with no failures. This environment always formatted the disk as an 800K volume.

- b. Erasing: When you choose to erase, the Macintosh Plus erases a disk as an 800K volume, even if the disk was previously formatted as a 400K volume.

2. Finder 4.1 with System 3.0

- a. Initializing: Asks if you want single- or double-sided.
- b. Erasing: Only double-sided disks (800K)

2. Finder 5.1 with System 3.0

- a. Initializing: Asks if you want single or double sided.
- b. Erasing: Single- or double-sided



Tech Info Library

MacTerminal 2.0 3278 emulation: Functions on different keys

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0 3278 emulation: Functions on different keys

=====

With AppleLine:
(Hexidecimal equivalence of Enter: 0D0A or 1B4F4D)

Function:	Break	Enter	Long Break	Send Answerback Message
-----------	-------	-------	---------------	----------------------------

key or keys:

Pull-down keypad	----	----	----	----
---------------------	------	------	------	------

on Macintosh OLD KEYBOARD	see note	Enter	Shift Enter	Command Enter
------------------------------	-------------	-------	----------------	------------------

OLD KEYPAD	----	Enter	----	----
------------	------	-------	------	------

on Macintosh XL KEYBOARD	see note	Enter	Shift Enter	Command Enter
-----------------------------	-------------	-------	----------------	------------------

XL KEYPAD	----	Enter	----	----
-----------	------	-------	------	------

on Macintosh Plus KEYBOARD	see note	Enter	----	----
-------------------------------	-------------	-------	------	------

Note: Connected to an AppleLine, MacTerminal 2.0 has no 3278 "Break" function on the Macintosh, Macintosh XL, and Macintosh Plus.

With Apple Cluster Controller:

Function:	Break	Enter	Long Break	Send Answerback Message
-----------	-------	-------	---------------	----------------------------

key or keys:

Pull-down keypad	----	----	Attn	----
on Macintosh OLD KEYBOARD	----	Enter	Shift Enter	
OLD KEYPAD	----	Enter	----	----
on Macintosh XL KEYBOARD		Enter	Shift Enter	Control Enter
XL KEYPAD	----	Enter	----	----
on Macintosh Plus KEYBOARD	----	Enter	----	----

Tech Info Library Article Number:1789



Tech Info Library

MacTerminal 2.0 VT-100 emulation: Functions on different keys

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0 VT-100 emulation: Functions on different keys

=====

MacTerminal 2.0 uses different keys and combinations of keys for the VT-100 "Break" function on the Macintosh, Macintosh XL, and Macintosh Plus. The Macintosh and Macintosh XL have a main keyboard and a numeric key pad; the Macintosh Plus has a keyboard that performs differently.

Function:	Break	Enter	Long Break	Send Answerback Message
key or keys:				
on Macintosh OLD KEYBOARD	Enter	----	Shift Enter	Command Enter
OLD KEYPAD	----	Enter	----	----
on Macintosh XL KEYBOARD	Enter	Return	Shift, Option, Enter	Command Enter
XL KEYPAD	----	Enter	----	----
on Macintosh Plus KEYBOARD	Option Enter	Enter	Shift, Option Enter	Command, Option Enter
Function:	Break	Enter	Long Break	Send Answerback Message

Note: To use arrow keys on the pull-down or regular keypad, hold down the command key then click on or press the arrow key of your choice.

Tech Info Library Article Number:1790



Tech Info Library

MacTerminal: 3278/2 Keyboard Translation Table

Revised: 9/1/87
Security: Everyone

MacTerminal: 3278/2 Keyboard Translation Table

Following is the MacTerminal 3278/2 Keyboard Translation Table:

3270 KEYS	PULL-DOWN KEYPAD	HEX EQUIVALENT	ASCII SEQUENCE	MANUAL KEY SEQ
ENTER	NO	'1B 4F 4D'	ESC O M	*ENTER
ENTER	NO	'0D 0A'	CR LF	**ENTER
NEW LINE (RETURN)	NO	'0D'	CR	RETURN or CTRL M
PF1	YES	'1B 31'	ESC 1	ESC 1
PF2	YES	'1B 32'	ESC 2	ESC 2
PF3	YES	'1B 33'	ESC 3	ESC 3
PF4	YES	'1B 34'	ESC 4	ESC 4
PF5	YES	'1B 35'	ESC 5	ESC 5
PF6	YES	'1B 36'	ESC 6	ESC 6
PF7	YES	'1B 37'	ESC 7	ESC 7
PF8	YES	'1B 38'	ESC 8	ESC 8
PF9	YES	'1B 39'	ESC 9	ESC 9
PF10	YES	'1B 30'	ESC 0	ESC 0
PF11	YES	'1B 2D'	ESC -	ESC -
PF12	YES	'1B 3D'	ESC =	ESC =
PF13	YES	'1B 21'	ESC !	ESC !
PF14	YES	'1B 40'	ESC @	ESC @
PF15	YES	'1B 23'	ESC #	ESC #
PF16	YES	'1B 24'	ESC \$	ESC \$
PF17	YES	'1B 25'	ESC %	ESC %
PF18	YES	'1B 5E'	ESC ^	ESC ^
PF19	YES	'1B 26'	ESC &	ESC &
PF20	YES	'1B 2A'	ESC *	ESC *
PF21	YES	'1B 28'	ESC (	ESC (
PF22	YES	'1B 29'	ESC)	ESC)
PF23	YES	'1B 5F'	ESC _	ESC _
PF24	YES	'1B 2B'	ESC +	ESC +
PA1	YES	'1B 5B'	ESC [	ESC [
PA2	YES	'1B 5D'	ESC]	ESC]
PA3	NO	'1B 5C'	ESC \	ESC \
ATTN	YES	'01'	SOH	CTRL A

PRINT	YES	'10'	DLE	CTRL P
HOME	YES	'1C'	FS	CTRL \
ERASE EOF	YES	'06'	ACK	CTRL F
DELETE	YES	'7F'	DEL	CTRL BACKSPACE
ERASE INPUT	YES	'0C'	FF	CTRL L
INSERT	YES	'1D'	GS	CTRL]
RESET	YES	'12'	DC2	CTRL R
SYS REQ	YES	'02'	STX	CTRL B
CLEAR	YES	'05'	ENQ	CTRL E
TEST	NO	'14'	DC4	CTRL T
DUP	NO	'15'	NAK	CTRL U
FIELD MARK	NO	'19'	EM	CTRL Y
TAB	NO	'09'	HT	TAB
BACK TAB	NO	'0B'	VT	SHIFT TAB or CTRL K
UP ARROW	NO	'1B 4F 41'	***ESC O A	UP ARROW OR ESC O A
DOWN ARROW	NO	'1B 4F 42'	***ESC O B	DOWN ARROW OR ESC O B
RIGHT ARROW	NO	'1B 4F 43'	***ESC O C	RIGHT ARROW OR ESC O C
LEFT ARROW	NO	'1B 4F 44'	***ESC O D	LEFT ARROW OR ESC O D
CURSR SEL	NO	'04'	EOT	CTRL D
IDENT	NO	'16'	SYN	CTRL V
DEV CNCL	NO	'18'	CAN	CTRL X

Additional Commands:

XON	NO	'11'	DC1	CTRL Q
XOFF	NO	'13'	DC3	CTRL S
REPAINT SCREEN	NO	'03'	ETX	CTRL C
LINE FEED	NO	'0A'	LF	CTRL J

*ENTER on Macintosh main keyboard (not on Macintosh Plus keyboard).

**ENTER on Numeric Keypad (Macintosh and Macintosh Plus).

***Arrow keys on Macintosh Plus keyboard only.



Tech Info Library

Inside Macintosh: Hardcover version missing a page

Revised: 5/10/89
Security: Everyone

Inside Macintosh: Hardcover version missing a page

=====

The hardcover, all-in-one Inside Macintosh manual from Addison Wesley is missing a page. Page 91 of Volume II was left out (containing a description of the FSOPEN File Manager call), and in it's place is Page 73 of Volume II (summary of OS Event Manager and data types). The page numbering is correct--it's just the page's contents that are wrong. So the manual contains two of the same page (pg. 73, vol. II), and none of another (pg. 91, vol. II).

Addison-Wesley is sending copies of the missing page to their bookstores for updating customers; we too will be receiving copies for distributing in our technical mailing. Permission has been granted to make as many copies of the errata as needed.

If someone insists upon receiving a corrected Inside Macintosh, refer them to Linda O'Brien at Addison-Wesley, (617) 944-3700, x2643, who will make arrangements for them to exchange their old copy.

Apple Technical Communications

Tech Info Library Article Number:1792



Tech Info Library

Manzanita software: Using it on hard disks other than ProFile

Revised: 3/10/86
Security: Everyone

Manzanita software: Using it on hard disks other than ProFile

=====

To install The Advanced Business Accountant or BusinessWorks on a hard disk other than the Profile, the hard disk must be accessed before booting The Advanced Business Accountant Startup Diskette or the BusinessWorks BW.HARDDISK diskette. For example, if installing software on a Sider hard disk, boot the hard disk and select the ProDOS option and then select Basic. Insert the Startup diskette or BW.HARDDISK and enter PR#6 (or whatever slot the floppy disk drive is located in). Then follow the installation instructions provided. Once the software has been installed it may be selected by entering -TAB A for The Advanced Business Accountant or -BW for BusinessWorks at the Basic prompt.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1793



Tech Info Library

Manzanita software payroll tax updates

Revised: 3/10/86
Security: Everyone

Manzanita software payroll tax updates

=====

This document provides a list of changes from the 1985 payroll tax tables to 1986 tables. The following list shows the status of federal and state tax tables in Manzanita Software Systems' Payroll modules for The Business Accountant, The Advanced Business Accountant and Payroll Plus. The first column lists the names of the states. Users should locate their state, then check the column to the right for the product they use. An "E" in the column indicates that changes have been made in that state's parameters and/or tax tables. The user should update his or her parameters and tax tables from the state-provided tax table information. An "*" in the column indicates that the state has changed calculation methods, so the user must get a Tax Table Update from Manzanita Software Systems. Without this update, payroll in that state will not calculate correctly. An "ok" in the column indicates that there have been no changes to the tables and no updating is required.

Users should also note that there are changes in the federal tax tables. All federal tax information can be changed by the user, with the exception of the earned income credit tables. If you have any employees who receive advanced earned income credit payments, then you must get a tax table update from MSS.

Tax Table updates are available for \$100.

Summary Report

As of: 2 / 27 / 86

Tax Table	TBA	TABA	BW	PR PLUS
=====	Parms/Tables	Parms/Tables	coming soon	Parms/Tables
=====	=====	=====	=====	=====
Federal	E/E	E/E		E/E
AK - Alaska	E/ok	E/ok		E/ok
AL - Alabama	ok	ok		ok
AR - Arkansas	ok	ok		ok
AZ - Arizona	ok	ok		ok
CA - California	E/E	E/E		*

CO - Colorado	ok	ok	ok
CT - Connecticut	ok	ok	ok
DC - Dist. of Col.	ok	ok	ok
DE - Delaware	E/E	E/E	*
FL - Florida	ok	ok	ok
GA - Georgia	E/ok	ok	E/ok
HI - Hawaii	E/ok	E/ok	E/ok
ID - Idaho	E/ok	E/ok	E/ok
IL - Illinois	ok	ok	ok
IN - Indiana	ok	ok	E/ok
KS - Kansas	* 2/86	* 2/86	* 2/86
KY - Kentucky	ok	ok	ok
LA - Louisiana	ok	ok	E/ok
MA - Massachusetts	* 2/86	* 2/86	* 1/86
MD - Maryland	ok	ok	ok
ME - Maine	E/ok	E/ok	E/ok
MI - Michigan	E/ok	E/ok	E/ok
MN - Minnesota	E/ok	E/ok	E/ok
MO - Missouri	ok	ok	E/ok
MS - Mississippi	ok	ok	ok
MT - Montana	E/ok	E/ok	E/ok
NC - North Carolina	E/ok	E/ok	E/ok
ND - North Dakota	E/ok	E/ok	E/ok
NE - Nebraska	E/ok	E/ok	E/ok
NJ - New Jersey	E/ok	E/ok	E/ok
NM - New Mexico	E/ok	E/ok	*
NV - Nevada	E/ok	E/ok	E/ok
NY - New York	ok	ok	ok
OH - Ohio	ok	ok	ok
OK - Oklahoma	E/ok	E/ok	E/ok
OR - Oregon	*	*	*
PA - Pennsylvania	ok	ok	ok
RI - Rhode Island	E/E	E/E	E/E
SC - South Carolina	ok	ok	ok
SD - South Dakota	ok	ok	ok
TN - Tennessee	ok	ok	ok
TX - Texas	ok	ok	ok
UT - Utah	E/ok	E/ok	E/ok
VA - Virginia	ok	ok	ok
VT - Vermont	E/ok	E/ok	E/ok
WA - Washington	E/ok	E/ok	E/ok
WI - Wisconsin	*	*	*
WV - West Virginia	ok	ok	ok
WY - Wyoming	E/ok	E/ok	E/ok
=====	=====	=====	=====

E = End-user can edit

* = Update from Manzanita required

ok = okay, no update required

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

..TIL01794-Manzanita_software_payroll_tax_updates_(TA33897).pdf

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1794



Tech Info Library

Manzanita Customer Support Service

Revised: 3/10/86
Security: Everyone

Manzanita Customer Support Service

=====

Customers purchasing Manzanita Software are entitled to 90 days of free support. Customers will be provided with a toll-free number and access code upon receipt of registration cards. Products must be registered to qualify for support. After the initial 90 days, support is available for \$150 per year. Information on our Customer Support Services is included in each package.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1795



Tech Info Library

Manzanita software: Printer Switch Settings

Revised: 3/10/86
Security: Everyone

Manzanita software: Printer Switch Settings

=====

The Business Accountant, The Advanced Business Accountant, and BusinessWorks require 10 characters per inch to properly align on preprinted forms.

Imagewriter:

	8	7	6	5	4	3	2	1	
Switch 1:				X					Closed
	X	X	X		X	X	X	X	Open

	4	3	2	1	
Switch 2:			X	X	Closed
	X	X			Open

Refer to page 40 and 41 of the Imagewriter Manual.

Imagewriter II:

Switch settings same as for Imagewriter. Be sure the perforation skip switch is off.

Interface Cards:

Grapler Plus: Must be version 3.2. To test for version, boot computer and enter PR#1 (be sure the printer is on and on-line). With the caps lock key on, enter Control-I V. The version of the card will print to the printer. Enter Control-I 80N for special character string in "Change Line Printer Configuration" option of System Setup and Configuration Menu.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880



Tech Info Library

ImageWriter: Spooling Available With QuickDraw GX (12/94)

Revised: 12/7/94
Security: Everyone

ImageWriter: Spooling Available With QuickDraw GX (12/94)

=====

Article Created: 5 January 1988
Article Reviewed/Updated: 7 December 1994

TOPIC -----

Is there a way to use background printing with an ImageWriter II printer?

DISCUSSION -----

With QuickDraw GX, you can use background printing on the entire ImageWriter series. This includes the ImageWriter, ImageWriter II, and ImageWriter LQ printers.

Non-QuickDraw GX printer drivers do not support background printing.

Article Change History:
07 Dec 1994 - Updated to include QuickDraw GX.
25 May 1994 - Updated with current information.

Support Information Services

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Tech Info Library Article Number:1797



Tech Info Library

Applesoft: Internals--Where to find routines (1 of 2)

Revised: 3/10/86
Security: Everyone

Applesoft: Internals--Where to find routines (1 of 2)

=====

The following list combines all the routines in the INTERNALS series of Apple Tech Notes with the title of the AppleLink article where the routine description appears. The list is arranged alphabetically by the name of the routine.

Name	Address	Applesoft: Internals--Title
-----	-----	-----
ABS	EBAF	Floating Point Math Package (2 of 3)
ADDON	D998	Miscellaneous Routines
ARG	A5-AA	Introduction (1 of 2)
		Floating Point Math Package (1 of 3)
		Floating Point Math Package (2 of 3)
ATN	F09E	Floating Point Math Package (2 of 3)
AYINT	E10C	Floating Point Math Package (3 of 3)
BKGND	F3F6	High Resolution Graphics Routines
BLTU	D393	Miscellaneous Routines
CHKCLS	DEB8	Error Processor Routines
CHKCOM	DEBE	Floating Point Math Package (3 of 3)
		Error Processor Routines
CHKNUM	DD6A	Error Processor Routines
CHKOPN	DEBB	Error Processor Routines

CHKSTR	DD6C	Error Processor Routines
CHKVAL	DD6D	Error Processor Routines
CHRGET	00B1	TXTPTR Routines (2 of 3)
		Floating Point Math Package (3 of 3)
CHRGOT	00B7	TXTPTR Routines (2 of 3)
CLEARC	D66C	Miscellaneous Routines
COMBYTE	E74C	Floating Point Math Package (3 of 3)
CONINT	E6FB	Floating Point Math Package (3 of 3)
CONT	D898	Miscellaneous Routines
CONUPK	E9E3	Floating Point Math Package (2 of 3)
COS	EFEA	Floating Point Math Package (2 of 3)
CRDO	DAFB	Device I/O Routines
DATA	D995	Miscellaneous Routines
DATAN	D9A3	Miscellaneous Routines
DIV10	EA55	Floating Point Math Package (2 of 3)
DRAW	F601	High Resolution Graphics Routines
ERRDIR	E306	Error Processor Routines
ERROR	D412	Error Processor Routines
EXP	EF09	Floating Point Math Package (2 of 3)
FAC	9D-A2	Introduction (1 of 2)
		Floating Point Math Package (1 of 3)
		Floating Point Math Package (2 of 3)
		Floating Point Math Package (3 of 3)
FADD	E7BE	Floating Point Math Package (2 of 3)
FADDH	E7A0	Floating Point Math Package (2 of 3)
FADDT	E7C1	Floating Point Math Package (2 of 3)

FCOMP	EBB2	Floating Point Math Package (2 of 3)
FDIV	EA66	Floating Point Math Package (2 of 3)
FIDVT	EA69	Floating Point Math Package (2 of 3)
FIN	EC4A	Floating Point Math Package (3 of 3)
FLOAT	EB93	Floating Point Math Package (3 of 3)
FMULT	E97F	Floating Point Math Package (2 of 3)
FMULTT	E982	Floating Point Math Package (2 of 3)
FNDLIN	D61A	Miscellaneous Routines
FOUT	ED34	Floating Point Math Package (3 of 3)
FPWRT	EE97	Floating Point Math Package (2 of 3)
FREFAC	E600	String Utilities (2 of 2)
FRESTR	E5FD	String Utilities (2 of 2)
FRETMP	E604	String Utilities (2 of 2)
FRETMS	E635	String Utilities (2 of 2)
FRMEVL	DD7B	Floating Point Math Package (3 of 3)
FSUB	E7A7	Floating Point Math Package (2 of 3)
FSUBT	E7AA	Floating Point Math Package (2 of 3)
GARBAG	E484	Miscellaneous Routines
GDBUFS	D539	Device I/O Routines
GETADR	E752	Floating Point Math Package (3 of 3)
GETARYPT	F7D9	Miscellaneous Routines
GETBYT	E6F8	TXTPTR Routines (2 of 3)
GETNUM	E746	Floating Point Math Package (3 of 3)
GETSPA	E452	String Utilities (2 of 2)
GETSPT	DA7B	String Utilities (1 of 2)
GIVAYF	E2F2	Floating Point Math Package (3 of 3)



Tech Info Library

Applesoft: Internals--Where to find routines (2 of 2)

Revised: 3/10/86
Security: Everyone

Applesoft: Internals--Where to find routines (2 of 2)

=====

The following is a continuation of the list combining all the routines in the INTERNALS series of Apple Tech Notes with the title of the AppleLink article where the routine description appears. The list is arranged alphabetically by the name of the routine.

Name	Address	Applesoft: Internals--Title
-----	-----	-----
GOTO	D93E	Miscellaneous Routines
GTBYTC	E6F5	TXTPTR Routines (2 of 3)
HANDLERR	F2E9	Error Processor Routines
HCLR	F3F2	High Resolution Graphics Routines
HFIND	F5CB	High Resolution Graphics Routines
HFNS	F6B9	TXTPTR Routines (2 of 3)
HGR	F3E2	High Resolution Graphics Routines
HGR2	F3D8	High Resolution Graphics Routines
HLIN	F53A	High Resolution Graphics Routines
HPLOT	F457	High Resolution Graphics Routines
HPOSN	F411	High Resolution Graphics Routines
INCHR	D553	Device I/O Routines
INLIN	D52C	Device I/O Routines
INLIN+2	D52E	Device I/O Routines

INPRT	ED19	Device I/O Routines
INT	EC23	Floating Point Math Package (2 of 3)
ISCNTC	D858	Error Processor Routines
ISLETC	E07D	Error Processor Routines
LET	DA46	Miscellaneous Routines
LINGET	DA0C	TXTPTR Routines (2 of 3)
LINPRT	ED24	Device I/O Routines
LOG	E941	Floating Point Math Package (2 of 3)
MOV1F	EB21	Floating Point Math Package (2 of 3)
MOV2F	EB1E	Floating Point Math Package (2 of 3)
MOVAF	EB63	Floating Point Math Package (2 of 3)
MOVFA	EB53	Floating Point Math Package (2 of 3)
MOVFM	EAF9	Floating Point Math Package (2 of 3)
MOVINS	E5D4	String Utilities (1 of 2)
MOVMF	EB2B	Floating Point Math Package (2 of 3)
MOVML	EB23	Floating Point Math Package (2 of 3)
MOVSTR	E5E2	String Utilities (1 of 2)
MUL10	EA39	Floating Point Math Package (2 of 3)
NEGOP	EED0	Floating Point Math Package (2 of 3)
NEWSTT	D7D2	Miscellaneous Routines
OUTDO	DB5C	Device I/O Routines
OUTQST	DB5A	Device I/O Routines
OUTSPC	DB57	Device I/O Routines
PARCHK	DEB2	Error Processor Routines
PLOTFNS	F1EC	TXTPTR Routines (2 of 3)
PRNTFAC	ED2E	Device I/O Routines

PTRGET	DfE3	Miscellaneous Routines
PUTNEW	E42A	String Utilities (2 of 2)
QINT	EBF2	Floating Point Math Package (3 of 3)
REASON	D3E3	Miscellaneous Routines
REMN	D9A6	Miscellaneous Routines
RESTOR	D849	Miscellaneous Routines
RESUME	F317	Error Processor Routines
RND	C9-CD	Floating Point Math Package (1 of 3)
		Floating Point Math Package (2 of 3)
RND	EFAE	Floating Point Math Package (2 of 3)
RUN	D566	Miscellaneous Routines
SCRTCH	D64B	Miscellaneous Routines
SETHCOL	F6EC	High Resolution Graphics Routines
SGN	EB90	Floating Point Math Package (2 of 3)
SHLOAD	F775	High Resolution Graphics Routines
SIGN	EB82	Floating Point Math Package (2 of 3)
SIN	EFF1	Floating Point Math Package (2 of 3)
SNGFLT	E301	Floating Point Math Package (3 of 3)
SQR	EE8D	Floating Point Math Package (2 of 3)
STKINI	D683	Miscellaneous Routines
STRINI	E3D5	String Utilities (1 of 2)
STRLIT	E3E7	String Utilities (2 of 2)
STRLT2	E3ED	String Utilities (2 of 2)
STROUT	DB3A	Device I/O Routines
STRPRT	DB3D	Device I/O Routines
STRSPA	E3DD	String Utilities (1 of 2)
STRTXT	DE81	String Utilities (2 of 2)

STXTPT	D697	Miscellaneous Routines
SYNCHR	DEC0	Error Processor Routines
TAN	F03A	Floating Point Math Package (2 of 3)
TEMP1	93-97	Floating Point Math Package (1 of 3)
TEMP2	98-9C	Floating Point Math Package (1 of 3)
TEMP3	8A-8E	Floating Point Math Package (1 of 3)
XDRAW	F65D	High Resolution Graphics Routines

Apple Technical Communications

Tech Info Library Article Number:1799



Tech Info Library

BASIC: Printing with properly aligned comma TABbing

Revised: 3/10/86
Security: Everyone

BASIC: Printing with properly aligned comma TABbing

=====

Applesoft BASIC comma formatting is only available for screen output. Comma formatting is not intended for printer output, and, with some combinations of a printer and its interface card, commas produce unwanted results such as misaligned fields.

To tab for printer output, use the command POKE 36,POS.

For example, these commands send the data in A, B, and C for printing in columns starting at 10, 30, and 50:

```
...  
100 POKE 36,10:PRINT A; : REM Go to column 10 and print A  
110 POKE 36,30:PRINT B; : REM Column 30, print B  
120 POKE 36,50:PRINT C : REM Last tab - no semicolon ends line
```

Apple Technical Communications

Tech Info Library Article Number:1800



Tech Info Library

LaserWriter: Page counter is for maintenance only

Revised: 9/21/87
Security: Everyone

LaserWriter: Page counter is for maintenance only

=====

This article last reviewed: 10 March 1986

You can't reset the LaserWriter's page counter because it is part of the printer's firmware.

Use the page counter to determine:

1. when to change the toner cartridge (approximately 2,500 pages)
or
2. when to have routine service performed (approximately 100,000 pages).

Tech Info Library Article Number:1801



Tech Info Library

Scribe Printer: Specifications (Discontinued)

Revised: 9/24/93
Security: Everyone

Scribe Printer: Specifications (Discontinued)

=====

I. Technical Specifications

A. Print Speed:

1. Letter mode: 50 cps at 10 cpi
2. Draft mode: 80 cps at 10 cpi
3. Speed selection
 - a. front-panel switch
 - b. software command

B. Print Method: Non-impact matrix printer

C. Character Format:

1. Letter Mode: 12(H) x 15(V) matrix alphanumeric and symbols
2. Draft Mode: 9(H) x 14(V) matrix alphanumeric and symbols
3. Superscripts/Subscripts: 9(H) x 14(V) matrix

D. Character Set:

1. 96 ASCII characters
2. 24 European characters

E. Character Pitch:

1. Letter mode: 10 cpi
2. Draft mode:
 - a. 10 cpi
 - b. 17 cpi

F. Line Spacing: 6 lpi (line per inch) plus n/144 in.

G. Line-Feed Rate:

1. 100 msec (at 6 lpi)
2. 180 msec for manual line feed

H. Graphics Densities: Variable

-- Maximum dots Per Lines: 1280

I. Resolution: Up to 160 by 144 dots per inch

J. Paper:

1. Width: 3.5 in. to 10 in. max
2. Thickness: .003 in. to .07 in. (equivalent to 15 to 25 bond)
3. Formats:
 - a. single cut sheet
 - b. fanfold continuous
 - c. paperback transparencies
 - d. mailing labels
- adjustable pin-feed tractors for labels
4. Supply: Compact paper supply tray fits under printer

K. Ribbon:

1. Type: single-pass, disposable cassette
2. Colors: black or three color
3. Life: 85,000 characters (average 40-50 pages)
4. Dimensions: 5/16 in. x 273 yd.

L. Interface:

1. Type: RS-232-C (serial)
2. Buffer: 1 line, current print mode
3. Baud Rate: 1200 or 9600
4. Apple systems:
 - a. Apple II
 - b. Apple II Plus
 - c. Apple IIe
 - d. Apple IIc

M. Electrical:

1. Input Power:
 - a. 115 V 60 Hz
 - b. 230 V 50 Hz
2. Power Consumption:
 - a. Standby: 20 Watts maximum
 - b. Printing: 60 Watts maximum

N. Physical Dimensions

1. Width: 14.5 in.
2. Height: 6.12 in. (with paper tray)
3. Depth: 12.4 in.
4. Weight: 14.1 lb.

O. Environmental:

1. Storage Temperatures: -4 to 104 degrees F (-20 to 40 degrees C)
2. Storage Humidity: 20 to 80%

II. Features:

- A. Cable and power cord connect to the side of the Scribe, well out of the paper path.

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Tech Info Library Article Number:1803



Tech Info Library

Macintosh Plus Upgrade: Removing The Security Kit

Revised: 7/24/92
Security: Everyone

Macintosh Plus Upgrade: Removing The Security Kit

=====

Article Created: 10 March 1986
Article Last Reviewed: 24 July 1992
Article Last Updated: 31 March 1992

TOPIC -----

The following provides an explanation on removing the security kit from a Mac Plus.

DISCUSSION -----

Removing the security kit from the housing and keyboard is fairly simple once you've opened the case. From the inside of the case, merely pry the retaining prongs apart with a flatblade screwdriver and slip the plug out.

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Tech Info Library Article Number:1804



Tech Info Library

Monotype Inc.

Revised: 4/3/97
Security: Everyone

Monotype Inc.

=====
Article Created: 01/20/88
Article Reviewed: 07/13/93
Article Updated: 04/02/97

Monotype Inc.

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312-855-1440

Company Profile:
Hardware and software, specializing in laser typesetting equipment,
high-resolution imagesetters, and image processors.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1805



Tech Info Library

Applesoft BASIC: Displaying and printing text in 80 columns

Revised: 6/9/87
Security: Everyone

Applesoft BASIC: Displaying and printing text in 80 columns

=====

The Apple II permits input and output to only one device at a time, including the 80-Column Text Card in slot 3.

Here is a BASIC program that will send information to the printer, and then to the screen.

```
10 D$ = CHR$(4)
20 PRINT D$;"PR#1" : REM Turn on the printer in slot 1
30 PRINT "This sentence will be sent to the printer. Make it a long sentence,
so we can see if the printer uses 80 columns."
40 PRINT D$;"PR#3" : REM Turn off the printer; return to 80 column screen
50 PRINT "This sentence will appear on the screen."
60 END
```

If you find that the printer doesn't use 80 columns, then the interface card in the Apple IIe is set for 40 columns. Check the manual for that card, and change the DIP switches for 80 columns.

Use these techniques within any Applesoft BASIC program to turn a printer on and off, and still maintain disk drive access.

This short program shows how to print lines longer than 80 characters without overprinting. An explanation follows the listing.

```
10 D$=CHR$(4)
20 PRINT D$;"PR#1"
30 PRINT CHR$(9);"80N"
40 PRINT CHR$(9);"C"
50 LIST
60 S2$ = "We get a lot of calls regarding a problem with the Imagewriter I
and the Imagewriter II overprinting when using the PRINT command from
AppleSoft BASIC with lines that are longer than 80 characters. Here is a
workable solution."
70 PRINT D$;"PR#3"
```

In the statement `PRINT CHR$(9); "80N"`, (which sends Control-I 80N) the number

80 sets the printer card so that it sends a carriage return after sending 80 characters to the printer. The choice of the number, 60, 72, 80, or 132, to name a few options, depends on how you want to use the features of the printer and its interface card. This works for an Apple Super Serial Card, Apple Parallel Interface Card, and other popular interface cards.

After sending Control-I 80N to set the SSC to end its lines at 80 columns, it's still necessary to tell the SSC when that Control-I 80N command should work. That's what Control-I C does: it tells the SSC to issue a carriage return on column overflow.

Column overflow occurs when the SSC detects it has reached the end of the column as set by switches 2-3 and 2-4 or by Control-I 80N. The addition of a line like line 40 should correct similar overstriking problems, especially with listings of BASIC programs. If you run this program, it will correctly print S2\$ on an Imagewriter or an ImageWriter II.

On an Apple IIGS, the Control-I C would need to be a Control-I CE.

Tech Info Library Article Number:1807



Tech Info Library

AppleWorks: Using it on the Apple II UniDisk 3.5

Revised: 3/10/86
Security: Everyone

AppleWorks: Using it on the Apple II UniDisk 3.5

=====

To catalog a disk in a Unidisk 3.5 on an Apple IIc with system utilities 2.1, you may choose 4 options on the menu screen:

1. built-in drive
2. external disk 3.5 #1
3. external disk IIc
4. Prodos Pathname

When choosing to format a disk, of course, the first 3 options are present.

Users of AppleWorks versions previous to version 1.3 may be confused by the menu screen shown when they choose to catalog a disk or change current disk:

1. Drive 1
2. Drive 2
3. Profile or other ProDOS directory

Choose option 3 to use the Unidisk 3.5 with AppleWorks before version 1.3. In these earlier versions, you can refer to the UniDisk 3.5 only by its pathname, such as /appleworks/business.

Refer to page 9 the pamphlet "Using AppleWorks on the Apple II Unidisk 3.5" for further explanations of how to load, save and list data files with Appleworks and the 3.5 disk.

Apple Technical Communications

Tech Info Library Article Number:1808



Tech Info Library

Disk II: Connecting it to a Unidisk

Revised: 5/17/89
Security: Everyone

Disk II: Connecting it to a Unidisk

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To connect a Disk II to the back of a Unidisk, use a Unidisk cable, service part number 590-0327.

To install this cable on the Disk II:

1. Open the case of the Disk II
2. Pull out the old cable
3. Plug in the new cable.
4. File or drill a small half circle into the top of the case of the Disk II.
5. Reinstall the case, inserting the new cable into the half circle.

This modification should only be done by an Apple dealer, and will void the customers warranty.

The old and new cables are electrically the same; therefore, no other modification need be done.

To use a UniDisk on the Disk II controller card use a cable available from Quark, Inc., (303) 934-2211. Quark makes the cable to connect the Quark QC10 to the Apple IIc.

Apple Technical Communications

Tech Info Library Article Number:1809



Tech Info Library

Instant Pascal: Transferring Programs to and from Mac Pascal

Revised: 3/10/86
Security: Everyone

Instant Pascal: Transferring Programs to and from Mac Pascal

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The Instant Pascal Master Program disk contains a file called "A2.TO.MAC." Use this file to transfer programs between a Macintosh and an Apple IIe or Apple IIc. A modem is not necessary.

Follow these steps, but first, if you have not already done so, delete some of the demonstration files from your master program disk before trying to use the file "A2.TO.MAC."

- A. Open the file "A2.TO.MAC" on the Master Program side of the disk.
- B. Print the file to a printer to obtain hard copy output.
- C. Enter the A2.TO.MAC program on your Macintosh using Macintosh Pascal.
Save the program.
- D. To set up an Apple IIe or Apple IIc to send files to a Macintosh:
 1. If you are sending files from an Apple IIe to a Macintosh:
 - a. Connect a Macintosh printer cable to the Super Serial Card installed in the Apple IIe.
 - b. On the Apple IIe, check to make sure the constants (CONST) are set at APPLE2C = FALSE and MAC = FALSE.
 - c. On the Macintosh, change the constant (CONST) default setting from MAC = FALSE to MAC = TRUE.
 - d. You must run A2.TO.MAC on both systems, beginning with the Apple IIe. Start A2.TO.MAC running on the Apple IIe BEFORE you start it running on the Macintosh.
 2. If you are sending files from an Apple IIc to a Macintosh:
 - a. Connect a female-to-female adapter to modem port of the Apple IIc.

- b. On the Apple IIc, change the constant (CONST) default setting from APPLE2C = FALSE to APPLE2C = TRUE.
- c. On the Macintosh, change the constant (CONST) default setting from MAC = FALSE to MAC = TRUE.
- d. You must run A2.TO.MAC on both systems, beginning with the Macintosh. Start A2.TO.MAC running on the Macintosh BEFORE you start it running on the Apple IIc.

E. A2.TO.MAC asks for the name of the file that you wish to transfer.

1. On your Apple IIe or IIc, either:

- Type in the file name and press Return
- or
- Select the appropriate box with your mouse and click the mouse button.

2. On your Macintosh:

- Type in the file name and select the appropriate box with your mouse and click the mouse button.

F. Check to see that the file you just transferred is actually on your disk.

This procedure is similar to that for transferring Macintosh Pascal files to Instant Pascal files and Apple IIe Instant Pascal files to Apple IIc Instant Pascal files. Read the instructions on A2.TO.MAC. Remember to run your Macintosh A2.TO.MAC program first.

Apple Technical Communications

Tech Info Library Article Number:1810



Tech Info Library

Macintosh Plus: Transferring Data To And From An Apple IIc

Revised: 11/2/88
Security: Everyone

Macintosh Plus: Transferring Data To And From An Apple IIc

=====

This article last reviewed: 15 July 1986

Use the Apple IIc Peripheral - 8 Cable to connect the Apple IIc to the Macintosh Plus. You can transfer ASCII data successfully with Access II and MacTerminal or another compatible communications program.

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Tech Info Library Article Number:1811



Tech Info Library

ProDOS Access Unit: Volume not found error

Revised: 3/10/86
Security: Everyone

ProDOS Access Unit: Volume not found error

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The original release of SANE uses an early version of the ProDOS Access Unit. This version of the Access Unit checks the ProDOS disk for the version of ProDOS that formatted the disk, accepting versions of ProDOS equal to 1.0 or less. If the version on the ProDOS disk is greater than 1.0, such as 1.1.1, the Access Unit returns a 'volume not found' error.

For example, if you initialize a ProDOS disk using ProDOS V1.1.1 and then use SANE2 disk to build a custom FP library for ProDOS, the machine alternately:

1. reboots during the build
2. tries to access the disk after which the Access Unit returns a 'volume not found' error.

Workarounds

1. format the ProDOS disk from ProDOS 1.0

or

2. update to the latest version of the ProDOS Access Unit, available on SANE2 through Media Exchange.

Apple Technical Communications

Tech Info Library Article Number:1812



Tech Info Library

Apple IIc Plus: How It's Different From The Apple IIc

Revised: 9/21/88
Security: Everyone

Apple IIc Plus: How It's Different From The Apple IIc

=====

This article last reviewed: 13 September 1988

Here are some of the new hardware changes in the Apple IIc Plus computer:

800K Internal Drive
Accelleration Circuit
Built-in Power Supply
Other Changes

800K Internal Drive

Support for the 800K internal drive is accomplished by a custom chip and dedicated RAM which interfaces with the IWM (intergrated Woz machine-disk controller chip) and the Apple 3.5" disk drive. The custom gate array is called the MIG (magic interface glue). A RAM buffer and the MIG are necessary to replace the circuit that is contained in the UniDisk 3.5 to provide support for the Apple 3.5" disk drive.

An additional 8K of ROM code was necessary to support the Apple 3.5" disk drive. The ROM does not provide support for copy-protection on the UniDisk 3.5" disk drive. There may be applications that used copy protection that worked on the UniDisk 3.5 but will fail on the Apple IIc Plus due to use of the Apple 3.5" disk drive.

Accelleration Circuit

New hardware has been added to the Apple IIc Plus to allow operation up to 4MHz. This circuit includes two 8K of static RAMs, a 65C02 running at 4MHz, and an 84-pin custom gate array to control access between the static RAM and the rest of the computer. The static RAM acts as a data cache for the 4MHz 65C02, and is controlled by the gate array.

Most programs run the same routines repeatedly. Using a cache is an ideal way of allowing these routines to be run faster, while letting the rest of the Apple IIC Plus continue at the normal 1MHz rate.

The gate array is the chip that enables the fast cache RAM method speed-up of the Apple IIC Plus computer. This chip is specific to the 65C02 and the Apple IIC Plus memory map. On one side of the gate array sits the 65C02 (4MHz) and two SRAMs for data cache. On the other side of the gate array is the rest of the Apple IIC Plus (video, I/O, memory, disk drive, ROM, etc.). The gate array knows which parts of Apple memory may be cached and which may not be (e.g. I/O), and keeps track of which bank of switched memory areas are switched in.

The cache RAM is transparent and not directly addressable. Data that fills the cache RAM can come from most areas of memory; main RAM, aux RAM, ROM, Language card RAM.

Built-in Power Supply

The Apple IIC Plus uses a built-in power supply to operate the computer. A battery power supply would have to provide the SUPPLY VOLTAGES. Due to the new design, an existing battery power supply for the Apple IIC will not work in the Apple IIC Plus. The internal power supply operates using the following parameters:

Electrical Requirements

- Line voltage: 90 to 130 volts AC
- Line frequency: 50 to 60 hertz
- Maximum power consumption: 20 watts continuous
- Supply voltages:
 - + 5 volts (+- 5%)
 - +12 volts (+-10%)
 - 12 volts (+-10%)
- Maximum supply currents:
 - + 5 volts = 1.5 amps
 - 5 volts = 30 milliamps
 - +12 volts = 0.9 amps continuous
 1.5 amps intermittent
 - 12 volts = 100 milliamps

Other Changes

There were a number of small changes to the Apple IIC Plus. These include:

- Volume Control slide located above the keyboard and replaces the 40/80 switch
- Rear handle locks in place
- Uses Apple standard mini-din 8 connectors
- Normal speed operation. (Hold down Esc key before you press Command-Control-Reset, Release the Reset Key, then release the ESC key when you see the word NORMAL on the screen, then release the other keys.)
- Headphone jack has been removed

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1814



Tech Info Library

Apple IIe: If Built-in Diagnostics Run on Power-Up

Revised: 7/24/92
Security: Everyone

Apple IIe: If Built-in Diagnostics Run on Power-Up

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Article Created: 11 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

This article describes what to do if an Apple IIe's built-in diagnostics run when the system is powered on.

PROBLEM DESCRIPTION: When the Apple IIe is turned on, the system's built-in diagnostic program starts. (This program is normally initiated by pressing Control, Reset, Open Apple, and Closed Apple -- or by holding down Open Apple and Closed Apple at power on.) This is repeated until the system is powered off.

CAUSE: Keyboard or Keyboard Cable

BEFORE YOU START: Remove all peripheral cards from the Apple IIe to eliminate them as a possible problem.

CURE:

- 1) Remove any attached Joystick. The five buttons correspond to the Open Apple keys.
- 2) Verify that the keyboard cable is securely attached to the logic board and to the keyboard.
- 3) If the problem persists, replace the keyboard cable.
- 4) If the problem persists, replace the keyboard.
- 5) If the problem persists, refer to the Level I Technical Procedures.

To see a General Troubleshooting procedure, search on the product's name and HTS and GTS.

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Tech Info Library Article Number:1815



Tech Info Library

Apple III : Powers Up Into RAM/ROM Diag (But No Inverse 1s)

Revised: 1/17/92
Security: Everyone

Apple III : Powers Up Into RAM/ROM Diag (But No Inverse "1"s)

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Article Created: 11 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

BEFORE YOU START: Remove all peripherals cards from the Apple III to eliminate them as possible problem causes and boot the computer.

PROBLEM DESCRIPTION: The Apple III displays the Diagnostic RAM/ROM Test when booted. The RAM/ROM test is displayed as a Matrix of dots located at the upper left corner of the screen display. The Apple III will automatically display inverse "1"s (indicating bad memory chip/s) in the Diagnostic RAM/ROM Test if it has a "real" memory problem (which this problem isn't). With this problem, there are no inverse "1"s in the matrix of dots. If there are inverse "1"s, refer to the Tech Procedures for help in isolating the memory problem.

CAUSE: If inverse 1's are NOT displayed, the Apple III may have a keyboard problem or the power lamp may be burned out.

CURE: 1. Make sure that the keyboard is properly connected to the logic PCB.
2. If the keyboard is properly connected, check the power on lamp at the third key position from the lower left corner of the keyboard. If it is off, that is the problem so replace it.
3. If the lamp is OK, insert a boot disk into the internal drive and try to boot the system depressing just the Reset key.
4. If the system boots and seems to run normally, swap the keyboard.
5. If replacing the keyboard seems to cure the problem, try going go a step further and replace the Reset key.

If this cure does not resolve the problem, go back to the Word Search

screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1816



Tech Info Library

Apple III : Won't Boot AII Disk Calibrate in AII Emulation

Revised: 1/17/92
Security: Everyone

Apple III : Won't Boot AII Disk Calibrate in AII Emulation

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Article Created: 11 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Apple II Disk Calibration Program will not boot on the Apple III in Apple II Emulation mode.

CAUSE: Peripheral cards may be interfering with the Apple II Disk Calibration program.

CURE: Power down the Apple III and remove ALL interface cards, (especially the ProFile interface card). Reboot the Apple II Emulation Disk then load and run the Apple II Disk Calibration Program.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1817



Tech Info Library

Apple IIe: Vertical Bars or Hissing after Logic PCB Replacement

Revised: 7/22/88
Security: Everyone

Apple IIe: Vertical Bars or Hissing after Logic PCB Replacement

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Article Created: 11 March 1986
Article Last Reviewed: 17 March 1992
Article Last Updated:

PROBLEM DESCRIPTION: After the logic PCB is replaced, the Apple IIe displays vertical bars on the monitor or makes a hissing sound.

CAUSE: The speaker wire may be shorting against the logic PCB.

- CURE:
1. Check to see if the speaker wire is running under the Logic Board. If this is the case the wire may have been punctured by one of the IC pins protruding from the bottom of the logic board.
 2. Route the wire over the top of the board and reconnect the speaker. If this cures the problem, replace the speaker with a new one.
 3. Follow the Level I Tech Procedures to replace the Logic Board.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1818



Tech Info Library

Apple Iic : Logic PCB Bad After Iic Starts By Itself

Revised: 11/7/88
Security: Everyone

Apple Iic : Logic PCB Bad After Iic Starts By Itself

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Article Created: 11 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: The system won't boot or exhibits diagnostic RAM failure after turning itself back on about 10 to 20 minutes after it was turned off.

NOTE: This usually occurred the first time the Apple Iic was turned and did not occur on all of the power supplies in the serial number range. Most of the power supplies in the serial number range work properly and will not show any of the described symptoms. If the Apple Iic is working properly there is no need to replace the power supply. All of the replacement module power supplies made by TDK have had this problem corrected. Refer to the Apple Iic Technical Procedures for more information on identifying reworked TDK power supplies.

CAUSE: Some TDK Apple Iic power supplies have a problem that causes them to turn back on spontaneously 10 - 20 minutes after the power switch has been turned "OFF". The power supply may have blown the RAM on the logic PCB when it turned itself back on.

CURE: To check for this problem locate the serial number/name plate on the power supply. Identify the vendor and date code for the power supply. The information on the plate is in the following order.

(Vendor)
699-0230
CE-0453
(Date Code)
(Serial Number) Japan

If the vendor is TDK, the power supply shows a date code between 8501 and 8526, and displays the problem stated above, replace the power supply and the logic PCB. Be sure to refer to the Apple Iic

Technical Procedures for complete information.

If this cure does not resolve the problem, go to the Technical Procedures to obtain a general troubleshooting procedure for this product.

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Tech Info Library Article Number:1820



Tech Info Library

ImageWriter I: Blown Fuses on the Logic Board

Revised: 1/17/92
Security: Everyone

ImageWriter I: Blown Fuses on the Logic Board

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This article last reviewed: 24 February 1988

PROBLEM DESCRIPTION: The printer doesn't power up, or the power light comes on but the carriage assembly doesn't move. Inspection of the logic board reveals that either one or more of the fuses is blown.

CAUSE: The small screw holding the screw which mounts the printer cable to the logic board may have dropped free and be shorting out pins.

CURE: 1. Carefully check the logic board and the inside of the printer for this small screw holder. Remove it.
2. Replace the fuses.
3. If the problem persists, refer to the Level I Technical Procedures.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1821



Tech Info Library

ImageWriter: Carriage Locks,Doesn't Go Left At Power On

Revised: 1/17/92
Security: Everyone

ImageWriter: Carriage Locks,Doesn't Go Left At Power On

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This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The ImageWriter performs the Self Test OK. But, when an interface cable is connected and the printer is turned on, the carriage locks and does not return to the left of the platen. The printer gives no other response. The cable may or may not be connected to the computer.

CAUSE: A carrier drive transistor may have blown.

- CURE: 1. If you haven't already replaced the logic PCB, replace it to eliminate it as a possible problem.
2. Replace the carrier drive transistor array.

If this cure does not resolve the problem, go to the Technical Procedures to obtain a general troubleshooting procedure for this product.

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Tech Info Library Article Number:1822



Tech Info Library

ImageWriter 8 And 15 Problem/Cure: Erratic Carrier Motion

Revised: 11/10/88
Security: Everyone

ImageWriter 8 And 15 Problem/Cure: Erratic Carrier Motion

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This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: During printouts, the carrier makes a clattering noise and letters are printed over each other.

CAUSE: The pitch and the character size may not be properly specified in the software causing the carrier assembly to run into the left margin sensor. The carrier reaches the left margin, but in attempting to follow software controls, continues printing on the same line.

CURE: 1. Verify that the software being used is correctly set, for example, 80 characters with 10 pitch, etc.

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Tech Info Library Article Number:1823



Tech Info Library

ImageWriter P/C: Growling Sounds When Printing

Revised: 1/17/92
Security: Everyone

ImageWriter P/C: "Growling" Sounds When Printing

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This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: Printer makes "growling" sounds when printing. Poor horizontal registration on self test. Characters don't line up evenly. Printer powers up fine. When checked with power off, carriage moves freely along guides and does not appear to bind.

CAUSE: Rubber bushings on carriage stepper motor may not be properly fitted on the carriage stepper motor.

CURE: Check the rubber bushings for a proper fit. Refer to the Illustrated Parts in the Tech Procedures for location information. Correct as necessary.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

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Tech Info Library Article Number:1824



Tech Info Library

ImageWriter II Paper Jams

Revised: 1/17/92
Security: Everyone

ImageWriter II Paper Jams

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This article last reviewed: 03 November 1987

PROBLEM DESCRIPTION: Paper jams or "paper folding" between the paper blade and paper bail assembly with the ImageWriter II.

BEFORE YOU START: There are four major reasons that paper jams occur with the ImageWriter II. Those are: a) the platen release lever is not in the correct position (released); b) possible obstruction(s) in the paper path (labels etc...); c) the paper has become deformed because of its being curved under the platen for an extended period of time; d) the paper guide is defective.

With most rear tractor feed printers it's not possible to just load the paper into the tractors and hit form feed to load the paper. You must guide the paper under the platen, then lock it into the tractors or use the procedure outlined in the IMAGEWRITER II owner's manual page 19. If this is the Problem reported, there isn't any 'fix', rear tractor feed printers don't do this gracefully.

CURE: Use the following procedures to troubleshoot the Problem:

1. Remove the paper from the printer and tear off the first page. Sometimes the first page of perforated paper is deformed from its being curved under the printer for an extended period of time (see Note 1). Reinsert the fresh paper and test the printer. Continue to the next step if the Problem still persists.
2. Check that the platen has been released from friction feed mode. Release the platen if the lever is in friction mode and test. Continue to Step 3 if the Problem still persists.
3. Check for the presence of obstructions in the paper path. One very common obstruction is that of a label that has adhered to the metal blade located under the platen. Clear any obstructions

and test the printer. Proceed to Step 4 if the problem persists.

4. Check the paper guide and make sure that it is not damaged. Sometimes the foil will peel from the plastic part of the paper guide assembly. Remove and replace the paper guide assembly if you find it to be defective. Proceed to the next steps if the problem persists.

4.A. Problem: The printer will print fine for several lines. Suddenly the carriage will stop and make grinding sounds. Home position is lost and the carriage crashes into either side of the printer. There is no error light.

Cure: Adjust the paper guide to be farther from the platen per Technical Procedures.

4.B. Problem: The paper jams in the printer and does not feed properly.

Cure: Adjust the paper guide to be farther from the platen per Technical Procedures.

Other causes for paper jams on the ImageWriter II.

5. Problem: The tractor assembly can be misaligned causing the paper to feed improperly.

Cure: Replace the tractor assembly

6. Problem: The paper out sensor is interfering with the paper path. You can really tell this when you insert a single sheet and the left hand side under the platen is 'tighter' than the right side.

Cure: Adjust the paper out sensor so it sits lower in the platen cradle, but high enough to detect paper out. To adjust the paper out sensor, take a screw driver and bend the sensor downward.

7. Problem: Paper bail is not aligned or one side is loose.

Cure: Adjust paper bail or replace

8. Problem: The metal plate on the left of the platen, which holds the platen in place on the left side is loose or out of adjustment (Technical Procedures, IMAGEWRITER II illustrated parts, page 6.36, part 'A')

Cure: Metal plate needs to be adjusted or tightened

Note 1: This step is listed first because deformity of the paper is quite common. Checking the friction lever is normally the first step performed when troubleshooting most other printers.



Tech Info Library

ImageWriter II: SheetFeeder Causes Top/Bottom Margin Problems

Revised: 11/10/88
Security: Everyone

ImageWriter II: SheetFeeder Causes Top/Bottom Margin Problems

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This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The ImageWriter II SheetFeeder pulls the paper in about a 1/4" too much. The end result is a document that has a 1.25" margin at the top and a .25" margin at the bottom.

CAUSE: DIP switch set incorrectly

CURE: 1. Switch 5 on the ImageWriter II should be set to open.

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Tech Info Library Article Number:1826



Tech Info Library

Lisa/Macintosh XL: Configuration Table

Revised: 1/17/92
Security: Everyone

Lisa/Macintosh XL: Configuration Table

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This article last reviewed: 24 February 1988

To line up the items in the table below, print it in Monaco 9.

BASIC LISA/MAC XL CONFIGURATION TABLE

Systems:->		LISA 2	MACINTOSH XL	MODIFIED
Basic		(LISA 2/5 if	(LISA 2/10)	MACINTOSH XL
Features:		connected to		(Screen Mod
(Below)		ProFile)		Kit Installed
=====		=====	=====	=====
INTERNAL	Present:	NO	YES	YES
HARD	-----	-----	-----	-----
DISK	Notes:	Runs Lisa 7/7	Runs Lisa 7/7	Runs MacWorks
		Office System	Office System	only
		and MacWorks	and MacWorks	
=====		=====	=====	=====
MICRODISK	Present:	YES	YES	YES
DRIVE	-----	-----	-----	-----
	Notes:	Requires Lisa		
		Lite adapter		
		board in disk		
		drive chamber		
=====		=====	=====	=====
BUILT-IN	Present:	YES	NO	NO
PARALLEL	-----	-----	-----	-----
PORT	Notes:	Can connect Pro-	Must install	Must install
		File or other	parallel inter-	parallel
		parallel device	face card in	interface card
		to motherboard	expansion cham-	in expansion
			ber to access	chamber to
			parallel device	access par-
				allel device
=====		=====	=====	=====
		Can install Mac	When using Lisa	Internal hard

		Works and/or Lisa7/7/ Office on a connected ProFile	7/7 Office System internal hard disk can access ProFile and other parallel devices	disk runs MacWorks only: cannot access ProFile, but can access parallel prin- ter if driver is installed
			When using Mac- Works, internal hard disk cannot access ProFile, but can access parallel prin- ter if driver is installed	
=====		=====	=====	=====
TWO	Present:	YES	YES	YES
BUILT-IN	-----	-----	-----	-----
SERIAL	Notes:	Has three DB-25	Only two DB-25	Only two DB-25
PORTS		connectors in back	connectors in back	connectors in back
=====		=====	=====	=====
8-AMP	Present:	YES	NO	NO
POWER				
SUPPLY - rated				
at 1.2 amps AC				
=====		=====	=====	=====
10-AMP	Present:	NO	YES	YES
POWER				
SUPPLY - rated at				
1.8 amps AC				
=====		=====	=====	=====

Interpreting the Basic Lisa2/Macintosh XL Configuration Table

The top row (across) lists the system names for three basic configurations of the Lisa2/Macintosh XL. The first column (down) lists the names of basic hardware components. The YES or NO listed under each system indicates whether the hardware component is or is not a required part of that system. The "Notes" provide important information about software compatibility and hardware configuration for each system.

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Tech Info Library Article Number:1827



Tech Info Library

Lisa/Macintosh XL: Module Compatibility?

Revised: 7/22/88
Security: Everyone

Lisa/Macintosh XL: Module Compatibility?

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This article last reviewed: 20 July 1988

To line up the items in the table below, print it in Monaco 9.

SYSTEM BOARDS COMPATIBILITY TABLE

Systems: ->	LISA 2	MACINTOSH XL	MODIFIED
	(Lisa 2/5 if		MACINTOSH XL
SYSTEM BOARDS:	connected to	(LISA 2/10)	(Screen
(below)	ProFile		Modification
			Kit Installed)
MOTHERBOARD		Same for MacXL and Modified MacXL	
Board Eng #	620-0108-X	620-X141	
Apple P/N	661-93106	661-93170	
Notes:	1. Has parallel connector	1. No parallel connector	
	2. Has 3 DB-25 connectors	2. Has total of 2 DB-25 connectors	
I/O BOARD		Same for MacXL and Modified MacXL	
Board Eng #	620-0117-X	620-X142-X	
Apple P/N	661-93198	661-93171	
Disk Contro- ller ROM			
P/N	341-0290	341-0281	
Rev	B	D	
Location	1-A	2-A	
Notes:	1. Resistor at R-47 is NOT	1. Resistor at R-47 IS present	

	present	
	2. Has batteries	2. No batteries
=====		
CPU BOARD	Same for Lisa 2 and Macintosh XL	
Board Eng #	620-0119-X	620-0119-X
-----	-----	-----
Apple P/N	661-03203	661-0298 or 661-03103
-----	-----	-----
Boot ROMs		
P/Ns	341-1075 and 341-1076	341-0347 & 341-0346
Rev	H H	3A 3A
Locations	13-D 14-D	13-D 14-D
-----	-----	-----
Serialized ROM		
(Video State		
ROM) P/N	620-0003	341-0348
-----	-----	-----
Notes:	1. The serialized ROM must be transferred to the customer's replacement CPU board.	
	2. The Macintosh XL (Lisa 2/10) CPU board can be used in the Modified Macintosh XL, provided the correct boot ROMs and serialized ROM are installed.	
=====		
MEMORY BOARDS	Same for Lisa 2, Mac XL (Lisa 2/10), and Modified Mac XL	
(2 identical)		
Board Eng #	620-01XX-X	
-----	-----	
Apple P/N	661-93105	
=====		
VIDEO BOARD	Same for Lisa 2, Mac XL (Lisa 2/10), and Modified Mac XL	
(2 identical)		
Board Eng #	620-0121-X	
-----	-----	
Apple P/N	661-93107	
=====		

Interpreting the System Boards Compatibility Table

The top row (across) lists the system names for three basic configurations of Lisa 2/Macintosh XL. The first column (down) lists the names of the boards contained in the card cage and video chamber. The boxes under each system list the engineering numbers (printed near the edges of each board) and the Apple part numbers for each system board. The part numbers and rev. level for ROM on the CPU and I/O boards are included.

When inspecting or replacing system boards, use the System Boards Compatibility Table to make sure boards and ROM (part numbers and rev. level) match the information pertaining to the system you are working on.

NOTE: Any number can be in place of the "X" in the engineering numbers

listed on the table.

NOTE: Refer to the Module Identification Manual for pictures of the system boards.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1828



Tech Info Library

LaserWriter Problem/Cure: New Cartridge Gives Lighter Print

Revised: 1/17/92
Security: Everyone

LaserWriter Problem/Cure: New Cartridge Gives Lighter Print

=====

This article last reviewed: 24 February 1988

PROBLEM DESCRIPTION: After a new toner cartridge is installed, the LaserWriter prints lighter than it did with the other toner cartridge.

CAUSE: The new toner cartridge's print may seem lighter, but it is actually still within specification. However see "CURE" below for the things you can do to improve print quality.

CURE: 1. Turn the Print Density dial located on the back of the printer, one graduation higher.
2. Make 100 to 200 copies to break in the toner cassette.
3. Return the Print Density dial to its normal range for the remaining life of the toner cartridge.
4. Make sure that the paper being used is 16 to 20 pound paper stock.

If this cure does not resolve the problem, the problem may be with the LaserWriter itself. Go to the LaserWriter Technical Procedures to obtain a general troubleshooting procedure for this product.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1829



Tech Info Library

LaserWriter Problem/Cure: Only Prints Top Half of Page

Revised: 7/22/88
Security: Everyone

LaserWriter Problem/Cure: Only Prints Top Half of Page

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: The LaserWriter only prints the top half of the page.

CAUSE: A failed toner cartridge or DC Controller PCB.

CURE: Perform the User and Service Test prints to eliminate a failed I/O PCB as described in steps 1 and 2 of the LaserWriter Functional Check in the LaserWriter Technical Procedures.

If the problem is with the I/O PCB, follow the procedure located in the LaserWriter Technical Procedures to perform the repair.

If the problem is with the print engine replace the toner cartridge first and recheck for the problem. If the problem still remains, replace the DC controller PCB.

If this cure does not resolve the problem, go to the LaserWriter Technical Procedures to obtain the general troubleshooting procedure for this product.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1830



Tech Info Library

400K Drive Problem/Cure: Fails to Read/Write or MacTest

Revised: 4/9/91
Security: Everyone

400K Drive Problem/Cure: Fails to Read/Write or MacTest

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: When running MacTest with a 400K drive the test says that the drive has failed.

CAUSE: Possible incompatibility between the drive and the boot ROM on the Macintosh. There are two revisions of stepper motors for the Macintosh 400K drive.

One of them, is compatible with any rev of ROM on the Macintosh.

The other is not compatible with revision A. It is only compatible with revisions B or later.

CURE:

1. Remove the drive case and examine the drive mechanism. Locate the label on the drive's stepper motor. If the label is circular and on the flat end of the stepper motor facing the rear of the drive, then the stepper motor is compatible with any rev of Macintosh boot ROM and if the drive fails MacTest, it should be replaced .
2. If the label is square and on the curved part of the stepper motor, then you need to check the ROM in the Macintosh to make sure it they are revision B or later. A square labelled stepper motor is not compatible with revision A ROM in the Macintosh. If the customer's Macintosh has revision A ROM installed, install revision B ROM to make it compatible with the disk drive.

If this cure does not solve the problem, go to the Technical Procedures to obtain a general troubleshooting procedure for this product.

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Tech Info Library Article Number:1831



Tech Info Library

Macintosh Problem/Cure: Sporadic Loss of Parameter Memory

Revised: 7/22/88
Security: Everyone

Macintosh Problem/Cure: Sporadic Loss of Parameter Memory

=====

This article last reviewed: 20 July 1988

PROBLEM DESCRIPTION: The problem Macintosh is at least 2 years old and begins to sporadically use the paramaters set into its parameter memory.

CAUSE: The Macintosh's battery is only designed to last two years and may be losing its charge.

CURE: Check the Macintosh's serial number for the below date information.

Typical serial number = F4325HR

F = Built in Fremont

4 = The last digit of the year built. In this case 84

32 = The week of production. In this case the 32nd week
in 1984

5HR = Information is not necessary for this article.

IMPORTANT: If you replace the battery, make sure that you record the date on a sticker or something. Then two years from the date you replaced the batteries, the troubleshooter will be able to determine the date when those batteries were installed.

If this cure does not resolve the problem, go back to the Word Search screen and search on the product's name and HTS and GTS to obtain a General Troubleshooting procedure.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1832



Tech Info Library

Macintosh External Drives: Disks Only Insert About 1/2 in.

Revised: 8/20/92
Security: Everyone

Macintosh External Drives: Disks Only Insert About 1/2 in.

=====

This article last reviewed: 24 February 1988

PROBLEM DESCRIPTION: The disks will only insert about 1/2 inch and then stop.

CAUSE: The power may have been turned off during the eject cycle or a paper clip may have been used to eject the disk and was not pushed in far enough for the cycle to be completed.

CURE: On the front of the drive, there is a little hole to the lower right of the disk entrance. Insert a paper-clip firmly into this hole and hold it until the eject cycle is completed

If this cure does not resolve the problem, follow the recommended Apple repair policy for this product.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1833



Tech Info Library

Macintosh: Cure for Wrong System Font

Revised: 7/24/92
Security: Everyone

Macintosh: Cure for Wrong System Font

=====

Article Created: 11 March 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: Some applications occasionally cause desktop icons and window information to be displayed in the wrong system font. The same disks work fine on other Macintoshes. Turning the Macintosh off then back on again does not usually clear the problem.

CAUSE: Parameter memory contains the wrong information.

CURE: For 128K, 512K, 512Ke, or Plus unplug the Macintosh and remove its battery for 15 seconds or so. This will clear the Macintosh's parameter RAM.

For NuBus or System 7 Macintosh, hold down Command-option-R-P until the system sounds the startup chord a second time. Release the keys.

For SE or SE/30, hold down Command-option-shift and open the control panel. Release the keys and acknowledge any dialog boxes.

Finally, reset the Control Panel settings.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:1834



Tech Info Library

Disk III P/C: Calibration Using an Apple IIe

Revised: 1/17/92
Security: Everyone

Disk III P/C: Calibration Using an Apple IIe

=====

This article last reviewed: 24 February 1988

BEFORE YOU START: Read the Disk II Adjustment and Calibration sections in the Tech Procedures.

PROBLEM DESCRIPTION: Drive exhibits problem(s) that you think can be attributed to improper adjustment or calibration.

CAUSE: You may not have an Apple III or III+ available to adjust and calibrate the Disk III.

CURE: 1. Remove and replace the Disk III analog card with a Disk II analog card.
2. Attach the Disk II analog card to the Disk III's controller card with the Disk II's analog card to controller card cable
3. Perform the adjustment and/or calibration procedures as described in the Tech Procedures for Disk II.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1836



Tech Info Library

Apple IIe : Double Characters Displayed in 80 Column Mode

Revised: 1/17/92
Security: Everyone

Apple IIe : Double Characters Displayed in 80 Column Mode

=====

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: Apple IIe exhibits double characters in
80 column mode.

CAUSE: Possible bad HAL chip.

CURE: Remove and replace the logic board (HAL not replaceable part) chip
and test system.

If the above cure doesn't fix the problem, search on GTS and Apple
IIe to obtain a general troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1837



Tech Info Library

Macintosh XL: Screen Kit Notes

Revised: 9/30/88
Security: Everyone

Macintosh XL: Screen Kit Notes

=====

This article last reviewed: 31 August 1987

1. The Macintosh XL Screen Kit alters the video display of a Macintosh XL (Lisa 2/10 or Lisa 2) so that the video display pixels are square (as on the Macintosh screen) as opposed to the pixel ratio on the Lisa (2 units wide by 3 units tall). This eliminates the distortion experienced by XL users when running Macintosh software under MacWorks XL. The video display is changed from 720 x 364 to 608 x 431 pixels.

2. The kit contains 4 components:

1 transformer	installed in line with the yoke of the CRT (yellow and green wires)
---------------	---

Video State ROM	P/N 341-0348	installed in location C 6 (CPU Board)
Boot ROM (High)	P/N 341-0347	installed in location D 13 (CPU Board)
Boot ROM (Low)	P/N 341-0346	installed in location D 14 (CPU Board)

3. The version of the boot ROM that is displayed in the upper left corner of the XL while booting is 3A. On an XL the I/O ROM is still 88; on the Lisa 2 the I/O ROM is A8.

4. A new version of Mac XL Test, P/N 077-0206 is required to run diagnostics on a pixel modified Macintosh XL. Earlier versions of XL Test will not run properly on a modified XL.

5. A full screen dump on a Macintosh XL still wraps the right part of the screen around to the left side of the printer page, but due to the reduced number of pixels horizontally, 720 vs. 608, the printing does not actually overwrite the left side of the screen dump.

6. The pixel fix kit greatly improves the performance of Microsoft Chart. The printed graph does not show up in unexpected locations on the printed copy after it looked perfect on the screen of your XL.

7. Very important: Once the pixel fix kit is installed, the customer will be unable to run Lisa software. Since the first part of the Lisa-to-Mac migration is run under the Lisa Office System, which cannot be done on a system that has been modified with the Screen Kit, install the pixel fix after you use the migration utility to transfer your Lisa software to the Macintosh environment.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1839



Tech Info Library

Extended 80-Column Text Card: Sample Program Error (11/96)

Revised: 11/18/96
Security: Everyone

Extended 80-Column Text Card: Sample Program Error (11/96)

=====

Article Created: 03 March 1986
Article Change History: 14 November 1996

TOPIC -----

There is an error in the example program on Page 45 of the Extended 80-Column Text card manual.

DISCUSSION -----

The manual reads:

```
1000 PI = 3.14159265: P2 = PI 2
1010 SP = P2 9: REM
1020 EP = SP 5: REM
1030 DT = PI 15:REM
```

The arithmetic operands are missing.

The lines should read:

```
1000 PI = 3.14159265: P2 = PI * 2
1010 SP = P2/9: REM
1020 EP = SP/5: REM
1030 DT = PI/15: REM
```

Article Change History:
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1986-96, Apple Computer, Inc.

Tech Info Library Article Number:1841



Tech Info Library

General Information on Northern Telecom's LANStar/PTE

Revised: 12/6/89
Security: Everyone

General Information on Northern Telecom's LANStar/PTE

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This article last reviewed: 15 February 1988

Northern Telecom's LANStar technology is based on the data handling capabilities of a central "frame" known as the packet transport equipment (PTE). The standard PTE resembles a full-height rack-mount frame in which earlier DEC minicomputers were mounted. It is divided into "shelves" and each shelf contains slots or tracks into which "modules" can be inserted.

Northern Telecom makes several different sorts of modules for this frame, most of which have nothing to do with LANs, but are related to voice processing, i.e., voice messaging, etc. One LANLink assembly, made up of two cards, is the basis for the local area networking capabilities of the PTE. Each assembly supports 16 nodes through the PTE. There are currently two versions of the PTE. The large one, known simply as the PTE, addresses 1,344 nodes. A smaller one, the PTE/S, can address 112 nodes. The smaller PTE can support ONLY the LAN modules, and not the other voice processing modules available for the large frame.

Communications between the PTE and the desktop workstation is via two twisted pairs (four wires). If the wiring must also support voice, a third twisted pair is required. Thus, buildings wired with at least three pair to each desktop are best suited for LANStar technology. Of course, there is a LANStar card in the desktop works MS-DOS based PCs (traditional slots, not MicroChannel). Data transfer between the workstation LAN card and the LANLink card in the PTE is at 2.56 Mbps. There is absolutely no contention for this 2.56 Mbps bandwidth, as there is only one workstation attached to each PTE-LANLINK card. It appears from some of the materials available that this communications may be full duplex.

Back at the PTE, each PTE LANLINK card is plugged into a backplane bus. The PTE LANLINK cards communicate between themselves at 40Mbps, 8 bits wide. Obviously, as there could be 1,344 cards wanting to talk at 2.56 Mbps all at once, and 40 Mbps won't go around, there must be some "link access protocol managing access" to the 40 Mbps bus. This is where the telephone heritage of the PTE shows through. Rather than using CSMA/CA, CSMA/CD, or token passing,

the PTE bus uses a form of time division multiplexing that Northern Telecom calls "Perfect Scheduling". The 40 Mbps bandwidth is divided into time slices during which certain sorts of tasks are allocated/guaranteed bandwidth. This time slicing is controlled externally to the data bus. There is virtually no bandwidth consumed by link access overhead, even under very heavy loads.

In some ways, this access scheme is similar to token passing, in that a given data transmission will have to wait its turn for bus access. But unlike token rings, a LANLink card failure cannot result in loss of the token. And no data bus time is consumed in simply passing the token around. The bandwidth is also sliced very fine: 8,000 slices per second, with 640 frames per slice (each frame carries 8 bits), so the wait should never be long.

As already stated, the PTE is wired as a star: a separate set of twisted pair goes from each workstation back to a corresponding LANLink card in the PTE. However, within the PTE the network takes on a more bus-link structure. Billed as one of LANStar's security features, packet address interpretation is all done inside the PTE bus, with each PTE LANLink recognizing its own address (note that the address, at least at this level, is the address of the PTE LANLink card, not the address of the LANStar card or the workstation itself) and capturing ONLY packets intended for it. Thus, anyone tapping into a leg of the star will see ONLY the data traffic for the workstation attached to that leg - not any of the traffic for any of the other legs. Broadcasts, of course, still go to all legs.

The PTE LANStar technology is also available to the MS-DOS world. The LANLink PC card goes in a standard MS-DOS slot, and connects to the same PTE equipment as is used with LANStar AppleTalk. In the Macintosh world, LANStar AppleTalk has (separately) been tested with MacServe, TOPS, and AppleShare. In the MS-DOS world, LANStar is in use with MS-Net and Banyan's Vines/286 servers.

It appears possible to attach both Macintoshes and MS-DOS PCs to a single PTE LAN. However, similar to running multiple protocols over Ethernet, the Macintoshes and their AppleShare will not see the PCs and their MSNet, etc. AppleShare PC, TOPS for PC, or Tangent Share do not solve this problem, because they all require an AppleTalk board for the MS-DOS PC -- not a PC LANLink card. Initial testing of this multiple protocol PTE LAN seems to run well. Apparently there is some performance degradation on the MS-DOS side, having to do with the number of broadcast packets used by AFP, vs. the number of broadcast packets expected by the Vines/286 server. The problem is not severe, as it was detected only through use of performance monitoring tools on the network.

Bridging between the different protocols seems to be the best possibility for a mixed MS-DOS-Macintosh LANStar network. At least one of the MS-DOS PCs could run both TOPS and LANLINK and republish volumes as a gateway. Or, when the LANStar Bridge becomes available, PCs running an AFP based network could bridge onto a LANStar AppleTalk network to get to an AFP server. Long term, some further integration between MSNet based networks and AFP networks would be desirable.

Tech Info Library Article Number:1842



Tech Info Library

Apple IIGS: Hard Drive Speed is Limited by System Speed

Revised: 1/20/88
Security: Everyone

Apple IIGS: Hard Drive Speed is Limited by System Speed

=====

This article last reviewed: 6 January 1988

Will a 29ms hard drive perform twice as fast as a 65ms hard drive if both are run on an Apple IIGS with the Apple SCSI card? In other words, is the hard drive the slower component, or the Apple IIGS with the Apple SCSI card?

The maximum data transfer rate for the SCSI bus is 1.25 MBytes per second. If the disk accesses the data faster than that, it is not apparent to the user. The determining factor for data transfer is system overhead. In this case, the system is the slower component.

System overhead consists of: operating system timings, interface timings, and the interleave factor for the disk (which is 3 to 1 for the Apple IIGS). If the 65ms drive is waiting for the Apple IIGS system, then changing to a 29ms drive will probably not increase performance.

Tech Info Library Article Number:1843



Tech Info Library

IBM PC: How to use the LaserWriter with it

Revised: 3/4/90
Security: Everyone

IBM PC: How to use the LaserWriter with it

=====

This article last reviewed: 19 March 1986

Serial Port (for software that supports PostScript)

1. Begin by detaching all connections to the LaserWriter and make sure the LaserWriter has been turned off.
2. Take your null modem cable and connect one end to the 25 pin plug on the LaserWriter and the other end to the RS232 serial port on the IBM .
3. Look for the switch on the LaserWriter and set it to 9600.
4. Turn on the LaserWriter.
5. Wait for the test page to eject, then follow the instructions for you application. (See Note)

Diablo 630 Emulation (for software that does not support PostScript)

1. Begin by detaching all connecions to the LaserWriter and make sure the LaserWriter has been turned off.
2. Take your null modem cable and connect one end to the 25 pin plug on the LaserWriter and the other end to the RS232 serial port on the IBM.
3. Look for the switch on the LaserWriter and set it to Special.
4. Turn on the LaserWriter.

The connections have been made and you may now set up the software package to the Diablo printer driver. No test page will appear. (See Note.)

AppleTalk PC MacBridge Tangent Technology Card

1. Begin by placing the Tangent Technology card in an available slot.
2. Connect the AppleTalk cables to the Tangent port on the IBM and to the AppleTalk connection on the LaserWriter.
3. Look for the switch and set it to AppleTalk.
4. Turn on the LaserWriter.
5. Wait for the test page to eject, then follow the MacBridge menu instructions for communications.

NOTE: These DOS commands must be executed before using the LaserWriter from the serial port. (They may be included in a batch file for ease of execution.) The DOS file MODE.COM must also be on the disk for these commands to work properly.

```
MODE COM1:9600,N,8,1,P
MODE LPT1:=COM1:
```

Applications that do not support Xon/Xoff communication protocol may have problems with large files.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Adobe Development

Tech Info Library Article Number:1845



Tech Info Library

Macintosh Plus: Using Microsoft applications on an 800K disk

Revised: 2/11/88
Security: Everyone

Macintosh Plus: Using Microsoft applications on an 800K disk

=====

This article last reviewed: 21 April 1986

With the release of the Mac+ and double sided disk drives, many people will want to put Microsoft applications on 800K disks. The following information will take you through the steps needed to prepare an 800K disk for use with Microsoft applications.

The following information assumes that you already know how to perform basic operations with your Apple Macintosh. You should know how to use the Finder and the mouse, eject disks, and copy files. If you are not familiar with these operations, please refer to your Macintosh users manual. The following steps assume you are using a Mac+ with an 800K external disk drive.

1. Start the computer with the system disk that came with your computer. This system disk should contain a system file (v3.0 or higher), and a Finder (v5.1 or higher).
2. Insert a blank disk into the external disk drive and initialize it to be an 800K disk.
3. Copy the system folder from the Mac+ system disk to the initialized 800K disk.
4. Now eject the system disk from the internal disk drive and insert the Microsoft application disk. (If you are setting this disk up for Microsoft Excel, insert the program disk marked 1 of 2).
5. Copy the program and any other files such as printer drivers, help files etc., to the newly formatted 800K disk in the external disk drive. DO NOT COPY THE SYSTEM FOLDER. You have already copied the system folder from the Mac+ system disk.

The process is now complete. You may shut down and reboot the computer with the 800K disk that you just prepared. When you start one of our applications, the program will start to load and then ask for the master. You will have to

insert the master once when you start the program.

SETUP FOR 512K MAC AND 800K EXTERNAL DISK DRIVE

The following steps will allow you to set up your 800K disks with Microsoft applications to run on a 512K mac.

1. Start the computer by inserting the new system disk into the internal drive. The system disk must be on a 400K disk and contain a system file (v3.0 or higher), Finder (v5.1 or higher), and an HD 20 file.
2. Insert a blank disk into the external 800K disk drive and initialize it for 800K.
3. Make a copy of the system folder (containing the system, Finder, and HD20 files) onto the 800K disk in the external disk drive.
4. Now eject the system disk from the internal disk drive and insert the Microsoft application disk. (If you are setting this disk up for Microsoft Excel, insert the program disk marked 1 of 2).
5. Copy the program and any other files such as printer drivers, help files etc. to the newly formatted 800K disk in the external disk drive. DO NOT COPY THE SYSTEM FOLDER. You have already copied the system folder from the Mac+ system disk.

The process is now complete. When using a 512K mac with 800K external disk drive, you must always start the computer with the 400K system disk, containing the system, Finder, and HD20 files) in the internal disk drive. Insert the newly prepared 800K application disk into the external drive and start the application. The system disk in the internal drive will be ejected and the program will ask for the master. After you insert the master, it will be ejected and the internal drive will be free. You will be able to save data files to the internal drive.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1846



Tech Info Library

Multiplan: Beware when loading files from a nearly full disk

Revised: 2/11/88
Security: Everyone

Multiplan: Beware when loading files from a nearly full disk

=====

This article last reviewed: 21 April 1986

In Multiplan 1.02, 1.01 and 1.0, if you load a file from a nearly full disk and add enough that it will not fit on the disk, you will get a disk full message when you try to save. You will also lose the original copy on the disk.

What plan does during saving is first erase the old copy, then tries to save the new version. Just use "Save As ..." and save to another disk before quitting. Otherwise you will lose both copies of the file.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1847



Tech Info Library

Multiplan: When headers/footers won't print on the LaserWriter

Revised: 2/11/88
Security: Everyone

Multiplan: When headers/footers won't print on the LaserWriter

=====

This article last reviewed: 21 April 1986

Multiplan 1.02, 1.01, and 1.0 will not print headers/footers when using U.S. legal. Headers also will not print when printing Wide (with any size paper) on the Laserwriter.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1849



Tech Info Library

ImageWriter LQ: Requires Macintosh Plus Or Later

Revised: 11/22/91
Security: Everyone

ImageWriter LQ: Requires Macintosh Plus Or Later

=====

This article last reviewed: 6 January 1988

Because the ImageWriter LQ must use current versions of:

- the System file (version 4.1 or later)
- the Finder (version 5.5 or later)
- the Chooser (version 3.1 or later)

the ImageWriter LQ should not be used with a Macintosh 512KE, Macintosh 512K, or Macintosh 128K.

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Tech Info Library Article Number:1850



Tech Info Library

Multiplan 1.02, 1.01 and 1.0: Loading MacTerminal files

Revised: 2/11/88
Security: Everyone

Multiplan 1.02, 1.01 and 1.0: Loading MacTerminal files

=====

This article last reviewed: 21 April 1986

The Apple Mac-terminal communication program seems to add three blank lines to each SYLK file. Then Mac MP cannot load the file. Just delete the first three lines, then it will load properly.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1851



Tech Info Library

Multiplan 1.02, 1.01 and 1.0: Saving large clipboard

Revised: 2/11/88
Security: Everyone

Multiplan 1.02, 1.01 and 1.0: Saving large clipboard

=====

This article last reviewed: 21 April 1986

The "saving large clipboard" dialog comes up any time you have more than 50 cells in the clipboard. If you have more than 100, both the check boxes are off, otherwise both are on. You never get one off and one on. If you save Formatted, you get a TEXT scrap--complete with dollar signs, etc. If you save unformatted you get a value scrap--the raw numbers to the best accuracy plan can produce (for pasting to Chart or BASIC).

When running Multiplan and EXCEL through the Switcher, you must select a large enough area to get this dialog box in order to get the information into the clipboard and copy it to Excel. Otherwise it will not enter the clipboard when you switch applications.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1852



Tech Info Library

Multiplan 1.02, 1.01 and 1.0: Printing selections w/page breaks

Revised: 2/11/88
Security: Everyone

Multiplan 1.02, 1.01 and 1.0: Printing selections w/page breaks

=====

This article last reviewed: 21 April 1986

If you try to print out a selection only and there is a page break within the selection then it will break at the page break and printout on separate pages.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1853



Tech Info Library

Multiplan 1.02, 1.01 and 1.0: Inserting a row

Revised: 2/11/88
Security: Everyone

Multiplan 1.02, 1.01 and 1.0: Inserting a row

=====

This article last reviewed: 21 April 1986

Q. I am trying to insert a row with Multiplan and it doesn't insert. Why?

A. When you select the last cell (from the Select menu), and the selected cell ends up being in row 255, Multiplan thinks you are using this entire area and that there are no more rows to insert. Select all rows (by pointing to the row numbers) beyond the actual working area of the document and use the Cut command to remove them. You will then be able to insert rows. This is most commonly caused by formatting entire columns rather than just the cells used.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Microsoft Product Support

Tech Info Library Article Number:1854



Tech Info Library

LANStar PTE and PTE/S: Can Be Used Without Voice Features

Revised: 12/6/89
Security: Everyone

LANStar PTE and PTE/S: Can Be Used Without Voice Features

=====

This article last reviewed: 6 January 1987

Northern Telecom's LANStar can be used just for its LAN features, without any voice features installed.

Northern Telecom makes a smaller frame for the Packet Transport Equipment (PTE) called the PTE/S (S for "small") that can support only LAN functions, up to 112 nodes. The larger frame system can be configured with a variety of voice/data modules, or as LAN functions only.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1855



Tech Info Library

Macintosh XL: Incompatible With System 4.0 & ImageWriter LQ

Revised: 11/22/91
Security: Everyone

Macintosh XL: Incompatible With System 4.0 & ImageWriter LQ

=====

This article last reviewed: 6 January 1988

People have asked if Macintosh XL can run on System 4.0, and if it can use System 4.0 to run an ImageWriter LQ.

The Macintosh XL was officially discontinued on May 1, 1986, and there is no new hardware or software development (including system software) for the Macintosh XL. Software and hardware support will continue for five years from the date the machine was discontinued.

At the time of the Macintosh XL discontinuation, the System software was System 3.2 and Finder 5.3. This software contained patches that allowed it to run on a Macintosh XL. Any System software released AFTER these versions does not contain the necessary patches to run properly on the Macintosh XL.

The ImageWriter LQ must use current versions of the System file (version 4.1 or later), Finder (version 5.5 or later), and Chooser (version 3.1 or later) with ImageWriter LQ printer resources, so ImageWriter LQ should not be used with a Macintosh XL.

For further information on enhancements for Macintosh XL, search under: Sun Remarketing

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Tech Info Library Article Number:1856



Tech Info Library

LaserShare 1.0: Error Can Result From Changing Long Spooler Name

Revised: 11/2/88
Security: Everyone

LaserShare 1.0: Error Can Result From Changing Long Spooler Name

=====

This article last reviewed: 7 January 1988

A system error can occur on LaserShare 1.0 when a very long spooler name is changed.

If the user has a multi-zone network, with multiple LaserWriters in each zone, when starting LaserShare and capturing the printer, LaserShare will show a system error (ID=02) when the user tries to alter the default spooler name provided in the dialog box.

In this example:

Zone name = INFO. SERVICES

Laser name = LASERWRITER PLUS- SOUTH

the generated name is

LASERWRITER PLUS- SOUTH INFO. SERVICES...SPOOLER (48 characters)

which runs out the end of the text box. If the user tries to type a shorter name, LaserShare crashes.

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Tech Info Library Article Number:1860



Tech Info Library

ImageWriter LQ: Transparencies Cause Optical Sensor Problems

Revised: 1/20/88
Security: Everyone

ImageWriter LQ: Transparencies Cause Optical Sensor Problems

=====

This article last reviewed: 7 January 1988

The ImageWriter LQ does not recognize unbacked transparency material, due to its optical paper sensor.

Optical sensors are normally of two types: see-through and reflective. Both have difficulty detecting transparencies.

- Reflective sensors depend on a certain amount of light being bounced back to the sensor by reflection from the paper. If that amount is not received, the sensor believes there is no paper in the printer.
- See-through sensors depend on seeing little or no light through the paper. Because transparency material passes too much light, the sensor doesn't detect paper.

Transparency material that has a white backing sheet is available, and can be used in the ImageWriter LQ or ImageWriter II. The image density isn't significantly greater on the Imagewriter LQ than on the ImageWriter II, since the print density on transparency material is very weak no matter what printer is used -- the surface is generally too smooth to accept much ink from the ribbon.

Tech Info Library Article Number:1861



Tech Info Library

Microsoft Word: Recovering Documents After a Crash

Revised: 2/11/88
Security: Everyone

Microsoft Word: Recovering Documents After a Crash

=====

This article last reviewed: 9 December 1987

If your system crashes while Microsoft Word is running, documents that were open at the time of the crash can be recovered.

When you restart after the crash, you should find one or more Word temporary files on your disk (probably in the System folder). The names of these files have the form:

- MWnnn (Word 1.0 or 1.05), or
- Word Temp n (Word 3.0)

Word can't read these temporary files until you use a utility program to change the temporary file's file type from WTMP to WDBN. Here's how to use FEDIT PLUS to make the change:

1. Make a backup copy of the temporary file. Just in case.
2. Start FEDIT PLUS.
3. Select Open File from the File menu.
4. Open the temporary file.
5. Select Display Sector in Hex from the Display menu.
6. Select File Finder Attributes from the Display menu.
7. The File Type field is highlighted (it's probably WTMP). Type WDBN then click Change.
8. To confirm the change, close all windows. Start again at step 3 and see if the file type is now WDBN.

9. Click Cancel; Quit FEDIT PLUS.

Word should now be able to open the file. Changes made since the last time you saved won't be there, but the file should be complete otherwise.

Tech Info Library Article Number:1869



Tech Info Library

AppleLine: Connecting it to a Macintosh XL

Revised: 8/19/87
Security: Everyone

AppleLine: Connecting it to a Macintosh XL

=====

An AppleLine used with a Macintosh XL should be connected to the XL's serial port B; select Printer Port in the Capatibility dialog box (Settings menu).

The AppleLine document that accompanies MacTerminal should work in most connections. To create your own, select the following options in the Compatibility and Terminal dialog boxes (both in the Settings menu). Select: 3278, AppleLine, 9600 baud, 7 bits and even parity.

Use the standard Lisa/Macintosh XL to Imagewriter I cable (pn 590-0037) with a modem elimator cable (P/N 590-0029).

Tech Info Library Article Number:1877



Tech Info Library

Apple Writer versions 2.0 and 2.1: Differences from IIe version

Revised: 4/21/86
Security: Everyone

Apple Writer versions 2.0 and 2.1: Differences from IIe version

=====

After Apple Writer for the IIe, Apple Writer versions 2.0 and 2.1 were released with the following additional features:

- ProDOS Operating System, which implies support for all ProDOS-supported storage devices.
- Terminal mode, which allows the user to connect the keyboard to a modem for telephone communications and sending and receiving files from remote computers/information services.
- fixes to miscellaneous problems
- a new, improved manual set

Apple Technical Communications

Tech Info Library Article Number:1878



Tech Info Library

ImageWriter II: Auto-skipping the perforation

Revised: 4/21/86
Security: Everyone

ImageWriter II: Auto-skipping the perforation

=====

There are two ways to automatically skip the page perforation on the ImageWriter II. The first way turns auto perforation skip off and on for a standard size page:

--To turn auto perforation skip on, type:

```
PRINT CHR$(27);"Z";CHR$(0);CHR$(4)
```

--To turn it off, type:

```
PRINT CHR$(27);"D";CHR$(0);CHR$(4)
```

The second way affords you the benefit of being able to place the auto perforation skip anywhere you wish, allowing you to use shorter paper. For instance, if you have a nine-line page and wish the ImageWriter to print seven lines and then skip two, you would type:

```
PRINT CHR$(29);"A@@@@@@@@@C@@@@A@";CHR(30)
```

This second, more powerful way is described in seven pages of the ImageWriter II technical reference manual.

NOTE: The second method also works for the regular ImageWriter.

Apple Technical Communications

Tech Info Library Article Number:1879



Tech Info Library

Scrapbook: In Finder 5.1 Scrolls Slowly Between Items

Revised: 6/12/92
Security: Everyone

Scrapbook: In Finder 5.1 Scrolls Slowly Between Items

=====

Article Created: 21 April 1986
Article Last Reviewed: 27 May 1992
Article Last Updated: 27 May 1992

While in Finder 5.1 (at the Desktop), the Scrapbook may take a long time to scroll from item to item. This happens because the Scrapbook looks through ALL available open resources as it scrolls. When the system is at the Finder level, there are many open resources. This behavior is not exhibited from within most applications since most applications keep fewer resources open.

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Tech Info Library Article Number:1880



Tech Info Library

IEEE-488 Interface Card: Internal Cable Pinouts (11/96)

Revised: 11/18/96
Security: Everyone

IEEE-488 Interface Card: Internal Cable Pinouts (11/96)

Article Created: 21 April 1996
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Listed below are the pinouts for the IEEE cable.

DISCUSSION -----

As both connectors are mass terminate type connectors, the pinouts are straight through, with the following exceptions:

Card 26-pin internal connector	24-pin external connector
pin	pin
12 no connection	12 separate ground *
25 no connection	
26 no connection	

* Grounding occurs with a special connection to pin 12 on the external connector. This special wire leads from pin 12 on the external connector to system or chassis ground as pictured on page 6 of the IEEE card manual. The wire must NOT be connected to the ground signal of the card or the slot.

Article Change History:
14 November 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1986-96, Apple Computer, Inc.

Tech Info Library Article Number:1881



Tech Info Library

Duodisk Problem/Cure: Won't Format-Says Volume Not On Line

Revised: 1/17/92
Security: Everyone

Duodisk Problem/Cure: Won't Format-Says "Volume Not On Line"

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: When trying to format a brand new disk, i.e. one that has never been formatted , the system returns a "Volume Not On Line" error prompt. Other error prompts may occur depending on the application you are using to format the disk.

CAUSE: The revision of the Format Utility that is being used may be incompatable with the Analog PCB in the DuoDisk.

CURE: Use revision 2.1 or newer of the System Utilities. If the format attempt fails again, swap the analog PCB and retry.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1882



Tech Info Library

Apple IIC: After Upgrade Can't <Open Apple><Ctrl><Reset>

Revised: 1/17/92
Security: Everyone

Apple IIC: After Upgrade Can't <Open Apple><Ctrl><Reset>

=====

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: After an Apple IIC logic PCB has been upgraded, it seems to be unable to perform an Open Apple/Control-Reset.

CAUSE: The board is still able to perform the reset. However the timing in the key strokes is more critical.

CURE: 1. While simultaneously holding the Open Apple and Control keys down, press and release the Reset key.
2. Release the Open Apple and Control keys "after" you have released the Reset key.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1883



Tech Info Library

Macintosh Plus P/C: No Response From Apple Personal Modem

Revised: 1/17/92
Security: Everyone

Macintosh Plus P/C: No Response From Apple Personal Modem

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: When using the old MacTerminal program with the Macintosh Plus and the Apple Personal Modem, there is no response from the modem.

CAUSE: The Data Terminal Ready (DTR) signal is not activated from the old serial driver. This signal would normally be used by the Macintosh to let the modem know that it is activated. Without DTR the modem will not look at any other signals from the Macintosh.

CURE: Use MacTerminal 2.0 with the new system and finder because it will activate the DTR signal on the Macintosh Plus.

If the above cure doesn't fix the problem, refer to the Tech Procedures for this product's troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1884



Tech Info Library

Apple IIC Prob/Cure: Data Errors When Sending to Serial Device

Revised: 1/17/92
Security: Everyone

Apple IIC Prob/Cure: Data Errors When Sending to Serial Device

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: Data errors occur when the Apple IIC transmits data to a serial device (modem, printer, etc.).

CAUSE: There may be a timing problem in the Apple IIC motherboard.

CURE: Check location UC7 on the motherboard for a "black" (not silver) LS161 integrated circuit. If this component is black, then this board has a timing problem so the motherboard should be replaced. Refer to the service programs binder to see if the repair can be reimbursed under a special warranty program.

If the component is silver, then the board does not have the timing problem.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1885



Tech Info Library

Extended 80-Col. Card P/C: Fails in One Ile, Works in Other

Revised: 1/17/92
Security: Everyone

Extended 80-Col. Card P/C: Fails in One Ile, Works in Other

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The extended 80-column card does not work at all in one Apple IIe but installing it into another Apple IIe solves the problem. This looks like a problem with the original Apple IIe's motherboard but it isn't.

CAUSE: The 80 column card may be at fault.

CURE: 1. Before you swap motherboards (an expensive proposition), try changing the 74LS245 chip on the extended 80-column card (listed in the price pages).

2. If step 1 didn't work, replace the 80 column card.

3. Replace the motherboard in the original Apple IIe.

If the above cure doesn't fix the problem, refer to the Technical Procedure for the Apple IIe's troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1886



Tech Info Library

ImageWriter II Problem/Cure: Prints Darker on One Side

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Prints Darker on One Side

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The ImageWriter II prints darker on one side of the page than on the other.

CAUSE: The print head may not be parallel to the platen.

CURE: Install appropriate shims from the ImageWriter II shim kit. The part number for this kit is listed in the Price Pages of the Service Programs binder.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1887



Tech Info Library

ImageWriter: Print Fades Intermittently

Revised: 1/17/92
Security: Everyone

ImageWriter: Print Fades Intermittently

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: Printing is fine most of the time, then the print will fade. After a space of 15 or so characters, the print density returns. The location of the print fade can happen anywhere on the document.

CAUSE 1: If the ribbon cartridge may not be a genuine Apple cartridge, the ribbon may fit loosely in the ribbon mechanism. This causes the clutch on the ribbon to slip when it turns to advance the ribbon.

FIX: Replace third party ribbon with a genuine Apple ribbon.

CAUSE 2: The ribbon may be catching on the screw which fastens the paperguide in place.

FIX: Tighten or replace the screw as appropriate.

CAUSE 3: The springs part numbers 970-0063 and 970-0064 may be misplaced. These springs have different tensions. Spring 970-0063 is the one with a greater tension. When misplaced it will cause the gear 970-0061 to slip.

FIX: Check the tension of the springs and install them in their proper place. After repair, reinstall all the parts in the carriage and run Self Test to check for proper operation of the printer.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1888



Tech Info Library

ImageWriter 15 Problem/Cure: Prints OK But Makes Grinding Sound

Revised: 1/17/92
Security: Everyone

ImageWriter 15 Problem/Cure: Prints OK But Makes Grinding Sound

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: ImageWriter 15" prints OK but the carriage seems to make a grinding sound when moving across the print bar. This often happens after the carriage motor has been replaced.

CAUSE: The screws mounting the carrier motor on its grommets may be too tight causing vibration (grinding noise).

CURE:

1. Loosen the screws that secure the Carrier Motor Clamps.
2. Loosen the four screws that secure the Carrier Motor to the bottom cover of the printer.
3. Cross tighten the four Carrier Motor Screws until you feel some resistance but DO NOT over tighten. If the Carrier Motor has just been replaced and the screws have been over tightened, you may have to replace all eight Carrier Motor Rubber Grommets and cross tighten again. Remember, tightening the screws to much will cause the grommets to over compress and cause a vibration that exhibits the grinding sound.
4. Tighten the screws that hold the Carrier Motor Clamps.
5. Run Self Test to check for the vibration problem.

Note: You may have to follow the above procedure several times before the noise is eliminated.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1889



Tech Info Library

ImageWriter II Problem/Cure: Carriage Locks and Prints Bad

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Carriage Locks and Prints Bad

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: ImageWriter II carriage intermittantly locks up and gives light or bad printing.

CAUSE: Carriage assembly was incorrectly assembled, or the carriage fell out of its rear rail mount during shipping.

REFERENCE: Figure 5 (Nov. 85) Page 6.10. Block 2:
Two guides with screws are shown in the rear of the carrier assembly. The guides are supposed to ride underneath the chassis; instead they ride on the chassis.

CURE:

1. Remove the top cover.
2. Slide the carrier assembly to the right
3. CAREFULLY. Push the carrier slightly down until the guides locks in the place underneath the chassis.
4. Test the printer and replace the cover.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1890



Tech Info Library

ImageWriter II Problem/Cure: Missing Dots

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Missing Dots

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: Top Row(s) of Dots are missing when
Character(s) are Printed.

CAUSE: Ribbon Lift may be misadjusted.

CURE: Before assuming that there is a Print Head failure, check to see
that the Ribbon Lift is adjusted properly. To perform the lift
adjustment, follow the steps documented in the ImageWriter II
Technical Procedures for Color Printing adjustment, even though you
MIGHT NOT be using the color ribbon. Adjustment of the lock nut on
the Color Ribbon Assembly may be all that is needed to solve the
problem.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1891



Tech Info Library

ImageWriter II Problem/Cure: Ink Spots or Streaks

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Ink Spots or Streaks

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The Imagewriter II leaves ink streaks or spots on the paper as it prints. These streaks may be light or dark, and resemble smudges. Leaving the printer idle for a period of time with a piece of paper in it may leave a spot on the paper when it is advanced out of the printer.

CAUSE: Customer may have forgotten to set the paper thickness lever to the proper thickness when printing on an envelope or multiple pages. This causes the metal part of the paper guide to press against the ribbon cloth during printing which 'scrapes' some of the ink off of the ribbon and deposits it on the guide. If enough ink builds up, it will begin to smear onto following pages.

CURE: Remove the paper guide from the carriage assembly using the procedures outlined in the Tech Procedures. The metal shield on this part will probably be coated with a layer of ink (possibly thick). Use isopropyl alcohol to thoroughly remove the ink. Be careful not to bend the metal shield. Re-install shield as close to the platen as possible. This will put the ribbon a little farther from the paper guide helping to prevent ink from building up. Advise the customer to prevent this problem, he/she should adjust for proper paper thickness when printing on envelopes and multiple pieces of paper.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1892



Tech Info Library

ImageWriter I Problem/Cure: Single Sheet Paper Skews

Revised: 4/26/89
Security: Everyone

ImageWriter I Problem/Cure: Single Sheet Paper Skews

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: The ImageWriter is unable to feed a single sheet of paper through without the paper slipping to one side.

CAUSE: Lightly pulling on the "slipped" side of the paper reveals that there is not much friction holding the paper positioned between the platen and the rollers.

CURE: Remove the the platen using the procedures in the Technical Procedures manual. Lightly rub the surface of the platen with fine steel wool to lightly roughen the surface and increase the friction between the platen, paper and rollers.

CAUTION: To prevent shorts from occurring on the logic board, be sure to thoroughly brush "all" steel wool particles off of the platen before reinstalling it.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1896



Tech Info Library

Macintosh1/2 XL(Lisa 2/5) : Clobbers Other Nodes On ATalk

Revised: 1/17/92
Security: Everyone

Macintosh1/2 XL(Lisa 2/5) : Clobbers Other Nodes On ATalk

=====

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: A Macintosh 1/2 XL (originally called Lisa 2/5) may suffer from noise problems on its receiving lines. This interferes with its ability to hear other network devices, so may think it is safe to broadcast even if another node is transmitting. This can result in collisions that clobber other node's transmissions. The problem only happens with units that have the old I/O PCBs (the ones with battery packs).

CAUSE: The old I/O PCB needs to be upgraded.

CURE: 1. Cut R38 (location 12E above the battery pack).
2. Cut the trace leading to pin 3 of RP4 (location 12F)

If the above cure doesn't fix the problem, refer to the Lisa Tech Procedures to obtain a troubleshooting procedure.

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Tech Info Library Article Number:1897



Tech Info Library

LaserWriter P/C: Vertical Line or Blank Line on Page

Revised: 1/17/92
Security: Everyone

LaserWriter P/C: Vertical Line or Blank Line on Page

=====

This article last reviewed: 10 March 1988

PROBLEM DESCRIPTION: From the top to the bottom of the page, either a solid line or blank line of variable thickness is printed.

CAUSE: There are six possible causes for this symptom:

- 1 - Defective toner cartridge
- 2 - Defective scanner unit
- 3- Dirty or bent primary or transfer corona wires
- 4 - Dirty fuser assembly or wiper
- 5 - Defective I/O board
- 6 - Defective DC controller board

CURE: First, perform a service print test and see if the same symptom is exhibited. If it is, the I/O board can be removed from the list of possible causes. If not, replace the I/O board and re-test.

If after the I/O board has been replaced or removed from consideration, replace each item, 2 through 6, rechecking for the problem after each replacement until the unit is printing properly.

If the above cure doesn't fix the problem, refer to the LaserWriter Tech Procedures to obtain a troubleshooting procedure.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1898



Tech Info Library

Macintosh Continuously Reboots Itself

Revised: 1/17/92
Security: Everyone

Macintosh Continuously Reboots Itself

=====

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: After being powered on the Macintosh continuously reboots of its own initiative. During this process, it beeps about twice a second.

CAUSE: The power supply may be defective.

IMPORTANT: To avoid damage to Macintosh modules follow the instructions exactly as given in the "CURE:" below.

CURE: 1. Replace the power supply.
2. Turn on the Macintosh and make all Level I adjustments.
3. Run MacTest. If the problem remains, replace the Main Logic PCB.
4. If the problem remains after step 3, replace the drive.

If the above cure doesn't fix the problem, search on GTS and the product's name to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1899



Tech Info Library

Macintosh: 512K With 800K Disk Drive

Revised: 7/20/92
Security: Everyone

Macintosh: 512K With 800K Disk Drive

=====

Article Created: 22 April 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

BACKGROUND: A 512K Macintosh requires a special revision of ROM to work with an 800K disk drive. Service stock PCBs commonly used as replacements when repairing Macintoshes do not have the 800K upgraded ROM installed.

IMPORTANT: When swapping the main logic PCB on a 512K Macintosh, perform the following:

1. CHECK FOR 800K ROM UPGRADE ON "BAD" PCB
Check the ROM installed on the malfunctioning PCB. If the ROM part numbers are 34X-0341 and 34X-0342, then they are 800K upgrade ROM and you should proceed to step 2 of this procedure. If not, then the bad PCB doesn't have 800K ROM so you don't need to worry about transferring the upgrade from the bad PCB to the new PCB.

2. SWAP 800K ROM FROM "BAD" PCB TO "NEW" PCB
If the malfunctioning PCB has the 800K ROM installed, swap them into the new PCB before installing it into the customer's Macintosh.

NOTE: If the ROM were swapped from the "BAD" PCB to the "NEW" PCB, remember to install the original ROM from the new service stock PCB into the bad PCB before returning it to Apple.

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Tech Info Library Article Number:1900



Tech Info Library

ImageWriter II Problem/Cure: Character Smudging

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Character Smudging

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: When using an ImageWriter II in conjunction with the Macintosh, characters sometimes appear "smudged" or "blurry".

CAUSE: This can often be a result of using other than the current version of ImageWriter II driver software.

CURE: First, to determine if the driver is the cause of the smudging, check the version of driver being used. The easiest way is to print a document and see what version number is displayed in the Print Dialog box. The version should be 2.1 or later. If it is not, the driver should be replaced.

To install the new driver, use the LaserWriter Install program contained on the LaserWriter Install diskette. (This diskette was sent to all dealers in the October 1 AppleGram mailing. The diskette is also included in all AppleTalk Option Kits for the ImageWriter, LaserWriter Plus Upgrade Kits, and LaserWriters.) Run the Install program and select "ImageWriter" as the print driver.

DON'T use the old method of dragging the current ImageWriter icon into the trash can and the new ImageWriter II icon into the system folder. This may result in a malfunction of the ImageWriter II.

If this cure does not resolve the problem, go to the Technical Procedures to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1901



Tech Info Library

ImageWriter II Problem/Cure: Creeping Top of Form

Revised: 1/17/92
Security: Everyone

ImageWriter II Problem/Cure: Creeping Top of Form

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: When using an ImageWriter II in conjunction with the Macintosh, the top of form gradually "creeps" down the page. Each page will have the top of form 1 line below the previous page.

CAUSE: This can often be a result of using other than the current version of ImageWriter II driver software.

CURE: First, to determine if the driver is the cause of the smudging, check the version of driver being used. The easiest way is to print a document and see what version number is displayed in the Print Dialog box. The version should be 2.1 or later. If it is not, the driver should be replaced.

To install the new driver, use the LaserWriter Install program contained on the LaserWriter Install diskette. (This diskette was sent to all dealers in the October 1 AppleGram mailing. The diskette is also included in all AppleTalk Option Kits for the ImageWriter, LaserWriter Plus Upgrade Kits, and LaserWriters.) Run the Install program and select "ImageWriter" as the print driver.

DON'T use the old method of dragging the current ImageWriter icon into the trash can and the new ImageWriter II icon into the system folder. This may result in a malfunction of the ImageWriter II.

If this cure does not resolve the problem, go to the Technical Procedures to obtain a general troubleshooting procedure.

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Tech Info Library Article Number:1902



Tech Info Library

Apple IIe (Enhanced): Distorted Double High-Res Graphics

Revised: 1/17/92
Security: Everyone

Apple IIe (Enhanced): Distorted Double High-Res Graphics

=====

Article Created: 12 May 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: While trying to run a program that uses Double High Resolution Graphics (ie. DazzleDraw, MouseCalc, etc.), screen output appears poor, unreadable or badly distorted.

CAUSE: The Molex Jumper might have fallen off, or been removed from the the Extended 80 Coloumn Card.

CURE: Reinstall the Molex Connector as explained in the Extended 80 Column Card Manual.

Note: Later versions of the Extended 80 Column Card do not have the jumper connected by the molex plug described here. That connection is already made on the card at the factory.

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Tech Info Library Article Number:1903



Tech Info Library

Apple Logo II--An Introduction to Programming: Manual Errata

Revised: 4/24/86
Security: Everyone

Apple Logo II--An Introduction to Programming: Manual Errata

=====

Page 161 in Appendix A mistakenly lists ARCR and ARCL as four-line procedures. The third printed line, REMAINDER :DEGREES 10, should be appended to the second line in both procedures so that they read:

```
TO ARCR :RADIUS :DEGREES
ARCR1 .174532 * :RADIUS :DEGREES / 10 REMAINDER :DEGREES 10
END
```

```
TO ARCL :RADIUS :DEGREES
ARCL1 .174532 * :RADIUS :DEGREES / 10 REMAINDER :DEGREES 10
END
```

When you're in the editor, your screen will show:

```
TO ARCR :RADIUS :DEGREES
ARCR1 .174532 * :RADIUS :DEGREES / 10 RE!
MAINDER :DEGREES 10
END
```

```
TO ARCL :RADIUS :DEGREES
ARCL1 .174532 * :RADIUS :DEGREES / 10 RE!
MAINDER :DEGREES 10
END
```

Apple Technical Communications

Tech Info Library Article Number:1904



Tech Info Library

Imagewriter: Controlling with BASIC (12/96)

Revised: 12/16/96
Security: Everyone

Imagewriter: Controlling with BASIC (12/96)

Article Created: 24 April 1986
Article Reviewed/Updated: 16 December 1996

TOPIC -----

This article describes changing the Imagewriter's printing style from within a BASIC program.

DISCUSSION -----

A BASIC program can be used to change the Imagewriter's printing style. The Imagewriter User's Manual contains a listing of the different printer codes and their meaning.

The following sample program changes the type size to 17 characters per inch:

```
10 D$ = CHR$(4) : REM DOS and ProDOS commands access the printer.
15 REM CHR$(4) makes DOS or ProDOS look for a command.
20 PRINT D$;"PR#1" : REM Turn the printer interface card on.
30 PRINT CHR$(27); CHR$(113);
35 REM CHR$(27); and CHR$(113); change type to condensed size (17 CPI).
40 PRINT "THIS IS A TEST" : REM Print something to test the new style.
50 PRINT D$;"PR#0"
55 REM Turn off the printer interface card and turn on the screen output.
56 REM For 80 column screen output, replace the number 0 with the number 3.
60 END
```

Line 30 is the key to obtaining the smaller type size. The Imagewriter recognizes these two characters (27 and 113) as the command to change to condensed print. You will find these codes in the text of the Imagewriter User's Manual and on the foldout card in the back of the manual.

Use the foldout card to find the code for a feature you wish to use and enter the corresponding decimal codes in a print statement. For example, to obtain boldface printing, replace line 30 with the statement 30 PRINT CHR\$(27); CHR\$(33);

Some features have a series of n's in the decimal code column on the foldout card. Replace these n's with a number that has as many numerals as there are n's in the code, and PRINT the code with the number. For example, the foldout card shows that to set the left margin, send the characters Escape, L, and nnn or send the decimal codes 27, 76, and nnn. This means that the value of the left margin must be sent as a three digit number. If the margin value has only two digits, put an extra zero on the left. For example, to set the left margin to 15, replace line 30 with the statement 30 PRINT CHR\$(27); CHR\$(76); "015";

The Apple ImageWriter and Dot Matrix Printer have special modes which allow them to generate custom-design characters. To get the most definition for each character it is useful to be able to control all eight bits of the data being sent to the printer. The following program example illustrates the use of a routine which allows for all eight data bits to be significant. It demonstrates an example in the ImageWriter User's Manual Part 1: Reference on pages 69 and 70.

```
10 D$ = CHR$(4)
20 FOR I = 768 TO 773: READ J: POKE I,J: NEXT I
30 PRINT D$;"PR#1"
40 FOR I = 1 TO 14: READ J: POKE 769,J: CALL 768: NEXT I
50 PRINT CHR$(27)"*&&&" CHR$(27)"$"
60 PRINT D$; "PR#0"
70 DATA 169,4,76,237,253,96
80 DATA 27,45,27,73,166,71,0,72,72,126,72,72,0,4
```

* Line 20 reads the data from line 70 and POKE's a machine language routine into the computer.

* Line 30 activates the printer.

* Line 40 reads the data from line 80 which is a string of data defining a custom character, the plus/minus character as shown in the ImageWriter manual. It is defined using eight bit data where all eight bits are required.

* Line 50 uses the custom character.

* Line 60 returns the output to the screen.

Article Change History:

16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1905



Tech Info Library

Machine language programs: Determining the length of code

Revised: 4/24/86
Security: Everyone

Machine language programs: Determining the length of code

=====

In the case of a short machine language program, you just count the bytes to determine the length of code. This method is not practical for longer programs, though; for such programs, hexadecimal arithmetic is more useful. If you're familiar with hex digits (A = 10, B = 11, C = 12, D = 13, E = 14, F = 15), you can subtract hex locations, just like decimal numbers.

To discover the length of a longer machine language program, simply add 1 to the last location used by the machine language program, and then subtract from that the first location used by the program. For example, an ending address of \$0357 and a starting address of \$0300 would yield the calculation (\$0357 + \$0001) - \$0300, or a length of \$58:

last + 1	0	3	5	8
first	-	0	3	0
length		0	0	5

Likewise, the length of a program with an ending address of \$03AC and a starting address of \$031B is \$92:

last + 1	0	3	A	D
first	-	0	3	1
length		0	0	9

In each case above, the answer is the length of the machine language program, and you may use it in a BSAVE command:

BSAVE PROGRAM, A\$0300, L\$58

You'll find more extensive explanations of hexadecimal arithmetic in most introductory machine language books. Check with a local book store or Apple dealer to help you locate one.

Apple Technical Communications

Tech Info Library Article Number:1906



Tech Info Library

Apple Access II: 1.1 Update

Revised: 5/25/89
Security: Everyone

Apple Access II: 1.1 Update

=====

The new version of Access II (1.1) solves many of the bugs that were associated with Access 1.0. Here are the main changes:

- Text file send delay (The 1.0 version would only accept 99 as a value when the maximum input should have been 9999)
- XMODEM file transfer (Access 1.0 would 'lock-up' during XMODEM transfers and the file would be lost)
- Formatting routines (The formatting routines now operate)

The Access II 1.1 upgrade may be obtained by the user through the Apple media exchange program.

Apple Technical Communications

Tech Info Library Article Number:1907



Tech Info Library

Macintosh Plus: Problems with Chooser Versions Earlier Than 3.1

Revised: 6/12/92
Security: Everyone

Macintosh Plus: Problems with Chooser Versions Earlier Than 3.1

=====

Article Created: 24 April 1986
Article Last Reviewed: 27 May 1992
Article Last Updated: 10 November 1987

The following information applies only to versions of the Chooser earlier than 3.1.

A Macintosh Plus or Macintosh 512K Enhanced often have difficulty initializing the serial port for AppleTalk other than at power up.

This becomes obvious when you've physically connected AppleTalk to your system, clicked on Connect AppleTalk in the Control Panel (Apple menu) and your LaserWriter or ImageWriter (with an AppleTalk card) connected to the network still doesn't appear in the Chooser.

Try closing then reopening the Chooser; if your printer still doesn't display in the Chooser, you'll need to power down and back on. After power back on, you'll then be able to Choose any printer connected to your AppleTalk network.

If you still are unable to select your printers, perform the above steps again. Additionally, make sure you've installed the necessary drivers with the Installer: check the System Folder. There you should find drivers for each of your printers. For example, if wish to print to a LaserWriter, then in the System Folder you should find an icon named LaserWriter and one named LaserPrep.

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Tech Info Library Article Number:1908



Tech Info Library

Apple Tape Backup 40SC: Restore Volume Backup To Original Disk

Revised: 5/4/88
Security: Everyone

Apple Tape Backup 40SC: Restore "Volume" Backup To Original Disk

=====

This article last reviewed: 7 January 1988

You can use either the "Backup Files" or "Backup Volume" option on the Tape Backup 40SC, but "Volume" backups should be restored only to the SAME hard disk. "File" backups may be restored to any hard disk that have enough room to store the files from the original hard disk.

Distributing backup material by tape is also possible -- as long as the backup of the original material was done using the "Backup Files" option. If you use the "Backup Volume" option, the hard drive you are restoring to must have exactly the same number of blocks as the original hard drive.

Tech Info Library Article Number:1909



Tech Info Library

AppleSoft BASIC: How to round numbers

Revised: 4/24/86
Security: Everyone

AppleSoft BASIC: How to round numbers

=====

There is no rounding function in AppleSoft BASIC, but there is a formula you can enter to get the same effect. It's described on page 18 of the old AppleSoft BASIC Programming Reference Manual. Here's the formula:

$$X = \text{INT}(X * 10^D + .5) / \text{INT}(10^D + .5)$$

where D is the number of decimal places.

Apple Technical Communications

Tech Info Library Article Number:1911



Tech Info Library

Macintosh Plus: Connecting it to an AppleLine

Revised: 10/12/87
Security: Everyone

Macintosh Plus: Connecting it to an AppleLine

=====

This article last reviewed: 9 October 1987

There are two ways to connect a Macintosh Plus to AppleLine:

- 1) use the 590-0169A Cable and the Mini Din 8 to DB-9 Adapter.
- 2) use the A2C0311 590-0331-B Tan, or the A2C0312 590-0555-A Platinum cable. These cables have a DIN 8 at one end and a 25 pin on the other, AppleLine end.

Note: The second method has been shown to be generally more reliable than the first.

Tech Info Library Article Number:1912



Tech Info Library

AppleWorks: Using it with the IIfx and the Epson DX-20 printer

Revised: 4/24/86
Security: Everyone

AppleWorks: Using it with the IIfx and the Epson DX-20 printer

=====

This article describes how to run AppleWorks on a IIfx with an Epson DX-20 printer.

Configuration:

- Apple IIfx
- Super Serial Card
- CompuCable, P/N MTB0201
- Epson DX-20 Letter Quality Printer
- AppleWorks, version 1.3

Super Serial Card switch settings:

SW 1-1: OFF	SW 2-1: ON
SW 1-2: ON	SW 2-2: OFF
SW 1-3: ON	SW 2-3: OFF
SW 1-4: ON	SW 2-4: OFF
SW 1-5: ON	SW 2-5: ON
SW 1-6: ON	SW 2-6: OFF
SW 1-7: ON	SW 2-7: OFF

DX-20 switch settings:

SW 1-1: OFF	SW 2: all OFF
SW 1-2: OFF	
SW 1-3: ON	
SW 1-4: OFF	
SW 1-5: OFF	
SW 1-6: ON	
SW 1-7: OFF	
SW 1-8: OFF	

AppleWorks configuration:

Needs line feed after each return:	NO
Accepts top-of-page commands:	NO

Stop at end of each page: YES or NO (NO is preferable)

Platen width: 13.0

Printer codes:

Characters per inch: no codes

Lines per inch: no codes

Boldface, subscript and superscript:

Boldface begin: ESC-W

Boldface end: ESC-&

Subscript begin: ESC-U

Subscript end: ESC-D

Superscript begin: ESC-D

Superscript end: ESC-U

Underlining (printer has start/stop underlining commands):

Underlining begin: ESC-E

Underlining end: ESC-R

Apple Technical Communications

Tech Info Library Article Number:1914



Tech Info Library

MacTerminal 2.0: Terse mode

Revised: 9/1/87
Security: Everyone

MacTerminal 2.0: Terse mode

=====

Numbered responses from the Personal Modem are more efficiently interpreted by MacTerminal 2.0 than are string responses, so MacTerminal 2.0 puts the Personal Modem into this "terse" mode by issuing the command `ATV0`. In terse mode, the Personal Modem returns numbers instead of strings in response to commands, such as returning a zero in place of the response string "OK".

You can take the Personal Modem out of terse mode by typing `ATV1`. The Personal Modem responds to this command with the string "OK".

If you wish to reset all defaults, including the display of strings rather than number codes, use `ATZ --` or, of course, turn the modem off and then on.

Tech Info Library Article Number:1917



Tech Info Library

Super Serial Card: Accessing it through Machine Language

Revised: 4/30/86
Security: Everyone

Super Serial Card: Accessing it through Machine Language

=====

Although Apple's Super Serial Card can be used from Applesoft Basic, it is often desirable to use machine language to increase the speed with which characters are sent and received. The assembler program below illustrates a method of communicating with another Apple computer through the Super Serial Card. You may use this routine as a starting point for your own program.

On page 291 of the Apple IIe Reference manual and on pages 261 to 265 of the Apple IIc Reference Manual there are lists of the registers and entry points used by routines resident in the Super Serial Card. The equates in the program below use these locations, as well as input/output hooks found in the Apple II family of computers.

The initialization routine (INIT) stores the address of the Super Serial Card's initialization routine in CSW (the Apple II monitor character output hook). This activates the card for output by jumping to COUT. Following this, DOS or ProDOS hooks are reinstalled.

The OUTPUT routine checks the 6551 status port bit 4. If this is equal to zero, the previous character has not yet been sent, so we must check the status byte again until that register is clear. When the value in bit 4 becomes one, the 6551 is ready to send another character. To accomplish this, simply store the data in the transmit register (TDREG) of the chip.

Bit 3 of the status port is checked by the INPUT routine. If this bit is zero, the program either loops continuously or returns to the calling program, depending on the state of the return flag found in location \$FF. If bit 3 is one, a character is waiting at the input port, and the character is then read from the read register (RDREG) of the 6551.

The DEMO portion of this program calls the INIT routine, and sends each letter of the alphabet to the connected device. After each character is sent, the program waits to see if a response has been received from the external device. If a character is waiting, the program ends.

1 * Super Serial Card - Demo of accessing it through machine language
10

```
11          ORG      $2000
12  COUT      EQU     $FDED      ; CHARACTER OUT IN MONITOR
13  CSWL      EQU     $36        ; OUTPUT HOOK
14  CSWH      EQU     $37
15  WAIT      EQU     $FCA8      ; MONITOR ROUTINE TO WAIT
16  ;
17  ;   SSC EQUATES
18  ;
19  DIPSW1     EQU     $C081      ; +N0  DIPSWITCH BLOCK 1
20  DIPSW2     EQU     $C082      ; +N0  DIPSWITCH BLOCK 2
21  TDREG      EQU     $C088      ; +N0  6551 DATA REGISTER
22  RDREG      EQU     $C088      ; +N0  6551 DATA REGISTER
23  STATUS     EQU     $C089      ; +N0  6551 STATUS REGISTER
24  RESET      EQU     $C089      ; +N0  6551 SOFTWARE RESET
25  COMMAND    EQU     $C08A      ; +N0  6551 COMMAND REG
26  CONTROL    EQU     $C08B      ; +N0  6551 CONTROL REG
27  ;
28  START      JMP     DEMO       ; SKIP AROUND ALL THE SUBROUTINES
29  ;
30  ; USE THE SSC FIRMWARE TO INITIALIZE THE 6551.
31  ;
32  INIT      LDA     CSWL        ; STORE THE CURRENT CSW
33          PHA                    ; SO THAT WE DO NOT DISCONNECT
34          LDA     CSWH        ; DOS OR PRODOS
35          PHA
36          LDA     #$00        ; STORE $Cs00 IN CSW
37          STA     CSWL
38          STX     CSWH        ; THIS ALREADY CONTAINS $Cs
39          LDA     #$00
40          JSR     COUT        ; JUMP TO COUT TO INIT THE CARD
41          PLA
42          STA     CSWH        ; RESTORE THE DOS OR PRODOS
43          PLA                ; HOOKS AND THEN RETURN
44          STA     CSWL
45          RTS
46  ;
47  ; OUTPUT A CHARACTER TO 6551
48  ;
49  OUT      PHA                    ; STORE DATA ON STACK
50  OLP      LDA     STATUS,Y     ; CHECK BIT 4 OF STATUS BYTE
51          AND     #$10        ; TO SEE IF IT'S OK TO SEND
52          BEQ     OLP         ; CHARACTER WAITING TO GO OUT
53          PLA                ; GET DATA BACK FROM STACK
54          STA     TDREG,Y      ; AND OUTPUT THE CHARACTER
55          RTS
56  ;
57  ; INPUT A CHARACTER FROM 6551
58  ;
59  IN       LDA     STATUS,Y
60          AND     #$08        ; BIT 3 OF STATUS
61          BEQ     INTST       ; NO CHAR WAITING TO BE RECEIVED
62          LDA     RDREG,Y     ; GET THE INPUT FROM 6551
```

```
63          RTS
64  INTST    LDA    $FF      ; CHECK RETURN FLAG
65          BNE    IN       ; IF NOT 0 THEN WAIT FOR INPUT
66          RTS           ; IF ZERO, DON'T WAIT
67  ;
68  ;    BEGIN THE DEMO PROGRAM
69  ;
70  DEMO      LDY    #$10     ; Y CONTAINS $s0 - DEMO USES SLOT 1
71          LDX    #$C1     ; LOAD X WITH $Cs
72          JSR    INIT     ; INIT THE CARD
73          LDA    $FF     ; SET RETURN FLAG FOR INPUT
74          STA    $FF     ; FF MEANS WAIT FOR CHAR
75          JSR    IN       ; INPUT A CHARACTER - SEE ABOVE
76  OLOOP    LDX    #$41     ; OUTPUT THE ASCII CODES
77  OLP1      TXA           ; FROM A-Z TO THE SSC. IT WILL STOP
78          JSR    OUT     ; WHEN THE SSC RECEIVES A CHAR.
79          LDA    #$80     ; DELAY BETWEEN CHARACTERS
80          JSR    WAIT     ; TO ALLOW TIME FOR INPUT.
81          LDA    #$00
82          STA    $FF     ; RETURN IF NO CHARS WAITING
83          JSR    IN       ; CHECK FOR A CHARACTER
84          BNE    ALLDONE  ; THEY SENT SOMETHING - WE END
85          INX
86          CPX    #$5B     ; THE LETTER 'Z'
87          BNE    OLP1
88          LDA    #$0D
89          JSR    OUT     ; SEND A CARRIAGE RETURN
90          JMP    OLOOP    ; BEGIN THE ALPHABET AGAIN
91  ALLDONE  RTS           ; END ROUTINE
```

Apple Technical Communications

Tech Info Library Article Number:1918



Tech Info Library

Mac Plus, SE, and II: Memory Configuration and Speed (5/95)

Revised: 5/1/95
Security: Everyone

Mac Plus, SE, and II: Memory Configuration and Speed (5/95)

Article Created: 22 January 1988
Article Reviewed/Updated: 1 May 1995

TOPIC -----

With the advent of larger SIMMs (single inline memory modules), there are several ways to configure a Macintosh Plus, Macintosh SE, or Macintosh II.

DISCUSSION -----

Macintosh Plus and SE
=====

The Macintosh Plus and Macintosh SE can be configured in five ways:

- 512 KB
- 1 MB
- 2 MB
- 2.5 MB
- 4 MB

Memory expansion must follow strict guidelines that involve modification of the Macintosh logic board and correct placement of the SIMMs.

On a Macintosh Plus or Macintosh SE logic board are four SIMM sockets, labeled SIMM1 through SIMM 4. These sockets are paired, 2 banks of 2 sockets each.

For the Mac Plus:

|	68000
|	SIMM 1
| Bank A	
|	SIMM 2

For the Mac SE:

|	68000
|	Bank A
| SIMM 1	SIMM 2
|	Bank B



 . Logic Board (front)

 Logic Board (front)

- Bank A comprises SIMM 1 and SIMM 2; Bank A, the 2 slots towards the rear of the logic board.
- Bank B comprises SIMM 3 and SIMM 4; Bank B, the 2 slots towards the front of the logic board.

Both sockets in each pair must configured identically. For example, both SIMM sockets 3 and 4 must contain either 256K or 1MB SIMMs, or be empty.

The RAM density of the chips in Bank A must be greater than or equal to the RAM density of the chips in Bank B. For example, if Bank A contains 256K SIMMs, Bank B may be empty or contain 256K SIMMs, but not 1MB SIMMs.

Some configurations require changes to the logic board. There are two resistors that tell the Macintosh important information about what kind of SIMMs are installed.

- If you have only one row of SIMMs installed (say, Bank A has 1MB SIMMs installed and Bank B is empty), then the resistor marked "ONE ROW" must be present; otherwise it should be cut or removed. (The Macintosh Plus and Macintosh SE are not shipped with this resistor installed.)
- If your computer has 256K SIMMS in Bank A, then the resistor marked "256K BIT" must be installed. If either or both Banks have 1MB SIMMs, then the resistor must be cut or removed. (The Macintosh Plus and Macintosh SE come with the resistor installed.)

Here's a chart that shows all the currently possible SIMM configurations and resulting memory total for the Macintosh Plus and Macintosh SE:

.	Bank A	256K	256K	1MB	1MB	1MB
.	Bank B	empty	256K	empty	256K	1MB
.	256K Resistor	present	present	absent	absent	absent
ONE ROW Resistor	present	absent	present	absent	absent	absent

	Total Memory	512K	1MB	2MB	2.5MB	4MB

Macintosh II
 =====

There are currently four SIMM sizes for the Macintosh II:

- 512 KB
- 1 MB

- 4 MB
- 16 MB

The Macintosh II requires special 4MB SIMMs. Be sure to specify your Macintosh model when ordering these SIMMs and ensure that the vendor is aware of the difference. The Macintosh II requires the SuperDrive (FDHD) Upgrade to use 4MB or 16MB SIMMs.

To take advantage of more than 8MB of physical RAM, the Macintosh II MUST have a PMMU installed, so that MODE32 can expand the system's memory map.

With the original ROMs, the Macintosh II will not start up if you install 4MB or 16MB SIMMs in bank A. You'll hear musical chimes at startup, indicating a hardware failure. Install 4MB SIMMs in bank B, and use 256K or 1MB SIMMs in bank A. This provides a maximum of 68MB of RAM installed.

With the FDHD ROMs installed, up to 16 MB SIMMs are supported in bank A increasing the maximum memory configuration to 128 MB.

Restrictions on placing SIMMs in the Macintosh II are similar to those for the Macintosh Plus and Macintosh SE: the SIMM sockets are divided into two banks, A and B, each containing four SIMM sockets. All SIMMs in either bank must be of the same type. No resistors need to be cut to differentiate between the possible configurations.

With original ROMs:

Bank A	256K	to a Maximum	1 MB
Bank B	empty		16 MB
-----	-----		-----
Total Memory	1 MB		68 MB

With FDHD ROMs:

Bank A	256K	to a Maximum	16 MB
Bank B	empty		16 MB
-----	-----		-----
Total Memory	1 MB		128 MB

SIMM Speed Ratings

=====

- Macintosh Plus: SIMMs must be rated 150ns or faster (the number on the SIMM must be 150 or smaller)
- Macintosh SE: SIMMs must be rated 150ns or faster (the number on the SIMM must be 150 or smaller)
- Macintosh II: SIMMs must be rated 120ns or faster (the number on the SIMM must be 120 or smaller)

Article Change History:

19 Apr 1995 - Updated the Macintosh II section of this article.

Support Information Services

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Tech Info Library Article Number:1919



Tech Info Library

Micro Planning International

Revised: 4/3/97
Security: Everyone

Micro Planning International

=====

Article Created: 10/04/89
Article Reviewed: 07/13/93
Article Updated: 04/02/97

Micro Planning International

3801 E. Florida Ave.
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Denver, CO 80210

800-852-7526

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Company Profile:

Software, specializing in project planning software for DOS computers in a standard and EMS versions. Instaplan product: Micro Planning International (formerly Micro Planning Software USA), and UNIX

Article Change History: 07/13/93 New product information added

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1920



Tech Info Library

3.5 Disk Drive: Ejection Problems

Revised: 4/9/91
Security: Everyone

3.5 Disk Drive: Ejection Problems

=====

This article last reviewed: 28 March 1988

Whenever a diskette from either a 800K Macintosh internal or external or a UniDisk 3.5 disk drive does not fully eject, the user must push the diskette back in and attempt to eject it electronically. For the Macintosh, this can be done by holding down the <SHIFT> and <COMMAND> (cloverleaf) keys and pressing '1' (for the internal drive) or '2' (for the external drive). The EJECT command from the FILE menu can also be used. For the UniDisk 3.5, the user can press the eject button on the front of the UniDisk. For either disk drive, the user should attempt this two or three times. As a last resort, a large paper clip can be inserted into the pin hole located to the right of the slot where the disk is inserted.

NOTE: Misalignment of the drive mechanism relative to the bezel, might cause extra drag friction on the floppy that is being ejected and thus cause the eject cycle to be interrupted. The June 1986 Service Mailing will instruct dealers on how to perform this alignment procedure.

IMPORTANT: Once the diskette becomes "frozen" and does not fully eject, the user must NOT force the diskette by pulling it out from the drive. Doing so can cause possible damage to the disk drive mechanism. If the user has tried to forcibly remove the diskette from the disk drive, refer to "Removing Diskettes Which Will Not Eject" below.

In addition to the precautions discussed above, the user should be aware of other factors which can affect the insertion and ejection of a diskette.

- A diskette should be inserted by pressing the diskette gently into the drive. Avoid grasping and pushing the diskette, as this may cause the diskette to go in only part way and stop. If this happens the user should attempt to eject the diskette as described above.

- Diskettes which contain three or more labels may not slide easily into and out of the diskette slot in the case. Should a third label be required, either the other labels should be removed first or the diskette should be discarded.

Technicians should also exercise care when removing or installing a Macintosh Internal disk drive mechanism. If the diskette opening in the disk drive mechanism is not properly centered, binding or friction may cause ejection problems. Refer to the Macintosh Technical Procedures for the proper installation procedures.

REMOVING DISKETTES WHICH WILL NOT EJECT

If a diskette becomes "jammed" in a customer's disk drive, the following procedure should be used to remove it prior to returning the disk drive.

1. Remove the disk drive. Refer to the Technical Procedures to do this.
2. If the disk drive is a Macintosh Internal drive, remove the RFI shield from the mechanism.
3. Place the disk drive mechanism on a flat surface, with the Printed Circuit Board facing down and the diskette opening facing you.
4. If the diskette is not already fully inserted into the disk drive, push it in until it is properly seated.
5. Press the eject lever at the right side of the disk drive.
6. Turn the disk drive so that the left side is facing you.
7. Located the small arm with a cylindrical cog at its end. This arm is located near the left-to-right center of the drive mechanism. This cog will be caught in the half-moon depression of the diskette case.
8. Insert a small screwdriver between the arm mentioned in step 7 and the diskette case. Gently move the arm away from the diskette until the diskette pops forward slightly. Remove the diskette from the disk drive.
9. Return the defective disk drive to Apple and follow the instructions in Technical Procedures to replace the disk drive with a new unit.

Compliments: Clayta Morand, Apple Service Product Support

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Tech Info Library Article Number:1921



Tech Info Library

Ethernet: Cable and Network Specifications

Revised: 7/31/92
Security: Everyone

Ethernet: Cable and Network Specifications

=====

This article last reviewed: 7 January 1988

When ordering and installing Ethernet cable, be sure the cable and network meet the following defined physical specifications:

	10BASE5 (Ethernet)	10BASE2 (Cheapernet)
Cable	0.4 in diameter 50 ohm Double Shielded	0.2 diameter 50 ohm (RGA58A/U) Single Shielded
Segment Length	500 m	185 m
Network Span	2500 m	925 m
Nodes per Segment	100	30
Node Spacing	2.5 m	0.5 m min
Capacitance per Node	4 pf max	8 pf max

For more information on where to obtain thin Ethernet cables and terminators, search under: Northern Wire and Cable

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Tech Info Library Article Number:1923



Tech Info Library

Apple EtherTalk Card: Supports TCP/IP With NCSA Telnet

Revised: 10/4/89
Security: Everyone

Apple EtherTalk Card: Supports TCP/IP With NCSA Telnet

=====

This article last reviewed: 7 January 1988

The National Center for Supercomputer Applications offers NCSA Telnet Version 2.1e, a communications program that supports TCP/IP with the Apple EtherTalk card.

Telnet Version 2.1e includes file transfer and Tektronix terminal emulation. Because network access is via NuBus, and is not bottlenecked by the AppleTalk port, performance is better than with FastPath.

Although Telnet Version 2.1e is in public domain, there is a charge for handling and diskettes. (Specify the Macintosh version.)

For more information, search under: National Center for Supercomputer Applications.

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Tech Info Library Article Number:1924



Tech Info Library

AppleColor RGB Monitor: Specifications (Discontinued 12/92)

Revised: 9/13/93
Security: Everyone

AppleColor RGB Monitor: Specifications (Discontinued 12/92)

=====

Article Created: 1 October 1986
Article Reviewed/Updated: 10 September 1987

I. Technical Specifications

A. Picture Tube:

- 12-inch diagonal (11.5-inch viewable)
- 0.37 mm tri-dot-pitch high contrast (black matrix)

B. Input Signal:

- Analog
- Red, green, blue video signals composited with negative going synchronous 1.0+/- 0.5 volts peak to peak, internally terminated with 75 ohm resistors. Composite synchronous negative going 4.0 +/- 1.0 volts peak to peak, internally terminated with 2000 ohm resistor.

C. Scanning Frequencies:

- | | System: NTSC/60 | NTSC/50-PAL/50 |
|----------------|-----------------|----------------|
| 1. Horizontal: | 15.734 kHz | 15.659 kHz |
| 2. Vertical: | 60 Hz | 50Hz |

D. Video Bandwidth:

- Flat within 1.5 DB to 6.5 MHz. Less than 3 DB down at 8 MHz.

E. Resolution:

- 640 horizontal by 200 vertical pixels when used with the Apple IIGS.

F. Active video display area:

-- Adjusted at the factory to produce an active video area of
200 mm horizontal by 150 mm vertical.

-- Remainder of display area is used for border display area.

G. User Controls:

1. Power switch (right side)
2. Contrast (right side)
3. Brightness, with detent reference (right side)
4. Vertical size (back panel)
5. Vertical hold (back panel)
6. Horizontal hold (back panel)

H. Physical:

- | | mm | inches |
|------------|---------|--------------|
| 1. Height: | 281 | 11 |
| 2. Width: | 344 | 13.5 |
| 3. Depth: | 405 | 16 |
| 4. Weight: | 12.5 kg | 27.56 pounds |

I. Electrical

1. Power Requirements:
 - Less than 65 watts under normal viewing conditions.
 - 90 watts maximum.

2. Input Voltage:

Model	Operating Range	Power Frequency
a. 120 v	108-132	50-60 Hz
b. 220 v	198-242	50-60 Hz
c. 240 v	216-264	50-60 Hz

3. Fuse Protection:

-- The monitor contains internal power line fuse protection.
This fuse should be replaced with the same type by a
qualified service technician.

4. Interface:

-- 15-pin D-style connector
-- Apple IIGS cable

J. Environmental (Operating):

- | | Celsius | Fahrenheit |
|---------------------------|---------|------------|
| 1. Temperature (ambient): | 0-50 | 32-122 |

2. Humidity: 90% maximum
3. Altitude: 10,000 feet maximum

II. Part number: A2M6014

III. System Configuration

-- Apple IIGS

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Tech Info Library Article Number:1930



Tech Info Library

Apple Hard Disk 20SC: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Hard Disk 20SC: Specifications (Discontinued)

=====

Article Created: 1 October 986
Article Reviewed/Updated: 10 September 1987.

I. Technical Specifications

A. Storage:

1. Formatted data capacity: 20 megabytes
2. Data surfaces: 4
3. Heads per surface: 1
4. Block size: 512 bytes
5. Total disk blocks: 39,360
6. Sectors per track: 32

B. Drive:

- Winchester technology
1. Average access time: 65 to 85 milliseconds
 2. Data transfer rate: up to 1.25 megabytes per second
 3. Rotation speed: 2,744 RPM
 4. Startup: 9 seconds
 5. Spindown: 20 seconds

C. Interfaces

-- Two 50-pin connectors

-- One expansion port, a "pass-thru" SCSI port, allows for connection of second HD20 or backup device

D. Electrical

-- Automatically adapting to supply

1. Line voltage: 85 to 270 volts AC, RMS

2. Frequency: 47 to 64 Hz

3. Power consumption: 60 watts

E. Environmental

1. Temperature:

Degrees		
	Celsius	Fahrenheit
a. Operating:	10 to 40	50 to 104
b. Storing:	-40 to 50	-40 to 122

2. Relative humidity: 20 to 80 percent (noncondensing)

3. Altitude:

	feet	meters
a. Operating:	-1000 to 10,000	-305 to 3,050
b. Nonoperating (shipping):	-1000 to 40,000	

F. Physical

	mm	inches
1. Height:	78	3.1
2. Width:	246	9.7
3. Depth:	266	10.5
4. Maximum weight:	3.63kg or 8 pounds	

II. System Configuration

A. Cable: Apple SCSI System Cable

B. Connector:

1. SCSI port of Macintosh Plus, Macintosh SE, Macintosh II

2. SCSI connector of Apple II SCSI Card for:

- a. Apple IIGS
- b. Apple IIe
- c. Apple II Plus

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Tech Info Library Article Number:1931



Tech Info Library

Advanced Geographic Systems

Revised: 7/2/93
Security: Everyone

Advanced Geographic Systems

=====

Article Created: 01/21/88
Article Reviewed: 07/02/93
Article Updated: 07/02/93

Advanced Geographic Systems

16742 Gothard
Suite 213
Huntington Beach, CA 92647

714-841-1562

714-842-7336 Fax

Company Profile:
Specializing in graphic tools.

Article Change History: 07/02/93 MCI number removed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:1932



Tech Info Library

GDT Softworks, Inc. (4/97)

Revised: 4/3/97
Security: Everyone

GDT Softworks, Inc. (4/97)

=====

Article Created: 21 January 1994
Article Reviewed/Updated: April 3, 1997

GDT Softworks, Inc.

4664 Lougheed Highway, Suite 188
Burnaby, B.C. V5C 6B7
CANADA

800-663-6222 (Sales, Product information)

604-291-9121

604-291-9689 Fax

America Online: GDT

CompuServe: 72137,3246

Company Profile:
Specializing in printer drivers collections, including PowerPrint and cabling.

(for U.S. inquiries)
P.O. Box 1865
Point Roberts, WA 98281

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:1933



Tech Info Library

Microtek Labs, Inc.

Revised: 4/3/97
Security: Everyone

Microtek Labs, Inc.

=====

Article Created: 21 January 1988
Article Reviewed/Updated: April 3, 1997

Microtek Labs, Inc.

680 Knox St.
Torrance, CA 90502

800-654-4160 (Sales Department only)

213-321-2121

503-645-7333 (Development Systems)

310-538-1193 Fax

Company Profile:
Hardware, specializing primarily in scanners and printers.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:1934



Tech Info Library

LaserWriter II: Connecting an MS-DOS Computer (5/96)

Revised: 6/5/96
Security: Everyone

LaserWriter II: Connecting an MS-DOS Computer (5/96)

=====

Article Created: 17 June 1988
Article Last Reviewed/Updated: 05 June 1996

When you configure the DIP switches (or push-button switch) of a LaserWriter II series printer for the appropriate communication channels, default parameters are also set for baud rate, parity, and data/stop bits.

For example:

On the LaserWriter IINT, setting switch 1 up and switch 2 down configures both serial ports to the PostScript batch mode at 9600 baud, 8 data bits, 1 stop bit, ignore parity, and XON/XOFF.

The MS-DOS computer must be configured to match the LaserWriter's communication parameters. Type these two MS-DOS commands to set baud to 9600, parity none, 8 data bits, 1 stop bit:

```
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
```

These commands, vary depending on the current settings of the LaserWriter with which the computer will be communicating. They must be updated each time the LaserWriter parameters are changed.

Handshaking must also match; MS-DOS computers typically use DSR/DTR -- the LaserWriter defaults to XON/XOFF. Some MS-DOS applications allow you to change the handshake protocol; if not, you will have to configure the printer to conform to the computer's handshake.

On the LaserWriter IINTX, handshaking is controlled by switches 5 and 6; setting switch 5 up and switch 6 down configures the printer to use DSR/DTR. It is possible to override these settings through a PostScript program.

On the LaserWriter IINT, handshaking must be configured by sending a PostScript program for changing parameters with options encoded for the

appropriate values for the compatible handshake method. To set the DB-25 port for communication at 9600 baud and with DTR handshaking on the LaserWriter, send this PostScript program:

```
serverdict begin 0 exitserver
statusdict begin
25 9600 4 setsccbatch
end
```

On the Laserwriter II_f and II_g, these settings are adjusted with a push-button switch, not with DIP switches. The switch setting configurations are documented in the following table.

Begin_Table

Switch setting	Mode	Baud	Data	Stop	Parity	Handshaking
0	Postscript	9600	8	1	N	XON
1	HP PCL4	9600	8	1	N	DTR
2	Postscript	19200	8	1	N	XON
3	<inactive>					
4	Postscript	1200	7	1	N	XON
5	Postscript	9600	8	1	N	XON
6	Postscript	19200	8	1	N	XON
7	Postscript	1200	8	1	N	DTR
8	HP PCL4	1200	8	1	N	XON
9	Postscript*	9600	8	1	N	XON

*switch setting 9 sets printer to postscript binary

End_table

More information on changing parameters on the LaserWriters can be found in current Apple LaserWriter Reference manuals, and current PostScript Language Reference Manuals. See the manuals that came with your MS-DOS computer for more information on communication configuration.

Article Change History:

28 Mar 1992 - Corrected technical information.

05 Jun 1996 - Added Laserwriter II_f and II_g information.

Copyright 1988-96 Apple Computer, Inc.

Tech Info Library Article Number:1935



Tech Info Library

Apple Monochrome Monitor: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Monochrome Monitor: Specifications (Discontinued)

=====
Article Created: 1 October 1986
Article Reviewed/Updated: 10 September 1987

I. Technical Specifications

A. Picture Tube:

- 12-inch diagonal
- Phosphor EIA Type: P4 (White)
- High contrast
 - When used with Apple IIGS applications that generate color, it displays up to 16 shades of gray.
- Anti-glare
- Text display: 80 columns by 24 lines

B. Input Signal:

- Composite synchronous negative 1.0 +/- 0.5 volts peak to peak, internally terminated with 75 ohm resistor.

C. Scanning Frequencies:

- | | System: NTSC/60 | NTSC/50-PAL/50 |
|----------------|-----------------|----------------|
| 1. Horizontal: | 15.734 kHz | 15.659 kHz |
| 2. Vertical: | 60 Hz | 50Hz |

D. Video Bandwidth:

- Less than 3 DB down at 12 MHz.

E. Resolution:

1. Apple IIGS: 640 horizontal by 200 vertical pixels
2. Apple IIc: 560 horizontal by 192 vertical pixels

F. Active video display area:

- Adjusted at the factory to produce an active video area of 215 mm horizontal by 160 mm vertical.
- Remainder of display area is used for border display area.

G. User Controls:

1. Power switch (right side)
2. Contrast (right side)
3. Brightness (back panel)
4. Vertical size (back panel)
5. Vertical hold (back panel)

H. Physical:

- | | mm | inches |
|------------|--------|-----------|
| 1. Height: | 255 | 10 |
| 2. Width: | 310 | 12.3 |
| 3. Depth: | 375 | 14.3 |
| 4. Weight: | 8.8 kg | 18 pounds |

I. Electrical

1. Power Requirements:
 - Less than 20 watts under normal viewing conditions.
 - 45 watts maximum.

2. Input Voltage:

Model	Operating Range	Power Frequency
a. 120 v	108-132	50-60 Hz
b. 220 v	198-242	50-60 Hz
c. 240 v	216-264	50-60 Hz

3. Fuse Protection:

- The monitor contains internal power line fuse protection. This fuse should be replaced with the same type by a qualified service technician.

3. Video Input Connector: RCA-style phono jack

J. Environmental (Operating):

- | | Degrees | |
|---------------------------|---------------------|------------|
| | Celsius | Fahrenheit |
| 1. Temperature (ambient): | 0-50 | 32-122 |
| 2. Humidity: | 90% maximum | |
| 3. Altitude: | 10,000 feet maximum | |

II. Part number: A2M6016

III. System Configuration

- Apple IIGS
- Apple IIc

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Tech Info Library Article Number:1936



Tech Info Library

Apple IIGS: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple IIGS: Specifications (Discontinued)

=====

Article Created: 6 October, 1986

I. Technical Specifications

A. Central Processing Unit (CPU)

1. Microprocessor: 65C816
2. Clock speeds: 2.8 or 1.0 megahertz
-- Speed selected by user or software
3. Address bus: 24 bits
4. Data bus: 8 bits
5. Address range: 16,777,216 bytes
6. 16-bit registers:
 - a. Accumulator
 - b. 2 index registers
 - c. Direct register
 - d. Stack pointer
 - e. Program counter
7. 8-bit registers:
 - a. Data bank
 - b. Program bank
 - c. Status
8. Addressable memory (as used in the Apple IIGS):
 - a. RAM: Up to 8 megabytes
 - b. ROM: Up to 1 megabyte

B. Memory

1. RAM: 256 kilobytes
 - Expandable to 8 megabytes
2. ROM: 128 kilobytes
 - Expandable to 1 megabyte
 - a. Control Panel
 - b. QuickDraw II graphics routines
 - c. Applesoft BASIC
 - d. Desk Accessory Manager
 - e. Memory Manager
 - f. Free-form sound playback capabilities
 - g. Apple IIe and IIc soft switches and supporting code
 - h. AppleTalk protocols
 - i. Apple DeskTop Bus firmware
 - j. SANE (trademark) numerics
 - k. Event Manager
 - l. Tool Locator
 - m. Video firmware
 - n. Drivers for built-in devices:
 - Mouse and ports for serial interface and disk drive
 - o. Extensions to system monitor for 65C816 support
 - p. Diagnostic routines

C. Display modes

1. Graphics
 - a. Super-high-resolution
 1. 320 dots horizontally by 200 dots vertically
 - Colors per line: Up to 16
 - Colors per screen: 256 from 4096
 2. 640 dots horizontally by 200 dots vertically
 - Colors per line: 4 or more
 - Colors per screen: 128 from 4096
 - b. Double-high-resolution
 - 560 dots horizontally by 192 dots vertically
 - Monochrome
 - c. Double-low-resolution
 - 80 dots horizontally by 48 dots vertically
 - Colors: 16
 - d. High-resolution
 - 280 dots horizontally by 192 dots vertically
 - Colors: 6
 - e. Low-resolution
 - 40 dots horizontally by 48 dots vertically
 - Colors: 16
2. Text
 - a. 40-column text mode
 - 40 columns by 24 lines
 - b. 80-column text mode
 - 80 columns by 24 lines

D. Character sets

1. Letters
 - a. Uppercase: 32
 - b. Lowercase: 32
2. Characters:
 - a. Special: 32
 - b. MouseText: 32
 - c. Unique: 12
 - For each international character set: U.S., U.K., French, Danish, Spanish, Italian, German, and Swedish

E. Keyboard

- Standard typewriter-style
- 1. Keys:
 - a. Main board: 80
 - b. Numeric keypad: 14
- 2. Apple DeskTop Bus (ADB) connectors: 2
 - a. For attaching keyboard to computer
 - b. For daisy-chaining a maximum of 16 ADB input devices
- 3. Layouts: 11
 - Selected through Control Panel
 - a. QWERTY (Sholes)
 - b. Dvorak
 - c. International sets: 9
 - U.S., French Canadian, U.K., French, Danish, Spanish, Italian, German, and Swedish

F. Sound capability

1. Ensoniq 32-oscillator digital synthesizer chip
 - Dedicated 64K RAM
2. Simultaneous voices: Up to 15
3. Output:
 - a. Internal speaker
 - b. Audio output jack:
 - Inside diameter 3.60mm
 - Accepts a 3.5mm stereo plug
 - c. Signal-to-noise ratio: 48bd
 - d. Volume adjusted from Control Panel

G. Interfaces

1. Expansion slots

..TIL01937-Apple_IIGS-Specifications_Discontinued.pdf

- a. Multipurpose RAM and ROM expansion slot
- b. General purpose input/output slots: 7
 - For peripheral control cards
 - Each slot fully buffered
 - Interrupt and DMA priority
- 2. Serial ports: 2
 - 8-pin mini-circular connectors
 - AppleTalk
 - Utilize SCC communication chip
- 3. Disk drive port:
 - 19-pin D-style connector
 - Supports daisy-chaining
- 4. Video output
 - a. Analog RGB via 15-pin D-style connector
 - b. Composite color via RCA phono connector
- 5. Apple DeskTop Bus ports: 3
 - 4-pin mini-circular connector
 - a. On back of IIGS: 1
 - b. On keyboard: 2
- 6. Game I/O: 9-pin D-style connector
 - For joysticks, graphics tablet, etc.
- 7. Audio
 - a. RCA mini jack
 - Programmable volume control
 - b. Input/output connector on main logic board

H. Operating systems

- 1. ProDOS (registered trademark):
 - a. ProDOS 8
 - b. ProDOS 16
- 2. Pascal
- 3. DOS 3.3
- 4. CP/M
 - With appropriate co-processor card

I. Other Features

- Real time clock
 - Set through Control Panel
- Battery backup for Control Panel settings

J. Electrical

1. Line voltage: 107 to 132 volts AC; 50 to 60 Hertz

2. Power consumption:

-- Typical: 11 watts

-- Maximum: 60 watts

3. Supply:

	Voltage in volts	Voltage Tolerance	Maximum current in milliamps (ma)
a. + 5		3%	2500 ma
b. +12		6%	1500 ma
c. - 5		10%	250 ma
d. -12		10%	250 ma

4. Safety and EMI qualifications

a. FCC Part 15, Class B Computing Devices

b. CSA 22.2, No, 154-1979

c. UL 114-Office Appliances and Business Equipment

K. Environmental

		Degrees Celsius	Fahrenheit
1. Ambient operating temperature:	0 to 45		32 to 113
2. Maximum temperature			
	on power supply case:	55	130

3. Relative humidity: 5% to 85%

L. Physical

	mm	inches
1. Width:	284	11.2
2. Depth:	348	13.7
3. Height:	117	4.6
4. Weight:	3.96kg or 8.72 pounds	

Article Change History

12/14/92 - Modified to add Discontinued to title
08/23/89 - Reviewed For technical accuracy

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1937



Tech Info Library

Apple II SCSI Card: Cable Pinouts (11/96)

Revised: 11/21/96
Security: Everyone

Apple II SCSI Card: Cable Pinouts (11/96)

Article Created: 06 October 1986
Article Reviewed/Updated: 15 November 1996

TOPIC -----

Listed below are the pinout for the cable between the Apple II SCSI card and any standard SCSI system cable.

DISCUSSION -----

SCSI Card port	SCSI System Cable
DB-25 connector	Apple 50 pin connector
-----	-----

Pin	Signal	Pin
---	-----	---
1	REQ' Request	49
2	MSG' Message	46
3	I/O'	50
4	RST' Reset	45
5	ACK' Acknowledge	44
6	BSY' Busy	43
7	GND Ground	16,18,19
8	DB0' Data Line 0	26
9	GND Ground	20,21,22
10	DB3' Data Line 3	29
11	DB5' Data Line 5	31
12	DB6' Data Line 6	32
13	DB7' Data Line 7	33
14	GND Ground	1,2,3
15	C/D' Carrier Detect	48
16	GND Ground	4,5,6
17	ATN' Attention	41
18	GND Ground	7,8,9
18	DIFFSENS-GND	11
19	SEL' Select	47

20	DBP'	Parity	34
21	DB1'	Data Line 1	27
22	DB2'	Data Line 2	28
23	DB4'	Data Line 4	30
24	GND	Ground	23,24,25
25	TERMPWR		38

Important SCSI Card Information

=====

The prime (') next to the signal name indicates the signal voltage levels are negative, "low true". The SCSI port uses -5V logic levels.

Because the SCSI port is a DB-25 connector, it looks like a RS-232 port but is NOT a RS-232 port. DO NOT plug any RS-232 device into the SCSI port. Doing so can damage the 5380 chip on the card.

Article Change History:

15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:1938



Tech Info Library

Apple IIGS: A descriptive list of tools in the IIGS Toolbox

Revised: 10/6/86
Security: Everyone

Apple IIGS: A descriptive list of tools in the IIGS Toolbox

=====

Among other features, the Apple IIGS' built-in Toolbox distinguishes the Apple IIGS from earlier Apple II's in that IIGS applications can call the Toolbox routines like Macintosh applications can call the Macintosh Toolbox. Supporting the desktop user interface, the IIGS Toolbox makes developing new applications easier.

1. Tool Locator

The Tool Locator provides the mechanism for dispatching tool calls. It maintains vectors to all of the managers and their associated routines and allows for the patching of these routines with RAM tools or substitutions.

2. Memory Manager

Controlling memory allocation, the memory manager attempts to parcel out sections of memory for an application's use in response to a request by that application. If the memory manager cannot grant that request because of lack of memory, then it is up to the application to deal with an "Out Of Memory" error condition.

3. QuickDraw II

Many of the routines in QuickDraw II are the same as those in the Macintosh. However, QuickDraw II does have the added capability of drawing in color (in both 320 and 640 resolution).

4. SANE Numerics

SANE stands for Standard Apple Numeric Environment. An extended-precision floating point routine package, it conforms to IEEE standard (754) arithmetic.

5. The Desk Accessory Manager

The Desk Accessory Manager keeps track of active Desk accessories on

the desktop. On the Apple IIGS, there are two types of Desk Accessories: classic desk accessories that can run either in the Apple IIGS desktop environment or with old-style applications (like AppleWorks) and new desk accessories that run only in the Apple IIGS desktop environment.

6. Event Manager

This manager is responsible for keeping track of events that occur in the computer system while the current application is doing something else. The application can, when it is done with its current task, ask the event manager what happened while it was busy, and the manager will return a record describing the events that occurred.

7. Menu Manager

This manager is responsible for the maintenance and selection of menus and their associated items. It handles both mouse and keyboard selection.

8. Window Manager

This manager is responsible for keeping track of which areas are covered by which windows including overlapping windows. Whenever a mouse down event is detected, the application calls this manager to find out in which window the event took place.

9. Control Manager

Controls are little "hot spots" on the screen; clicking in controls gives the application commands: yes/no buttons, check boxes, and scroll bars. The control manager is responsible for the placement of these controls on the screen and for alerting the application when the user clicks the mouse in one of them.

10. Line Editor

The Line Editor provides a standard text input interface. Text can be entered, deleted, cut, and pasted within limits.

11. Dialog Manager

This manager is responsible for placing alert messages and text-filled boxes on the screen.

12. Scrap Manager

This manager is responsible for handling the transmission of data from one application to another, often appearing as the clipboard or the scrapbook.

13. Print Manager

The print manager provides for a standard interface for applications among the many printers available for the Apple IIGS.

14. Integer Math Tools

These are a series of fast, extended-precision routines for arithmetic on integer numbers only.

15. Sound Manager

The Sound Manager, a set of routines that controls the Digital Oscillator Chip (DOC) and the Note Synthesizer, oversees the transmission of data to the sound RAM and activates and deactivates all of the 15 voices the Apple IIGS can produce.

16. The Scheduler

Much of the system code in the Apple IIGS is not re-entrant. This means that an interrupt routine cannot call the section of code that was running when the interrupt occurred. The Scheduler makes it possible to delay the execution of tasks that require non-re-entrant system code whenever that code is already in use.

17. Miscellaneous Tools

These tools allow modifying of battery RAM (Control Panel settings) and the clock chip, preparing interrupts and installing interrupt handling routines, as well as mouse control, data compaction, and other small but necessary routines.

Apple Technical Communications

Tech Info Library Article Number:1939



Tech Info Library

LaserWriter IIntx: Speed Up Printing with Font Caching

Revised: 9/22/89
Security: Everyone

LaserWriter IIntx: Speed Up Printing with Font Caching

=====

This article last reviewed: 15 January 1988

PostScript printer fonts -- outline fonts -- are defined as mathematical constructs that form the outline of the character. Each font (for example: Helvetica 12 bold, Times 18) must be converted into bitmaps before it can be printed on the LaserWriter. The bitmapped characters are stored (cached) in RAM; they will remain in RAM until the memory space is required by other bitmapped fonts, or by other system tasks. Each time a font that is no longer in the memory is required for a document, it must be reconstructed.

You can decrease the need to rebuild font bitmaps on a LaserWriter IIntx by adding RAM and/or attaching SCSI hard disks. When additional fonts must be downloaded and cached, RAM is checked first for available caching space. If no RAM is available, and the existing cached fonts are not needed by the current job, they will be replaced. If all RAM-cached fonts are used in the present print job, the new font will be cached in the space on the hard disk allocated for font-caching. This eliminates the need to reconstruct the bitmaps of those fonts which would have been removed if no hard disk space were available, and if RAM caching had exceeded its limits.

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Tech Info Library Article Number:1942



Tech Info Library

Video Out for HyperDrive

Revised: 9/30/91
Security: Everyone

Video Out for HyperDrive

=====

Article Created: 7 May 1986
Article Last Reviewed: 30 September 1991
Article Last Updated: 30 September 1991

TOPIC -----

Can a dealer install a Video Out on a HyperDrive Macintosh and, if so, which manufacturers are compatible with HyperDrive?

DISCUSSION -----

Mentauris Technologies is one manufacturer that designs composite video adapters. We have tested this product and it is compatible with the new silver HyperDrive bracket.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

General Computer Co., Service Documentation

Tech Info Library Article Number:1943



Tech Info Library

LaserWriter II: Specifications (Discontinued 2/88)

Revised: 9/20/93
Security: Everyone

LaserWriter II: Specifications (Discontinued 2/88)

=====

This article last reviewed: 27 April 1988

Here are the technical specifications for a LaserWriter II:

Printing Method

Electrophotography (single-component dry toner)

Printing Speed

Cassette Feed: 8 prints/ minute (other than legal size)
7 prints/ minute (legal size)

Optical System

Laser: semiconductor laser
Scanning System: rotating 6-faced prism mirror

Paper

Cassette Feed 16 to 24 lbs. single sheet photocopy bond
Manual Feed 16 to 36 lbs. letterhead and colored stock
Standard Weight transparency material
Envelopes and labels

Cassettes/Capacity/Sizes

Auto 200 sheets: US Letter, Legal, A4, B5
Manual Single sheets: US Letter, Legal, A4, B5
Envelope 15 envelopes

Print delivery/Capacity

Face-down 100 sheets
Face-up 20 sheets

(NOTE: Always open the face-up tray when printing stock above 21 lbs., or when printing envelopes or transparencies.)

Duty Cycle (month) No limit

Minimum life expectancy: 300,000 pages

Service Interval: 100,000 pages

Pages per Toner: 4000 pages

Noise Level

Printing Under 60 dB(A)

Standby Under 50 dB(A)

Dimensions W 20.2" x D 18.7" x H 8.7"

Weight 46 lbs.

Power Consumption

Standby Average 170W

Operating Maximum 900W (115V)

780W (220V)

880W (240V)

Line Voltage requirements Voltage (V) 10% Frequency (Hz)

US/Japan 100/115 50/60

Europe/Australia 220/240 50

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Tech Info Library Article Number:1944



Tech Info Library

LaserWriter IIsC: How It Handles Fonts

Revised: 1/21/88
Security: Everyone

LaserWriter IIsC: How It Handles Fonts

=====

This article last reviewed: 15 January 1988

Four times (4X) fonts are provided for the LaserWriter IIsC so the resolution image created in the off-screen bit-map by the LaserWriter IIsC driver will correspond to the resolution of the printer. Because these fonts are bit-mapped fonts, they can be printed directly from the Macintosh screen to the LaserWriter IIsC. Any intrinsic font (a font whose characteristics are entirely defined by a font resource) can be used by the LaserWriter IIsC without modification.

Because the full set of LaserWriter IIsC fonts requires 1.5 megabytes of storage, only the plain intrinsic fonts are included. Sources of additional fonts will be third party developers, shareware, etc. Or you can create your own fonts by using a third party program such as FONTastic by AltSys.

The five style selections (bold, italic, underline, outline, shadow) can easily be derived by QuickDraw. QuickDraw uses an algorithm to derive the desired style if the intrinsic font is not available. The information necessary for calculating a specific style is stored in the font family record, FOND.

The LaserWriter IIsC driver requests a scaling factor of 4:1 when intercepting the QuickDraw commands to the Font Manager. If you select a font for which there is not an associated four times (4X) font in the system file, the Font Manager uses an algorithm to find another font that can be scaled ("scaling" refers to the resizing, compression, or expansion of a character by QuickDraw.)

The LaserWriter IIsC does not support font substitution.

For more information, search under: AltSys Corporation

Tech Info Library Article Number:1945



Tech Info Library

LaserWriter Font Utility: It Has Four Basic Functions

Revised: 11/5/91
Security: Everyone

LaserWriter Font Utility: It Has Four Basic Functions

=====

Article Created: 2 March 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 18 October 1988

TOPIC -----

This article describes the functions of the LaserWriter Font Utility.

DISCUSSION -----

The LaserWriter Font Utility Application located on the LaserWriter II installation disk provides four basic functions:

- Initialization of disk devices attached to the LaserWriter IIntx. Initialization allots 20 percent of total disk space to font storage and 80 percent to font-caching.

NOTE: The following functions can be used with any AppleTalk LaserWriter.

- Display all available fonts -- built-in ROM fonts, downloaded RAM fonts, downloaded disk device fonts. You are given the option of deleting fonts which have been downloaded to a disk device.
- Download fonts - When you download a font (AND you have a hard disk attached,) you can choose to download it either to the disk or to RAM. Downloading it to the disk stores it there permanently (or until you remove it.) Those fonts downloaded to RAM remain there until the LaserWriter is powered-down.
- Print Catalog of available fonts (same as display fonts) and their associated sample text.

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Tech Info Library Article Number:1946



Tech Info Library

LaserWriter II Family: List Of Pinouts (6/94)

Revised: 6/23/94
Security: Everyone

LaserWriter II Family: List Of Pinouts (6/94)

Article Created: 15 January 1988
Article Reviewed/Updated: 23 June 1994

TOPIC -----

Is there a listing of the pinouts for the various connectors on the LaserWriter II I/O boards?

DISCUSSION -----

Here is a list of LaserWriter II I/O board pinouts:

LaserWriter II Mini Circular-8 RS-422:

Pin	Signal	Description
1	HSKo	Handshake output
2	HSKi	Handshake input
3	TxD-	Transmit data -
4	SG	Signal Ground
5	RxD-	Receive data -
6	TxD+	Transmit data +
7	RxD+	Receive data +

LaserWriter II RS-232C:

Pin	Signal	Description
1,7 *	SGnd	Signal Ground
2 *	Txd	Transmit Data
3 *	Rxd	Receive Data
4	Rts	Request to send
5	Cts	Clear to send
6	DSR	Data Set Ready

8	DCD	Data Carrier Detect
20	DTR	Data Terminal Ready
22	Ring	Ring indicator

* Only pins 1 (or 7,) 2, and 3 are needed by the LaserWriter II. The other pins exist for support of communication with devices requiring specific hardware handshaking.

NOTE: The RS-232C connector on the LaserWriter is configured as Data Terminal Equipment (DTE), which means that you can connect it directly to a modem or host computer that is configured as Data Communication Equipment (DCE) without any signal reversals. Connection to another DTE device, such as a Macintosh or IBM-compatible, requires that the TxD and the RxD of each connector be crossed connected.

LaserWriter IIsc, IIIntx, IIIf and IIg SCSI port:

Pin	Signal
26	/DATA0
27	/DATA1
28	/DATA2
29	/DATA3
30	/DATA4
31	/DATA5
32	/DATA6
33	/DATA7
34	/PARITY
38	+5V
41	/ATN
43	/BUSY
44	/ACK
45	/RST
46	/MSG
47	/SEL
48	C/D
49	REQ
50	I/O

Pins 1-12, 14-25, 35-37, 39, 40, 42 are GROUND. Pin 13 is not connected.

Apple DeskTop Bus Mini Circular-4:

Pin	Signal	Description
1		Bi-directional Data
2		Not Connected
3		Not connected
4		Ground

LaserWriter IIg ethernet connector:

Pin	Signal	Description
1	FN Pwr	Power (+12V @ 2.1W or +5V @ 1.9W)
2	DI-A	Data In circuit A
3	DI-B	Data In circuit B
4	VCC	Voltage Common
5	CI-A	Control In circuit A
6	CI-B	Control In circuit B
7	+5V	+5 volts (from host)
8	+5V	Secondary +5 volts (from host)
9	DO-A	Data Out circuit A
10	DO-B	Data Out circuit B
11	VCC	Secondary Voltage Common
12	NC	Reserved
13	NC	Reserved
14	FN Pwr	Secondary +12V @ 2.1W or +5V @ 1.9W
Shell	Prot Gnd	Protective Ground

Article Change History:

23 Jun 1994 - Reviewed for technical accuracy, revised formatting, added
LaserWriter II^f and II^g.

Support Information Services

Copyright 1988-94 Apple Computer, Inc.

Tech Info Library Article Number:1947



Tech Info Library

Quark QC Hard Disk: Specifications (Discontinued)

Revised: 9/27/93
Security: Everyone

Quark QC Hard Disk: Specifications (Discontinued)

=====

This article last reviewed: 15 January 1988

Performance

Capacity	10.3 & 21.0 Megabytes Formatted
Access Time	
Track to Track	16.4 mSec
Average	85 mSec
maximum	175 mSec
Average Latency	8.37 mSec
Startup time(typical)	12 Sec

Functional

Rotational Speed	3600 RPM
Recording Density	9036 & 9827 BPI
Track Density	360 & 588 TPI
Cylinders	306
Read/Write Heads	4
Disks	2

Domestic Power Supply 115 VAC 60Hz 0.45 Amps.
European Power Supply 230 VAC 50Hz <0.25 Amps.

Environmental Limits

Ambient Temperature

Operating	+50 to +115 Degrees F
	+10 to +46 Degrees C
Non-Operating	-40 to +140 Degrees F
	-40 to +60 Degrees C

Relative Humidity

Operating	8% to 80% non-condensing
Non-Operating	1% to 95%
Altitude Limit	10,000 ft(3048m) above sea level.
Shock Non Operating	30g Maximum

Dimensions

Height	3.85 in (97.79mm)
--------	-------------------

Width	14.5 in (368.3mm)
Depth	8.5 in (215.9mm)
Weight	11.0 lbs (approx. 50 kg)

Perfomance Comparison

Data based on reading (2000 blocks QC, 200 blocks DiskII, 800 blocks Macintosh 400K internal drive) in sequence from the disks.

Apple IIc

Internal disk drive	16.4 blocks per second
QC hard disk	25.7 blocks per second

Apple II and III

Disk II, III and Duodisk	16.4 blocks per second
Profile	41.3 blocks per second
QC hard disk	55.6 blocks per second

Macintosh 2.0 System

Macintosh 400K	29 blocks per second
QC hard disk	45 blocks per second

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1948



Tech Info Library

LaserWriter IINT or IINTX: Description of Serial Communications

Revised: 9/15/93
Security: Everyone

LaserWriter IINT or IINTX: Description of Serial Communications

=====

Article Created: 15 January 1988
Article Reviewed/Updated: 15 September 1993

The LaserWriter IINT or LaserWriter IINTX has two serial channels, RS-422 and RS-232C. Either channel can be used for asynchronous serial communication. The RS-422 can also be used for synchronous communication for AppleTalk but NEVER for both serial and AppleTalk simultaneously.

Each channel sends and receives serial data encoded in ASCII. Both serial ports are enabled; they can be configured with independent data transmission rates and parity. The first channel to receive a character will execute the print job; if characters are also received on the alternate channel they are buffered, and on completion of the initial job will be executed.

CAUTION: Do NOT hook up AppleTalk and the RS-232C interface at the same time on the LaserWriter. If you use the RS-232C port, and leave AppleTalk connected on the LaserWriter IINT or LaserWriter IINTX, you must set the baud rate parameter for the RS-422 port to 0 (zero).

Changing Communication Parameters:

Many of the communication parameters can be changed by setting the hardware switches on the LaserWriter. Parameters controlled by these switches can also be changed by sending a PostScript program to the printer.

The hardware-controlled parameters and those that can not be configured by the hardware switches are stored in non-volatile memory (EEROM or ZPRAM) as system parameters, and are accessed through the special dictionary, "statusdict". To change the parameters, you must exit the normal server mode, and a password is required. Send the following program to LaserWriter:

```
serverdict begin password exitserver
statusdict begin channel baud options setscbatch
```

Where channel designates which serial port is to be configured, baud sets the baud rate, and options encodes the settings for parity, flow control, number of

data bits, and number of stop bits.

NOTE: When using the Diablo emulation mode, replace setsccbath with setsccinteractive.

Article Change History

15 September 1993 - Changed the LaserWriter model designator to upper case.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:1949



Tech Info Library

Access II: Making room for more data on the backup disk

Revised: 5/25/89
Security: Everyone

Access II: Making room for more data on the backup disk

=====

To free up some disk space on your Access II diskette, use your BACKUP disk ONLY!

If you use the 80 column format, delete the following files from your backup disk:

UT40.SYSTEM
ACS40.SYSTEM
CON40

While these deletions make this disk unusable for the 40 column format, you now have about 104 more blocks you can use for saving downloaded files or captured data.

Deleting these files:

UT80.SYSTEM
ACS80.SYSTEM
CON80

from the backup disk frees up space for the user of the 40 column format and makes the disk unusable for the 80 column format.

To make the disk reusable for the format you deleted, simply copy the deleted files from the master to the backup disk.

Apple Technical Communications

Tech Info Library Article Number:1950



Tech Info Library

Apple Personal Modem: Manual erratum

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Manual erratum

=====

Page 84 of the Apple Personal Modem User's Manual shows the pin numbers incorrectly.

Here is the correct pin numbering for the serial port (female connector), as viewed from the rear of the modem:

8	7	6
5	4	3
2	1	

Apple Technical Communications

Tech Info Library Article Number:1951



Tech Info Library

Using a Appleworks Database file with Word Juggler

Revised: 5/12/86
Security: Everyone

Using a Appleworks Database file with Word Juggler

=====

This procedure describes how to use an Appleworks Database file as a source for a Word Juggler print form. These procedures are for Word Juggler version 2.9 and Appleworks version 1.3 other versions may vary from these instructions.

1. Create a report format in Appleworks.
2. Print the report To a text file on disk option 6. You will be asked for a Pathname. Enter (Data.File) as an example. Do not use the name of the Appleworks data file.
3. Exit Appleworks.
4. Start up Word Juggler.
5. Select 1 for new document.
6. Enter the information in the following format.
*number of fields
field name 1
field name 2
...other fields
Name of the file created in Appleworks example (Data.File).
All lines must end with a carriage return.

EXAMPLE
*5
name
address
city
state
zip.code
Data.File

7. Store the file as Field.List for example.
8. Select 1 for new file.
9. Create your form letter.
10. After you have finished creating the form letter store it to disk.
11. Select print form Closed-Apple-2.
12. Select Word Juggler Data file option 1.
13. For Pathname enter Field.List for example.

14. Word Juggler will now print your form letter using the data from Appleworks.

Notes

Use one disk if possible for the three files.

Variable names used in field.list and the form letter must be an exact match.

An example- name, Name & NAME are different.

FILE NAMES USED	DESCRIPTION
Data.File.....	file generated by Appleworks report containing data for the form letter.
Field.List.....	Interface file from Data.File to form letter. Created in Word Juggler.
form letter.....	Word Juggler form letter.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Quark Technical Support

Tech Info Library Article Number:1952



Tech Info Library

Advanced Business Accountant: List of Available Reports

Revised: 5/12/86
Security: Everyone

Advanced Business Accountant: List of Available Reports

=====

General Ledger:

Chart of Accounts

- Accounts with budget data
- Accounts with comparative data
- Departments List
- List of Recurring Journal Entries
- Income Statement

Comparative Income Statement

- Budget Variance Income Statement

Balance Sheet

- Comparative Balance Sheet

Source and Use of Funds Statement

- Trial Balance (detailed and summary)

Journal Detail Report

Account Detail Report

Accounts Payable:

Vendor List

Checks with detailed stubs

- Check Register

Handcheck Register

- Monthly Check Register

Accounts Payable Detail Report

- Aging Report (detailed and summary)

Open Invoice Report

Monthly Purchases Journal

- Cash Flow Report based on due date

- Cash Flow Report based on discount date

Cash Requirements Report

Reconciliation Worksheet

Payment Selection Report

- Discount Analysis Report

Flash Report

Accounts Receivable:

- Customer List
- Sales Representative List
- Customer Statement
- Invoice
- Debit and Credit Memos
- Finance Charge Calculation Report
- Accounts Receivable Detail Report
 - Aging Report (detailed and summary)
- Monthly Invoice Register
- Monthly Cash Receipts Register
- Monthly Adjustments Register
- Cash Flow Report
- Open Invoice Report
- Credit Limit Report
- Delinquent Accounts Report
 - Customer Worksheet
- Sales Analysis by Customer
 - Sales Analysis by Sales Rep
- Flash Report

Inventory Control:

- Parts List
- Purchase Order
- Physical Inventory Worksheet
- Physical Inventory Analysis
- Stock Status Report
- YTD Summary Report
- On Hand Detail Report
 - Inventory Margin Analysis Report
- ABC Analysis Report
- Transaction Register
- Financial Summary
 - Order Recommendations Report
- Low Stock Report
- Overstock Report
 - On Order Report
 - Surplus on Order Report
- Flash Report

Payroll:

- Employee Master List
- Employee Address List
- Employee Phone List
- Employee Earnings Summary
 - Employee Compensation History
- Overtime Report
- Vacation and Sick Pay Report
- Company Totals Report
- Current Balance Report
- Posting Report
 - Commission List
- Deduction List
- Job Code List

Standard Rates List
QTD and YTD Commission Report
 QTD and YTD Deduction Report
QTD and YTD Job Code Report
 Time Card Entries List
Standard Time Card Entries List
Payroll Register
Paycheck and check stub
Check Register
Handcheck Register
Voided Check Register
Commission Period Activity Report
Deduction Period Activity Report
Job Code Period Activity Report
Vacation, Sick Pay Period Activity Report
Overtime Period Activity Report
Hours Exception Report
W-2 forms and W-3 Report
 940 and 941 reports
Tax Tables
State Abbreviation List
Flash Report
Verify Initial Payroll Balances Report

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1953



Tech Info Library

Business Accountant: List of Available Reports

Revised: 5/12/86
Security: Everyone

Business Accountant: List of Available Reports

=====

General Ledger:

- Chart of Accounts
- Accounts with budget data
- Accounts with comparative data
 - Departments List
 - List of Recurring Journal Entries
- Income Statement
 - Comparative Income Statement
- Budget Variance Income Statement
- Balance Sheet
 - Comparative Balance Sheet
- Source and Use of Funds Statement
- Trial Balance (detailed and summary)
- Journal Detail Report
- Account Detail Report

Accounts Payable:

- Vendor List
- Checks with detailed stubs
- Check Register
- Handcheck Register
- Accounts Payable Detail Report
 - Aging Report (detailed and summary)
- Open Invoice Report
 - Cash Flow Report based on due date
 - Cash Flow Report based on discount date
- Payment Selection Report
- Discount Analysis Report

Accounts Receivable:

- Customer List
- Invoice
- Debit and Credit Memos
- Customer Statement
 - Finance Charge Calculation Report

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- Accounts Receivable Detail Report
- Aging Report (detailed and summary)
- Monthly Invoice Register
- Monthly Cash Receipts Register
- Cash Flow Report
- Open Invoice Report
- Credit Limit Report
- Delinquent Accounts Report
- Customer Worksheet

Inventory Control:

- Parts List
- Purchase Order
- Physical Inventory Worksheet
- Physical Inventory Analysis
- Stock Status Report (detail and summary)
 - Inventory Margin Analysis Report
 - ABC Analysis Report
 - Transaction Register
 - Transaction Summary
- Order Recommendations Report
- Low Stock Report
- On Order Report
- Surplus on Order Report

Payroll:

- Employee Master List
- Employee Address List
- Employee Phone List
- Employee Summary Report
- Company Totals Report
- Current Balance Report
- Posting Report
- Commission List
- Deduction List
- Job Code List
- Standard and Overtime Rates List
- QTD and YTD Commission Report
- QTD and YTD Deduction Report
- QTD and YTD Job Code Report
- Time Card Entries List
- Payroll Register
- Paycheck and check stub
- Check Register
- Commission Period Activity Report
- Deduction Period Activity Report
- Job Code Period Activity Report
- W-2 forms and W-3 Report
- 940 and 941 reports
- Tax Tables
- State Abbreviation List

..TIL01954-Business_Accountant-List_of_Available_Reports.pdf

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1954



Tech Info Library

BusinessWorks: List of Available Reports

Revised: 5/12/86
Security: Everyone

BusinessWorks: List of Available Reports

=====

General Ledger:

- Chart of Accounts
- List of Account Budgets
- List of Previous Months' Account Balances
- Departments List
- List of Recurring Journal Entries
- Income Statement
 - Comparative Income Statement
- Budget Variance Income Statement
- Balance Sheet
 - Comparative Balance Sheet
- Source and Use of Funds Statement
- Trial Balance (detailed and summary)
- Journal Detail Report
- Account Detail Report

Accounts Payable:

- Vendor List
- Checks with detailed stubs
- Check Register
- Handcheck Register
- Monthly Check Register
- Accounts Payable Detail Report
- Aging Report (detailed and summary)
- Open Invoice Report
- Monthly Purchases Journal
- Cash Flow Report based on due date
- Cash Flow Report based on discount date
- Cash Requirements Report
- Reconciliation Worksheet
 - Payment Selection Report
- Discount Analysis Report
- 1099 Worksheet
- List of Recurring Invoices
- Flash Report

Accounts Receivable:

- Customer Master List
- Customer Name List
- List of Recurring Invoices
- Sales Representative List
- Invoice
- Credit and Debit Memos
- Customer Statements
- Finance Charge Calculation Report
- Accounts Receivable Detail Report
 - Aging Report (detailed and summary)
- Monthly Invoice Register
- Monthly Cash Receipts Register
- Monthly Adjustments Register
- Cash Flow Report
- Open Invoice Report
- Credit Limit Report
- Open Credit Report
- Delinquent Accounts Report
- Customer Worksheet
- Sales Analysis by Customer
- Sales Analysis by Sales Rep
- Flash Report

Inventory Control:

- Master Parts List
- Cost and Price Lists
- Purchase Order
 - Physical Inventory Worksheet
- Physical Inventory Analysis
- Stock Status Report
 - On Hand Detail Report
- Margin Analysis Report
- ABC Analysis Report
- Transaction Registers
- Order Recommendations Report
- Low Stock Report
- Overstock Report
- On Order Report
- Open Purchase Order Report
- Inventory Performance Report
- Transaction Detail Report
- Flash Report

Payroll:

- Employee Master List
- Employee Address List
- Employee Phone List
- Employee Earnings Summary
- Employee Compensation History
- Vacation and Sick Pay Report
- Company Totals Report

- Current Balance Report
- Posting Report
- Commission List
- Deduction List
- Job Code List
- Standard Rates List
- QTD and YTD Commission Report
- QTD and YTD Deduction Report
- QTD and YTD Job Code Report
- Time Card Entries List
 - Standard Time Card Entries List
- Payroll Register
- Paycheck and check stub
- Check Register
 - Handcheck Register
 - Voided Check Register
- Overtime Report
- Commission Period Activity Report
 - Deduction Period Activity Report
 - Job Code Period Activity Report
- Vacation and Sick Pay Period Activity Report
- Overtime Period Activity Report
- Hours Exception Report
- W-2 forms and W-3 Report
- 940 and 941 reports
 - Tax Tables
- State Abbreviation List
- State Tax Information Report
- Verifiy Initial Balances Report
- Flash Report

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:1955



Tech Info Library

Hard Disk 20: Cable length limit with Macintosh

Revised: 10/12/87
Security: Everyone

Hard Disk 20: Cable length limit with Macintosh

=====

This article last reviewed: 17 May 1986

A cable 30 inches long may safely connect a Macintosh to an HD 20 as long as there is shielding integrity in the cable and connection. Any poor connections, flat cables, unshielded cables, or exposure to external EMI or RFI sources may affect operation. Cable lengths exceeding 30" are not recommended because of the excessive cable capacitance and IR drops.

Tech Info Library Article Number:1957



Tech Info Library

LOGO II: Printing on the Apple Dot Matrix Printer

Revised: 5/17/86
Security: Everyone

LOGO II: Printing on the Apple Dot Matrix Printer

=====

To print graphics to the Apple Dot Matrix Printer with LOGO II, you must:

1. save the picture to a disk file
2. exit LOGO
3. run a graphics dump program on the disk file.

You could use a third party graphics dump program or the one that came with the Apple Dot Matrix Printer.

Apple Technical Commuunications

Tech Info Library Article Number:1958



Tech Info Library

Macintosh: 128K ROM Debugger

Revised: 8/26/86
Security: Everyone

Macintosh: 128K ROM Debugger

=====

The Macintosh Plus or any Macintosh with the 128K ROM's has a built-in debugger, a very limited tool compared to Macbug or any other advanced debugger.

Here are the commands:

G - The Go command with no parameter it will start execution at PC.
You can also have execution started anywhere by typing 'G XXXXXX',
where XXXXXX is the address you want it to start at.

DM XXXXXX - will display memory values starting at XXXXXX.

SM XXXXXX XXXX - will set memory location XXXXXX equal to value XXXX.
Note : You can include a string of values and they will
go into sequentially higher memory locations.

PC XXXXXX - will set the current program counter to XXXXXX.
NOTE : Issuing the PC command without a value prints the
current PC Value.

Ax - prints out the current value of Address register x.

Dx - prints out the current value of data register x.

Ax XXXXXX - sets Address register x to value XXXXXX.

Dx XXXXXX - sets Data register x to value XXXXXX.

Here are a few tricks:

To determine which ROM version you are using via the mini-monitor:

1. Press the interrupt switch on the programmer's switch to enter the built-in mini-monitor.
2. Type DM 400000. If the third byte value displayed is EA, it means

the revised ROMs; if it's EE, it means the original 128K ROMs.

3. Type G to return.

To return to the shell, type 'SM 15000 A9 F4', then 'G 15000'. This will usually get you back to the Finder.

Apple Technical Communications

Tech Info Library Article Number:1959



Tech Info Library

Macintosh Interrupt

Revised: 7/20/92
Security: Everyone

Macintosh Interrupt

=====

Article Created: 20 May 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Customer has purchased the Macintosh 800K Enhancement or Macintosh Plus Upgrade and notices that when pressing "Interurrupt" on the Programers Switch a ">" appears in a dialog box. The prompt and dialog box did not appear on the customers Macintosh 512K before the upgrade occured.

CAUSE: This is not a software or hardware failure, but an added enhancement made to ROM for programing purposes. Pressing the interrupt switch after booting to the "desktop" or executing a program will cause the Macintosh to drop into the Mini-Debugger.

CURE: To exit the Mini-Debugger type "G" and press "RETURN". This will allow the user to resume work without having to reboot the computer.

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Tech Info Library Article Number:1960



Tech Info Library

Apple IIf: Splitting the Case

Revised: 7/17/92
Security: Everyone

Apple IIf: Splitting the Case

=====

Article Created: 15 July 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: Using the normal Take-Apart section for splitting the Apple IIf case halves is difficult or nearly impossible to perform on some Apple IIf's that have never been taken apart before.

BEFORE YOU START: Familiarize yourself with the Apple IIf Take-Apart procedure (in Apple IIf Technical Procedures). Also, refer to Macintosh Technical Procedures to become familiar with using the Macintosh Take-Apart Tool. (Note: Apple IIf Technical Procedures will be revised to reflect this procedure.)

CURE: The Macintosh Take Apart Tool may be used to split the case halves of the Apple IIf. Insert the tool between the front case halves and spread them apart. Once you have the front end split apart try and work your way to the rear of the computer using the normal splitting procedure (see Apple IIf Take-Apart).

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1961



Tech Info Library

Hard Disk 20: Failure To Launch Application Or Format

Revised: 1/17/92
Security: Everyone

Hard Disk 20: Failure To Launch Application Or Format

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: Hard Disk 20 will not initialize media, or applications fail when launched. Also, sometimes application files will not transfer successfully to the Hard Disk 20.

BEFORE YOU START: Familiarize yourself with the Hard Disk 20 Owner's Manual and Hard Disk 20 Technical Procedures.

CAUSE: Hard Disk 20 controller board might contain a HAL instead of a PAL chip.

CURE: Check the serial number of the Hard Disk 20. If the serial number is F619xxx or higher, and the controller board contains a HAL chip at board location C3 (PAL is 16R6 is silk screened next to the chip), remove and replace the Controller Board using a service spare. Reconnect and power-up the Hard Disk 20. Try to initialize the drive. If initialization fails, refer to the Hard Disk 20 Technical Procedures for more troubleshooting information.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1962



Tech Info Library

Super Serial Card: Blown Resistor

Revised: 1/17/92
Security: Everyone

Super Serial Card: Blown Resistor

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: ImageWriter causes R7 on the Super Serial Card to fail.

BEFORE YOU START: Familiarize yourself with the procedure for removal and replacement of the carrier drive transistors, referring to the ImageWriter Level I Technical Procedures.

CAUSE: One of the carriage transistors in the ImageWriter is shorted.

CURE: Follow these steps:

1. Remove the string of 4 carrier drive transistors and their associated insulators using the procedure documented in the ImageWriter Technical Procedures.
2. Check to make sure that none of the insulators is missing or cracked.
3. If any of the insulators is missing or cracked, replace them, reinstall the string of carriage transistors, and test the printer with the Super Serial Card. Otherwise, proceed to Step 4.
4. Replace the string of carriage transistors with a new set and test the printer using the Super Serial Card.
5. If the above procedure does not cure the problem, refer to Troubleshooting in the ImageWriter Technical Procedures.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:1963



Tech Info Library

Pascal Profile Manager (PPM): Using it with Pascal 1.3

Revised: 1/20/87
Security: Everyone

Pascal Profile Manager (PPM): Using it with Pascal 1.3

=====

Pascal Profile Manager (PPM) does work under Pascal 1.3.

Replace the following files with the 1.3 equivalent: SYSTEM.APPLE, SYSTEM.PASCAL, and SYSTEM.ATTACH. Moreover, since CHAINSTUFF 1.2 doesn't work with Pascal 1.3, it's a good idea to use the 1.3 SYSTEM.LIBRARY.

The only problem with PPM and 1.3 is not being able to use the X)tended filer, although its functions can be duplicated by using the F)iler for normal stuff and then X)ecuting PPM.CODE for the extra functions.

The most recent version of Backup II, version 1.1.1, fully supports 3.5 disks for backing Profiles and works well with disks containing Pascal Areas.

Backup II 1.1.1 is available on many consumer information services (e.g. CompuServe, Source, Genie, etc.).

Apple Pascal 1.3 and the Pascal Profile Manager are not compatible with the SCSI drive, the Apple HD20 SC. We are not aware of any existing software driver to allow Apple Pascal 1.3 to recognize the HD20 SC.

Apple Technical Communications

Tech Info Library Article Number:1964



Tech Info Library

Configuring the Apple Modem 300/1200 to the Apple IIC

Revised: 8/3/89
Security: Everyone

Configuring the Apple Modem 300/1200 to the Apple IIC

=====

I. Switch settings:

-- Modem:

UP		X	X
DOWN	X		
	1	2	3
	CD	BC	DTR

II. Connection:

IIC	Modem
1	6
2	9
3	3
4	5
5	2

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:1965



Tech Info Library

Connecting Apple Modem 300 & 1200 to Mac 128K or 512K

Revised: 7/17/92
Security: Everyone

Connecting Apple Modem 300 & 1200 to Mac 128K or 512K

=====

Article Created: 18 July 1986
Article Last Reviewed: 2 July 1992
Article Last Updated: 2 July 1992

Connecting the Apple Modem 300 or Modem 1200 to a Macintosh 128K, 512K, or 512K enhanced requires a DE-9 to DE-9 cable (part 590-0197).

Connection:

Macintosh	Modem
3,8	3,8
5	9
6	6
7	7
9	5

Switch settings:

-- Modem:

UP		X	X
DOWN	X		
	1	2	3
	CD	BC	DTR

Copyright 1989, 1992 Apple Computer, Inc.

Tech Info Library Article Number:1966



Tech Info Library

LaserWriter: Printing a square box

Revised: 7/18/86
Security: Everyone

LaserWriter: Printing a square box

=====

While making documents such as questionnaires, you might want to put in a square box for a check mark or some other response from your reader.

You can get a suitable box with a LaserWriter Plus from the lowercase "n" of the Zapf Dingbats font in the Outline style. A source for Zapf Dingbats is the LaserWriter and LaserWriter Plus Fonts Disk. You can find other "square box" key stroke alternatives by using the new Key Caps desk accessory.

A regular LaserWriter doesn't have the fonts that will allow you to print any sort of square box.

There is a work-around for this. You can modify an existing font to display and print a "square box" without having to purchase special third-party software. This work-around does not work around the problem when you have "Font Substitution" checked in "Page Setup" of the "File" menu.

1. Before you begin this procedure, check to make sure you have the following copies of these files:
 - a. A copy of ResEdit (available on CompuServe or in the Software Supplement)
 - b. A copy of your "Laserized" System File with Monaco font

The importance of working with copies cannot be overstated. Make sure that you start with a copy of your System File and a copy of the ResEdit program. ResEdit can cause havoc with your System File and corrupt data on your floppy or hard disk if used incorrectly.

2. "Open" the following files by double-clicking on the respective Icon in the order indicated below.
 - a. ResEdit
 - b. System Folder (If your System Files are in the System Folder)
 - c. System File
 - d. "Font"
 - e. Font named "Monaco 12"

After you have the Font "Monaco 12" opened, you may want to position the window to allow you to view the entire window by dragging the window to the center of the screen.

You now should have a large "a" on your screen.

3. Press the "[" key.

You can now modify the "[" by pointing and clicking the mouse where you need a "dot".

4. After you have finished modifying the "[" character into a box, simply close the windows one by one until you can quit from ResEdit.

Be sure to indicate "yes" when asked if you want to save changes to the System File.

Depending upon the size of your System File, the saving process may take some time. Be patient and don't interrupt this process.

To put the square in your document, select Monaco font (12pt) and press the "[" key. Be sure to turn off font substitution in "Page Setup" of the "File" menu before you have the document printed by the LaserWriter.

Apple Technical Communications

Tech Info Library Article Number:1967



Tech Info Library

Macintosh Plus: Keystrokes and AppleLine EBCDIC output

Revised: 6/1/89
Security: Everyone

Macintosh Plus: Keystrokes and AppleLine EBCDIC output

=====

Macintosh Plus Keystroke	AppleLine EBCDIC output	Macintosh Plus Keystroke	AppleLine EBCDIC output	Macintosh Plus Keystroke	AppleLine EBCDIC output
A	00	N	45	1	18
B	11	O	31	2	19
C	08	P	35	3	20
D	02	Q	12	4	21
E	14	R	15	5	23
F	03	S	01	6	22
G	05	T	17	7	26
H	04	U	32	8	28
I	34	V	09	9	25
J	38	W	13	0	29
K	40	X	07		
L	37	Y	16		
M	46	Z	06		
-	27	BACKSPACE	51	ARROWS:	
=	24	RETURN	36	DOWN	72
`	50	SHIFT	56	UP	77
/	44	TAB	48	LEFT	70
\	42	CAPS LOCK	57	RIGHT	66
[	33	OPTION	58		
]	30	FUNCTION	55		
;	41	SPACE	49		
'	39				
,	43				
.	47				

Key Pad

0	82	.	65
1	83	=	56 72
2	84	/	56 77
3	85	*	56 66

4	86	-	78
5	87	+	56 70
6	88	Enter	76
7	89	Clear	71
8	91		
9	92		

NOTE: When the 56 appears on the numeric keypad, it indicates the key is automatically shifted.

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Tech Info Library Article Number:1969



Tech Info Library

Macintosh 512Ke: Specifications (Discontinued) (8/94)

Revised: 9/2/94
Security: Everyone

Macintosh 512Ke: Specifications (Discontinued) (8/94)

Article Created: 18 July 1986
Article Reviewed/Updated: 2 September 1994

TOPIC -----

This article gives the technical specifications for the Macintosh 512K enhanced computer.

DISCUSSION -----

MICROPROCESSOR

- Motorola MC68000, 32-bit architecture, 8 (7.8336) MHz clock speed

MEMORY

- 512K of RAM (Random Access Memory)
- 128K of ROM (Read Only Memory)

DISK DRIVE

- One built-in 800K disk drive. (Optional external 400K or 800K disk drive.)

SCREEN

- Built-in 9-inch diagonal, 512 by 342-pixel high-resolution bit-mapped monochrome display

INTERFACES

- Mouse port, DB-9 connector
- One eight-bit keyboard bus, 300 baud, RJ11 connector for Macintosh keyboard
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally), DB-9 connectors
- External Disk Drive interface (400K or 800K disk drives)
- Sound port for external audio amplifier or headphones

CLOCK/CALENDAR

- CMOS custom chip with 4.5 volt battery backup (Eveready No. 523 or

equivalent)

ELECTRICAL REQUIREMENTS

- Line voltage: 105 to 125 volts AC
- Line frequency: 50 to 60 hertz
- Maximum power: 60 watts

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: -40 to 122 degrees F (-40 to 50 C)
- Relative humidity: 5% to 90% relative humidity
- Altitude: 15,000 feet (4615 meters)

SIZE AND WEIGHT

- Height: 13.5 inches (34.6 cm)
- Width: 9.7 inches (24.6 cm)
- Depth: 10.9 inches (27.6 cm)
- Weight: 16 lb. 8 oz. (7.5. kg)

Article Change History:

2 Sep 1994 - Corrected the article title.

Support Information Services

Copyright 1986-94, Apple Computer, Inc.

Tech Info Library Article Number:1970



Tech Info Library

Logo II: Clearing an Apple IIc screen under Catalyst 3.0

Revised: 7/15/86
Security: Everyone

Logo II: Clearing an Apple IIc screen under Catalyst 3.0

=====

After loading LOGO II on an Apple IIc with Quark's Catalyst 3.0, the LOGO II screen is not cleared. You see High-Res graphic 'garbage' on the screen.

To solve the problem, simply execute the following command at the '?' prompt.

```
? .DEPOSIT 49247 0
```

This will clear the graphics left over from the Catalyst High-Res screen images.

Apple Technical Communications

Tech Info Library Article Number:1972



Tech Info Library

LaserWriter: Defaults

Revised: 7/18/86
Security: Everyone

LaserWriter: Defaults

=====

This article last reviewed: 18 July 1986

The LaserWriter picks up its default settings, such as tall orientation, from the printer driver. To bring up a document with settings different from the default, such as wide orientation, create a special "boilerplate" document with the settings you require. Once you change the defaults, the new configurations are stored with the document when you save it. This method gives you much more versatility and is much easier than using RESEDIT to change the driver.

From then on, open that same document for those printer settings; they will automatically set to those stored with the document. Then use the "Save AS" option and save the document with a new name, which will preserve the original for the creation of more documents with those special settings.

Tech Info Library Article Number:1973



Tech Info Library

LaserWriter: Driver errors

Revised: 8/10/87
Security: Everyone

LaserWriter: Driver errors

=====

An "Error in PostScript" message means that there is an error in the code generated in the driver that Apple has written. The error messages, generated by the application, would vary with the application.

Here is a list of the Printer Manager errors:

Error Value	Description
0	No error
128	Abort the printing process
-1	Problem saving print file
-17	Unimplemented control instruction
-27	Trouble with I/O
-108	Not enough heap space

The following errors are relevant to the LaserWriter ONLY.

-4101	Printer closed or not found
-4100	Connection just closed
-4099	Write request too big
-4098	Request already active
-4097	Bad connection refNum
-4096	Ne free Connect COntrol Blocks available

Page 110-111 of the Postscript Language Reference Manual gives a listing of the error messages that reside in the LaserWriter in the errordict.

Tech Info Library Article Number:1974



Tech Info Library

AppleWorks: Recovering files after program hangs

Revised: 7/18/86
Security: Everyone

AppleWorks: Recovering files after program hangs

=====

The following procedure should be considered with these cautions:

1. DON'T KEEP USING APPLEWORKS AFTER YOU HAVE COMPLETED THIS PROCEDURE!
2. When this procedure works, the only thing you should do is save the files you were working on. This is intended as a Rescue Routine only.
3. This procedure does not ALWAYS work. Its reliability rate is about 95%. It can be unpredictable.

ALWAYS backup your work during every session!

The Procedure

It is actually very simple to get back into AppleWorks after the program hangs, no matter what the problem is. However, if the problem causes AppleWorks to crash into the monitor, then this procedure will probably be less reliable because such a problem could make further trouble. But if the only thing wrong happens to be that you have hung up the program to the point where the only escape is to hit control-reset to reboot, then this procedure is effective.

1. After hitting control-reset, the screen goes to 40 column mode, and you are left with the '*' prompt on the screen.

2. Type:

C073:0

and a CR. This will make sure that bank 0 of memory is selected.

3. Type:

3 CTRL-P

and a CR

Here are the keystrokes for that sequence:

- a. 3
- b. Hold down the control key while typing a 'P'
- c. RETURN

This SHOULD clear the screen, select 80 column mode, and put the prompt in the upper left hand corner of the screen. If it does, go on to step 4.

If this does NOT happen, type:

FF59G

and a CR

Then try 3 CTRL-P again. If this works, go on to step 4. If it does not, you will have to reboot.

4. The following line must be typed carefully and exactly as shown:

2F0:2C 83 C0 2C 83 C0 4C 33 10

and a CR

5. Next and last, type:

2F0G

and a CR

At this point, you should have the AppleWorks main menu back, and files that were on the desktop should still be there.

Do not continue work with any files. Save the files off the desktop and re-boot AppleWorks.

Sometimes the choices on the main menu will be numbered 7-12 or 11-16 instead of 1-6. This is not serious. Just flip back and forth between menus, such as selecting 'add files' then hitting ESC to go back, and the numbering should return to normal.

Apple Technical Communications

Tech Info Library Article Number:1975



Tech Info Library

Macintosh: Converting Macintosh XL AppleTalk Connectors

Revised: 7/17/92
Security: Everyone

Macintosh: Converting Macintosh XL AppleTalk Connectors

=====

Article Created: 18 July 1986
Article Last Reviewed: 2 July 1992
Article Last Updated: 2 July 1992

To convert Macintosh XL Appletalk connectors to Macintosh (Mini-8) Appletalk connectors, follow the diagram below. Test the pin signals for each wire because the color coding may not be consistent.

DB-25 Mac XL	Color	Mini-8 Macintosh
2 TX-	green	3 TX-
3 RX-	white	5 RX-
19 RX+	blue	8 RX+
20 TX+	red	6 TX+

Other suggestions:

- Cut the cable about 3/8" up from the 25 pin connector so you can strip it back and verify the pinout- you'll need an ohmmeter or a continuity tester.
- Tin wires and connectors beforehand, of course.
- Use a soldering iron with a small tip and controlled temperature.
- Solder quickly so as not to deform the connector then clean with a good flux remover.
- First slide the outer plastic piece over the wire. Next fan the braid around the OUTSIDE of the metal shell and clamp it between the metal shell and the hard plastic pieces, then force the outer plastic piece over the whole connection.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:1976



Tech Info Library

Macintosh 64K and 128K ROMs: Startup Differences

Revised: 9/11/92
Security: Everyone

Macintosh 64K and 128K ROMs: Startup Differences

=====

Article Created: 15 August 1986

Article Change History

09/07/92 - REVISED

- For clarity and relevance. Focused article on Mac 512K since it's the only Macintosh to which this article applies.

09/07/92 - RETITLED

- Changed title to reflect new focus of article.

TOPIC -----

How can I tell what ROMs a Macintosh 512K has? What are some differences that I can see without looking at the logic board?

DISCUSSION -----

The 64K ROMs and 128K ROMs have different ways of starting up and looking for the System file on a disk.

To tell if your Macintosh 512K has 64K or 128K ROMs, check either of the following:

1. Choose "About the Finder" in the Apple Menu. At the bottom left corner of the box that appears, the amount of RAM (in K) that the Macintosh has will be displayed.
 - a. A K without a period following it indicates the 64K ROMs.
 - b. A K with a period following it indicates the 128K ROMs.
2. Look at the title bar of any window.
 - a. Windows with only a close box in the title bar indicate the

64K ROMs.

- b. Windows with a close box and a resize or zoom box in the title bar indicate the 128K ROMs.

Now that you can identify which ROMs are in your Macintosh, here's how each type boots:

1. Macintosh 512K with 64K ROMs

The startup procedure looks first at the internal floppy drive and then the external drive. If the Macintosh does not find the System file on a disk in the internal drive, it ejects the disk there and looks to the external drive. If there is no system file on the disk in the external drive, that disk is also ejected.

The Hard Disk 20 Startup disk in the internal drive will load the HFS file system and drivers into memory and eject the disk if there is a system folder on the HD 20.

2. Macintosh Plus or Macintosh 512K Extended with 128K ROMs

The startup procedure looks for a valid system folder in these devices in the following order:

- a. Internal floppy disk drive
- b. External floppy disk drive
- c. Hard Disk 20 (System Folder)
- d. SCSI devices

Copyright 1986, 1992 Apple Computer, Inc.

Tech Info Library Article Number:1977



Tech Info Library

Apple IIfc Technical Procedures: Erratum

Revised: 11/10/88
Security: Everyone

Apple IIfc Technical Procedures: Erratum

=====

This article last reviewed: 10 November 1988

On page 2.9 of the Apple IIfc Technical Procedures, Apple IIfc Diagnostics, the second sentence states that you can boot from the external drive in order to test that drive.

However, if you have an Apple IIfc with the logic board upgraded with new ROMs and you attempt to boot it from the Apple IIfc External 5.25" Drive, you get the message "AppleTalk Off-Line".

New or upgraded Apple IIfc systems configure an Apple IIfc External 5.25" Drive as a second drive, which cannot be used for a boot, as in the Apple IIe. Typing "PR#5" will just cause the system to hang, since the External 5.25" Drive is now considered to be Drive 2 of Slot 6. Typing "PR#7" will produce the "AppleTalk Off-Line" message.

You can, however, boot such a system from a 3.5" drive with a "PR#5" because new or upgraded Apple IIfc systems configure the 3.5" drive as a first drive, Drive 1 of Slot 5, which can be used for a boot, as in the Apple IIe.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1980



Tech Info Library

Apple Personal Modem: Carrier detect

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Carrier detect

=====

Some software packages, such as Dow Jones Market Manager Plus, don't appear to get a carrier detect because the Apple Personal Modem's 0.6 seconds of carrier detect response time is not enough time for the hookup of the software. Carrier detect response time, register S9 on the APM, cannot be changed.

To workaroud this situation, you must send a command to adjust the Carrier Wait register, S7, to tell the modem how long to wait for a carrier. The command is ATS7x, where x has a range of 1 to 255. For example, to reset the default Carrier Wait, 30 seconds, send the command ATS730.

Apple Technical Communications

Tech Info Library Article Number:1981



Tech Info Library

Macintosh: Serial pinouts for VAX DB-25 connector

Revised: 7/17/92
Security: Everyone

Macintosh: Serial pinouts for VAX DB-25 connector

Article Created: 16 June 1986
Article Last Reviewed: 2 July 1992
Article Last Updated: 2 July 1992

The cable described here is a "null" cable.

Macintosh DTE			VAX DTE		
signal	dir- ection	Mini Circular 8	DB-25	signal	dir- ection
HSKo (DTR)	out	1	6 20	DSR DTR	in in
HSKi (CTS)	in	2	8 5	DCD CTS	out out
TxD-	out	3	3	RxD	in
Gnd		4 8	1 7	Gnd	
RxD-	in	5	2	TxD	out
		6	no connection		
		7	no connection		

Connect pins:

1. Macintosh side of cable: 4 and 8
2. VAX side of cable:
 - a. 6 and 20
 - b. 8 and 5

c. 1 and 7

The pins on the male end of the circular 8 connector are numbered as shown:

6	7	8
3	4	5
1	2	

Copyright 1986, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1982



Tech Info Library

LaserWriter Plus: Diagnostics

Revised: 11/10/88
Security: Everyone

LaserWriter Plus: Diagnostics

=====

This article last reviewed: 10 November 1988

The Technical Procedures do not make it clear that no message will be returned if the diagnostics find that the ROMs are OK. The LaserWriter Plus diagnostics are contained in ROMs H3 and L3 (board locations E7 and F7).

If all the ROMs are OK, nothing will be printed from the diagnostics. If an error is found, then an error message will appear on the Macintosh screen.

The Technical Procedures are being updated to reflect this fact.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:1983



Tech Info Library

LaserWriter: Test page in Special mode

Revised: 6/18/86
Security: Everyone

LaserWriter: Test page in Special mode

=====

A test print will occur in the "Special" switch setting of a LaserWriter or LaserWriter Plus, contrary to some sources, such as page 130 of the manual for the LaserWriter and LaserWriter Plus.

The line graph on the test print shows two tick marks on the x-axis. These tick marks indicate Special mode. The bar graph on the test print shows which port is active at which baud rate. For example, if the 25-pin port is active at 9600 baud, then above the number 25 on the graph's x-axis, there is a bar extending up to the number 9600 on the y-axis.

Apple Technical Communications

Tech Info Library Article Number:1984



Tech Info Library

Macintosh: Transferring information to and from an Apple III

Revised: 3/22/88
Security: Everyone

Macintosh: Transferring information to and from an Apple III

=====

This article last reviewed: 20 June 1986

To transfer information between an Apple III and a Macintosh, use Access III on the Apple III and MacTerminal on the Macintosh. To connect an Apple III to Macintosh Plus, use the peripheral adapter cable and the Macintosh 512K to ImageWriter I cable (590-0169).

If using the Apple III serial card, have the card set to no - modem eliminator. If using the built-in port C, make sure you're using the .RS-232 driver rather than the .PRINTER driver. You can find the .RS-232 driver for the built-in port C on the System Utilities Data diskette.

Make sure both systems are set for the same baud rate, data bits, and so forth, and then simply set one system up to send a file and the other one to receive a file.

Tech Info Library Article Number:1985



Tech Info Library

Apple II Machine Language: Accessing the keyboard

Revised: 6/9/86
Security: Everyone

Apple II Machine Language: Accessing the keyboard

=====

When writing a machine language routine to check the keyboard for a single character, make sure that the routine checks for the high bit at the keyboard, signifying valid data, before the routine attempts to read data there.

Here is an example of such a routine:

```
ORG    $300
KBD     EQU    $C000      ; location of keyboard data
KBDSTRB EQU    $C010      ; location of keyboard strobe latch

ReadKey  BIT    KBD        ; test high bit of data reg.
        BPL    ReadKey    ; If not set retest till it is set
        LDA    KBD        ; Data at KBD is Valid (High Bit set)
        BIT    KBDSTRB    ; now clear the keyboard for the next char
        RTS              ; and we are done.
```

The act of striking a key will set the strobe bit automatically, so this routine clears it before returning.

If you are testing for a particular keystroke, put the test in a separate routine. Here is an example of how that would be done:

```
...
        BIT    KBDSTRB    ; Clear out any data that is already at KBD
WaitForA JSR    ReadKey    ; get a key from the keyboard
        CMP    #$C1       ; is it an A????
        BNE    WaitForA   ; Nope go get another
        RTS
...
```

These methods apply to all Apple II's: II, II Plus, IIe, IIe enhanced, and IIC.

Apple Technical Communications

Tech Info Library Article Number:1986



Tech Info Library

LaserWriter IINT: Controller Description

Revised: 9/15/93
Security: Everyone

LaserWriter IINT: Controller Description

=====

Articel Created: 15 January 1988
Article Reviewed/Updated: 15 September 1993

The LaserWriter IINT controller consists of:

- MC68000 (11.16 MHz)
- 2 megabytes of RAM
- 1 megabyte of ROM (rev 47 PostScript)
- a two-position DIP switch for serial port configuration

It supports AppleTalk and serial communications over aDB-25 RS-232 and a mini-8 RS-422 ports. The Apple DeskTop Bus port has been added for future enhancements, but it is not supported in this version of the ROM.

	Printer with Controller	Controller Only
Marketing Number:	M6210	M6009

Article Change History

15 September 1993 - Change LaserWriter model designators to upper case.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:1988



Tech Info Library

AppleWorks: Using an ImageWriter II's sheetfeeder

Revised: 6/5/86
Security: Everyone

AppleWorks: Using an ImageWriter II's sheetfeeder

=====

An ImageWriter II doesn't print more than 11 inches on legal size (14-inch) paper fed through the sheetfeeder.

Workaround:

1. From AppleWorks, identify the ImageWriter II as a custom printer.
2. Under printer codes, select either subscript or superscript begin.
3. Insert an ESCAPE H 2016.

The H must be a capital H. The code ESCAPE H 2016 sets the form length to 14 inches (in increments of 1/144 of an inch).

4. At the top of the document, by typing the open-Apple O command and the appropriate code:
 - a. Insert the subscript or superscript begin, whichever you used in step 2
 - b. Set the page length to 14 inches.

You should be able to print legal size documents from this AppleWorks setup using the sheet feeder on the ImageWriter II.

The problem has been passed on to the product engineer.

Apple Technical Communications

Tech Info Library Article Number:1989



Tech Info Library

Macintosh 512K ROM Upgrade: Memory Available

Revised: 5/11/89
Security: Everyone

Macintosh 512K ROM Upgrade: Memory Available

=====

The upgrade makes a negligible difference of 1.5K in available memory over the 372K available on the original Macintosh 512K. This is the result of the combination of more system stuff and an increase in the system heap for global variables.

The benefit of the 128K ROMs is in the increased speed in performing rote functions: opening and closing windows, redrawing, and accessing the faster ROM-based routines instead of the slow RAM-based routines.

Apple Technical Communications

Tech Info Library Article Number:1990



Tech Info Library

Color Plotter Model 410: Specifications (Discontinued)

Revised: 9/14/93
Security: Everyone

Color Plotter Model 410: Specifications (Discontinued)

=====

I. Technical Specifications

1. Pens:

- a. Maximum active: 4 in head, software selectable
- b. Tips:
 - 1. Porous plastic for paper
 - 2. Fiber for transparency
- c. 8 colors: black, red, green, blue, violet, orange, gold, brown
- d. Liquid ink
- e. Velocity:
 - 1. Each axis: Pen up or down, max. 10 cm/sec (3.94 in./sec)
 - 2. Programmable: 1 to 10 cm/sec in 1 cm/sec increments
 - 3. Both axes driven to 45 degree line: Max. 14.12 cm/sec (5.56 in./sec)

2. Plot:

- a. Maximum: X axis: 391.8 mm (15.4 in.); Y axis: 257 mm (10.1)
- b. Minimum width: 115 mm (4.6 in.)
- c. Resolution: Smallest addressible step size: 0.1 mm (0.004 in.)
- d. Repeatability:
 - 1. With one pen: 0.2 mm (0.008 in.)
 - 2. Between pens: 0.4 mm (0.016 in.)
- e. Method: X-axis paper motion with Y-axis pen motion
- f. Driving method: Stepper motors

g. Relative position accuracy: + 1% + 0.3 mm

3. Media:

a. Paper or Apple Plotter Transparency Film

b. 9 software-selectable sizes:

a. Vertical

--Inches

1. 8.5 x 11 ANSI Size A

2. 11 x 17 ANSI Size B

--Millimeters

3. 297 x 420 DIN/JIS A3

4. 210 x 297 DIN/JIS A4

5. 250 x 353 DIN/JIS B4

6. 176 x 250 DIN/JIS B5

b. Horizontal

--Inches

1. 11 x 8.5 ANSI Size A

--Millimeters

2. 297 x 210 DIN/JIS A4

3. 250 x 176 DIN/JIS B5

c. Thickness:

	mm	in.
--	----	-----

1. Maximum:	0.05	0.002
-------------	------	-------

2. Minimum:	0.8	0.031
-------------	-----	-------

4. Seven Language font sets

a. English (U.S.)

b. English (U.K.)

c. German

d. French

e. Italian

f. Swedish

g. Spanish

5. Front panel controls:

a. Operate/Free (LED and switch)

b. Remote/Local (LED and switch)

c. Pen Select (switch - local mode only)

d. Pen Up/Down (switch - local mode only)

e. Pen Movement (switches - up, down, left, right)

f. Clear (switch - Free mode only)

g. Self test (switch - Free mode only)

6. Power requirements:

a. 103.5-126.5 V 57-63 Hz

b. 200-250 V 48-52 Hz

-- 33 watts maximum consumption

7. Interface:

a. RS-232C asynchronous serial ASCII

b. Hardware handshaking

c. Switch-selectable baud rates:

75, 150, 300, 600, 1200, 4800, or 9600

d. Data format: 7 or 8 bit (switch selectable)

e. Stop Bit: None, 1 1.5 or 2 (switch selectable)

f. Parity: None, odd, or even

8. FCC Certification: Class B computing device

9. Physical

	mm	in.
Height:	122	4.8
Width:	412	16.2
Depth:	300	11.8
	kg	lb.
Net:	6	13.2
Shipping:	10	22

10. Environmental requirements

a. Temperature

	Degrees	
	Fahrenheit	Celsius
1. Operating:	41 to 104	5 to 40
2. Storage:	-4 to 149	-20 to 65

b. Humidity: 20 to 80% relative humidity at 40 degrees Celsius

II. System Configuration

1. Computer: Apple II Plus, Apple IIe, Apple IIc, Apple III

a. For Apple II Plus and IIe:

--disk drive

--Super Serial Card

2. Video display

3. Apple Business Graphics users must have a driver installed with a PIK (Printer Interface Kit) disk.

Copyright 1986, 1992, Apple Computer, Inc.

Tech Info Library Article Number:1991



Tech Info Library

LaserWriter IINT: Switch Configurations

Revised: 9/15/93
Security: Everyone

LaserWriter IINT: Switch Configurations

=====

Article Created: 15 January 1988
Article Reviewed/Updated: 15 September 1993

The LaserWriter IINT has a two-position DIP switch located on the controller panel. This switch is used for controlling the mode of operation, serial port configuration, and communication parameters.

Switch 1	Switch 2	Meaning
Up	Up	AppleTalk (Serial Port Disabled)
Down	Down	RS-232 and RS-422 * Serial Ports 1200 baud
Up	Down	RS-232 and RS-422 * Serial Ports 9600 baud
Down	Up	Special Diablo 630 emulation

* BOTH serial ports are enabled. Serial communication and AppleTalk communication are NOT compatible and will never occur at the same time.

These serial port configurations are stored in the EEROM as persistent parameters, and can be overridden by downloading a PostScript program. The EEROM configuration is updated to match the switch configurations if:

- the switches are changed between a power-off/on cycle
- or
- the switch settings do not match the values in EEROM at start-up
- or
- while the printer is on you toggle a switch, wait 30 seconds, and toggle it back.

Other asynchronous configurations of the SCC ports are available. Refer to the current Apple LaserWriter reference manual or the current PostScript Language

..TIL01992-LaserWriter_IINT-Switch_Configurations_(TA35606).pdf

reference manual for information on setting the parameters of the serial ports.

Article Change History

15 September 1993 - Changed the LaserWriter model designators to upper case.

Copyright 1988, 1993, Apple Computer Inc.

Tech Info Library Article Number:1992



Tech Info Library

ImageWriter II: IBM 3287 printer emulation

Revised: 8/3/89
Security: Everyone

ImageWriter II: IBM 3287 printer emulation

=====

This article last reviewed: 4 June 1986

ImageWriter II's make good replacements for the IBM 3287 dot matrix printers commonly used with the IBM 3270 family of terminal devices. The IBM 3278 terminals can be replaced with an AppleLine-Macintosh-MacTerminal combination, and you can replace the IBM 3287 printers with this simple and cost effective configuration:

Equipment	Vendor	Number
-----	-----	-----
IRMAprint	DCA *	PC3287-S
ImageWriter II Printer	Apple	A9M0310
Apple II Printer 8 cable	Apple	A9C0313

--> Installation Diagram

IBM 3274/6 --> Coax cable --> IRMAprint --> Printer 8 cable --> ImageWriter II

This solution proves to be a good value because it provides better print quality and speed than the IBM 3287 or similar printers such as Telex.

* DCA is a registered trademark of Digital Communications Association, Inc.

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Tech Info Library Article Number:1993



Tech Info Library

Mini-Circular 8 pin connector sources

Revised: 6/17/92
Security: Everyone

Mini-Circular 8 pin connector sources

=====

Article Created: 2 June 1986
Article Last Reviewed: 15 June 1992
Article Last Updated:

TOPIC -----

Who else makes connectors that are compatible with mini-circular 8 pin connectors used on the Mac Plus?

DISCUSSION -----

For the 8 pin mini-circular connectors used on the Macintosh Plus, Apple Personal Modem, and ImageWriter Plus, there are two vendors of connectors which have pins that conform to the Apple specification for length and diameter:

1. "C" Enterprises

Wiring connection: Machine-attach pin

2. AESP (Advanced Electronic Support Products - formerly Roman Cable)

Wiring connection: Female pin, which makes soldering easier for the user.

AESP connectors have the same construction and assembly as the AppleTalk Custom Cable Kit connectors.

For more information search on "C" Enterprises or AESP.

Copyright 1986, 1988 Apple Computer, Inc.

Tech Info Library Article Number:1995



Tech Info Library

800K Floppy Drives: Don't Use with Old Hewlett-Packard 3.5 Disks

Revised: 4/9/91
Security: Everyone

800K Floppy Drives: Don't Use with Old Hewlett-Packard 3.5 Disks

=====

This article last reviewed: 10 November 1987

A word of caution to those who try to use the old HP 3-1/2" disks (i.e., the ones that don't have springs; you have to open and close the shutter by hand) in the 800K Macintosh and UniDisk 3.5 drives.

An old HP disk has a protective door which locks in the open position when it is opened all the way. An Apple 400K drive doesn't slide the door all the way open, and so it doesn't lock in the open position.

However, an Apple 800K drive does slide the door all the way open, and because the protective door locks, the drive isn't able to eject the disk.

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Tech Info Library Article Number:1997



Tech Info Library

Logo II: Using it with the Apple IIe Memory Expansion Card

Revised: 5/29/86
Security: Everyone

Logo II: Using it with the Apple IIe Memory Expansion Card

=====

Logo II will address the card as a RAM disk only.

There are two precautions:

1. Logo II cannot be loaded into the Memory Expansion Card because Logo II is copy protected.
2. Use the Extended 80 Column Card to run Logo. With Logo II, the Memory Expansion Card only works as a RAM disk.

Apple Technical Communications

Tech Info Library Article Number:1998



Tech Info Library

Macintosh 800K External Disk Drive: Specs (Discontinued)

Revised: 9/24/93
Security: Everyone

Macintosh 800K External Disk Drive: Specs (Discontinued)

=====

This article last reviewed: 29 May 1986

I. Technical Specifications

A. Recording Media:

1. Disk diameter: 3.5 inches
-- Hard shell

2. Recording surfaces: 1 or 2

-- Finder can initialize a disk as a 400K MFS single-sided disk or an 800K HFS double-sided disk.

3. Tracks per surface: 80

B. Capacities with double-sided disk:

1. Formatted data: 800 kilobytes
2. Unformatted data: 1,246 kilobytes

C. Driver Characteristics:

1. Access Time:
 - a. Seek time (track to track): 6 milliseconds maximum
 - b. Settle time: 30 milliseconds maximum
 - c. Drive-motor start time: 600 milliseconds maximum
2. Transfer Rate: 500 Kilobits
3. Eject time: 2 seconds maximum

D. Power Consumption:

1. +12 volts
 - a. Standby: 10 microamps
 - b. Typical: 120 milliamps
 - c. Peak: 600 milliamps
2. +5 volts
 - a. Standby: 170 milliamps
 - b. Typical: 360 milliamps

E. Head Position Tolerance: Plus or minus 0.035 mm

F. Environmental Requirements:

1. Temperature:

	Degrees	
	Fahrenheit	Celsius
a. Operating:	40 to 120	5 to 50
b. Nonoperating:	-40 to 140	-40 to 60

2. Humidity: 5% to 90%
 - a. Maximum wet bulb temperature: 85 F, 29 C
 - b. No condensation

G. Physical Dimensions:

	inches	millimeters
1. Length:	7.87	200
2. Width:	4.72	120
3. Height:	1.91	48.5
	pounds	kilograms
4. Weight:	2.84	1.29

II. System Configuration:

A. External disk port on:

1. Macintosh (see item C below)
 - a. Macintosh 512K
 - b. Macintosh 512K extended
2. Macintosh Plus
3. Personal Hard Disk 20

B. Software:

1. System File: 3.0 or greater
2. Finder: 5.0 or greater

C. NOTE: The limited memory is a 128K Macintosh will not support an 800K external drive.

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Tech Info Library Article Number:1999



Tech Info Library

Macintosh Plus: Hanging on Boot and ROM versions (8/95)

Revised: 8/23/95
Security: Everyone

Macintosh Plus: Hanging on Boot and ROM versions (8/95)

Article Created: 29 May 1986
Article Review/Updated: 23 August 1995

TOPIC -----

My Macintosh Plus hangs at startup intermittently. I'm not sure why, any ideas?

DISCUSSION -----

When a Macintosh Plus hangs on boot, check for a connected SCSI device that is powered off. If such a device is connected, the Macintosh Plus may have the original 128K ROMs that have this problem, which was corrected in the revised ROMs.

Workaround:

Power up the SCSI device or disconnect it.

There are two methods that can be used to check the ROM version on a Macintosh Plus: the serial number and the built-in mini-monitor.

1. Serial number

A factory built Macintosh Plus computer with a serial number beyond F609xxxMxxxxx has the revised ROMs. However, if you are not sure if your machine was upgraded to a Macintosh Plus, or if you have a serial number earlier than that, move on to the next method.

2. Mini-monitor

Follow these steps to use the mini-monitor to check ROM version:

Step 1

Press the interrupt switch on the programmer's switch to enter

the built-in mini-monitor.

Step 2

Type DM 400000. If the third byte value displayed is EA, it means the revised ROMs; if it's EE, it means the original 128K ROMs.

Step 3

C. Type G to return.

ALL upgrade kits were shipped with the revised ROMs.

Article Change History:

23 Aug 1995 - Removed extraneous information and reformatted.

22 Jul 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:2000



Tech Info Library

Macintosh: Logic Boards May Mis-align with Programmer's Switch

Revised: 9/11/92
Security: Everyone

Macintosh: Logic Boards May Mis-align with Programmer's Switch

=====

Article Created: 28 May 1986

Article Change History

09/07/92 - REVIEWED
• For technical accuracy

TOPIC -----

After I had my the logic board in my Macintosh IIcx upgraded, it behaves strangely and sometimes the sad Macintosh will show up at startup. What's going on?

DISCUSSION -----

After the installation of a logic board, a Macintosh's strange behavior or the appearance of the Sad Macintosh may stem from the improper alignment of the reset and interrupt buttons with the programmer's switch on the outside of the case.

Workaround:

Remove the progammer's switch, re-insert the programmer's switch, and check the alignment with the corresponding buttons on the logic board. If the problem persists, remove 1 millimeter of plastic from the ends of the two projections on the inside of the programmer's switch; these two ends contact the buttons.

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Tech Info Library Article Number:2005



Tech Info Library

LaserWriter IINTX and PostScript: A General Description

Revised: 5/3/89
Security: Everyone

LaserWriter IINTX and PostScript: A General Description

=====

This article last reviewed: 10 March 1989

The LaserWriter IINTX is an expandable printer. It is configured with:

- MC68020 (16. MHz) microprocessor
- 2 megabytes of RAM expandable to 12 megabytes
- 1 megabytes of ROM (rev 47 Postscript) expandable to 8 megabytes
- A bank of 6 DIP switches for serial port configuration, which can be set for Diablo 630 or LaserJet+ emulation
- A SCSI expansion port supported by the PostScript extensions for file systems

It supports AppleTalk and serial communications over a DB-25 RS-232 port and a mini-8 RS-422 port. The Apple DeskTop Bus port has been added for future enhancements, but is not supported in this version of the ROM.

	Printer with Controller	Controller Only
Marketing Number:	M6215	M6004

PostScript File System

On the LaserWriter IIntx, PostScript has been extended to include a simple file system. This file system provides support of non-volatile storage for:

- A cache of character bitmaps
- A user accessible file storage
- A display-list buffer (which stores compiled PostScript instructions.)

There are two types of devices supported by the file system:

- The disk device (or multiple disks forming one logical disk device), and
- The cartridge device (configured as additional ROM up to 8M.)

More information on the PostScript File System extension and its operators can be found in the current Apple LaserWriter reference manual and the current PostScript Language reference manual.

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Tech Info Library Article Number:2006



Tech Info Library

LaserWriter IIntx: RAM Expansion

Revised: 9/22/89
Security: Everyone

LaserWriter IIntx: RAM Expansion

=====

This article last reviewed: 15 January 1988

Adding RAM allows more fonts to be downloaded to the printer at any one time, and increases the space available for font caching. The additional RAM also lessens the need for reconstructing bitmaps.

RAM Expansion Kits

	1 Megabyte	4 Megabyte
Marketing Number:	M6005	M6006

(NOTE: These SIMM expansions CAN NOT be used in a Macintosh computer.)

RAM Configurations

There are three banks of RAM on the LaserWriter IIntx controller, each bank consisting of 4 SIMM sockets, which can be configured with four 256Kbyte SIMMs or four(4) 1Mbyte SIMMs. Bank 0, located farthest from the controller panel, must be configured with the largest size SIMM.

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Tech Info Library Article Number:2007



Tech Info Library

Manzanita Product Comparisons (1 of 2)

Revised: 7/2/86
Security: Everyone

Manzanita Product Comparisons (1 of 2)

=====

Manzanita Software Systems specializes in high-quality business accounting software for the Apple II computer family. The following details the specifications of Manzanita's accounting products: The Business Accountant(R), and BusinessWorks(R). (This is part 1 of two parts.)

HARDWARE REQUIREMENTS

The Business Accountant:

Apple IIe or IIC
Two 5-1/4" floppy disk drives or one 5-1/4" floppy and a DOS 3.3 hard disk
Monitor
Printer

BusinessWorks:

Apple IIe or IIC
Two UniDisk 3.5 drives, or one UniDisk 3.5 drive and a RAM card, or one floppy disk drive (3-1/2" or 5-1/4") and a ProDOS hard disk.
Monitor
Printer

	The Business Accountant -----	BusinessWorks -----
System-Wide Features		
Operating System	DOS 3.3	ProDOS
On-line HELP	No	Yes
Show windows listing needed data	No	Yes
Password protection	Yes	Yes
Supports clock card	Yes	Yes
Modules integrate or stand-alone	Yes	Yes
Converts data to DIF	Yes	No
Converts data to AppleWorks	No	Yes
Uses AppleWorks filecard metaphor	No	Yes
Installs on Catalyst (2.0 and 3.0)	No	Yes

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Works with Pinpoint	No	Yes
Loads on RAM cards	No	Yes
Accesses other software directly	No	Yes
Number of multiple companies:		
removable media disk	Unlimited	Unlimited
hard disk	1	50

General Ledger System

Maximum number of accounts	500	1,000
# of characters in acct. description	22	22
Maximum # of monthly journal entries:		
removable media disk	500-1,900*	20,000*
hard disk	2,300**	20,000*
Maximum amount for each j/e	\$9,999,999.99	\$9,999,999.99
# of recurring journal entries	15	15
# of account types	14	14
# of reports in report queue	8	8
# of months budgeted	12	12
# of months history maintained	13	13
# of departments	99	99
# of lines per journal entry	99	99
Maximum dollar amount	\$43 million	\$43 million
Rounds financial reports to nearest \$	no	yes
Posts to prior months in fiscal year	yes	yes
Posts to future months	no	yes

Accounts Payable System

Maximum number of vendors:		
removable media disk	500	1,000*
hard disk	6,320**	10,000*
Maximum number of transactions:		
removable media disk	1,750*	***
hard disk	16,000**	***
Distribution accts. per transaction	8	8
# of payment terms	9	9
# of characters in vendor ID	8	8
# of characters in invoice #	8	8
# of characters in invoice reference	12	12
Maximum amount per transaction	\$999,999.99	\$999,999.99
Maximum amount per check	\$999,999.99	\$999,999.99
Invoices per check	Unlimited	Unlimited
# of cash accounts	1	4
Reconcile checkbook	No	Yes
Check voiding	No	Yes
Recurring payable invoices	No	Yes
Open credits	Yes	Yes
Discounts	Yes	Yes
Prints check with register	Yes	Yes
Allows handchecks	Yes	Yes

*The actual maximum numbers may be less than those listed, depending on the

number of accounting modules you use, and/or the number of accounts, vendors, parts or customers on the system. These numbers should be used as general guidelines. Refer to the sizing worksheets for more specific information.

**These figures reflect using a DOS 3.3 hard disk with a maximum of eight data sets.

***Limited only by disk space.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:2008



Tech Info Library

Manzanita Product Comparisons (2 of 2)

Revised: 7/2/86
Security: Everyone

Manzanita Product Comparisons (2 of 2)

=====

Manzanita Software Systems markets business accounting products for the Apple IIe and IIc. The following chart compares specifications of The Business Accountant and BusinessWorks. This is part 2 of two parts.

	The Business Accountant -----	BusinessWorks -----
Accounts Receivable System		
Maximum number of customers:		
removable media disk	500	1,000*
hard disk	5,840**	10,000*
Maximum number of transactions:		
removable media disk	2,320*	***
hard disk	20,800**	***
Maximum number of sales reps	n/a	16
# of customer notes	9	9
# of dunning notes	3	3
# of payment terms	9	9
# of sales accounts	8	16
# of sales tax jurisdictions	1	3
# of line items per invoice	16	40
Maximum invoice amount	\$999,999.99	\$80,000.00
# of characters in customer ID	8	8
# of digits in invoice number	5	5
Credit and open invoice inquiry	yes	yes
Includes contact names	no	yes
Prints invoices, debit, credit memos	yes	yes
Invoices directly from inventory	no	yes
Returns product to inventory	no	yes
Recurring receivables invoices	no	yes
Handles open credits	yes	yes
Calculates finance charges	yes	yes
Maintains customers' high balances	no	yes

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Open item & balance forward statements	yes	yes
Sorts all reports by sales rep	no	yes

Inventory Control System

Maximum number of parts:

removable media disk	1,000*	1,000*
hard disk	10,000**	10,000*

Maximum number of transactions:

removable media disk	4,000	***
hard disk	38,400**	***
# of product groups	99	99
# of bins/locations	n/a	99
# of costing methods (LIFO,FIFO, standard, weighted average)	4	4
# of price levels	1	3
# of cost of goods sold accounts	8	16
Maximum on-hand quantity of any part	999,999	999,999.99
Maximum amount of purchase order	\$999,999.99	\$999,999.99
Global prices changes	no	yes
Fractional quantities	no	yes
Prints purchase orders	yes	yes
Retains purchase order detail	no	yes
Allows receipts & cancellations of p.o.'s	no	yes
Calculates inventory turnover	no	yes
Handles return of merchandise to inventory	no	yes
Maintains YTD sales and costs of goods sold	no	yes
Handles physical inventory	yes	yes

Payroll System

Maximum number of employees:

removable media disk	200*	500*
hard disk	300*	1,000*
Deductions	12	25
with company contribution	no	yes
Commissions	12	25
Overtime rates	3	3
Standard rates	50	100
Job codes	100	200
# of pay types	4	5
# of pay periods	4	4
Maximum individual annual earnings	\$999,999.99	\$999,999.99
Tax tables for 50 states, DC, federal	yes	yes
Multiple earnings categories	yes	yes
Compensation time	no	yes
Shift differentials	no	yes
Departmental posting	no	yes
Checks and handchecks	yes	yes
Retain check detail for quarter	no	yes
Void most recent checks	yes	yes

Void any check	no	yes
Labels Plus		
# of names in mailing list:		
removable media disk	1,000	1,000*
hard disk	8,000**	10,000*
Number of selection keys	8	8
# of label definitions	1	4
Maximum number of labels across	4	4
# of characters in ID	8	8
Minimum label width, in characters	24	24
Maximum label width, in characters	72	72
Minimum label height, in lines	4	4
Maximum label height, in lines	24	24
Name and address lists	yes	yes
Telephone lists	yes	yes
Mailing labels (roll or single sheet)	yes	yes
Merge vendors, customers & employees	yes	yes

*The actual maximum numbers may be less than those listed, depending on the number of accounting modules you use, and/or the number of accounts, vendors, parts or customers on the system. These numbers should be used as general guidelines. Refer to the sizing worksheets for more specific information.

**These figures reflect using a DOS 3.3 hard disk with a maximum of eight data sets.

***Limited only by disk space.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Manzanita Software Systems, Customer Support (916) 781-3880

Tech Info Library Article Number:2009



Tech Info Library

ImageWriter Blows 5 AMP Fuse

Revised: 1/17/92
Security: Everyone

ImageWriter Blows 5 AMP Fuse

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: ImageWriter continues to blow 5 amp fuses on the CPU PCB.

BEFORE YOU START: Familiarize yourself with ImageWriter Technical Procedures.

CAUSE: Print head might be shorted.

CURE: Try the following steps and refer to ImageWriter Technical Procedures when needed:

1. Remove and replace the print head.
2. Replace the 5 amp fuse with a known good one.
3. Reassemble the printer.
4. Run the built-in "Self-Test".
5. If the 5 amp fuse blows again, refer to ImageWriter Technical Procedures for more information on troubleshooting.

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Tech Info Library Article Number:2016



Tech Info Library

Hard Disk 20: Applications Launch Slowly

Revised: 11/10/88
Security: Everyone

Hard Disk 20: Applications Launch Slowly

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: Customer complains that it takes an unusually long time to launch an application or boot from the Hard Disk 20.

BEFORE YOU START: Make sure that you are using Finder version 4.1 or greater.

CAUSE: The "Desktop" has been rebuilt or the media is becoming full. Performing the following steps will cause the files to be written to the drive in a sequential fashion, allowing faster access to data on that drive.

CURE: Perform the following procedure:

1. Make certain that the Hard Disk 20 and the computer are turned off.
2. Connect a newly formatted Hard Disk 20 to the disk drive port of the problem drive. If a Hard Disk 20 is not available, a floppy drive will suffice.
(Note: Some files might be too large to copy to a floppy.)
3. Power on the computer and both hard disks if you have not yet done so.
4. Select all Icons on the problem drive by using the "Select All" function from the "Edit" menu and move those files to the backup Hard Disk. If a floppy drive is being used as the backup drive, the files must be transferred individually.
5. Verify that ALL data has been transferred to the backup disk drive after the file transfer is finished.
6. If all data has been transferred properly, continue to s8-7. Otherwise retry steps 1-5.
7. Open the System folder on the backup drive and double-click on the "Finder" icon.
8. Close all windows so that only the two drive Icons show on the screen.
9. Highlight the icon of the problem drive and select "Erase" from the "Special" menu.
10. Open the backup drive icon and choose "Select All" from the "Edit" menu.

11. Move all files from the backup drive to the original "problem drive".

12. Select "Shut Down" from the "Special" menu and reboot the computer. Your applications should launch much faster. When booting from the Hard Disk 20 and using a Macintosh Plus or Enhanced Macintosh 512k, there should be a noticeable improvement in booting speed.

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Tech Info Library Article Number:2017



Tech Info Library

Lisa:10707 Error when Booting the Lisa Office Systems I Disk

Revised: 7/24/92
Security: Everyone

Lisa:10707 Error when Booting the Lisa Office Systems I Disk

=====

Article Created: 13 August 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: The 10707 Error occurs upon booting the Office Systems I disk or ProFile hard disk.

BEFORE YOU START: Familiarize yourself with the Lisa (or Macintosh XL) Technical Procedures.

CAUSE: The disk is write-protected or the system software is damaged.

CURE: To unprotect the disk, slide the write-protect tab so that it covers the small rectangular opening (see the Lisa or Macintosh owner's manual if you are not sure how to perform this procedure).

If using a ProFile, boot the Office System 1 diskette. Choose the "Repair" option. If this fails, choose "Install" and reinstall the Office System. If this still fails, back up the customer's data, reinitialize the ProFile using the Install option, and install the Office System.

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Tech Info Library Article Number:2018



Tech Info Library

ImageWriter II Paper Guide

Revised: 1/17/92
Security: Everyone

ImageWriter II Paper Guide

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: The new paper guides seem hard to install when using the old installation procedure documented in the ImageWriter II Technical Procedures manual.

BEFORE YOU START: Familiarize yourself with the ImageWriter II Technical Procedures.

CAUSE: Design changes made to the paper guide require a different method of installation. There are 2 different ImageWriter II paper guides. The NEW paper guide has a reinforcing bar molded to the bottom of the opening that is covered by the "metal foil". The older part does not have this reinforcing bar.

CURE: Remove the print head first before installing the new-style paper guide. See the ImageWriter II Technical Procedures for more information on how to install the paper guide. Then follow the normal paper guide procedure as documented in the ImageWriter II Technical Procedures.

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Tech Info Library Article Number:2019



Tech Info Library

ImageWriter II Print Quality

Revised: 1/17/92
Security: Everyone

ImageWriter II Print Quality

=====

This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: The ImageWriter II produces blurred print when used with the Macintosh in "high quality mode".

BEFORE YOU START: Familiarize yourself with the ImageWriter II Technical Procedures.

CAUSE: The wrong print driver might be installed (such as 2.2).

CURE: Install ImageWriter driver version 2.3 or higher.

OTHER POSSIBLE CAUSES/CURES: "Over inking" might occur when using a new ribbon with porous paper. The thickness lever might be adjusted too far forward. Some applications might require that an older driver be used.

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Tech Info Library Article Number:2020



Tech Info Library

Macintosh: Resources

Revised: 5/10/89
Security: Everyone

Macintosh: Resources

=====

This article last reviewed: 10 November 1987

Every Macintosh application is a collection of discrete modules of data called resources. When a programmer assembles or compiles his source code into object code, the code is placed in a resource of type CODE. The programmer may then link to his CODE resource other data resources his code will use. These may include resources such as menus, fonts, windows, controls, dialog boxes, icons or pictures.

At power up, the Resource Manager initializes in ROM. To refer to and access resources, which are grouped logically by "type", application code can use the Resource Manager on an "as needed" basis, usually specifying the resource by type and either ID number or name. Since resources can be contained in files separate from the programmer's CODE resource, many programmers keep their code size minimal by referencing resources in the System file.

Resource types are distinguished by their four-character labels. Apple has reserved all resource type names which consist of lower case or international characters (ASCII \$61-\$7A and \$7F on up). Additionally, Apple reserves the resource type names in the article "Macintosh: Reserved resource type names".

You can make alterations to discrete resources outside of the programmer's code, customizing or localizing the resource with foreign language prompts, currency formatting and other custom representations. Use ResEdit, REdit, and these tools' accompanying documentation, available through the Apple Programmer Development Association (APDA), to individualize almost any application or to edit custom-programmed resources.

For sources of information about the Resource Manager and resources in applications and in ROM, consult Inside Macintosh, volumes I-IV. Chapter 5, volume I and chapter 3 volume IV pertain directly to the Resource Manager. For information about resources used by the DeskTop file, read Apple Macintosh TechNote #29, "Resources Contained in the DeskTop File."

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Tech Info Library

ImageWriter Carriage Assembly stops or vibrates

Revised: 1/17/92
Security: Everyone

ImageWriter Carriage Assembly stops or vibrates

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This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION #1: The ImageWriter printer carriage assembly freezes or grinds when connected to a Macintosh or Apple II Super Serial card.

BEFORE YOU START: Familiarize yourself with the ImageWriter Technical Procedures.

CAUSE: One or more of the carriage drive transistors is defective or one or more of the insulators is cracked or broken.

CURE: Remove the string of carriage transistors from the ImageWriter referencing the technical procedures if needed. Check to make sure that none of the insulators is missing. Each transistor should have a mylar insulator between it and the printer chassis. An insulator for the screw should also be present. Install new insulators if any are missing or cracked. Reassemble the printer and run the printer self-test.

In the event that all insulators are in good condition then replace the string of carriage transistors. ALWAYS REMEMBER TO REINSTALL ALL INSULATORS WHEN THE CARRIAGE TRANSISTORS ARE REPLACED. REMEMBER THAT THE PRINTER WILL EXHIBIT THE SAME SYMPTOMS IF THE INSULATORS ARE MISSING. (A TRANSISTOR SHORTED TO GROUND.)

Run an extensive self test on the printer. Sometimes the CPU board will cause transistor(s) to fail again. In the event that this occurs, replace the CPU board and the transistor assembly.

PROBLEM DESCRIPTION #2: The Carriage Assembly stops or vibrates when powered on and the printer IS NOT connected to a computer.

CAUSE: Occasionally, one of the transistor wires is cold-soldered to the transistor itself.

CURE: Replace the string of carriage transistors.

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Tech Info Library Article Number:2024



Tech Info Library

ImageWriter II won't print from Macintosh

Revised: 1/17/92
Security: Everyone

ImageWriter II won't print from Macintosh

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This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: The ImageWriter II printer won't print when interfaced with the Macintosh and the printer has the 32K Option card installed. The ImageWriter does, however, perform a self-test with no errors.

BEFORE YOU START: Make sure that the print driver has been installed properly on the customers software then attempt to print to a known-good Imagewriter.

CAUSE: The Option card is bad (even though the self-test generates no errors).

CURE: Remove the 32K Option Card and test the printer with the Macintosh connected to the ImageWriter II. Boot a program such as MacWrite and print to the ImageWriter II. Swap the Option Card with a known good one and try to print with MacWrite again.

Refer to General Troubleshooting for the ImageWriter II if the printer still does not print.

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Tech Info Library Article Number:2025



Tech Info Library

Apple II ProFile Interface Card Modification for the Apple II GS

Revised: 1/17/92
Security: Everyone

Apple II ProFile Interface Card Modification for the Apple II GS

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This article last reviewed: 28 March 1988

PROBLEM DESCRIPTION: Some ProFile Interface cards will not work properly when installed in the Apple IIGS. ProFile directory information might become damaged and cause the user not to be able to access data stored on the ProFile.

CAUSE: There might be an incomplete ground path through the card.

CURE: If ANY ProFile Interface Card is to be installed in an Apple IIGS, check first to see that a jumper, made of 24-26 gauge multistrand wire is installed between pin 12 of IC C6 (2716 EPROM-Apple Part# 341-0299) and pin 1 of IC B4 (74LS368-Apple Part# 305-0368) on the non-component side of the board. If needed, the jumper should be installed by a knowledgeable technician to assure proper operation of the ProFile when interfaced with the Apple IIGS. The jumper wire should be just long enough to make the connection. The technician should remove the EPROM before soldering, thus preventing any damage to the chip.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2026



Tech Info Library

Apple Personal Modem: Setting registers from Applesoft BASIC

Revised: 8/27/86
Security: Everyone

Apple Personal Modem: Setting registers from Applesoft BASIC

=====

To set the registers on the Apple Personal Modem from Applesoft BASIC, use this program, based on a program that sends custom characters to ImageWriters. Line 60 contains the machine language program that downloads commands. Line 70 contains the ASCII codes for the command string.

Line 70 of this particular example makes the program set the S0 register to 255 by sending the string ATS0=255 <RETURN>, a return the APM must have to accept the command string in all cases.

```
10 D$=CHR$(4)
20 FOR I= 768 TO 773: READ J : POKE I,J : NEXT I
30 PRINT D$;"PR#2"
40 FOR I = 1 TO 9: READ J : POKE 769,J : CALL 768 : NEXT I
50 PRINT D$;"PR#0"
60 DATA 169,4,76,237,253,96
65 REM ENTER COMMANDS IN LINE 70 AS ASCII CODES
66 REM BE SURE FOLLOW COMMAND STRING WITH A RETURN (ASCII 13)
70 DATA 65,84,83,48,61,50,53,53,13
```

Refer to the APM manual and the ASCII code chart for more information.

Apple Technical Communications

Tech Info Library Article Number:2027



Tech Info Library

AppleWorks: Printer codes for Qume LetterPro 20

Revised: 8/27/86
Security: Everyone

AppleWorks: Printer codes for Qume LetterPro 20

=====

1. Carriage: 11"
2. Linefeed after carriage return: YES
3. Underlining: The Qume Letterpro 20 makes an underline by printing the character, backspacing one character, and printing the underline.
4. Special Codes

	Begin	End
--	-------	-----

- | | | |
|-----------------|-------|-------|
| a. Boldface: | Esc K | Esc M |
| b. Underline: | Esc I | Esc J |
| c. Superscript: | Esc D | Esc U |
| d. Subscript: | Esc U | Esc D |

Check the printer manual for more information.

Apple Technical Communications

Tech Info Library Article Number:2028



Tech Info Library

PictureBase(TM) Application Note #1

Revised: 6/27/86
Security: Everyone

PictureBase(TM) Application Note #1

=====

This application notes describes the internal format of PictureBase Library files.

Library File: Creator: PBAP
Type: PCLB

Type of resources: LMAP - Directory of pictures.
PICT - Pictures.
TILE - Titles of pictures.
KYWD - Keywords for pictures.
INFO - Text information for pictures.

LMAP: ID: Zero (all others reserved for future use)
Format: Number of pages in this Library (WORD)
Reserved (LONG)

Resource ID of first page (WORD)
Reserved (LONG)

-
-
-

Resource ID of last page (WORD)
Reserved (LONG)

PICT: ID: 513 or greater
Format: Standard PICT format

TILE: ID: 513 or greater
Format: ASCII data (not Pascal or C string)

KYWD: ID: 513 or greater
Format: ASCII data (not Pascal or C string)

INFO: ID: 513 or greater
Format: ASCII data (not Pascal or C string)

..TIL02030-PictureBaseTM_Application_Note_#1_(TA35905).pdf

The ID in a LMAP entry is the resource ID for the PICT, TILE, KYWD, and INFO for that page in the Library.

ID numbers are allocated randomly (as long as they don't already exist in that Library file).

IDs 0-128 are reserved for use by the system.

IDs 129-512 reserved for use by the PictureBase application.

PICT, TILE, KYWD, and INFO resources must be marked as purgable and not pre-loaded.

NOTE: Apple Computer Inc. is not responsible for the contents of this article.

Symmetry Corporation Technical Support

Tech Info Library Article Number:2030



Tech Info Library

LaserWriter IINTX: Switch Configurations

Revised: 5/20/88
Security: Everyone

LaserWriter IINTX: Switch Configurations

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This article last reviewed: 15 January 1988

The LaserWriter IINTX has a bank of 6 DIP switches located on the controller panel. These switches are used for controlling the mode of operation, serial port configuration, and communication parameters. The switches will be preset to the AppleTalk configuration.

Switch 1	Switch 2	Meaning
Up	Up	8 pin AppleTalk (Serial Port Disabled)
Down	Up	25 pin RS-232 and 8 pin RS-422 * Serial Ports 1200 baud
Up	Down	25 pin RS-232 and 8 pin RS-422 * Serial Ports 9600 baud
Down	Down	25 pin RS-232 serial port 9600 baud;** 8 pin RS-422 serial port 0 baud

Switch 3	Switch 4	Meaning
Up	Up	PostScript Batch
Down	Up	Diablo 630
Down	Down	HP LaserJet
Up	Down	PostScript Interactive

Switch 5	Switch 6	Meaning
Down	Down	No Handshake

Up	Up	ON/XOFF
Down	Up	Etx/Ack
Up	Down	DSR

* Both serial ports are enabled. Serial communication and AppleTalk communication are NOT compatible, and will never occur at the same time.

** This configuration allows you to use the 25 pin RS-232 port while leaving LocalTalk connected. This prevents serial communication from interfering with the AppleTalk Network.

The switch configuration settings are maintained between power-off and power-on cycles by the 2K battery-backed-up ZPRAM (Zero-Power-RAM) equivalent to the EEROM of the LaserWriter IINT. The same PostScript commands that are used to modify the EEROM parameters will ALSO set or read the ZPRAM parameters. Consistency between the switch configurations and the ZPRAM is maintained through the VIA. Toggling a switch, waiting 30 seconds, then toggling the switch back forces the ZPRAM to update to the current switch settings.

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Tech Info Library Article Number:2031



Tech Info Library

LaserWriter IIscc: Controller Description

Revised: 4/8/94
Security: Everyone

LaserWriter IIscc: Controller Description

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This article last reviewed: 15 January 1988

LaserWriter IIscc is a personal laser printer that communicates through the SCSI port. The LaserWriter IIscc controller consists of:

- a Motorola MC68000 microprocessor (7.46MHz)
- 16K bytes of ROM
- 1 megabyte of RAM
- two 50-pin SCSI connectors
- a switch for setting the SCSI device number
- Apple Desktop Bus connector.

The printer ROM does NOT contain a page description language such as the PostScript language interpreter. All imaging is done in the Macintosh using QuickDraw and a set of specially designed four times (4x) fonts (such as 48, 56, 72, 96 point) which are stored in the Macintosh System File. QuickDraw commands are intercepted and translated by the LaserWriter IIscc driver, which draws each object into an offscreen bit-map in the Macintosh RAM.

The LaserWriter IIscc is configured with 1 megabyte of dynamic RAM, which is primarily used as a page-frame buffer for constructing the bit-mapped page image. They are 64-pin printer SIMMs, 120 nS access time, and interchangeable with the LaserWriter IIntx SIMMs.

Even though the hardware supports up to 4 megabytes of RAM, the software utilizes only 1 megabyte -- which is all that is required to represent a full page bitmap.

The host sends bit-mapped data and control commands to the LaserWriter IIscc controller over the SCSI bus; there is no support for the AppleTalk Personal

Network or serial communications.

	Printer with Controller	Controller Only
Marketing Number:	M6200	M6003

Controller Panel

ADB Port

The ADB port in the LaserWriter IIsC ROM supports printer enhancements -- i.e.: cut sheet feeders, bin feeders, output collators. The LaserWriter IIsC does NOT provide any power to the ADB bus. Refer to the ADB specifications for information about the ADB hardware and protocol currently available from Developer Support or Software Licensing.

SCSI Address Switch

This is the only switch on the controller panel. It is a pushwheel-type switch with a numeric display that indicates the address to the user. It will be preset to SCSI address "4".

CAUTION: The SCSI Address Switch should always be assigned a value in the range of 2 to 6; an internal SCSI hard disk is always ID "0" (zero) and the Macintosh is always ID "7". The SCSI ID number for the printer must be different from any SCSI hard disk in the SCSI chain. There is a remote possibility that data on a hard disk which is inadvertently assigned the same ID as the printer would be destroyed when attempting to print to the printer.

SCSI Port

There are two 50-pin SCSI connectors on the controller panel. Only ONE Macintosh may be connected to the printer at one time. The LaserWriter IIsC does supply terminator power to the connectors, but does not have an internal terminator.

1989

Tech Info Library Article Number:2033



Tech Info Library

AppleColor RGB Monitor: How To Connect It To The Apple IIfc

Revised: 10/14/88
Security: Everyone

AppleColor RGB Monitor: How To Connect It To The Apple IIfc

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This article last reviewed: 29 September 1988

While limited to only 8 colors, the AppleColor RGB Monitor does work with the Apple IIfc with:

1) a Telexmax Inc. "Peacock" RGB interface for the complete connection (like the connection for the Apple Color 100 Monitor)
and

2) a new interface cable, the pinouts of which are:

DB15 Pin	DB15 Pin
1 <----->	6
2 <----->	5
3 <----->	3
5 <----->	2
6 <----->	1
9 <----->	9
10 <----->	10
13 <----->	13
Shell <----->	Shell

For more information, search under: "Telexmax Inc."

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Tech Info Library Article Number:2034



Tech Info Library

LaserWriter IIntx: What The ROM/Font Expansion Card Is For

Revised: 1/21/88
Security: Everyone

LaserWriter IIntx: What The ROM/Font Expansion Card Is For

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This article last reviewed: 15 January 1988

The purpose of the LaserWriter IIntx Font Expansion Card is to provide additional ROM storage for fonts. The fonts must be stored either as character bitmaps or as character outlines. Refer to the PostScript Language Reference Manual for the character outline definitions and contact Adobe Systems for information about conforming to the Adobe cartridge-font definition.

The Font Expansion Card, 5.25 x 4.6 inches, interfaces with the controller ROM through a 96-pin DIN connector.

For more information about cartridge-font definition, search under: Adobe Systems Inc.

Tech Info Library Article Number:2035



Tech Info Library

AppleColor RGB Monitor input connector: Pinouts

Revised: 7/7/88
Security: Everyone

AppleColor RGB Monitor input connector: Pinouts

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Pin	Function
1	Red video ground
2	Red composite video
3	Composite sync
4	(not used)
5	Green composite video
6	Green video ground
7	(not used)
8	(not used)
9	Blue composite video
10	(not used)
11	(not used)
12	(not used)
13	Blue video ground
14	(not used)
15	(not used)
Shell	Shield ground

Apple Technical Communications

Tech Info Library Article Number:2036



Tech Info Library

Apple IIc: Memory Expansion Card

Revised: 11/10/88
Security: Everyone

Apple IIc: Memory Expansion Card

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This article last reviewed: 10 November 1988

The Apple IIc Memory Expansion Card is a dealer-installed option available for Apple IIc computers that have a memory expansion connector. The card requires a memory expansion connector found on the IIc logic board. Simply exchange a logic board that does not have the connector for a board with the connector.

The Memory Expansion Card is sold with 256K RAM and may be expanded to 512K, 768K, or 1 Megabyte of RAM. Additional memory may be added at any time by plugging 256K RAM increments into the board's sockets.

Note that the Memory Expansion Card is static sensitive, so that proper electrostatic discharge precautions must be taken before handling the card.

The Memory Expansion Card will be available under ProDOS as a RAM disk, with the name /RAM4. Some software, such as AppleWorks 2.0, will use the extra RAM within the program.

To test the Memory Expansion Card, power on the Apple IIc and follow these steps:

1. Simultaneously press CTRL and RESET
2. Type CALL -151(CR)
3. Type C40AG(CR)

The Apple IIc responds with a message that indicates the RAM size found (256, 512, 768K, or 1M) and then tests the card until an error or until you press ESC.

The Memory Expansion Card test on an Apple IIc will give results whether or not a card is actually installed. You must make sure that a card is properly installed before getting valid results from the test.

When you run the diagnostics and there is no card, you should see:

MEMORY CARD TEST
ESC TO EXIT
TEST WILL TAKE 180 SECONDS
CARD SIZE = 1 MEG

PASSES = 0000

CARD FAILED
ADDRESS ERROR
SEE DEALER FOR SERVICE

8002- M=00 A=04 X=C1 Y=A0 P=B0 S=CE

(M is the memory bank where failure occurred)

If this is the message you are getting, then you may not have a RAM card
(or it may not have RAM in it).

There is no other way of determining how much memory the Apple IIC has
without writing a machine language program.

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Tech Info Library Article Number:2037



Tech Info Library

LaserWriter IINTX SCSI Hard Disks: General Information

Revised: 9/16/93
Security: Everyone

LaserWriter IINTX SCSI Hard Disks: General Information

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Article Created: 15 January 1988
Article Reviewed/Updated: 15 September 1993

Configuring the hardware:

The extended ROM support of a disk-based file system and the 53C80 SCSI controller with a 50-pin external connector allows you to attach one or more SCSI hard disks to the LaserWriter IINTX. The addition of a hard disk acts as "virtual memory", increasing the space available for font storage, font caching, or a display list buffer.

When connecting hard disks to the LaserWriter II, follow the standard SCSI procedures:

- each disk drive must have a unique SCSI ID number
- no more than two SCSI cable terminators in a chain
- no more than 7 devices.

The LaserWriter IINTX controller does NOT provide termination of the SCSI signals or active power for external terminators.

LaserWriter IINTX will NOT recognize any of the attached disks unless they are ALL turned on when you want to use any one of them.

(NOTE: some manufacturer's disk drives do not have the intelligence to report their size. These disk drives SHOULD NOT be used on the LaserWriter IINTX.)

Initialization:

Initialize the disks and download fonts to them with the LaserWriter Font Utility application on the LaserWriter II installation disk.

Initialization allots 20 percent of total disk space to font storage, and 80

percent to font-caching. The LaserWriter IINTX automatically increases the storage percentage as needed. The Font Utility application warns you when the percentage is high enough to threaten font-caching performance.

The LaserWriter IINTX regards all attached hard disks as a single logical unit. Therefore, if you add a disk to the system you will have to re-initialize ALL your disks and rebuild your font storage. The font cache rebuilds itself automatically. Because you can chain several hard disks, the space available for font-caching is essentially unlimited, and thus the bit-maps are always available.

Downloading:

When you download a font (and you have a hard disk attached,) you can choose to download it either to the disk or to RAM. Downloading fonts to the disk stores them there permanently (until you remove them). This process saves time, because you won't have to download repeatedly over the AppleTalk network.

Start-up Sequence:

Postscript checks the disk device for file-system integrity -- and the disk-based font cache for internal consistency -- each time the LaserWriter IINTX is turned on. If the check for file-system integrity fails, the disk device is re-initialized; for this reason you should ensure that ALL data on the device is recoverable from another source.

If the check of the internal consistency of the disk-based font cache fails, the information in the font cache is discarded, and associated data structures and files are restored to their initial state. If these start-up diagnostics are completed successfully, PostScript searches the disk device for a file named Sys/Start.

Sys/Start File:

A Sys/Start file can be used to set volatile parameters and to load special items into virtual memory before any other job is executed. If a Sys/Start file is stored on the disk device, it will be executed if "dosysstart" is true, right after completion of the start-up diagnostics.

If the file has become corrupt, it is necessary to restart the printer with the disk device turned off. To prevent the file from being run, you need to set "dosysstart" to FALSE -- then the Sys/Start file would not be executed the next time the printer is turned on. (To replace the bad Sys/Start file, restart the printer with the disk device turned on.)

Storing/Replacing the Start-up File:

The procedure used to download your Sys/Start file to the printer's disk device is broken into two PostScript programs to preserve virtual memory, which

is consumed when working outside the server loop:

(NOTE: Virtual memory is not recovered until the printer is powered-down and on again. To protect the system files, it is necessary to work outside the server loop when accessing these Sys files.)

- The first job stores the text of your Sys/Start file to a temporary file. It is not necessary to exit the server loop to perform this function.

- The second job exits the server loop, deletes the Sys/Start file if one already exists, and renames the temporary file to Sys/Start.

Actual code is provided in the current Apple LaserWriter Reference manual.

Article Change History

15 September 1993 - Changed the LaserWriter model designators to upper case.

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Tech Info Library Article Number:2038



Tech Info Library

Apple IIGS: Alternate Display Mode Desk Accessory

Revised: 9/22/89
Security: Everyone

Apple IIGS: Alternate Display Mode Desk Accessory

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This article last reviewed: 16 September 1986

The Alternate Display Mode is a small firmware routine that can be activated from the Desk Accessory menu. It makes the Apple IIGS compatible with applications that display text or graphics on Page 2 (memory \$800-\$BFF).

The Apple IIGS does not shadow this range of memory to the Mega II normal RAM. However, some programs depend on this shadowing in order to display Text or Low-Res Graphics from Page 2. These programs will not work because the hardware is not updating the slow screen memory with the appropriate memory range from the Fast RAM.

Enabling the Alternate Display Mode will install a small routine into the Heartbeat Manager routine queue. This fast routine copies the appropriate values every 1/60 of a second, assuming that VBL interrupts have been turned on and the Heartbeat Manager has been initialized. While this slows overall execution speed of any programs on the Apple IIGS, they still run faster than on an Apple IIe or Apple IIc.

For more information on the Apple IIGS Heartbeat Manager, see the Apple IIGS Firmware Reference Manual or the appropriate database article.

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Tech Info Library Article Number:2039



Tech Info Library

Apple IIGS Super Control Panel: Refresh rate

Revised: 9/16/86
Security: Everyone

Apple IIGS Super Control Panel: Refresh rate

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From the Control Panel on the Apple IIGS, one can set many of the system configuration settings stored in the battery RAM. These include such settings as screen color, microprocessor speed, slot assignment, and others. However, one of the configurable settings that is not included as an option in the Control Panel is the screen refresh rate.

Because the Apple IIGS is an international machine, it must be able to conform to European standards. In Europe, the screen refresh rate is 50 Hz, rather than 60 Hz as defined by the U.S. standard.

In order to change the screen refresh rate, one must enter the "Super" Control Panel. This control panel is kept separate from the regular Control Panel for safety reasons. No harm will come to the Apple IIGS or the monitor if the refresh rate is incorrectly set. However, the screen display may become unreadable as long as the incorrect mode is set. The Super Control panel was made less accessible so that it would be more difficult to accidentally change the setting.

Entering the Super Control Panel is done by re-booting the computer in a special way. Rather than pressing Open-Apple/CTRL/Reset, the normal key sequence for rebooting, simultaneously press OPTION, CTRL, and Reset. The computer will cold start and then display the Super Control Panel screen. From there one can change the screen refresh rate, enter the regular Control Panel, or continue with the boot process.

Apple Technical Communications

Tech Info Library Article Number:2040



Tech Info Library

Apple IIGS System Disk: Overview

Revised: 9/22/89
Security: Everyone

Apple IIGS System Disk: Overview

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This article last reviewed: 16 September 1986

Every Apple IIGS user needs at least one complete system disk. This disk is shipped with every Apple IIGS system, and is provided on an 800K, double-sided, 3.5 inch disk; the complete set of files will not fit on a 5 1/4" disk.

CONTENTS OF A COMPLETE APPLE IIGS SYSTEM DISK

DIRECTORY/FILE	DESCRIPTION
PRODOS	A routine that loads the proper operating system and selects an application, both at boot time and whenever an application quits.
SYSTEM/	A sub-directory containing the following files:
P8	ProDOS/8 operating system kernel and loader
P16	ProDOS/16 operating system kernel
LOADER	The Apple IIGS System Loader
START	The Apple IIGS Finder
LIBS/	a sub-directory containing the standard system libraries
TOOLS/	a sub-directory containing all RAM-based tools
FONTS/	a sub-directory containing all fonts
DESK.ACCS/	a sub-directory containing all desk accessories
SYSTEM.SETUP/	a sub-directory containing system initialization programs
TOOL.SETUP	a load file containing patches to ROM and a program to install them. This is the only required file in the SYSTEM.SETUP sub-directory; it is executed before any others in the sub-directory
BASIC.SYSTEM	The Applesoft BASIC system interface program

These are all of the programs that come on a standard and complete System disk. In many cases, however, an application will not need all of these files, and some may be removed. The following is a list of the required files, and a short description of when it is safe to remove the others:

DIRECTORY/FILE	REQUIRED/(REQUIRED IF...)
-----	-----
PRODOS	required
SYSTEM/	required
P8	(required if the application is ProDOS/8-based)
P16	required
LOADER	required
START	(required if the application works from the Finder)
LIBS/	(required if the application uses the standard libraries)
TOOLS/	(required if the application needs RAM-based tools)
FONTS/	(required if the application needs fonts)
DESK.ACCS/	(required if the application supports desk accessories)
SYSTEM.SETUP/	required
TOOL.SETUP	(required if the application uses ROM-based tools)
BASIC.SYSTEM	(required if the application is written in Applesoft)

SYSTEM STARTUP

Disk blocks 0 and 1 on an Apple IIGS system disk contain the startup (boot) code. They are identical to the boot blocks on Apple IIe/IIc system disks. This allows ProDOS system disks to boot on an Apple IIGS, and it also means that the initial part of the ProDOS/16 bootstrap procedure is identical to the procedure for ProDOS. For a system disk with a volume name of /SYS, the boot process is outlined as follows:

1. The boot code searches the disk's volume directory for the first file named /SYS/PRODOS with the file type \$FF.
2. If the file is found, it is loaded and executed at location \$2000 of bank \$00. If it is not found, then a message stating that PRODOS cannot be found on the disk is displayed.

On an Apple IIe/IIc system disk, the file named PRODOS is the ProDOS operating system. On an Apple IIGS system disk, however, this PRODOS file is not the operating system itself; it is an operating system loader and application selector. When it receives control from the boot code, /SYS/PRODOS on the Apple IIGS performs the following tasks:

3. It relocates the part of itself name PQUIT to an area in memory where PQUIT will reside permanently. PQUIT contains the code required to terminate one program and start another.
4. /SYS/PRODOS loads the ProDOS/16 operating system kernel.
5. Using ProDOS/16 calls, /SYS/PRODOS loads the System Loader.
6. /SYS/PRODOS performs any necessary boot initialization of the system by executing the files in the sub-directory /SYS/SYSTEM/SYSTEM.SETUP. If there is a file named TOOL.SETUP in that sub-directory, it is executed first -- it loads RAM-based tools and RAM patches to ROM-based tools.

Every file in the sub-directory /SYS/SYSTEM/SYSTEM.SETUP must be an Apple IIGS load file of type \$B6. /SYS/PRODOS loads it and makes a JSL to each file in turn; when the file returns with an RTL, /SYS/PRODOS unloads it from memory.

7. Now /SYS/PRODOS selects which program to run.

- a. It first searches for a type \$B3 file named /SYS/SYSTEM/START. Typically, that file is the Apple IIGS Finder, but it could be any Apple IIGS system program. If START is found, it is selected.
- b. If there is no START file, /SYS/PRODOS searches the boot volume directory for the first file that is either (1) a ProDOS system program (type \$FF with the filename extension .SYSTEM), or (2) a ProDOS/16 system program (type \$B3 with the filename extension .SYS16). Whichever is found first is selected.

Note: If a type \$FF file is found first, but the ProDOS operating system (file /SYS/SYSTEM/P8) is not on the system disk, /SYS/PRODOS will then search for and select the first ProDOS/16 system program.

- c. If /SYS/PRODOS cannot find a file to execute, it will bring up an interactive routine that prompts the user for the filename of a system program to load.

8. Finally, /SYS/PRODOS passes control to an entry point in PQUIT. It is PQUIT, not /SYS/PRODOS, that actually loads and executes the selected program.

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Tech Info Library Article Number:2041



Tech Info Library

Apple IIGS Incompatibilities: CP/M Cards

Revised: 10/12/87
Security: Everyone

Apple IIGS Incompatibilities: CP/M Cards

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This article last reviewed: 17 September 1986

The Apple IIGS is designed to be used with the vast majority of Apple IIe hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

Some CP/M cards designed for the Apple IIe use non-Apple conventions on the I/O Select and Device Select lines in the expansion I/O slots. These cards are not compatible with an Apple IIGS.

There are several CP/M card that work on the Apple IIGS. Please note, though, that they MUST be run only when the Apple IIGS is in normal speed mode.

Manufacturer	Card
Applied Engineering	Z80
Advanced Logic Systems	Z Engine
MicroSoft	SoftCard
MicroSoft	CATS
Digital Research	any of the GoldCard series

Tech Info Library Article Number:2042



Tech Info Library

Apple IIGS Incompatibilities: Communications software

Revised: 5/31/89
Security: Everyone

Apple IIGS Incompatibilities: Communications software

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The Apple IIGS is designed to be used with the vast majority of Apple IIe hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

A number of communications packages written for the Apple IIe bypassed the firmware available for the system. Those software programs that write directly to the IIe hardware cannot be used on the Apple IIGS, since the serial ports are now controlled by a 8530 Serial Communications Chip, rather than a 6551. Most currently available communications packages, including Access II, version 1.1, do not work on an Apple IIGS.

Apple Technical Communications

Tech Info Library Article Number:2043



Tech Info Library

Apple IIGS Incompatibilities: Slot 2 and ProDOS 1.2

Revised: 10/12/87
Security: Everyone

Apple IIGS Incompatibilities: Slot 2 and ProDOS 1.2

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This article last reviewed: 17 September 1986

The Apple IIGS is designed to be used with the vast majority of Apple IIe hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

When a RAM disk or ROM disk is used with ProDOS 8 and at least two disk drives are connected to the SmartPort, the IIGS maps the second (and third) drives into slot 2. This function will conflict with those multi-function cards manufactured for the Apple IIe which normally reside in slot 2. Since phantom slots are used by both the multi-function card and ProDOS 1.2, the two cannot be used in the same machine.

Tech Info Library Article Number:2044



Tech Info Library

Apple IIGS Incompatibilities: No Apple IIf auxiliary slot

Revised: 10/12/87
Security: Everyone

Apple IIGS Incompatibilities: No Apple IIf auxiliary slot

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This article last reviewed: 17 September 1986

The Apple IIGS is designed to be used with the vast majority of Apple IIf hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

Any card that is used in the Apple IIf auxiliary slot cannot be used on an Apple IIGS, since there is no auxiliary slot in the IIGS, and no other IIGS slot has the signals present in the Apple IIf's auxiliary slot.

Tech Info Library Article Number:2045



Tech Info Library

Apple IIGS Incompatibilities: Timing-Dependent Programs

Revised: 10/12/87
Security: Everyone

Apple IIGS Incompatibilities: Timing-Dependent Programs

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This article last reviewed: 17 September 1986

The Apple IIGS is designed to be used with the vast majority of Apple IIe hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

Some programs, especially games, depend on particular timing loops to operate correctly. If you find that a program does not work on an Apple IIGS, use the control panel to change to normal mode. Fast mode on the Apple IIGS will change timing loops to the point that some software will not operate correctly.

Tech Info Library Article Number:2046



Tech Info Library

Apple IIGS: How To Disable Keyboard Repeat

Revised: 3/23/89
Security: Everyone

Apple IIGS: How To Disable Keyboard Repeat

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This article last reviewed: 8 January 1988

People with limited motor skills sometimes can't adapt to the keyboard repeat rate on the Apple IIGS, causing several characters appear after each keypress.

The keyboard repeat rate can be set from the Control Panel. Here's how to disable keyboard repeat altogether:

1. In the Control Panel, select the Options menu.

The 'repeat delay' option controls the time between the first keypress and the time when keys begin auto repeating.

2. To disable the auto repeat feature, move the asterisk all the way to the left of the sliding scale.

3. To save the changes made to the Control Panel, press Return.

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Tech Info Library Article Number:2047



Tech Info Library

Apple IIGS: Connecting Disk Drives

Revised: 10/12/87
Security: Everyone

Apple IIGS: Connecting Disk Drives

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This article last reviewed: 22 September 1986

The Apple IIGS is capable of using all drives available for the Apple IIe, as well as drives built for the Apple IIGS, including the Disk II, Duodisk, Unidisk, Unidisk 3.5, Profile, Apple 3.5 Drive, Apple 5.25 Drive, and SCSI-20. Some of these drives may be plugged directly into the SmartPort on the back of the IIGS, while others require an interface card in one of the expansion I/O slots.

The following drives may be plugged into the SmartPort's DB-19 connector:

- one Duodisk
- two Unidisk 5.25 drives
- two Unidisk 3.5 drives
- two Apple 5.25 drives
- two Apple 3.5 drives

Only under Prodos 16 may a combination of up to six drives be daisy-chained to the SmartPort. The chain MUST occur in the order given below and may include up to two (excepting the DuoDisk) in each of the following three categories:

- nearest to IIGS (maximum of two):
 1. Apple 3.5 Drives
 2. Unidisk 3.5 drives
- farthest from IIGS (maximum of two):
 3. 5.25 disk drives: Disk II's, Unidisk 5.25 drives, Apple 5.25 drives or ONE Duodisk drive

Under Prodos 8 (also known as Prodos 1.2), four drives are accessible through the SmartPort. These may be a combination of Apple 3.5 drives, Unidisk 3.5 drives, a RAM disk, and a ROM disk, under the same order restrictions as above.

The SmartPort is mapped to slot 5, so drives connected directly to the port are accessed as slot 5, drive 1 and slot 5, drive 2. When more than two drives are used under Prodos 8, or if the RAM disk is active, "phantom slots" are

assigned.

To be used on the Apple IIGS, the Disk II requires a Disk II Controller Card, just as on the Apple II or Apple IIe. The drive may be accessed through the slot used for the card, most likely slot 6, in which case the two possible drives are referred to as slot 6, drive 1 and slot 6, drive 2.

A SCSI Interface Card is needed to use the Apple Hard Disk 20SC on the Apple IIGS. A Profile Interface Card must be used with a 5 or 10 Megabyte Profile, accessible by referencing the slot where the interface card resides or by the ProFile's ProDOS pathname.

The Apple IIGS control panel allows you to select the slot from which the computer will be booted, or you may choose to scan slots on bootup to find a device that is ready.

Tech Info Library Article Number:2048



Tech Info Library

Apple IIGS Incompatibilities: ProFile Interface Cards

Revised: 10/12/87
Security: Everyone

Apple IIGS Incompatibilities: ProFile Interface Cards

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This article last reviewed: 22 September 1986

The Apple IIGS is designed to be used with the vast majority of Apple IIe hardware and software. However, there are some design differences that will cause some products to be incompatible with the Apple IIGS.

Some Apple ProFile Interface Cards work incorrectly in an Apple IIGS and cause the information on the ProFile to be inaccessible. To avoid problems when using a ProFile in an Apple IIGS, either modify the interface card or obtain the new version of the card.

The Apple IIGS bus' higher 'noise' levels create the problem. The 'noise' is passed on to the ground traces on the ProFile interface card and will eventually (after use) corrupt the directory of the ProFile, rendering it invisible to ProDos and inaccessible to the user.

Tech Info Library Article Number:2050



Tech Info Library

Apple IIGS: Recovering a corrupted ProFile

Revised: 9/16/88
Security: Everyone

Apple IIGS: Recovering a corrupted ProFile

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This article last reviewed: 29 March 1988

In the Apple IIGS, the bus' higher 'noise' passes on to the ground traces on the ProFile interface card and, after use, corrupts the directory of the ProFile, rendering it invisible to ProDos and inaccessible to the user.

It is possible to recover the directory and make the ProFile usable again. On the report of a ProFile going bad after installation in a Apple IIGS, first see the article "Apple II ProFile Interface Card Modification for the Apple IIGS. This modification lets the card operate correctly for the directory fix. Don't try to repair a directory with an un-modified ProFile card.

For the recovery, use a disk editor program, like the ProDos MLI Exerciser program here:

1. Execute the ProDos Machine Language Interface Exerciser program with the '-' command and wait for the main menu.
2. From the main menu, type '80'<Return> to command a read of a block; follow that by typing in the following values from the next screen:

Parameter Count	\$03 (Default)
Unit Number	\$50 (The ProFile card's slot followed by a '0')
Data Buffer	\$00 (This value is where the block to be modified \$40 will be loaded)
Block Number	\$02 (This is the bad block to load in) \$00

After typing in each pair of numbers, press <Return> to go on to the next entry prompt. After pressing <Return> on the last entry, you see a message 'PRESS RETURN TO EXECUTE COMMAND', you press <Return> and then see another message 'Error \$00: Call Successful'. At this point, press <Return> to get the main menu.

3. Type 'M' <Return> to modify the buffer. The default should read:

\$00
\$40

This is the correct setting; press <Return> on each entry and press it once more to go on to modify mode. At this point, you should see a table of numbers and a blinking cursor on the entry we want to 'delete', number '55'. Now that we know that problems with the directory exist, press <ESC> to go to the main menu.

If the '55' was not in the first position of the table, then this directory recovery procedure won't work. If the '55' was not shown at all, your ProFile possibly has a different reason for not operating)

4. Type '81' <Return> to write the block out to the disk. Press <Return> through the number entries until you reach the 'data buffer' entry. Change it to look like this:

\$01
\$40

Continue to press <Return> through the block number entries and once more to command the actual block write, after which you will see the message 'Error \$00: Call Successful' will be displayed.

5. You may now reboot your system and check to see if the ProFile is now recognized. All of the data previously inaccessible should be back and usable.

For more information about using the ProDOS Exerciser Program, see the ProDOS Technical Reference manual.

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Tech Info Library Article Number:2051



Tech Info Library

Apple IIGS: Cabling Configurations

Revised: 10/12/87
Security: Everyone

Apple IIGS: Cabling Configurations

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This article last reviewed: 22 September 1986

The Apple IIGS is very compatible with Apple's existing cable product line. Below you will find the possible configurations for the various Circular 8 cables.

Apple System Peripheral - 8 Cable
Product M0187 / Part 590-0340-A
Circular 8 to Circular 8

Can be used as connecting cable for the Apple IIGS to:

- ImageWriter //
- Apple Personal Modem
- Macintosh Plus (data transfe)
- Apple IIGS (data transfer)

Macintosh Peripheral - 8 Cable
Product M0185 / Part 590-0322-B
Circular 8 to DB9

Can be used as connecting cable for the Apple IIGS to:

- Macintosh 128K and 512K (data transfer)

In ny other required combination, use the Apple IIGS Adapter Cable (Circular 8 to DB25 adapter) and the appropriate DB-25 Apple II type cable used on the Super Serial Card.

Tech Info Library Article Number:2052



Tech Info Library

Apple IIGS Connectors: Power

Revised: 9/22/86
Security: Everyone

Apple IIGS Connectors: Power

=====

Standard 3 prong power cable used on the GS. Male end on system side, female connector on cable. Standard 107 to 132 AC volts required.

Apple Technical Communications

Tech Info Library Article Number:2053



Tech Info Library

Apple IIGS: Composite Video Jack

Revised: 10/12/87
Security: Everyone

Apple IIGS: Composite Video Jack

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This article last reviewed: 24 September 1987

The Apple IIGS composite video output, a standard 'RCA' connector used for composite NTSC compatible monitors, does not always display in color. Because of effects known as color fringing (showing bits of color on the edges of white characters), the color burst signal is turned off when the computer is in text mode, making colored text, background, and borders appear as black, white, or shades of grey. Turning off the color burst eliminates color fringing and improves the legibility of text displayed on composite color monitors. However, it makes testing of the color modes of the Apple IIGS on a composite monitor impossible from a text-only program such as the Control Panel or the Apple IIGS Diagnostics.

Color burst is enabled whenever any of the graphics modes (lo-res, hi-res, or super hi-res) is switched on. Don't confuse the hi-res or super hi-res mode with the text mode: when characters are drawn on the graphics screen (as in the Apple IIGS Program Launcher, or when ProDOS 16 displays the 'One moment please...' message while starting up), users may get the impression that they are seeing text with a colored screen border, when in fact they're not.

Tech Info Library Article Number:2054



Tech Info Library

Apple IIGS Connectors: Desktop Bus (9/95)

Revised: 9/21/95
Security: Everyone

Apple IIGS Connectors: Desktop Bus (9/95)

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Article Created: 22 September 1986
Article Reviewed/Updated: 21 September 1995

TOPIC -----

This article describes the Desktop Bus on the Apple IIgs computer.

DISCUSSION -----

The Apple Front Desktop Bus connector is an intelligent interface capable of handling many input devices, hand controllers, graphics tablets, numeric pads, although it is currently used for the keyboard and mouse attachments. A serial interface (not a standard serial port), the Desktop Bus is controlled by its own built-in microprocessor, the 'ADB microcontroller'. Desktop Bus devices use inexpensive four-conductor cables and four-pin miniature DIN connectors. Additional devices can chain to devices already installed. Some devices already include a jack for connecting additional devices.

Article Change History:
21 Sep 1995 - Corrected minor typo. Reviewed for technical accuracy.

Support Information Services

Apple Technical Communications

Tech Info Library Article Number:2056



Tech Info Library

Apple IIGS Connectors: Drive Port

Revised: 9/22/86
Security: Everyone

Apple IIGS Connectors: Drive Port

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A DB-19 female connector, the drive port on the back of the Apple IIGS is commonly referred to as the 'SmartPort'. Actually 'SmartPort' is a set of assembly language routines used to support block I/O devices. The 'SmartPort' firmware includes the Protocol Converter software used in the Apple IIc 3.5 ROM revision. Up to six drives (DuoDisk, Uni-Disk, Uni-Disk 3.5, Apple 5.25 Drive, Apple 3.5 Drive are all plug compatible with port) may be attached to the port at any one time.

Apple Technical Communications

Tech Info Library Article Number:2057



Tech Info Library

Apple IIGS Connectors: Game I/O

Revised: 9/22/86
Security: Everyone

Apple IIGS Connectors: Game I/O

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The Game I/O setup on the Apple IIGS is exactly the same as the Apple IIe: the DB9 connector on the back of the machine and the 16 pin DIP socket on the main mother board. The DB9 connector has four analog inputs, three button inputs, power, and ground. The 16 pin DIP connector is the same but has a strobe line and four single-bit outputs. For pinouts, see the IIe Technical Reference Manual.

Apple Technical Communications

Tech Info Library Article Number:2058



Tech Info Library

Apple IIGS Connectors: Serial Port Pinouts and Description

Revised: 9/22/86
Security: Everyone

Apple IIGS Connectors: Serial Port Pinouts and Description

=====

The serial port pinouts are as follows:
(Circular 8 Female on system end)

- 1 - HSKo
- 2 - HSKi
- 3 - TxD-
- 4 - Signal GND
- 5 - RxD-
- 6 - TxD+
- 7 - GPi
- 8 - RxD+

The Apple IIGS has two serial ports that can substitute for slots 1 and 2. You can choose to use either internal slot 1 or 2 or external port 1 or 2 through the control panel. The built-in port can operate while there is a peripheral card plugged into the corresponding slot, but the port and the card cannot operate at the same time.

The communication hardware are 2 channel SCC (Zilog 8530) and RS-422 driver IC's. The ports emulate the Super Serial Card firmware. Normally the ports are configured so that port 1 is the printer port and port 2 is the modem port. Via the control panel, you can turn one of the two ports into the AppleTalk connection.

Even though the same commands are used in the Apple IIGS serial port firmware as the Super Serial Card firmware, some existing programs using these ports will not be compatible because some of the programs (usually communication programs) bypass the firmware commands and access the hardware directly. The new communications chip in the Apple IIGS doesn't work with the programs that are hard coded for the 6551 chip on the SSC.

Apple Technical Communications

Tech Info Library Article Number:2059



Tech Info Library

PC 5.25 Drive & Macintosh II PC Drive Card: Pinouts and Cabling

Revised: 6/17/92
Security: Everyone

PC 5.25" Drive & Macintosh II PC Drive Card: Pinouts and Cabling

Article Created: 22 January 1988
Article Last Reviewed: 16 June 1992
Article Last Updated:

TOPIC -----

What are the pinouts for the Macintosh II PC Drive Card and PC 5.25" Drive?

DISCUSSION -----

Here is the pinout for the DB37 connector on the Macintosh II PC Drive card. Note that pins not listed are not used.

DB37	Signal Name
1 -----	+12 Volts
2 -----	Ground
4 -----	+ 5 Volts
5 -----	Ground
6 -----	INDEX
7 -----	Motor Enable
8 -----	Drive Select 1
9 -----	Motor enable
11 -----	Direction
12 -----	STEP
13 -----	Write Data
14 -----	Write Enable
15 -----	Track 00
16 -----	Write Protect
17 -----	Read Data
18 -----	Side 1
19 -----	Diskette Change
20 -----	Ground
25 -----	Ground

This is the pinout for the cable, part number 590-0368, used on the PC 5.25 inch drive. The cable uses a 34 pin connector and smaller 4 pin connector for the DC power on the inside of the PC 5.25 inch drive and a DB37 connector that attaches to the card in Macintosh II. Note that pins not listed are not used.

DB37	Signal Name	34 pin edge connector	DC Connector
1	+12 Volts		1
2	Ground		2
3	Low Density	2	
4	+5 Volts		4
5	Ground		3
6	Index	8	
7	Motor Enable A	16	
9	Drive Select A	10	
11	Direction	18	
12	Step	20	
13	Write Data	22	
14	Write Enable	24	
15	Track 00	26	
16	Write Protect	28	
17	Read Data	30	
18	Side 1	32	
19	Disk Change	34	
20	Ground	1	
25	Ground	5	
27	FNPRES	7	

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Tech Info Library Article Number:2060



Tech Info Library

Apple IIGS: Resetting And Buffer Clearing

Revised: 9/22/86
Security: Everyone

Apple IIGS: Resetting And Buffer Clearing

=====

Some Apple IIGS's will not reset when 'hung'.

The Apple IIGS has two levels of user reset: warm and cold. For a warm reset, hold down the 'Control' key and press and release the 'Reset' key. A 'cold' reset, which is a machine restart, requires you to hold down the 'Control' and 'Apple' keys and press and release the 'Reset' key, which makes the machine reboot as if it were just turned on.

The computer can't possibly recognize these resets usually when an application has bombed and hung the machine. The reset acts like any other keystroke in this case; moreover, if you already have some of the other keys pressed and waiting in the keyboard micro, the reset must wait its turn.

Remedy this problem with clearing the keyboard buffer by holding down the keys control and Apple and then pressing the backspace key. You can then press the reset sequence you want and the Apple IIGS can recognize it.

Apple Technical Communications

Tech Info Library Article Number:2061



Tech Info Library

Apple II VisiCalc: How To Convert Its Files To MS-DOS

Revised: 3/23/89
Security: Everyone

Apple II VisiCalc: How To Convert Its Files To MS-DOS

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This article last reviewed: 19 January 1988

Here's how to transfer Apple II VisiCalc files to an MS-DOS format:

1. Save the Apple II VisiCalc file to disk in the DIF format.
2. Transfer the file, via terminal software, to the MS-DOS system.
3. Save the file.

The file can now be read into any of the MS-DOS spreadsheet applications that support a DIF format -- Lotus 1-2-3, for example.

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Tech Info Library Article Number:2062



Tech Info Library

Pascal 1.3: Using UNITSTATUS

Revised: 9/22/86
Security: Everyone

Pascal 1.3: Using UNITSTATUS

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The Pascal 1.3 operating system on all Apple systems does not detect characters with the device REMIN:. For example, when an Apple IIc with the 3.5" ROM runs the sample program from volume III, page 191 of the Apple II Pascal 1.3 Workbench Manual, the characters from the modem port (i.e. REMIN:) are not detected.

In previous versions of Pascal, the programmer was requested to use the Applestuff function RemStatus instead of UNITSTATUS when he wanted to use REMIN: and REMOUT:. RemStatus was not included with Pascal 1.3.

To employ REMIN: and REMOUT: with Pascal 1.3, use the Library program to replace the 1.3 APPLESTUFF with the 1.2 APPLESTUFF, following the procedure on pages 216-222 of chapter 8 of the Pascal 1.3 manual, volume II.

After that procedure, the following function and types will be available:

```
TYPE RStatus = (RStatBusy, RStatReady, RStatOffline);  
      RSChannel = (RSOutput, RSInput);
```

```
FUNCTION RemStatus (channel: RSChannel):RstatType;
```

Use this function instead of UNITSTATUS.

Apple Technical Communications

Tech Info Library Article Number:2063



Tech Info Library

Macintosh Power Sweep Voltage Adjustment

Revised: 7/17/92
Security: Everyone

Macintosh Power Sweep Voltage Adjustment

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Article Created: 8 October 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: Macintosh Plus, 512Ke, 512K has no video output or clicking sound is emitted from the power supply.

CAUSE: The voltage on the Power/Sweep board might need adjustment.

CURE: Use the following procedure in order to adjust the voltage inside the Macintosh:

POWER/SWEEP ADJUSTMENT

The voltages must be verified whenever the logic board or the power/sweep board is exchanged. If the voltages are outside of the specified tolerances, the adjustments must be performed.

The adjustments are done with the power on, and all voltage measurements are taken on the disk drive port with no peripheral device attached. The internal disk drive should not be running when the measurements are being taken.

EQUIPMENT REQUIRED: Digital Voltmeter (accurate to 0.1 volts)
Macintosh voltage test cable
Plastic alignment tool

NOTE: If you don't have the test cable, you may use wire that has been stripped of insulation at both ends. Insert one wire into one of the drive port pin locations indicated for ground (Pin 1 or Pin 2 of the DB 19). Connect the other end of this wire to the ground probe of the voltmeter. Insert the other wire into

the drive port pin location indicated for 5 or 12 volts (pin 6 for 5 volts or pin 7 for 12 volts). ALWAYS DOUBLE-CHECK THAT YOU ARE READING THE VOLTAGES FROM THE CORRECT PINS.

CAUTION: If the banana plugs on the test cable short one another, the Macintosh will be damaged. Make sure that the banana plugs are insulated by their rubber hoods when not in use.

1. The power should be off, and the back cover removed. Connect the black test lead to the ground, set the proper range on the the voltmeter and plug the connector into the disk drive port on the rear of the Macintosh.

2. Connect the orange test lead (12 volts) to the input on the voltmeter. Power on the Macintosh.

The voltage reading must be between 11.90 and 12.75 volts. If the voltage is not within these tolerances, use the alignment tool to adjust the voltage regulator on the power/sweep board to 11.90 to 12.75 volts. Access to voltage regulator is gained from the noncomponent side of the power/sweep board through the hole just above the 11 o'clock position of the speaker.

3. Power off the Macintosh. Disconnect the orange test lead and replace its insulating hood.

4. Connect the red test lead (5 volts) to the input on the voltmeter. Power on the Macintosh.

The voltage reading must be between 4.85 and 5.15 volts. If the voltage is not within these tolerances, use the alignment tool to adjust the voltage regulator (see step 2 for location of the voltage regulator access hole) on the power/sweep board to the specified limits.

6. Power off the Macintosh. Disconnect the red test lead and replace its insulating hood.

7. Return and repeat steps 2 through 6 to verify that both voltages are within the specified tolerance ranges.

IMPORTANT: If the power/sweep board cannot be adjusted so that BOTH voltages fall within the tolerances indicated above, it should be exchanged.

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Tech Info Library Article Number:2064



Tech Info Library

Apple IIGS: Differences with other Apple II models

Revised: 10/23/86
Security: Everyone

Apple IIGS: Differences with other Apple II models

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Some of the features found only on the Apple IIGS:

FEATURE -----	SPECIFICATION -----	DESCRIPTION -----
More powerful microprocessor	65C816	16-bit microprocessor has 24 bit address and 6502 compatibility
Faster Operation	CPU clock speeds of 1 MHz and 2.8 MHz	User can select either of two speeds: 1 MHz speed of 6502 or fast 2.8 MHz.
Memory Expansion	24-bit address bus	Expansion card can expand RAM up to as much as 8 megabytes
Detached Keyboard	78 keys	Separate keyboard includes cursor keys and numeric pad.
Apple DeskTop Bus	Low cost serial I/O	Supports detached keyboard, mouse, and other I/O devices.
RGB Video	R, G, B and sync	Provides both RGB and NTSC video outputs.
40 and 80 column text in color	Text, background, and border colors (RGB only)	Text, background, and border can be any of sixteen colors.
Super Hi-Res color	True 320x200 or 640x200	Improved graphics with up to 16 graphics colors per scan line-up to 256 colors on screen out of 4096.
Desktop user interface	Uses Hi-Res color graphics and mouse	Tool box supports desktop interface with mouse, menus, and windows

Improved Sound	Ensoniq digital sound IC with 32 oscillators	Supports 15 independent voices (GS retains Apple II type sound)
Control Panel	Built-in desk accessory	User may set machine parameters for display, operating speed, serial ports, disk drives, etc.
Enhanced Monitor	Monitor in ROM	Handles 16-bit and 24-bit addresses, assembles and disassembles 65C816 and 6502 instructions, performs 32-bit arithmetic, Low level I/O included
Built-in Clock	Time and Date provided	Has battery back up
Built-in Serial ports	Two standard serial ports	Support modems, printers, and AppleTalk. (User can still use serial card in slot)
Built-in AppleTalk	Uses one serial port	No card required. User can select either serial port to use for AppleTalk.
Built-in Disk port	Disk I/O port using custom chip	User can select built-in driveport, disk interface cards, or both.

Apple II type features found on the Apple IIGS:

FEATURE	DESCRIPTION	OTHER MODELS
-----	-----	-----
6502 Instruction set	65816 has emulation mode for running 6502 programs	All Apple II
128k RAM	Main and aux banks, with language-card & I/O spaces	IIc, 128 IIe
AppleSoft in ROM	Applesoft Basic with lower case and 80-column features	All Apple II
Monitor in ROM	Supports low level I/O and program development	All Apple II
40 and 80 column text	Black & White text displays (color text on GS only)	IIc, IIe with 128k or 80 column card
Lo-Res Color graphics	48x40, 16 colors	All Apple II

Hi-Res Color graphics	280x192, 6 colors	All Apple II
Double Hi-Res Color graphics	560x192, 16 colors	IIc, 128k IIe
Built-in serial ports	Two RS232 compatible ports, IIc (similar) for modem, printer, etc.	
Built-in disk port	Using IWM chip, supports both 5.25", 3.5" drives	IIc
Expansion slots (7)	Slots for peripheral I/O and expansion cards, in addition to built-in ports	II, II Plus, IIe
Game I/O	9-pin and 16-pin connectors for paddles and joysticks	All Apple II (9 pin IIe, IIc)

Apple Technical Communications

Tech Info Library Article Number:2065



Tech Info Library

Apple II Peripherals: Quick Reference Chart (2/97)

Revised: 2/12/97
Security: Everyone

Apple II Peripherals: Quick Reference Chart (2/97)

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Apple II Peripherals: Quick Reference Chart (2/97)

Article Created: 23 October 1986
Article Reviewed/Updated: 12 February 1997

TOPIC -----

The following table identifies compatible peripherals for the Apple II line of computers.

DISCUSSION -----

The X means that the peripheral product is compatible with the CPU. The footnotes explain the numbers.

Item	Apple II CPU				
	II Plus	IIe	IIc	IIc(new)	IIGS
Drives					
Disk II	X 1	X 1	9	9	X 1
DuoDisk	X 2	X 2	14	14	X
Unidisk	X 2	X 2	X	X	X
Unidisk 3.5	X 3,7	X 3,5		X	X
IIc External	X 2	X 2	X	X	X
Apple 3.5					X
Apple 5.25	X 11	X 11	X	X	X
Profile (5M,10M)	X 4,7	X 4			X 4
Hard Disk 20SC	X 6,7	X 6			X 6
Cards					
II Memory Expansion	X 7	X			X
IIc Memory Expansion				X	
IIGS Memory Expansion					X

Super Serial	X	X	8	8	X
Parallel Interface	X	X	9	9	X
80-column		X	8	8	
Extended 80-column		X	8	8	
Apple Modem 300/1200	X 12	X 12	X	X	X
Apple Personal Modem	X 12	X 12	X	X	X
Imagewriter	X 12	X 12	X	X	X
Imagewriter II	X 12	X 12	X	X	X
Daisy Wheel Printer	X 12	X 12	X	X	X
LaserWriter	X 12	X 12	X	X	X
Monitors					
II	X	X	X	X	X
IIc	X	X	X	X	X
ColorMonitor IIc, IIe	X	X	X	X	X
ColorMonitor 100		X 10	9	9	
AppleColor RGB	9	9	9,13	9,13	X
AppleColor Composite	X	X	X	X	X
Monochrome	X	X	X	X	X

Footnotes:

- 1 - Requires Disk II controller card
- 2 - Requires Duodisk/Unidisk controller card
- 3 - Requires Unidisk 3.5 controller card
- 4 - Requires Profile Interface Card
- 5 - Will auto boot on an enhanced IIe
- 6 - Requires Apple II SCSI Card
- 7 - Requires 64K RAM for ProDOS
- 8 - This function is built into the Apple IIc
- 9 - A third party solution is available
- 10- Requires Extended 80-Column AppleColor Card
- 11- May be daisy-chained from a Unidisk
- 12- Requires a Super Serial Card
- 13- Limited color capability
- 14- Will only have access to one of the drives

Note: "IIe" stands for either the unenhanced or the enhanced Apple IIe.
 "IIc(new)" refers to an Apple IIc with memory expansion socket.

Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2066



Tech Info Library

Apple IIGS: Sound Logic

Revised: 10/12/87
Security: Everyone

Apple IIGS: Sound Logic

=====

This article last reviewed: 23 October 1986

To support sound, the Apple IIGS has the Apple IIGS Sound General Logic Unit, an Ensoniq sound chip, 64K of dedicated sound RAM, and associated circuitry.

Sound General Logic Unit

The Apple IIGS Sound General Logic Unit (Sound GLU) provides an interface between the Ensoniq sound chip and the remainder of the Apple IIGS logic system. The Sound GLU permits the Ensoniq chip to run independently of the Mega II chip.

The Sound GLU contains a control register, data register, and address pointer. Bits within the control register determine the system volume level and control the flow of information between the Ensoniq chip and Sound RAM. The data register and address pointer are used to transfer information to and from the dedicated 64K of Sound RAM to the Ensoniq digital oscillator chip.

Ensoniq Digital Oscillator Chip

The Ensoniq chip contains 32 oscillators, two of which are reserved for use by the Apple IIGS itself. The remaining 30 oscillators are used in pairs to produce 15 sound voices. Each oscillator uses seven DOC registers which contain such parameters as the frequency rate at which the oscillator steps through its wavetable, the size and starting address of the wavetable, data obtained from the wavetable, and the volume and mode of the oscillator.

Sound RAM

64K of RAM is provided for the exclusive use of the Ensoniq DOC. It contains wavetables, which are digitized waveforms, for each of the oscillators.

Tech Info Library Article Number:2067



Tech Info Library

Macintosh Internal Drive

Revised: 1/17/92
Security: Everyone

Macintosh Internal Drive

=====

Article Created: 17 January 1986
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

PROBLEM DESCRIPTION: The Macintosh Internal Drive will not operate even though a new exchange module has been connected.

CAUSE: The drive is not secured to the chassis.

CURE: Always make sure that the drive is screwed securely to the chassis when troubleshooting for internal drive problems.

Follow General Troubleshooting Procedures if the drive is screwed to the chassis and still does not work.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2068



Tech Info Library

Monitor II Displays Raster Line

Revised: 1/17/92
Security: Everyone

Monitor II Displays Raster Line

=====

This article last reviewed: 29 March 1988

PROBLEM DESCRIPTION: The Monitor II displays a single line across the screen. There is no other display.

CAUSE: Yoke wires might not be connected properly.

CURE: Check the connections for the green/white pair of yoke wires and make sure they are properly connected to the main electronics assembly. At present they are connected to location V-DY (center of main electronics assembly).

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2069



Tech Info Library

LaserWriter Generates Documents with Missing Portions of Print

Revised: 1/17/92
Security: Everyone

LaserWriter Generates Documents with Missing Portions of Print

=====

This article last reviewed: 29 March 1988

BEFORE YOU START: Familiarize yourself with the LaserWriter Technical Procedures. Be sure to follow proper ESD procedures.

PROBLEM DESCRIPTION: The LaserWriter printer generates documents with missing top and side portions. The LaserWriter test print is missing the vertical lines that make up its outer border.

#1 - CAUSE: The paper cassette might be deformed, causing the printer to assume that larger size paper is being used.

CURE: Swap the paper cassette and generate a test print.

#2 - CAUSE: A legal-size paper tray is possibly being used.

CURE: Install a standard-size paper tray if legal-size paper is not what the user intended for the print job.

#3 - CAUSE: The paper cassette detect switch assembly is bent or damaged. This can be caused by rough handling of the paper tray during insertion or removal of the paper tray.

CURE: Replace the paper cassette detect switch assembly in the LaserWriter pedestal. Be sure to refer to the LaserWriter Technical Procedures for instructions on removing the printer from the pedestal.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2070



Tech Info Library

Macintosh Displays Single Raster Line

Revised: 7/20/92
Security: Everyone

Macintosh Displays Single Raster Line

=====

Article Created: 28 October 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: The Macintosh displays a single white raster line. The line is usually positioned horizontally or vertically across the screen.

BEFORE YOU START: Familiarize yourself with Macintosh Technical Procedures. ALWAYS DISCHARGE THE CRT TO THE "GROUND LUG". The Macintosh uses an isolated ground. Performing a discharge to the chassis will DESTROY the logic board!

CAUSE: In most cases this is an indication of a faulty Power Supply Board but there exists a possibility that more than one module is defective.

CURE: Replace the modules in the following order:

1. Replace the power supply and test. If the system is still inoperative perform Step 2.
2. Replace the Logic Board. If the system is still inoperative perform Step 3.
3. Replace the CRT. If the system is still inoperative perform Step 4.
4. Replace the Power Supply and the Logic board as a set.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2071



Tech Info Library

Lisa or Macintosh XL RAM Cache and Mouse Tracking Problems

Revised: 11/10/88
Security: Everyone

Lisa or Macintosh XL RAM Cache and Mouse Tracking Problems

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Article Created: 16 October 1986
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM DESCRIPTION: RAM cache and mouse tracking indicators are empty even though the computer has successfully passed diagnostics. The system software is Finder 5.3 or System 3.2.

CAUSE: The I/O board is defective.

CURE: Remove and Replace the I/O board.

Follow the General Troubleshooting Procedures for Lisa/Macintosh XL if the problem still persists.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2072



Tech Info Library

ProFile Formatting Error #21

Revised: 1/17/92
Security: Everyone

ProFile Formatting Error #21

=====

This article last reviewed: 29 March 1988

PROBLEM DESCRIPTION: Error #21 is generated when the ProFile is formatted using the Apple III System Utilities.

BEFORE YOU START: Familiarize yourself with the Apple III Owners Guide and ProFile Owners Manual.

CAUSE: Software damage has occurred.

CURE: Use the following procedure:

1. Format the ProFile using the Apple III Systems Utilities and define the volume name as HVRMHGL. Another volume name can be defined once the ProFile has been formatted.

Proceed to Step 2 if you again receive the error #21.

2. Format the ProFile using an Apple II/IIfx with the ProDos utilities. Reconnect the ProFile to the Apple III once the ProFile has been successfully formatted and perform Step 1.

Use the ProFile troubleshooting procedure (documented in ProFile Technical Procedures) if both Steps 1 and 2 fail to produce satisfactory results.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2073



Tech Info Library

Apple IIGS: Video Generation Chip (VGC)

Revised: 10/12/87
Security: Everyone

Apple IIGS: Video Generation Chip (VGC)

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This article last reviewed: 23 October 1986

The Video Generation Chip (VGC) supports video output from the Mega II for both Apple II graphics and Super Hi-res graphics, provides an interface to the Real Time Clock chip, supports interrupt handling, and assists disk drive interfacing.

The VGC accepts color information from the Mega II, modifies it according to the current Control Panel selections, and puts out appropriate display information for the NTSC composite video jack and the Video RGB port. The VGC accesses text, background, and border information maintained in the Text and Background Color Register and Border Color Register. 4-bit value determines each of the three color areas, so that there are 16 possible colors for each. These colors correspond to the 16 Apple II Lo-res colors.

Apple II Graphics and Text

If Apple II text mode is used, the VGC removes color information from the NTSC composite output signal, so that color fringing does not occur on a color composite monitor. If a mixed text/graphics mode is chosen, color fringing is unavoidable, since most composite monitors do not have the ability to respond quickly enough to a change in the chroma information. In this case, the bottom four lines of text will show a color fringing anomaly.

The VGC polls the Monochrome/Color Register to determine which type of video signal should be output. If monochrome has been chosen, the VGC will output appropriate dot patterns to represent the chosen colors, so that a monochrome composite monitor will display gray-scale images. An AppleColor RGB Monitor displaying double Hi-res graphics will also display gray-scale images if monochrome is selected.

Super Hi-res Graphics

After the selection of one of the new Apple IIGS Graphics modes, the VGC is responsible for implementing the color mode. It uses memory in the auxiliary

64K bank of Apple II RAM to implement Super Hi-res graphics. In this display buffer, locations \$2000-\$9CFF are used for pixel information, \$9D00-\$9DFF are pointers that determine the characteristics of each line, and \$9E00-\$9FFF hold color palette information.

For 640 or 320 graphics modes, each pixel may be represented respectively by either 2 or 4 bits, wherein the value is a number of a color in the appropriate color palette. Each of the 200 pointers (one for each line) stores the display mode used, the color palette associated with that line, and a flag of enabled or disabled for scan line interrupts. Each of the 16 color palettes contains information on 16 colors. Each of the colors takes two bytes: 4 bits each for the value of red, green, and blue, which allows the three primary colors can be combined in 4096 different ways.

Real Time Clock Interface

The Video Generation Chip also works as an interface between the 65816 microprocessor and the Real Time Clock Chip (RTC). A Real Time Clock register in the VGC is used as a command register for the RTC. The RTC then maintains calendar and clock information within parameter RAM.

VGC Interrupts

Two types of internal interrupts are handled by the VGC: the One-Second interrupt generated by the Real Time Clock Chip and the Scan-Line interrupt generated by scan line information in Super Hi-res mode. The status and enable states of these interrupts are found in the VGC Interrupt Register and the VGC Interrupt Clear Register. The VGC also handles one external interrupt line.

VGC Disk Register

The VGC Disk Register, used as a control register for the disk drive interface, functions in choosing the head to use and the type of drive selected.



Tech Info Library

Apple II SCSI Card: Product Description (11/96)

Revised: 11/21/96
Security: Everyone

Apple II SCSI Card: Product Description (11/96)

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Article Created: 20 October 1996
Article Reviewed/Updated: 15 November 1996

TOPIC -----

This article contains the technical specifications for the Apple II SCSI card.

DISCUSSION -----

Technical Specifications
=====

Hardware

Provides an electrical interface between external SCSI devices and the CPU.

Provides the address and control lines required by the Apple II's microprocessor for accessing and controlling the SCSI chip and Smartport firmware.

Provides other circuitry to interface the 5380 IC with the Apple II CPU control signals.

NCR 5380 SCSI IC

Implements SCSI bus (5380 data sheet in Chapter 2 of the Hardware Technical Reference manual).

On board RAM

8 banks of 1K, accessed with special logic circuits. Used for status of devices at SCSI bus initialization (including the status of the Apple II SCSI card itself)

On Board ROM

8 banks of 1K, accessed with special logic circuits and used for storing Smartport firmware

Interface

25-pin SCSI connector

Input/Output

Parallel transmission, two modes for data i/o operations

- PDMA (pseudo-DMA), default
- Block Move only supported by 65816 CPUs and must be enabled by the application
- Maximum storage area under ProDOS: 32 megabytes

Firmware

Smartport program converts the microprocessor commands or calls issued by CPU to a format compatible with external SCSI devices

Issues calls to the microprocessor to give it the status of the external SCSI devices and allow the CPU to control their operation

Commands supported: STATUS, READ BLOCK, WRITE BLOCK, FORMAT, CONTROL, INIT, OPEN, CLOSE, READ, WRITE

Boot capability with Autostart ROM when you install the card in the slot with highest priority, which may depend on the operating environment

When Smartport does not find the SCSI device capable of starting up the system, Smartport returns control to the environment of the Apple II and the startup search continues through lower-priority slots.

Electrical

Voltage requirement: 4.75 to 5.25 volts DC

Power consumption in milliamps (ma)

Standby: 340 ma

Operating: 390 ma

Environmental

Ambient temperature: 50 to 104 deg F (10 to 40 deg C)

Relative humidity: 20 to 95 percent (non condensing)

System Requirements

Apple IIGS, Apple IIe or Apple II Plus

Apple II SCSI Card

Apple SCSI System Cable

One or more SCSI-compatible peripherals, can be a high-speed printer interface

Daisy chaining

Apple II with the SCSI card in slot 5 and ONLY a serial printer or modem card in slot 2.

- Running ProDOS 1.2: 4 external devices
- Running ProDOS 16: 7 external devices

Additional SCSI system components as required

Cable Terminator

Peripheral Cables

Cable Extenders (Maximum total length of cables: 20 feet (6.5 meters)).

Read the manual for the Apple SCSI Cable System before trying to connect any SCSI devices.

Article Change History

15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1986-96, Apple Computer, Inc.

Tech Info Library Article Number:2075



Tech Info Library

ImageWriter II Ribbon Advance Problems

Revised: 1/17/92
Security: Everyone

ImageWriter II Ribbon Advance Problems

=====

This article last reviewed: 29 March 1988

BEFORE YOU START: Familiarize yourself with the ImageWriter II Technical Procedures. Be sure to follow proper ESD procedures.

PROBLEM DESCRIPTION: A customer might complain that the print will become light then dark again, or that the ribbon wears through in certain spots. A technician might notice that the ribbon drive gear will turn counter-clockwise when the carriage assembly is moved - but only when the carriage assembly is moved in one direction.

CAUSE: The ribbon frame assembly might be defective.

CURE: Replace the ribbon frame assembly.

Note: Refer to General Troubleshooting Procedures if replacing the ribbon frame assembly did not cure the problem.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2077



Tech Info Library

Macintosh SE/30: Displays Horizontal Lines at Startup

Revised: 8/23/89
Security: Everyone

Macintosh SE/30: Displays Horizontal Lines at Startup

=====

Article Created: 11 August 1989
Article Last Reviewed: 17 July 1992
Article Last Updated:

Problem: The Macintosh SE/30 begins to display short horizontal lines during the first few minutes of operation. The lines tend to appear whenever the mouse is moved. Some applications may make the problem appear more pronounced than others.

Cure: Exchange the logic board and thoroughly retest the system. If the problem continues then consult the Technical procedures manuals for additional information.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2078



Tech Info Library

Apple IIC Power-On Light Flashes

Revised: 7/17/92
Security: Everyone

Apple IIC Power-On Light Flashes

=====

Article Created: 29 March 1988
Article Last Reviewed: 15 April 1992
Article Last Updated: 15 April 1992

PROBLEM DESCRIPTION: The Apple IIC power-on light flashes after installing a new logic board.

CAUSE: The internal power supply or keyboard might need to be replaced.

CURE: This can be caused by low voltage conditions. Confirm the failure by trying another circuit or AC Power Pack before proceeding. Then replace the keyboard. If the keyboard does not solve the problem replace the internal power supply.

Note: Refer to the Apple IIC General Troubleshooting Procedures if replacing the keyboard or power supply does not solve the problem.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2079



Tech Info Library

Using the DuoDisk with the Apple IIGS

Revised: 6/1/89
Security: Everyone

Using the DuoDisk with the Apple IIGS

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This article last reviewed: 04 May 1989

The DuoDisk can not be used as the last daisy-chained device on the built-in IWM disk port of the Apple IIGS. For instance, a UniDisk 3.5 will be rendered inoperable when the DuoDisk is installed in the above manner - although using the DuoDisk by itself is not a problem.

A qualified technician will have to modify the DuoDisk analog board if the DuoDisk is to be used as the last device on the chain. Please use the following procedure to determine how to modify the analog board.

Identifying Which Analog Board You Have

Remove the top cover as documented in Technical Procedures. Turn the drive so that the I/O connector is facing toward you. The identifying number will be at the bottom left of the analog board. The number might read 676-[]101, 676-[]102 or 676-[]107.

Performing the Modification

If the I.D.# for the analog board is 676-[]101 or 676-[]102, use a pair of nippers to cut out resistor R8 (located at position A2).

If the I.D.# for the analog board is 676-[]107, use a pair of nippers to cut out resistor R39 (located at position C3).

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Tech Info Library Article Number:2080



Tech Info Library

WARNING: Discharging the Macintosh CRT

Revised: 1/17/92
Security: Everyone

WARNING: Discharging the Macintosh CRT

=====

This article last reviewed: 29 March 1988

ALWAYS discharge the Macintosh CRT to the "GROUND LUG" (as described in Macintosh Technical Procedures) of the Macintosh. Discharging the CRT to the Macintosh chassis will destroy the logic board! Make sure you follow the safety precautions for working with the CRT as described in Macintosh Technical Procedures.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2081



Tech Info Library

LaserWriter: Cause and Elimination of Image Ghosts (7/95)

Revised: 7/31/95
Security: Everyone

LaserWriter: Cause and Elimination of Image "Ghosts" (7/95)

Article Created: 11 August 1989
Article Reviewed/Updated: 28 July 1995

TOPIC -----

What causes of the ghosting effect on the LaserWriter printers? How can it be reduced or eliminated?

DISCUSSION -----

Overview and Recommendation

The most common type of ghosting problem exhibited by the LaserWriter is developer system ghosting. This form of ghosting is inherent in the design of the cartridge. In an effort to reduce or eliminate the ghosting problem, many alternate toners and cartridge designs were considered, but all of them would have substantially increased the cost of the printers.

The problem can be reduced by either increasing the copy density level (turning the print density dial counterclockwise or software density indicator if the printer is so equipped to a lower value) or by running several pages of the desired document (in many cases, the ghost image is reduced to acceptable levels by the third copy).

Detailed Explanation: the Causes of Ghosting

The xerographic process used in the LaserWriter has two major sources of ghost images:

- latent image on the photosensitive drum
- latent image on the developer cylinder

One source of ghosting is a latent image on the photosensitive drum. This results from either the failure of the cleaning system to remove a toner image from the drum, or failure of the drum preconditioning system to remove electrostatic image from the drum. It is also possible to "burn" an image into a

drum by exposing a drum, which has a toner image on the surface, to bright light for a long enough period of time.

The second source of ghosting is the image developer system. It manifests itself either as a darker or lighter ghost image in the solid areas of output copy.

The darker ghost is caused by the reduced ability of the toner, left for a period of time on the developer cylinder, to adequately develop the electrostatic image on the photosensitive drum. This reduced development capability results in a lighter image. Once replaced by more active toner from the toner supply bin, the image is noticeably thicker and darker. This effect can be seen when a solid black page is printed after the machine is allowed to sit unused for several minutes. In this case, the first two inches or so (one revolution of the developing cylinder) of the image will be lighter than the rest of the page.

This darker form of ghosting occurs when an image is created from the less active toner on the developer cylinder. The toner that was removed from the cylinder to develop the image on the drum, is replaced by the more active toner from the toner bin. Images formed on subsequent revolutions of the developer cylinder will be made of a combination of the more active and less active toners. These subsequent images will be dark where they are made by the active toner (remember that the active toner is in the shape of the earlier image which selectively removed the inactive toner) and lighter, where the less active toner is placed. This is why you see a dark "ghost" image approximately two inches from the original image, in what should be a uniform solid-area image. Of course, as the machine is run, more and more of the less-active toner is replaced by the more-active toner, resulting in decreased ghosting.

The visual effect of "dark" developer ghosting can also be diminished by increasing the print density. Because, once the paper is completely coated with toner, the paper no longer shows through to visually decrease the image density, increasing the print density to cover up the ghosting by making the light areas darker. Although the problem is still there, it is not as visible, and may be acceptable to the user.

The lighter form of developer system ghosting is caused by the lack of sufficient replenishing toner in the toner bin. It usually occurs as the toner supply in the cartridge is depleted. In this case, as above, toner is removed from the developer cylinder in forming a toner image on the drum. But, unlike the case above, there is a lack of toner in the bin to replace the lost toner on the cylinder. This results in a light form of ghost in the solid area parts of the output copy. With this form of ghosting, rocking the cartridge may be enough to redistribute the toner to the developer cylinder.

Because ghosting is affected by several other factors of environment and machine tolerance, you may notice different ghosting levels at various times during the year or from one machine to another.

Article Change History:

28 Jul 1995 - Minor formatting changes.

22 Apr 1993 - Updated for technical accuracy.

08 Apr 1989 - Reviewed.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:2084



Tech Info Library

Macintosh Programming Seminars: How To Enroll

Revised: 5/10/89
Security: Everyone

Macintosh Programming Seminars: How To Enroll

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This article last reviewed: 10 November 1988

Macintosh Programming Seminars are for people who want to develop Macintosh applications but aren't sure where to begin. The only prerequisites are familiarity with the Macintosh and one or more Macintosh applications.

Classes

- Introduction to Macintosh Programming
- Developing a Macintosh Program
- Using MPW
- MacApp and Object-Oriented Programming

Locations

At this writing, classes are available in

- Cupertino, Pleasanton, Newport Beach, and San Francisco, California
- Chicago
- Boston
- Dallas

Registration

Call (408) 974-2726

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Tech Info Library Article Number:2085



Tech Info Library

Apple IIGS Adapter Cable: Pinouts

Revised: 10/12/87
Security: Everyone

Apple IIGS Adapter Cable: Pinouts

=====

This article last reviewed: 19 November 1986

Mini-8	Function	DB-25
1	HSKo --> DSR	6
2	HSKi <-- DTR	20
3	TXD- --> RXD	3
+--4	SGND --- SGND	7
| 5	RXD- <-- TXD	2
| 6	NC	8
| 7	GPI* <-- RTS	4--+
+--8	NC CTS	5--+
-	FGND NC FGND	1-----+
Shield	o-----o	Shield---+

Pins 4 and 8 are jumpered on the mini-8 side of the cable; pins 4 and 5 are jumpered on the DB-25 side of the cable as are pins 1 and the shield.

To connect DB-25 cables of Apple II family peripheral cables to the serial ports of the Apple IIGS, use the Apple IIGS Peripheral Adapter Cable. This short cable's male mini-circular 8 connector plugs into the IIGS printer and phone serial ports with the female mini-circular 8 connectors on the back of the IIGS. The DB-25 connector at the other end of the adapter cable will take the DB-25 connectors of the DB-25 cables used with many Apple peripherals.

Some modems and communications software may need a DCD signal and therefore

may require a modem eliminator cable in the cable configuration. The modem eliminator cable flips pins 2 with 3 and 6 with 20 and passes GPi access through to pin 8. GPi, for General Purpose input, is a high or low signal read from and determined by the connecting device.

Tech Info Library Article Number:2086



Tech Info Library

Extended 80-Column/AppleColor Card: Cable Pinout (11/96)

Revised: 11/14/96
Security: Everyone

Extended 80-Column/AppleColor Card: Cable Pinout (11/96)

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Article Created: 19 November 1986
Article Reviewed/Updated: 14 November 1996

TOPIC -----

What is the pinout for the cable included with the Extended 80-Column/AppleColor card?

DISCUSSION -----

The cable pinout for this cable is straight through except for no connection on pin 16 of the in-line 16 female connector (there is no matching pin on the DB-15 side).

DB-15 connector: Female, plugs into monitor cable.

8	7	6	5	4	3	2	1
15	14	13	12	11	10	9	

Inline 16: Female, plugs into card.

16	14	12	10	8	6	4	2
15	13	11	9	7	5	3	1

Article Change History:
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:2088



Tech Info Library

Access II: Configuring version 1.2 on an Apple IIGS

Revised: 5/25/89
Security: Everyone

Access II: Configuring version 1.2 on an Apple IIGS

=====

Apple has issued an upgraded version of Access II for support of the Apple IIGS internal modem port.

While version 1.2 is essentially the same as the previous version of Access II, successfully using version 1.2 constrains the IIGS system in the configuration of slots 1 and 2. Access II works properly when slots 1 and 2 are set up in their default configurations from the Control Panel:

Under the 'SLOTS' menu item:

Slot 1: Printer Port
Slot 2: Modem Port
Slot 7: Your Card

Under the 'Modem Configuration' menu item:

Device Connected: Modem

Unless the following change is made to the default settings of the modem port, Access II will freeze and no dialing will occur.

1. enter the Control Panel
2. select Modem Port
3. select DCD Handshake: it MUST be answered NO
4. select DST/DTR Handshake: it MUST be answered NO
5. tap the RETURN key to save your change.

Be sure to turn the computer off before trying Access II again.

The Modem Port setting should look like this:

Device Connected: Modem
Line Length: Unlimited
Delete first LF after CR: No
Add LF after CR: No
Echo: No

Buffering: No
Baud: 1200
Data/Stop Bits: 8/1
Parity: None
DCD Handshake: No
DSR/DTR Handshake: No
XON/XOFF Handshake: No

When using Access II 1.2 through the IIGS internal port, there cannot be any type of interface card in slots one or two, regardless of control panel settings. If they are present, various results may be encountered including the Utilities function of the program becoming inaccessible.

Also, if you are using AutoDial to dial out, you must wait about 30 seconds before you will hear a dial tone and the number dialed. If after 30 seconds you don't hear the dial tone, check the cable connections and settings of the IIGS Control Panel and Access II and try again.

Apple Technical Communications

Tech Info Library Article Number:2089



Tech Info Library

AppleWorks 2.0: Features

Revised: 6/9/87
Security: Everyone

AppleWorks 2.0: Features

=====

The designers of AppleWorks have changed features in version 1.3 with AppleWorks 2.0:

1. File size limits

When a one megabyte Apple Memory Expansion card (or its Apple IIGS or IIc equivalent) is installed, AppleWorks 2.0 has the capacity for the following file sizes:

-- Database records: 6350 (instead of 1350)

6350 is the maximum number of records that can be placed in the AppleWorks data base with only 1 field identified with 1 character and having entries of only 1 character. Using an Apple II with a 1 megabyte memory board, you can add 6350 records. You will find there is still plenty of memory available, but AppleWorks will tell you the data base has reached the maximum number of records permitted.

On the other hand, on a data base pushed to the maximum of 30 fields, each with a length of 20 characters and filled by 17, you will find that you will run out of desktop memory before the data base reaches the maximum record count.

-- Word processor lines: 7250 (instead of 2250)

-- Spread sheet rows: 10K (instead of 1.55K)

2. Automatic RAMDisk pre-load

When an Apple Memory Expansion card (or its Apple IIGS or IIc equivalent) is installed, AppleWorks 2.0 will automatically pre-load into the RAMDisk as a part of the boot process. This pre-loading takes only about 30 seconds and may be halted by pressing the ESC key.

All AppleWorks files except the SEG.PR file are loaded into the RAM card on startup. The SEG.PR file contains only printer data, and, because of its

small size, it would be one of the first files to be removed from memory if a file needed that space.

One possible way around this is from the Control Panel:

Set aside 192K for a RAMDisk in the memory expansion area. Copy AppleWorks into the RAMDisk with System Utilities. Then go into BASIC, and run APLWORKS.SYSTEM from the RAMDisk. Appleworks will load itself into memory while recognizing the RAMDisk. Now, when the program requires the SEG.PR file, the program, retaining the fact that it started up from the RAMDisk, goes there to find the SEG.PR file.

3. New Spreadsheet feature: Cut/Copy & Paste:

After a cell has been cut or copied to the clipboard, the user will be able to paste from the clipboard either the value, the formula, or both.

4. New file save feature:

If there is not enough room on a disk to save a file that already exists on the disk, then AppleWorks first allows the user to delete the original file from the disk. With AppleWorks' capability to create larger files, this feature will become important.

5. Enhancements and fixes:

a. Word Processor:

- Removed code that made the word processor take 13 seconds to process a carriage return in the middle of the first paragraph of a 2000 line document.
- Inserted extra code to make ESC and some OPEN-APPLE keystrokes work faster on large documents.

b. Spreadsheet:

- The routine to display spreadsheet rows was changed; it should now work faster on rows that have lots of filled cells.



Tech Info Library

Apple Equipment: Using On 12 Volts (2/97)

Revised: 2/18/97
Security: Everyone

Apple Equipment: Using On 12 Volts (2/97)

=====

Article Created: 19 November 1986
Article Reviewed/Updated: 13 February 1997

TOPIC -----

This article discusses using Apple equipment with a 12V DC power supply.

DISCUSSION -----

Apple Computer, Inc. is not responsible for any damages, real or implied, resulting from the use of this information. The responsibility for any damage lies completely with the user.

If you want to use Apple equipment on 12V DC, bear in mind the following precautions prior to powering up.

An inverter is a power converter that takes a direct current voltage, commonly 11.4 to 14.4 volts DC, and changes it to a nominal 120 Volts AC. Care must be taken to ensure an adequate supply of direct current to the inverter so the output voltage will be within the normal requirements of the attached equipment. This means that the minimum power capability of the converter would have to be at least 50% higher than the combined maximum current of the attached equipment.

Example: To connect a Macintosh Plus and an ImageWriter II to a 12v inverter, the maximum current draw of the equipment is 300 watts. The minimum safe rating of an inverter would be 450 watts, and 500-600 would be better. This allows a high enough safety factor so the inverter will not overheat, and the current draw will not be high enough to drop the AC output voltage.

The majority of the inverters on the market output the AC power as a square wave. Most Apple CPUs use switching power supplies which can handle this square wave power without any difficulties. However, square wave power causes the equipment to generate more than the normal amount of heat. You can eliminate the cause, the high frequency component of the square wave, by placing a line filter between the square wave power source (the inverter) and the attached equipment

to provide a modified sine wave. The filter doesn't reduce the power but does soften the waveform enough to minimize the effect of abnormal heat. The line filter should have a current (or power) rating equal to the rating of the inverter. While a matching filter is not absolutely necessary, it should be considered if the life of the equipment is a factor.

Damage to the equipment can occur when too much heat or too little power is running through the system. Be very sure to observe power and current ratings to match an inverter to any electronic equipment so that the inverter will supply the proper amount of power.

Powering computer equipment with an inverter gets you and your computer into many different environments: boats, planes, trains, as well as some solar powered homes, and other places that previously could not support electronic equipment.

Article Change History:

13 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:2092



Tech Info Library

Apple IIC: 80/40 switch

Revised: 11/19/86
Security: Everyone

Apple IIC: 80/40 switch

=====

The 80/40 switch on the Apple IIC only sets a bit in memory. While a program can read this bit and use the setting in a decision to display 80 or 40 columns, in practice, only a few programs, e.g. Apple Writer, take advantage of the switch in that way. In itself, the 80/40 switch does not force 80 column firmware on or off; only a software command like Applesoft's PR#3 or PR#0 can do that.

The 80/40 switch on the Apple IIC was designed for customers who use their television set as a monitor. A television set doesn't display 80 columns of text very legibly; 40 columns reads much better. Unfortunately, most Apple II software packages, written before the Apple IIC, don't check the bit set by the 80/40 switch.

Because the bit setting is independent from the PR#3 command, programmers can use the bit set by the 80/40 switch for features other than 80/40 column display:

```
10    TEXT:HOME:REM INITIALIZATION
100    SWITCH = PEEK(49248):REM MEMORY LOCATION FOR CURRENT SWITCH SETTING
110    VTAB 12
120    IF SWITCH > 127 THEN PRINT "80/40 SWITCH DOWN":REM OR ANYTHING ELSE
130    IF SWITCH < 128 THEN PRINT "80/40 SWITCH UP ":REM OR ANYTHING ELSE
140    GOTO 100
```

For more info, see the two-volume Apple IIC (16K ROM) Technical Reference Manual, pages 5 and 77 of Volume I and page 128 of Volume II, or the one-volume manual published by Addison-Wesley, pages 5, 80, and 342.

Apple Technical Communications

Tech Info Library Article Number:2094



Tech Info Library

Apple II SCSI Card: Interrupt Problem (11/96)

Revised: 11/21/96
Security: Everyone

Apple II SCSI Card: Interrupt Problem (11/96)

Article Created: 26 November 1986
Article Reviewed/Updated: 15 November 1996

TOPIC -----

This article discusses a potential problem with the Apple IIGS, Apple II SCSI card and programs using interrupts.

DISCUSSION -----

Apple IIGS system crashes may occur with programs using interrupts during access of SCSI disk drives connected to the Apple II SCSI card. Once interrupts are enabled, it is possible an interrupt may occur during a SCSI drive data transfer. Programs initiate data transfer by passing control to the SCSI card.

The SCSI card firmware places code in its own stack for executing. If taking an interrupt also places code on the same stack it may wipe out some or all of the previous SCSI firmware code. Returning from the interrupt, returns to the portion of the stack corrupted by the interrupt, which results in some kind of unidentifiable system crash.

Crashes are possible if BOTH of the following conditions apply:

- The SCSI card is used with an interrupt driven program, like AppleTalk.
- This application program calls the SCSI card directly, NOT using ProDOS.

To work around this possibility, make sure your applications use ProDOS to handle any interrupts. This may decrease SCSI disk data transfer rates but will help reduce system crashes.

Article Change History:
15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1986-96, Apple Computer, Inc.

Tech Info Library Article Number:2097



Tech Info Library

Apple IIGS: Printing to the LaserWriter from AppleWorks

Revised: 7/11/91
Security: Everyone

Apple IIGS: Printing to the LaserWriter from AppleWorks

=====

Article Created: 26 November 1986
Article Last Reviewed: 23 April 1991
Article Last Updated: 23 April 1991

The following instructions are valid for AppleWorks versions 1.3 and 2.0; earlier versions of AppleWorks have not been tested with these modifications. These changes support both the LaserWriter and the LaserWriter Plus.

You first create an AppleWorks program disk with all the files required to print AppleWorks documents to the LaserWriter and thereupon you test the disk by printing a document.

Then you can create a bootable disk that effectively reduces the number of manual steps needed to prepare the system for printing your AppleWorks documents to the LaserWriter.

Creating a program disk:

Using the System Utilities program,

- Name a disk /APPLEWORKS. For this set of instructions, we'll say the disk is a single 3.5" disk.
- Copy all files from the master AppleWorks disk to the single 3.5" disk you have named /APPLEWORKS.
- Put away the master AppleWorks disk
- Delete the old version of ProDOS 1.1.1 from your /APPLEWORKS disk.
- Copy the new version of ProDOS, P8, from the Apple IIGS System Disk to your /APPLEWORKS disk.
- On your AppleWorks disk, rename P8 with the name PRODOS.

-- Copy the following files from the Apple IIGS System Disk to your
/APPLEWORKS disk:

```
ATINIT ----- AppleTalk initialization program
IWEM ----- ImageWriter Emulator program
MTXABS.0 ---- Mousetext tool kit
NAMER.0 ----- Namer Object Code
NAMER.II ---- Namer program
CHOOSE.0 --- Chooser Object Code
CHOOSE.II -- Chooser program
```

Printing a document with AppleWorks and the LaserWriter:

You need only do steps 3a through 3f once; after that, the disk has the necessary information.

1. Plug the AppleTalk cable into the printer port on the back of the Apple IIGS.
2. Change the Control Panel Slot settings to "Your Card" for Slot 1 and to "Built-In AppleTalk" for Slot 7. (Note: If you have the newer model Apple IIGS with 1MB of RAM on the logic board, set Slot 7 to AppleTalk and EITHER slot 1 or slot 2 to AppleTalk.)
3. Tell AppleWorks how to send information to the LaserWriter:
 - a. Start up AppleWorks and choose Other Activities from the Main Menu (item #5).
 - b. Choose Specify information about your printer(s) (item #7).
 - c. Choose Add a printer (item #2).
 - d. Choose Apple ImageWriter.
 - e. To name the printer, type "LaserWriter" and press Return.
 - f. Choose Slot 7.
4. Start up the application called Chooser on your System Disk.
5. Click on LASERWRITER and choose the LaserWriter to which you want to print.
6. Quit Chooser.
7. Start AppleWorks by typing:

```
-/APPLEWORKS/APLWORKS.SYSTEM
```

Note: The Chooser and the ImageWriter Emulator

The Chooser program "CHOOSER.II" must be run and the LaserWriter selected each time your LaserWriter is turned off and on. The CHOOSER program is used to download the IWEM file from the Apple IIGS into the LaserWriter. If the LaserWriter has been powered off since the last time the IWEM program was downloaded, the AppleWorks program will not print to the LaserWriter.

A problem surfaces when a network only has one AppleTalk device available at the time of a Chooser boot. The very first time you boot the Chooser and select the LaserWriter, it will download the emulator and everything will work fine. The problem starts when the Chooser saves the user name and last selected printer to disk: when you re-run the Chooser, the one and only LaserWriter is already selected and won't let you click on it again to re-download the ImageWriter Emulator.

This has been fixed in Chooser 1.1. The only AppleTalk device that is available allows you to 're-click' on it to load the ImageWriter Emulator.

Creating a bootable disk:

To run the Namer, Chooser, or AppleWorks at boot time, create the simple startup program below and copy it to the disk. Follow the file copying instructions above in "Creating a program disk," and then:

1. Using the System Utilities

- Copy the file BASIC.SYSTEM from the Apple IIGS System Disk to your AppleWorks disk.
- On your AppleWorks disk, rename the file called APLWORKS.SYSTEM to APLWORKS
- Exit to BASIC

2. Create the following Applesoft BASIC program:

```
10 HOME : REM  Startup program
20 PRINT " Program Loader ": PRINT
30 PRINT " 1) AppleWorks "
40 PRINT " 2) Chooser"
50 PRINT " 3) Namer": PRINT
60 INPUT " Enter your choice:";A$
70 A = VAL (A$)
80 ON A GOTO 100,200,300
90 GOTO 10
100 PRINT CHR$ (4);"-APLWORKS"
110 END
200 PRINT CHR$ (4);"-CHOOSER.II"
210 END
300 PRINT CHR$ (4);"-NAMER.II"
310 END
```

3. Check to be sure you entered the BASIC program exactly as shown.

4. Type SAVE STARTUP and press Return.

Boot your AppleWorks disk; the following appears on the screen:

Program Loader

- 1) AppleWorks
- 2) Chooser
- 3) Namer

Enter your choice:

Type in the number of the program you wish to run, and press Return.
Whenever you print to "LaserWriter," your output will be directed to the
last LaserWriter chosen using Chooser.

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Tech Info Library Article Number:2098



Tech Info Library

ProDOS 1.1.1: Incorrectly Displays 1982 as the Current Year

Revised: 1/25/88
Security: Everyone

ProDOS 1.1.1: Incorrectly Displays 1982 as the Current Year

=====

This article last reviewed: 19 January 1988

ProDOS 1.1.1 has problem with dates after 1987. One result is that when you set the date in AppleWorks, then you turn off the computer and back on again, the displayed date is correct except the year is shown as 1982 rather than 1988.

If you upgrade the ProDOS on your startup disks to ProDOS 1.4, this problem should disappear.

Tech Info Library Article Number:2099



Tech Info Library

AppleWorks: Getting 10 CPI single spaced on the LaserWriter

Revised: 12/11/86
Security: Everyone

AppleWorks: Getting 10 CPI single spaced on the LaserWriter

=====

The Diablo emulation mode command string

ESC, CTRL-Underscore, CTRL-M

for 10 characters per inch becomes a problem when used with conventionally configured AppleWorks. The code sets the LaserWriter to 10 CPI, but because the Super Serial Card firmware includes a Line Feed as it picks up the CTRL-M, it adds a line feed to each line: single space text comes out double spaced, double space triple spaced, etc, making single spacing in 10 characters per inch impossible.

In order to fix this problem, tell AppleWorks to insert the linefeeds and configure the serial card NOT to add linefeeds by setting switch SW2-5 to OFF. For the built-in serial port in an Apple IIGS, use the Control Panel; for the printer port of the Apple IIc, use the Apple IIc System Utilities. AppleWorks will be smart enough not to insert linefeeds after any carriage returns in the printer codes.

Apple Technical Communications

Tech Info Library Article Number:2101



Tech Info Library

LocalTalk: Soldering connectors of the Custom Cable Kit

Revised: 11/2/88
Security: Everyone

LocalTalk: Soldering connectors of the Custom Cable Kit

=====

This article last reviewed: 11 December 1986

Intermittent network problems can result from bad electrical contact caused by residual solder flux on Custom Cable Kit connectors. After the connectors are dis- and reconnected a few times, the network problems no longer appear, but the users of the network are wary and unconfident.

Assemblers of Custom Cable Kit networks can avoid this situation by 'flushing out' any residual flux from the male connector end after assembly. Caution must be exercised in doing this as most commonly used flux removal solvents destroy the plastic connector assembly. A remedy is a silicon-based spray 'contact enhancer' called "TWEED", from UKO Inc., Berkeley, CA. Any other type of contact cleaner or enhancer can be used, as long as it does not have any solvent in it.

Not machined into its pin shape, the connector is instead stamped and rolled, leaving a small channel along the length of the pin. Solder flux flows in this channel and a small portion enters the contact area of the male connector when the AppleTalk wire is soldered to the open side of the pin. Once the flux is on the contact area of the pin, the flux inhibits contact with the female connector, and this partial connection gives intermittent network problems.

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Tech Info Library Article Number:2102



Tech Info Library

Apple IIGS Errors: Toolset numbers

Revised: 12/11/86
Security: Everyone

Apple IIGS Errors: Toolset numbers

=====

Generally, error numbers are a hybrid of the toolset number and a specific error within that toolset: the first byte is the tool number and the 2nd byte, the error number.

For example, error \$110B is an error that occurred within the Segment Loader (\$11 in decimal is 17). Specifically, error \$110B is a 'Load Segment is Foreign' error, which can occur from the Initial Load (function \$07) or Load Segment by Number (function \$09) calls.

Here, you can at least identify in which Toolset an error occurred with this list of current Tool Sets and their Toolset numbers (to be superceded by an APDA mailing).

- 1 - Tool Locator
- 2 - Memory Manager
- 3 - Miscellaneous Tools
- 4 - QuickDraw //
- 5 - Desk Manager
- 6 - Event Manager
- 7 - Scheduler
- 8 - Sound Manager
- 9 - Front Desk Bus Manager
- 10 - SANE
- 11 - Integer Math
- 12 - Text Tools
- 14 - Window Manger
- 15 - Menu Manager
- 16 - Control Manager
- 17 - System Loader
- 18 - High Level Printer Driver
- 19 - Low Level Printer Driver
- 20 - Line Edit
- 21 - Dialog manager
- 22 - Scrap Manager
- 23 - Standard File
- 24 - Disk utilites

25 - Note Synthesizer

26 - Note Sequencer

27 - Font Manager

Apple Technical Communications

Tech Info Library Article Number:2103



Tech Info Library

Apple IIGS Monitor: Step, Trace, and Search

Revised: 10/12/87
Security: Everyone

Apple IIGS Monitor: Step, Trace, and Search

=====

This article last reviewed: 11 December 1986

Step and Trace are not built into the Apple IIGS Monitor.

The format for the search command is

```
\<search string>\{<bank>/}<addr1>.<addr2>P
```

where <search string> is either a series of hexadecimal values or ASCII text delimited by single or double quotes. In addition, the entire search string is separated from the search range with backslashes. <Bank> is optional (as the braces are meant to indicate) and specifies the memory bank in which you want to search. If you do include a bank number, then you must separate it from <addr1> with a slash. <addr1> and <addr2> are the start and end of the memory range of the search.

For example, to look for the location of the Apple IIgs startup message, type:

```
\ "Apple IIgs" \FF/0000.FFFFFP
```

You should get

```
FF/F914:
```

as the response.

Tech Info Library Article Number:2104



Tech Info Library

AppleWriter II (ProDOS): Printing from an Apple IIGS

Revised: 12/11/86
Security: Everyone

AppleWriter II (ProDOS): Printing from an Apple IIGS

=====

The Applewriter program works fine on the Apple IIGS until the program locks up when you try to have it print through the Apple IIGS's serial ports. If a Super Serial Card with an ImageWriter or an ImageWriter II with an AppleTalk option is used, AppleWriter prints fine. The problem occurs with prints to the internal Apple IIGS serial ports. AppleWriter may address and only address the Super Serial Card's communications chip and not the Apple IIGS's communications chip.

Apple Technical Communications

Tech Info Library Article Number:2105



Tech Info Library

AppleWorks: Lining up amounts in a Spreadsheet

Revised: 12/11/86
Security: Everyone

AppleWorks: Lining up amounts in a Spreadsheet

=====

Numbers in Dollar format misalign in columns

\$45.66	\$78.99	\$55.33
98.66	33.45	23.99
44.55	14.75	34.76
23.56	44.89	34.66

because AppleWorks makes space for signifiying negative amounts with parentheses:

(\$45.66)	(\$78.99)	(\$55.33)
98.66	33.45	23.99
44.55	14.75	34.76
23.56	44.89	34.66

To get the remaining numbers to line up with the 'Dollar' formatted numbers, use the 'Commas' format, which makes space for the same parentheses but doesn't display a dollar sign:

\$45.66	\$78.99	\$55.33
98.66	33.45	23.99
44.55	14.75	34.76
23.56	44.89	34.66

Apple Technical Communications

Tech Info Library Article Number:2106



Tech Info Library

Logo II: How to print procedures

Revised: 12/11/86
Security: Everyone

Logo II: How to print procedures

=====

To print procedures using Apple Logo II (128K), type

DRIBBLE 1

which enables the system to print procedures/variables after you type one of the following commands:

PO (name)
POALL
PON (name)
PONS
POPS
POT (name)
POTS

(For information on the above commands, see the Logo II reference manual.)

To disable this printing, type:

NODRIBBLE

Apple Technical Communications

Tech Info Library Article Number:2108



Tech Info Library

MacDraw 1.9, 1.9.5: Printing Without Page Breaks

Revised: 3/31/92
Security: Everyone

MacDraw 1.9, 1.9.5: Printing Without Page Breaks

=====

Article Created: 11 December 1986
Article Last Reviewed: 31 March 1992
Article Last Updated: 31 March 1992

TOPIC -----

The following discusses printing with MacDraw 1.9 and 1.9.5 without page breaks.

DISCUSSION -----

When its rulers are set to centimeters, MacDraw 1.9 and 1.9.5 put a break between pages even though you select "No Breaks Between Pages".

You can work around this by drawing your document in the normal manner and changing the ruler increments to inches just before printing. MacDraw then prints without page breaks.

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Tech Info Library Article Number:2110



Tech Info Library

New Ground Wire to HyperDrive Bracket

Revised: 1/7/87
Security: Everyone

New Ground Wire to HyperDrive Bracket

=====

The current DC power supply harness of the HyperDrive 20 has a green ground wire on the line to the hard disk assembly. This green wire should be attached to the small spade on the silver DRIVE BRACKET surrounding the drive and not to any spade you might see on the drive itself. If there is no spade on the bracket, the ground wire should be snipped off.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

General Computer Co., Service Documentation

Tech Info Library Article Number:2111



Tech Info Library

Joystick: You'll Need an Adapter for Use with the Apple II

Revised: 5/17/89
Security: Everyone

Joystick: You'll Need an Adapter for Use with the Apple II

=====

This article last reviewed: 19 January 1988

The packaging for the Apple Joystick (part number A2M2012) states that the Joystick works on the Apple II Plus. In fact, it will not without an adapter plug. Apple no longer supplies that adapter, but there is one available from Southern California Research Group.

Southern California Research Group also supplies adaptors that let you simultaneously connect two joysticks to an Apple II+, Apple IIe, or Apple IIGS (but not to an Apple IIc). If a given software package is specifically written for two Joysticks, it will say so on the box.

For more information, search the library under Southern California Research Group.

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Tech Info Library Article Number:2113



Tech Info Library

Catalyst 3.0: Incompatible with Apple 3.5 disk drive

Revised: 1/20/87
Security: Everyone

Catalyst 3.0: Incompatible with Apple 3.5 disk drive

=====

Catalyst 3.0 on a 3.5 inch disk is not compatable with the Apple 3.5 disk drive. Quark does not currently have a fix for this problem.

The only way to use Catalyst 3.0 on an Apple IIGS is by using the 5.25 inch version or by using only UniDisk 3.5's on the Apple IIGS.

A book mentions a Catalyst version 4.0 for the Apple IIGS. Such a version does not exist and is not being worked on.

Apple Technical Communications

Tech Info Library Article Number:2114



Tech Info Library

AppleWorks: Version 2.0 requires 128K

Revised: 1/20/87
Security: Everyone

AppleWorks: Version 2.0 requires 128K

=====

AppleWorks 2.0 will not boot on a 64K Apple IIe. AppleWorks 2.0 requires 128K of memory to run successfully; an Apple IIe with an 80-column card installed will display the message "AppleWorks can only be used on systems with 128K of memory" when later versions of the AppleWorks program are booted.

AppleWorks 2.0 can use as a RAMDisk the 256K to 1MB of memory in the Memory Expansion Cards designed for and respectively used in the Apple IIe, Apple IIGS, or the Apple IIc with a memory expansion slot. AppleWorks 2.0 will not use an Apple IIe Memory Expansion Card in an Apple IIGS.

Apple Technical Communications

Tech Info Library Article Number:2115



Tech Info Library

AppleWorks: Desktop size on the Apple IIGS

Revised: 1/20/87
Security: Everyone

AppleWorks: Desktop size on the Apple IIGS

=====

For desktop storage, AppleWorks 2.0 on an Apple IIGS will only use memory found on the Apple IIGS logic board and Memory Expansion Card. When this card is not present and AppleWorks 2.0 is booted from the Apple IIGS System Disk, the Apple IIGS Tools, using a large portion of available logic board RAM, leave only 13K for the AppleWorks desktop. The message "WARNING! Desktop is full. Action not completed. Press space bar to continue." appears when the user attempts to create a word processor file from scratch. If you make a second attempt to create a word processor file, AppleWorks will complete the task.

AppleWorks' users should be aware of this situation before using AppleWorks 2.0 and the Apple IIGS System Disk files on an Apple IIGS without an Apple IIGS Memory Expansion Card installed.

If AppleWorks 2.0 is booted from the AppleWorks Startup Disk, an Apple IIGS 1M Expansion Card will permit up to 1149K on AppleWorks' desktop. Factors that affect the size of AppleWorks' desktop are:

- memory available on the Apple IIGS Memory Expansion Card
- memory occupied by the Apple IIGS RAM disk
- the availability of the Apple IIGS desktop
- other AppleWorks auxiliary programs that are loaded into the Apple IIGS
- the method used to start up AppleWorks.

You may create a disk that will allow AppleWorks and the Apple IIGS Desktop to be used effectively on the same disk:

1. Make a new copy of your AppleWorks 2.0 master disk.
2. Remove the file "PRODOS" from the new AppleWorks disk.
3. Copy the file called "P8" from the System folder on the Apple IIGS System Disk onto the new AppleWorks disk. Rename the copied file "PRODOS". The disk is now bootable for starting up the Apple IIGS.

If you wish to add the desktop:

1. Locate the folder "DESKTOP" on the Apple IIGS System Disk.
Copy the contents of this folder onto the root directory of the new AppleWorks disk.
2. On new the AppleWorks disk, rename the file "APLWORKS.SYSTEM" "APPLEWORKS" and "DESKTOP1" "DESK1.SYSTEM".
3. Start your Apple IIGS with the modified AppleWorks disk.
Once the desktop appears, double click on the "APPLEWORKS" icon to run the AppleWorks program. Using this disk on an Apple IIGS with 256K memory provides 124K of AppleWorks' desktop space.

AppleWorks versions 1.1, 1.2 and 1.3 can be used on an Apple IIGS, an Apple IIc, or an Apple IIe with either 64K or 128K memory. AppleWorks' desktop size on an Apple IIGS will vary with the version of AppleWorks in use. Because AppleWorks 1.3 and earlier versions do not recognize the newer features of the Apple IIGS, the user can obtain only a 55K AppleWorks desktop, even though the computer may have from 256K to 1.25M of memory on the logic board and in the Memory Expansion Slot. However, if the Apple IIGS has an Apple II Memory Expansion Card in one of its seven slots, AppleWorks 1.3 does recognize it and uses the Memory Expansion Card to increase the desktop size.

Apple Technical Communications

Tech Info Library Article Number:2116



Tech Info Library

ParcPlace Systems

Revised: 7/22/93
Security: Everyone

ParcPlace Systems

=====

Article Created: 25 January 1988
Article Reviewed/Updated: 22 July 1993

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Software, specializing primarily in Smalltalk products.

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Tech Info Library Article Number:2117



Tech Info Library

Apple IIGS: Composite and analog video

Revised: 10/12/87
Security: Everyone

Apple IIGS: Composite and analog video

=====

This article last reviewed: 20 January 1987

The Apple IIGS has two video ports: an RCA phono jack and a 15-pin D-Type connector. An EIA-standard composite video signal (2.0V white, 0.75V black, 0.0V sync., 75-ohm impedance) is available from both connectors. This composite signal drives many monitors such as the AppleColor Composite Monitor, the Apple Monochrome Monitor, and a TV unit with an RF modulator. While composite video monitors can be used with the Apple IIGS, they don't fully render the 320 x 200- and 640 x 200-pixel color graphics potential of the new system.

The 15-pin connector analog RGB signals provide full color graphics display capability. Note that the Apple IIGS outputs analog, not digital, RGB signals. The designers preferred the unrestricted character of an analog signal for the ability of the Apple IIGS to support 4096 colors. Apple offers a new platinum Apple Color RGB Monitor for the Apple IIGS. Other analog RGB monitors known to work with the Apple IIGS include several models by Hitachi, Panasonic, Sanyo, Mitsubishi, Conrac, and Commodore.

To check if your monitor is analog RGB, consult the manual. Check the pinouts before connecting the monitor to an Apple IIGS to make sure your monitor is compatible with pins 7 and 8. The Apple IIGS's 15-pin RGB video signals are as follows:

Pin	Signal
-----	--------

- | | |
|---|------------------------|
| 1 | Signal ground (Red) |
| 2 | Analog RED with sync |
| 3 | Composite sync |
| 4 | No connection |
| 5 | Analog GREEN with sync |
| 6 | Signal ground (Green) |
| 7 | -5 volts DC |
| 8 | +12 volts DC |
| 9 | Analog BLUE with sync |

10	No connection
11	Sound 1V peak-to-peak
12	NTSC/composite color video out
13	Signal ground (Blue)
14	No connection
15	No connection
Shield	System ground

There's no simple, straightforward way to invert sync or to separate horizontal and vertical sync on the composite signal for incompatible monitors, but it could be done as an interface product.

Some types and makes of monitors won't work at all. Digital RGB monitors either won't work at all or will work with unpredictable results. Digital RGB monitors with these problems are Apple's older Color Monitor 100 and IBM RGB monitors (IBM's RGB monitors need inverted sync in addition to TTL video signals.). Apple's Flat Panel Display has incompatible signals.

Do NOT assume that a DB-15 connector on your color monitor means it's analog RGB.

Tech Info Library Article Number:2118



Tech Info Library

LaserWriter Driver 3.1: Excel printing problems

Revised: 1/20/87
Security: Everyone

LaserWriter Driver 3.1: Excel printing problems

=====

Generally, turning Font Substitution OFF will help avoid many of the font printing problems encountered.

With Charts, you may encounter system errors when using the LaserWriter Driver 3.1 to print Charts created in a system with a driver prior to 3.1. Cut and Paste the Chart information to a new document and print the chart with the LaserWriter Driver 3.1 in the system.

Apple Technical Communications

Tech Info Library Article Number:2120



Tech Info Library

ProDOS 1.1.1: Track 0 not automatically protected

Revised: 1/20/87
Security: Everyone

ProDOS 1.1.1: Track 0 not automatically protected

=====

In ProDOS 1.1.1 and ProDOS 8 v1.2, part of the Disk II I/O driver code causes occasional trashing of track 0.

ProDOS 8 v1.3 and 16 were changed to solve this problem, first reported in the January 1986 issue of Open Apple. An Applesoft solution appears in the November 1986 issue in an article entitled "ProDOS bug found in Australia".

The beginning code of the driver performs a series of instructions intended to de-activate any UniDisk 3.5's that may happen to be on line. The problem occurs when these instructions cause a clash on the disk drive port data lines. The clash may put in write mode any 5.25" disk drive (Disk II, UniDisk, Apple 5.25, DuoDisk, or Apple IIc external drive). ProDOS 1.1.1 and ProDOS 8 v1.2 do not check for this re-setting, so they act as if the 5.25 drive were in the read-only state (which it is under normal circumstances). The next time these versions of ProDOS attempt to access a 5.25 disk, they wipe out what they would normally read. In many cases, the directory is wiped out because many applications check the directory in order to open a file.

Apple Technical Communications

Tech Info Library Article Number:2121



Tech Info Library

Apple Presents AppleWriter: On the Apple IIfx in 80 column mode

Revised: 1/28/87
Security: Everyone

Apple Presents AppleWriter: On the Apple IIfx in 80 column mode

=====

The 80 Column side of the disk "Apple Presents AppleWriter" will not boot on a platinum Apple IIfx unless the 80/40 column switch is down (in 80-column mode). As far as we know, there are no plans to upgrade the program.

Apple Technical Communications

Tech Info Library Article Number:2122



Tech Info Library

LaserWriter: Memory requirements for downloadable typefaces

Revised: 9/12/88
Security: Everyone

LaserWriter: Memory requirements for downloadable typefaces

=====

This article last reviewed: 28 January 1987

The amount of LaserWriter RAM required for Adobe typefaces are given below.

When a LaserWriter receives its first downloadable typeface file, memory is loaded with information that is global to all the typeface files. This happens just once and takes, at most, 10K of LaserWriter RAM.

After the first typeface file is sent to the printer with the extra global information, all following typeface files will only take the amount of approximated memory shown below.

Note that Oblique faces have two numbers associated with them: the first represents the amount of memory used if the main face has been previously downloaded (such as the Roman version of that face), and the second number represents memory taken if the main face does not reside in memory, although you may need to account for the one-time-hit mentioned above.

Adobe downloadable fonts, with memory required (in bytes):

	Roman	Light	Medium	Bold	Demi	Book
ITC American Typewriter			33K	34K		
ITC Avant Garde Gothic					22K	21K
Oblique					3K/26K	3K/26K
ITC Benguiat				26K		25K
ITC Bookman		25K			25K	
Italic		26K			25K	
ITC Friz Quadrata				25K		
(Regular - 24K bytes required)						
ITC Garamond		33K		35K		
Italic		33K		35K		
ITC Glypha	23K			25K		
Oblique	3K/28K			4K/30K		
ITC Lubalin Graph					24K	22K

Oblique		5K/30K		3K/28K	
ITC Machine		13K			
New Century Schoolbook	29K		30K		
Italic	28K		28K		
Palatino	27K		28K		
Italic	32K		35K		
ITC Souvenir		28K		28K	
Italic		30K		29K	
ITC Zapf Chancery Italic		26K			
ITC Zapf Dingbats		37K			

Roman	Light	Medium	Bold	Demi	Book
-------	-------	--------	------	------	------

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Tech Info Library Article Number:2123



Tech Info Library

Apple IIf Owner's Manual 030-1030-B: Erratum on PR#7 feature

Revised: 1/28/87
Security: Everyone

Apple IIf Owner's Manual 030-1030-B: Erratum on PR#7 feature

=====

Received with the new Apple IIf, the manual with part number 030-1030-B shows, at the top of page 100, how to boot the computer off the external drive as part of a troubleshooting procedure.

However, the manual doesn't state that the PR#7 feature has been removed since the introduction of the UniDisk 3.5 option for the IIf.

Apple Technical Communications

Tech Info Library Article Number:2124



Tech Info Library

Applesoft BASIC: Making a text file from a program file

Revised: 1/28/87
Security: Everyone

Applesoft BASIC: Making a text file from a program file

=====

To transfer a program in Applesoft BASIC from the Apple II family of computers to another computer, you must first make a text file from the program. Adapt to your own situation this example:

Assume that your BASIC program begins with line number 10 and ends with line number 30000. Add these lines to the beginning of the program:

```
1  PRINT CHR$(4);"OPEN TEXTFILE"  
2  PRINT CHR$(4);"WRITE TEXTFILE"  
3  LIST 10-30000  
4  PRINT CHR$(4);"CLOSE"  
5  END
```

Save the program with the new lines added, then run the program.

This will work in DOS 3.3 or ProDOS, so long as either was used to boot the disk, and so long as there is disk space available to write the program file.

If your program has used lines 1-5, put the new lines at the end, as lines 30001-5 for example, and then type RUN 30001.

Apple Technical Communications

Tech Info Library Article Number:2125



Tech Info Library

ImageWriter: Codes for printing accented vowels

Revised: 4/2/87
Security: Everyone

ImageWriter: Codes for printing accented vowels

=====

To print an accent mark over a vowel in an AppleWorks word processor document, you can backspace and print an accent.

Or you can use the command

`e<superscript>'<normal>`

You must, however, turn on superscripting with command sequences you define in the custom driver.

With ImageWriter, you can use the following sequence of characters to turn on superscripting:

`CTRL-H ESCAPE ESCAPE ll ESCAPE T12 ESCAPE r CTRL-_ 1`

(N.B. ESCAPE ll is ESCAPE, lower case L, numeric one)

The characters needed to end superscripting are:

`ESCAPE T09 ESCAPE f CTRL-_ 1 ESCAPE A ESCAPE 10`

(N.B. T09 and 10 have numeric zero)

ESCAPE T09 compensates for the "printer slop" that the tractor feed causes when a reverse linefeeds occurs. If you are using friction feed, these codes are not necessary and may be removed.

If you are using an ImageWriter II, then the superscripting control codes are easier:

`CTRL-H ESCAPE ESCAPE x`

To end superscripting, use:

`ESCAPE z`

Character sets available on the Apple IIGS and ImageWriter may be of some help. For instance, Italian has an accented 'e'. Check the ImageWriter II manual, Appendix C, for a list of the characters in the character sets.

One of the options in the Apple IIGS is the ability to change the characters set of the display and the keyboard layout. By entering the control panel, and selecting "Display: Spanish", you will be able to display certain Spanish characters that print properly when sent to an ImageWriter in Spanish mode.

Apple Technical Communications

Tech Info Library Article Number:2126



Tech Info Library

Apple IIGS: Error in Show Text File Desktop Accessory

Revised: 9/22/89
Security: Everyone

Apple IIGS: Error in Show Text File Desktop Accessory

=====

This article last reviewed: 4 February 1987

On version 1.1 of the Apple IIGS System Disk, dated December 2, the Apple II DeskTop gives a "system error" when the desk accessory Show Text File comes to end-of-file. This doesn't happen with version 1.0, dated November 26.

Furthermore, on both versions, 1.0 and 1.1, of the system disk, this desk accessory will only show the first 32K of a text file.

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Tech Info Library Article Number:2127



Tech Info Library

Apple IIGS: Grappler Plus cards

Revised: 10/12/87
Security: Everyone

Apple IIGS: Grappler Plus cards

=====

This article last reviewed: 4 February 1987

Older Grappler Plus cards are not necessarily Apple IIGS compatible. Some of the older interface cards malfunction because of timing changes made to the IIGS slots, even though these changes were within Apple's specifications. The Grappler Plus card was designed before Apple even had those timing specifications.

On the Grappler Plus card at location U10, if the chip there is a 74LS373, then you have an old card and should contact Orange Micro. A 74LS374 is at U10 on the recent card.

Tech Info Library Article Number:2128



Tech Info Library

AppleWorks 2.0: Printing to disk

Revised: 2/4/87
Security: Everyone

AppleWorks 2.0: Printing to disk

=====

When printing to disk, AppleWorks 2.0 only saves a document in this way with carriage returns ending each line (by selecting the Silentype printer option).

If you need to workaroud this situation, the text file printed to disk by AppleWorks can be read into AppleWriter or a BASIC program. You can then replace all spurious carriage returns with spaces, taking care to recognize and preserve carriage returns at the end of paragraphs.

The feature of putting a carriage return at the end of a line was added because many people had problems transmitting text with lines longer than 255 characters.

All previous versions of AppleWorks printed to disk a file with carriage returns only at the ends of paragraphs.

Apple Technical Communications

Tech Info Library Article Number:2129



Tech Info Library

Mac3D 2.0: System Errors

Revised: 2/4/87
Security: Everyone

Mac3D 2.0: System Errors

=====

Mac3D requires System version 3.2 and Finder version 5.3 or later to operate properly. If system error ID=10 or ID=02 show up, you should make sure you are using the system software described above.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Challenger Software Technical Support.

Tech Info Library Article Number:2130



Tech Info Library

Apple IIe: Keyboard and keypad in Apple IIGS upgrades

Revised: 10/12/87
Security: Everyone

Apple IIe: Keyboard and keypad in Apple IIGS upgrades

=====

This article last reviewed: 6 February 1987

When upgraded to an Apple IIGS, two different Apple IIe systems will behave exactly the same as the Apple IIGS: an Apple IIe with an external numeric keypad and a new Apple IIe with built-in numeric keypad. The "ESC" is mapped as a "Clear" on both systems. Remember, you still have extra keys on the IIe numeric pad.

Once an Apple IIe is upgraded, the keyboard behaves the same as the Apple IIGS keyboard. Remember, the Solid Apple Key is now the 'Option' key. Since there is a place on the motherboard labeled "NUMERIC KEYPAD", a connected keypad behaves the same as on the Apple IIGS keypad and then some. It is, of course, laid out differently, but all the keys that are on the IIGS keypad are on the IIe keypad. The extra keys available are: space, comma, "(", ")", and the left and right arrows. The "ESC" key is now the IIGS "Clear" key, and the "Print key" is now an "=".

An Apple IIe with a keyboard and keypad connected to an Apple IIGS motherboard in the upgrade does not affect operation of the Apple Desktop Bus. The DeskTop Bus continues to operate fine, regardless of what is hooked up via the Keyboard or Numeric pad connectors. It is possible to have both new and old keyboards hooked up and functional at the same time.

Tech Info Library Article Number:2131



Tech Info Library

Apple IIGS: Keyboard Connector

Revised: 11/10/88
Security: Everyone

Apple IIGS: Keyboard Connector

=====

This article last reviewed:10 November 1988

A problem concerning the connectors present on release Apple IIGS motherboards comes out of the fact that certain Special Education devices require the use of the keyboard connector (not the Game I/O) for different input devices.

The keyboard connector sockets aren't mounted on the Apple IIGS motherboard in the systems that will ship to customers; the connectors only are mounted on Apple IIGS IIe upgrade boards.

Depending on size of order, Manufacturing may do a special Apple IIGS build with keyboard and numeric keypad connectors. You should have your Sales Representative go through normal channels to investigate.

On a single unit basis, there is no way for Apple to add the connectors to an Apple IIGS board. However, all of the electronics for the external keyboard connectors exists on current Apple IIGS units. If you can find the connectors, it is possible to solder them in.

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Tech Info Library Article Number:2132



Tech Info Library

FullPaint and the Hyperdrive

Revised: 2/10/87
Security: Everyone

FullPaint and the Hyperdrive

=====

FullPaint requires 384K just to launch. If the HyperDrive Volume Manager is not configured properly, the program will not load and will tell the user that he needs to check RAM Cache.

Following is the procedure for getting FullPaint to run on non-XP HyperDrives:

'Preferences' must be set to 'Maximum Compatibility'

OPEN Volume Manager

Choose PREFERENCES from the CREATE menu

Set the buttons to Maximum Compatibility

Close the PREFERENCES window

QUIT the Volume Manager

Choose SHUTDOWN from the Special menu

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Ann Arbor Technical Support

Tech Info Library Article Number:2133



Tech Info Library

Apple IIGS: Desk Accessories

Revised: 9/22/89
Security: Everyone

Apple IIGS: Desk Accessories

=====

This article last reviewed: 17 February 1987

At startup, Apple IIGS Desk Accessories are automatically installed by ProDOS. It scans the sub-directory SYSTEM/DESK.ACCS on the startup disk for any files of type \$B8 (CDA) and installs them. A CDA is a classic desk accessory, a menu of which can be accessed with Command-Control-Escape.

The format of a CDA is very similar to that of a regular application. The main difference is the existence of a header that contains:

- a Pascal string that contains the name of the CDA
- a pointer to the entry point of the CDA code
- a pointer to the shutdown routine of the CDA code

More documentation on writing classic and new desk accessories will be found in the chapter on the Desk Manager in the Apple IIGS Toolbox Reference Manual in summer 1987.

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Tech Info Library Article Number:2134



Tech Info Library

Apple IIGS: Controlling speed mode from machine language

Revised: 2/17/87
Security: Everyone

Apple IIGS: Controlling speed mode from machine language

=====

In the Configuration Register, CYAREG, at location \$C036, the bit to control is the high bit: setting it to 0 will set the normal mode and setting it to 1 will put the Apple IIGS in fast mode. The following machine language program shows how to use the bit.

```
300: lda C036
303: jsr FDDA    ;print the value of the memory location
306: jsr 0318    ;wait a little while
309: lda C036    ;now swap the speed mode
30C: eor #80
30E: sta C036
311: jsr FDDA    ;and show how it changed
314: jsr 0318    ;wait again, to show the speed difference
317: rts

318: ldx #00     ;this is a wait routine that will pause for 8 seconds
31A: ldy #00     ;in fast mode, and 19 seconds in normal mode
31C: jsr 031F
31F: jsr 0322
322: jsr 0325
325: jsr 0328
328: jsr 032B
32B: jsr 032E
32E: dex
32F: bne 032E
331: dey
332: bne 032E
334: rts
```

This program will print the value of CYAREG, pause a while, flip the speed, print the new value of CYAREG, and wait again. The speed difference is very apparent.

Take note that speed control under AppleSoft may be very difficult, if not impossible. Many firmware routines need the speed mode changed, so they often save the previous mode on the stack and then set the required speed mode. In

this case, if you set the speed from AppleSoft or directly from the monitor, the speed mode will get set back to its default value (as specified in the Control Panel).

However, if you set the speed from a machine language program, the speed should remain the same for as long as that program maintains control.

Apple Technical Communications

Tech Info Library Article Number:2135



Tech Info Library

LocalTalk PC Card: Using It With TOPS On A 640K IBM-PC/XT

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card: Using It With TOPS On A 640K IBM-PC/XT

=====

This article last reviewed: 17 February 1987

When one PC has both an LocalTalk PC Card and a Centram TOPS card, problems (unrecognized cards and malfunctioning printing) that may occur might be isolated by testing each card separately for all functions and making sure both COM ports are free (the LocalTalk PC Card needs a free COM port).

You should also check the DMA settings of a file for the TOPS card, config.sys, and the switches for the cards for Centram TOPS and LocalTalk PC. The DMA settings must be compatible, e.g. config.sys with DMA=1, Centram TOPS card with switches set for DMA=1, and LocalTalk PC card with switches set for DMA=3.

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Tech Info Library Article Number:2136



Tech Info Library

Macintosh: Screen font character spacing

Revised: 5/10/89
Security: Everyone

Macintosh: Screen font character spacing

=====

The screen fonts distributed by Adobe have a slightly different character spacing than those distributed by Apple. Page 22 of the Adobe Type Library User's Manual points out:

"If you own an older Macintosh, not a Macintosh Plus, and are concerned about character spacing, avoid using the Bold and Italic selections from the Style menus of your application. Instead, install the bold, italic, and bold italic screen fonts available in your typeface package and select these fonts from your application's pull down menu when you need to change styles. You will then get more accurate spacing when printing documents."

The manual goes on to say:

"If you own a Macintosh Plus, you can install only the Plain font and still get correct character spacing. For display clarity, however, you may want to install the Other fonts."

If you are using a Macintosh with the 128K ROM's, only the Plain font needs to be installed. Just remember to use a Font/DA Mover of version 3.1 or later so the FOND resource is correctly installed.

Apple Technical Communications

Tech Info Library Article Number:2137



Tech Info Library

AppleShare 1.0 File Services: User Limits

Revised: 10/26/90
Security: Everyone

AppleShare 1.0 File Services: User Limits

=====

This article last reviewed: 1 September 1987

1. Users per server:

- a. Logged on: 25 maximum
- b. Registration file: virtually unlimited

2. Group capability:

- a. Registration file: virtually unlimited
- b. Group memberships per user: 15 maximum
- c. Groups having special access privileges to a folder: 1 maximum
Note that a different set of access privileges can be assigned to
EVERYONE in addition to the group privileges

3. Servers per AppleTalk network:

- Limited by LocalTalk only
for example, you could have 31 servers and 1 user
- An AppleTalk internetwork connected by bridges could have a virtually
unlimited number of Servers

4. Volumes per server:

- a. SCSI: 7 devices
- b. HD20: 2 devices
- Limited only by the Macintosh operating system and hardware:
AppleShare can handle as many volumes as the Finder.

5. Groups per zone:

a. Logged on: 25 maximum

b. Registration file: virtually unlimited

6. Servers per zone:

-- Limited only by LocalTalk

for example, you could have 31 servers and 1 user

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Tech Info Library Article Number:2138



Tech Info Library

Apple IIGS: ProDOS/8

Revised: 2/18/87
Security: Everyone

Apple IIGS: ProDOS/8

=====

To support the old Apple II mode on the Apple IIGS, system disks have P8, or ProDOS/8, as it is a version of ProDOS 1.1.1 made especially for Apple IIGS, although ProDOS/8 works on an Apple IIe or Apple IIc.

ProDOS/8 handles the following Apple IIGS capabilities, features and operating modes:

- ProDOS/8 accepts system calls from applications running in 8-bit mode only.
- ProDOS/8 accepts system calls from the lowest 64K of memory only.
- ProDOS/8 uses a simple global page bit map.
- ProDOS/8 maintains a section of memory, which can be accessed directly, that contains system global variables such as date and time, system level, and I/O buffer addresses.
- ProDOS/8 reads the Apple IIGS clock rather than the ThunderClock.

On the Apple IIGS, ProDOS and ProDOS/16 are designed to run in tandem, as a package. ProDOS/8 is provided to maintain compatibility with ProDOS v1.1.1. In normal situations, you need not be concerned with which operating system is functioning; ProDOS/8 is automatically loaded if you run an application designed to run under ProDOS 1.1.1 or versions earlier.

Apple Technical Communications

Tech Info Library Article Number:2140



Tech Info Library

AppleWorks: Creating database documents from text with tabs

Revised: 2/18/87
Security: Everyone

AppleWorks: Creating database documents from text with tabs

=====

Some database programs export text files that have fields separated by tabs and records by carriage returns. AppleWorks imports a database file from a text file when all fields and records are separated by carriage returns. To convert the tabbed export format to the format AppleWorks imports, you must use a word processing application or a programming language, such as BASIC or Pascal, whether or not you have to transfer the data from the Macintosh.

Using a word processing application, open the document and change the tabs to carriage returns with a replace command. Most applications have special codes for the tab and carriage return, such as ^t and ^p in MicroSoft Word. Save the changes as a text file, which AppleWorks should accept.

For using a programming language, take this example in Applesoft BASIC under ProDOS.

```
10 ONERR GOTO 130
20 O$="<OLD FILE NAME>"
30 N$="<NEW FILE NAME>"
40 D$=CHR$(4)
50 PRINT D$"OPEN"O$
60 PRINT D$"OPEN"N$
70 PRINT D$"READ"O$
80 GET A$
90 PRINT D$"WRITE"N$
100 IF A$=CHR$(9) THEN A$=CHR$(13)
110 PRINT A$;
120 GOTO 70
130 PRINT D$"CLOSE"
140 END
```

This program should be saved, along with the exported text file, to a ProDOS disk; save the program with a name such as "TAB2CR". After substituting appropriate names in lines 20 and 30, run the program. AppleWorks should accept the output file.

Here is a MacPascal program that could convert the export file of a Macintosh

application such as MacWorks.

```
program Convert;
type
  text = file of char;

var
  infile, outfile : text;
  c : char;

begin
  {an example pathname could be 'HD:MS Works:ExportFile'}
  open(infile, 'export file pathname');
  open(outfile, 'AppleWorks format file pathname');
  while not (eof(infile)) do
    begin
      read(infile, c);
      if ord(c) = 9 then
        begin
          c := chr(13);
        end;
      write(c);    {echo to screen}
      write(outfile, c);
    end;
  close(infile);
  close(outfile);
end.
```

Substitute appropriate names for "export file pathname" and "AppleWorks format file pathname". After transferring the output file to the Apple II (with MS Works or MacTerminal), save the captured file as a text file. AppleWorks should accept the captured file.

Apple Technical Communications

Tech Info Library Article Number:2141



Tech Info Library

Apple IIGS: ProDOS/16 version 1

Revised: 2/18/87
Security: Everyone

Apple IIGS: ProDOS/16 version 1

=====

With the Apple IIGS, Apple introduced an operating system for the IIGS, ProDOS/16, as ProDOS/16 version 1. ProDOS/16 version 1 was intended to implement the same call structure and many of the other features of ProDOS/16 in its final version.

Functioning as a shell around ProDOS/8 (the GS version of ProDOS 1.1.1), ProDOS/16 v1 has a user interface layer that mimics the external appearance and system call structure in its final version, but the actual operating system beneath the shell is ProDOS. Therefore, ProDOS/16 v1 is essentially restricted to functions that are available under ProDOS. Those parts of the final version that will involve fundamental revisions or extensions to ProDOS/8 are not available in ProDOS/16 v1. However, under ProDOS/16 v1, you will be able to:

- make ProDOS/16 system calls from anywhere in memory, using ProDOS/16 parameter blocks located anywhere in memory.
- make I/O data transfers to or from anywhere in memory.
- allow limited use of named devices in the VOLUME and GET_DEV_NUM calls. With ProDOS/8, you can only refer to a device by its volume name or its slot and drive number.
- support up to eight system prefixes; ProDOS/8 supports only one.

Apple Technical Communications

Tech Info Library Article Number:2142



Tech Info Library

AppleWorks 2.0: Using the Apple IIGS clock

Revised: 2/18/87
Security: Everyone

AppleWorks 2.0: Using the Apple IIGS clock

=====

To use the clock on the Apple IIGS with AppleWorks 2.0, make a backup copy of your AppleWorks disk and, with your newly made copy:

1. Delete the file "PRODOS" off of the AppleWorks Startup diskette.
2. Copy the file "P8" from the Apple IIGS System disk over to your copy of the AppleWorks Startup Disk. The "P8" file is in the subdirectory called "SYSTEM" on the Apple IIGS System Disk.
3. Rename the file "P8" to "PRODOS"
4. Startup your new AppleWorks disk to test it.

The date from the Apple IIGS clock should come up automatically now.

Apple Technical Communications

Tech Info Library Article Number:2143



Tech Info Library

Modems, PhoneNETs and Key Switch Telephones (20Feb87)

Revised: 5/25/89
Security: Everyone

Modems, PhoneNETs and Key Switch Telephones (20Feb87)

=====

Modems, PhoneNETs and Key Switch Telephones (20Feb87)

When a modem is connected through a PhoneNET AppleTalk Connector to a RJ11 wall jack, the modem can electrically short the PhoneNET signal lines (yellow & black wires). This tech note describes what's going on and how to configure the modem from shorting the PhoneNET signal lines.

Many modems have a switch, jumper, or command that causes it to connect the yellow and black wires in a telephone jack. This feature is provided so that modems being used with a key switch multi-line office PBX will provide the correct signals to indicate that the modem line is in use and should not be picked-up at another phone.

The following commands, switches or jumpers will disable the modem from shorting the two wires normally used by PhoneNET connectors. Doing the opposite will cause the modem to indicate that the line is in use on multi-line key switch telephone systems.

```
Hayes Smartmodem 2400: issue commands AT&J0 or AT&J
Hayes Smartmodem 1200: set switch 7 UP
      Avatek 1200: only uses two wires
US Robotics Password 1200: pull up jumper J1
US Robotics Courier 2400: set switch 7 UP
      Apple Modem 300/1200: pull up jumper J1
      Apple Personal Modem: (made in USA) cannot be disabled, cut the yellow
                           and black wires in the telephone extension cable.
      Apple Personal Modem: (made in Hong Kong) only uses two wires
```

If you know how to configure modems that are not on this list, please let us know. Our AppleLink address is D0119. We intend to keep this list updated.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

..TIL02145-Modems_PhoneNETs_and_Key_Switch_Telephones_20Feb87.pdf

Farallon Computing, Berkeley California

Tech Info Library Article Number:2145



Tech Info Library

FullPaint and LaserPrint

Revised: 2/20/87
Security: Everyone

FullPaint and LaserPrint

=====

2/6/87

LaserPrint

LaserPrint is a utility by A2S bundled with FullPaint that enhances the resolution of FullPaint documents for printing on the LaserWriter.

Error While Printing

Clicking 'Print Final' generates either an 'Image mask' error or Offending Command 0' within Postscript in the LaserWriter.

Correction - Use PRINT DRAFT instead of PRINT FINAL

In effect, PRINT FINAL is trying is trying to convert (smooth) documents into 300 dpi that are already 150 dpi or 300 dpi.
PRINT FINAL is reserved for future versions of PostScript.
PRINT DRAFT bypasses smoothing routines.

+ Clearing the error

Turn off the LaserWriter and turn it back on

Printed Documents Not Smooth

Smoothing of documents for LaserPrint must be done by hand in Fat Bits within FullPaint.

+ Correction

- After splitting into 4 or 16, go back to FullPaint

- Smooth all the documents in Fat Bits

..TIL02146-FullPaint_and_LaserPrint_(TA36766).pdf

Setting ruler units to pixels and having Mouse Spot on screen makes it easier to retain shapes that go from one document to another.

- Return to LaserPrint
- Queue up documents as per the grid
- Click PRINT DRAFT

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

FullPaint Technical Reference Guide

Tech Info Library Article Number:2146



Tech Info Library

FullPaint and MacPaint Compatibility

Revised: 2/20/87
Security: Everyone

FullPaint and MacPaint Compatibility

=====

2/19/87

Oftentimes users try to launch MacPaint documents from the desktop. If MacPaint is the maker, it will not find FullPaint. Following are the steps necessary to convert to FullPaint format documents.

1. Opening/Converting MacPaint Documents
 - MacPaint documents will not launch from the FullPaint desktop. They are looking for MacPaint.
 - 1.1. Open FullPaint
 - 1.2. Choose OPEN from the File menu
 - 1.3. Open the desired document
 - 1.4. Choose SAVE from the File menu

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

FullPaint Technical Reference Guide

Tech Info Library Article Number:2148



Tech Info Library

FullPaint and MacServe

Revised: 2/20/87
Security: Everyone

FullPaint and MacServe

=====

2/6/87

Following is a description of how to get FullPaint to run on a MacServe network.

RAM Caching must be set to 'Minimum' (10K) in the MacServe Manager

Open MacServe Manager

Choose STARTUP OPTIONS from the Settings menu

Set RAM caching to 10K (minimum)

Click the SET button

QUIT the MacServe Manager

Choose SHUTDOWN from the Special menu

512K Macintosh as the network server

FullPaint will NOT work under any circumstances on a 512K Mac that is being used as the server for the network. 512K net users may use FullPaint. MacServe software uses about 130K and FullPaint requires 384K just to launch.

For further information contact Ann Arbor technical support.
Our AppleLink address: D0294.
Our tech support phone lines: (805) 375-1491.

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

Ann Arbor Technical Support

Tech Info Library Article Number:2149



Tech Info Library

FullPaint Won't Boot?

Revised: 2/20/87
Security: Everyone

FullPaint Won't Boot?

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2/19/87

Sometimes an error message appears when the user tries to launch FullPaint saying that FullPaint requires 384K to run. This message may occur on both 512's and Plus'. Nothing is wrong with FullPaint or the Mac - the RAM cache needs to be turned off.

1. Turn RAM Cache off
 - RAM Caching in the Control Panel collides with the same address that FullPaint uses to open extra documents.
 - If Caching is on, FullPaint will NOT open under any circumstances.
- 1.1. Boot FullPaint
- 1.2. Choose CONTROL PANEL from the Apple menu
- 1.3. Click the OFF button for RAM Cache in lower right of window
- 1.4. Close the CONTROL PANEL
- 1.5. Click SHUTDOWN from the Special menu
- 1.6. Reboot

NOTE: Apple Computer, Inc. is not responsible for the contents of this article.

FullPaint Technical Reference Guide

Tech Info Library Article Number:2151



Tech Info Library

Macintosh: Feature Summaries for Finder 4.1, 5.4, and 5.5

Revised: 7/22/91
Security: Everyone

Macintosh: Feature Summaries for Finder 4.1, 5.4, and 5.5

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Article Created: 2 March 1987
Article Last Reviewed: 2 February 1991
Article Last Updated:

TOPIC -----

This article lists the features of Finder versions 4.1, 5.4, and 5.5.

DISCUSSION -----

Finder 4.1

These are the features added to Finder 4.1:

- Mini Finder
- Choose Printer Desk Accessory
- New Folder option
- Print Catalog
- Page Setup
- Shut Down
- About the Finder
- Up to 500 documents can be managed. (The previous limit was 130.)
- Icons can be moved, renamed, duplicated, or discarded from directories in any arrangement--view by icon, name, date, size, or kind.
- Directories are displayed in a text format (name, date, size or kind); a locked file displays a small padlock next to it.

- If the Finder encounters an error and can't reconstruct folders exactly, the top level of the folder hierarchy is always remembered (although the associated names are not).
- Open Dialog box matches user-entered characters.
- New combined Font/Desk Accessory Mover.

Finder 5.4

These are the features added to Finder 5.4:

- Trash can bulges when there's something in it.
- Two Get Info windows go side-by-side.
- Network Support:
 - Network files and volumes supported
 - Get privilege
 - Allows setting and viewing of access privileges
 - Shows folder names, location, user name, privileges, owner, group
 - Folder visual appearance indicates folder status.
- Option-drag operation copies an icon instead of moving it.
- Clean Up options: Clean Up Window, Clean Up Desktop, Clean Up Selection(s).
- Shutdown menu item initiates "housecleaning" on system, files, and desktop.
- Restart reboots the system.
- Control Panel accepts additional resources; Chooser 3.0 supports Zones.
- Size options added to RAM Cache.
- TeachText: Communicates undocumented changes; also a simple word processor.
- Startup Manager (SE and II only) Control Panel selection of any hard disk as Startup Device. Floppy insertion overrides startup selection.

Finder 5.5

These are the features added to Finder 5.5:

- Adjustment of window size from a larger screen when a window opens on a smaller screen.
- Resource errors less likely to cause a large desktop file.

- Dialogs and alerts centered on larger screens.
- Comments in the "Get Info" box copied properly when a file is duplicated.
- When boot disk is ejected, more icons (including small icons) are read into RAM, reducing the number of disk swaps required when changing disks.

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Tech Info Library Article Number:2152



Tech Info Library

ProDOS: Limited to 32 megabyte access on HD40SC and HD80SC

Revised: 9/29/90
Security: Everyone

ProDOS: Limited to 32 megabyte access on HD40SC and HD80SC

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This article last reviewed: 2 March 1987

A limitation of ProDOS prevents the Apple II from accessing more than 32 megabytes of storage space on an Apple Hard Disk 40SC or Apple Hard Disk 80SC. Those drives can be connected to an Apple II with an Apple II SCSI card.

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Tech Info Library Article Number:2153



Tech Info Library

SCSI Hard Disk Drives: Interleave Information (11/94)

Revised: 11/9/94
Security: Everyone

SCSI Hard Disk Drives: Interleave Information (11/94)

Article Created: 2 March 1987
Article Reviewed/Updated: 09 November 1994

TOPIC -----

This article pertains to the interleave of Apple external SCSI hard drives of all sizes.

DISCUSSION -----

To initilaize a SCSI hard disk drive you want to use on a Macintosh:

1. Always use Apple HD SC Setup.
2. Always initialize from the type of Macintosh the drive will be connected to. For example, if you wish to connect a Apple HD40 SC to a Macintosh Plus, initialize that hard disk with a Macintosh Plus.

If you want more than one type of Macintosh to access the SCSI hard disk, always initialize it from the slowest system for the best average performance. You must do this because, with Apple HD SC Setup, different types of Macintosh computers require a SCSI hard disk with a different interleave.

Computer	Interleave	relative speed
Macintosh II and later	1:1	fast
Macintosh SE	2:1	medium
Macintosh Plus	3:1	slow
Apple II	3:1	slow

Interleave is the ratio of consecutive sectors a CPU can read from or write to. This means that a Macintosh II is fast enough to read from or write to every consecutive sector, a Macintosh SE can only read every other sector, and the Macintosh Plus is only fast enough to read one in every three sectors. An Apple

II also has an interleave of 3:1. The Apple II can support a 3:1 interleave because the SCSI card has a 8K RAM buffer enabling it to buffer data until the CPU is ready for it.

Delays occur when you connect a "slower" Macintosh to a hard disk initialized on a "faster" Macintosh. For example, a hard disk intialized from a Macintosh II has more data on every consecutive sector than a Macintosh Plus can consecutively read, necessitating a full revolution of the platter before the Macintosh Plus can access the sectors it knows it missed. There's a delay of the revolution of only one or two sectors when a "fast" Macintosh accesses a hard disk intialized from a "slower" Macintosh.

For the change in interleave ratio between the Macintosh Plus and the Macintosh SE, there are three reasons: improved performance, hardware handshaking, and changes in SCSI firmware. First, the Macintosh SE performs more quickly, even though it uses the Macintosh Plus' 68000 processor running at the same speed. The Macintosh SE has a change in hardware design that allows the video circuitry 1 long word access to the RAM for every 3 made by the processor, as opposed to the 1 video access for every 1 made by the processor on previous Macintoshes. Next, hardware handshaking was implemented, allowing cleaner and faster communication between the Macintosh SE and the drive. Finally, the SCSI firmware was cleaned up and optimized for the SE. Previous bugs and patches caused the SCSI driver to not perform as quickly as it should.

Article Change History:

09 Nov 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:2154



Tech Info Library

Macintosh SE: SCSI ID Number for Internal Hard Disk

Revised: 8/7/92
Security: Everyone

Macintosh SE: SCSI ID Number for Internal Hard Disk

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Article Created: 2 March 1987
Article Last Reviewed: 7 August 1992
Article Last Updated:

TOPIC -----

What is the SCSI (Small Computer Systems Interface) ID number for the optional internal 20MB SCSI hard disk?

DISCUSSION -----

The SCSI ID number is 0 for the optional internal 20MB SCSI hard disk available in the Macintosh SE. The CPU uses ID number 7, so additional SCSI devices connected to the Macintosh SE may use ID numbers 1 through 6. You must be able to set numbers 1 through 6 on any more SCSI devices you connect to a Macintosh SE with the optional 20MB SCSI internal hard disk. The internal hard disk's ID number, set in firmware, can't be changed.

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Tech Info Library Article Number:2156



Tech Info Library

Apple Tape Backup 40SC: Description (Discontinued) (9/93)

Revised: 12/1/93
Security: Everyone

Apple Tape Backup 40SC: Description (Discontinued) (9/93)

Article Created: 2 March 1987
Article Reviewed/Updated: 27 September 1993

TOPIC -----

The Apple Tape Backup 40SC, a SCSI block-type device for Macintosh computers with a SCSI port, provides data storage on removable 40MB magnetic tape cartridges. The unit contains all of the electrical and mechanical subsystems required to support a 1/4-inch tape drive and provide an intelligent SCSI port.

DISCUSSION -----

The tape backup unit uses the Group Code Recording (GCR) method on DC 2000 tapes. Each tape lasts for approximately 5,000 passes.

The Apple Tape Backup 40SC application allows you to backup data by volume or by file to your Apple Tape Backup 40SC unit. If you wish to backup by file, you have the additional option to backup files specifically (at any one HFS level) or incrementally since the last volume backup or last file backup.

When you restore by volume, be sure to restore to a hard disk of the same capacity. Restore by Volume completely replaces the directory of the hard disk. Therefore, if you are restoring a volume that has the capacity of 20MB onto a 40MB hard disk, that 40MB hard disk will only have a storage capacity of 20MB until you reinitialize it.

The Tape Backup 40SC backs up hard disks that use the HFS file system: all Apple hard disks and most hard disks made by other manufacturers.

IMPORTANT NOTE: The bundled software included with the Tape Backup 40SC is Tape Backup 40SC 2.0.1. Tape Backup 40SC 2.0.1 is INCOMPATIBLE with System 7 and greater. Apple recommends using third party backup software with the Tape Backup 40SC. Two third party applications which work with the Tape Backup 40SC are Retrospect/Retrospect Remote from Dantz Development Corp. and FastBack Plus from Fifth Generation Systems.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

27 September 1993 -

1987-1993 Apple Computer, Inc.

Tech Info Library Article Number:2157



Tech Info Library

Apple Tape Backup 40SC: Cleaning guidelines

Revised: 5/4/88
Security: Everyone

Apple Tape Backup 40SC: Cleaning guidelines

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This article last reviewed: 2 March 1987

Your Apple Tape Backup 40SC unit requires very little maintenance. To clean the outside of the tape back up unit, just wipe it with a soft, damp cloth. To remove stains or dirt, add a drop of liquid detergent to the cloth and wipe the surface of the tape backup device.

It's time to clean the tape recording head when its surface looks dull (you can check this with a flashlight) or when it takes longer than normal to restore files or a volume from the tape backup unit. While similar to the heads on a hard disk, the ferrite-ceramic head of the tape unit may be cleaned as the heads are cleaned on a audio tape player or VCR. To remove debris and materials rubbed off from the tape surface, clean the head with a cotton swab soaked in isopropyl alcohol.

Caution: Never clean the head with a head cleaner that contains active or abrasive ingredients.

Tech Info Library Article Number:2158



Tech Info Library

Macintosh II, IIx, IIfx: Power On and Power Off

Revised: 7/24/92
Security: Everyone

Macintosh II, IIx, IIfx: Power On and Power Off

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Article Created: 2 March 1987
Article Last Reviewed: 21 July 1992
Article Last Updated: 24 July 1992

TOPIC -----

Is there any difference between turning on my Macintosh II by using the Power On key on the keyboard or by pressing the button in back? What about powering off? Should I always do a Shut Down or can I just hit the button in back?

DISCUSSION -----

The Macintosh II, Macintosh IIx, and Macintosh IIfx computers do not have a "hard" power on and power off switch. There are two ways to turn on the computer: you can use the keyboard's Power On key or the power button next to the sound jack on the back panel of the computer.

Pushing the Power On key or the power button sends a request to the logic board to begin the startup sequence. Either way may be used; they are equivalent.

To power off the Macintosh II, IIx or IIfx, use the Shut Down command from the Finder. Choosing Shut Down permits the computer to close files that are open, update the directory on each disk, and power off the system.

Alternatively, you may press the power button on the back panel of the Macintosh. Doing so will power off the system immediately and any work that wasn't saved will be lost. Do not remove AC power from the system unless neither Shut Down nor the power button produce results. Removing power is likely to result in lost or damaged files because there isn't enough time for the computer to update disk information.

To restart the computer with a different boot disk or to cause the computer to recognize newly installed devices, you may wish to reboot the

Macintosh by choosing Restart from the Special Finder menu. The Macintosh will save file information as needed, power off the system, and immediately startup the system again.

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Tech Info Library Article Number:2159



Tech Info Library

Macintosh 128K ROMs: RAM cache

Revised: 9/17/87
Security: Everyone

Macintosh 128K ROMs: RAM cache

Macintosh computers with 128K ROMs include a Control Panel feature, RAM cache, through which the user can select the cache memory size.

To reduce the time the program uses for accessing a disk, RAM cache acts as a special RAM buffer between applications and disk drives. Blocks of data are read from disk into program memory and RAM cache. The application can flush from program memory certain data that the program needs later on. At that time, the program submits a request for the data from blocks on disk. If the blocks are still in RAM cache, the data can go from the RAM cache blocks to the application heap, saving the significantly greater time needed for disk access.

Of course, the RAM cache will eventually run out of space as the number of blocks of data read from disk increases. When this happens, new blocks overwrite the blocks of data used least recently, keeping frequently used sections of code in RAM cache to speed up operation of the system.

The RAM cache is capable of tracking 36 different files and may occupy from 32K to 768K of memory. A RAM cache of moderate size will not only increase speed within an application but will also cause applications to be launched from and return to the Finder more quickly.

The optimum RAM cache size depends on (and the use of RAM cache is largely dictated by) how memory and disk segments of code are juggled by one or more of the applications in use. Rarely are applications larger than 300K on disk, so a RAM cache of a slightly smaller size should be sufficient - say 256K. If you are using a very large program, it might be of some benefit to increase the size of the cache to 384K. However, if the cache is much larger than that, the document and program segments in use will only have available the restricted memory that begins to degrade performance.

While applications accessing a LaserWriter increase the need for disk access, there is only a small benefit to be had in increasing the size of the cache in this situation. Most applications will continue to operate very efficiently with a RAM cache of 256K.

It is possible to set the size of the RAM cache so high that the program cannot operate in the remaining space. MacWrite 4.5, for example, must have a minimum of 144K of memory to run and print to the LaserWriter. Don't set the RAM cache so high that less than 144K remains for the program.

The AppleLink article "Switcher: Memory Configurations for LaserWriter printing" includes a table that lists the preferred memory size needed by applications under Switcher. This information can provide a guideline for safe RAM cache sizes. Note that many of the programs will take advantage of more memory if it is available. If RAM cache is set high enough to cut into that capability, the cache will not necessarily improve overall performance.

Remember also that active desk accessories require dedicated memory. Some combinations of applications and desk accessories will occupy so much memory that the size of the RAM cache must be severely limited.

Tech Info Library Article Number:2161



Tech Info Library

Apple High-Resolution Monochrome Monitor: Specs (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple High-Resolution Monochrome Monitor: Specs (Discontinued)

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Article Created: 6 March 1987
Article Reviewed/Updated: 29 September 1987

Picture tube:

- 12-inch diagonal
- Phosphor EIA Type P4 (white)
- High-contrast antiglare

Input signals:

- Video: RS-343 standard
- Sync: Composite sync, negative going TTL

User controls:

- Power switch (back panel)
- Brightness, with detent reference (right side)
- Contrast (right side)

Scanning frequencies:

- Horizontal: 35.000 kHz
- Vertical: 66.7 Hz

Video:

- Bandwidth: +/-3 dB to 22 MHz
- Resolution: 640H by 480V pixels
- Active display area: Adjusted at the factory to produce an active video area of 213 mm horizontal by 160 mm vertical. The remainder of the screen is used for the dark border around the display.

Weight:

--7.7 kg (17.0 lbs) approximately

Power requirements:

--Watts: 40 watts Maximum, all line conditions

--Input voltage: 85-270 Vrms, self-configuring

--Frequency: 50-60 Hz

Environmental Requirements:

--Operating ambient temperature: 10 to 40 deg C (50 to 104 deg F)

--Operating humidity: 90% maximum, non-condensing

--Operating altitude: 10.000 feet maximum

Fuse protection:

--The monitor contains internal power line fuse protection. This fuse should be replaced with the same type by a qualified service technician.

Warm-up time:

--20 minutes to meet all specifications

Input signal jack pin assignments:

DA-15 style connector

Pin	Function
1	(not usde)
2	(not usde)
3	Composite TTL sync
4	Composite sync return
5	Black and white video
6	Video return
7	(not used)
8	(not used)
9	(not used)
10	(not used)
11	(not used)
12	(not used)
13	(not used)
14	(not used)
15	(not used)

Shell Shield ground

Physical specifications:

Height	10.0 in.	255 mm
Width	12.2 in.	310 mm
Depth	14.4 in.	365 mm

The brightness and contrast controls are located on the right side as the user faces the monitor. The center of the brightness control knob is 82.0 mm from the top of the monitor, and the center of the contrast control knob is 40 mm from the center of the brightness control knob. The control knob diameter is 28.5 mm, and both controls are set into the back side of the front bezel and hidden from view when the user is sitting in front of the monitor.

The power switch is on the back of the monitor, located 212.5 mm down from the top and 336.4 mm from the left side as you look at the back of the monitor. The power switch opening is 21.23 mm wide by 11.0 mm high.

Ventilation for the monitor should be designed so that an adequate air flow is maintained at all times. The enclosure should allow for a heat dissipation of 136.8 BTUs at a temperature not to exceed 40 C or 104 F.

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Tech Info Library Article Number:2163



Tech Info Library

Apple Tape Backup 40SC: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Tape Backup 40SC: Specifications (Discontinued)

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Article Created: 6 March 1987

Following are the specifications for the Apple Tape Backup 40SC (part # M2640):

I. GENERAL SPECIFICATIONS

A. Storage Media

1. Type: 0.25-inch magnetic tape cartridge (DC 2000)
2. Length: 205 ft (62.5 meters)
3. Width: 0.25 in (6.35 mm)
4. Lifespan: 5,000 passes

B. Data Capacity

1. Total capacity: 38.5 MB
2. Encoding method: GCR (Group Code Recording)
3. Flux density: 12,500 ftpi
4. Bit density: 10,000 bpi (GCR)
5. Block size: 8192 bytes (8320 w/ 128 bytes of system data appended)
6. Number of tracks: 24 serpentine
7. Track width: 8 mils (.020 mm) write
5 mils (.0125 mm) read
10 mils (.025 mm) spacing

C. Speed and Timing

1. Tape speed: 60 ips R/W; 90 ips search/rewind
2. Drive data transfer rate: 600 Kb/s noninterleaved (uncorrected raw); 400 Kb/s noninterleaved (fully corrected)
3. SCSI data transfer rate:
 - avg. for continuous tape motion: 21.3 Kb/s corrected, noninterleaved
 - maximum burst rate: 500 Kb/s
4. Rewind time: 27 seconds, end-to-end (nominal)

5. Start/Stop time: 150 ms (nominal)
6. R/W head position time: 250 ms track-to-track

II. MECHANICAL SPECIFICATIONS

A. Dimensions

1. Height: 3.07 in (78 mm)
2. Width: 9.7 in (246 mm)
3. Depth: 10.5 in (266 mm)
4. Weight: 7.3 lb (3.3 Kg)

B. Temperature

1. Operating: 5 to 45 deg C (cartridge limited)
2. Shipping/Storage: - 40 to 65 deg C (hardware only)

C. Humidity

1. Operating: 20 to 80% (noncondensing)

D. Altitude

1. Operating: tested to 15,000 ft
2. Non-Operating: tested to 50,000 ft

III. ELECTRICAL SPECIFICATIONS

A. Input power

1. Line voltage: 85 to 270 VAC, 47 to 64 Hz
2. Power dissipation: 15W

B. Data interface: Two 50-pin SCSI ports

Copyright 1987, 1992, Apple Computer, Inc.

Tech Info Library Article Number:2164



Tech Info Library

AppleColor High-Resolution RGB Monitor: Specifications

Revised: 7/31/92
Security: Everyone

AppleColor High-Resolution RGB Monitor: Specifications

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Article Created: 6 March 1987
Article Last Reviewed: 12 December 1991
Article Last Updated: 12 December 1991

This article describes the specifications of the AppleColor High-Resolution RGB Monitor.

Picture tube:

- 13-inch viewable diagonal
- .25mm aperture grill pitch Crinitron CRT

Input signals:

- Red, green, and blue video signals using RS-343 standard.
- Composite sync., negative going TTL.

User controls:

- Power switch (back panel)
- Degauss switch (back panel)
- Brightness, with detent reference (right side)
- Contrast (right side)
- V-twist misconvergence adjustment (back panel)
- H-stat misconvergence adjustment (back panel)

Scanning frequencies:

- Horizontal: 35.000 kHz
- Vertical: 66.7 Hz

Video:

- Bandwidth: +/-1.0 dB to 23 MHz
- Resolution: 640 horiz. pixels by 480 vert. lines
- Active display area: Adjusted at the factory to produce an active video area of 235 mm horizontal by 176 mm vertical. The remainder of the screen is used for the dark border around the display.

Weight:

- 34 lbs. including video cable and power cord.

Power requirements:

- Watts: 160 watts maximum
- Input voltage: 85-270 Vrms, self-configuring
- Frequency: 50-60 Hz

Environmental requirements:

- Ambient operating temperature: 10 to 35 deg C (50 to 95 deg F)
- Operating humidity: 90% maximum, non-condensing
- Operating altitude: 10.000 feet maximum

Fuse protection:

- The monitor contains internal power line fuse protection. This fuse should be replaced with the same type by a qualified service technician.

Warm-up time:

- 20 minutes to meet all specifications

Input signal jack pin assignments:

DA-15 style connector

Pin	Function
1	Red video return
2	Red video
3	Composite TTL sync
4	Composite sync return
5	Green video
6	Green video return
7	(not used)

8	(not used)
9	Blue video
10	(not used)
11	(not used)
12	(not used)
13	Blue video return
14	(not used)
15	(not used)
Shell	Shield ground

Apple Technical Communications

Tech Info Library Article Number:2165



Tech Info Library

Hard Disk 40SC and Hard Disk 80SC: Specs (Discontinued 5/93)

Revised: 9/14/93
Security: Everyone

Hard Disk 40SC and Hard Disk 80SC: Specs (Discontinued 5/93)

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This article last reviewed: 29 March 1988

Following are the specifications for the Apple Hard Disk 40MB (part number M2644) and the Apple Hard Disk 80MB (part number M2688):

I. Capacity	HD 40SC	HD 80SC
A. Data capacity: (with HD Setup v1.5)	39,333K (formatted)	76,869K (formatted)
B. Disk diameter:	5 1/4"	5 1/4"
C. Data Surfaces:	4	6
D. Heads per surface:	1	1
E. Bytes per block:	512	512
F. Logical allocation block size:	1,024	1,536
G. Total disk blocks:	78,246	156,370
H. Sectors per track:	32	32

II. Characteristics

A. Avg. seek time:	30 msec	30 msec
B. Transfer rate:	up to 1.25MB	up to 1.25MB
C. Rotational speed:	3,662 rpm	3,662 rpm
D. Startup time:	13 sec	13 sec
E. Spin-down time:	18 sec	18 sec

III. Electric Requirements

A. Line voltage:	85 to 270 V AC	85 to 270 V AC
B. Frequency	47 to 64 Hz	47 to 64 Hz
C. Max. power:	60 watts	60 watts

IV. Environment Requirements

A. Operating temp:	50 to 104 deg F (10 to 40 deg C)	50 to 104 deg F (10 to 40 deg C)
B. Storage temp:	32 to 133 deg F (0 to 50 deg C)	32 to 133 deg F (0 to 50 deg C)
C. Relative humidity:	20 to 80% (noncondensing)	20 to 80% (noncondensing)
D. Altitude:	1000 to 10000 ft. (304 to 3048 m)	1000 to 10000 ft (304 to 3,048 m)

V. Size and Weight

A. Height:	3.1 in (78.5 mm)	3.1 in (78.5 mm)
B. Width:	9.7 in (24.6mm)	9.7 in (24.6mm)
C. Depth:	10.5 in (266 mm)	10.5 in (266 mm)
D. Weight:	9 lbs (4 Kg)	9 lbs (4 Kg)

VI. Interface: SCSI, 50-pin interface

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Tech Info Library Article Number:2166



Tech Info Library

Macintosh SE: Specifications (Discontinued 10/90)

Revised: 9/27/93
Security: Everyone

Macintosh SE: Specifications (Discontinued 10/90)

Article Created: 16 September 1987
Article Last Reviewed: 6 August 1992

TOPIC -----

Following are the specifications for the Macintosh SE (2 floppies) and the Macintosh SE hard disk 20MB and 40MB (1 floppy, one 20 or 40 megabyte hard disk).

DISCUSSION -----

PROCESSOR

-MC68000, 32-bit internal architecture, 7.8336 MHz clock frequency

MEMORY

-256K ROM, 1 MB RAM (expandable to 4MB), 256 bytes of user-settable parameter memory

DISKS

- Capacity: 800K on double-sided 3.5-inch disks; 20MB (20.2 actual) or 40MB (42.1 actual) on optional 3-1/2" hard disk
- Bytes per block (20MB or 40MB hard disk): 512
- Total disk blocks:
 - 20MB hard disk: 39,360
 - 40MB hard disk: 82,150
- Avg. access time:
 - 20MB hard disk: 89 msec
 - floppy: 36 msec
- Avg. seek time:
 - 20MB hard disk: 65 msec
 - 40MB hard disk: 30 msec
- Transfer rate, max.:
 - 20MB hard disk: 1.25MB per second
 - 40MB hard disk: 1.25MB per second
 - floppy: 500K-bits per second

- Shock limit:
20MB hard disk: 40 G's
- Noise level:
20MB hard disk: 42 decibels-measured at seated operating distance

SCREEN

- 9-inch diagonal, 512-pixel by 342-pixel high-resolution bit-mapped display

INTERFACES

- Two Apple DeskTop Bus connectors
- Two RS-232/RS-422 serial ports
- SCSI interface
- External disk port
- Sound port for external audio
- 96-pin expansion connector (CPU bus connector)

SOUND

- 4-voice sound with 8-bit digital-analog conversion using 22 KHz sample rate

KEYBOARD

- Apple Keyboard (or Apple Extended Keyboard)

MOUSE

- Mechanical tracking, optical shaft encoding 90 pulses per inch (3.54 pulses per mm) of travel

CLOCK/CALENDAR

- CMOS custom chip with 7-year lithium battery

FAN

- 0 CFM Cross Flow

ELECTRICAL SPECIFICATIONS

- Input line voltage: 120/240 Volts AC, RMS
- Frequency: 47 to 63 Hz
- Power: 100 Watts maximum

SIZE AND WEIGHT

	Weight	Height	Width	Depth
Main Unit	17-22 lbs* 7.7-9.5 kg*	13.6 in 345 mm	9.69 in 244 mm	10.9 in 276 mm
Apple Keyboard	2 lbs 4 oz 1.0 kg	1.75 in 44.5 mm	16.5 in 418.3 mm	5.6 in 142 mm
Mouse	6 oz .17 kg	1.1 in 27.9 mm	2.1 in 53.3 mm	3.8 in 96.5 mm

* Weight varies depending on optional installed hard disk or second

3.5-inch drive.

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 deg F to 104 deg F (10 deg C to 40 deg C)
- Storage temperature: -40 deg F to 116.6 deg F
(-40 deg C to +47 deg C)
- Relative humidity: 5% to 95% (noncondensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)

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Tech Info Library Article Number:2167



Tech Info Library

AppleColor High-Resolution RGB: Degauss adjustments

Revised: 8/31/87
Security: Everyone

AppleColor High-Resolution RGB: Degauss adjustments

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The Degauss switch corrects small patches of color distortion that can occur on the screen. You should press the Degauss switch if, for example, you notice that a small area in an all-red field of the screen seems to be slightly off color, say, with blue. This situation is more likely if you've left the monitor on for a long time or if you moved the monitor while the power was on.

The switch is located just below the On-Off button on the back panel. Pressing the Degauss switch makes the screen flicker for a few seconds as the monitor corrects the colors in your display. When the image steadies, the colors should be correct.

Tech Info Library Article Number:2168



Tech Info Library

LaserWriter Driver 3.3: Enhancements and fixes

Revised: 3/9/87
Security: Everyone

LaserWriter Driver 3.3: Enhancements and fixes

=====

LaserWriter Version 3.3 and LaserPrep Version 3.3 are on the disks for the Macintosh System Tools Version 1.0 and Utility Version 1.0 that ship with the Macintosh SE. Outlined below are some of the differences, enhancements and problem fixes, between these LaserWriter drivers and the older driver, 3.1, and earlier. Not listed are fixes to several obscure, minor, and cosmetic problems.

- A. The driver resets (software power-cycle) the LaserWriter if it was initialized with an incompatible driver version.
- B. There's a fix to a problem encountered in all applications, most notably in Microsoft Excel: bytes were randomly written in memory, causing some programs to crash when printing.
- C. Bitmap printing has been completely changed to improve appearance and performance.
 - 1. There's an added routine, similar to smoothing, which pre-stretches bitmaps to the required dimensions before imaging; this allows bitmaps to print much faster.
 - 2. Clipping problems in bitmaps are gone.
 - 3. Random garbage in stretched bitmaps is gone.
 - 4. "Stitching" between bands of adjacent bitmaps has been greatly improved to eliminate hairline gaps.
- D. Bitmap fonts have been changed for greater speed. Bitmap fonts above 36 points now download and print correctly and print faster in a higher quality.
- E. There's a fix to a long-standing bug in the orientation of rotated QuickDraw patterns on various types of printers.
- F. Fonts on PostScript printers are no longer pre-coordinated at printer

initialization time but only as they are needed. This frees room for downloading other fonts and doesn't require spoolers to know anything about font coordination.

- G. Because they required more than 30 seconds to generate data for the printer, some applications were aborted for insufficient activity on the network. This timeout has been extended to 5 minutes.
- H. If a PostScript error occurs, a print error is now generated by the driver to tell the application to stop printing. The error message stops the application from having to generate any more document data which the driver would ignore anyway.
- I. Font substitution is now disabled in all cases where fractional pixel widths have been enabled. Disabling font substitution fixes a bug encountered by applications that use the fractional pixel width mode, such as WriteNow, Word 3.0, PageMaker 2.0, and MicroSoft Works.

Previously, single-font paragraphs could appear printed with different lines in the non-substituted form as well as the substituted font.

- J. Font downloading now occurs whenever it might improve output or if the font might not be available on the printer. This solves the problem on some 3rd party spoolers which sometimes did not have the font available.
- K. Some minor problems with dialog boxes were fixed along with some cosmetic changes made to dialog boxes and alert windows.
- L. Bitmaps one pixel wide can be printed.
- M. Zero width characters are now printed correctly. This fixes a bug where some characters in fonts such as Music and other symbols could not be printed.
- N. Cover sheets now default to print in Helvetica instead of Courier.
- O. Document names sometimes defaulted to the last document printed. Now, if a document name is not known, "unknown" appears in the dialog box.
- P. There's a fix to a bug in printing circles and ovals where some of these objects, when rendered extremely narrow or flat, had gaps at the beginning and end joints.
- Q. Sometimes the driver had difficulty printing when the amount of memory available in the Macintosh was low. This caused unrepeatable crashes with strange result codes. Though this problem cannot be detected or eliminated in all cases, the fix has made the situation significantly more robust and reliable.

-- If enough memory is not available for printing, the driver will try to reduce its memory requirements enough to print. If it cannot, it will abort the printing altogether. It will print slowly or not at all, but at least it won't crash.

- R. A problem in the QuickDraw comment to include PostScript in a handle has been fixed so that the QuickDraw comment now works correctly.
- S. If the printer is reinitializing, the driver will now wait until the printer is available.
- T. Another alert for spoolers was added. If the remote printer is actually a spooler rather than a printer, initialization of the printer is not permitted.

Apple Technical Communications

Tech Info Library Article Number:2169



Tech Info Library

Apple Desktop Bus: Maximum Number of Devices

Revised: 7/26/89
Security: Everyone

Apple Desktop Bus: Maximum Number of Devices

=====

This article last reviewed: 6 May 1989

The Apple Desktop Bus, or ADB, is available on the Apple IIGS, Macintosh SE and Macintosh II for connecting keyboards, mice and other input devices to the system. The Apple Desktop Bus protocol will accomodate up to 16 devices.

ADB devices are typically daisy-chainged together. Some devices may contain enough internal resistance to limit the number of devices you can connect. For instance, a maximum of 4 Apple Keyboards or Apple Extended Keyboards plus 1 mouse may be daisy-chained together before increases in DC resistance result in drops below TTY levels. It is possible to connect 5 Apple IIGS ADB keyboards and a mouse together before resistance increases to where input via some devices will be "lost". Look out for other ADB devices that may have similar traits.

If input isn't reaching the CPU, break the chain into two chains (supported by 2 ADB ports on the Macintosh SE and Macintosh II).

An Apple IIGS has only one ADB port, so if input isn't reaching the CPU, power off the GS, connect the particular ADB input device or devices you wish to use, then connect a limited number of other ADB devices, power up, and try again. Alternatively, "Y" connectors could help create additional chains and reduce the number of devices on any one of the those chains.

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Tech Info Library Article Number:2170



Tech Info Library

Apple DeskTop Bus: Pinouts

Revised: 9/11/92
Security: Everyone

Apple DeskTop Bus: Pinouts

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Article Created: 9 March 1987

Article Change History

09/07/92 - REVIEWED
• For technical accuracy
09/07/92 - RETITLED
• To make article more general.

Pin	Names	Meaning
1	Data	Bi-directional data bus for input and output
2	Reserved	
3	Power	+5 volts from the CPU
4	Return	Ground from the CPU

There are two identical Mini DIN-4 Ports.

4	3
2	1

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Tech Info Library Article Number:2172



Tech Info Library

Apple Tape Backup 40SC: Priority number

Revised: 5/4/88
Security: Everyone

Apple Tape Backup 40SC: Priority number

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This article last reviewed: 9 March 1987

SCSI device users have available eight priority numbers, 0 through 7. The Macintosh is always assigned number 7. An internal hard disk is always assigned 0. That leaves 1 through 6 to assign to your tape backup unit or 0 thru 6, if you don't have an internal SCSI hard disk.

Though the manual recommends you use priority 1 for the Tape Backup 40SC and connect it to the last SCSI device in the chain, you can use any of the other priority numbers if they are not already used. You may place the tape backup unit anywhere else in the SCSI bus as long as it is properly terminated. For a more complete description on how to connect SCSI devices, refer to the manual, "The Apple SCSI Cable System."

Tech Info Library Article Number:2174



Tech Info Library

Apple PC 5.25 Disk Drive: Specifications (Discontinued)

Revised: 9/10/93
Security: Everyone

Apple PC 5.25 Disk Drive: Specifications (Discontinued)

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Description

5.25" half height, double-sided, double-density

Case Color Platinum
Dimensions 162 wide x 72 high x 207 long millimeters
Weight 4.78 pounds

Specifications

Encoding Method	MFM
Unformatted Capacity	
per Drive	500 KBytes
per Surface	250 KBytes
Formatted Capacity (Data, 16 sectors)	
per Drive	327.68 KBytes
per Surface	163.84 KBytes
Data Transfer Rate	250 Kbits/sec
Access Time	
Track to Track	4 msec
Average	53 msec
Settling	15 msec
Disk Rotational Speed	300 RPM
Track Density	48 tpi
Number of Tracks	80
Number of R/W Heads	2
Spindle Motor	Brushless DC Direct Drive

Apple Technical Communications

Tech Info Library Article Number:2176



Tech Info Library

Apple PC 5.25 Drive: Not Compatible with MS/DOS Computers

Revised: 12/16/92
Security: Everyone

Apple PC 5.25 Drive: Not Compatible with MS/DOS Computers

=====

Article Created: 9 March 1987

12/15/92 - RETITLED
• To clarify the article

TOPIC -----

Can you attach an Apple PC 5.25 Drive to a MS/DOS computer?

DISCUSSION -----

No, you cannot attach an Apple PC 5.25 Drive to a MS/DOS computer.

First, MS/DOS computers do not supply power to an external floppy drive. The Apple PC 5.25 drive requires the computer to supply power to it, since it does not have its own power source.

Also, the Apple PC 5.25 Drive requires there be a control line for the signal "disk insert". MS/DOS computers put a different signal on this control line.

Apple Technical Communications

Tech Info Library Article Number:2177



Tech Info Library

Macintosh II PC 5.25 Floppy Disk Controller Card: Description

Revised: 5/11/89
Security: Everyone

Macintosh II PC 5.25 Floppy Disk Controller Card: Description

=====

The Floppy Controller card is capable of interfacing up to 4 drives, although the cable limits the actual connection of only one drive. User installable with instructions in the Apple PC 5.25 " Drive Users Guide, the card interfaces the Apple PC 5.25" Drive to the Macintosh II through any of the slots on the Macintosh II motherboard.

Through software, you can select two recording formats: IBM 3740 Single Density Format and IBM System 34 Double Density Format. The controller allows for multi-sector transfer capability; up to 3 sectors can be read/written in one read/write operation.

Full IBM PC/AT data format compatibility allows the IBM PC/AT to read disks formatted and written by the Macintosh II. The Macintosh II is also able to read data files created on the IBM PC/AT, but the controller does not give the Macintosh II the ability to run programs written for the IBM PC/AT.

Key Components

Address/Data Bus Transceivers: These 74LS640's buffer the internal address/data bus of the controller from the Nubus address/data bus.

AddressCounters: These 74LS169 counters latch the RAM/ROM address from the Nubus during RAM/ROM reads or writes and count down the RAM address during DMA transfers to or from the disk.

RAM: This is the 2048 x 8 sector buffer RAM. Data to be transferred to or from the disk is placed here by the CPU before such transfers are initiated.

ROM: This is the Nubus configuration ROM. The Nubus slot manager accesses this ROM on power-up to determine the controller's type and modes of access.

Slot Address Decoder PAL: The Pal20L10 determines if the controller's slot address is selected. It uses the signal START* and address decoding to compare if the upper nibble of the address is an x'F and if the address lines A[24-27]/D[0-3]* compare with the hard wired slot ID address.

State Machine PAL: This PAL20X10 generates the timing for programmed I/O and internal DMA transfers on the controller.

State Decoder PAL: The state number is decoded by this PAL to produce control signals needed by the various parts of the controller.

Control/Status Driver: The control driver places the signals ACK*, TMO* and TM1* on the Nubus at the end of a Nubus access of the controller. The status driver allows the signals, disk controller interrupt, internal operation pending, and disk in place to be read by the CPU.

NEC 765A Floppy Disk Controller IC: This LSI chip contains the circuitry necessary to interface to the Apple PC 5.25" Drive. Coupled with the companion NEC 9201 chip, it handles all operations with the drive including read and write data, formatting, seeking, sensing drive status, and recalibrating.

NEC 9201 Floppy Disk Interface IC: This chip provides drive and timing support to the NEC 765A IC. It contains write precompensation and phase-locked loop circuitry.

Disk Interface Driver: The disk interface driver buffers and provides current drive for several signals coming from and going to the disk. It also is used as a multiplexer for four signals: FLT/TRO, WP/TS, FR/STP, and LCT/DIR.

16 MHz Crystal Clock Oscillator: This oscillator provides a 16 MHz clock to the NEC 9201 for use in the drive interface.

Nubus Interface Logic

The controller interfaces to Nubus via several drivers and PAL's. The address/data bus is tied to four 74LS640 transceivers which invert each bit. Control signals such as START*, the slot identification bits ID[0-3]*, and the mode bits TM[0-1] are used to time data transfers to and from Nubus.

Status information is passed to Nubus along with the control signal ACK* by the status driver using Programmed I/O operations. DMA operations are controlled by the state machine and state machine decoder PAL's. All data transfer operations are initiated and controlled internally.

Connectors/Cables/Pinouts

Controller Card to Drive: A cable composed of a 37 pin male connector on one end and a 34 pin edge connector and 4 pin DC connector on the other. A 20 pin cable makes the interconnection. Pinouts for the 37 pin, 34 pin, and 4 pin connectors correspond to the pinouts of the Apple PC 5.25" Drive.

Power Requirements:

Operating Voltages:

+ 5V +/- 5%
+12V +/-10%

Maximum Ripple:

@ + 5V 50 mV peak to peak

@ +12V 100 mV peak to peak

Operating Current (Apple PC 5.25" Drive Attached):

@ + 5V 3.3A (max)/1.9A (typ)

@ +12V 0.9A (max)/0.25A (typ)

Apple Technical Communications

Tech Info Library Article Number:2178



Tech Info Library

Macintosh SE PC 5.25 Floppy Disk Controller Card: Description

Revised: 8/7/92
Security: Everyone

Macintosh SE PC 5.25 Floppy Disk Controller Card: Description

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Article Created: 9 March 1987
Article Last Reviewed: 7 August 1992
Article Last Updated:

TOPIC -----

This article describes the Macintosh SE PC 5.25 Floppy Disk Controller Card.

DISCUSSION -----

The Floppy Controller card is capable of interfacing up to four drives though the cable limits actual connection of only one drive. Installed by the dealer, the card interfaces the Apple PC 5.25" Drive to the Macintosh SE through the bus expansion slot on the Macintosh SE logic board

Through software, you can select two recording formats: IBM 3740 Single Density Format and IBM System 34 Double Density Format. The controller allows for multi-track and multi-sector transfer capability, permitting the entire disk to be read/written in one read/write operation.

Full IBM PC/AT data format compatibility allows the IBM PC/AT to read disks formatted and written by the Macintosh SE. The Macintosh SE is also able to read data files created on the IBM PC/AT but does not give the Macintosh SE the ability to run programs written for the IBM PC/AT.

Key Components

Control PAL's: These three 20 pin PAL's provide the address decoding and timing control for the disk controller. All controlling firmware and sector buffering RAM exists in the Macintosh SE. The control registers are mapped into the Macintosh SE's address space from \$800000-\$8FFFFFF.

Data Bus Transceivers: These 74LS245 buffers provide multiplexing control and sufficient current drive to and from the controller onto the data bus.

During high byte transfers, data is placed on D8-15; during low byte transfers, the data goes on D0-7.

Status Driver: The status driver allows the signals disk controller interrupt and diskette change to be read by the Macintosh SE.

NEC 765A Floppy Disk Controller IC: This LSI chip contains the circuitry necessary to interface to the Apple PC 5.25" Drive. Coupled with the companion NEC 9201 chip, it handles all operations with the drive including read and write data, formatting, seeking, sensing drive status, and recalibrating.

NEC 9201 Floppy Disk Interface IC: This chip provides drive and timing support to the NEC 765A IC. It contains write precompensation and phase locked loop circuitry.

Disk Interface Driver: The disk interface driver buffers and provides current drive for several signals coming from and going to the disk. It also is used as a multiplexer for four signals: FLT/TRO, WP/TS, FR/STP, and LCT/DIR.

16 MHz Crystal Clock Oscillator: This oscillator provides a 16 MHz clock to the NEC 9201 for use in the drive interface.

AMD 9516 Dual Channel DMA Controller and DMA Control PAL: The 9516 DMA controller handles all DMA data transfer operations between the NEC 765A and the Macintosh SE memory.

DMA Address and Data Multiplexing Logic: The 9516 has a multiplexed address and data bus. The multiplexing logic is used to demultiplex this bus. The logic consists of two 74LS373's and two 74LS245's.

Interface Logic

The controller interfaces to the 68000 bus via several drivers and PAL's. The timing of the 68000 bus is followed by the controller whether in PIO or DMA transfers.

All control information is passed to the disk controller and all status information is transferred to the host using Programmed I/O transfers. All data information is transferred to or from the host using DMA transfers.

Back panel to Drive: A cable composed of a 37 pin male connector on one end and a 34 pin edge connector and 4 pin DC connector on the other. Pinouts for the 37 pin, 34 pin, and 4 pin connectors correspond to the pinouts of the Apple PC 5.25" Drive.

Power Requirements:

Operating Voltages:

+ 5V +/- 5%
+12V +/-10%

Maximum Ripple:

@ + 5V 50 mV peak to peak

@ +12V 100 mV peak to peak

Operating Current (Apple PC 5.25" Drive Attached)

@ + 5V 3.3A (max)/1.9A (typ)

@ +12V 0.9A (max)/0.25A (typ)

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Tech Info Library Article Number:2179



Tech Info Library

Macintosh II Managers: Changes From Macintosh Plus ROMs

Revised: 7/20/92
Security: Everyone

Macintosh II Managers: Changes From Macintosh Plus ROMs

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Article Created: 11 March 1987
Article Last Reviewed: 20 July 1992
Article Last Updated:

TOPIC -----

A number of existing managers in the Macintosh Plus ROM have been expanded for use in the Macintosh II. This article provides a short description of these managers and the changes.

DISCUSSION -----

Font Manager

Fonts in ROM now include Monaco 9, Geneva 9 and 12, as well as Chicago 12. There are also 4 and 8-bit versions of Chicago 12 and a 4-bit Geneva 9 font. No new data structures are defined within the Font Manager, but the `fontType` structure has been modified to support color fonts. It now includes a field that indicates the depth of the font.

Window Manager

A new data type, `CWindowRecord`, has the same structure and size as the old `WindowRecord`, except the field `port` is now defined as a `CGrafPort` rather than the old `GrafPort`. Two other new types related to `CWindowRecord` are `CWindowPtr` and `CWindowPeek`. Another new data structure, `AuxWinRec`, stores the necessary information for drawing windows in color. Its primary function is to hold the handle to the window's individual color table.

Control Manager

The Control Manager has been expanded to include color support with the definition of a new data structure, `AuxCtlRec`, and its corresponding resource type `cctb`. These structures define a color table associated with the control and determine the border color, fill color, and text color for

the control.

Menu Manager

The Menu Manager now uses scrollable menus instead of QuickDraw to display menu text. Scrollable menus means that scrolling is possible with an up or down arrow at the top or bottom of the menu. The Menu Manager now implements up to five levels of hierarchical menus

A new data structure, MbarProc, holds information pertaining to the menu bar. Menu items themselves have been disassociated from the menu bar definition to permit hierarchical menus to be handled more easily.

Color menus are implemented through the Menu Color Information Table. A distinct MCInfoRec may exist for the menu bar and for each menu title and item. Within each MCInfoRec, you find RGBColor information for the item in question and its background color.

TextEdit

A TextEdit record may now have style information associated with it. A handle to a TStyleRec structure can replace the TextEdit fields txFont and txFace. This style record holds an array of "runs", each of which may use a different text style (font, face, size, color, line height, and font ascent).

Style information can be passed from TextEdit to the application through a TextStyle record, which includes font, face, size, and color information. When the scrap is used to cut and paste style information, a new scrpSTElement type is used to transfer style and start character information.

Dialog Manager

Two new resource types, actb and ictb, add color and style information to alerts and dialogs, and dialog item lists. These resources are associated with a dialog or alert by assigning them the same resource ID as the parent ALRT or DITL.

International Utilities Package

The International Utilities Package has been extended to support the new Script Manager. It now includes multiple resources within a given script, and new date and time formatting options. International scripts with non-Roman sorting rules may specify the details via hooks in this package, so that the many diacritical forms of the same letter may be treated for sorting purposes as equals regardless of diacritical marks, accents, umlauts, circumflexes, etc., e.g. a umlauted can be equated with a accented.

File Manager

The Macintosh II File Manager can be used with an external file system

other than the traditional Macintosh code.

Print Manager

The Printing Manager has added one call to ROM: the print glue file (called PRLINK or PRSCREEN) has moved from the system file into the Macintosh II ROM.

Device Manager

The Device Manager has been modified to include support for NuBus cards, both as boot devices, and through the interrupt process.

The Device Manager gains control of the Macintosh II bootup process shortly after video and boot drivers have been initialized. If the Startup Device has been set to one of the NuBus slots, and the configuration ROM found there contains boot code, the Device Manager will pass control to that NuBus device. If the Macintosh II continues its boot process from a Macintosh disk, the Device Manager will search all NuBus slots, looking for device drivers in the configuration ROM of each NuBus device. Any that are found there are installed into the system heap and initialized for later use by an application.

The Device Manager is the software interface for tracking the interrupt queue, determining the priority level that is proper to address, and, if necessary, posting an error when the interrupt cannot be serviced.

SCSI Manager

The Macintosh II and Macintosh SE ROMs implement an SCSI "blind" transfer mode. The types of SCSI drives used in these computers may support hardware handshaking, when blind transfer mode will result in faster transfer rates.

AppleTalk Manager

The AppleTalk Manager supports several changes to its code to assist servers, workstations, and spoolers:

- The node number of the computer may be requested in the server range.
- Packets may be sent to one's own node, or through a client-specified socket.
- The Name Binding Protocol can now accept multiple active requests.
- An Echo Protocol and an AppleTalk Session Protocol have been added.
- An Extended Protocol Package (XPP) combines portions of the AppleTalk Session Protocol and AppleTalk Filing Protocol.

Vertical Retrace Manager

The Vertical Retrace Manager has been changed slightly to take into account the flexible video interface on the Macintosh II. Since certain tasks on the Macintosh depend on the vertical retrace interrupt that occurs on the Macintosh 60 times every second, the Macintosh II must continue to supply that signal. The Vertical Retrace Manager can attach tasks to that pseudo VBL signal.

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Tech Info Library Article Number:2182



Tech Info Library

Macintosh II: Color capabilities

Revised: 7/1/92
Security: Everyone

Macintosh II: Color capabilities

=====
Article Created: 11 March 1987
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

The Macintosh II adds color capabilities to the Macintosh line of computers. Its implementation depends on the Toolbox calls available, and on the hardware installed in the system. This document describes the relationship between the hardware and firmware, and discusses color implementation in the Macintosh II Toolbox.

DISCUSSION -----

ABSOLUTE COLOR

Color QuickDraw, as defined in the Macintosh II ROMs, uses an absolute approach to determine color representation. A new data type, `RGBColor`, is defined to be a record containing three 16-bit integers, each of which represents an intensity value for one of the three additive primary colors: red, green, and blue.

type

```
    RGBColor = record
        red:integer;    {Red component}
        green:integer;  {Green component}
        blue:integer;   {Blue component}
    end;
```

Under Color QuickDraw, the application need not be concerned with the type of output device. The application specifies a color in `RGBColor` format, but the Color Manager then uses information from the device's driver to translate the `RGBColor` definition into the best available match on the output device. Some output devices may be limited to 8 or 16 colors; others use a lookup table to select from a wide range of possible display

colors. In any event, the Color Manager handles these details independently of Color QuickDraw or the application.

COLOR DEPTH

On the Macintosh II, the user can choose the depth to which the screen image should be displayed, up to the limits of the video hardware, by using the Control Panel desk accessory. This permits choosing a display consistent with the type of program. A word processing application may need only black and white, and a greater selection of colors (i.e., greater depth) would only slow down the application. On the other hand, drawing and charting applications benefit from the ability to use more colors, so the user might choose to use a greater pixel depth.

Pixel depth must be a power of 2. A display of 4 bits per pixel permits each pixel to choose from among 16 colors, while 8 bits per pixel allows a selection of 256 colors. Normally, the device implements these choices through a color lookup table controlled by the Color Manager.

THE PIXMAP

All drawing by Color QuickDraw is done in a pixel map, which is analogous to the bit map of old. New fields have been added to track the horizontal and vertical resolution in pixels per inch, the number of bits per pixel, and the handle to the pixel map's color table.

COLOR PATTERNS

Color QuickDraw includes color patterns. It provides an undefined limit to the size of the pattern, and a variable pattern depth. Although Color QuickDraw is capable of translating the depth of a pattern to the current screen display depth, this can be a time-consuming process, and should be avoided. As always, color patterns provide a method of dithering, which increases the number of perceived colors shown on the screen.

COLOR TRANSFER MODES

Color capabilities introduce new opportunities for transfer modes. Some previously defined transfer modes aren't useful when color display is used, so Color QuickDraw offers new ones:

- Replace with transparency
Permits overlay of pictures
- Additive
Adds red, green and blue components on the screen, resulting in a lighter screen image.
- Subtractive
Subtracts red, green and blue components on the screen, resulting in a darker screen image.
- Max and min

Compares the source and destination values, and chooses either the smaller or the larger. Used to smooth the edges of two objects displayed next to each other.

- Blend

Uses a formula to calculate a mix of the source and destination values of each component.

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Tech Info Library Article Number:2183



Tech Info Library

Macintosh II: NuBus capabilities

Revised: 7/21/92
Security: Everyone

Macintosh II: NuBus capabilities

=====
Article Created: 11 March 1987
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

The Macintosh II includes six NuBus slots to provide expansion capabilities for the computer. These slots may be used for video output, processors and coprocessors, terminal devices, and serial and parallel devices, among other uses.

DISCUSSION -----

The logic board's 68020 communicates with each of the six synchronous NuBus slots through the memory management unit. A full 32-bit address/data transfer is available between each slot and the 68020. Each slot is identified to the microprocessor by four ID lines, which the 68020 uses to determine the source of the communication. Power, timing, acknowledge, and parity lines are also implemented. Apple has changed Texas Instruments' NuBus definition by adding an interrupt line from each slot, so that each card can generate an interrupt to the 68020.

The 32-bit address space (equating to 4G bytes) available for all NuBus slots is partitioned to provide space for each slot. First, the top 256M of address space is divided into 16 "slots." This allows each physical slot to "own" 16M, which is referred to as its Slot Space. Each NuBus slot is also allocated 256M of "SuperSlot Space" from the portion of memory remaining in the 4G of address space.

Each NuBus card should contain a configuration ROM mapped to the top of its Slot Space to provide information for the Macintosh II operating system at startup time. The Macintosh II looks at the ROM to determine the type of card, how it is to be accessed, and slot resource data.

Pre-defined card categories include display, network, terminal emulator,

serial, parallel, intelligent bus, and human input devices. Each category is further defined by a type indicator. For example, the network category is subdivided into AppleTalk, EtherNet, Token Ring and so on. NuBus device drivers can then locate any appropriate card by checking these bytes in configuration ROM on each card.

NuBus cards can be designed to be "masters" of the bus, or as slaves only. A master card must be able to initiate bus transfers of 8, 16, or 32 bits, and must be able to arbitrate requests for bus mastership. It may include the ability to lock the bus from access by other NuBus devices for a specified period of time. A slave card responds to requests, but can only send a "non-master request." It need not support the full 32-bit transfer.

Card manufacturers may choose to implement a NuBus card with only a 24-bit logical address mode to provide compatibility with existing Macintosh products. This mode is supported by using only address lines 0 through 23, and is called "24-bit aliasing."

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Tech Info Library Article Number:2186



Tech Info Library

Macintosh II: Sound capabilities (3/94)

Revised: 3/10/94
Security: Everyone

Macintosh II: Sound capabilities (3/94)

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Article Created: 11 March 1987
Article Reviewed/Updated: 9 March 1994

TOPIC -----

This article provides an overview of the sound capabilities introduced by the Macintosh II.

DISCUSSION -----

The Macintosh II extends the sound capabilities of the Macintosh Plus by implementing the software Sound Driver in an Apple Sound Chip and the Sound Manager in the Macintosh II Toolbox. The hardware permits sound to be played asynchronously of other Macintosh II operation, while the software is flexible enough to support additional sound hardware through a NuBus slot or the external stereo sound port.

Macintosh II Sound Hardware

Sound is produced on the Macintosh II by a custom digital sound chip (the Apple Sound Chip), two Sony sound chips, and an internal speaker or through the external sound jack. The Apple Sound Chip generates an audio/stereo signal, which is then filtered and buffered by the Sony sound chips. The Apple Sound Chip also contains a 1024 byte FIFO buffer to accept sound values. This permits the Macintosh II to more frequently operate asynchronously of sound generation, and to provide stereo capabilities.

Sound may be played through the 2 1/4" internal speaker, or through the external stereo mini-jack. The jack will not drive a speaker directly, but can use a Walkman-style headphone.

The Sound Manager

There are four standard synthesizers defined within the Macintosh II Sound Manager. Each of the synthesizers is controlled by commands passed to them via a channel, or queue, of commands. A common set of commands is available to each of

the synthesizers, with extensions as appropriate for each individual driver. Sound Manager routines can direct a synthesizer to the queue that holds the sound commands, play the channel, set up new channels, etc.

Each channel is interpreted according to the rules supplied by the called synthesizer, and data is passed through the Apple Sound Chip's two FIFO buffers to the internal speaker or to the external sound jack. Since the internal speaker is monophonic, the Sound Chip will combine all four channels (if used) into one voice for the speaker. When the external sound jack is used, two voices are kept separate, with two channels used in each. Either sound output device may be used asynchronously of other Macintosh II operation while the Sound Chip feeds channel information to the speaker in use.

The note synthesizer allows a simple melody to be played. It permits monophonic sound only, and should be used to play simple sounds, such as SysBeep.

Either monophonic or polyphonic sound is possible using the wave table synthesizer. It may be used to produce voice sound by triggering the synthesizer at non-regular intervals.

The MIDI (Musical Instrument Digital Interface) synthesizer provides a way to play music on an external device via a MIDI synthesizer through the serial ports of the Macintosh II. Since the type of sound depends largely on the type and sophistication of the external equipment, the limits of its capabilities are largely hardware defined.

Pre-recorded sounds may be played back through the sampled sound synthesizer. The pitch, rate, and amplitude may be varied as the sound sample is played. The synthesizer has the ability to alternately play two buffers to provide uninterrupted sound as long as the buffers are refilled by the application when a channel of sound is completed.

If a programmer wishes to expand upon the synthesizers provided in the Macintosh II ROM, he may do so by defining a synthesizer or sound resource. The Sound Manager can call the new resources to play existing channels, using the rules defined by the new synthesizer. This feature permits developers the flexibility to develop external sound hardware via NuBus slots, while using the Sound Manager to provide a consistent interface for sound software.

Article Change History:

9 March 1994 - Updated formatting.

Support Information Services

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Tech Info Library Article Number:2187



Tech Info Library

Macintosh II, IIfx, & IIfx: Startup sequence

Revised: 7/24/92
Security: Everyone

Macintosh II, IIfx, & IIfx: Startup sequence

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Article Created: 11 March 1987
Article Last Reviewed: 21 July 1992
Article Last Updated: 24 July 1992

TOPIC -----

What happens exactly when I turn on my Macintosh II by pressing the Power On key on the keyboard?

DISCUSSION -----

The Macintosh II, IIfx, and IIfx are turned on via the Power On key, which is located above the numeric row of keys on Apple Desktop Bus Extended keyboards.

When this key is pressed on an ADB keyboard connected to one of these Macintosh computers, it grounds pin 2 (the Power On signal) on the Apple Desktop Bus port. This line is physically connected through a resistor to the lithium batteries found on the logic board.

The batteries charge a capacitor which toggles the power supply to turn on (assuming AC power is present). Power-up continues with a system check before control is passed to the Startup Manager in the ROM.

After power is supplied to the system, the Versatile Interface Adapters and IWM (SWIM in the IIfx's case) are initialized, memory is tested, and RAM and ROM are mapped to permanent locations. A video card is located, and video is initialized. The Start Manager is then ready to check for a startup device.

If a bootable disk is present in an internal floppy drive, that disk is used to start the system. If both floppy drives are empty, parameter RAM is checked for the location of the designated startup device, and that device is searched for system startup blocks. Should that be unsuccessful, SCSI devices are checked followed by a search for intelligent NuBus cards.

Once a device with boot block information has been found, the blocks are read and the code is executed. At that point, control passes from the Start Manager to the start application code.

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Tech Info Library Article Number:2188



Tech Info Library

The Macintosh II and SE: Differences that aren't apparent

Revised: 7/1/92
Security: Everyone

The Macintosh II and SE: Differences that aren't apparent

=====

Article Created: 11 March 1987
Article Last Reviewed: 26 June 1992
Article Last Updated:

TOPIC -----

There are a number of obvious differences between the Macintosh SE and the Macintosh II. The situations below describe differences that are not apparent.

DISCUSSION -----

Number of Supported Floppy Drives

The Macintosh SE has an external drive port, but the Macintosh II does not. If two floppies are installed internally, the Macintosh SE can support as many as three floppy drives. The Macintosh II can support no more than two floppy drives, and cannot support an Apple HD20 or external floppy drive.

SCSI Drive Interleave Scheme

The ROMs of the Macintosh SE and Macintosh II have different SCSI disk interleaving schemes. Although disks are interchangeable, they will work most efficiently on the system on which they were initialized. The Macintosh SE uses a 2-to-1 interleaving scheme, while the Macintosh II uses 1-to-1 interleaving.

Therefore, a SCSI disk initialized on a Macintosh SE and moved to a Macintosh II will not transfer data as quickly as a Macintosh II SCSI drive, since the Macintosh II will be forced to wait for every other block of data, rather than using them in sequence.

If a Macintosh II SCSI drive is taken to a Macintosh SE, the speed difference will be even more apparent. The Macintosh II drive will have

blocks allocated in sequence on each track. But the Macintosh SE will not be able to accept the data that quickly, so the drive must make almost a full rotation before the second block again passes under the head, and the information can be read from the drive.

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Tech Info Library Article Number:2189



Tech Info Library

Comparing the Macintosh Plus and Macintosh II

Revised: 6/8/92
Security: Everyone

Comparing the Macintosh Plus and Macintosh II

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Article Created: 11 March 1987
Article Last Reviewed: 8 June 1992
Article Last Updated: 11 May 1989

TOPIC -----

What are the major differences between the Macintosh Plus and the Macintosh II?

DISCUSSION -----

Several notable differences exist between Macintosh Plus and Macintosh II functions. Some of these items are listed below:

External Drive Port

There is no external drive port on the Macintosh II. An Apple HD20, 400K external drive, or 800K external drive cannot be connected to the Macintosh II.

Battery Location

The battery is no longer located within the power supply. Instead, it is soldered onto the logic board, and can only be replaced by a level 1 technician.

Serial Port Pinouts

While both the Macintosh Plus and Macintosh II use mini-DIN-8 connectors for serial ports, one signal has been changed on the Macintosh II and the Macintosh SE. Pin 7, which is not used on the Macintosh Plus, is now a general purpose input pin. It is connected to the serial communication chip's data carrier detect line on the Macintosh II. Pin 7 on the modem port may also be used as a SYNC line, since it is connected to the clock line from the VIA.

SCSI Terminator Power

The Macintosh Plus does not provide terminator power on its SCSI port. The Macintosh II has added this signal to pin 25 of the external SCSI connector.

Keyboard and Mice Connections

Keyboards, mice, and other input devices on the Macintosh II are now connected through an Apple Desktop Bus port. The DB-9 connector used for this purpose on the Macintosh Plus is no longer available.

SCSI Interleaving Schemes

The ROMs of the Macintosh Plus and Macintosh II have different SCSI disk interleaving schemes. Although disks can be used interchangeably, they will work most efficiently on the system on which they were initialized. The Macintosh Plus uses a 3-to-1 interleaving scheme, while the Macintosh II uses 1-to-1 interleaving.

Therefore, a SCSI disk initialized on a Macintosh Plus and moved to a Macintosh II will not transfer data as quickly as a Macintosh II SCSI drive, since the Macintosh II will be forced to wait for every third block of data, rather than using them in sequence.

If a Macintosh II SCSI drive is taken to a Macintosh Plus, the speed difference will be even more apparent. The Macintosh II drive will have blocks allocated in sequence on each track. But the Macintosh Plus will not be able to accept the data that quickly, so the drive must make almost a full rotation before the second block again passes under the head, and the information can be read from the drive.

Power On/Off Switch

The Macintosh II has no hard power on/off switch. Instead, the Power On key on the Apple Desktop Bus keyboard initiates a request for power-on to the Macintosh II. This key is not a power-off key; power-off is provided through software via the Shut Down command in the Finder.

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Tech Info Library Article Number:2190



Tech Info Library

Macintosh II: New Managers

Revised: 7/20/92
Security: Everyone

Macintosh II: New Managers

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Article Created: 11 March 1987
Article Last Reviewed: 20 July 1992
Article Last Updated:

TOPIC -----

The Macintosh II has a number of new managers in ROM and in system software that have no analog on the Macintosh Plus. This article provides a brief description of each of these new managers.

DISCUSSION -----

Color Manager

The Color Manager controls the task of translating an application's color requests to a color capable of being displayed by the current hardware. It keeps information about the display in a device record with information concerning the type of search mechanism to be used for color matching and inverting, as well as a handle to its pixel map.

The Color Manager sets up an initial color table for each GrafDevice with default values, which correspond to the colors defined by the original QuickDraw. Color Manager procedures can also manipulate individual colors in a color table, so that an application can "fine tune" the mapping of the program's color description to the color displayed on the screen device.

Color QuickDraw

Color QuickDraw includes the same types of procedures and calls found in "old" QuickDraw, but it has expanded to support color on the Macintosh II in GrafPorts, pixel maps, icons, polygons, and cursors.

Color cursors and color icons are implemented through two new data structures, CCrsr and CIcon. Each type of polygon has a new fill procedure

to permit color drawing. A typical definition is:

```
Procedure FillCRect(r: rect; ppat: PixPatHandle);
```

Script Manager

The Script Manager is used by TextEdit, or may be called by an application directly, to provide the means for an application to be written independently of the language (or script) in use.

The Script Manager provides a consistent interface to Roman and non-Roman alphabets, those that use right-to-left and left-to-right progression, and alphabets with other than the "standard" 26 Roman characters.

Start Manager

The Start Manager controls the bootup process on the Macintosh II. Once power is supplied to the Macintosh II and control has been transferred to the ROM, the Startup Manager determines which microprocessor is present, initializes ROM Managers, and checks for initialization code within the declaration ROM of all NuBus cards. The Start Manager then attempts to locate an appropriate startup device, and executes its boot blocks.

Apple Desktop Bus Manager

The Apple Desktop Bus Manager controls those devices on the Apple Desktop Bus (typically a keyboard and mouse). The ADB Manager supports calls to and from ADB devices and supplies information about keys pressed, mouse clicks, etc., to other managers.

Slot Manager

The Slot Manager in the Macintosh II provides the means for the on-board ROM and logic to communicate with cards in the NuBus slots. The Slot Manager interprets the information supplied by NuBus cards, and arbitrates requests for bus mastership.

The Slot Manager checks each NuBus card's declaration ROM and sets up a Slot Parameter Block data structure, which can be accessed by other Slot Manager routines. Applications, or more likely, device drivers, may then request the Slot Manager to read data of varying lengths from a card in a NuBus slot.

Sound Manager

The Macintosh II Sound Manager replaces the 64K and 128K ROM Sound Driver. All previous data structures, routines, and synthesizers are supported in the Sound Manager, and new routines have been added to take advantage of the new Apple Sound Chip on the Macintosh II logic board, including four standard synthesizers:

- Note synthesizer
- Wave table synthesizer

- M.I.D.I synthesizer
- Sampled sound synthesizer

A programmer may expand upon these synthesizers by defining a synthesizer or sound resource. The Sound Manager can call the new resources to play existing channels, using the rules defined by the new synthesizer.

Deferred Task Manager

Because the Macintosh II supports interrupts through all six NuBus slots, a manager is needed to handle the interrupts in an orderly fashion. The Deferred Task Manager determines the appropriate time to service each of the requested interrupts, depending on the level of interrupt requested and other activity occurring within the Macintosh II.

Shutdown Manager

The Shutdown Manager is designed to provide a consistent way for the Macintosh to be turned off or to be rebooted from the Finder as well as from within an application. It allows the system to perform some housekeeping prior to turning off or rebooting. Custom ShutDown procedures may be installed and removed through routines available in the ShutDown Manager.

Operating System Utilities

Routines in the Operating System Utilities provide the ability to switch between 24-bit address mode, required for compatibility with existing Macintosh applications, and 32-bit address mode allowing access to the full 32-bit addressing capability of the MC68020 and NuBus slots.

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Tech Info Library Article Number:2192



Tech Info Library

NuBus: Glossary of terms

Revised: 7/21/92
Security: Everyone

NuBus: Glossary of terms

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Article Created: 11 March 1987
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

This article contains a glossary of NuBus terms.

DISCUSSION -----

Following are common NuBus terms:

- NuBus

A synchronous bus defined by Texas Instruments. It operates on a 10 MHz clock, with a full 32-bit data and address transfer. Apple's implementation of NuBus does not include parity checks, but does add interrupt lines to each of the Macintosh II NuBus slots.

- Bus master

At a given time, the bus device that initiates a transaction. Also, a device with the ability to initiate a NuBus transaction by asserting the START* line.

- Configuration ROM (also declaration ROM)

A 1M portion of the minor slot space. Each card must include information within this space to identify itself to the Macintosh II at startup. Items included here are the type of card, the location of its driver, if present, the byte lanes it will use to communicate with other NuBus devices, and slot resource data.

- Major slot space (also SuperSlot Space)

A portion of memory in the address range \$9000 0000 to \$F000 0000. By convention, each card may use 256M in this space. A card in slot 1 would use from \$9000 0000 to \$9FFF FFFF, a card in slot 2 would use addresses \$A000 0000 to \$AFF FFFF, and so on. This address assignment is not enforced; cards may use more than 256M of space, as long as addressing conflicts do not occur between slots.

- Minor slot space (also Slot Space)

A portion of memory within the NuBus address space from \$F000 0000 to \$FFFF FFFF. Each slot is assigned 16M of memory beginning at \$Fs00 0000, where s is the card's physical slot location.

- Slave device

At a given time, a device that responds to a transaction. Also, a device that cannot initiate a NuBus transaction or arbitrate requests for bus mastership.

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Tech Info Library Article Number:2193



Tech Info Library

Macintosh II NuBus Slots: Pinouts and signal descriptions

Revised: 7/21/92
Security: Everyone

Macintosh II NuBus Slots: Pinouts and signal descriptions

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Article Created: 11 March 1987
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

This article contains the pinouts for Macintosh II NuBus slots.

DISCUSSION -----

All NuBus slots in the Macintosh II have the same pinouts:

Pin	Row A	Row B	Row C
---	-----	-----	-----
1	-12V	-12V	RESET
2	GND	GND	GND
3	SPV	GND	+5V
4	SP	+5V	+5V
5	TM1	+5V	TM0
6	AD1	+5V	AD0
7	AD3	+5V	AD2
8	AD5	GND	AD4
9	AD7	GND	AD6
10	AD9	GND	AD8
11	AD11	GND	AD10
12	AD13	GND	AD12
13	AD15	GND	AD14
14	AD17	GND	AD16
15	AD19	GND	AD18
16	AD21	GND	AD20
17	AD23	GND	AD22
18	AD25	GND	AD24
19	AD27	GND	AD26
20	AD29	GND	AD28
21	AD31	GND	AD30

22	GND	GND	GND
23	GND	GND	PFD
24	ARB1	-5.2V	ARB0
25	ARB3	-5.2V	ARB2
26	ID1	-5.2V	ID0
27	ID3	-5.2V	ID2
28	ACK	+5V	START
29	+5V	+5V	+5V
30	RQST	GND	+5V
31	NMRQ	GND	GND
32	+12V	+12V	CLK

Signal descriptions for these lines are:

- +5V
Power to slot; 2 amps per slot maximum continuous.
- +12V
Power to slot; 0.25 amps per slot maximum continuous.
- -12V
Power to slot; 0.1 amps per slot maximum continuous.
- -5.2V
Unused
- GND
Power return for +5V, +12V, and -12V
- RESET
Open collector signal; card should use to reset circuitry.
- SPV
Slot Parity Valid; asserted if card provides parity. Never asserted under Apple NuBus.
- SP
Slot Parity; odd parity of AD0-AD3 if SPV asserted.
- TM0 - TM1
Transaction modifiers.
- AD<31:0>
Address/Data bits 31 to 0.
- PFW
Power Fail Warning given 2ms before AC power is lost.
- ARB<3:0>
Arbitration bits 3 to 0; arbitrates system mastership.
- ID<3:0>
Geographical address 3 to 0; hard-coded to slot.

- START
Asserted to indicate an address on AD lines.
- ACK
Acknowledge of START cycle.
- RQST
Request; asserted to request bus mastership.
- NMRQ
Non-master request; used to signal an interrupt.
- CLK Clock. Asymmetrical 10MHz clock; synchronous transactions on NuBus.

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Tech Info Library Article Number:2194



Tech Info Library

Macintosh: External SCSI Port Pinouts (7/94)

Revised: 7/18/94
Security: Everyone

Macintosh: External SCSI Port Pinouts (7/94)

Article Created: 18 September 1987
Article Reviewed/Updated: 18 July 1994

TOPIC -----

What are the pinouts for the 25-pin SCSI port on the rear of most desktop Macintosh computers?

DISCUSSION -----

All Macintosh computers with the external 25-pin SCSI port have the pinouts listed below. Note that the Macintosh II and Macintosh SE do supply terminator power on pin 25, unlike the SCSI port on the Macintosh Plus.

Pin	Signal name	Signal description
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RST/	SCSI bus reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GND	Signal ground
8	DB0/	Data bit 0
9	GND	Signal ground
10	DB3/	Data bit 3

11	DB5/	Data bit 5
12	DB6/	Data bit 6
13	DB7/	Data bit 7
14	GND	Signal ground
15	C/D/	Common/Data
16	GND	Signal ground
17	ATN/	Attention
18	GND	Signal ground
19	SEL/	Select
20	DBP/	Data parity
21	DB1/	Data bit 1
22	DB2/	Data bit 2
23	DB4/	Data bit 4
24	GND	Signal ground
25	TPWR	Terminator power

IMPORTANT: Because the SCSI port is a DB-25 connector, it looks like a RS-232 port. It is NOT a RS-232 port. Do NOT plug an RS-232 device into the SCSI port. Doing so will most likely damage the SCSI chip on the logic board.

Article Change History:

18 Jul 1994 - Reviewed for technical accuracy.

23 Jun 1994 - Revised formatting, added rest of Macintosh line.

Support Information Services

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Tech Info Library Article Number:2195



Tech Info Library

Macintosh II: ROM Features Different From Mac Plus (9/95)

Revised: 9/1/95
Security: Everyone

Macintosh II: ROM Features Different From Mac Plus (9/95)

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Article Created: 11 March 1987
Article Review/Updated: 1 September 1995

TOPIC -----

The Macintosh II ROM features were greatly extended from those found in the Macintosh Plus. A number of new managers were added to the ROM, and most existing managers were modified to support the new hardware capabilities of the Macintosh II.

The modifications most frequently introduced involved color support - QuickDraw, menus, dialog boxes, and TextEdit are among those items that were extended with color features. The Nubus slots were also a prime candidate for causing additions and changes. The Macintosh II introduced a Slot Manager, an Operating System Utilities Manager, and the Deferred Task Manager to support Apple's Nubus implementation.

Other managers were rewritten to remove previous limitations: the Macintosh II was an open machine, so the ROM designers made every effort to permit developers the freedom to design products for the Macintosh II without being concerned with ROM limitations.

DISCUSSION -----

The following managers are new to the Macintosh II ROM:

Begin_Table

Color Manager
Color QuickDraw
Scrip Manager
Start Manager
Apple Desktop Bus Manager
Slot Manager
Sound Manager
Deferred Task Manager

Shutdown Manager
Operating System Utilities

End_Table

These managers underwent significant changes from the Macintosh Plus ROM:

Begin_Table

Font Manager
Window Manager
Control Manager
Menu Manager
TextEdit
Dialog Manager
International Utilities Package
File Manager
Printer Manager
Device Manager
SCSI Manager
AppleTalk Manager
Vertical Retrace Manager

End_Table

In all cases, previously defined calls, data types, and resources are recognized by the Macintosh II ROM, but extensions to those capabilities were added in the revised managers.

Article Change History:
01 Sep 1995 - Changed title for clarity.

Support Information Services

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Tech Info Library Article Number:2196



Tech Info Library

HD-20SC: What You'll Need to Format It With an Apple II

Revised: 9/29/90
Security: Everyone

HD-20SC: What You'll Need to Format It With an Apple II

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This article last reviewed: 19 January 1988

To format an HD-20SC drive using an Apple II, it's usually best to use System Disk 3.0. System Utilities 2.1.1 can be used for this purpose only with some versions of the Apple IIe, as described below.

- Apple IIGS: requires System Disk 3.0. (System Utilities 2.1.1 won't do it.)
- Unenhanced Apple IIe: is not compatible with System Disk 3.0. (Use System Utilities 2.1.1.)
- Apple IIe (Platinum) with Rev C logic board: use System Disk 3.0 to format an HD-20SC. (System Utilities 2.1.1 won't do it.)
- Apple IIe (Platinum) with Rev E logic board: it's advisable to use System Disk 3.0. System Utilities 2.1.1 can be used, but you'll see flashing garbage on the screen that will make it look like the system has crashed.

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Tech Info Library Article Number:2199



Tech Info Library

MouseDesk: Using It on the Apple IIGS Causes Color Problem

Revised: 1/25/88
Security: Everyone

MouseDesk: Using It on the Apple IIGS Causes Color Problem

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This article last reviewed: 19 January 1988

When you exit from MouseDesk to the Control Panel and then return to MouseDesk, there is a color problem. Apple no longer uses MouseDesk, and there are no plans to upgrade it. Apple now markets the Finder as a replacement.

Tech Info Library Article Number:2200



Tech Info Library

AppleShare Workstation: Switch Launching

Revised: 10/18/88
Security: Everyone

AppleShare Workstation: Switch Launching

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This article last reviewed: 13 March 1987

While using an AppleShare workstation, you can switch launch to an old Finder (even one that is not "Appleshare aware") and still be connected to AppleShare.

If you do so, however, you will not get the new icons that signify access privileges to various folders; the only icon you will see is the normal white one. However, even though this signifies the ability to see files within that folder on an AppleShare volume, you will not have any more ability to view the contents of folders than you had under Finder 5.4. This is because access control checking is done in the server, not by the Finder; you get the icon that says you have access to a folder because that's the only folder icon that the older Finders have.

Switch launching loads the System and Finder of a non-startup disk into the Macintosh. Launching is double-clicking on an icon, and switch launching switches the Finder when you:

- launch an application on a non-startup disk that has an old Finder that switches automatically,
- hold down the option key when you launch the application, providing the Always Switch Launch bit is set in the application, or
- hold down the option and command keys when you launch the non-startup Finder.

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Tech Info Library Article Number:2201



Tech Info Library

Bar Codes and Readers

Revised: 9/29/90
Security: Everyone

Bar Codes and Readers

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This article last reviewed: 30 August 1990

TOPIC -----

I am thinking of using bar codes for some special inventory uses, but don't know which one to choose. Can you help?

DISCUSSION -----

There are industry standards for bar coding. Virtually every manufacturer of computers and peripherals for instance has standardized on the Code 3-of-9 (Code 39) format. They have done so for a number of reasons. While most bar code formats are numeric only, Code 39 is an alphanumeric bar code consisting of all uppercase alphas A through Z, numerals 0 through 9, and a half dozen or so punctuation marks. Code 39 is a variable-length bar code. Anywhere from a single character to 30 or more characters (space and scanning hardware permitting) can be in a bar code.

Code 39 is in the public domain, which means that programmers can freely accommodate printing Code 39 in their programs.

UPC is clearly the most visible bar code in the US, and it is also the most useless to 98% of the population. It is a special-purpose bar code that is used by manufacturers whose products will be sold in retail stores with scanning equipment. This pretty much limits UPC to supermarkets and some record stores. UPC is hard to print and there is no reason to do so. Most currently available bar code scanners "autodiscriminate" which means they automatically decode several different bar code formats.

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Tech Info Library Article Number:2202



Tech Info Library

Voltage and TV Standards: Africa

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Africa

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The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Africa. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Algeria	220	50	French	PAL (2)
Angola	220	50	Portuguese	CCIR (2)
Benin	220	50	Euro/US	SECAM (2)
Botswana	220	50	British	-----
Cameroon	220/230	50	CEE 7/2	-----
Canary Is.	110/220	50	Euro/US	PAL (2)
Chad	220	50	European	-----
Congo	220	50	European	SECAM (2)
Djibouti	220	50		SECAM (2)
Egypt	220	50	British/Euro	SECAM (2)
Ethiopia	220	50	CEE 7/2	CCIR (2)
Gabon	220	50	European	SECAM (2)
Ghana	250	50	British	PAL (2)
Ivory Coast	220	50	French	SECAM (2)
Kenya	240	50	British	PAL (2)
Liberia	120	60	Euro/US	PAL (2)
Libya	230	50	British	SECAM (2)
Madagascar	110/220	50		SECAM (2)
Madeira	220	50		PAL (2)
Mauritius	230	50	British	SECAM (2)
Morocco	220/127	50	European	SECAM (2)
Mozambique	220	50	Port/British	PAL (2)
Niger	220	50	European	SECAM (2)
Nigeria	220/230	50	British	PAL (2)
Reunion	220	50	French	SECAM (2)
Senegal	127	50	European	SECAM (2)
Seychelles	230	50	British	PAL (2)
Sierra Leone	230	50	British	PAL (2)
Somalia	220/230	50		-----
South Africa	220	50	British	PAL (2)

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Sudan	240	50	British	PAL	(2)
Swaziland	230	50	British	PAL	(2)
Tanzania	230	50	British	PAL	(2)
Togo	220	50	CEE 7/6	SECAM	(2)
Tunisia	220	50	European	SECAM	(2)
Uganda	240	50	British	PAL	(2)
Zaire	220	50	CEE 7/6	PAL	(2)
Zambia	220	50	British	PAL	(2)
Zimbabwe	230/240	50	British	SECAM	(2)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.

2 = 625 lines, Vision modulation Neg, Sound modulation FM.

3 = 625 lines, Vision modulation Pos, Sound modulation AM.

4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:

Voltage and TV Standards: Europe

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Asia

Voltage and TV Standards: Pacific

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: North America and Greenland

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2203



Tech Info Library

Voltage and TV Standards: Asia

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Asia

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The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Asia. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Bangladesh	230	50	British	PAL (2)
Brunei	240	50	British	PAL (2)
Burma	220	50	British	NTSC (4)
China	220	50	US	PAL (2)
Hong Kong	200	50	British	PAL (2)
India	230	50	British	PAL (2)
Indonesia	220/127	50	European	PAL (2)
Japan (East)	100	50	US	NYSC (4)
Japan (Weat)	100	60	US	NTSC (4)
Korea (North)	220	60		CCIR
Korea (South)	100	60	US	NTSC (4)
Laos	220	50	French/US	PAL (4)
Malaysia	240	50	British	PAL (2)
Nepal	220	50		No TV
Pakistan	230	50	British	PAL (2)
Philippines	220/110	60	US	NTSC (4)
Sabah	240	50		PAL (2)
Singapore	230	50	British	PAL (2)
Sri Lanka	230	50	British	PAL (2)
Taiwan	220/110	60	US	NTSC (4)
Thailand	220	50	US	PAL (2)
Vietnam	220/110	50		CCIR (4)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

..TIL02204-Voltage_and_TV_Standards-Asia.pdf

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:

Voltage and TV Standards: Europe

Voltage and TV Standards: Africa

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Pacific

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: North America and Greenland

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2204



Tech Info Library

Voltage and TV Standards: Central America and Caribbean

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Central America and Caribbean

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Central America and the Caribbean. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Antigua	230	60		NTSC (4)
Bahamas	120	60	British/US	NTSC (4)
Barbados	230/115	50	US	NTSC (4)
Costa Rica	120	60	US	NTSC (4)
Cuba	115/120	60	US	NTSC (4)
Dominican Rep.	230	50	US	NTSC (4)
El Salvador	110/120	60	US	NTSC (4)
Grenada	230	50		
Guadeloupe	220	50/60		SECAM (2)
Guatemala	120/240	60	US	NTSC (4)
Haiti	110/220	50/60	US	NTSC (4)
Honduras	110	60	US	NTSC (4)
Jamaica	110/220	50	British/US	NTSC (4)
Martinique	127	50		SECAM (2)
Mexico	110/220	60	US	NTSC (4)
Montserrat	230	60		NTSC (4)
Neth. Antilles	120/220	50/60	Euro/US	NTSC (4)
Nicaragua	120/240	60	US	NTSC (4)
Panama	120/240	60	US	NTSC (4)
Puerto Rico	120/240	60	US	NTSC (4)
St.Kitts & Nevis	230	60		NTSC (4)
Trinidad/Tobago	230/115	60	British/US	NTSC (4)
Virgin Is.	110	60		NTSC (4)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:

Voltage and TV Standards: Europe

Voltage and TV Standards: Africa

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Asia

Voltage and TV Standards: Pacific

Voltage and TV Standards: North America and Greenland

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2205



Tech Info Library

Voltage and TV Standards: Europe

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Europe

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Europe. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Austria	220	50	CEE 7/7	PAL (2)
Belgium	220	50	CEE 7/7	PAL (2)
Denmark	220	50	Afsnit 107	PAL (2)
Finland	220	50	CEE 7/7	PAL (2)
France	220	50	CEE 7/7	SECAM (2)
Greece	220	50	Special	SECAM (2)
Ireland	220	50	13 A Sq.	PAL (1, 2)
Italy	220	50	CEE 7/7	PAL (2)
Luxembourg	220	50	CEE 7/7	PAL/SECAM (2)
Netherlands	220	50	CEE 7/7	PAL (2)
Norway	230	50	CEE 7/7	PAL (2)
Portugal	220	50	CEE 7/7	PAL (2)
Spain	220	50	CEE 7/7	PAL (2)
Sweden	220	50	CEE 7/7	PAL (2)
Switzerland	220	50	SEV 1011	PAL (2)
U.K.	240	50	13 A Sq.	PAL (2)
W. Germany	220	50	CEE 7/7	PAL (2)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:
Voltage and TV Standards: Africa

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Asia

Voltage and TV Standards: Pacific

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: North America and Greenland

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2206



Tech Info Library

Voltage and TV Standards: Near and Middle East

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Near and Middle East

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Near East and Middle East. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Afghanistan	220	50	CEE 7	PAL (2)
Bahrain	230/110	50/60	British/US	PAL (2)
Cyprus	240	50	British	PAL/SECAM
Iran	220	50	European	SECAM (2)
Iraq	220	50	British/Euro	SECAM (2)
Israel	230	50	Special	PAL (2)
Jordan	220	50	Many	PAL (2)
Kuwait	240	50	British	PAL (2)
Lebanon	220/110	50	British/Euro	SECAM (2)
Malta	240	50	British	PAL (2)
Oman	240	50	British/Euro	PAL (2)
Quatar	240	50	British	PAL (2)
Saudi Aribia	220/127	50/60	British/US	PAL/SECAM
Syria	220/115	50		SECAM
Turkey	220	50	European	PAL (2)
United Arab	220	50	British/CEE 7	PAL (2)
Yemen	220	50	British	PAL (2)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:
Voltage and TV Standards: Europe

..TIL02207-Voltage_and_TV_Standards-Near_and_Middle_East.pdf

Voltage and TV Standards: Africa

Voltage and TV Standards: Asia

Voltage and TV Standards: Pacific

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: North America and Greenland

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2207



Tech Info Library

Voltage and TV Standards: Pacific

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: Pacific

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of Pacific. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Australia	240	50	AS C112	PAL (2)
Fiji Is.	240	50	AS C112	
New Caledonia	220	50		
New Zealand	230/240	50	AS C112	PAL (2)
Papua New Gu.	240	50	AS C112	
Solomon Is.	240	50	AS C112	
Tahiti	127	60		
Tonga	230	50	AS C112	
West. Samoa	230	50		

- 1 = 405 lines, Vision modulation Pos, Sound modulation AM.
- 2 = 625 lines, Vision modulation Neg, Sound modulation FM.
- 3 = 625 lines, Vision modulation Pos, Sound modulation AM.
- 4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country or:

Voltage and TV Standards: Europe
Voltage and TV Standards: Africa
Voltage and TV Standards: Near and Middle East
Voltage and TV Standards: Asia
Voltage and TV Standards: Central America and Caribbean
Voltage and TV Standards: North America and Greenland
Voltage and TV Standards: South America

Apple Technical Communications



Tech Info Library

Voltage and TV Standards: South America

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: South America

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of South America. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Argentina	220/225	50	Euro/Aust.	PAL (2)
Bolivia	230/115	50	US	NTSC (2,4)
Brazil	127/220	60	European	PAL (4)
Chile	220	50	European	NTSC (4)
Columbia	110/120	60	US	NTSC (4)
Ecuador	110/127	60	US/CEE 7	NTSC (4)
Fr. Guiana	220/127	50	European	SECAM (2)
Paraguay	220	50	European	PAL (2)
Peru	225	60	Euro/US	NTSC (4)
Surinam	115/127	50/60	Euro/US	NTSC (4)
Uruguay	220	50	European	PAL (2)
Venezuela	120/240	60	US/CEE 7	NTSC (4)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries search on the country name or:

Voltage and TV Standards: Europe

Voltage and TV Standards: Africa

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Asia

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: Pacific

..TIL02209-Voltage_and_TV_Standards-South_America_(TA21760).pdf

Voltage and TV Standards: North America and Greenland

Apple Technical Communications

Tech Info Library Article Number:2209



Tech Info Library

Instant Pascal 1.5 Update: Erratum

Revised: 3/13/87
Security: Everyone

Instant Pascal 1.5 Update: Erratum

=====

There is a technical error in the Instant Pascal 1.5 Update document. The 1.5 Update document says on page 2 that:

312K or 356 blocks of contiguous memory is required to install Instand Pascal on a hard disk or on a RAM card.

This is incorrect.

The statement should be amended to:

A utility program, IP.Custom has been added so that you can install Instant Pascal on a hard disk or RAM card with at least 512 blocks (256K) of contiguous memory. Instant Pascal does not run on the Applied Engineering RAMDisk because the RAMDisk does not contain 512 contiguous blocks of memory (independent of the size of the RAMDisk).

Apple Technical Communications

Tech Info Library Article Number:2210



Tech Info Library

Voltage and TV Standards: North America and Greenland

Revised: 3/13/87
Security: Everyone

Voltage and TV Standards: North America and Greenland

=====

The listing below contains the voltage, cycles (Hz), plug, and TV standards for most of North America and Greenland. The number to the right of the TV standard denotes the number of lines of the display:

COUNTRY	VOLTS	Hz	PLUG	TV
Alaska	120	60	US	NTSC (4)
Bermuda	120	60		NTSC (4)
Canada	120	60	US	NTSC (4)
Greenland	220	50		PAL (2)
Miquelon	220	50		SECAM (2)
St. Pierre	220	50		SECAM (2)
USA	120	60	US	NTSC (4)

1 = 405 lines, Vision modulation Pos, Sound modulation AM.
2 = 625 lines, Vision modulation Neg, Sound modulation FM.
3 = 625 lines, Vision modulation Pos, Sound modulation AM.
4 = 525 lines, Vision modulation Neg, Sound modulation FM.

NOTE:

The information for some countries is incomplete. To obtain complete information, it will be necessary to contact that country's local consulate.

For other countries, search on the country name or:

Voltage and TV Standards: Europe

Voltage and TV Standards: Africa

Voltage and TV Standards: Near and Middle East

Voltage and TV Standards: Asia

Voltage and TV Standards: Central America and Caribbean

Voltage and TV Standards: Pacific

Voltage and TV Standards: South America

Apple Technical Communications

Tech Info Library Article Number:2211



Tech Info Library

AppleWorks: Number Of Copies Printable At One Time

Revised: 2/8/88
Security: Everyone

AppleWorks: Number Of Copies Printable At One Time

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This article last reviewed: 16 March 1987

In AppleWorks, you have many different printing options. One of these options is the "How many copies?" you want to print. The default setting for this option is 1 copy. You can print up to 9 copies from AppleWorks at one time. If you attempt to enter a number larger than 9, the speaker beeps.

If you are in the Word Processor, you can have the computer print more than one copy of the document at a time.

1. Move the cursor to the bottom of the document.
2. Place a NEW PAGE option after the last line.
3. Enter Open-Apple-C, Copy to the Clipboard, and enter Open-Apple-1. This selects all of the document. Press RETURN and a copy of the document will be placed in the clipboard.
4. You can now copy additional documents at the end of the existing report. Use the Open-Apple-C, "Copy FROM the Clipboard", and a copy of the document will be added to the end of the file.

You can now print up to 18 copies of the document. Depending on the size of the document, you can Open-Apple-Copy more copies of the document and print even larger quantities of the document.

Tech Info Library Article Number:2212



Tech Info Library

Macintosh SE Internal System Expansion Slot: Pinout Information

Revised: 8/7/92
Security: Everyone

Macintosh SE Internal System Expansion Slot: Pinout Information

Article Created:
Article Last Reviewed: 6 August 1992
Article Last Updated:

	Column 1	Column 2	Column 3
Row			
32	-12V	-5V	+12V
31	Spare	+12V	+12V
30	Ground	+12V	Ground
29	D15	Ground	C16M
28	D14	Ext .STK/	C8M
27	D13	Reserved	E
26	D12	Reserved	A23
25	D11	Reserved	A22
24	D10	Reserved	A21
23	D9	Reserved	A20
22	D8	Spare	A19
21	D7	BERR/	A18
20	D6	IPL2/	A17
19	D5	IPL1/	A16
18	D4	IPL0/	A15
17	D3	+5V	A14
16	D2	+5V	A13
15	D1	+5V	A12
14	D0	+5V	A11
13	+5V	+5V	A10
12	RESET/	HALT/	A9
11	PMCYC/	Reserved	A8
10	AS/	Reserved	A7
9	UDS/	Ground	A6
8	LDS/	Ground	A5
7	R/W/	Ground	A4
6	DTACK/	Ground	A3

5	BG/	Ground	A2
4	BGACK/	Ground	A1
3	BR/	Ground	FC0
2	VMA/	Ground	FC1
1	VPA/	Ground	FC2

Here is a description of the signals in the system expansion slot.

Signal	Description
FC0-FC2	68000 Function Code lines
A1-A23	68000 Address lines
E	68000 E Clock
C8M	Microprocessor clock = 7.8336 MHz = C16M divided by 2.
C16M	Gate Array Clock = 15.6672 MHz
HALT/	68000 Halt. Wired directly to RESET/
IPL0/-IPL2/	68000 Interrupt Priority Level lines
BERR/	68000 Bus Error. Generated by gate array due to SCSI access timeout.
Ext.DTK/	Pull low to put the gate array generated DTACK/ into a high-impedance state. The expansion board is then responsible for generating the DTACK/signal (as an output to the microprocessor, through the DTACK/signal line).
VPA/	68000 Valid Peripheral Address. Supplied to 68000. For Macintosh SE, VPA space is \$E0 0000 to \$FF FFFF.
VMA/	68000 Valid Memory Address
BR/	68000 Bus Request
BGACK/	68000 Bus Grant Acknowledge
BG/	68000 Bus Grant
DTACK/	68000 Data Transfer Acknowledge. Inserts wait states until data bus is available. Normally supplied by the gate array. Gate array generation of DTACK/ can be suppressed (put into a high-impedance state) by pulling the EXT.DTACK/line low; this allows DTACK/ to be externally generated by an add-on device. DTACK/ is not supplied for accesses to VPA space, is held off to separate 2 successive accesses to the SCC and is held off during RAM access by video.
R/W/	68000 Read/Write

LDS/	68000 Lower Data Strobe
UDS/	68000 Upper Data Strobe
AS/	68000 Address Strobe
PMCYC/	Processor-Memory Cycle. Used to synchronize with the gate array for RAM accesses. PMCYC/ is low when RAM is available for microporcessor accesses and is high during video aceses. PMCYC/ is always high during SO.
RESET/	68000 Reset. Wired directly to HALT/.
D0-D15	68000 Data Bus

Additional information may be found in the the Motorola 68000 manual.

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Tech Info Library Article Number:2213



Tech Info Library

Apple IIGS: Setting and using a RAM disk

Revised: 10/12/87
Security: Everyone

Apple IIGS: Setting and using a RAM disk

=====

This article last reviewed: 17 March 1987

To set and use the RAM disk, follow these steps:

1. Go into the control panel (CTRL-Open Apple-ESC) and set the RAM disk at a convenient size, say a minimum and maximum of 800K, the size of the Apple 3.5 drive.
2. Reset the Apple IIGS with a warm boot: CTRL-Open Apple-RESET.
3. Load system utilities.
 - a. List volumes. The RAM disk should be recognized in slot 5, drive 2, as "/RAM".
 - b. Format the RAM disk.
 - c. Copy to the RAM disk whichever files you wish, such as AppleWorks 2.0.

Now if you want to use the RAM disk as the system volume:

1. Make sure that you have loaded ProDOS onto the RAM disk.
2. Go into the control panel desk accessory. To set the startup, use the up or down arrow keys to choose the menus Slots and Start up slots, and then use the right or left arrow keys to choose the RAM disk.
3. Warm boot the Apple IIGS by pressing CTRL-Open Apple-RESET. Whatever is in the RAM disk should start up.

To get the RAM back:

1. Set the RAM disk to 0K.

2. Turn off the power on the IIGS. A reset will not reset the memory.

BEWARE: Save the data periodically in case of crash or power failure!

Tech Info Library Article Number:2214



Tech Info Library

Composite Color Monitors: Why They Display 80-Column Text Poorly

Revised: 5/25/89
Security: Everyone

Composite Color Monitors: Why They Display 80-Column Text Poorly

=====

This article last reviewed: 21 January 1988

80-column text is usually difficult to read when displayed on a composite color monitor.

The major problem is the bandwidth of the monitor: to properly display 40-column monochrome information requires a minimum of 4 MHz bandwidth. Television receivers are near the bottom end at 4.5 MHz. Monochrome monitors are usually specified with a bandwidth of 12 MHz, for sharpness with an 80-column display. If color information is displayed too, the minimum bandwidth doubles, to 24 MHz. The problem with many televisions that have direct video inputs is that they are still limited to the television bandwidth of 4.5 MHz, which is inadequate for displaying 80-column information.

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Tech Info Library Article Number:2215



Tech Info Library

Macintosh 68000 Development System Becomes Consulair

Revised: 10/7/93
Security: Everyone

Macintosh 68000 Development System Becomes Consulair

=====

The product Macintosh 68000 Development System, MDS, is obsoleted as of March 2, 1987. After this date, MDS will be available as the "Consulair 68000 Development System" from:

Consulair Corporation
140 Campo Drive
Portola Valley, CA 94025

The MDS upgrade also ended March 2, 1987.

Apple Technical Communications

Tech Info Library Article Number:2216



Tech Info Library

Dot Matrix Printer (DMP): Printer codes

Revised: 4/2/87
Security: Everyone

Dot Matrix Printer (DMP): Printer codes

=====

The following are the printer codes used by the Apple Dot Matrix Printer (DMP).

Ascii	Hex	Decimal	Resulting Printer Action
-----	---	-----	-----
Esc n	1B 6E	27 110	9 Characters Per Inch (cpi)
Esc N	1B 4E	27 78	10 cpi
Esc E	1B 45	27 69	12 cpi
Esc q	1B 71	27 113	15 cpi
Esc Q	1B 51	27 81	17 cpi
Esc P	1B 50	27 80	Proportional-1
Esc p	1B 70	27 112	Proportional-2
Esc A	1B 41	27 65	6 Lines per inch (1/6-inch Line Feed)
Esc B	1B 42	27 66	8 Lines per inch (1/8-inch Line Feed)
DC1	11	17	Select printer (online)
DC3	13	19	Deselect printer (offline)
Esc >	1B 3E	27 62	UniDirectional print
Esc <	1B 3C	27 60	Bidirectional print
Esc !	1B 21	27 33	Bold print
Esc "	1B 22	27 34	Deselect Bold print

SO	0E	14	Select Elongated characters (Headline mode)
SI	0F	15	Deselect Elongated characters
Esc X	1B 58	27 88	Start Underline
Esc Y	1B 59	27 89	Stop underline

For additional information or information on graphics, please see the Apple Dot Matrix Printer manual, Apple service part number 030-0607, and see the media exchange listing for price.

Apple II Keystrokes:

DC1: Control-Q
DC3: Control-S
SO: Control-N
SI: Control-O
Esc: Escape key

Apple Technical Communications

Tech Info Library Article Number:2217



Tech Info Library

Macintosh Pascal: Doing Screen Dumps

Revised: 4/2/87
Security: Everyone

Macintosh Pascal: Doing Screen Dumps

=====

To print a screen shot from Macintosh Pascal (versions 1.0, 1.1, 2.0, and 2.1):

- Select the ImageWriter or ImageWriter II from the Chooser. It may be connected to either the Printer or the Modem port. (The Modem port is available only in versions 2.0 and 2.1.)

- Type "Command-Shift-4" to print the current screen.

NOTES: --Command-4 does not print the current window.

- If you have a LaserWriter or an AppleTalk ImageWriter selected as the printer when you try to do a screen dump, Macintosh Pascal will simply "beep". If you wish to print a screen to an AppleTalk ImageWriter or LaserWriter, use Command-Shift-3 (to create a MacPaint file) and then print from MacPaint.

Apple Technical Communications

Tech Info Library Article Number:2218



Tech Info Library

Pascal 1.3: Using it on a Hard Disk 20SC

Revised: 4/2/87
Security: Everyone

Pascal 1.3: Using it on a Hard Disk 20SC

=====

When using Apple Pascal 1.3 (as well as versions 1.0, 1.1, and 1.2) on an Apple II, you cannot use the Hard Disk 20SC as a volume: since Pascal stores the volume size as a signed integer, it cannot work with volumes larger than 32767 blocks. (The HD 20SC has 39165.) The Hard Disk 20SC can be formatted from Apple Pascal, but when you attempt to use the Pascal FILER to copy files to the drive, you get a "NO ROOM ON VOLUME" message. Furthermore, Apple Pascal only supports 77 files per directory, so even if you could use the Hard Disk 20SC, you would run out of directory space before you could even come close to running out of disk space.

The directory limitation applies to 5 meg and 10 meg ProFile drives as well. You can use a ProFile hard drive with Pascal 1.3, but you cannot "share" the drive with ProDos: you must dedicate the entire hard drive to a maximum of 77 Pascal files.

Apple Technical Communications

Tech Info Library Article Number:2219



Tech Info Library

Apple Personal Modem: Making it Work with AppleLine

Revised: 7/26/89
Security: Everyone

Apple Personal Modem: Making it Work with AppleLine

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If you have no problems accessing an Apple Modem 300/1200 through AppleLine but cannot seem to access an Apple Personal Modem, the APM's auto-answer mode is most likely preventing it from answering.

The auto answer mode is one of the differences between the Apple Modem 300/1200 and the APM. With the Apple Modem 300/1200, the default for the S0 register is S0=1 (that is, "answer the phone on the first ring"). The default for the APM's S0 register, though, is S0=0 (that is, "do not answer any ring"). Try connecting a system to the APM and resetting the S0 register to S0=1. Then, without powering down the modem, connect it to the AppleLine. The modem will now be in auto answer mode, and, unless powered down or reset, it will answer incoming calls on the first ring.

Another possibility is that you are using the wrong cable. For the APM, you should be using a 590-0331 (the cable used for connecting an Apple Personal Modem to an Apple IIe with a Super Serial Card) along with the modem eliminator cable 590-0029.

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Tech Info Library Article Number:2220



Tech Info Library

Macintosh Internal Hard Drive: Problems When Using Other Drives

Revised: 8/7/92
Security: Everyone

Macintosh Internal Hard Drive: Problems When Using Other Drives

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Article Created: 19 July 1989
Article Last Reviewed: 7 August 1992
Article Last Updated:

TOPIC -----

When I hook up an external SCSI hard drive to my Macintosh SE, the internal drive crashes at bootup. What's going on?

DISCUSSION -----

When used with other external SCSI drives, a Macintosh SE or Macintosh II equipped with an internal SCSI drive may develop compatibility problems, such as the inability to boot up without crashing. This happens because:

- The Macintosh internal SCSI drive and the external hard drive have the same SCSI priority number.
- The external drive contains an older driver that will not work with the newer Macintoshes.

The first problem pertains only to those external SCSI drives that have the SCSI priority number set to 0 in their firmware, such as the AST 4000. Although AST drives are presently jumpered to have a priority number of 0, AST is replacing the jumper block on the 4000 with a dip switch, which will make changing the priority easier. The priority numbers in other AST and external Rodime drives are either set to a number other than 0 or can be changed easily. A customer who needs to change the priority number of a AST 4000 should contact AST for complete directions.

The workaround to the second problem is simply to update or reinitialize the driver using the Apple HD SC Setup.

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Tech Info Library Article Number:2221



Tech Info Library

AppleWorks 2.0: Order of evaluation of arithmetic expressions

Revised: 4/2/87
Security: Everyone

AppleWorks 2.0: Order of evaluation of arithmetic expressions

=====

AppleWorks evaluates all arithmetic expressions strictly from left to right, as does Applesoft. Before doing so, though, AppleWorks first evaluates all parenthetical expressions (from left to right, of course).

Apple Technical Communications

Tech Info Library Article Number:2222



Tech Info Library

SCSI Terminator: Description of the connections inside

Revised: 9/29/90
Security: Everyone

SCSI Terminator: Description of the connections inside

=====

This article last reviewed: 2 April 1987

This article describes the connections inside the SCSI terminator, Apple part number 590-0348.

Each of the pins listed below is connected straight through the connector (e.g., 1 to 1, 2 to 2, etc.). In addition, each of the signal pins is connected through a resistor network to terminator power.

An example follows:

Pin 26 (DB0) is connected to pin 26. It is also connected to pin 1 (DB0 GND, its corresponding ground) through a 330 ohm resistor and to a common line, which terminates in pin 38 (Terminator power), through a 220 ohm resistor. Similar connections occur for each signal pin.

Pin 38 (TERMPWR) is connected to the common line proceeding from the 220 ohm resistors. Pin 11 (DIFFSENS) is connected straight through only.

Here are the connections used in the SCSI terminator:

--Connect the following pins straight through to the same pin at the other end of the connector:

1 through 9,11,16,18 through 34,38,41,43 through 50

--Connect the first pin of each of the following pairs to a 330 ohm resistor, then to the second pin of the pair, then to a 220 ohm resistor, then to the terminator line.

1 -- 26
2 -- 27
3 -- 28
4 -- 29
5 -- 30

6 -- 31
7 -- 32
8 -- 33
9 -- 34
16 -- 41
18 -- 43
19 -- 44
20 -- 45
21 -- 46
22 -- 47
23 -- 48
24 -- 49
25 -- 50

--Connect pin 38 to the common terminator line.

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Tech Info Library Article Number:2223



Tech Info Library

HD-20: Erasing Information to Government Specs

Revised: 8/27/92
Security: Everyone

HD-20: Erasing Information to Government Specs

=====

Article Created: 2 April 1987

Article Change History

08/27/92 - REVISED

- To provide information on "HD 20 Test" version 1.1, and how to use it to perform a low-level format of the hard drive that meets Government specs for erasing the disk.

TOPIC -----

I used my HD-20, non-SCSI hard drive, while working on a U.S. Government contract, which is now completed. I need to erase the information on the hard drive in accordance with Government specs, or the Government will confiscate my hard drive, so they can destroy it.

The Finder's Erase Disk option is not suitable for erasing sensitive Government information because it simply erases the disk's directory.

Do you have a utility that zeros all blocks, including those that were previously spared?

DISCUSSION -----

"HD 20 Test" version 1.1 has a data-destructive, low-level formatting feature that can be used for this.

The low-level formatting feature of "HD 20 Test" version 1.1 is hidden. To access it:

- 1) Launch the program.
- 2) When the main dialog appears, press "Command-D", and a new dialog

appears. This dialog displays what is actually happening during the diagnostic cycle. It also provides more detailed options.

- 3) Click the radio button marked "Dstrct" at the lower right of the dialog box to perform a data-destructive, low-level format on the drive (all zeros are written to every block).

Note

A 24-hour extended diagnostic test is also available with "HD 20 Test" version 1.1 as a hidden feature. Press "Command-E" when the main dialog appears to access this feature.

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Tech Info Library Article Number:2225



Tech Info Library

Apple IIGS: 6502 communications applications (1 of 2)

Revised: 6/10/87
Security: Everyone

Apple IIGS: 6502 communications applications (1 of 2)

=====

Some assembly language programmers may want to convert 6502 communications software to use the IIGS logic boards to the full. To insure future compatibility when using the Apple IIGS serial ports through assembly language, you should use the built-in firmware calls. The firmware works very well, is very fast, and also provides you with a built-in interrupt handler and input/output buffers. All of these features can be managed through ROM calls.

More advanced use (bit and register handling) would require familiarity with the "Z8030/Z8530 Serial Communication Chip Technical Manual" from Zilog. Information there reveals that communications on the 8530 is much more complicated than that on the 6551; a straight conversion may not be that simple.

Zilog Inc.
210 Hacienda ave.
Campbell CA. 95008

Here are some examples of how you might use the serial ports with the built-in firmware. NOTE: all these examples use the Pascal interface in the ROM.

To initialize your programs and the port you might use something like this:

InitVector	equ	\$C20D	; pointer to the init routine in ROM
ReadVector	equ	\$C20E	; Pointer to the read char routine
WriteVector	equ	\$C20F	; pointer to the Write routine
StatVector	equ	\$C210	
ExtendVect	equ	\$C212	; Pointer to the extended interface routine
InitPort	equ	\$F8	; set up some area's for indirect jumps
ReadChar	equ	\$FA	; to be used in the program to make the
WriteChar	equ	\$FC	; calls to ROM
StatusCall	equ	\$FE	;
ExtendCall	equ	\$F6	; New vector for extended interface

```
InitPort      lda    InitVector    ; First set up your indirect pointers
              sta    InitPort

              ldy    #$C2          ; make sure to set the high byte
              sty    InitPort+1
              lda    ReadVector
              sta    ReadChar
              sty    ReadChar+1
              lda    WriteVector
              sta    WriteChar
              sty    WriteChar+1
              lda    StatVector
              sta    StatCall
              sty    StatCall+1
              lda    ExtendVect
              sta    ExtendCall
              sty    ExtendCall+1

              ldx    #$C2          ; Now make the init call to the ROM
              ldy    #$20          ; Always set up the X and Y Regs first
              jsr    (InitPort)    ; and indirect jump to the init routine
              cpx    #0            ; test for an error
              beq    *+5           ; if its zero skip next jump
              jmp    Error         ; if non-zero an error occured call error rtn
              RTS
```



Tech Info Library

Apple IIGS: 6502 communications applications (2 of 2)

Revised: 6/10/87
Security: Everyone

Apple IIGS: 6502 communications applications (2 of 2)

=====

...

```
CharWait      NOP                ; This rtn checks the input buffer for chars
               ldx    #$C2        ; and returns the result in the carry flag
               ldy    #$20
               lda    #$01        ; status call 1 is input status
               jsr    (StatusCall)
               cpx    #0          ; test for an error
               beq    *+5         ; if its zero skip next jump
               jmp    Error       ; if non-zero an error occured call error rtn
               RTS
```

```
OutEmpty      NOP                ;This rtn checks the output buffer for chars
               ldx    #$C2        ; and returns the result in the carry flag
               ldy    #$20
               lda    #$01        ; status call 1 is input status
               jsr    (StatusCall)
               cpx    #0          ; test for an error
               beq    *+5         ; if its zero skip next jump
               jmp    Error       ; if non-zero an error occured call error rtn
               RTS
```

```
GetChar       NOP                ; This routine gets an input char from the
               ; serial port and places it into <A>
               ldx    #$C2
               ldy    #$20
               jsr    (ReadChar)
               cpx    #0          ; test for an error
               beq    *+5         ; if its zero skip next jump
               jmp    Error       ; if non-zero an error occured call error rtn
               RTS
```

```
PutChar       NOP                ; This routine writes a char in <A> to the
               ; serial port
               ldx    #$C2
               ldy    #$20
```

```

        jsr    (WriteChar)
        cpx    #0            ; test for an error
        beq    *+5           ; if its zero skip next jump
        jmp    Error         ; if non-zero an error occured call error rtn
        RTS

DTROn    NOP                ; This routine turns the DTR line on
        lda    #$00          ; this rtn uses the extended interface calls
        sta    DTRData+4     ; set up the data block
        sta    DTRData+5
        ldy    #$00          ; on entry <x> <y> and <A> contain address of
        ldx    DTRDPtr+1     ; the call parm block
        lda    DTRDPtr
        jsr    (ExtendCall)
        rts

DTROff   NOP                ; This routine turns the DTR line off
        lda    #$80          ; this rtn uses the extended interface calls
        sta    DTRData+4     ; set up the data block
        sta    DTRData+5
        ldy    #$00          ; on entry <x> <y> and <A> contain address of
        ldx    DTRDPtr+1     ; the call parm block
        lda    DTRDPtr
        jsr    (ExtendCall)
        rts

DTRDPtr  dw     DTRData      ; pointer to our data structure
DTRData  DFB     03          ; # of params in call
        DFB     $0B          ; call # (0B means set DTR line)
        DW      0000         ; word for result code
        DW      0000         ; call data
                                ; (0000 means clear DTR, 8000 means set it)

SwitchBaud NOP              ; This rtn shows how to change the Baud Rate
                                ; it turns on 1200 Baud and buffering. It
could
                                ; be expanded to handle all port commands

        ldx    #00           ; Init the string index
SB0010   lda    theString,x   ; get the next byte to send
        phx                    ; save index
        jsr    PutChar        ; Write out the char to the port
        plx                    ; get the index back
        cpx    StrLength      ; are we done?
        beq    SB0020         ; if so then end
        inx                    ; if not get the next char and continue
        jmp    SB0010
SB0020   rts

theString  dfb     01          ; command char (Control-A)
        asc     '8B'          ; 1200 baud command
StrLength  dfb     02

```



Tech Info Library

Sending AppleWorks Word Processor Files to the Macintosh

Revised: 9/1/87
Security: Everyone

Sending AppleWorks Word Processor Files to the Macintosh

=====

By printing a text file through the printer port, you can send an AppleWorks word processor file to the Macintosh. You can make the text file by selecting the disk drive as the "Printer" in the "Specify Printer Information" section.

You may have some problems with the communications program you are using on the Macintosh. For instance, MacTerminal will ignore all characters past the 80th character if it does not receive a carriage return (in fact, this was the reason for the change in AppleWorks 2.0). Microsoft Works requires that you enter a "Capture Text" mode; otherwise, it will receive just one page of information.

AppleWorks 1.3 or earlier will print the file to a text file with carriage returns at the end of every paragraph. After it is in a text file, you can use a terminal program, such as Access II, to send the file over the modem line. If you do not have a communications program, then the following small BASIC program should suffice:

```
5  ONERR GOTO 90
7  SLOT = 1
10 D$ = CHR$(4)
15 F$ = "textfile" : REM You may use any file name.
17 PRINT D$;"PR#";SLOT
20 PRINT D$;"OPEN";F$
30 PRINT D$;"READ";F$
40 GET A$
60 PRINT A$;
80 GOTO 40
90 PRINT D$;"CLOSE"
95 PRINT D$;"PR#0"
100 END
```

AppleWorks 2.0 inserts a carriage return at the end of every line when printing to disk. However, the program below strips off the carriage returns if the following character is not a space or another carriage return.

```
10  ONERR GOTO 130
```



```
20  O$ = "oldfilename" : REM You may use any file name.
30  N$ = "newfilename" : REM You may use any file name.
40  D$ = CHR$(4)
50  PRINT D$;"OPEN";O$
60  PRINT D$;"OPEN";N$
70  PRINT D$;"READ";O$
80  GET A$
82  IF A$ <> CHR$(13) THEN 100
83  B$ = A$
84  GET A$
86  IF A$ <> CHR$(13) AND A$ <> " " THEN B$ = " " : REM Convert CR to space
88  PRINT D$;"WRITE";N$
90  PRINT B$; : GOTO 110
100 PRINT D$;"WRITE";N$
110 PRINT A$;
120 GOTO 70
130 PRINT D$;"CLOSE"
140 END
```

After you have passed the text file through this "pre-processor", you can transmit it with the first program.

Tech Info Library Article Number:2228



Tech Info Library

LaserWriter Driver: Laser Prep and PostScript

Revised: 3/4/90
Security: Everyone

LaserWriter Driver: Laser Prep and PostScript

=====

Article Created: 20 February 1990
Article Last Reviewed: 15 July 1992
Article Last Updated: 15 July 1992

The Apple LaserWriter driver is a program that takes a print record created by an application and the Macintosh Print Manager and converts this print record into a format appropriate for a LaserWriter. The driver captures all QuickDraw calls and converts them into equivalent PostScript calls and commands.

Until System 7, abbreviations for long PostScript commands and routines for repetitive and common tasks went into a dictionary of definitions called Laser Prep, created for two reasons:

- Unlike printer software that requires commands of a single byte, PostScript accepts commands that are a series of ASCII characters.
- There are some common tasks that needed to be done repeatedly by virtually all documents sent the LaserWriter.

Once Laser Prep downloaded itself into the LaserWriter when the LaserWriter was initialized, the LaserWriter driver didn't have to generate and send redundant and unnecessary information with each printing. Translating, sending, and printing a document was much quicker with a LaserPrep file than without one. However, each time a Macintosh using a different version of Laser Prep or of the LaserWriter driver sent a print job, Laser Prep was forced to download again and reinitialize the printer. Under System 7, the prep information is downloaded to the printer with each print job.

If you look at a PostScript text file generated from the Macintosh, you'll see that almost all the PostScript commands sent by the driver are not abbreviated commands. These abbreviations were sent to the LaserWriter, which (using Laser Prep with pre-System 7 versions of the driver) had the prep file resident from the first printer session after startup. The prep

..TIL02229-LaserWriter_Driver-Laser_Prep_and_PostScript_(TA36965).pdf

file took these abbreviated commands and, through its dictionary, which is actually almost the entire prep file, provided full PostScript commands to the LaserWriter.

The requirements do not differ from application to application, because they all (all that use the Apple LaserWriter driver) generate the abbreviated PostScript commands. Applications - PageMaker for example - use their own prep and driver files, especially if they perform their function differently than the Apple drivers. The end result is that all full PostScript commands are common to all PostScript printers.

The Laser Prep header file is found at the beginning of the PostScript text file that can be generated by the LaserWriter driver instead of printing. You can create this file under System 7 simply by clicking "PostScript File" instead of "Printer" in the Destination option of the Print dialog box. Under System 6.x, click Okay in the Print dialog box and then hold down Command-K until the Print Status dialog tells you it is creating a PostScript file. This will create a PostScript file with the Laser Prep header (hold down Command-F instead to generate a PostScript text file without the header under System 6.x or earlier; this does not work under System 7).

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Tech Info Library Article Number:2229



Tech Info Library

Crosfield Lightspeed, Inc.

Revised: 4/3/97
Security: Everyone

Crosfield Lightspeed, Inc.

=====

Article Created: 3 June 1987
Article Last Reviewed: 2 April 1992
Article Last Updated: 3 April 1997

Crosfield Lightspeed Inc., software, specializing in color graphics layout software for the Macintosh II.

Crosfield LightSpeed Inc.
47 Farnsworth St.
Boston, MA 02210
617-338-2173
Fax: 617-338-1948

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2231



Tech Info Library

Apple IIGS: System Diagnostic Errors

Revised: 11/10/88
Security: Everyone

Apple IIGS: System Diagnostic Errors

=====

This article last reviewed: 10 November 1988

Here's the currently available, though incomplete, list, with explanations, of error codes generated by the Apple IIGS when running system diagnostics for the Apple II Family (V1.0B1).

Apple IIGS error codes have the form AABBCDD.

Test numbers AA

Error Code (AA)	Test
-----	-----
"RM"/01	Checksum
02	RAM Moving Inversions
03	Softswitch
04	RAM Address
05	FPI Speed
06	Serial I/O
07	Real Time Clock
08	Battery RAM
09	Front Desk Bus
0A	Shadowing
0B	Interrupts

AA=06 serial test

BB Meaning

--

01	Register R/W
04	Tx Buffer empty status
05	Tx Buffer empty failure
06	All sent status fail
07	Rx char available
08	Bad data

AA=03 RAM test

BBCC= Address

AA=01 ROM Checksum

BB= Failed checksum

DD=1 Bad RAM

AA=05 Speed

BB=1 speed stuck slow

BB=2 speed stuck fast

AA=08 Battery RAM

BB=01 address test failure and CC= bad address

BB=02 memory failure and CC = pattern, DD = Address

AA=02 Softswitches

Bb= Statereg bit

CC= Read softswitch address

AA=04 Front Desk Bus

BBCC= Bad checksum found

DD=01 FDB toolcode encountered a fatal error and no checksum computed

AA=04 Ram Address

BB= failed bank No

CC= failed bit

AA=06 Clock Test

BBCCDD=not used

DD=01 a fatal error occurred after the test to within a second

AA=0A shadow register functionality

AA=0B Mega II and VGC capability of generating interrupts.

BB=01 VBL interrupt timeout

BB=02 VBL IRQ status fail

BB=03 1/4 SEC interrupt

BB=04 1/4 SEC interrupt

BB=05 ---

BB=06 VGC IRQ

BB=07 SCAN Line

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Tech Info Library Article Number:2233



Tech Info Library

LaserWriter Plus: Diablo emulation printable area

Revised: 5/9/89
Security: Everyone

LaserWriter Plus: Diablo emulation printable area

=====

This article last reviewed: 4 June 1987

When printing a full page of text in Diablo emulation on a LaserWriter Plus, the top and bottom line of the text may be cut in half, or there may be a similar problem.

In order to get maximum lines per page in Diablo mode, reduce the lines per page (or lines per inch) setting. There is no other workaround for this situation. The margins set in Diablo mode are the print engine's margins and cannot be reset.

For a long time, there's been a known bug in Diablo mode that causes margins to be wrong sometimes. There has been no fix for it because the problem cannot be found.

Some users may think that when Apple upgraded the LaserWriter and reduced the printable area, Apple neglected to test the Diablo emulation. This misconception needs to be cleared up. There's no difference in the margins between a LaserWriter and a LaserWriter Plus in Diablo 630 Emulation Mode. The increased margins come into play only when the printer is being driven by a LaserWriter driver and is using the Laser Prep file that is downloaded from the Macintosh.

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Tech Info Library Article Number:2235



Tech Info Library

AppleWriter IIe DOS 3.3: Ignores Control-O from Apple IIGS

Revised: 6/10/87
Security: Everyone

AppleWriter IIe DOS 3.3: Ignores Control-O from Apple IIGS

=====

The DOS 3.3 version of AppleWriter IIe is incompatible with the Apple IIGS in that it does not recognize a Control-O for the options menu. If you go into the Print/Program Commands menu, you will also notice that all the defaults are set to zero.

Here's a workaround:

1. Boot up with the DOS 3.3 System Master.
2. Take out the DOS 3.3 System Master and insert AppleWriter IIe DOS version.
3. Type BRUN OBJ.BOOT and return
4. When AppleWriter comes up, press the Return Key.
The disk spins, and then the program freezes.
5. Press Control-Reset.
A blank screen should appear.
6. Press Control-Reset.

This should bring the program back. The values in the Print/Program are still zero'ed, but you can access the Control-O menu. Make sure not to press Control Open Apple Reset in steps 5 and 6.

The data line still shows mouse text characters. To correct this, run the Apple IIc patch for the DOS 3.3 version of Apple Writer IIe. With this patch, mouse text characters are removed from the data line.

Tech Info Library Article Number:2236



Tech Info Library

Interbridge: Using it with 9600 baud modems

Revised: 1/13/88
Security: Everyone

Interbridge: Using it with 9600 baud modems

=====

This article last reviewed: 4 June 1987

A workaround was developed after trying to get the Hayes Interbridge to work with third party 9600 baud modems, Codex model 2260's, supposed to be Hayes command compatible.

In theory, the Codex modems should work after engineers unplug the 2400 baud modems they were using and plug in the Codex's, properly configured. Unfortunately, the Interbridge seems to look for responses that the Codex does not give.

Listed below are the settings used for the Interbridges and modems.

Equipment

2 Macintosh Plus
2 Interbridges (upgraded ROM's)
2 Codex Model 2260 modems.
Appropriate cables

Bridge Setups

Port S1

Remote Bridge
9600 baud
Async
Leased

Port A1

AppleTalk	On
Net#	Must be <>
Bridge Name	Must be <>
Zone Name	Must be =

Modem Setup

ORIGINATING MODEM

Connect the phone lines to the Audio Line (NOT the LLine) jack.

Rate = 9600 only

Terminal

Format = Async

Char Length = 10

DTR = 108.1 (Note: this tells the modem to dial on Interbridge power up. If you use 108.2 you will have to select one of 8 preset numbers to dial.

RTS = Normal

RTS/CTS Delay = 0

DCD = Normal

DSR = High

Modify Audio

Answer = Auto

Default Dial = 1 (or whichever preset number you want)

Line = Dial

Modify Modem

Mode = External

Clock = Internal

AutoRetrain = On

Disconnect = PSTN

Auxiliary

This is where you enter/view/set your phone numbers.

ANSWERING MODEM

Same setup as the originating modem except the default dialer is off.

Overview

Once the above setup is completed, any time the originating Interbridge is powered on, the modem will call the other Interbridge and begin operation.

Tech Info Library Article Number:2237



Tech Info Library

Hard Disks: Head parking

Revised: 9/16/88
Security: Everyone

Hard Disks: Head parking

=====

This article last reviewed: 2 June 1987

Disk parking or head parking is a feature considered essential by those who concern themselves with the long term reliability normally associated with a hard disk. Since a 'parked' head cannot 'land' on the data area, the disk becomes more reliable in terms of data integrity. Assuming the head parks in a non-data area, the disk is safer to use and move.

Apple 20 megabyte hard disks (Hard Disk 20 and SCSI HD20SC) don't have a park function. There is no park track for head resting on these hard disks.

However, when the drive is not powered up, all hard disks have braking, caused by the inertia of the head's stepper motor. If the heads don't retract, their stepper motor's inertia has to "put the brakes on them" to keep them in place. If the inertia of the stepper motor is great enough, it's difficult to get the head to land or move during "normal" use and movement. The internal SCSI drives on the Macintosh SE are rated for a shock of 40G's, so the stepper motor inertia there must be relatively significant.

The upcoming HD40SC and HD80SC will have a park function; however, be advised that this park function varies from vendor to vendor.

In other non-Apple hard disk configurations, a particular vendor's hard disk may not park the head in a non-data zone or may have stepper motor inertia that isn't great enough to provide adequate braking.

Apple's ProFile hard disk does have head parking. If the disk isn't accessed for 2-3 seconds, the Apple Profile's heads park in a non-data area.

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Tech Info Library Article Number:2239



Tech Info Library

ThunderWare

Revised: 4/3/97
Security: Everyone

ThunderWare

=====

Article Created: 2 June 1987
Article Reviewed/Updated: 3 April 1997

ThunderWare, software and hardware, specializing in scanners and clock cards for Apple II and Macintosh.

ThunderWare
21 Orinda Way
Orinda, CA 94563
510-254-6581
800-628-0693 (Orders only)
Fax: 510-254-3047

Article Change History:
25 Jul 1994 - Updated order phone number.

Support Information Services

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Tech Info Library Article Number:2240



Tech Info Library

AppleSoft: INPUT Statement Documentation Error

Revised: 6/10/87
Security: Everyone

AppleSoft: INPUT Statement Documentation Error

=====

The 'BASIC Programming with ProDOS' manual, published by Addison-Wesley, (service part number 030-1119) has an Appendix B which, among other things, lists changes made to AppleSoft. On page 218, the manual has inaccurate information concerning changes made to the AppleSoft INPUT statement:

"The AppleSoft INPUT command has been made more useful. This command always reads an entire line of text from a file. As before, multiple variables in an INPUT statement are assigned strings of characters that are separated by commas in the input string. When you use ProDOS, the last variable in the INPUT list is assigned all the remaining characters in the line, including commas and colons. This means that you can now use a single INPUT statement, such as 10 INPUT XX\$, to read any arbitrary string of characters."

This paragraph is incorrect. The feature mentioned was considered but not implemented due to compatibility problems.

Tech Info Library Article Number:2241



Tech Info Library

Macintosh: Custom Drivers For Typesetters

Revised: 11/4/91
Security: Everyone

Macintosh: Custom Drivers For Typesetters

=====

Article Created: 5 June 1987
Article Last Reviewed: 1 November 1991
Article Last Updated: 1 November 1991

TOPIC -----

How can I send Macintosh data to a non-PostScript typesetting device?

DISCUSSION -----

Many typesetters, such as the Autologic APS-5, are not PostScript devices. However, if the typesetter is an ASCII serial input device, data can be sent to it by either printing in draft mode or using a terminal package (e.g., MacTerminal). The drawback is that you can't use graphics or custom characters.

An alternate solution is to have a custom driver written for the typesetter.

For more information on having a custom driver written, search on "GDT SOFTWARES".

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Tech Info Library Article Number:2244



Tech Info Library

LaserWriter: How To Make It Coin Operated

Revised: 11/10/88
Security: Everyone

LaserWriter: How To Make It Coin Operated

=====

This article last reviewed: 10 November 1988

To connect a coin-operated switch to the LaserWriter, try setting the paper tray sensor switches to a "tray out" condition (i.e., no paper tray in the LaserWriter). When a coin is inserted, check for voltage at the paper feed rollers' solenoid (this way you know a sheet of paper has been ejected from the paper tray). Then, reset the the printer to the "tray out" condition until the next coin is dropped.

The connections for the three paper tray micro-switches are at locations J214-2, J214-4, and J214-6 on the DC controller board. The paper feed solenoid is connected at locations J210-3 and J210-4, also on the DC controller board.

Keep in mind that any modifications to the LaserWriter will void any warranty or AppleCare coverage.

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Tech Info Library Article Number:2245



Tech Info Library

AppleLine Cables: How to get and fit them

Revised: 8/19/87
Security: Everyone

AppleLine Cables: How to get and fit them

=====

The need AppleLine cables has finally been met (if you don't mind the AppleLine under your Macintosh Plus or Macintosh SE) by Product A9M0333, the Apple IIGS Adapter Cable.

The Adapter Cable is a female DB-25 with a circular 8 on one end. The only drawback is the cable's length (about 8 inches). Removing the screw and nuts from the cable lets it fit fully into AppleLine's unusual male plug, eliminating the need for a gender bender.

If the cable length is a problem, then Product A9C0314, the Apple II Printer - 8 Cable (smoke), is the answer. It has a male DB-25 (requiring the gender bender) along with the circular 8.

Note: While AppleLine is, logically, located on the Macintosh price list, both of the above cables are listed only on the Apple II price list. You will have to refer to both price lists when ordering this equipment.

Tech Info Library Article Number:2246



Tech Info Library

Macintosh SE: Slower Performance of Second Disk Drive

Revised: 12/6/89
Security: Everyone

Macintosh SE: Slower Performance of Second Disk Drive

=====

This article last reviewed: 8 June 1987

In the Macintosh SE, the upper disk drive (the "external" drive) operates differently from the lower "internal" drive or from any other 800K drive. The upper drive sounds different when moving the head from track to track; it sounds like the head moves three times when seeking.

The upper drive does work, but more slowly, sometimes a third more slowly. The problem resides in the firmware. The software is testing for the source drive at each read whenever the source drive is the upper drive. There have been no fixes for the problem.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2248



Tech Info Library

LaserWriter: Issuing a restart from an IBM PC XT

Revised: 3/4/90
Security: Everyone

LaserWriter: Issuing a restart from an IBM PC XT

=====

This article last reviewed: 8 June 1987

Assuming you are in serial batch or AppleTalk mode and not the Diablo 630 emulation mode, the following PostScript sequence should issue a restart from an IBM PC XT:

```
systemdict/quit get exec
```

This will need to go into a .bat file for output to the printer port. Do not forget that the LaserWriter requires XON/XOFF communication with standard settings of 8 data bits, 1 stop bit, and no parity. If you are using Diablo 630 mode ('special' switch setting), PostScript commands are ignored and treated as text.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2250



Tech Info Library

Installer: Why it's more useful than copying system files

Revised: 7/2/87
Security: Everyone

Installer: Why it's more useful than copying system files

=====

In general, the Installer is a very flexible program for installing just about anything. Since the Installer is designed to be programmable, the number and sort of items it replaces can vary, depending on the installer script.

In the case of updating a System or Finder file, the Installer will usually only replace resources it identifies as: 1. Apple's and 2. outdated. This method is better than simply swapping an old System for a new one because it lets you keep custom setups including Desk Accessories, Fonts, and special drivers, like MacServe and InBox.

Tech Info Library Article Number:2251



Tech Info Library

AppleShare 1.1: Won't Start Up Even Though the Server is Okay

Revised: 10/4/89
Security: Everyone

AppleShare 1.1: Won't Start Up Even Though the Server is Okay

=====

This article last reviewed: 8 January 1988

There is a problem in AppleShare 1.1 that prevents the AppleShare server from starting up even though the server is okay.

AppleShare creates and maintains a file called AppleShare PDS, which stands for "AppleShare Parallel Directory Structure." This "Parallel Directory" stores information about files, such as AppleShare short names and access privileges, that cannot be stored in the standard directory. As you add files to an AppleShare volume, the AppleShare PDS file grows.

The problem occurs when the "AppleShare PDS" file grows beyond one megabyte (1,048,576 bytes). It's hard to predict how many files you can add to a volume before you reach this limit.

AppleShare's maximum volume is somewhere between 8,000 and 12,000 files. (The variation is due to how the file names are added to the PDS file.) You can check the size of the "AppleShare PDS" file to see how close you are to the one megabyte limit. If you exceed this limit, your server will continue to report an error condition even if you remove enough files to bring the file down below one megabyte in size.

To fix this:

1. Throw away the AppleShare PDS file.
2. Run the AppleShare Admin program and verify access privileges for the volume. This will recreate the "AppleShare PDS" file, which allows your server to start up again. We recommend that your volumes contain no more than 8,000 files.

The next release of AppleShare will fix this problem.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2252



Tech Info Library

Macintosh II: Pinouts To NEC Multisync Monitor (6/94)

Revised: 6/24/94
Security: Everyone

Macintosh II: Pinouts To NEC Multisync Monitor (6/94)

Article Created: 24 October 1988
Article Reviewed/Updated: 23 June 1994

The Macintosh II video card can drive the NEC Multisync monitor. Here are the pinouts, provided by NEC, for connecting a Macintosh II to the Multisync's 9-pin connector:

Macintosh II	Nec MultiSync	signal name
1	6	red video ground
2	1	red video
5	2	green video+ Composite analog sync
6	7	green ground
9	3	blue video
11	7	green ground
13	8	blue ground
14	9	ground

Set the monitor to Analog and manual mode.

Apple is not responsible for the contents of this article.

Article Change History:
23 Jun 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1988-94 Apple Computer, Inc.

Tech Info Library Article Number:2254



Tech Info Library

ADB Mouse: Single click interpreted as multiple clicks

Revised: 8/7/92
Security: Everyone

ADB Mouse: Single click interpreted as multiple clicks

=====

Article Created: 9 June 1987
Article Last Reviewed: 6 August 1992
Article Last Updated:

TOPIC -----

Sometimes when I make a single mouse click, my Macintosh SE interprets it as several mouse clicks. What's going on here?

DISCUSSION -----

If a single mouse click is interpreted by your Macintosh SE as multiple mouse clicks, the problem may be a bad micro switch in the ADB mouse. Try replacing the mouse on the offending system; the problem is most likely not being generated by software.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2255



Tech Info Library

Macintosh: Upgrade for drives over 32MB (1 of 2)

Revised: 10/18/88
Security: Everyone

Macintosh: Upgrade for drives over 32MB (1 of 2)

=====

This article last reviewed: 9 June 1987

Important Note to Users of Disk Drives With Over 32 MB Capacity

It is extremely important that you upgrade to System 4.1 if your Macintosh computer is attached directly to a hard disk with a capacity of 32 megabytes or more.

There is a bug in versions of the system file prior to 4.1 which makes it unsafe to use disk drives larger than 32 MB. Note that there are special instructions for owners of disk drives over 134 MB as well.

-- Instructions for disks over 32 MB but less than 134 MB:

Use the installer to install System 4.1 and Finder 5.5 on the startup disks of all Macintosh Plus, SE, or II computers.

For Macintosh computers dedicated as AppleShare servers, shutdown the server, restart from the Macintosh System Tools disk Version 2.0, and use the Installer to install System 4.1, Finder 5.5, Chooser 3.1, etc., in the server folder on the server startup volume. When the install is complete, you may restart the server Macintosh as an AppleShare server by choosing Restart in the Special menu.

For the Macintosh II, and ideally the Macintosh Plus and Macintosh SE servers too, use the Install program that accompanies AppleShare 1.1. Doing so also updates the System, Finder, Chooser, etc., as well as updating AppleShare to Version 1.1 (neccessary for the Macintosh II).

Instructions for disk drives with 134 MB or more which were initialized with System 3.3 or earlier (creation date January 12, 1987 or earlier):

Since system versions 3.3 and earlier were not capable of correctly formatting disks over 134 MB, you need to reformat the disk with

System 4.1.

1. Backup all information on the hard disk to another device using a file by file backup (the Finder will do). Image Backup utilities are not acceptable, since image restoration will preserve the bad format.
2. Reformat the hard disk using System 4.1
3. Restore the information back to the hard disk using a file by file technique.
4. Update the System and Finder versions to 4.1 and 5.5, respectively.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2256



Tech Info Library

Macintosh: Upgrade for drives over 32MB (2 of 2)

Revised: 10/18/88
Security: Everyone

Macintosh: Upgrade for drives over 32MB (2 of 2)

=====

This article last reviewed: 9 June 1987

-- Special instructions for disks attached to AppleShare Servers:

Updating a disk over 134 MB attached to an AppleShare file server is a bit more complex because access privilege information will need to be manually restored during the update process. Note that updating requires a file by file backup of and restore onto the hard disk, and that all access privilege information will need to be reset after reformatting and restoration. A note below details the difference between file-by-file and image backup.

There are two alternative approaches to the process: Method A, less a burden for the server administrator, requires coordination with all server users. Method B requires little coordination, but may entail a substantial time commitment from the server administrator.

Method A - User participation.

1. Instruct all users of the file server to make backup copies over the network of the information they own on the affected volume(s) using their own local storage resources and to delete their information and folders from the server volume as they back them up.
2. After all users have completed this process, shut the server down, run AppleShare Admin, and make a complete volume report for each volume over 134 MB and make a floppy backup of the users and groups list.
3. Copy all remaining files and folders on affected volumes that you wish to preserve (perhaps belonging to absent employees) to some other storage device using a file by file technique (like the Finder).
4. Restart the server CPU using a floppy disk containing System 4.1, such as the Macintosh System Tools disk Version 2.0, and reformat the disks over 134 MB.
5. Restore the files and folders that you preserved in step 3, if

any, to the reformatted volumes using a file by file restore technique.

6. Insert the AppleShare Server Installer disk and open the Admin Application. Prepare the disk(s) as server volumes. If the program asks for a users and groups file, use the one you preserved on floppy.
7. Once preparation is complete, use Admin to reassign ownership and access privileges to each folder that you restored, if any, to the reformatted volumes using the information in the volume report(s) you created in step 2.
8. Quit Admin, and install system 4.1 in the server folder of the server startup volume, replacing the existing system. Use the installer utility for this purpose.
9. Restart the server, and instruct all users to log on to the server and restore their individually backed up information to the server. Each user must reset access privileges to each folder they own as desired.

Method B - No user participation.

1. Shut the server down, run AppleShare Admin, and make a complete volume report for each volume over 134 MB and make a floppy backup of the users and groups list.
2. Copy all files and folders on affected volumes that you wish to preserve to some other storage device using a file by file technique (like the Finder).
3. Restart the server CPU using a floppy disk containing System 4.1 and reformat the disk(s) over 134 MB.
4. Copy the files and folders that you preserved in step 2 to the reformatted volumes using a file by file restore technique.
5. Insert the AppleShare Server Installer disk and open the Admin Application. Prepare the disk(s) as server volumes. If the program asks for a users and groups file, use the one you preserved on floppy.
6. Using Admin, reassign ownership and access privileges to each folder that you restored to the reformatted volumes using the information in the volume report(s) you created in step 1.
7. Quit Admin, and install System 4.1 in the server folder of the server startup volume.
8. Restart the server.

Note on Backup:

Upgrading Disks over 134 MB which were originally initialized with System 3.3 or earlier requires a file-by-file backup and restore, since the original format was incorrect.

There are basically two kinds of backup: file-by-file and image. File-by-file backup performs its functions through standard file system calls, and backs up a particular file by creating a copy on another storage resource. Only the information in the file is transferred from the original storage device to the backup device. The formatting information on the original device is not transferred to the backup device.

Image backup performs its functions at a much lower level in the system. Image backup backs up a storage device as a series of bits of data, and does not differentiate between data and formatting information on the original storage device. The image backup of a storage device will therefore contain the formatting information of the original, even if it is incorrect. Restoring from an image backup onto a storage device will replace whatever formatting information is there with the formatting information that was in the image backup.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2257



Tech Info Library

Apple IIGS: Printing to the LaserWriter from AppleWriter

Revised: 7/2/87
Security: Everyone

Apple IIGS: Printing to the LaserWriter from AppleWriter

=====

Applewriter II works correctly on the Apple IIGS, except that you cannot print using the built-in ports to a standard RS-232 serial printer. You can, however, use the ports to print to a Laserwriter or an Imagewriter II over Appletalk. You can also print to either a parallel or serial printer by simply installing a compatible interface card, such as a Super Serial or Parallel card, into one of the Apple IIGS's slots.

To print to the Laserwriter or an Imagewriter II over Appletalk, you must first use the Chooser that comes with the Apple IIGS system disk. Choose the Appletalk printer that you would like to print your documents on, and then exit the program. When you are in Applewriter II, make sure that the last line of your document contains a form feed command. To do this, just type in the following as the last line in your document:

Control-V Control-L Control-V

This command will force the Appletalk Imagewriter and Laserwriter to eject the last page of the document.

For a deeper discussion on how to print to the LaserWriter from the GS, albeit with AppleWorks, see the article in this Library called "Apple IIGS: Printing to the LaserWriter from AppleWorks."

Tech Info Library Article Number:2258



Tech Info Library

LaserWriter: Problem in bold italic outline 48 points or more

Revised: 7/2/87
Security: Everyone

LaserWriter: Problem in bold italic outline 48 points or more

=====

A known problem with the LaserWriter causes it simply to print a test sheet when you ask it to print a bold italic outline font larger than 48 points.

Until a fix is made, the only workaround known is to avoid that style and size.

Tech Info Library Article Number:2259



Tech Info Library

TeleTypesetting Company

Revised: 4/3/97
Security: Everyone

TeleTypesetting Company

=====

Article Created: 10 June 1987
Article Reviewed/Updated: 3 April 1997

TeleTypesetting Company, software, postscript interpreter (esp. for non-postscript printers) and reference books on floppy disk.

TeleTypesetting Company
311 Harvard St.
Brookline, MA 02146
617-734-9700
Fax: 617-734-3974

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2260



Tech Info Library

Computer Associates

Revised: 3/9/94
Security: Everyone

Computer Associates

=====

Article Created: 10 June 1987
Article Reviewed/Updated: 8 March 1994

Computer Associates

1 Computer Associates Plaza
Islandia, NY 11788-7000

800-225-5224 (Information on Macintosh products, including Cricket Draw
and Cricket Presents.)

Company Profile:
Computer Associates develops, markets and sells development software (Clipper)
accounting, project management and drawing and illustration software.

Article Change History:
8 March 1994 - Corrected telephone number, updated company profile and
consolidated several articles into one.

Support Information Services

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Tech Info Library Article Number:2261



Tech Info Library

Ergotron, Inc.

Revised: 4/3/97
Security: Everyone

Ergotron, Inc.

=====

Article Created: 10 June 1987
Article Reviewed/Updated: 3 April 1997

Ergotron, Inc.

3450 Yankee Dr.
Suite 100
Eagan, MN 55121

800-888-8458

612-452-8135

612-452-8346 Fax

Company Profile:

Hardware, specializing in computer stands, CRT suspension furniture, and other hardware for Macintosh, LAN racking systems

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2262



Tech Info Library

Apple IIGS: What to Check If the Finder is Starting Very Slowly

Revised: 8/28/90
Security: Everyone

Apple IIGS: What to Check If the Finder is Starting Very Slowly

=====

This article last reviewed: 8 January 1988

When the Apple IIGS Finder starts very slowly, perhaps even seeming to be locked up, there are a number of things you can do:

- Limit the number of files/folders at the root level of the hard disk to fifty or less.
- Limit the number of files in any given folder to 50-60. This allows a reasonable number of files in a folder without any undue amount of time opening and displaying the folder. (These 50-60 files within folders can be other folders.)
- Displaying the file names by Name or Date, rather than by icon, take less time.
- Check the Control Panel and be sure there is no RAM set aside for RAM Disk. Memory is needed to build the table for displaying the files. If you have any of the RAM card assigned as RAM Disk, you will take up memory space needed to build this table. Normally this would give you an out of memory error message, but something else may be happening before the error is displayed.

When the Finder is requested to open a window, it must calculate the regions for every file/folder to show, so it knows where in the window it goes, and whether or not to display it, given the current size of the window, not to mention what color it needs to be. This can take a long time. Seven hundred files/folders could take hours to show up in the window on the screen.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2265



Tech Info Library

Apple IIGS Lithium Battery

Revised: 1/17/92
Security: Everyone

Apple IIGS Lithium Battery

=====

Article Created: 31 Juy 1987
Article Last Reviewed: 17 July 1992
Article Last Updated:

BEFORE YOU START: Familiarize yourself with the Apple IIGS
Technical Procedures.

PROBLEM DESCRIPTION: The lithium battery is leaking and has
contaminated the logic board of the Apple IIGS.

CURE: Do NOT attempt to clean the board. Do NOT install a new
battery. The entire board, with leaking battery, should be
returned to Apple and an exchange module installed in the
customers computer. The logic board should be returned in the
standard anti-static bags and the normal shipping box.

Copyright 1987, Apple Computer, Inc.

Tech Info Library Article Number: 2266



Tech Info Library

ImageWriter II:Paper Feed and Detection Problems(2 of 2)

Revised: 1/17/92
Security: Everyone

ImageWriter II:Paper Feed and Detection Problems(2 of 2)

=====

This article last reviewed: 29 March 1988

PROBLEM DESCRIPTION: Paper jams or "paper folding" between the paper blade and paper bail assembly with the ImageWriter II.

BEFORE YOU START: There are four major reasons that paper jams occur with the ImageWriter II. Those are: a) the platen release lever is not in the correct position (released); b) possible obstruction(s) in the paper path (labels etc...); c) the paper has become deformed because of its being curved under the platen for an extended period of time; d) the paper guide is defective.

With most rear tractor feed printers it's not possible to just load the paper into the tractors and hit form feed to load the paper. You must guide the paper under the platen, then lock it into the tractors or use the procedure outlined in the IMAGEWRITER II owner's manual page 19. If this is the Problem reported, there isn't any 'fix', rear tractor feed printers don't do this gracefully.

CURE: Use the following procedures to troubleshoot the Problem:

1. Remove the paper from the printer and tear off the first page. Sometimes the first page of perforated paper is deformed from its being curved under the printer for an extended period of time (see Note 1). Reinsert the fresh paper and test the printer. Continue to the next step if the Problem still persists.
2. Check that the platen has been released from friction feed mode. Release the platen if the lever is in friction mode and test. Continue to Step 3 if the Problem still persists.
3. Check for the presence of obstructions in the paper path. One very common obstruction is that of a label that has adhered to the metal blade located under the platen. Clear any obstructions

and test the printer. Proceed to Step 4 if the problem persists.

4. Check the paper guide and make sure that it is not damaged. Sometimes the foil will peel from the plastic part of the paper guide assembly. Remove and replace the paper guide assembly if you find it to be defective. Proceed to the next steps if the problem persists.

Other causes for paper jams on the ImageWriter II.

5. Problem: The tractor assembly can be misaligned causing the paper to feed improperly

Cure: Replace the tractor assembly

6. Problem: The paper out sensor is interfering with the paper path. You can really tell this when you insert a single sheet and the left hand side under the platen is 'tighter' than the right side.

Cure: Adjust the paper out sensor so it sits lower in the platen cradle, but high enough to detect paper out. To adjust the paper out sensor, take a screw driver and bend the sensor downward.

7. Problem: Paper guide is either too close to the platen, or damaged. The silver piece in front of the dot head could be torn

Cure: Replace paper guide

8. Problem: Paper bail is not aligned or one side is loose.

Cure: Adjust paper bail or replace

9. Problem: The metal plate on the left of the platen, which holds the platen in place on the left side is loose or out of adjustment (Technical Procedures, IMAGEWRITER II illustrated parts, page 6.36, part 'A')

Cure: Metal plate needs to be adjusted or tightened

Note 1: This step is listed first because deformity of the paper is quite common. Checking the friction lever is normally the first step performed when troubleshooting most other printers.

If this cure does not resolve the problem, go to the Technical Procedures to obtain a General Troubleshooting procedure for this product.

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Tech Info Library Article Number:2267



Tech Info Library

Macintosh SE: Video Problems

Revised: 1/17/92
Security: Everyone

Macintosh SE: Video Problems

=====

Article Created: 31 July 1987
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

BEFORE YOU START: Familiarize yourself with the Macintosh SE Technical Procedures. Be sure to follow proper ESD procedures.

PROBLEM DESCRIPTION: The Macintosh SE video screen slowly fades until there is no visible display at all.

PROBLEM CURE: Replace the Video Board, part number 661-0372 (or update to new part number). The video board is located on the back of the CRT assembly.

The video Board provides video amplification and over-voltage protection to the video circuit.

Copyright 1987, 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2268



Tech Info Library

Apple IIfc: Power Light Flashes

Revised: 7/20/92
Security: Everyone

Apple IIfc: Power Light Flashes

=====

Article Created: 31 July 1987
Article Last Reviewed: 17 July 1992
Article Last Updated: 17 July 1992

BEFORE YOU START: Familiarize yourself with the Apple IIfc
Technical Procedures. Be sure to follow proper ESD procedures.

PROBLEM DESCRIPTION: While using the IIfc, the green 'power'
light above the keyboard begins to flash at a steady rate.
This seems to be the only failure. The computer appears to still
be functional, and the video remains unchanged.

BACKGROUND INFORMATION: The internal power supply requires
the voltage from the power pack to be above a certain limit.
When the voltage drops below this limit, the internal power
supply signals an error to the logic board and begins to
flash the 'power' light until the condition is corrected.
Some common causes of this symptom are: brownouts, custom-
made battery packs with insufficient voltage or low battery
power, or attempting to run the IIfc from an automobile cigarette
lighter while the car is running. Although the Apple IIfc Reference
manual states that the Apple IIfc internal power supply requirements
are from between 9 and 20 volts, anything below approximately
12.5 volts may cause the 'power' light to flash.

CURES:

#1: Verify that the power source is providing the correct
voltage to the Apple IIfc.

#2: Replace the external power supply.

#3: Replace the internal power supply

If problems still continue then refer to the Apple IIfc General

Troubleshooting procedures.

Copyright 1987,1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2269



Tech Info Library

Apple IIGS: Problems setting the RAM Disk

Revised: 8/7/87
Security: Everyone

Apple IIGS: Problems setting the RAM Disk

=====

You may encounter problems if you set your RAM disk to the entire capacity of your RAM card. MouseDesk may be unable to write files to the disk when it gets close to full, and programs run from it may crash. The problem is in the Memory Manager, not in MouseDesk.

Until the problem is corrected, the workaround is not to set the RAM disk size as large as the RAM card. This should be acceptable, as most people need some of the extra RAM for the Tools and for data space for programs (such as AppleWorks 2.0) that recognize it.

Tech Info Library Article Number:2272



Tech Info Library

LaserWriter: Buffer Space and XOFF Character

Revised: 3/4/90
Security: Everyone

LaserWriter: Buffer Space and XOFF Character

=====

This article last reviewed: 6 August 1987

When the LaserWriter's input buffer fills, it sends an XOFF character to the computer. In some cases, after receiving the XOFF character, the computer can't stop transmitting immediately. This means that if the XOFF character is not sent early enough, characters may be lost.

The LaserWriter sends the XOFF code when there are 100 characters left in the input buffer. If this is not enough, changing to version 2.0 ROMs may help. Those ROMs support DTR as a method of handshaking, which generally operates faster than XON/XOFF.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2273



Tech Info Library

LaserWriter: Pin 20 of the DB-25 Connector

Revised: 9/21/87
Security: Everyone

LaserWriter: Pin 20 of the DB-25 Connector

=====

This article last reviewed: 6 August 1987

Pin 20 of the LaserWriter DB-25 connector is NOT (as sometimes stated)
a Tx (Transmit Data) line. It IS a DTR (Data Terminal Ready) line.

Tech Info Library Article Number:2274



Tech Info Library

ImageWriter II Sheet Feeder: Damage During Removal

Revised: 11/10/88
Security: Everyone

ImageWriter II Sheet Feeder: Damage During Removal

=====

This article last reviewed: 10 November 1988

The problem: sometimes the right side of the platen (facing the front of the unit) becomes loose and disengages from its mounting bracket. This can cause intermittent print quality problems.

The cause: while removing the Sheet Feeder, the operator rocks the assembly back and forth to eject it from the printer. This puts pressure on the platen hold-down bracket, bending it in such a way that the platen is loose enough to rise out of the frame assembly. The print head then does not firing squarely on the platen.

Three remedies:

- Remove and straighten the bent mounting bracket, then re-install it.
- Remove the bent mounting bracket and replace it with a new part (# 076-0200)
- Remove and straighten the bent mounting bracket. Drill out the dimple (the raised steel stamping) on the mounting bracket with a power drill and a 3mm bit. You can then mount the bracket with two screws instead of one. Use a SMW 2.6 x 6 screw along with a nut and toothed washer.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2275



Tech Info Library

LaserWriter: Page Count for New Units

Revised: 9/21/87
Security: Everyone

LaserWriter: Page Count for New Units

=====

This article last reviewed: 6 August 1987

LaserWriters are tested before they are shipped. When the customer first turns a new LaserWriter on, the page count will show a number in the range 28 to 200.

Tech Info Library Article Number:2276



Tech Info Library

LaserWriter: How To Print On Legal-Size Paper Without A Cassette

Revised: 12/3/88
Security: Everyone

LaserWriter: How To Print On Legal-Size Paper Without A Cassette

=====

This article last reviewed: 21 October 1988

It's possible to print on legal-size paper even if you have no legal paper input cassette. (If a letter-size paper cassette is installed, the LaserWriter or LaserWriter II assumes it's printing on letter-size paper.) This procedure assumes your application uses the standard Apple Page Setup dialog.

1. Choose Page Setup from the File menu. Select the US Legal button.
2. Click the Options button.
3. Click the box next to Larger Print Area. This shrinks the "nonprintable" area on the paper. (Without this step, the image is out of registration by 1/3 the length of the paper.)
4. Choose Print from the File menu.
5. Choose Manual Feed in the print dialog box.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2279



Revised: 12/16/96
Security: Everyone

=====

TOPIC -----

DISCUSSION -----

Communications Mode

Printer Mode

Switch 1

1 2 3 4 5 6 7

Switch 2

1 2 3 4 5 6 7

Mode Select OFF ON

Normal CTS	ON	OFF
Secondary CTS	OFF	ON
9600 Baud	OFF OFF OFF ON	
Data bits (=8)		
& Stop bit(=1)	ON	
Delay After <CR>	OFF	
Line Width (=80)		OFF ON
<LF> after <CR> out (=YES)		ON

KEY: LF = Line Feed
CR = Carriage Return
CTS= Clear To Send
XXX= Don't Care
To set the interrupts on or off, Switch Block Two, Number 6 is either
ON or OFF respectively

The switch settings are also found in the Super Serial Card Installation and Operation Manual. Chapters 2, 3 and the reference section contain the switch settings.

The default settings for the Apple IIC are in the Apple IIC Technical Reference Manual. Printer setup is on page 148, and modem setup on page 160.

Article Change History:
16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:2280



Tech Info Library

AppleSoft BASIC: Random Number Generators

Revised: 8/7/87
Security: Everyone

AppleSoft BASIC: Random Number Generators

=====

Applesoft BASIC includes a pseudo-random number generator, function call RND(x).

If $x = 0$, then the previous random number is returned.

If $x > 0$, then a new sequence of random numbers is generated by taking the previous random number, multiplying by a constant, and then adding the result to another constant. (The multiplication constant is -3490938.41 and the addition constant is -9.47445545 E-9.) Then the high and low bytes of the resulting 5-byte floating-point number are swapped, the exponent is rotated into the mantissa for further "randomness," and the new exponent is set to -1, insuring a number between 0 and 1. The high and low bytes are swapped to insure a random distribution of numbers greater than and less than 0.5.

If $x \leq 0$, then a new sequence is NOT generated, so the multiplication and addition by constants does NOT take place -- only the swapping process, and so on, that follows.

Operating systems have random number algorithms of their own. For details, see the operating system's documentation.

Tech Info Library Article Number:2281



Tech Info Library

AppleShare: Why Verifying the Server Can Take So Long

Revised: 10/4/89
Security: Everyone

AppleShare: Why Verifying the Server Can Take So Long

=====

This article last reviewed: 29 March 1988

When an AppleShare server is started up, it initiates a two-pass process that ensures that the PDS (Parallel Directory Structure) is valid. During the first pass, it makes sure that for every entry in the PDS, there is a corresponding entry in the catalog. On the second pass, it does the opposite. A server with a very large number of files can takes an hour or more to verify.

If this interval is unacceptable, turn off the server less often. To blank the screen when you don't need to see it, turn down the screen intensity or install a desk accessory that blanks the screen automatically after a period of inactivity.

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Tech Info Library Article Number:2283



Tech Info Library

Apple IIGS Finder: Description of Features and Some User Tips

Revised: 8/28/90
Security: Everyone

Apple IIGS Finder: Description of Features and Some User Tips

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This article last reviewed: 12 January 1988

The Apple IIGS Finder brings much of the power of the Macintosh Finder to the Apple IIGS. It lets Apple IIGS users use a 'desktop' interface for launching applications and performing file manipulation. The Apple IIGS Finder works only on an Apple IIGS with a mouse and at least 512K of memory.

Some of the features of the Apple IIGS Finder are:

- icon representation of volumes, disk files, and the trash can.
- menus: Apple, File, Edit, View, Special, and Color.
- online Help available in the Apple menu.
- choice of colors for individual volume and file icons.
- the Put Back function lets the user return files that have been thrown in the trash can or recently moved to the desktop back to their original locations.
- a Preferences option in the Special menu provides six options (all of which default to 'on'):

Display help for dimmed commands. If this box is checked, users can select a greyed-out menu option, and get help on why that option is currently not available.

Double-check before removing files and folders. If this box is checked, a dialog box requests verification before files or folders are deleted.

Color selected icon's background instead of its outline. If this box is checked, the selected icon's background is colored instead of its outline. It is personal preference, but the default -- background color fill -- is easier to see than a colored outline

Save Finder information onto disk. If this box is checked, the Finder creates a file called FINDER.DATA that records the window position and size of all open windows. Another file, called FINDER.ROOT, remembers what windows were open on the desktop when the disk was ejected. If for some reason you want this data not to be recorded, don't check this box.

Hide the Finder's data files. If this box is checked, when a window is opened, the default is to not display the FINDER.DATA and FINDER.ROOT files. If you want them displayed, don't check this box.

Do a smart block copy. If this box is checked, the default mode when copying disks of the same size is to copy only those blocks that contain information (this speeds the process). To copy all blocks, regardless of whether they contain information, don't check this box.

Users familiar with the Macintosh Finder may find the following tips useful when using the Apple IIGS Finder:

- After making a working copy of the original Apple IIGS System Disk 3.0, unlock the working disk. If you don't, the window positions and icon arrangements won't be saved to disk.
- When a 5 1/4" disk is inserted into the drive, there is no way for the Apple IIGS Finder to know it is there, unless you tell it. There are now 5 1/4" disk drive icons on the desktop, directly below any other volumes that are online. When a 5 1/4" disk is inserted, double click on its icon so the Finder can recognize the disk.
- If a volume is brought online while there is another volume of the same name already on the desktop, a dialog box warns the user that the volumes have the same name the operation is cancelled. The disk is not ejected, and the volume does not appear on the desktop. The best thing to do after receiving such a message is to eject the disk by hand.

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Tech Info Library Article Number:2284



Tech Info Library

Macintosh II: Loose Speaker Brackets

Revised: 7/1/92
Security: Everyone

Macintosh II: Loose Speaker Brackets

=====

Article Created: 10 November 1988
Article Last Reviewed: 26 June 1992
Article Last Updated: 17 June 1991

TOPIC -----

Under some conditions, the brackets do not adequately secure the speaker to the lower pan in the Macintosh II. If the Macintosh II is handled roughly during shipping, the speaker may break loose, while the wire harness usually stays connected to the board. The speaker then swings around inside the computer, possibly cracking the main logic board or causing a hazardous short.

DISCUSSION -----

Use a wire butterfly snap hold device similar to the Apple IIe speaker hold down assembly. In fact, the Apple IIe speaker hold down device could be reworked to be used in the Macintosh II. The existing support bars around the speaker can accommodate the wire butterfly snap hold device adequately.

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Tech Info Library Article Number:2285



Tech Info Library

Macintosh: VT101 Emulation

Revised: 8/3/89
Security: Everyone

Macintosh: VT101 Emulation

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This article last reviewed: 10 August 1987

The VT101 is a superset of the VT100, adding eight enhancements. According to the engineers that developed MacTerminal 2.2, it is supported to an extent by the entire the Macintosh line. MacTerminal defaults to the complete VT100 with two of the VT101 enhancements. These two features are implemented in:

1. Insertion of lines
2. Deletion of lines

These 2 changes increase the speed of line editing because the length of the escape sequence is substantially shorter.

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Tech Info Library Article Number:2286



Tech Info Library

Macintosh: Maximum Number of Digits

Revised: 5/10/89
Security: Everyone

Macintosh: Maximum Number of Digits

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A customer asks: "What is the largest number of digits that can be represented in a number on the Macintosh?" The answer depends on what is meant by "digits."

Binary Digits

The maximum number of binary digits is 63. A number this large can be achieved with both the comp data type and the extended data type. In the case of the extended data type, a 15-bit exponent is part of the number.

Decimal Numbers

The maximum representable number in the extended data type is $2^{\text{exponent } (16383) * (1.1 \text{ recurring } 63 \text{ times})} = 1.1\text{E}4932$. This number is 4,933 decimal digits long.

In terms of numbers not represented in a floating point extended data type, but one of the other data types, then the maximum decimal digit is $2^{\text{exponent } 63}$, approximately equalling $9.2\text{E}18$, which is 19 decimal digits.

For More Information

See the "Apple Numerics Manual: Standard Apple Numeric Environment," (copyright 1986, ISBN 0-201-17741-2) page 14.

Note: programming languages may further limit the data types available to the programmer.

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Tech Info Library Article Number:2287



Tech Info Library

Macintosh II and Macintosh IIfx: Guided Tour Disks (1/95)

Revised: 2/2/95
Security: Everyone

Macintosh II and Macintosh IIfx: Guided Tour Disks (1/95)

=====

Article Created: 10 August 1987
Article Reviewed/Updated: 2 February 1995

TOPIC -----

The following is an explanation why the Mac II Guided Tour disk will not launch in some situations.

DISCUSSION -----

On a 1 megabyte Macintosh II, the Guided Tour disk will not launch if the Monitors control panel setting has been changed to:

1. Colors
2. 16 shades/levels
3. or both

The additional RAM required by Color QuickDraw for data manipulation causes the memory available for the Guided Tour to decrease below the required 960K. The shipping default settings are Black & White and 2 colors.

On a Macintosh II with 2MB of RAM, even with the RAM Cache set to 1536K and Monitor control panel set to 256 Colors, the Guided Tour always boots. RAM Cache settings are ignored by the Guided Tour system file.

Article Change History:
2 Feb 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2289



Tech Info Library

ImageWriter LQ: Using it with a Macintosh

Revised: 8/21/89
Security: Everyone

ImageWriter LQ: Using it with a Macintosh

=====

This article last reviewed: 10 August 1987

The ImageWriter LQ recognizes output from the Macintosh ImageWriter driver, but, for better results, use the new ImageWriter LQ driver. This driver has options similar to those found on the ImageWriter driver:

- "draft" sends ASCII information to the printer
- "faster" prints 72 x 72 dpi
- "best" prints 216 x 216 dpi

If sheet feeder bin(s) are installed, you can also select the bin for the first page of a document and the bin for the remaining pages. However, those applications that treat each page as a separate document will not be able to take advantage of this feature, since each page will be seen as "Page 1" of a new document.

An AppleTalk ImageWriter LQ driver is also available for times when the ImageWriter LQ is connected to an AppleTalk network.

The ImageWriter LQ comes with four disks. One contains the Macintosh drivers mentioned above, and the other three include font files of various type and sizes.

Because the 27-pin head is organized in three rows of nine pins each, the best printing occurs with a font three times larger than the screen font. Therefore, we are shipping 27 point, 30 point, 36 point, and similar multiples of point sizes of fonts in common faces in the ImageWriter LQ package.

Some font families also include italic and bold. When installed in a system file, these defined faces will replace the computed versions of an italic or bold font.

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Tech Info Library Article Number:2290



Tech Info Library

ImageWriter LQ: Description (Discontinued)

Revised: 6/1/94
Security: Everyone

ImageWriter LQ: Description (Discontinued)

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The ImageWriter LQ is a 27-pin wide-carriage dot-matrix printer that can produce black-and-white or color output in three different levels of print quality. The three printer qualities are draft, near letter quality (NLQ), and letter quality (LQ).

Optional accessories are a sheet feeder (which can have up to three paper bins) and the AppleTalk card.

To choose line feed, form feed, printer select, and printer quality, there are external switches similar to those on the ImageWriter II.

The power outlet and mini-circular-8 RS-422 port (pinouts identical to the ImageWriter II) are on the back of the printer. Three sets of eight DIP switches on the logic board are used to select baud rate, character set, handshaking mode, etc.

There are three ways to feed paper through the ImageWriter LQ: friction feed, pull tractor feed, or push tractor feed. Continuous tractor feed paper can be fed through the back of the printer, using either push or pull tractor feed, or paper can be fed from the bottom of the printer and pulled through by tractors behind the platen. The pull tractor option will help correct the problem seen in the push tractor mode of the ImageWriter II which jammed paper against the printer head and paper bale. The ImageWriter LQ has two paper sensors: an optical sensor is used when paper is fed from the back of the printer, and a mechanical sensor is active when bottom paper feed is used.

While the printer has a 5K print buffer, it can accept a larger buffer either on the logic board or on an option card. However, neither larger buffer is available from Apple at this time.

Wherever possible, the ImageWriter LQ firmware accepts the same commands as the ImageWriter and ImageWriter II. For example, "Escape E" instructs the ImageWriter LQ to use elite type size, just as it does on the ImageWriter II. Other commands for characters, graphics, and color remain the same, and there is still support for half-height text, superscripts, subscripts, and vertical and horizontal platen and printer head movement. Additional printer commands

support the multiple-bin sheet feeder and high-resolution printing. The ImageWriter LQ does not support downloadable character sets or MouseText, so those commands have been removed.

ImageWriter LQ firmware contains font definitions in various qualities. Draft printing can be done in any available ImageWriter LQ size, including both proportional and non-proportional fonts. Near Letter Quality can also be obtained in all sizes, either proportional or non-proportional. If Letter Quality is chosen, the firmware must also be instructed to use one of the two proportional fonts, since Letter Quality cannot be printed in a non-proportional size. AppleWorks users must be sure to select "P1" or "P2" as the character size when using Letter Quality on an ImageWriter LQ; otherwise, the printer will use Near Letter Quality and its non-proportional font instead.

ImageWriter II graphic modes are referred to as "standard-resolution graphics" on the ImageWriter LQ. The LQ can print at 72 dpi (dots per inch) in one pass of the printer head, and at 144 dpi in two passes. A third graphics mode, "high-resolution graphics," is accomplished in one pass using 24 pins, and results in 216 dpi both horizontally and vertically. 216 dpi is the maximum vertical dot resolution, although the printer may achieve up to 320 dpi horizontally.

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Tech Info Library Article Number:2291



Tech Info Library

ImageWriter LQ: Pinouts

Revised: 8/10/87
Security: Everyone

ImageWriter LQ: Pinouts

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The ImageWriter LQ has an RS-422/RS-232 serial port with a minicircular-8 socket. The signals on each of the pins are as follows:

Pin	Symbol	Description	Direction
1	DTR	Data Terminal Ready	Output
2	DSR	Data Set Ready	Input
3	TxD-	Transmitted Data	Output
4	SG	Signal Ground	
5	RxD-	Received Data	Input
6	TxD+	Balanced Transmit	Output
7	NC	No Connection	
8	RxD+	Balanced Receive	Input
Shield	PG	Protective Ground	

To connect an RS-232 interface to an ImageWriter LQ, use the following pin assignments:

Minicircular-8		RS232	
Pin Number	Symbol	Description	DB25 pin number
1	DSR	Data Set Ready	6**
1	DCD	Data Carrier Detect	8**
2	DTR	Data Terminal Ready	20
3	RxD	Received Data	3
4*	GND	Ground	7
5	TxD	Transmitted Data	2
6	NC	No Connection	
7	NC	No Connection	
8*	GND	Ground	
Shield	Shield		

* Connect together at minicircular connector

** Connect together at DB25 connector



Tech Info Library

ImageWriter LQ: Specifications (Discontinued)

Revised: 9/21/93
Security: Everyone

ImageWriter LQ: Specifications (Discontinued)

Article Created: 10 August 1987
Article Reviewed/Updated: 11 October 1988

Print method: Dot Matrix, logic seek (line by line)

Printing speed: Draft 250 cps at 10 cpi in Draft mode
NLQ 90 cps at 10 cpi in NLQ mode
LQ 115 cps in proportional mode

Printing throughput: 25 line per minute in 216 by 216 graphics mode,
bidirectional, 25% duty cycle, 11-inch wide line,
assuming no limitation because of communications
or overheating of the print head

Character format: Draft fixed-width characters - 12 dots wide by 7 dots
high, using every third print head wire and using every
other dot on a horizontal line (1/2 dot method)

Draft proportional characters - Up to 16 dots wide by 7
dots high, using every third print head wire

NLQ fixed-width characters - 16 dots wide by 24 dots high

NLQ proportional characters - Up to 16 dots wide by 24
dots high

LQ proportional characters - Up to 32 dots wide by 24
dots high

Standard characters: 96 ASCII (alphanumeric and symbols)
28 European language characters

Vertical dot spacing: 1/216 inch

Printed line length: 13.6 maximum

Horizontal pitches:	Characters per inch	Characters per line
---------------------	------------------------	------------------------

17	231
15	204
13.4	182
12	163
10	136
9	122

Input buffer: 5K (Though expandable up to 64K, Apple has not yet implemented this capacity.)

Paper feed direction: Forward and reverse

Line spacing: 1/144 to 99/144 inch, selectable in increments of 1/144 inch

Line feed speed: Maximum 24 lps at 6 lpi

Paper width: 3.5 to 15 inch pin to pin

Paper thickness: 0.051 - 0.55 mm (0.002 to 0.028 inch)

Paper feed method: Selectable, friction, push tractor, or pull tractor feed

Paper types: Single sheets

Continuous paper hole centers 3.5 - 15.0 inches

Ribbon: Cassette containing black inked fabric ribbon, continuous

Optional four-color ribbon: black, yellow, magenta, cyan

Ribbon life: 4 million characters (black)

1 million characters/band (color)

Power options: North American 120 V AC +/- 10%, 60 Hz

Universal	100 V AC +/- 10%, 50/60 Hz
	120 V AC +/- 10%, 50/60 Hz
	140 V AC +/- 10%, 50/60 Hz
	200 V AC +/- 10%, 50/60 Hz
	220 V AC +/- 10%, 50/60 Hz
	240 V AC +/- 10%, 50/60 Hz

Power consumption: Operating - 180 W maximum

Standby - 20 W maximum

Data input form: 8-bit serial: 1 start bit, 8 data bits, and 1 stop bit
(no parity bit), asynchronous

Data output form: 8-bit serial: 1 start bit, 8 data bits, and 1 stop bit,
no parity, asynchronous

Transmission speed: 1200, 4800, 9600, or 19200 baud set by DPI switches

Printer connector: minicircular 8-pin socket

Cable connector: minicircular 8-pin plug

Weight: 17 kg (38 lb)

Dimensions:	Width	Depth	Height
	590	380	130 mm
	23.2	15.0	5.12 in

Ambient temperature in degrees:	Celsius	Fahrenheit
- Operating	10 to 40	50 to 104
- Storage (1 year)	-40 to 47	-40 to 116
- Transit (72 hours)	-40 to 65	-40 to 149

Humidity: Operating- 20% to 95% relative, noncondensing
Storage (6 mo.) - 10% to 95% relative, noncondensing

Operating acoustics: 55 dBa maximum sound pressure at typical operator distance

Print head life: 400,000,000 wire fires (approx. 200,000,000 characters)

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Tech Info Library Article Number:2293



Tech Info Library

Macintosh: System Tools 5.0 with MultiFinder

Revised: 8/7/91
Security: Everyone

Macintosh: System Tools 5.0 with MultiFinder

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Article Created: 10 August 1987
Article Last Reviewed: 2 February 1991
Article Last Updated:

TOPIC -----

This article outlines the use and features of Macintosh System Tools 5.0.

DISCUSSION -----

System Tools 5.0 files were intended for use on the Macintosh Plus, Macintosh SE, and Macintosh II. Due to increased memory demands caused by larger system files and MultiFinder, these tools cannot be used reliably on a Macintosh with 128K or 512K, or on a Macintosh XL. In Version 5.0 of Macintosh system software, the System, Finder, and CDEV files were revised to support MultiFinder and to expand Macintosh II features.

System 5.0

The following list summarizes the changes made to Macintosh System files in Version 5.0:

- Color support for the Macintosh II
- More fully-implemented Palette Manager
- Upper drive on the Macintosh SE used at the same speed as the lower
- Command-Shift-1 and -2 (and all FKEYs) work properly under Excel
- No stray dots appear when outlined text is move
- Releases previously-used memory correctly when re-initializing the ADB port

- Supports a color desktop pattern through the Color code
- Supports color text highlighting

The Finder

- Supports color; a new menu appears when Finder 6.0 is used on a Macintosh II to let the user select the color of an icon or folder.
- Supports MultiFinder

The LaserWriter Driver

- Supports MultiFinder
- Clips the right edge of bitmaps properly

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Tech Info Library Article Number:2294



Tech Info Library

HyperCard v1.0: Specifications (Discontinued)

Revised: 9/14/93
Security: Everyone

HyperCard v1.0: Specifications (Discontinued)

=====

This article last reviewed: 10 August 1987

Number of stacks: Limited only by available disk or file server storage.
Each stack is one Macintosh disk file.

Maximum stack size: 4096 Megabytes

Number of cards per stack: Limited only by available disk or file server
storage.

Card size: 512 horizontal by 342 vertical pixels

Graphics: Black-and-white bitmaps with opaque and transparent areas.

Text fields per card: Unlimited

Maximum text per field: 32,767 characters

Buttons or links per card: Unlimited

Maximum script length: 30,000 characters

System Requirements

HyperCard will operate on Macintosh Plus, Macintosh SE, or Macintosh II that has:

- at least 1MB of RAM
- a hard disk, or two 800K disk drives
- Finder 5.3 or later
- System 3.2 or later
- LaserWriter 4.0 or later

If you wish to operate other applications simultaneously with HyperCard using MultiFinder, your system should have at least 2MB of RAM.

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Tech Info Library Article Number:2296



Tech Info Library

NuBus: Apple's Implementation

Revised: 7/21/92
Security: Everyone

NuBus: Apple's Implementation

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Article Created: 10 October 1987
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

This article discusses the features of NuBus™ and how Apple's implementation differs from the original design.

DISCUSSION -----

The major advantage of NuBus is its simplicity in system configuration and protocol. A simple handshake protocol between master and slave enables modules or boards with different speeds to communicate. There are no interrupt lines. Each module can interrupt a processor by writing into an address space area monitored by that processor. NuBus also relies on only one main bus, in contrast to more complicated competition, such as VME and Multibus II.

NuBus is independent in terms of system architecture and CPU. Because each board has its own ROM, there is no need for jumper and switch settings. It has synchronous bandwidth of 10 MHz and is easily adaptable to asynchronicity. (Its transactions may be a variable number of clock periods long.) It requires fewer signal lines than all other advanced buses.

The major change Apple made to the NuBus was a signal change with the NMRQ (non-master request). It is a dumb interrupt that allows a slave to interrupt without being the bus master. Apple's NuBus implementation adds interrupt lines to the 68020 from each of the slots.

NuBus data-transfer signals are all three-state and include control, address/data, and parity. Apple also does not implement the parity checks.

Another major change has to do with the form factor: Apple uses smaller

cards.

Although NuBus is designed for 32-bit addressing modes, the Macintosh II logic board is typically set in a 24-bit mode. The current Operating Systems Utilities portion of the firmware will translate to accept previous 24-bit addresses.

The NuBus can handle 16 slots to provide expansion capabilities for Ethernet, terminal, serial and parallel devices, video output, and other processors and coprocessors. Apple's design implements only six.

Here are some articles on NuBus:

- "Battle of the Buses for 32-bit Systems," Systems & Software, 9/84
- "Bus Structure Eases Multiprocessor Integration," Computer Design, 6/84
- "Synchronous 32-Bit Backplane Buses Open Up Distributed System Design," EDN 6/84

For basic information such as pinout and signal descriptions, glossary of terms, addressing, and capabilities, search on "NuBus".

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Tech Info Library Article Number:2300



Tech Info Library

FT/CMS: Recommended Settings

Revised: 9/22/89
Security: Everyone

FT/CMS: Recommended Settings

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This article last reviewed: 19 August 1987

When using 3270 FT/CMS, your AppleLine and terminal software (3270 FT/CMS) should be set to:

9600 baud
8 data bits, 0 stop bits
no parity
Auto-Speed setting (AppleLine) set to on/yes.

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Tech Info Library Article Number:2301



Tech Info Library

AppleShare 1.0/1.1: Lost Server Volumes

Revised: 4/3/92
Security: Everyone

AppleShare 1.0/1.1: Lost Server Volumes

=====

Article Created: 13 August 1987
Article Last Reviewed: 3 April 1992
Article Last Updated: 3 April 1992

TOPIC -----

The following describes a problem with server volumes being reported in need of repairs in error.

DISCUSSION -----

When using AppleShare 1.1, the Finder may complain that the server volume needed minor repairs and then reported that the volume couldn't be fixed. Unplugging the AppleTalk connector makes the problem go away.

One way to get into this situation is to have a volume to which access has been completely denied after the volume is marked for mounting at start up. When the Finder tries to access the volume, it gets an immediate error. The Finder then tries to create a new Desktop file, which fails also, resulting in a final error message and no trace of the volume on the Desktop.

One fix: use the Chooser to select the server volume then deselect the box labeled "Mount at Startup time." That should stop the volume from being mounted without access to the root, causing the Finder no further difficulties on the next startup.

Another solution: throw away the "AppleShare Prep" file in the System folder, causing all startup information to be lost.

Future versions of AppleShare will check the root of the volume for accessibility before mounting the volume, the way the chooser already does (indicated by greying out the volume name in the volume list).

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Tech Info Library Article Number:2303



Tech Info Library

Macintosh SE Hard Drive Systems: HD SC Setup Version 1.3

Revised: 8/7/92
Security: Everyone

Macintosh SE Hard Drive Systems: HD SC Setup Version 1.3

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Article Created: 13 August 1987
Article Last Reviewed: 7 August 1992
Article Last Updated: 7 August 1992

TOPIC -----

A problem was discovered when HD SC Setup Version 1.3 was used to initialize a hard disk inside certain Macintosh SE computers. This recalibration problem may have, in rare cases, caused a loss of data. The article below provides more information.

DISCUSSION -----

The Macintosh SE production units which MAY experience this problem have serial numbers beginning with:

F721,
F722, or
F723

The fix for this is to use Version 1.4 or higher of HD SC Setup.

Production units with serial numbers F724 and up didn't have this problem and could be initialized with either version 1.3 or 1.4 of HD SC Setup.

HD SC Set Up 1.4 was shipped with production units starting in early July of 1987.

Customers should upgrade to HD SC Set Up 1.4 or higher (and discard version 1.3) to ensure compatibility with all hardware configurations. Any Macintosh SE that has been initialized with version 1.3 should be updated using version 1.4 to avoid loss of data in the future. If a Macintosh SE hard disk system is serviced, the hard disk must either be updated or re-initialized with HD SC Setup 1.4.

Version 1.1 may continue to be used -- with Rodime drives only -- but due to its lack of versatility, its use is not encouraged.

BACKGROUND

The Macintosh SE originally contained:

- SCSI hard drives made by Rodime
- HD SC Setup version 1.1.

When MiniScribe became a second source of drives, HD SC Setup version 1.3 was required, because version 1.1 would not recognize or initialize MiniScribe drives.

Version 1.3 was designed to be used with both Rodime and MiniScribe drives. Unfortunately, version 1.3 exposed a bug in the Rodime drive controller. Version 1.3 turned on Rodime's head recalibration feature, which activated every 20 minutes and took 5 seconds. If the Macintosh SE user attempted to save data onto the hard disk during that time, the drive controller chip interrupted the recalibration. However, the recalibration wasn't terminated properly, and scrambled data was written to the sector over which the drive head resided. The user would notice a problem at some later date, when attempting to access the file containing the scrambled sector.

HD SC Setup version 1.4 or higher works properly on both Rodime and MiniScribe drives.

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Tech Info Library Article Number:2304



Tech Info Library

Affinity Microsystems, Ltd.

Revised: 4/3/97
Security: Everyone

Affinity Microsystems, Ltd.

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Article Created: 08/12/91
Article Reviewed: 07/02/93
Article Updated: 11/03/92

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Tech Info Library Article Number:2305



Tech Info Library

Disk Cache: Macintosh compared to IBM PS/2

Revised: 8/13/87
Security: Everyone

Disk Cache: Macintosh compared to IBM PS/2

=====

A caching device driver is included with the new IBM PS/2, models 50-80. This cache uses a technique that fetches either 2, 4, or 8 sectors (user selectable) when an I/O is issued for a single sector. This method appears to achieve significant performance improvements with relatively small cache sizes. Some have asked whether Apple (or other vendor) is looking at improving the Macintosh's disk performance this way.

Apple's disk caching is not done like IBM's, for two reasons. The first has to do with hardware: the IBM can access a multiple number of blocks in just about the same time it can access just one. We can't do that with our drives; we have to monitor the reading of each block.

Second, Apple has a very complicated file format and directory structure that can't compare to the IBM disk format. The Macintosh is constantly loading in small resource segments (often much smaller than one block) and maintaining a complex B-tree catalog structure. Our disk cache is optimized for this type of structure.

Basically, the way the cache works is to remember recently-written blocks of data. It can be thought of as a "post-written" system, rather than a "read-ahead" system. If we need that information again soon, we can retrieve it from the cache rather than from disk. However, we can do some read-ahead, as some hard disk controllers maintain a track buffer, reading in an entire track at once and doling it out to the Macintosh one block at a time.

Tech Info Library Article Number:2306



Tech Info Library

ADB Keyboard: Cure for 'Dead' Keyboard

Revised: 8/13/87
Security: Everyone

ADB Keyboard: Cure for 'Dead' Keyboard

=====

Some users have reported that their ADB keyboard are sometimes 'dead' (though the mouse works fine) when they start up a Macintosh II or SE. One reported cure has been simply to unplug the keyboard then plug it back in.

Caution: this fix works only if the mouse is plugged into the second ADB plug on the back of the computer. If the mouse is plugged into the keyboard, the fix (unplugging the keyboard then plugging it in again) crashes the system.

Tech Info Library Article Number:2308



Tech Info Library

Apple Extended Keyboard: Key Codes

Revised: 7/1/92
Security: Everyone

Apple Extended Keyboard: Key Codes

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Article Created: 13 August 1987
Article Last Reviewed: 25 June 1992
Article Last Updated:

TOPIC -----

Are the key codes for the Apple Extended Keyboard different from those of the Apple Standard Keyboard?

DISCUSSION -----

The key codes for the Apple Extended Keyboard differ slightly from those of the Apple Standard Keyboard. The following list includes only those keys whose codes are different from the Apple Standard Keyboard:

F1	7A
F2	7B
F3	63
F4	76
F5	60
F6	61
F7	62
F8	64
F9	65
F10	6D
F11	67
F12	6F
F13	69
F14	6B
F15	71
HELP	72
HOME	73
PAGE UP	74
PAGE DOWN	79
DELETE	75

END	77
CURSOR UP	7E
CURSOR DOWN	7D
CURSOR RIGHT	7B
CURSOR LEFT	7C

Application software should NOT be designed so that it depends on these key codes -- because they will probably change. These codes are used by the application and are not necessarily what the keyboard actually puts out. Any unused codes not listed here are not yet defined and should not be used.

Key codes for the Apple Standard Keyboard are found in the "Macintosh Family Hardware Reference."

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2309



Tech Info Library

Hayes InterBridge version 1.06: Improvements

Revised: 1/13/88
Security: Everyone

Hayes InterBridge version 1.06: Improvements

=====

This article last reviewed: 13 August 1987

Version 1.06 of Hayes InterBridge corrects several problems that were reported in version 1.05:

- Down bridge: causes the bridge to become inactive or inaccessible, a large number of buffer allocation errors, or cause the bridge to stop functioning completely.
- Missing bridge: could occur in AppleTalk networks connected with four or more InterBridges. Causes the network manager software to be unable to see the bridge.
- Packet errors: when an InterBridge is combined on an AppleTalk network with a Kinetics Fastpath device, a large number of packet errors occur.

Tech Info Library Article Number:2310



Tech Info Library

AppleWorks: Problems Loading, Uploading, or Saving

Revised: 8/13/87
Security: Everyone

AppleWorks: Problems Loading, Uploading, or Saving

=====

Three of the most common questions about AppleWorks deal with files not loading, saving, or uploading properly to a base for electronic mail or messages. The solution is often simple. Before panicking, consider the following solutions.

File won't load - file not found

First, be sure you're not be trying to open more files than AppleWorks allows. AppleWorks allows no more than twelve files on the desktop at any one time -- less in the case of large files or limited memory.

If the file name appears in the directory, but AppleWorks can't access it, the file or the subdirectory may be damaged. To logically isolate the problem, use a copy utility (System Utilities 2.1.1 or the GS System Utilities 1.1) and move the suspect file to another directory and attempt to load it from there. If it will not load from the new directory, then the file itself is corrupted and the data is lost -- unless it has been backed up.

If the file is moved to a subdirectory, and it loads correctly from there, the original subdirectory is damaged. Copy all files in the subdirectory to another area, then delete the damaged subdirectory.

If you are using a floppy drive, check the disk and make sure it isn't damaged: it's far less expensive to discard a disk and use a new one than to continue losing data! If you are using a hard disk, and you discover a problem, you will want to back up the drive and reformat it.

File won't save - diskette is full

The most common reason for a file not saving is the tendency to overfill subdirectories. While ProDOS allows 51 files on the Root Directory, and an unlimited number in subdirectories, AppleWorks permits only 130 files in a directory. Veteran AppleWorks experts limit subdirectory entries to 30 or less. While this is not a major problem for 5.25" drive users, it can

become a problem with larger-capacity drives.

Make sure that you are not saving all your files in one area. Subdirectories can be used effectively to organize and catalog your files.

AppleWorks text file won't upload

Some systems, such as CompuServe(tm), require both a Carriage Return AND a Linefeed at the end of each line in order to upload files correctly.

In AppleWorks, Version 1.3 or earlier, writing an AppleWorks document out as text (ASCII) file, or using the AppleWorks option of "Printing to a Text (ASCII) File" will result in:

- A carriage return in the text file wherever there is a Carriage Return in a word processor document.
- A carriage return following each entry in a data base report.
- A carriage return following each cell when working with a spreadsheet document.

To get that elusive Line Feed, the work-around is to configure a Custom Printer using the "Add a Printer" option in AppleWorks. Name it "Upload" or some other appropriate name that will remind you of its purpose. Choose the SilentType printer. Change the specifications to add a Line Feed after each RETURN, [1. Needs line feed after each RETURN], and save this printer configuration to disk.

To convert an AppleWorks file to an ASCII file with the required Carriage Return/Line Feed line termination, simply print your document to "Upload." The resulting file will then upload properly.

AppleWorks 2.0 AUTOMATICALLY adds Carriage Returns at the end of each line, but you will still have to add Line Feeds with the above procedure.

Summary

Remember the three rules that will keep you out of trouble:

1. Back up your files frequently.
2. Back up your files FREQUENTLY.
3. BACK UP YOUR FILES FREQUENTLY.

Tech Info Library Article Number:2311



Tech Info Library

SuperMac Technology

Revised: 4/3/97
Security: Everyone

SuperMac Technology

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Article Created: 13 August 1987
Article Reviewed/Updated: 3 April 1997

SuperMac Technology (a Division of Scientific Micro Systems, Inc.)

215 Moffet Park Drive
Sunnyvale, CA 94089

408-541-6100 (Technical Support)
408-541-5500 (Technical Support)
408-245-0646 (Technical Support)

Fax:408-541-6150

Company Profile:
Hardware, specializing in video products and peripheral cards.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2313



Tech Info Library

AST Research

Revised: 7/22/93
Security: Everyone

AST Research

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Article Created: 13 August 1987
Article Reviewed/Updated: 22 July 1993

AST Research

16215 Alton Pkwy.
Irvine, CA 92718

800-727-4278 (Customer Info.)

714-727-4141

714-727-8597 (Direct Marketing) Fax

Company Profile:
Hardware, specializing in memory enhancement cards and desktop systems.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2315



Tech Info Library

Blyth Software

Revised: 4/3/97
Security: Everyone

Blyth Software

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Article Created: 08/13/87
Article Reviewed: 07/06/93
Article Updated: 04/02/97

Blyth Software, Inc.

1065 E. Hillside
Suite 300
Foster City, CA 94404

800-346-6647

415-571-0222

415-571-1132 Fax

Company Profile:
Software, specializing in Macintosh and Apple II databases.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2316



Tech Info Library

Farallon Computing

Revised: 9/27/96
Security: Everyone

Farallon Computing

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Article Created: 13 August 1987
Article Reviewed/Updated: 26 September 1996

Farallon Computing

2470 Mariner Square Loop
Alameda, CA 94501

WWW: <http://www.farallon.com>

General

510-814-5100
510-814-5020 - FAX

Internet: info@farallon.com

Customer Service and Technical Support

510-814-5000
510-596-814-5023 - FAX

Internet: techsports@farallon.com

Sales

510-814-5100
510-814-5025 - FAX

Internet: sales@farallon.com

Company Profile:

Hardware and software, specializing in routers, PCI (Peripheral Component Interconnect) cards, star controllers, repeaters, ethernet cards, as well as screen sharing and document sharing software.

Article Change History:

26 Sep 1996 - Updated phone numbers.

06 Jun 1995 - Added new product information.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:2319



Tech Info Library

Hayes Microcomputer Products, Inc. (9/94)

Revised: 4/3/97
Security: Everyone

Hayes Microcomputer Products, Inc. (9/94)

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Article Created: 13 August 1987
Article Reviewed/Updated: 3 April 1997

Hayes Microcomputer Products, Inc.

5835 Peach Tree Corners E.
Norcross, GA 30092

P.O. Box 105203
Atlanta, GA 30348-5203

800-96-HAYES (800-964-2937)
800-665-1259 (Customer Service)
404-840-9200
404-441-1617 (Tech Support)

Fax: 404-449-0087 (Customer Service)

Company Profile:
Hardware, specializing in modems and communications devices.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2320



Tech Info Library

Novell, Inc.

Revised: 4/3/97
Security: Everyone

Novell, Inc.

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Article Created: 13 August 1987
Article Reviewed/Updated: 3 April 1997

Novell, Inc.

122 East 1700 South
Provo, UT 84606

800-453-1267 (outside UT)

800-NETWARE (638-9273) (Tech. Support)

801-429-7000 408-747-4000 (Communication Products Division)

801-377-6743 Fax

Telex: 310-378-9541

Novell's Macintosh Development Center
1340 Treat Blvd.
Suite 300
Walnut Creek, CA 94596

510-947-0998

510-947-0998 Fax

Company Profile:

Software, specializing in Netware Systems and networking of business-wide information systems. Acquired International Business Software, Inc. on 6 April 1992, (now handled by Novell's Macintosh Development Center), software, specializing in communication software for Macintosh computers, including the PowerBook series.

NOTE: On 21 March 1994, WordPerfect and Novell announced the intention to merge in the near future.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2322



Tech Info Library

Microsoft Corporation

Revised: 1/30/95
Security: Everyone

Microsoft Corporation

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Article Created: 13 August 1987
Article Reviewed/Updated: 28 September 1994

Microsoft Corporation

One Microsoft Way
Redmond, WA 98052-6399

800-426-9400 (End User Sales)
800-227-4679 (Sales)
800-426-9400 (Upgrades)
800-344-2121, Extension 115 (Microsoft TechNet - Technical
Information Network subscription for computer support professionals)
800-759-5474 (Microsoft Developer Network - subscriptions)
800-MS-PRESS (Microsoft Press - book publishing)
800-426-9400 (Microsoft Education Services, Training)
800-936-3500 (Microsoft Online Services, Microsoft Support Network Sales
Group)
206-882-8080 (Corporate Office)
206-936-7329 (Corporate Office) Fax

For technical and product support phone numbers, please refer to the Apple Tech
Info Library article: "Microsoft Technical Support"

Company Profile:
Software, developer of system and application software for Macintosh,
MS-DOS, and Windows computers.

Article Change History:
28 Sep 1994 - Reviewed for technical accuracy
01 Mar 1994 - Added upgrade number, verified other info.
10 Dec 1993 - Revised phone numbers added for new services.

Support Information Services



Tech Info Library

T/Maker Company

Revised: 4/3/97
Security: Everyone

T/Maker Company

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Article Created: 13 August 1987
Article Reviewed/Updated: 13 April 1997

T/Maker Company

1390 Villa St.
Mountain View, CA 94041

415-962-0195 (Sales and Technical Support)

Fax: 415-962-0201

Company Profile:
Software, specializing in clip art and accessories for Macintosh and Windows computers.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2325



Tech Info Library

JDR Microdevices

Revised: 7/12/93
Security: Everyone

JDR Microdevices

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Article Created: 08/13/87
Article Reviewed: 07/12/93
Article Updated: 04/03/92

JDR Microdevices

2233 Samaritan Dr.
San Jose, CA 95124

408-559-1200

800-538-5000 (Cust. Service Outside CA)

Fax: 408-559-0250

Company Profile:
Hardware, specializing in connectors for Apple computers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2328



Tech Info Library

AMP Inc.

Revised: 7/2/93
Security: Everyone

AMP Inc.

=====
Article Created: 08/13/87
Article Reviewed: 07/02/93
Article Updated: 11/05/92

AMP Inc.

P.O. Box 3608
Harrisburg, PA 17105

717-564-0100

717-986-3500 Fax

Company Profile:
Hardware, including connectors for all types of computers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2329



Tech Info Library

CPS, Inc.

Revised: 7/6/93
Security: Everyone

CPS, Inc.

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Article Created: 08/21/91
Article Reviewed: 07/06/93
Article Updated:

CPS, Inc.

5125 S. Royal Atlanta Dr.
Tucker, GA 30084

404-908-1107

404-908-1208 Fax

Company Profile:
Hardware, specializing in data communications.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2330



Tech Info Library

Midwest Data

Revised: 7/13/93
Security: Everyone

Midwest Data

=====

Article Created: 08/14/87
Article Reviewed: 07/13/93
Article Updated:

Midwest Data

349 Walnut St.
Suite 5
Lawrenceburg, IN 47025

812-537-4448

812-537-4428 Fax

Company Profile:
Hardare and software, specializing in data communications; primarily software.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2331



Tech Info Library

AppleFax Modem: Overview and Firmware

Revised: 8/3/89
Security: Everyone

AppleFax Modem: Overview and Firmware

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This article last reviewed: 9 August 1988

Overview

The AppleFax Modem allows Macintosh users to send and receive Fax files/documents with the huge installed base of Fax machines currently used by most businesses. In addition to its Fax capabilities, the AppleFax Modem allows 9600 baud file transmission of Macintosh software with other AppleFax Modem users.

The AppleFax Modem's case is exactly the same size as the Apple 3.5" disk drive, letting the two products be stacked. The AppleFax Modem is compatible with Fax Group 3 ONLY (some early-release manuals erroneously\state that the modem is compatible with Fax Group 2 as well). The firmware in this unit is a subset of the Hayes-compatible firmware in the Apple Personal Modem.

Availability

The AppleFax Modem will be sold only by authorized Apple Desktop Communications dealers.

AppleFax Firmware

The command set in the AppleFax Modem firmware is a subset of the Hayes command set used in the Apple Personal Modem, with some additional Fax only 'S' registers. The new AppleFax Modem registers are:

- S14 Error Rate / Contains a value that indicates the number of erroneous transmissions that occurred in the last 256 transmissions.

- S32-S64 Modem Chip Set / These registers map to the R96 Fax compatible modem chip set contained in the AppleFax Modem as follows:

Registers S32-47 Bank 0 registers 0..15

Registers S48-63 Bank 1 registers 0..15

The firmware in the AppleFax Modem is compatible enough with the Hayes protocol that it should run with most communication applications (MacTerminal, for example) with no problem. This will allow you to transfer Macintosh files, type messages back and forth with the other AppleFax Modem owner, and in general become familiar with the command set of this modem.

The communication application must follow these guidelines:

- Handshaking CTS (Clear To Send) or RTS (Return To Send)
- Local Echo Echo off
- Duplex Full duplex
- Bits 8 data bits, 1 stop bit and 1 start bit.
- Baud Rate 9600

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2334



Tech Info Library

AppleFax Modem: Hardware Description (Discontinued)

Revised: 6/1/94
Security: Everyone

AppleFax Modem: Hardware Description (Discontinued)

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On the back of the AppleFax Modem, you will find:

- On/Off Switch
- Two line jacks, phone line / phone set
(RJ-11 type, identical in function)
- Two minicircular 8-pin serial ports, Pass through / Fax to Mac
(Allows pass through to second serial device from one Mac port)
- One 7-pin DIN power connector
(+5dc, -5dc generated within unit, +12dc, -12dc)
- Security cable socket
(Newer, smaller version of security socket)

The power source is external, similar in function and size to the Apple IIc power supply, but with a 7-pin power connector instead of 5-pin. There are also two LED indicators on the front of the unit, one yellow and the other green. These indicate the state of the pass through port on the back of the AppleFax Modem. With the yellow light on, the AppleFax Modem is disabled and you're passing through the serial data to the device (usually an Apple Personal Modem) plugged into the 'phone port' (pass through) on the AppleFax Modem (Note: AppleTalk devices cannot be used on the pass through port.) With the green light on, the serial data is going directly to the AppleFax Modem and the pass through port is disabled. The button located between these two LEDs lets you toggle between the two states. There is no software control of this function.

There is also a sliding control on the right side of the unit. This sliding control is used for volume adjustment, the detent being a default volume level. This unit behaves very much like the Apple Personal Modem when dealing with the speaker. The DTMF tones are passed through to the speaker, as well as the connection 'tones,' until the attempt at a connection is successful and both Fax units sync up, shutting off the speaker. Beyond that, there are the same ATM commands available for the user to adjust for different speaker behavior. The speaker is located on the bottom of the case, with slots for the sound to

come out.

Copyright 1989-1994 Apple Computer, Inc.

Tech Info Library Article Number:2335



Tech Info Library

AppleFax Modem: General Information

Revised: 12/17/91
Security: Everyone

AppleFax Modem: General Information

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Article Created: 14 May 1991
Article Last Reviewed: 7 August 1992
Article Last Updated:

TOPIC -----

This article provides information about the AppleFax modem. Apple no longer sells the AppleFax modem, but it is still supported.

DISCUSSION -----

The AppleFax Modem shipped with two types of software: the resource file and the application. The easiest way to send a Fax is via the "AppleFax Modem" resource file put in your System Folder. With this resource, you can print, just as you do with a laser printer.

The AppleFax application goes beyond the resource, sending multiple Fax messages to multiple addresses at pre-set times. The application also makes a Macintosh file transfer rate 9600 baud possible.

AppleFax Software

The AppleFax package contains the AppleFax application and the AppleFax Modem resource file disk and three other disks containing LQ Fonts. The AppleFax Modem works very much like the ImageWriter LQ, in that it requires fonts when "printing" that are three times the size of the font on the Macintosh screen. When these LQ fonts are installed in the System file you can use the maximum 200 dpi density of the AppleFax Modem.

When the proper size font is not available, resolution suffers, but the Fax document is still printed to the recipient. As long as the fonts are available when the Fax is sent, even a "normal" Fax machine benefits for the 200 dpi images sent from your Macintosh.

There are two ways to use the AppleFax Modem. The first is via the

AppleFax Modem resource file. Once that resource is dragged into the System Folder and selected via the Chooser as the active resource, you're in business.

The advantage of the AppleFax Modem resource is immediate conversion and sending of the document you have selected. You don't even have to leave the active application to send the Fax. You can select any document from within the Finder and "print" it just as you would to a LaserWriter. When the dialog box appears, you have the option of sending the document immediately ("Printing it") or saving it to disk.

For example, if you plan to use the AppleFax application program to send your multiple Fax documents at 1:00 AM, you would use the "Save Fax To Disk" feature for each Fax you want to send with the application. You must use the resource to convert your Macintosh documents into Fax documents. In turn, you can use this resource from within the AppleFax application. Once you have all the Fax documents saved to disk, you're ready to move on to the "AppleFax" application.

The AppleFax application program for the AppleFax Modem turns your Macintosh into a Fax station. The application does require the full attention of the Macintosh and, therefore, won't run in the background. When you start the AppleFax application, the application presents you with various options. Among the main features of the application are that it

- Sends Macintosh files like Macintosh documents and applications.
- Sends many files or facsimiles to one destination.
- Sends one file or facsimile to multiple destinations.
- Specifies the time for the AppleFax Modem station to send your files or facsimiles.
- Sends your files or facsimiles to another AppleFax Modem station that will temporarily store and then forward the files to their final destination.
- Sends your files or facsimiles and then prompts the other AppleFax Modem station to send its files back to you.

Here's a key difference between using the AppleFax resource and the AppleFax application. With the application you can both receive and send facsimiles. With the resource, you can only convert and send a Fax. The application automatically saves the Macintosh files and Fax documents as they are being received from the sender.

More About the AppleFax Application Program

The two main ingredients in the AppleFax Modem application are "Address Books" and "Envelopes." An address book contains the names of various Fax stations, their phone numbers, and the best calling times. You drag addresses over to "empty" envelopes which then become AppleFax Modem application documents. You can put Macintosh files and previously-created

facsimiles into the envelope. Once that's done, you may either wait for the envelope to be sent at the time indicated, or send it "immediately."

If you choose to have the envelope sent at the pre-set time, it is wise to check the "Activity Report," when you come back. The report tells whether the contents of the envelope were really sent, when, and any other problems encountered.

One important note here. When an entry into the address book is created, one of the choices is whether or not this address belongs to a "normal" Fax machine, or to a AppleFax Modem. This is important, for when you drag your address into an empty envelope, that envelope becomes either a Fax-machine-only envelope or a Fax-document-and-Macintosh-files envelope, for use with other AppleFax Modem stations. If you want to send to separate types of stations in the same session, you can create more than one type of envelope.

Copyright 1989, Apple Computer, Inc.

Tech Info Library Article Number:2336



Tech Info Library

AppleFax Modem: Specifications (Discontinued) (8/94)

Revised: 8/30/94
Security: Everyone

AppleFax Modem: Specifications (Discontinued) (8/94)

Article Created: 9 September 1988
Article Reviewed/Updated: 30 August 1994

TOPIC -----

This article provides specifications on the AppleFax Modem.

DISCUSSION -----

- General

Microprocessor	- 65C112
Timing	- 1.8432 MHz
ROM	- 32k x 8
RAM	- 8k x 8
Modem Type	- R96 Fax compatible chip set
Modulation	- Quadrature Amplitude Modulation (QAM)
	- Frequency Shift Key (FSK)
	- Amplitude Modulation (AM)
	- Single SideBand (SSB)
Receiver Level	- -10 to -40 dBm
Transmit Level	- -10 dBm, fixed per FCC part 98

Signaling and Data Rates

- 2400 baud	9600, 7200, 4800 bps
- 1600 baud	4800 bps
- 1200 baud	2400 bps

Carrier Frequencies

- T.3	2100 Hz
- V.27 ter	1800 Hz
- V.29	1700 Hz

Data Format	- Asynchronous
-------------	----------------

- Group 3 protocol supported
- Character length: 7 or 8 data bits / 1 or 2 stop bits
- Parity: odd, even, or none
- Half Duplex

- Environmental

- | | |
|-----------------|----------------------------------|
| Operating Temp. | - +10 to +40C (50F to 104F) |
| Storage Range | - -40 to +47C (-40F to 117F) |
| Transit Range | - -40 to +65C (-40F to 149F) |
| Humidity Range | - 20% to 95% RH (non-condensing) |
| Maximum BTUs | - 34.2 |

- Physical

- | | |
|--------|---|
| Depth | - 7 7/8 in. (20.0 cm) |
| Width | - 4 3/4 in. (12.0 cm) |
| Height | - 2.0 in. (5.0 cm) |
| Weight | - 1.5 lbs (.91 kg - excluding power supply) |

- Power Requirements

- | | |
|-----------------------------|--------------------------|
| AC Input
(U.S. & Canada) | - 120VAC +/-10%, 60Hz |
| AC Input
(Japan) | - 100VAC +/-10%, 50/60Hz |
| Consumption | - 10 watts maximum |

- Interface

- | | |
|-----------|------------------------|
| Connector | - mini-circular, 8-pin |
|-----------|------------------------|

- Operating Modes

- Auto or manual dial
- Auto or manual answer

- Receiver Sensitivity

- 10 to -40 dBm

- Transmitter Level

- 10 dBm, fixed per FCC Part 68

- Line Monitoring

- Audible (volume is adjustable)
- Visual (status messages printed on computer screen)

- Connectors

- Two RJ-11 modular telephone jacks (one for phone line cable, one for optional telephone)
- Two mini-circular 8-pin jacks (data cable and pass-through device)

..TIL02337-AppleFax_Modem-Specifications_Discontinued_8-94.pdf

Article Change History:

30 Aug 1994 - Combined articles #6954 and #2337.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:2337



Tech Info Library

Apple IIGS Finder

Revised: 1/18/93
Security: Everyone

Apple IIGS Finder

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This article last reviewed: 14 August 1987

Overview

The Apple IIGS Finder is similar to the Macintosh Finder, but with enough variation to make it a uniquely Apple II product. The Apple IIGS Finder works only on an Apple IIGS with at least 512K of RAM.

Availability and Distribution

The Apple IIGS Finder was announced August 11, 1987. At that time, it was anticipated that it would be shipped on the Apple IIGS System Disk, revision 3.0, and be part of the Endless Disk Drive mailing the last week of August. The dealers, in turn, are expected to pass out the new System Disk revision freely to their customers. Technical Communications planned to send this disk out to all our audience around the same time.

The Endless Disk Drive mailing will contain two System Disks, revision 2.0 and 3.0. This is bound to cause some confusion, but it is necessary. The Finder application replaces the DeskTop program that has been on earlier versions of the System Disk, including version 2.0. Since the Apple IIGS Finder requires a 512K configuration, we might leave some people out in the cold with their 256K machines. This way, we are able to give them an up-to-date system disk with the DeskTop program on it, which will run on their machines.

This System Disk revision, including the Finder, will make its way into new Apple IIGS boxes in the beginning of September. Because of current stock on hand, these new systems including the Finder are not expected to hit dealer shelves until late September to mid-October.

If current Apple IIGS owners would like the Apple IIGS System Disk manual that is going to be bundled with the new Apple IIGS, along with the System Disk 3.0, they may order it from their dealer.

Finder Notes and Tips

After making a working copy of the original Apple IIGS System Disk 3.0, unlock the working diskette. If you don't, the window positions and icon arrangements won't be saved to disk.

This Finder allows the user to change and save the color of each individual volume and file icon.

To reach online Help, pull down the Apple menu.

If a volume is brought online while there is another volume of the same name already on the desktop, a dialog box appears, warning the user that the volumes have the same name and that the operation is cancelled. Note, however, that the disk is not ejected, though the volume has not appeared on the desktop. It is best after receiving such a message to manually eject the disk.

If the monochrome monitor is used, be sure to select the Monochrome setting in the Apple IIGS control panel. This will use gray scaling to produce a better overall image.

When a 5 1/4" diskette is inserted into the drive, the Apple IIGS Finder doesn't know it's there -- unless you 'tell' it. There are now 5 1/4" disk drive icons on the desktop, directly below any other volumes that are online. When a 5 1/4" disk is inserted, be sure to click on the respective icon so the finder can recognize the disk.

The Put Back function in the Apple IIGS Finder is the same as the Macintosh Finder's Put Away function. This menu choice lets you return files, that you have thrown in the trash can or recently moved to the desktop, back to their original position.

A major difference between the Apple IIGS Finder and the Macintosh Finder is that the Apple IIGS version has a Preferences option in the Special menu. The Preferences dialog gives you six check-box options, all defaulted to a 'checked' state. They are:

- Display help for dimmed commands

If this option is chosen, the user can select a grayed out menu item, and get information on why that item isn't available.

- Double-check before removing files and folders

If this option is chosen, the Finder will not delete files or folders until the user confirms, via a dialog box, that the files or folders should be deleted.

- Color selected icon's background instead of its outline

This is personal preference, but the default (background color fill) is easier to see than a colored outline.

- Save Finder information onto disk

If this option is chosen, the Finder creates a file called FINDER.DATA that records the window position and size for all open windows. There is also a file called FINDER.ROOT that remembers what windows were open on the desktop when the disk was ejected. If you don't want these items recorded, deselect this check box.

- Hide the Finder's data files

When a window is opened, the default is not to display the FINDER.DATA and FINDER.ROOT files. If you want them displayed, deselect this check box.

- Do a smart block copy

When copying disks of the same size, the default mode for the Apple IIGS Finder is to copy only those blocks that contain information. This speeds up the process. If you want to copy all blocks, regardless of whether they contain information, deselect this check box.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2338



Tech Info Library

AppleWorks 2.0: Page Numbering limit in Footer and Header

Revised: 8/18/87
Security: Everyone

AppleWorks 2.0: Page Numbering limit in Footer and Header

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While the documentation says that the limit for page numbering is 512 pages, it is actually 256.

You may encounter a situation where a header is numbered from 255 through 256, and the numbering goes on to 257 and further, whereas a footer starts over after page 256 at page 1. This is a problem in either the documentation or the program.

Tech Info Library Article Number:2340



Tech Info Library

DB 19 Connectors: Where To Get Them

Revised: 6/18/92
Security: Everyone

DB 19 Connectors: Where To Get Them

=====

Article Created: 29 January 1988
Article Last Reviewed: 15 June 1992
Article Last Updated:

TOPIC -----

Where can I obtain DB 19 connectors?

DISCUSSION -----

Here are two companies that sell DB 19 connectors:

JDR Microdevices and AMP Inc.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2341



Tech Info Library

Apple IIGS: VGC and ROM Upgrade Notes

Revised: 7/26/89
Security: Everyone

Apple IIGS: VGC and ROM Upgrade Notes

=====

Article Created: 20 August 1987
Article Last Reviewed: 17 July 1992
Article Last Updated:

The serial number cutoffs given in the August Service and Support Notice to determine which Apple IIGS systems need the VGC and ROM upgrade are incorrect.

Use the first three digits of the serial number on the bottom of the Apple IIGS to determine which of the two upgrades a computer needs:

- when the first three digits of the computer's serial number are 704 or lower, both the new VGC and the ROM upgrade are required.
- when the first three digits of the computer's serial number are 705 through 724 (inclusive), only the new ROM is required.
- when the first three digits of the computer's serial number are 725 or higher, neither of the upgrades is required.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2342



Tech Info Library

Macintosh II: Electrohome Video Projection Connection

Revised: 7/2/92
Security: Everyone

Macintosh II: Electrohome Video Projection Connection

Article Created: 7 November 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

How can I project the display of the Macintosh II Video Card?

DISCUSSION -----

There is a product called the Electrohome RGB 2000H which is used to project the video display of the Macintosh II. The card used in this configuration is the Macintosh II Video Card with full memory (512K of video RAM) for the 8 bit color mode. Two cables are needed: the 15 pin video cable that comes with a Macintosh II color monitor, and the 10 pin cable that comes with the Electrohome projector. An interface is necessary to convert the signals from the Video Card with Macintosh II RGB monitor cable to that of the Electrohome and its cable. Such an interface is provided by Covid, Inc.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Here are their pinouts of Macintosh II monitor and Video Card for reference:

Macintosh II Video Card

Pin#	Signal
---	-----
1	GND
2	Red Channel
3	Composite Sync
4	GND
5	Green Channel (also recognized as Monochrome Signal)
6	GND

7	NC
8	NC
9	Blue Channel
10	NC
11	GND
12	Green Channnel
13	GND
14	GND
15	NC

AppleColor Hi-Res RGB Monitor

Pin#	Signal
---	-----
1	Red Video Return
2	Red Video
3	Composite TTL Sync
4	Composite Sync Return
5	Green Video
6	Green Video Return
7	NC
8	NC
9	Blue Video
10	NC
11	NC
12	NC
13	Blue Video Return
14	NC
15	NC
Shell	Shield GND

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2343



Tech Info Library

Presentation Technologies

Revised: 4/3/97
Security: Everyone

Presentation Technologies

=====

Article Created: 26 August 1987
Article Reviewed/Updated: 3 April 1997

Presentation Technologies

779 Palomar Ave.
Sunnyvale, CA 94086

800-782-2543 (Sales only)

408-730-3700

408-749-0746 Fax

Company Profile:
Hardware, specializing in slide presentation packages.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2347



Tech Info Library

QMS, Inc. (USA)

Revised: 4/3/97
Security: Everyone

QMS, Inc. (USA)

=====

Article Created: 26 August 1987
Article Reviewed/Updated: 3 April 1997

QMS, Inc. (USA)

1 Magnum Pass
Mobile, AL 36618

205-633-4300

800-631-2692 (Marketing)
800-523-2696 (Marketing)

Fax: 205-633-4866

Local Office (Sales, Service, R&D):
2650 San Thomas Expressway
P.O. Box 58101
Santa Clara, CA 95052-8101

408-986-9400

Fax: 408-727-3725

Company Profile:

Hardware, specializing in high-performance, non-impact laser printers and printing solutions, including PostScript printers.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2351



Tech Info Library

Core Technology Corporation

Revised: 4/3/97
Security: Everyone

Core Technology Corporation

=====

Article Created: 04/20/88
Article Reviewed: 07/07/93
Article Updated: 04/02/97

Core Technology Corporation

7435 Westshire Dr.
Lansing, MI 48917

800-338-2117 (Customer Support)

517-627-1521

517-627-8944 Fax

Company Profile:

Hardware and software, specializing in Unisys/Burroughs and Unisys/Sperry connectivity.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2353



Tech Info Library

Macintosh: Languages Available for Apple's Localized Keyboards

Revised: 1/11/93
Security: Everyone

Macintosh: Languages Available for Apple's Localized Keyboards

=====

Article Created: 1 September 1989

Article Change History

01/05/93 - UPDATED

- To add currently supported languages.

TOPIC -----

Apple sells Macintosh keyboards in a number of localized configurations. These keyboards are generally available only within the respective countries or areas.

DISCUSSION -----

The Macintosh is currently available in the following 37 languages:

Arabic
Australian
British
Bulgarian
Croatian
Czech
Danish
Dutch
Faroese
Finnish
Flemish (Belgium)
French
French Canadian
German
Greek
Hangul (Korea)

Hebrew
Icelandic
International (English)
Italian
Kanji (Japan)
Magyar
Norwegian
Persian
Polish
Portuguese
Romanian
Russian
Simplified Chinese
Spanish
Swedish
Swiss French
Swiss German
Thai
Traditional Chinese (Taiwan)
Turkish
USA (English)

Copyright 1989, 1993, Apple Computer, Inc.

Tech Info Library Article Number:2354



Tech Info Library

Macintosh: Disk Repair with Copy II Mac

Revised: 8/31/87
Security: Everyone

Macintosh: Disk Repair with Copy II Mac

=====

When other means (Fedit+, Disk First Aid) have failed to repair a disk that's gone bad, try this procedure:

1. Copy the disk with the sector copy mode of Copy II. When Copy II Mac encounters a bad block, it zeros that block on the destination disk. This gets rid of any unreadable blocks.
2. Run Disk First Aid v1.2 with "Repair Automatically" (Options menu) checked.

When a disk goes bad, don't be too quick to give it up for lost. There are several ways to recover data from bad disks. Oh, yes -- back up often.

Tech Info Library Article Number:2357



Tech Info Library

HyperCard 1.0: Tiny Bug in Help Stack

Revised: 6/12/92
Security: Everyone

HyperCard 1.0: Tiny Bug in Help Stack

=====

Article Created: 31 August 1987
Article Last Reviewed: 3 June 1992
Article Last Updated:

In the Help stack of HyperCard 1.0, there is a single card with a small bug. It's the card named "Math functions (cont.)".

If you click on the left or right screen button, nothing happens. (You CAN, however, move to the next/previous card by clicking right below one of the buttons or by using the right/left arrow key.)

The problem: the card's text fields partially overlap the arrow buttons at the bottom. (These fields are invisible, so you can't see them if you're browsing.) When you click on the buttons, you click in the text fields instead.

Here's how to repair the card:

1. Put HyperCard into Edit mode.
2. Bring up the "Math Functions (cont)" card.
3. Select the Field mode in the Tools menu (the upper-right box).
When you do this, the text fields become visible, and you'll see the overlap.
4. Click the arrow in the lower parts of the three fields that overlap buttons, and move them up.

Copyright 1987, Apple Computer, Inc.

Tech Info Library Article Number:2358



Tech Info Library

Apple IIGS: ImageWriter Pinouts

Revised: 9/1/87
Security: Everyone

Apple IIGS: ImageWriter Pinouts

=====

This article last reviewed: 8/31/87

Here are the pinouts for connecting an Apple IIGS to the ImageWriter II or ImageWriter I printer:

Apple IIGS		ImageWriter II		ImageWriter I
-----		-----		-----
DTR	1	DSR	2	
HSKI	2	DTR	1	DTR 20
TXD-	3	RXD-	5	RXD- 3
G	4	SG	4	SG 7
RXD-	5	TXD-	3	TXD- 2
TXD+	6			
GP	7			
RXD+	8			

Advanced Electronic Support Products, Inc. makes switchboxes that use mini-circular 8 connectors and all necessary cables.



Tech Info Library

MacDraw 1.9.5: Problem When Reducing an Arc

Revised: 4/6/92
Security: Everyone

MacDraw 1.9.5: Problem When Reducing an Arc

=====

Article Created: 31 August 1987
Article Last Reviewed: 6 April 1992
Article Last Updated: 6 April 1992

TOPIC -----

The following information describes a situation with involving system crashes when drawing an arc with MacDraw 1.9.5.

DISCUSSION -----

If you draw an arc, reduce it to exactly .04 x .04, deselect the arc, and finally select it again, the system crashes (ID-04).

Workaround: do a Group Selection around the arc: drag a rectangle around the arc, rather than click on it.

Copyright 1987, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2361



Tech Info Library

Apple IIGS: SuperCalc 3a Memory Use

Revised: 5/25/89
Security: Everyone

Apple IIGS: SuperCalc 3a Memory Use

=====

Because SuperCalc 3a does not take advantage of the 24-bit addressing capabilities of the Apple IIGS, it can access only the first 128K of RAM (by using the same bank-switching techniques used in the Apple IIe and Apple IIc.)

Tech Info Library Article Number:2365



Tech Info Library

Macintosh SE: Don't Start Up From Bernoulli Drive

Revised: 12/6/89
Security: Everyone

Macintosh SE: Don't Start Up From Bernoulli Drive

=====

This article last reviewed: 31 August 1987

If you are using a Macintosh SE with two internal floppy drives and an IOmega Bernoulli drive, be sure to start up the computer with an 800K System disk in one of the drives. If you don't, the computer will try to start up from the Bernoulli drive, and will crash.

In the case of a Macintosh SE with built-in hard disk drive, the computer will always start up from the built-in hard drive.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2366



Tech Info Library

Macintosh SE: HD-20SC Setup and Parameter RAM

Revised: 5/9/89
Security: Everyone

Macintosh SE: HD-20SC Setup and Parameter RAM

=====

This article last reviewed: 31 August 1987

When you update the SCSI driver on a Macintosh SE, using HD20SC Setup 1.4, the parameter RAM is affected in three ways:

1. It validates the SCSI ID for the internal drive. If it is determined not to be a "reasonable" number, it is set to zero.
2. The time to wait for the internal drive to start up is checked and set, if necessary.
3. There is a byte that is sometimes overwritten if the system crashes. If this happens, the Macintosh won't start up from the SCSI drive. This byte is reset if necessary.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2367



Tech Info Library

File Formats: Where to obtain TIFF and EPSF Specs (1/95)

Revised: 1/6/95
Security: Everyone

File Formats: Where to obtain TIFF and EPSF Specs (1/95)

=====

Article Created: 1 September 1987
Article Reviewed/Updated: 6 January 1995

TOPIC -----

Where can I get information on the TIFF and EPS file formats?

DISCUSSION -----

The TIFF 6.0 specification is available in the TIFF Developer's Kit. Information on obtaining this kit and joining the Aldus Developer's Association (ADA) may be obtained from the Developer's Desk at Aldus Corporation, or from the following FTP site:

<ftp://sgi.com/graphics/tiff/TIFF6.ps.Z>

The EPSF (Encapsulated PostScript File) format is available from the Technical Specialists Group at Adobe Systems Inc. Additional information can also be found in the PostScript Language Reference Manual, Adobe Systems Inc.

To locate a vendor's address and phone numbers, use the vendor name as the search string.

Article Change History:
06 Jan 1995 - Replaced entire article with current information.

Copyright 1987-95, Apple Computer, Inc.

Tech Info Library Article Number:2368



Tech Info Library

Apple II Family: Square Wave Power Source (2/97)

Revised: 2/18/97
Security: Everyone

Apple II Family: Square Wave Power Source (2/97)

=====

Article Created: 01 September 1987
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article discusses the use of a square wave AC power source, as opposed to the normal sine wave, with the Apple II family of computers.

DISCUSSION -----

The Apple II power supply is of a switching type that rectifies the AC input voltage to a DC voltage for use internal to the supply. The AC input is first sent through a line filter and then to a diode bridge for rectification. The line filter consists of inductors and capacitors to smooth the waveform of the input voltage. This action would soften the square waves an inverter might supply and the whole combination makes it OK to use an Apple II on a square wave AC supply.

Article Change History:
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2370



Tech Info Library

UniSoft Corporation

Revised: 4/3/97
Security: Everyone

UniSoft Corporation

=====

Article Created: 25 January 1988
Article Reviewed/Updated: 3 April 1997

UniSoft Corporation

6121 Hollis St.
Emeryville, CA 94608-2092

510-420-6400

Fax: 510-420-6499

Company Profile:
Software, specializing in disk optimizers, primarily for UNIX products.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2371



Tech Info Library

Autologic and Monotype Typesetters: Introduction

Revised: 7/26/93
Security: Everyone

Autologic and Monotype Typesetters: Introduction

=====

Article Created: 11 February 1988
Article Reviewed/Updated: 22 July 1993

The Autologic APS-5 and the Monotype LaserComp are high-end typesetters used in the printing industry, especially by newspapers. These typesetters can do a limited bit-map image, but require information in ICL or PostScript.

Autologic, Monotype, and their ICL page description language were all developed in the 1970s. They are analogous to, and compete with, newer products like the Linotype LN300 using PostScript from Adobe.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:
23 July 1993 - Updated company names.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2372



Tech Info Library

Apple File Exchange: AppleWorks-Microsoft Works Transporter

Revised: 5/24/89
Security: Everyone

Apple File Exchange: AppleWorks-Microsoft Works Transporter

=====

This article last reviewed: 12 January 1988

The Work-Works Transporter for AFE translates and transports AppleWorks Files to Microsoft Works: a valuable productivity tool.

The resource is copyright 1986, 1987 by Productivity Software, Inc. and must not be sold -- but it may be distributed freely. If they wish, dealers may use the resource and charge for the service of converting a user's files.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2373



Tech Info Library

National Instruments Corp. (6/95)

Revised: 4/3/97
Security: Everyone

National Instruments Corp. (6/95)

=====

Article Created: 25 January 1988
Article Reviewed/Updated: 3 April 1997

National Instruments

6504 Bridge Point Parkway
Austin, TX 78730-5039

Telephone: 800-433-3488

Telephone: 512-794-0100

Fax: 512-794-8411

Company Profile:

Hardware and software, including the Macintosh scientific and math applications LabVIEW and HiQ. Manufacturer of PCI (Peripheral Component Interconnect) cards, such as their Data Acquisition and Instrument Control.

Article Change History:

06 Jun 1995 - Added information about new products.

Support Information Services

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2374



Tech Info Library

Apple File Exchange 1.0.1: Problem Formatting ProDOS Disk On Mac

Revised: 12/3/88
Security: Everyone

Apple File Exchange 1.0.1: Problem Formatting ProDOS Disk On Mac

=====

This article last reviewed: 10 November 1988

Apple File Exchange 1.0.1 (part of System 5.0, MultiFinder release) sometimes fails to correctly format a ProDOS Disk on a Macintosh. This happens when the user first types an invalid name for the new ProDOS disk, then makes a correction to it. Here's the scenario:

1. The user puts the AFE disk in the Macintosh's external drive, and starts the program.
2. User ejects the startup disk from the internal drive, via the appropriate clicks on the Drive and Eject buttons, then replaces it with a blank unformatted disk.
3. AFE tells the user that it can't read the disk, and asks if the user wants to initialize it.
4. User selects 800K, ProDOS format, and clicks Initialize.
5. AFE initializes the disk and asks the user to name it.
6. The user accidentally types a name that is too long for ProDOS (or uses illegal characters).
7. AFE ejects the newly-formatted ProDOS disk and asks for the startup disk back.
8. The user inserts the startup disk, and AFE displays an alert about an invalid ProDOS name.
9. The user clicks OK, and sees a dialog box containing a suggested (valid) name.
10. The user makes minor changes to the name, but keeps it a legal ProDOS name, and click OK, expecting AFE to eject the startup disk and ask for

the newly-formatted ProDOS disk back to record the new name.

Seconds later, the user has a hybrid disk: part Macintosh startup disk, and part ProDOS volume name -- AFE didn't let the user swap disks one last time.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2376



Tech Info Library

LaserWriter: When to Service

Revised: 9/1/87
Security: Everyone

LaserWriter: When to Service

=====

This article last reviewed: 9/1/87

A LaserWriter or LaserWriter Plus should have major service after printing on the order of 100,000 pages. At 3,000 pages per month, that's about two and a half years.

Toner cartridges should be changed every 2,000 to 3,000 pages.

Tech Info Library Article Number:2377



Tech Info Library

ADB Keyboards: Sharing Among Several Computers

Revised: 9/1/87
Security: Everyone

ADB Keyboards: Sharing Among Several Computers

=====

This article last reviewed: 9/1/87

It is possible for more than one computer (Macintosh SE, Macintosh II, or Apple IIGS) to share an ADB keyboard and the mouse attached to it. Switch the data leads only, not the power switch on the keyboard.

Only one keyboard is hooked up at a time; at power-up, each is assigned the default ADB address of 2. This default gets assigned all the time (unless the software specifies otherwise) and so they all have the same address. Thus, when the computer addresses the keyboard at address 2, whichever keyboard is attached will respond.

The switching should take place when there's no activity, so as not to lose or confuse data.

Remember: don't change the default address with software.

Tech Info Library Article Number:2381



Tech Info Library

AppleShare: TOPS Compatibility

Revised: 5/11/89
Security: Everyone

AppleShare: TOPS Compatibility

=====

This article last reviewed: 1 November 1988

Overview

AppleShare volumes mounted with the new network Chooser on an AppleShare WORKSTATION Macintosh can be made available (via TOPS on the same Macintosh) to the TOPS network. The AppleShare volume can then be accessed from any TOPS station on the network, including MS-DOS computers.

TOPS allows MS-DOS connectivity to the AppleShare file server. AppleShare volumes mounted on a Macintosh workstation and then published via TOPS are 'available' in a PC TOPS window. The volume can then be mounted by the PC and accessed like any other TOPS volume.

Potential Trouble Spots

TOPS does not recognize AppleShare folder access privileges. Publishing any AppleShare volume via TOPS gives the same access privileges to any TOPS station that might access the volume. This means that if an AppleShare user published a private volume or folder via TOPS, the volume or folder would be available to all other TOPS users on the network. When an AppleShare volume is accessed through any TOPS station, it appears to the AppleShare server that the AppleShare workstation that originally mounted the volume is accessing the server. This extends the access privileges of the original user to all TOPS workstations, effectively bypassing the AppleShare user privileges and restrictions.

Volumes and folders can safely be accessed through AppleShare or through TOPS, but not both. AppleShare uses the Apple AFP file transfer protocols, while Centram uses a proprietary file transfer scheme. An AppleShare volume or folder that has been first mounted by an AppleShare workstation and then published via TOPS should not then be mounted through both AppleShare and TOPS at the same time on another AppleShare workstation. Calling the file or folder will result in the two different file transfer mechanisms clobbering each other.

TOPS should NOT be installed on the AppleShare Server. This could work if ALL volumes were published from the File Server as "Read-Only" volumes, though there is probably no reason to configure any network this way. The reason for this conflict is that AppleShare keeps a copy of the server directory, which would not be properly updated if a server volume were modified by any TOPS users.

AppleShare shows all folders on the mounted volume, irrespective of whether the workstation user has access privileges to the folders. If an AppleShare volume has first been mounted by an AppleShare user, published via TOPS on the Macintosh workstation, then viewed through the TOPS window on any TOPS workstation, all the folders in the volume will be listed. If the volume is mounted via TOPS and private folders are opened with the Finder, the folder's window will be empty. Attempting to mount a private folder via TOPS will cause an error message.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2382



Tech Info Library

Macintosh: How to Make a Color Startup Screen

Revised: 3/31/93
Security: Everyone

Macintosh: How to Make a Color Startup Screen

=====

Article Created: 1 September 1987

Article Change History

03/12/93 - EXPANDED AND UPDATED

- To take new developments into account.

TOPIC -----

How can I create a color startup screen for my color Macintosh? I'd also like to know if the Performa series supports color startup screens?

DISCUSSION -----

The Macintosh line and the Performa line support startup screens. Color models will display color startup screens if the StartupScreen file contains color information. Startup screens are supported in all versions of the Macintosh and Performa operating systems.

To operate as a startup screen, a document must be in the System folder and be named StartupScreen. Some color graphics application programs, such as Canvas, SuperPaint, and Color MacCheese, have a startup screen option: they let you save a document specifically as a startup screen.

If your graphics application doesn't have that option, here's how to make a color startup screen. In summary, you'll place a PICT resource with ID 0 in the StartupScreen file.

The easiest way to create a PICT resource is to copy a color picture from an application, or from a screen "dump" and paste it into the Scrapbook. Then use ResEdit to find the resource in the Scrapbook File and paste it into the StartupScreen file.

- 1) Copy a color picture to the Clipboard, either with a color graphics

application, or with a screen dump utility.

- 2) Paste the picture into your Scrapbook. (You can quit the graphics application.)
- 3) In ResEdit, copy the picture from the Scrapbook into the resource fork of the file named Startupscreen in your System folder. The picture will be saved as a PICT resource.
- 4) Still in ResEdit, change the ID of the PICT resource to 0 (zero).
- 5) Quit ResEdit and restart your system.

Copyright 1987, 1993, Apple Computer, Inc.

Tech Info Library Article Number:2383



Tech Info Library

Macintosh II Video Card: Description of Pins and Signals (2/95)

Revised: 2/14/95
Security: Everyone

Macintosh II Video Card: Description of Pins and Signals (2/95)

=====

Article Created: 17 May 1988
Article Reviewed/Updated: 14 February 1995

TOPIC -----

This article answers some of the questions that have arisen about connecting third-party peripherals (monitors, projectors, video recorders) to the Macintosh II video card.

DISCUSSION -----

Only an interface cable need be created for most of the signal compatible monitors and projectors. Some devices will need other signals than those provided by the video port. There is another set on the card that supplies signals not needed by the Apple High Resolution Monitors.

Before a third-party peripheral is connected, it must follow the Macintosh video scheme. It must have:

- a bandwidth of 22 MHz or greater
- a horizontal scan rate of 35 KHz or greater
- an analog RGB video display (for color)
- reception of a TTL negative going sync signal

There are four video signals and four accompanying ground pins on the DB-15 female connector of the Macintosh II video card:

- | | | |
|----|--------------------|--|
| 1 | RED VIDEO GROUND | |
| 2 | RED | (analog) |
| 3 | CSYNC * | (TTL) used by Apple Displays |
| 4 | CSYNC GROUND | |
| 5 | GREEN + CSYNC | (analog) used for Mono; CSYNC unused by Apple displays |
| 6 | GREEN CSYNC GROUND | |
| 9 | BLUE | (analog) |
| 12 | GREEN + CSYNC | (analog) not used |
| 13 | BLUE VIDEO GROUND | |

* This is composite sync (vertical and horizontal)

The Apple High Resolution Monochrome Monitor uses only the green video and the composite sync signal lines: pins 3,4,5, and 6.

The Macintosh II video card can produce RS170 interlaced video signals as well as the usual RS343 non-interlaced. This is a software controlled mode that utilizes a 12.27 MHz clock. The timings for the mode follow the RS170 specifications, giving a video image similar to the Amiga computer's 400- line mode (visible flickering). Monitors with lower scan rates than those required by the RS343 mode can use the RS170 mode at the disadvantage inherent in lower resolution devices. This mode is unsupported at this time, and no drivers are available.

Here is a description of the video signals and their timings:

Horizontal SYNC:

Frequency	35 KHz
Period	$1/35 \text{ KHz} = 28.5714 \text{ microseconds}$
Back Porch	96 dots
Front Porch	64 dots
Sync	64 dots
Active video	640 dots
Blanking	224 dots (back porch + front porch + sync)
Pixel Clock	30.24 MHz (one dot = $1/30.24\text{MHz} = 33.06878\text{ns}$)

Vertical SYNC:

Frequency	66.67 Hz
Back Porch	39 horizontal scan lines
Front Porch	3 lines
Sync	3 lines
Active	480 lines
Total	525 lines = 15 milliseconds

Lines are derived from $1/\text{Scan rate} = 1/35\text{KHz} = 28.5714 \text{ microseconds}$.

Other values:

vertical even field blanked lines	45 lines
video rise and fall times approx.	5-6 ns
video signal black level	0 volts
video signal green+csync black level	0.3 volts
video signal white level	1 volt

When tested at the connector, because the 75ohm terminating resistor within the monitor is not loading the line, the signals will appear to range from 0-3 volts.

The above signals are for the non-interlaced RS343 standard video used by the Apple High Resolution video monitors. Note that while the video signal voltage levels comply with the RS343 standard, the CSYNC does not as it is a TTL signal.

Although not present on the external video connector, there are also six more video signals available on connector space J3 on the video card. J3 is a set of 14 holes located along the top of the video card and between the TFB and the video port edge of the board (sometimes covered by the serial number label).

J3 signals:

- 1 GROUND
- 2 GROUND
- 3 GROUND
- 4 EXT_PBCLK (EXTERNAL PIXEL BUS CLOCK)
- 5 GROUND
- 6 CLK_SEL (PIXEL BUS CLOCK SELECT)
- 8 CBLANK~ (COMPOSITE BLANKING SIGNAL)
- 9 GROUND
- 10 VSYNC~ (VERTICAL SYNC)
- 11 GROUND
- 12 HSYNC~ (HORIZONTAL SYNC)
- 13 VCC
- 14 CLK_SEL~ (PIXEL BUS CLOCK SELECT)

Pins 1,2,3,5,7,9,11 are tied to ground

1) Pin 4 is EXT-PBCLK. This is a tristateable clock that can be driven from a master card onto the Mac II video card. It must be tristated except when the video merge card or whatever is attached to the Mac II video card is trying to drive the video with its own pixel clock.

2) Pin 6 is CLKSEL. This is an active high pin that indicates that the master card wishes to drive the pixel clock line. This pin should be driven high only when pin 14 is driven low and the interlace bit is set on the Macintosh II video card. Eventually a call will be supported which will set the interlace bit in the Macintosh II video card.

3) Pin 8 is CBLANK~. This is the composite blanking signal for the video being driven by the Mac II video card.

4) Pin 10 is VSYNC~. This is the vertical sync signal for the video being generated by the Mac II video card. This signal is bidirectional and can be driven by a master to allow for genlock. The direction of this signal is under software control. A call will soon be supported to allow for setting up the card for genlock.

5) Pin 12 is HSYNC~. This is the horizontal sync signal for the video being generated by the Mac II video card. This signal is bidirectional and can be driven by a master to allow for genlock. The direction of this signal is under software control. A call will soon be supported to allow for setting up the card for genlock.

6) Pin 13 is VCC. No more than 100mA may be drawn from this VCC pin.

7) Pin 14 is CLKSEL~. It is an inverted version of pin 6.

Some video units require a separate horizontal and vertical sync. These can be obtained through the signals supplied on J3.

Making a video cable: use a cable with an impedance of 75 ohm, like RG59, particularly for long distances (over 12 feet). As for the pin considerations for the connectors, pay attention be paid to grounding each video line as well as the shield to its appropriate pin on the video device and card. To keep within RFI levels, ferrite rings or beads can be attached.

Article Change History:

14 Feb 1995 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2384



Tech Info Library

SCSI Terminators: Using them with a Macintosh and a SCSI Drive

Revised: 5/11/89
Security: Everyone

SCSI Terminators: Using them with a Macintosh and a SCSI Drive

=====

This article last reviewed: 9/1/87

This is to clarify when to use terminators when connecting a Macintosh II or Mac SE to a SCSI drive. The information on EXTERNAL drives applies to the Macintosh Plus as well.

Mac II or Mac SE with 40MB Internal Drive

The internal 40MB drive itself is automatically terminated. When connecting external SCSI devices, you need a terminator at the end of the chain.

- Mac II/SE + internal 40MB
no terminator necessary
- Mac II/SE + internal 40MB + external SCSI
terminator at external SCSI
- Mac II/SE + internal 40MB + external SCSI ... external SCSI
terminator at end of chain

Mac II or Mac SE without 40MB Internal Drive

There must be at least one terminator between the Mac II/SE and the first SCSI device, and one more at the end of the line if there is more than one SCSI device.

- Mac II/SE + external SCSI
terminator at external SCSI
- Mac II/SE + external SCSI ... external SCSI
terminator at beginning and end of chain

Again, the information on external drives applies to the Macintosh Plus

as well.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2385



Tech Info Library

Macintosh II: Sharing Monitors & Keyboards

Revised: 7/2/92
Security: Everyone

Macintosh II: Sharing Monitors & Keyboards

=====
Article Created: 1 September 1987
Article Last Reviewed: 25 June 1992
Article Last Updated:

TOPIC -----

There is no way for several Macintosh II computers to share both a single keyboard and a single monitor. A switch for a monitor should be relatively easy to make, since you are only supplying the monitor with a stream of bits. A switch for the keyboard is more difficult, because you must deal with the Apple Desktop bus (ADB).

DISCUSSION -----

The first time a keyboard is recognized, it receives an ID number from the computer and retains this ID number. When the multiple computers started up, one after the other, they would all get the same Keyboard ID. The problem is that when the keyboard is subsequently addressed, it assumes it is communicating with just one computer and forgets its ID number. So when a second computer attempts to communicate with it, nothing happens.

Conceivably, you could implement a program that echoed all the keyboard information out from one "master" Macintosh II, over AppleTalk, but still you would have to rewrite quite a bit of lower level code.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2386



Tech Info Library

Macintosh Debugger

Revised: 12/4/89
Security: Everyone

Macintosh Debugger

=====

This article last reviewed: 5 October 1989

MacsBug v. 6.1 supports the Macintosh Plus, Macintosh SE, Macintosh SE/30, and the Macintosh II family. MacsBugs is compatible with all Macintosh monitor configurations and all versions of Macintosh System Software, including Multifinder. Version 6.1 of MacsBug does not work with the 64K ROMs (Macintosh 128K and Macintosh 512K) or the Macintosh XL.

MacsBug is available from APDA. You must acquire a license from Apple Software Licensing before including MacsBug in a shipping product.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2388



Tech Info Library

LaserWriter: How to Tell What ROM is Installed

Revised: 9/21/87
Security: Everyone

LaserWriter: How to Tell What ROM is Installed

=====

This article last reviewed: 1 September 1987

A customer reports that his LaserWriter stops printing in the middle of a job, with a message that it is unable to print or set up a spool file.

This could be caused by using a LaserWriter with version 1.0 ROM, which had an XOFF-XON problem (an XOFF was sent by never an XON). This resulted in the LaserWriter not finishing its printing. The 2.0 version LaserWriter ROM corrects the problem.

Here's how to tell what version ROM is in your LaserWriter:

1. Look at the test sheet that comes out of the LaserWriter when it's started up.
2. On the test sheet, find the picture of a page with a graph.
3. The ROM version is shown in the lower-left corner of that picture.
4. If the number is 1.0, replace the LaserWriter ROM with the latest version.

Tech Info Library Article Number:2389



Tech Info Library

System 3.3: Don't Use with Macintosh SE or Macintosh II

Revised: 5/10/89
Security: Everyone

System 3.3: Don't Use with Macintosh SE or Macintosh II

=====

This article last reviewed: 1 September 1987

A recent item in the Tech Support folder ("AppleShare 1.0: Installing with System") stated that it is OK to run System 3.3 with Finder 5.4 on a Macintosh II.

This is emphatically not OK -- you should not run 3.3 on either a Macintosh II or Macintosh SE.

- a Macintosh II requires System 4.1 or later.
- a Macintosh SE requires system 4.0 or later (4.1 is even better).

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2390



Tech Info Library

Apple IIGS: Headphone Jack is Not Stereo

Revised: 10/12/87
Security: Everyone

Apple IIGS: Headphone Jack is Not Stereo

=====

This article last reviewed: 1 September 1987

The diagram on page 158 of the Apple IIGS Owner's Guide shows a "stereo headphone" jack. Some advertising also suggests that the IIGS produces stereophonic sound. While it's true that you can connect stereo headphones to this jack, you'll hear only monophonic sound: identical sounds from both channels.

Tech Info Library Article Number:2391



Tech Info Library

AppleShare, LaserShare, InterMail: All From One Server

Revised: 11/2/88
Security: Everyone

AppleShare, LaserShare, InterMail: All From One Server

=====

This article last reviewed: 1 September 1987

It is possible to use the same hard disk for AppleShare, LaserShare, and InterMail. One Macintosh Plus, Macintosh SE, or Macintosh II with server can then do triple duty: file, printer, and mail service.

1. Copy InterMail's server icon into the AppleShare server folder.

On first launch, loading before AppleShare, InterMail creates its own data file, which disrupts AppleShare's launch. We'll take of that in a moment.

2. Start up the Server Installer.
3. Drag the InterMail data file into the Server folder.
4. Run AppleShare's Admin application, which 'repairs' the server desktop.
5. Restart. InterMail and AppleShare will run properly.
6. While installing LaserShare according to the directions, enable it as a 'Concurrent Application.'
7. Restart again. All three applications will load and run.

Since InterMail loads first, and in the background, its memory is reserved before AppleShare and LaserShare launch.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2392



Tech Info Library

Advanced Electronic Support Products, Inc. (AESP)

Revised: 7/2/93
Security: Everyone

Advanced Electronic Support Products, Inc. (AESP)

=====

Article Created: 09/02/87
Article Reviewed: 07/02/93
Article Updated: 03/30/92

Advanced Electronic Support Products, Inc.

1810 N.E. 144th St.
North Miami, FL 33181

305-944-7710

800-446-2377

305-652-8489

AppleLink: D2345

Company Profile:
Hardware, specializing in computer cables and connectors.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2393



Tech Info Library

A/UX: Guide to 80SC Disk Partitions

Revised: 5/18/89
Security: Everyone

A/UX: Guide to 80SC Disk Partitions

=====

This article last reviewed: 13 January 1988

There are six partitions on the A/UX Master volume:

slice	partition	name	size	start

-	-	Partition map	128	0
-	2	Eschatology 1	6144	128
0	3	A/UX Root	111184	6272
1	4	Swap	28672	117456
-	1	Mac	4096	146128
-	5	Eschatology 2	6144	150224
-	-	(not used)	1	156368

The number in the 'slice' column is the number used in the A/UX disk specification of the form /dev/dsk/c3d0s0. The slice number is the one following the "c"--"3" in this example. A disk slice is a region of a disk accessible from the CPU. The partition number is the one used in the partition map (you don't need to know much about this one). The partition name is how some commands (such as pname) refer to the partition.

The number in the 'size' column is the size of the partition in 512-byte blocks.

The number in the 'start' column is the number of the first block in the partition (again in 512-byte blocks).

The two partitions 'root' and 'mac' are the two most used. The 'root' partition is the one that A/UX runs from, and the 'mac' partition is the one that the system boots from (in SASH). The swap partition is used by the A/UX system to swap programs out to.

The two Eschatology partitions are copies of each other. They are used with the esch program (available from SASH) to help recover the root file system in case of a crash. They are located at opposite ends of the disk, so a

physical head crash will probably leave one of them intact.

This information was provided by Apple Software Configuration Management.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2395



Tech Info Library

DuoDisk: Cable Specifications and Pinouts

Revised: 12/14/92
Security: Everyone

DuoDisk: Cable Specifications and Pinouts

=====

Article Created: 13 January 1988

Article Change History

12/14/92 - EXPANDED and RETITLED
• To include specifications.

Specifications

- Wire connection must withstand 3 lbs. without breaking.
- Each contact must withstand 10 lbs. of force.
- Cable must withstand 15 lbs. of pull without damage.

Pinouts

The pin-outs for the DB-19-to-disk cable (P/N 590-0114) are:

DB-25	Function	DB-19
2-----	Ground-----	1
4-----	Ground-----	2
9,21----	Ground-----	3
10,14----	Ground-----	4
23-----	[-12 volts]-----	5
7-----	+5 volts-----	6
19-----	+12 volts-----	7
20-----	12 volts-----	8
8-----	ENBL B -----	9
12-----	WR PROT-----	10
15-----	00 -----	11
16-----	01 -----	12
17-----	02 -----	13

18-----	03 -----	14
5-----	WR REQ -----	15
24-----	+5 volts-----	16
11-----	ENBL A-----	17
3-----	RD DATA-----	18
6-----	WR DATA-----	19
1,13,22,25-----	No connection	

Pins 1 and 25 of the DB-25 connector are not connected.

Copyright 1988-1992, Apple Computer, Inc.

Tech Info Library Article Number:2396



Tech Info Library

Apple IIGS: Using ToolBox To Create/Modify Character Sets

Revised: 1/26/88
Security: Everyone

Apple IIGS: Using ToolBox To Create/Modify Character Sets

=====

This article last reviewed: 19 January 1988

The Apple IIGS ToolBox allows programmers to do some interesting things. You can, for example, redefine the keyboard layout by patching certain calls to the ToolBox.

To create new character sets, you'll intercept the data coming from the keyboard, translate it to whatever you want, and store it in the proper place.

To learn how to do this, you'll need the Apple IIGS ToolBox Reference Manual (two volumes, APDA order number K2BGST). This book describes the ADB toolset that you would use to alter the keycodes. The Keyboard Micro gets data from the ADB keyboard, then software is called to get that data and send it to the \$C000 area. Your software would read the keyboard micro, and then translate the keycode that it gets back into an ASCII (or whatever) type of code, storing it back into the \$C000 vector.

Altering the character set is not possible in text mode, because the character sets are in ROM (in the VGC custom IC) and can't be changed. But there is a simple way to accomplish this: use the standard graphics environment that the Apple IIGS provides. By using the Font Manager, you can create your own customized fonts for any language and any type of symbols. This system is also documented in the Apple IIGS ToolBox Reference Manual.

Tech Info Library Article Number:2399



Tech Info Library

DataViz Inc.

Revised: 4/3/97
Security: Everyone

DataViz Inc.

=====

Article Created: 26 January 1988
Article Reviewed/Updated: 3 April 1997

DataViz Inc.

55 Corporate Dr.
Trumbull, CT 06611

Phone (203)268-0030 (Sales, Technical Support)
FAX (203)268-4345
Toll Free: 800-733-0030

Company Profile:
DataViz Inc., software, specializing in communications and data
conversion products. DataViz makes MacLink Plus, Easy Open Translators,
Translators Pro, PC Connect

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2402



Tech Info Library

Southern California Research Group

Revised: 7/19/93
Security: Everyone

Southern California Research Group

=====

Article Created: 26 January 1988
Article Reviewed/Updated: 19 July 1993

Southern California Research Group

P. O. Box 593
Moorpark, CA 93020

805-529-2082

Company Profile:
Hardware, specializing primarily in Apple II adapters and connectors.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2403



Tech Info Library

Graphic Simulation Corp.

Revised: 4/3/97
Security: Everyone

Graphic Simulation Corp.

=====

Article Created: 01/26/88
Article Reviewed: 07/08/93
Article Updated: 04/03/97

Graphic Simulation Corp.

1200 E. Collins
Suite 214
Richardson, TX 75081

214-699-7400

214-699-0972 Fax

Company Profile:

Software, specializing in entertainment software,i.e. flight simulators.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2404



Tech Info Library

Berg Electronics (formerly DuPont Connector Sys.)

Revised: 4/3/97
Security: Everyone

Berg Electronics (formerly DuPont Connector Sys.)

=====

Article Created: 01/28/88
Article Reviewed: 07/07/93
Article Updated: 04/03/97

Berg Electronics

825 Old Trail Rd.
Etters, PA 17319

800-233-1173

717-938-6711

717-938-7000 Fax

Company Profile:
DuPont Connector Systems, hardware, specializing in electronics
packaging.

Article Change History: 07/07/93 Name Changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2406



Tech Info Library

Dayna Communications

Revised: 4/3/97
Security: Everyone

Dayna Communications

=====

Article Created: 01/28/88
Article Reviewed: 07/07/93
Article Updated: 04/03/97

Dayna Communications

849 W. Levoy Dr.
Salt Lake City, UT 84123

801-269-7200 (also Tech Support)

801-269-7363 (Corporate Office) Fax

Company Profile:

Dayna Communications, hardware and software, specializing in
conectivity, LocalTalk and Ethernet.

Article Change History: 07/07/93 Address Changed, Phone Information Changed,

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2407



Tech Info Library

U. S. Robotics (2/97)

Revised: 2/24/97
Security: Everyone

U. S. Robotics (2/97)

=====

Article Created: 28 January 1988
Article Reviewed/Updated: 24 February 1997

U.S. Robotics

8100 N. McCormick Blvd.
Skokie, IL 60076-2999

Main: (847) 982-5010
Data: (847) 982-5092
FAX: (847) 676-7323
Faxback: (800) 762-6163 or (847) 676-8536

Technical Support:
Sportster (847) 982-5151
Courier (800) 550-7800 or (847) 982-5010

email: support@usr.com
Home Page: <http://www.usr.com/>
FTP site: <ftp://ftp.usr.com/>

Compuserve email: 76711,707
Compuserve forum: USROBOTICS

Company Profile:
Hardware and software, specializing in modems, communications software,
terminal emulation, and interfaces.

Article Change History:
24 Feb 1997 - Updated phone numbers with new area code.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2408



Tech Info Library

Sun Select (Formerly Sitka)

Revised: 4/3/97
Security: Everyone

Sun Select (Formerly Sitka)

=====

Article Created: 28 January 1988
Article Reviewed/Updated: 3 April 1997

Sun Select (Formerly Sitka)

2060 Callinger Rd.
Alameda, CA 94501

510-769-9669
510-769-8711 (Tech. Support)

Fax: 510-769-0354 (Tech. Support)

Company Profile:

Formerly Sitka, hardware and software, developer of connectivity software for file and printer sharing among Macintoshes, PCs, and Sun Workstations.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2409



Tech Info Library

Studer Editech

Revised: 4/3/97
Security: Everyone

Studer Editech

=====

Article Created: 28 January 1988
Article Reviewed/Updated: 3 April 1997

Studer Editech

1370 Willow Rd., Suite 201
Menlo Park, CA 94025

415-326-7030

Fax: 415-326-7039

Company Profile:
Hardware, specializing in high-end digital/audio products for Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number: 2414



Tech Info Library

Iconix Software Engineering, Inc.

Revised: 4/3/97
Security: Everyone

Iconix Software Engineering, Inc.

=====

Article Created: 01/28/88
Article Reviewed: 07/09/93
Article Updated: 04/03/97

Iconix Software Engineering, Inc.

2800 28th St.
Suite 320
Santa Monica, CA 90405

310-458-0092

310-396-3454 Fax

Company Profile:
Software, specializing in high-end Computer-Aided Software Engineering
(C.A.S.E.) tools.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2415



Tech Info Library

Northern Wire And Cable Distributors

Revised: 7/14/93
Security: Everyone

Northern Wire And Cable Distributors

=====

Article Created: 28 January 1988
Article Reviewed/Updated: 14 July 1993

Northern Wire and Cable Distributors

4545 Camaron St.
Suite A
Las Vegas, NV 89103

800-634-6051

702-739-9641

702-367-8644 Fax

1902 Northwood Dr.
P.O. Box 1026
Troy, MI 48084

800-521-2756 (Outside MI)

313-244-2999

313-244-9840 Fax

Company Profile:
Specializing in distribution of wires and cables for many electronic and industrial applications.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2416



Tech Info Library

Macintosh 512K: Adding a SCSI Port

Revised: 7/17/92
Security: Everyone

Macintosh 512K: Adding a SCSI Port

=====

Article Created: 11 January 1988
Article Last Reviewed: 2 July 1992
Article Last Updated: 27 September 1991

TOPIC -----

The following information provides information on how to add a SCSI port to the Macintosh 512K.

DISCUSSION -----

If you have a Macintosh 512K and need hard disk storage (no longer provided by the discontinued Apple HD20 hard disk), you can add a third-party SCSI port.

For more information, search under:
SuperMac Technology
MacProducts
Spectra Micro Development

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2417



Tech Info Library

Xenosoft

Revised: 11/3/92
Security: Everyone

Xenosoft

=====

Article Created: 28 January 1988
Article Last Reviewed: 3 November 1992
Article Last Updated: 13 April 1992

Xenosoft, software, specializing in data format conversion.

Xenosoft
2210 6th St.
Berkeley, CA 94710
510-644-9366

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:2418



Tech Info Library

Spectra Micro Development

Revised: 4/3/97
Security: Everyone

Spectra Micro Development

=====

Article Created: 1 February 1988
Article Reviewed/Updated: 3 April 1997

Spectra Micro Development

P.O. Box 41795
Tucson, AZ 85717

602-795-7288

Company Profile:
Hardware and software, specializing in utilities and security software for the
Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2420



Tech Info Library

MacPEAK Research, Inc.

Revised: 4/3/97
Security: Everyone

MacPEAK Research, Inc.

=====

Article Created: 1 February 1988
Article Reviewed/Updated: 3 April 1997

MacPEAK Systems, Inc.

3701 Bee Cave Rd.
Austin, TX 78746

512-327-3211

512-327-9553 Fax

Company Profile:

Software, specializing in formatting and caching programs for Macintosh
compatible drives, CD, jukeboxes, printers

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2422



Tech Info Library

MacProducts

Revised: 7/13/93
Security: Everyone

MacProducts

=====

Article Created: 02/01/88
Article Reviewed: 07/13/93
Article Updated: 11/03/92

MacProducts

608 W 22nd St
Austin, TX 78705-5116

800-622-8721 (Orders Only)

512-472-8881

512-499-0888 Fax (Sales)

Company Profile:
Hardware and software, specializing in upgrades and peripherals (esp. Magic brand) for Macintosh.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2423



Tech Info Library

Space Quest: It is Incompatible with Old Apple IIGS ROMs

Revised: 10/4/89
Security: Everyone

Space Quest: It is Incompatible with Old Apple IIGS ROMs

=====

This article last reviewed: 11 January 1988

A software package called Space Quest, part of the Endless Disk Drive, can produce a Fatal System Error -> 0814 unless the following rules are observed:

- An Apple IIGS with serial number E704 or less needs to have both the VGC and ROM upgrades.
- An Apple IIGS with serial numbers E704 - E723 needs the ROM upgrade only.
- You must use System 2.0 or later. This means that Space Quest will not run with the old Apple IIGS ROMs (342-0077-A).

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2424



Tech Info Library

MIDI: General Description and Overview (1/95)

Revised: 1/19/95
Security: Everyone

MIDI: General Description and Overview (1/95)

Article Created: 8 February 1988
Article Reviewed/Updated: 19 January 1995

TOPIC -----

This article contains a description of MIDI (Musical Instrument Digital Interface), and how it is used on the Macintosh.

DISCUSSION -----

Introduction

MIDI is a communications protocol --
a standard way of exchanging information:

- between electronic musical instruments, and
- between computers and those instruments.

By connecting the Apple MIDI interface to your Macintosh or Apple IIGS, and using MIDI software and instruments designed for the purpose, you can use your computer to compose, edit, orchestrate, and control playback of music on MIDI instruments such as keyboard synthesizers, drum synthesizers, and tone generators. You can then use your computer and MIDI software to transcribe the music into musical notation that can be edited, saved on a disk, and printed.

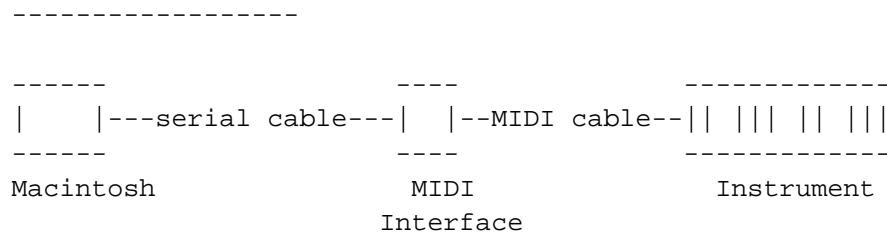
The most common use of a computer/MIDI setup is to record songs which can be saved onto the computer's hard disk, much like using a tape recorder to record songs. Advantages of using a computer/MIDI setup are:

- You can easily edit what you played on your instrument without having to re-play it. You can change the timing, duration, pitch, and volume of individual notes or whole passages.
- You can record several different tracks, one at a time, to make a complete song, without having to use a multi-track tape recorder.

- For difficult passages, you can play your instrument slowly, and have the computer increase the tempo.
- The computer can cue to any song or any part within a song much faster than a tape recorder can.
- You can record different tracks of a song, and then practice playing along with those parts, as though you were playing with other musicians. (You can do this with a tape recorder, but it's much more cumbersome.)
- You can record one or more tracks of a song, and play along with those parts during a live performance. This is handy if you want to be a solo musician, or if you are missing band members.
- Unlike cassette tapes, the quality of a digital computer recording will not deteriorate over time.

Recording music with MIDI instruments such as keyboards, drum machines, and sound modules is easy. MIDI translators are available for electric guitars, but they are an added expense. Although computers can make digital recordings of analog instruments such as voice and horns in addition to recording MIDI instruments, this requires expensive computer hardware and storage devices.

Typical MIDI Setup



Serial Cable

Every desktop Macintosh manufactured since 1986 comes with two standard DIN-8 serial ports. You connect the Macintosh to a MIDI interface (a small box) with a standard serial cable--the same kind used to connect the Macintosh to a StyleWriter printer. It does not matter which end of the cable is used in either device.

MIDI Interface

Most MIDI-equipped instruments contain both a receiver and transmitter. However, some instruments may have only a receiver or transmitter. The receiver accepts messages in a MIDI data format and executes the MIDI commands. The transmitter originates messages in MIDI data format, and transmits them by way of a line driver and UART. The MIDI interface consists of an optoisolator, UART (Universal Asynchronous Receiver-Transmitter), and other interface function hardware. The MIDI interface has at least one MIDI IN jack and MIDI OUT socket.

A MIDI interface operates at 31.25 Kbaud (+/- 1%) asynchronously, using a data format of one start bit, eight data bits, and one stop bit. This makes a total of 10 bits for each 320 microsecond period per serial byte.

The MIDI circuit is designed to accommodate a 1.5 mA current loop with a

logical 0 as current ON. Also, one Output can drive one Input, and ONLY one, with a rise and fall time of less than 2 microseconds.

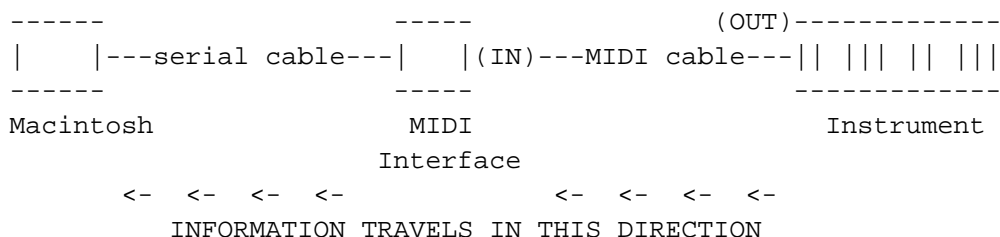
As specified by the IMA (International MIDI Association), MIDI connectors are DIN 5 (180 degree) female receptacles. The MIDI connectors are labelled MIDI IN and MIDI OUT, with pins 1 and 3 left disconnected in both the transmitter and receiver.

MIDI cables may be a maximum of fifty feet (15 meters,) with shielding connected to pin 2 at both ends.

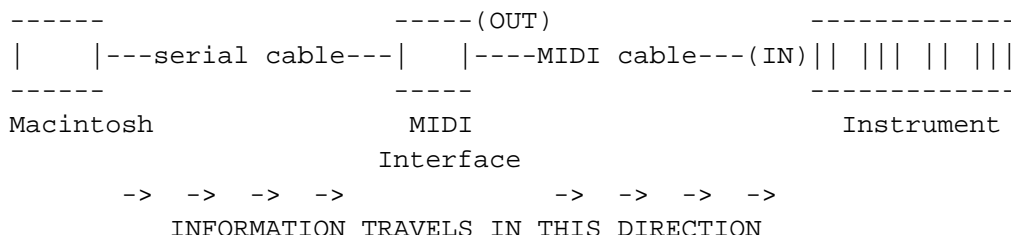
MIDI Setup

The MIDI OUT of the interface is connected to the MIDI IN of an instrument, and the MIDI OUT of the instrument is connected to the MIDI IN of the interface. These connections are made with standard MIDI cables.

TO RECORD MUSIC FROM A MIDI INSTRUMENT



TO PLAY BACK MUSIC THAT IS STORED IN THE COMPUTER



MIDI Instruments

A MIDI instrument is an electronic instrument which can send and receive MIDI information. Common MIDI instruments include keyboards, drum machines, and sound modules (also called tone generators). A MIDI instrument can be connected to a MIDI interface, which is in turn connected to a computer. Some MIDI instruments have a built-in MIDI interface.

A sound module, also called a tone generator, is like an electronic keyboard without the keyboard keys. It is a device containing all the sounds a keyboard would contain, and these sounds can be triggered by another MIDI keyboard, or by a computer using sequencing software.

MIDI Data Format

Except for the "Real-Time" and "Exclusive" messages, all MIDI communications are transacted through multi-byte "messages" of one Status byte followed by one or two Data bytes. The messages are divided into two main categories:

1. Channel
 - Voice
 - Mode
2. System
 - Common
 - Real-Time
 - Exclusive

$$[\text{Status}] \text{ ----- } + \text{ ----- } [\text{Channel}] \text{ ----- } \text{ or } \text{ ----- } [\text{System}]$$
$$+ \qquad \qquad \qquad +$$
$$[\text{Voice or Mode}] \qquad \qquad [\text{Common, Real-Time, or Exclusive}]$$

Status Byte

The Status byte is an eight-bit binary number with the most significant bit set (1). The purpose of the Status byte is to identify the message type for the Data bytes.

Except for Real-Time messages, a new Status byte always commands the receiver to adopt the new status, even if the receiver has not yet completed the previous message.

Channel Messages

The Channel message is identified by a four-bit number in the Status byte which address the message to one of the sixteen channels. In this way, messages are sent to any units in the system whose channel number matches the channel number encoded in the Status byte.

- Voice: A type of Channel message used for controlling an instrument's voice.
- Mode: A type of Channel message used for controlling an instrument response to a voice message.

System Messages

The System message does NOT have a channel number encoded and the message is intended for all units on the system.

- Common: The Common message is intended for all units in the system.
- Real-Time: The Real-Time message is intended for all units in the system and may be sent at any time, even between messages of a

different status type. A Real-Time message is either acted upon or ignored by the unit, after which the receiving unit will resume process under its previous status.

- Exclusive: The Exclusive message may contain any number of Data bytes and will include a Manufacturer's Identification (ID) code. All but the unit whose receiver recognizes the ID code should ignore the Data bytes.

COMPUTER

You need "music processing software" to enter and edit music, just like you need word processing software to enter and edit text. Music processing software is commonly referred to as "sequencing software".

If you would like to know more about MIDI, a number of helpful books are available from bookstores.

Article Change History:

19 Jan 1995 - Total rewrite of discussion.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2425



Tech Info Library

System 4.1: Text Spacing Problems When Using A LaserWriter

Revised: 11/5/91
Security: Everyone

System 4.1: Text Spacing Problems When Using A LaserWriter

=====

Article Created: 8 February 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 18 October 1988

TOPIC -----

This article describes text spacing issues with System Software version 4.1.

DISCUSSION -----

Using System 4.1 and LaserWriter or LaserWriter Plus, you may experience text spacing problems, either with screen fonts or text fonts, or with both.

- A problem in the System 4.1 software occasionally corrupts the Fond resource, causing a font to space incorrectly. To correct the Fond resource, remove the offending fonts (all sizes) using Font D/A Mover 3.6, and reinstall them. This action will force the font table in the Fond resource to be recreated, which will correct the problem.
- Also, under the Print option in Microsoft Word 3.01, there is a selection for printing WITH or WITHOUT fractional widths. This option defaults to WITHOUT (not using fractional widths,) and must be selected to obtain correct spacing with LaserWriter fonts.

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Tech Info Library Article Number:2426



Tech Info Library

LaserWriter: Why It Prints Only Two Pages When Using MS-DOS

Revised: 3/4/90
Security: Everyone

LaserWriter: Why It Prints Only Two Pages When Using MS-DOS

=====

This article last reviewed: 18 January 1988

If you are printing to a Laserwriter from an MS-DOS machine, and can't print documents more than two pages long (for instance, a ten-page document can only be printed as 5 two-page documents,) it is most likely a "handshaking" problem.

The MS-DOS system and the LaserWriter are not set up for the same kind of handshaking, and the printout is only one buffer-length long.

Make sure that both the printer and the MS-DOS system are set for either DTR or Xon/Xoff handshaking.

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Tech Info Library Article Number:2428



Tech Info Library

AppleWorks 2.0: How to Print Documents More Than 10 Pages Long

Revised: 2/8/88
Security: Everyone

AppleWorks 2.0: How to Print Documents More Than 10 Pages Long

=====

This article last reviewed: 8 January 1988

When printing documents over 10 pages from AppleWorks 2.0 with an Apple IIGS and a LaserWriter or LaserWriter Plus, it is not possible to print the entire document all at once.

You can, however, Select the text, 10 pages at a time, and then do a Print Selected rather than Print All from AppleWorks.

Tech Info Library Article Number:2429



Tech Info Library

Activision (formerly Mediagenic)

Revised: 4/3/97
Security: Everyone

Activision (formerly Mediagenic)

=====

Article Created: 8 February 1988
Article Reviewed/Updated: 3 April 1997

Activision

11440 San Vicente Blvd.
Suite 300
Los Angeles, CA 90049

310-479-5644 (Sales, Technical Support)

Fax: 310-820-6131

Company Profile:
Formerly Mediagenic, software, specializing in entertainment and video games.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2430



Tech Info Library

Where to Find Info on the PICT File Format

Revised: 8/4/89
Security: Everyone

Where to Find Info on the PICT File Format

=====

This article last reviewed: 11 January 1988

You can find information on writing graphics files in PICT format in:
Macintosh Technical note #27.

This Technical Note is in the Developer Service bulletin board. Open the
following folders in order:

1. Developer Technical Support
2. Macintosh
3. Technical Notes
4. 26-50

Apple wants Technical Notes to be distributed as widely as possible. The
file may be downloaded for dealers who don't have access to the Developer
Technical Support bulletin board. Technical Notes are sent to all certified
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APDA also supplies this and other Technical Notes on both disk and paper.
For more information, search under: APDA

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Tech Info Library Article Number:2431



Tech Info Library

Apple IIGS System 3.1: How to Make It Come Up Into The Launcher

Revised: 9/22/89
Security: Everyone

Apple IIGS System 3.1: How to Make It Come Up Into The Launcher

=====

This article last reviewed: 11 January 1988

To get the Apple IIGS System Disk version 3.1 to come up into the Launcher, rather than in the Desktop:

1. Open the SYSTEM folder.
2. Rename START to STARTOLD.
3. Rename LAUNCHER to START.

Under ProDos 16, the file named START runs before any of the .SYSTEM files can execute. The Apple IIGS will now start up and run the new START file first, skipping the IIGS Finder.

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Tech Info Library Article Number:2432



Tech Info Library

AppleTalk ImageWriters: Why They Switch Jobs Back and Forth

Revised: 8/21/89
Security: Everyone

AppleTalk ImageWriters: Why They Switch Jobs Back and Forth

=====

This article last reviewed: 11 January 1988

Two or more AppleTalk ImageWriter users printing at the same time may find that the ImageWriter "interleaves" the pages, switching between jobs. In other words, the ImageWriter prints page 1 from the first document, then page 1 from the second document, followed by page 2 from the first document, page 2 from the second document, and so on.

The problem is caused because the application in use works by the "spool-a-page / print-a-page" method of printing: the application prints each page of a document as a separate job instead of calling PrPicFile to print the entire picture file. Many applications adopted this method of printing to avoid running out of disk space while the ImageWriter driver was spooling the document to disk. Because printing code is moved from application to application, this method is still in use.

Applications that use the method of printing described in "Inside Macintosh" (ISBN 0-2-1-17737-4), Volume II, page 155, will print by job, and will not interleaf. This method allows the multiple bin option of the ImageWriter LQ to work correctly.

Short of asking the designers, the only method of testing which method a given application uses is by testing it on multiple printing jobs.

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Tech Info Library Article Number:2433



Tech Info Library

Node Check: Not Designed For Use With EtherNet

Revised: 8/10/92
Security: Everyone

Node Check: Not Designed For Use With EtherNet

=====

Article Created: 13 January 1988
Article Last Reviewed: 7 August 1992
Article Last Updated: 7 August 1992

TOPIC -----

I have tried to use Node Check (formerly called NetCheck) with EtherNet and have gotten confusing results.

DISCUSSION -----

(NetCheck's name was changed for legal reasons, and the function of the program did not change, though some slight fixes were incorporated into Node Check 1.0. For reference, NetCheck 1.0 was released 1/28/85, 2.0 was released 9/9/85, and Node Check 1.0 was released 2/18/87.)

Node Check was NOT designed to work with EtherNet. EtherNet uses a 48-bit address scheme that is assigned on a static basis, and AppleTalk uses an 8-bit address scheme, dynamically assigned. Furthermore, standard EtherNet does not use address names.

The current version of Node Check is 1.0 and will not be updated in the future.

AARP (Apple Address Resolution Protocol) is designed to handle addressing differences. The address and name information available to a given network is based on the developer's implementation of AARP.

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Tech Info Library Article Number:2434



Tech Info Library

ADB: Mouse/Keyboard Security Lockout Not Yet Available

Revised: 7/2/92
Security: Everyone

ADB: Mouse/Keyboard Security Lockout Not Yet Available

=====

Article Created: 3 January 1988
Article Last Reviewed: 30 June 1992
Article Last Updated: 30 June 1992

TOPIC -----

Is there some way I can lock only ADB devices such as the keyboard and mouse?

DISCUSSION -----

There is currently no application or desk accessory available that locks only ADB devices. The security utilities that are available either lock access to a disk or folder, or disable the drive at system power-down.

The Quadra 900 and Quadra 950 provide a keyswitch which can lock out ADB devices. Currently, they are the only Macintosh computers with this feature.

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Tech Info Library Article Number:2435



Tech Info Library

GEMDRAW: MacDraw or PICT Conversion Currently Unavailable

Revised: 8/4/89
Security: Everyone

GEMDRAW: MacDraw or PICT Conversion Currently Unavailable

=====

This article last reviewed: 13 January 1988

There is no conversion utility for transferring documents created with GEMDRAW on the IBM PC/XT to MacDraw or PICT format.

The only GEM documents that can be used on a Macintosh are those created in GEMWRITE and saved as a text file, then transferred to Macintosh by the serial port.

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Tech Info Library Article Number:2436



Tech Info Library

Canon SX Engine's Life Expectancy Is 300,000 Pages

Revised: 2/8/88
Security: Everyone

Canon SX Engine's Life Expectancy Is 300,000 Pages

=====

This article last reviewed: 11 January 1988

The Canon SX LaserWriter engine has a life expectancy of 300,000 pages.
Service is required after 100,000 pages, at which time the following parts
and/or assemblies should be replaced:

- Fuser Assembly
- Pick-up Roller Unit
- Transfer Guide Unit
- Transfer Corona Assembly
- Ozone Filter

Tech Info Library Article Number:2437



Tech Info Library

ImageWriter II: European Model Has a Universal Power Supply

Revised: 2/8/88
Security: Everyone

ImageWriter II: European Model Has a Universal Power Supply

=====

This article last reviewed: 11 January 1988

The European ImageWriter II should have a universal power supply, and can be used in the United States as is. Look under the right side of the platen: if the power supply is the universal type, there is a switch for selecting the desired power.

Tech Info Library Article Number:2439



Tech Info Library

AppleTalk: Diagnostic Tools For Use With Ethernet

Revised: 11/2/88
Security: Everyone

AppleTalk: Diagnostic Tools For Use With Ethernet

=====

This article last reviewed: 13 January 1988

There are no diagnostic tools currently available for diagnosing
AppleTalk-to-EtherNet.

However, if the Ethernet is operating with a host system such as a VAX/VMS,
the Ethernet can be diagnosed using diagnostic tools such as Netstat.

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Tech Info Library Article Number:2440



Tech Info Library

LaserWriter Driver 5.0: Print Problems with a Mac 512Ke & Plus

Revised: 11/4/91
Security: Everyone

LaserWriter Driver 5.0: Print Problems with a Mac 512Ke & Plus

=====

Article Created: 8 February 1988
Article Last Reviewed: 31 October 1991
Article Last Updated: 18 October 1988

TOPIC -----

This article describes issues when using LaserWriter Driver and LaserWriter Pre version 5.0 on a Macintosh 512Ke or a Macintosh Plus.

DISCUSSION -----

If you are running LaserWriter Driver (and Prep) 5.0 on Macintosh 512Ke or Macintosh Plus, you may experience a problem with documents containing Bit-Mapped Graphics: the LaserWriter prints the document, then the Macintosh returns to the application, hangs, and must be restarted.

The problem is due to incompatibility between the driver file and the System and Finder files. The solution is to use a previous version of the LaserWriter Driver and LaserWriter Prep files, such as version 4.0, or move up to a more current version of the LaserWriter drivers, such as 5.2, 6.0, or 7.0 for the Macintosh Plus.

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Tech Info Library Article Number:2441



Tech Info Library

AppleShare 1.1: Problems Running It With InBox

Revised: 4/6/92
Security: Everyone

AppleShare 1.1: Problems Running It With InBox

=====
Article Created: 8 February 1988
Article Last Reviewed: 6 April 1992
Article Last Updated: 6 April 1992

TOPIC -----

The following discusses problems with running AppleShare 1.1 with InBox.

DISCUSSION -----

You may have had problems running AppleShare 1.1 and InBox on the same machine and at the same time, with InBox as a background application.

This is because AppleShare 1.1 automatically configures the RAM Cache for optimal use, leaving too little memory for the next application -- the InBox background message center.

One solution is to run the AppleShare 1.1 server in the background, and the InBox message center in the foreground:

When you configure the InBox message center, you have two options: BACKGROUND or DEDICATED. Choose DEDICATED; then AppleShare will start up first in the background, followed by the InBox message center in the foreground.

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Tech Info Library Article Number:2442



Tech Info Library

Apple Personal Modem: Pinouts for IBM-Compatible PCs

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Pinouts for IBM-Compatible PCs

=====

This article last reviewed: 13 January 1988

You can use the Apple Personal Modem with an Epson QX 16 or other IBM compatible, as long as the compatible system has an RS-232 communication port.

Here is the standard pinout configuration for connecting the Apple Personal Modem's circular-8 connector to a common DB-25 connector:

Supported RS-232 data lines.

Mini-circular-8			RS-232
DIN	Function	Direction	Pin
1	Data Set Ready (DSR)	From Modem	6
2	Data Term Ready (DTR)	To Modem	20
3	Receive Data (RXD)	From Modem	3
4	Signal Ground		7
5	Transmit Data (TXD)	To Modem	2
6	Signal Ground		7
7	Data Carrier Detect (DCD)	From Modem	8
8	Not connected (n.c.)		

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Tech Info Library Article Number:2443



Tech Info Library

ImageWriter I & II: Same Documents Print Differently (9/95)

Revised: 9/19/95
Security: Everyone

ImageWriter I & II: Same Documents Print Differently (9/95)

=====

Article Created: 8 February 1988
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Why do the ImageWriter I and ImageWriter II sometimes produce differing results, even though both are working from the same document?

DISCUSSION -----

The following are some possible reasons this could happen:

- Screen fonts print differently with different system versions. Use the font and ImageWriter driver that best suits your needs.
- MacDraw or MacPaint documents that print perfectly on ImageWriter I may show a horizontal white line when printed on ImageWriter II. This is because ImageWriter II has smaller print head wires, which allow the ImageWriter II to produce a finer text quality. The white line is caused by the finer dots failing to overlap. This can be fixed by printing in BEST mode.

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.
13 Jan 1988 - Reviewed for technical accuracy

Support Information Services

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Tech Info Library Article Number:2444



Tech Info Library

LaserWriter: Printing to It With DECserver

Revised: 2/8/88
Security: Everyone

LaserWriter: Printing to It With DECserver

=====

This article last reviewed: 13 January 1988

You can use DECserver to print with Macintosh and LaserWriter:

Wire the Macintosh modem port into the DECserver and hang the LaserWriter off the same server, but a different port. Use the Async LaserWriter with the Direct.ACL file.

- Set the various parameters of the server (name, baud rate, XON, etc.) to correspond to the LaserWriter.
- Start up Mac240 on the Macintosh, log in and choose 'C LaserWriter'. Quit Mac240.
- Start up PageMaker. From the Choose Print option under the File menu, select the Apple Driver to be used through the modem port.

NOTE: Only one user can have access to the port while this process is in effect.

- Select Async LaserWriter from the Chooser.

Tech Info Library Article Number:2445



Tech Info Library

Macintosh II: NuBus Power Consumption Specifications

Revised: 7/21/92
Security: Everyone

Macintosh II: NuBus Power Consumption Specifications

=====

Article Created: 13 January 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

Macintosh users have asked about Macintosh II maximum power consumption per slot.

DISCUSSION -----

The maximum recommended current limits for NuBus cards are described on page 6-5 of "Designing Cards and Drivers for Macintosh II and Macintosh SE" (ISBN #0-201-19256.)

These limits provide for the following NuBus card current draw:

5V at 2.0a
12V at .175a
-12V at .1a

The total wattage is 13.3 per slot, including an internal hard disk and two floppy drives.

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Tech Info Library Article Number:2447



Tech Info Library

Sybase Canada, Ltd. (formerly DEFT, Inc.)

Revised: 4/3/97
Security: Everyone

Sybase Canada, Ltd. (formerly DEFT, Inc.)

=====

Article Created: 8 February 88
Article Reviewed/Updated: 3 April 1997

Sybase Canada, Ltd.

557 Dixon Rd. Suite 111
Rexdale, Ontario M9W 1H7
CANADA

416-249-2246

416-245-6241 Fax

Company Profile:

Formerly DEFT Inc., software, specializing in CASE tools with VAX/VMS connectivity to relational database systems.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2448



Tech Info Library

StarSys, Inc.

Revised: 12/3/92
Security: Everyone

StarSys, Inc.

=====

Article Created: 9 February 1988

Article Change History

12/03/92 - UPDATED

- To reflect changes in company information.

StarSys, Inc., software, specializing in C.A.S.E. products for system analysts involved with large Management Information Systems (MIS) software. Also involved in training and consulting for MIS.

StarSys, Inc.
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Silver Spring, MD 20902
301-946-0522
Fax: 301-929-8206
Compuserve: 74065,64

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Tech Info Library Article Number:2451



Tech Info Library

Applied Statistics, Inc.

Revised: 4/3/97
Security: Everyone

Applied Statistics, Inc.

=====

Article Created: 02/09/88
Article Reviewed: 07/02/93
Article Updated: 04/03/97

Applied Statistics, Inc.

3080 Centerville Rd.
St. Paul, MN 55117

800-331-1068

612-481-0202

612-481-0410 Fax

Company Profile:

Hardware and software, specializing in real-time analog input, workstations, statistical process control for the Macintosh, custom interface boards, and custom erectable gauging systems.

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Tech Info Library Article Number:2453



Tech Info Library

ImageWriter LQ Fonts: How They Compare To LaserWriter Fonts

Revised: 11/22/91
Security: Everyone

ImageWriter LQ Fonts: How They Compare To LaserWriter Fonts

=====

This article last reviewed: 18 January 1988

The ImageWriter LQ comes with its own versions of the Helvetica, Times, Courier, and Symbol fonts. Some of the "LaserWriter" sizes of these fonts have different resource sizes than those shipped with LaserWriters. In addition, the LaserWriter and ImageWriter LQ FONDS for these fonts differ. This has led to questions from some users:

- What are the differences?

The ImageWriter LQ fonts are up to 72 points in size; their spacing and font metrics are essentially identical to the LaserWriters' fonts. The difference in font resource sizes between LaserWriter and ImageWriter LQ is about six bytes.

- What is the correct font installation procedure for machines that will be printing to both printers?

Use the Font/DA mover to move the fonts you wish to use.

(NOTE: You must have a screen font three times larger than the size you are printing installed in the system.)

- Will there be any change in spacing on documents created for the LaserWriter when these documents are printed after installing the ImageWriter LQ versions of the fonts?

There should be NO size differences in the documents (spacing, etc.) between the two fonts -- the screen fonts are fundamentally the same. The only difference should show up in the actual printout because of the differences in resolution (300 dpi vs. 216 dpi,) not because of any font differences.

Remember, the fonts you install are SCREEN fonts, not the actual font used for printing on the LaserWriter, which come from the font metrics information

stored in the printer.

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Tech Info Library Article Number:2454



Tech Info Library

Macintosh II and SE: A List Of Trap Words

Revised: 5/10/89
Security: Everyone

Macintosh II and SE: A List Of Trap Words

=====

This article last reviewed: 15 January 1988

The following is an excerpt from Inside Macintosh, Volume V Appendix C (the 8/17/87 Final APDA draft, the version that APDA is currently shipping).

This appendix lists the trap macros for the new Toolbox and Operating System routines and their corresponding trap word values in hexadecimal. The NAME column gives the trap macro name (without its initial underscore character). In those cases where the name of the equivalent Pascal call is different, the Pascal name appears indented under the main entry. The routines in Macintosh packages are listed under the macros they invoke after pushing a routine sector onto the stack; the routine selector follows the Pascal routine name in parentheses.

NOTE: Traps that aren't currently used by the system are reserved for future use.

NAME	TRAP WORD
ADBOp	A07C
ADBReInit	A07B
AttachVBL	A071
CountADBs	A077
DoVBLTask	A072
DTInstall	A082
GetDefaultStartup	A07D
GetIndADB	A078
GetOSDefault	A083
GetTimeout	
GetVideoDefault	A080
GetADBInfo	A079
PrGlue	A8FD
RGetResource	A80C
ScriptUtil	A8B5
SCSIDispatch	A815

SCSISelAtn	(11)	
SCSIMsgIn	(12)	
SCSIMsgOut	(13)	
SCSIDisconnect	(16)	
SCSIReselect	(14)	
SCSIReselAtn	(15)	
SetADBInfo		A07A
SetDefaultStartup		A07E
SetOSDefault		A084
SetTimeout		
SetVideoDefault		A081
Shutdown		A895
ShutDwnPower	(1)	
ShutDwnStart	(2)	
ShutDwnInstall	(3)	
ShutDwnRemove	(4)	
SIntInstall		A075
SIntRemove		A076
SlotManager		A06E
InitPRAMRecs		
InitSDeclMgr		
InitsRsrcTable		
SCalcStep		
SCardChanged		
SCkCardStatus		
SDisposePtr		
SExec		
SFindDevBase		
SFindStruct		
SGetBlock		
SGetcString		
SGetDriver		
SIntInstall		
SIntRemove		
SMacBoot		
SNextRsrc		
SNextTypesRsrc		
SOffsetData		
SPrimaryInit		
SPtrToSlot		
SPutPRAMRec		
SReadByte		
SReadDrvrName		
SReadFHeader		
SReadInfo		
SReadLong		
SReadPBSize		
SReadPRAMRec		
SReadStruct		
SReadWord		
SRsrcInfo		
SSearchSRT		
SUpdateSRT		

SlotVInstall	A06F
SlotVRemove	A070
SndPlay	A805
SndNewChannel	A807
SndAddModifier	A802
SndControl	A806
SndDoCommand	A803
SndDoImmediate	A804
SndDisposeChannel	A801
SwapMMUMode	A05D

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Tech Info Library Article Number:2455



Tech Info Library

Quark, Inc.

Revised: 4/3/97
Security: Everyone

Quark, Inc.

=====

Article Created: 9 February 1988
Article Reviewed/Updated: 3 April 1997

Quark, Inc.

1800 Grant
Denver, CO 80203

303-894-8888

Fax: 303-894-3399

Company Profile:
Software, specializing in desktop publishing for Macintosh and Apple.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2456



Tech Info Library

Macintosh System 4.2: Problems Displaying Text

Revised: 2/23/89
Security: Everyone

Macintosh System 4.2: Problems Displaying Text

=====

This article last reviewed: 14 January 1988

Some Macintosh users who have updated from System 4.1 to 4.2 have discovered problems with their screen fonts -- for instance, certain letter pairs occurring too close together, causing some difficulty reading the characters.

There is a problem with the new system software which may on occasion corrupt the Fond resource. To correct the offending Fond resource, the user will need to remove the offending fonts (all sizes) using Font D/A Mover 3.6, and reinstall them. This action will force the font table in the Fond resource to be recreated, correcting the problem.

Also, in Microsoft Word 3.01, under the Print option, there is a selection for either printing with or without fractional widths. The option default is for NOT using fractional widths, and must be selected to obtain correct spacing with LaserWriter fonts.

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Tech Info Library Article Number:2457



Tech Info Library

LaserWriter: Sending It PostScript Files From VAX

Revised: 3/4/90
Security: Everyone

LaserWriter: Sending It PostScript Files From VAX

=====

Article Created: 12 January 1988
Article Last Reviewed: 15 July 1992
Article Last Updated: 15 July 1992

TOPIC -----

How can I print PostScript files to a LaserWriter directly from a VAX?

DISCUSSION -----

You can connect a Laserwriter to the RS232 backplane of a VAX and send VAX PostScript files to the printer as long as the files sent are written, saved, and sent as full PostScript files.

To be considered a full PostScript file, the LaserPrep header MUST be present in the PostScript text file. If, for instance, you create a PostScript text file on a Macintosh, and store the file on a VAX to print later, the Laser Prep header must also be included when you actually print that file.

Under System 7, choosing "PostScript File" in the Destination option of the Print dialog box automatically includes the LaserPrep header (in fact, the only way to exclude the header under System 7 is by using the shareware utility Trimmer, which can strip off the header).

Under System 6, the same result is achieved by holding down Command-K immediately after clicking Okay in the Print dialog box.

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Tech Info Library Article Number:2458



Tech Info Library

Macintosh Plus, SE: Modifying Screen Refresh Rate For NTSC Video

Revised: 7/24/92
Security: Everyone

Macintosh Plus, SE: Modifying Screen Refresh Rate For NTSC Video

Article Created: 10 November 1988
Article Last Reviewed: 24 July 1992
Article Last Updated:

TOPIC -----

Some Macintosh users have wondered about shooting a television picture of the screen of a Macintosh SE or Macintosh Plus: Why does video-camera footage of the Macintosh result in a rolling bar across the image of the computer screen? Can anything be done to solve the problem? And if so, will the Macintosh run correctly after that?

DISCUSSION -----

The "rolling bar" results from the Macintosh SE or Macintosh Plus computer's refresh rate (vertical scan rate) of 60.15 Hz, when television's refresh (vertical scan) rate is 59.94 Hz.

You can use an external or internal clock at 15.612515 MHz (.35% of the Macintosh's internal clock) to stabilize the scan line that rolls down the screen. There are three problems with this:

- Such adjustments void the computer's warranty.
- Ordering a specific oscillator usually takes anywhere from 8 to 12 weeks.
- Once stabilized, the visible scan line will remain visible on the screen.

You might be able to start it within the retrace period (where it rolls off bottom and begins on the top), but the odds are against it.

After the adjustments discussed above, the Macintosh would not be running correctly -- at least in a technical sense. The screen refresh rate would be incorrect, and other Macintosh components dependent on the internal clock would be slowed down accordingly. There are many possible problems,

but applications would probably continue to function without anyone noticing any real problems for some time.

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Tech Info Library Article Number:2460



Tech Info Library

Macintosh: Connecting AppleTalk To A TCP/IP Network

Revised: 11/2/88
Security: Everyone

Macintosh: Connecting AppleTalk To A TCP/IP Network

=====

This article last reviewed: 19 January 1988

If you are running on a TCP/IP network, and wish to upload or download files to a Macintosh (and possibly make changes to downloaded files,) MacIP can be used as a stand-alone system or across an AppleTalk network.

MacIP is an IP implementation of the Telnet and FTP communications programs developed at Stanford University, and is provided free from Kinetics with their Kinetics FastPath products.

FastPaths work with the Kinetics driver software to route normal AppleTalk communications onto Ethernet networks -- or, by using MacIP, to communicate in a limited fashion with systems across TCP/IP networks.

For more information, search under: Kinetics

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Tech Info Library Article Number:2461



Tech Info Library

Macintosh II: Comparison of Internal Synthesizers (10/94)

Revised: 10/10/94
Security: Everyone

Macintosh II: Comparison of Internal Synthesizers (10/94)

Article Created: 14 January 1988
Article Reviewed/Updated: 10 October 1994

TOPIC -----

Are the sound synthesizers in the Macintosh II the same as those used in the music industry?

DISCUSSION -----

It's important to distinguish between the "synthesizers" built into the Macintosh II, and the "synthesizer" and "sampler" instruments used in the music industry.

In the music industry, the term synthesizer comes from the central components that synthesize or process the sounds they generate -- just as computers are sometimes called CPUs for the main component of a computer. The music industry digital instruments "synthesize" sound from digital information. These instruments store and manipulate digital information and are far more complex in their sound production than are the components built into the Macintosh II.

In the music industry, a sampler is a type of digitizer that converts analog sound to digital information. Samplers derive their name from the discrete samples of analog sound that are converted at high frequencies (usually 44.56KHz) to digital information. This, like music synthesis, is possible on the Macintosh II with third-party solutions. When attempting to produce digitally sampled or generated sound on the Macintosh II, remember that the possible output may be limited by your third-party hardware and software.

The Macintosh II doesn't have hardware comparable to that found in music instruments. The methods of modifying and manipulating the digitized sounds of a music synthesizer are not in the synthesizer logic chips found in the Macintosh II, but in the design of the instrument components. The Macintosh may emulate these products through software and hardware, but is not designed to BE one of them.

Answers to some frequently-asked questions:

- What is the high and low sampling frequency, and can it be changed?

The pre-recorded or computer-generated sounds may be played through the sampled sound synthesizer from 1Hz to 44KHz samples per second. The number of samples per second can be adjusted. The effect of this adjusting is an increase or decrease in pitch.

- What is the maximum sampling length?

Maximum sampling width is 8 bits. However, maximum length of sampled sound that can be PLAYED is restricted only by disk space. This is because sound buffers can be allocated and linked end to end. As sound buffers are played, new data can be loaded from the disk, provided that each buffer is at least 256 bytes long and the load routines are programmed efficiently.

- What method does the Wave Table Synthesizer use?

The methods of wave synthesis listed here are for adjusting or editing wave forms. The wave table synthesizer merely takes a defined sound and plays it. What method is used for creating or modifying the wave is up to the software. Each of the above listed methods can be created in the software that delivers the final wave form to the wave table synthesizer.

- Do all four voices of the ASC wave-table synthesis play in stereo?

Yes, however the note synthesizer does not have the command for stereo sound built into it and therefore is excluded from its use.

Two more notes:

- There is NO sampling capability of the digitizing type built into the Macintosh hardware: the sampled sound digitizer plays pre-digitized sound.
- There are no sound editing capabilities built into the Macintosh hardware.

Article Change History:

10 Oct 1994 - Revised title to more accurately reflect contents of article.

Support Information Services

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Tech Info Library Article Number:2462



Tech Info Library

LaserWriter and LaserWriter Plus: Font Substitution List

Revised: 7/14/93
Security: Everyone

LaserWriter and LaserWriter Plus: Font Substitution List

=====

This article last reviewed: 18 January 1988

You can find a complete list of the substitution fonts (the exchanges made when Font Substitution is selected) for LaserWriter and LaserWriter Plus on page 51 of the LaserWriter and LaserWriter Plus manual (Engineering Part #030-1296-C.)

The substitutions are as follows:

- NEW YORK changes to TIMES (in LaserWriter and LaserWriter Plus)
- GENEVA changes to HELVETICA
- MONACO changes to COURIER
- SEATTLE, (the font used in Microsoft Multiplan,) changes to a modified version of HELVETICA.

These are the only fonts that have LaserWriter font-substitution. Other fonts are printed as bitmaps.

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Tech Info Library Article Number:2463



Tech Info Library

LaserWriter: Courier 9 Printing Problem

Revised: 2/9/88
Security: Everyone

LaserWriter: Courier 9 Printing Problem

=====

This article last reviewed: 18 January 1988

LaserWriter users may experience a problem with printing MacWrite text or Microsoft Word text in the 9-point Courier font: when one of the words in the text is italic, the printed text following the italicized word is printed in bold.

This problem occurs only with the Courier font in 9-point size, and seems to occur in the LaserWriter Prep file. PageMaker, which uses its own LaserWriter Prep file -- unlike MacWrite or Word -- prints the text properly.

Tech Info Library Article Number:2464



Tech Info Library

IEEE Number For NuBus Is 1196

Revised: 7/21/92
Security: Everyone

IEEE Number For NuBus Is 1196

=====

Article Created: 18 January 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

What is the IEEE issue number for implementation of the NuBus standard?

DISCUSSION -----

The IEEE issue number for implementation of the NuBus standard is 1196.

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Tech Info Library Article Number:2466



Tech Info Library

TeachText 1.1: Adding Graphics

Revised: 5/10/89
Security: Everyone

TeachText 1.1: Adding Graphics

=====

Article Created: 18 January 1988
Article Last Reviewed: 29 July 1992
Article Last Updated:

You can incorporate graphic elements -- boldface and centered text, graphs, pictures, etc. -- into TeachText 1.1 documents. These are "PICT resources", and may be inserted into a TeachText document as follows:

1. Create your document, leaving five carriage returns in the places where you want to place the graphics or specially-formatted text.
2. Create your specially-formatted text or graphics and paste them into the Scrapbook.

NOTE: The text will need to be in "PICT" format. You can use MacDraw to do this.

3. Use a file editor such as FEdit to open your TeachText file to its data fork. Search for the five carriage returns (carriage return = \$0D) and replace the third "0D" with "CA" and write the change to disk. Do this for all places you want to insert the specially-formatted text or graphics.
4. Using ResEdit, open your TeachText document. Select New from the File menu; type PICT in the dialog box, and press Return.
5. Select New again and paste your formatted text or graphics from the Scrapbook into the resource. When done, select Get Info -- for ID type in "1000". Do the same for all the formatted text or graphics in the Scrapbook, remembering to increment the ID by 1 for each successive resource (1001, 1002, etc.).
6. Quit ResEdit, saving changes.
7. Open your TeachText document. Insert or delete carriage returns to adjust

the graphics and formatted text, which will be automatically centered.

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Tech Info Library Article Number:2467



Tech Info Library

Macintosh: How To Change TeachText From Read-Write To Read Only

Revised: 7/10/91
Security: Everyone

Macintosh: How To Change TeachText From Read-Write To Read Only

=====

Article Created: 19 January 1988
Article Last Reviewed: 29 July 1992
Article Last Updated: 10 July 1991

The only way to change a user-created TeachText 1.1 (as well as TeachText 7.0) document from "Read-Write" to "Read Only" is by using a file editor (such as FEdit, or Norton Utilities) to change the file type from "TEXT" to "ttro".

The file creator type must remain "ttxx".

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Tech Info Library Article Number:2470



Tech Info Library

Apple MIDI Interface: Specifications

Revised: 5/26/88
Security: Everyone

Apple MIDI Interface: Specifications

=====

This article last reviewed: 20 January 1988

These are the specifications for the Apple MIDI interface:

Size

- Depth 1.31 in. approx.
- Width 2.08 in. approx.
- Length 2.92 in. approx.

Connectors and cables

Port	Connector	Cable Length
MIDI In	DIN 5	2 meters
MIDI Out	DIN 5	2 meters
Serial	Mini Circular 8	46 cm

MIDI DIN 5 Pinouts

Connector	Pin #	Description
MIDI IN	1	No Connect
MIDI IN	2	Shield Ground
MIDI IN	3	No Connect
MIDI IN	4	Interface Enable
MIDI IN	5	Data In
MIDI OUT	1	No Connect
MIDI OUT	2	Shield Ground
MIDI OUT	3	No Connect
MIDI OUT	4	+5 Volts
MIDI OUT	5	Data Out

..TIL02474-Apple_MIDI_Interface-Specifications.pdf

NOTE: The Apple MIDI interface does not support MIDI THRU. However, a MIDI musical instrument may have a MIDI THRU port which can be used.

Power

The Apple MIDI interface requires no external power supply or power cable. Power for the Apple MIDI interface is supplied through the serial port from the system.

Connecting the Apple MIDI Interface to a Computer

The Apple MIDI interface may be connected to either the PRINTER or MODEM ports of the Macintosh or Apple IIGS. However, depending on the software used, it may be necessary to use only one of the two ports. Consult the current software manual for the proper port selection.

To connect one MIDI device to your computer:

- Run one MIDI cable from the IN port on the MIDI interface to the OUT port on the MIDI device
- Connect the other MIDI cable from the MIDI Out port of the MIDI interface to the In port of the MIDI device.
- WITH THE COMPUTER TURNED OFF, connect one end of the mini circular-8 cable to the computer and the other end to the Apple MIDI interface. When the MIDI interface is being used with the Apple IIGS it may also be necessary to reconfigure some parameters in the systems control panel.

To connect two MIDI devices to your computer:

- Connect the first device (the one with a keyboard) as in the directions above for one device.
- Run a third cable from the Thru port on the first MIDI device to the In port on the second MIDI device.

To connect a third (or more) MIDI device:

- Run a fourth cable from the THRU port on the second device to the IN port on the third MIDI device.
- This process can be continued with a cable from the third MIDI device to the IN port on the fourth MIDI device, and so on, as you continue to string MIDI interfaces.

NOTE: Only the FIRST device, the one with an outbound line back to the computer, can send information back to the computer. The other devices can only respond to signals generated by the computer, or by the first device as relayed by the computer. Some MIDI software has a keyboard select feature or a command for PATCH THROUGH which lets you send signals generated from the first device to other devices.

As an alternative, if you have a keyboard controller and one other MIDI device, you can run one cable from the OUT port on the controller to the IN port on the Apple MIDI interface, and then run the other MIDI cable from the OUT port on the Apple MIDI interface to the IN port of the second MIDI device.

There is no reason to connect a cable from the Apple MIDI interface to the IN port of the controller -- a controller does not play music.

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Tech Info Library Article Number:2474



Tech Info Library

MultiFinder: Workaround for Incompatible Desk Accessories

Revised: 10/16/91
Security: Everyone

MultiFinder: Workaround for Incompatible Desk Accessories

=====

Article Created: 21 January 1988
Article Last Reviewed: 15 October 1991
Article Last Updated: 15 October 1991

TOPIC -----

Why do some desk accessories work with MultiFinder and others do not?

DISCUSSION -----

Some desk accessories do not work properly under the MultiFinder DA Handler (version 1.0). If you open the DA while holding down the Option key, the DA loads into the present application's heap. This will allow some (but not all) MultiFinder-incompatible DAs to work correctly.

If you have a DA that is used in one application only, you may install it into that application using the Font/DA mover. This allows you to open the DA in the application's heap without having to hold down the Option key.

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Tech Info Library Article Number:2475



Tech Info Library

PC 5.25 Drive & Macintosh SE-Bus Drive Card: Pinouts & Cabling

Revised: 6/17/92
Security: Everyone

PC 5.25" Drive & Macintosh SE-Bus Drive Card: Pinouts & Cabling

=====

Article Created: 22 January 1988
Article Last Reviewed: 16 June 1992
Article Last Updated: 16 June 1992

TOPIC -----

What are the pinouts for the Macintosh SE Bus Drive Card and PC 5.25" Drive?

DISCUSSION -----

Here are the pinouts for the internal cable, part number 590-0600, for the SE Bus Drive Card. It has a 26-pin in-line connector on one end for the card itself and a DB-37 connector on the other for the PC 5.25" Drive.

26 pin connector		DB-37 connector	

Signal Name			
1	----- GND -----		2
2	----- Side 1 -----		18
3	----- GND -----		NC
4	----- Read Data -----		17
5	----- GND -----		5
6	----- Write Protect -----		16
7	----- GND -----		NC
8	----- Track 00 -----		15
9	----- GND -----		NC
10	----- Write Enable -----		14
11	----- GND -----		NC
12	----- Write Data -----		13
13	----- GND -----		NC
14	----- STEP -----		12
15	----- GND -----		NC
16	----- Direction -----		11
17	----- GND -----		NC
18	----- Drive Select 0 -----		9

19	-----	GND	-----	20
20	-----	Motor Drive 0	-----	7
21	-----	Diskette Change	-----	19
22	-----	INDEX	-----	6
23	-----	+12 Volts	-----	1
24	-----	+ 5 Volts	-----	NC
25	-----	+12 Volts	-----	NC
26	-----	+ 5 Volts	-----	4

Here is the pinout for the DB37 connector on the Macintosh SE-Bus Drive Card
Note that pins not listed are not used.

DB37	Signal Name
1	----- +12 Volts
2	----- Ground
4	----- + 5 Volts
5	----- Ground
6	----- INDEX
7	----- Motor Enable
8	----- Drive Select 1
9	----- Motor enable
11	----- Direction
12	----- STEP
13	----- Write Data
14	----- Write Enable
15	----- Track 00
16	----- Write Protect
17	----- Read Data
18	----- Side 1
19	----- Diskette Change
20	----- Ground
25	----- Ground

These are the pinouts for the cable, part number 590-0368, used on the PC 5.25 inch drive. The cable uses a 34 pin connector and smaller 4 pin connector for the DC power on the inside of the PC 5.25 inch drive and a DB37 connector that attaches to the card inside the Macintosh SE. Note that pins not listed are not used.

DB37	Signal Name	34 pin edge connector	DC Connector
1	----- +12 Volts	-----	1
2	----- Ground	-----	2
3	----- Low Density	----- 2	
4	----- +5 Volts	-----	4
5	----- Ground	-----	3
6	----- Index	----- 8	
7	----- Motor Enable A	----- 16	
9	----- Drive Select A	----- 10	
11	----- Direction	----- 18	
12	----- Step	----- 20	

13	-----	Write Data	-----	22
14	-----	Write Enable	-----	24
15	-----	Track 00	-----	26
16	-----	Write Protect	-----	28
17	-----	Read Data	-----	30
18	-----	Side 1	-----	32
19	-----	Disk Change	-----	34
20	-----	Ground	-----	1
25	-----	Ground	-----	5
27	-----	FNPRES	-----	7

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Tech Info Library Article Number:2477



Tech Info Library

Macintosh Applications under A/UX (9/94)

Revised: 9/9/94
Security: Everyone

Macintosh Applications under A/UX (9/94)

=====
Article Created: 31 March 1988
Article Last Reviewed: 9 September 1994

TOPIC -----

In general, Macintosh applications that are "absolutely well behaved" (that follow the guidelines in Inside Macintosh) can be launched under A/UX.

DISCUSSION -----

Many of the non-compatible programs have programming flaws dealing with null pointers and handles. Because the Macintosh OS uses only 24 of the 32 bit address lines, many programmers have taken short cuts to handle locking by using one of the eight non-utilized bits as a locking status bit. But A/UX recognizes all 32 bits, and programs using those upper eight bits as status have major problems.

A/UX 2.0, 2.0.1, and 3.0 have a 24-bit compatability mode (it is a login session type) that will allow customers to run older, poorly behaved applications.

Article Change History:
09 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:2478



Tech Info Library

Macintosh OS and A/UX: Transfer Files between the Two (9/94)

Revised: 9/14/94
Security: Everyone

Macintosh OS and A/UX: Transfer Files between the Two (9/94)

=====

Article Created: 31 March 1988
Article Reviewed/Updated: 13 September 1994

TOPIC -----

How can I transfer files between Macintosh OS and A/UX?

DISCUSSION -----

A/UX 3.0 supports File Sharing. The Macintosh running A/UX can act as both an AppleShare client or a server (using File Sharing, not AppleShare 3.0 or 4.0). Turn on file sharing on either the Mac OS machine or the A/UX machine. Then mount the shared volume from the other machine and copy the files.

Article Change History:
13 Sep 1994 - Reviewed. Updated for A/UX 3.0.
19 Jun 1992 - Reviewed.

Support Information Services

Copyright 1988,1994 Apple Computer, Inc.

Tech Info Library Article Number:2479



Tech Info Library

A/UX: The INET Daemon and Network Services (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: The INET Daemon and Network Services (8/94)

Article Created: 31 March 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

This article expands on the information in `inetd(1M)`, `servers(4)`, `services(4)`, the "inittab" file, and in the Network System Administration Manual.

DISCUSSION -----

"inetd" is one of the networking daemons (Internet super-server as quoted by the man page) started up ("fork"ed and "exec"ed) when the "init" process reads the "inittab" file and "net9"'s action field is "respawn". The inetd program waits for some process to connect to one of the "servers" that the inet daemon supports (found in `/etc/servers`). Only when the connection request comes in does inetd fire up ("fork" and "exec") the associated server process. It then continues listening for other connection requests (distinguished by the unique combination of the protocol type, Internet address, and port number).

In other words, "inetd" doesn't fire up all the "servers" listed in the `/etc/servers` file just because the "service" is listed in the file. There must be a connection request for that service before it is invoked. At this point, let's clear up possible confusion between `/etc/servers` and `/etc/services`.

The servers file contains the servers ("services") that our A/UX Internet daemon supports. Additionally, "inetd" calls "getservent," which reads `/etc/services` for more information such as port number, etc. This file references all the known services on the DARPA Internet. A simple analogy: `/etc/services` is the dictionary and `/etc/servers` are the words in your vocabulary.

You could theoretically run "inetd" in background mode and it would act the same as being spawned from the "inittab" file -- EXCEPT for one crucial thing. If the daemon quits for some reason, it would not be automatically reinvoked ("respawned") as it does when it is read from the inittab file with the "respawn" action (see `inittab(4)` for more information on "respawn").

Why are some network services handled by init reading "/etc/inittab" and others invoked by "inetd"? The network services listed in "/etc/inittab" are:

- portmap
- ypserv
- ypbind
- nfsd
- biod
- in.routed
- in.rwhod
- named

Each of these programs must be running all the time in a network environment for reasons like caching, performance, and availability for completion of a network requests. These "services" can't be called to life when a connection request comes in and then dropped when the connection request has completed, because these programs maintain the network and must be around at all times. Therefore, we must fire them up during the creation of the networking environment.

Services that do a task, then quit, are the services listed in the /etc/servers file.

Article Change History:

23 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:2480



Tech Info Library

Macintosh: Macros Files

Revised: 9/18/92
Security: Everyone

Macintosh: Macros Files

=====

Article Created: 2 Februry 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Macintosh macros files.

DISCUSSION -----

It is possible for Macintosh users to create macro files to automate repetitive system functions (similar to .BAT and .COM files in MS-DOS).

In the Macintosh OS, this is possible within the MPW Shell and with Manx C.

On a Macintosh II with A/UX, this can be done with shell scripts within the C, Bourne, and Korn programming environments.

For more information, see the documentation that accompanies these products.

The Finder doesn't allow these capabilities from the Desktop.

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Tech Info Library Article Number:2482



Tech Info Library

A/UX: Internal Operations Answers (11/95)

Revised: 11/28/95
Security: Everyone

A/UX: Internal Operations Answers (11/95)

=====

Article Created: 10 February 1988
Article Reviewed/Updated: 28 November 1995

TOPIC -----

A/UX internal operations answers.

DISCUSSION -----

- The per process address space of A/UX is 512 MBytes.
- A/UX supports Berkeley Sockets and TTYS. A/UX also supports ptyp's (pseudo ttys in Berkeley terms).
- A/UX fully implements STREAMS with two drivers, except for multiplexing (no I_LINK, I_UNLINK, IOCTL, POLLING, and so on).
- A/UX uses copy on write on demand.

Article Change History:
28 Nov 1995 - Updated format and changed title.
27 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2483



Tech Info Library

How To Boot A/UX From startup# Prompt or on Startup (8/94)

Revised: 8/24/94
Security: Everyone

How To Boot A/UX From "startup#" Prompt or on Startup (8/94)

=====

Article Created: 2 February 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

How do you boot A/UX from the startup shell? How do you cause A/UX to boot automatically on machine startup?

DISCUSSION -----

Initially, to enter A/UX Startup you must cancel the startup process for A/UX. Once in the A/UX Startup shell, you see a command line prompt. The default prompt is "startup#".

To boot the system from here, pull down the "Execute" menu and select "Boot". This will launch the A/UX boot program. You can also type "launch" on the command line and press Return.

To have the Macintosh operating system automatically boot A/UX on machine startup, pull down the "Preferences" menu and select "Booting...". Place an "X" in front of the option that says "Automatically Boot at startup". Then click "OK".

Refer to the A/UX Local System Administration manual chapter on System Startup and Shutdown for more information.

Article Change History:
23 Aug 1994 - Updated to describe the startup shell.

Support Information Services

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Tech Info Library Article Number:2484



Tech Info Library

A/UX: Multi-User Accessibility (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Multi-User Accessibility (8/94)

=====

Article Created: 2 February 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

Can A/UX be used as a multi-user system?

DISCUSSION -----

A/UX is primarily a multi-tasking system. It can be operated as a multi-user system, but A/UX is NOT expressly designed to be a central system for multiple users -- at least, not as most people would view a true multi-user system.

The idea behind A/UX on the Macintosh is to have multiple stations, networked together, that can share resources.

Multiple users can interface with the Macintosh through Ethernet, or through the serial communication ports.

Article Change History:
23 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:2487



Tech Info Library

A/UX Display Driver Is Modeled After UNIX Form

Revised: 9/22/92
Security: Everyone

A/UX Display Driver Is Modeled After UNIX Form

=====

Article Created: 2 February 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Some Apple UNIX (A/UX) users have asked whether the display drivers used under A/UX are pure UNIX form drivers, or dependent on the display routines in the Macintosh Toolbox.

DISCUSSION -----

The display driver in A/UX is a text-based driver modeled after "STREAMS", a UNIX form driver. A/UX's display driver is a full implementation of a UNIX form driver, minus the multiplexing functions. The shell and UNIX-executable files that are part of A/UX are text-based.

Most of the Macintosh ToolBox routines are accessible through A/UX as library calls. These routines may be used in applications to create Macintosh environments, just as with Macintosh OS applications.

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Tech Info Library Article Number:2488



Tech Info Library

Epson HX20: Pinouts to Connect a Macintosh

Revised: 6/17/92
Security: Everyone

Epson HX20: Pinouts to Connect a Macintosh

=====

Article Created: 11 February 1988
Article Last Reviewed: 16 June 1992
Article Last Updated:

TOPIC -----

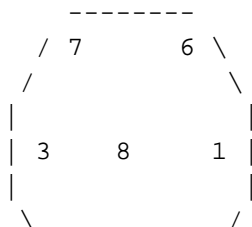
I have an Epson HX20 laptop computer and I want to connect it to my Macintosh.
What are the pinouts for a cable to connect the two?

DISCUSSION -----

Here are the pinouts for building a cable to connect a Macintosh Plus,
Macintosh SE, or Macintosh II to an Epson HX20 laptop computer.

The Epson HX20 has a DIN 8 connector for the RS-232 signals out. The pin
configuration is:

Epson HX20 Serial Port (DIN 8)	Macintosh (Mini DIN 8)
-----	-----
1 - Signal Ground (SG)	4 - GND
2 - Transmit Data (TXD)	5 - RXD
3 - Receive Data (RXD)	3 - TXD
4 - Request to send (RTS)	
5 - Clear to Send (CTS)	
6 - Data Set Ready (DSR)	
7 - Data Terminal Ready (DTR)	
8 - No Connect (NC)	



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Tech Info Library Article Number:2499



Tech Info Library

HyperCard: How to Open a Stack That Closes Itself

Revised: 6/24/90
Security: Everyone

HyperCard: How to Open a Stack That Closes Itself

=====

This article last reviewed: 22 January 1988

If you find that you've accidentally created a HyperCard stack that closes itself immediately upon opening -- and you can't edit it to correct the problem, here's a way to force it to stay open.

In your home stack, make a button with this script:

```
on mouseUp
    set lockmessages to true
    go to stack "xyz"
end mouseUp
```

where "xyz" is the name of the problem stack. This will open the stack and leave you at the first card.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2501



Tech Info Library

EtherTalk Node Limits

Revised: 2/12/88
Security: Everyone

EtherTalk Node Limits

=====

This article last reviewed: 1 February 1988

Here are the answers to several questions regarding the EtherTalk card and the associated control panel cdev for choosing a network connection.

- When you switch from local AppleTalk to the EtherTalk card, the node number is renegotiated using the Apple Address Resolution Protocol (ARP). The AppleTalk session is restarted -- you don't have to reboot the system.
- If all 254 nodes are in use, the system will be physically attached to the network but will be logically unattached. No errors will be reported. The Ethertalk can still be used for other protocol suites such as TCP/IP -- the 254-node limit applies only to EtherTalk Cards and bridges running the AppleTalk protocol.

Tech Info Library Article Number:2502



Tech Info Library

Beagle Brothers Inc.

Revised: 7/6/93
Security: Everyone

Beagle Brothers Inc.

=====

Article Created: 02/12/88
Article Reviewed: 07/06/93
Article Updated: 07/06/93

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Company Profile:
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Article Change History: 07/06/93 Phone number added

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Tech Info Library Article Number:2503



Tech Info Library

Apple Pascal 1.3: Info On Remote Start-up

Revised: 2/12/88
Security: Everyone

Apple Pascal 1.3: Info On Remote Start-up

=====

This article last reviewed: 22 January 1988

It is possible to set up a network so as to start up Apple IIs over the network using Apple Pascal.

The Pascal 1.3 manual contains useful information concerning the Pascal boot process: basically, if the network card looks like a disk controller, and adheres to the ProDOS firmware standards (that is, ProDOS compatible without drivers), then this is very possible. (By the way, you need a multi-user license to run Pascal this way.)

Tech Info Library Article Number:2504



Tech Info Library

Backup II: Use ProDOS 1.2, Not ProDOS 1.4

Revised: 2/12/88
Security: Everyone

Backup II: Use ProDOS 1.2, Not ProDOS 1.4

=====

This article last reviewed: 22 January 1988

There were numerous changes made from ProDOS 1.1.1 to 1.4, perhaps too many for Backup II. Backup II was never updated to take advantage of the latest version of ProDOS, which supports the Apple IIGS.

If you're using Backup II, we suggest you go back to ProDOS 1.2 instead of 1.4, to have fewer changes in the operating system. By not using ProDOS 1.4, all you'll be giving up is support for the Apple IIGS. ProDOS versions 1.3 and 1.2 work correctly on other systems, just not on the Apple IIGS.

Tech Info Library Article Number:2505



Tech Info Library

Page Setup: What Happens When Font Substitution? Is Deselected

Revised: 11/5/91
Security: Everyone

Page Setup: What Happens When "Font Substitution?" Is Deselected

=====

Article Created: 13 February 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 18 October 1988

TOPIC -----

When you deselect "Font Substitution?", what size of the bitmapped font is sent to the LaserWriter?

DISCUSSION -----

The font is scaled by the Macintosh Font Manager. If the Font Manager can't find a font of the requested size, and font scaling is enabled, it follows the standard scaling algorithm (described in "Inside Macintosh" Volume I, chapter 7) with one exception: if it can't find a font that's either double or half the requested size, it looks for the font that's closest to the requested size, larger or smaller.

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Tech Info Library Article Number:2507



Tech Info Library

AppleShare: It Cannot Limit Access By Location

Revised: 10/4/89
Security: Everyone

AppleShare: It Cannot Limit Access By Location

=====

This article last reviewed: 9 February 1988

The AppleShare server is designed to limit access by individual, not by geographical location. So it's not possible, for example, for an individual user to have differing access privileges depending on which workstation he's using at the moment.

Once networks are connected, it's not possible through AppleShare or the Chooser to limit inter-network access. Unless you're using a mail system or other system communication that requires inter-network access, it may be best not to connect your networks.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2509



Tech Info Library

System 4.2 / Finder 6.0: It Can Corrupt Fond Resources

Revised: 11/6/91
Security: Everyone

System 4.2 / Finder 6.0: It Can Corrupt Fond Resources

=====

Article Created: 13 February 1991
Article Last Reviewed: 6 November 1991
Article Last Updated: 6 November 1991

TOPIC -----

This article describes font problems that may occur with System 4.2, Finder 6.0, and LaserWriter 5.0.

DISCUSSION -----

There is a problem in the new system software (System 4.2, Finder 6.0, and LaserWriter 5.0) that sometimes corrupts the Fond resource. This can cause inconsistent results when documents are created under older system software then opened or printed under the new system software.

To correct the offending Fond resource, use Font D/A Mover 3.6 to remove the offending fonts (all sizes), and reinstall them. This forces the font table to be recreated.

Another solution would be to update to a current version of System Software.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2510



Tech Info Library

MacWorkStation: It Can Support User-written Code

Revised: 5/10/89
Security: Everyone

MacWorkStation: It Can Support User-written Code

=====

This article last reviewed: 9 February 1988

A host program can send a message to MacWorkStation telling it to execute a code module. The code modules should be in a resource whose ID is passed in the message. It is also possible to pass data or parameters to the code module.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2511



Tech Info Library

MacDraw: It Doesn't Have a True Tab Function

Revised: 2/13/88
Security: Everyone

MacDraw: It Doesn't Have a True Tab Function

=====

This article last reviewed: 9 February 1988

MacDraw does not support a true tab function.

When the tab key is pressed in MacDraw, a representation of the character is displayed. For example, the Courier tab character has a width, whereas the Helvetica tab character does not -- so Courier moves the insertion point over the width of the tab character.

This is not really the tab function that is written into many other applications, which inserts a defined amount of space when a tab (ASCII code 9, horizontal tab) is received. With a tab function, it's not the character width being displayed, but the code being interpreted by the application, which inserts the defined amount of space.

There is no correlation between a space or tabs in MacDraw. The tab differs, different depending on the font selected and whether the tab character has been given a character width.

Tech Info Library Article Number:2512



Tech Info Library

IBM 9375 and Macintosh 327x Connectivity

Revised: 10/4/89
Security: Everyone

IBM 9375 and Macintosh 327x Connectivity

=====

This article last reviewed: 10 February 1988

Because the IBM 9375 is a member of the 370 family, 3725s can be attached and AppleLine, Avatar, and MacIrma can be connected. The NetWay requires a specific ICA (Integrated Communications Adapter), one with a Sync RS-232 port, to function with this system.

The 937X processor contains a communications processor card, which can be thought of as the hardware equivalent of a 3725. This processor card can support a number of line adapter cards that interface with devices such as 3174 and 3274s. The ICA is therefore functionally equivalent to a 3725, a 3174, or a 3274.

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Tech Info Library Article Number:2513



Tech Info Library

Printing Postscript to DEC's LN03R Printer

Revised: 2/13/88
Security: Everyone

Printing Postscript to DEC's LN03R Printer

=====

This article last reviewed: 10 February 1988

When printing Postscript output from LaserWriter drivers to a DEC LN03R printer (LaserWriter Plus compatible) attached to a VAX, you may encounter an INVALID ACCESS ATTEMPT error for the SETDEFAULT TIMEOUTS command. When this command is removed, another error of UNDEFINED: NAME NOT FOUND is reported for the LEGAL command.

According to Adobe, you need to exit the server loop to use the setdefaulttimeout operator. The code is:

```
statusdict begin 0 exitserver
```

DEC's LN03 is LaserWriter-compatible from the Postscript side of things, but there are differences with respect to hardware options.

Tech Info Library Article Number:2516



Tech Info Library

Zapf Chancery Font: Why It Doesn't Print Bold or Italic

Revised: 5/17/89
Security: Everyone

Zapf Chancery Font: Why It Doesn't Print Bold or Italic

=====

This article last reviewed: 9 February 1988

Although you can produce italic and bold characters on the screen with the Zapf Chancery font, when you print them they'll seem to be plain.

Actually, plain Zapf Chancery is italic to start with and it has no bold style. Observe the delicate and precise curves of the normal style of Zapf Chancery: making it bold would fill in most of the open areas on the smaller sizes.

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Tech Info Library Article Number:2517



Tech Info Library

ADB: Can Control External Devices

Revised: 7/2/92
Security: Everyone

ADB: Can Control External Devices

=====

Article Created: 26 September 1989
Article Last Reviewed: 26 June 1992
Article Last Updated:

TOPIC -----

What is the Apple Desktop Bus (ADB) port on the LaserWriter IISC used for?

DISCUSSION -----

The Apple Desktop Bus can be used to control external devices such as cut sheet feeders, bin feeders, and output collators for the LaserWriter IISC. The ADB port isn't currently supported in the LaserWriter IINT and LaserWriter IINTX ROMs.

Developers may contact Apple Software Licensing for additional information on developing ADB devices for the LaserWriter IIs. Search on "Software Licensing" for address information.

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Tech Info Library Article Number:2518



Tech Info Library

ImageWriter: Printing from MS-DOS (9/94)

Revised: 9/30/94
Security: Everyone

ImageWriter: Printing from MS-DOS (9/94)

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 30 September 1994

TOPIC -----

Does Apple have any driver that supports printing to a ImageWriter, ImageWriter II, or an ImageWriter LQ from a MS-DOS compatible?

DISCUSSION -----

There is no driver that supports printing to any of the ImageWriter family of printers from MS-DOS or Windows that is made by Apple Computer, Inc. Microsoft Windows has a driver named "C-Itoh 8510" that may work with the ImageWriter II (with no LocalTalk option card) if the proper cable is used.

With the appropriate driver, it is possible for an MS-DOS computer with the AppleTalk PC Card to print to an ImageWriter II or AppleTalk ImageWriter LQ over LocalTalk. However, Apple Technical Communications is not, at this writing, aware of such a driver.

Article Change History:
30 Sep 1994 - Revised formatting slightly.

Support Information Services

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Tech Info Library Article Number:2519



Tech Info Library

Douglas Electronics

Revised: 4/3/97
Security: Everyone

Douglas Electronics

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Article Created: 02/13/88
Article Reviewed: 07/08/93
Article Updated: 04/03/97

Douglas Electronics

2777 Alvarado St.
San Leandro, CA 94577

510-483-8770

510-483-6453 Fax

Company Profile:
Hardware and software, specializing in circuit boards and software programs.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2520



Tech Info Library

Apple High-Resolution Monitors For Mac II: Specs (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple High-Resolution Monitors For Mac II: Specs (Discontinued)

=====

Article Created: : 9 February 1988

AppleColor High-Resolution RGB Monitor

Linearity: 10% (see note)
Brightness: 20 foot Lamberts
Contrast: (ambient light dependent - see light transmission)
Deflection: 90 degrees diagonal
235mm horizontal
176mm vertical
Light transmission: 43% - neutral density gray

Apple High-Resolution Monochrome Monitor

Linearity: 10% (see note)
Brightness: 33 foot Lamberts
Contrast: (ambient light dependent - see light transmission)
Deflection: 90 degrees diagonal
213mm horizontal
160mm vertical
Light transmission: 42% - neutral density gray

Note: 10% linearity here means that an object on the screen when moved will change in size (larger or smaller) by no more than 10%.

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Tech Info Library Article Number:2521



Tech Info Library

Network Technologies Inc.

Revised: 7/14/93
Security: Everyone

Network Technologies Inc.

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 14 July 1993

Network Technologies Inc.

1275 Danner Dr.
Aurora, OH 44202

800-742-8324

216-562-7070

216-562-1999 Fax

Company Profile:
Hardware, primarily video products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2522



Tech Info Library

Macintosh II: It Requires 120ns RAM Chips Or Faster

Revised: 7/21/92
Security: Everyone

Macintosh II: It Requires 120ns RAM Chips Or Faster

=====

Article Created: 6 November 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

I know the Macintosh II requires SIMMs that are 120ns or faster. What problems will I run into with using ones that are slower?

DISCUSSION -----

Apple recommends and supports only 120ns or faster RAM chips for the Macintosh II.

In theory, the Macintosh II does not operate properly with SIMMs containing RAM chips slower than 120ns. This is because the number of RAM wait states defined in ROM does not change dynamically to accommodate slower RAM. (This is not an issue with the Macintosh Plus and Macintosh SE because their slower processor clock speed accomodates slower RAM speeds.)

In practice, however, slower RAM chips (150ns, for example) will work on a Macintosh II because RAM chips are often faster than their labelled ratings. Nevertheless, always use RAM that is tested and rated at the required speed of the computer. Otherwise, you may eventually experience random system crashes or other inconsistent errors using SIMMs slower than 120ns.

(NOTE: Macintosh Plus and Macintosh SE do NOT dynamically allocate wait states according to memory speed.)

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Tech Info Library Article Number:2523



Tech Info Library

Macintosh II: Always Keep It Horizontal

Revised: 7/14/92
Security: Everyone

Macintosh II: Always Keep It Horizontal

=====

Article Created: 3 February 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

Can I use my Macintosh II in a vertical orientation?

DISCUSSION -----

A Macintosh II, or Macintosh IIX and Macintosh IIIfx, should always be kept horizontal.

Standing it on end

- voids the warranty
- defeats the cooling design
- will eventually damage the main unit.

The above remains true even if the required 4 to 6 inches of clearance is maintained around the vents.

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Tech Info Library Article Number:2525



Tech Info Library

ImageWriter LQ: Spacing Problem In Best Mode Caused By Driver

Revised: 11/6/91
Security: Everyone

ImageWriter LQ: Spacing Problem In "Best" Mode Caused By Driver

=====

Article Created: 13 February 1988
Article Last Reviewed: 6 November 1991
Article Last Updated: 6 November 1991

TOPIC -----

This article describes spacing problems with the earlier version of the ImageWriter LQ print driver, version 1.x.

DISCUSSION -----

In the box with the ImageWriter LQ is a sheet titled "ImageWriter LQ Important Information." It says: "Macintosh users: Words printed in Best Mode may occasionally touch or overlap, depending on the font, font size, or font style you use. To correct any spacing problems, try adding one or more spaces between words that are too close together."

The problem is not with the ImageWriter LQ itself, but with the ImageWriter LQ driver.

The solution is to upgrade to the ImageWriter LQ 2.0 driver.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2527



Tech Info Library

Applesoft BASIC: Advancing to Next Line After a ProDOS Call

Revised: 2/13/88
Security: Everyone

Applesoft BASIC: Advancing to Next Line After a ProDOS Call

=====

This article last reviewed: 5 February 1988

When you add a function to ProDOS and call the function from BASIC, you don't then return to the BASIC program that called the routine: at that point, you are BASIC. If the added function is more than one word (as specified in the ProDOS Technical Reference Manual), the pointer that should automatically take you to the start of the next line is not updated properly.

You must make a call to Applesoft to go to the end of the current line, which automatically sets the pointer to the start of the next line.

There is a specific call in Applesoft to make this happen. In the Tech Info Library, search on:

Applesoft and internals

Tech Info Library Article Number:2528



Tech Info Library

AppleTalk ImageWriter: Avoiding Timeout Problems

Revised: 8/21/89
Security: Everyone

AppleTalk ImageWriter: Avoiding Timeout Problems

=====

This article last reviewed: 5 February 1988

How an application, or driver, is written is what determines whether it works correctly in all instances with networked printers. If a program or driver is 'disconnected' from the printer long enough for the AppleTalk option card to timeout, the rest of the print job may be lost.

Two ways to avoid having this happen:

- When using manual feed, don't wait for a page to finish before responding to screen prompts -- this will help you avoid AppleTalk option card timeouts.
- Use a cut-sheet feeder, which lets you use the paper you want without having to use manual feed with its attendant pauses.

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Tech Info Library Article Number:2529



Tech Info Library

ProDOS Can't Handle Disk Volumes Larger Than 32MB

Revised: 2/13/88
Security: Everyone

ProDOS Can't Handle Disk Volumes Larger Than 32MB

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This article last reviewed: 5 February 1988

Current versions of ProDOS can't handle more than 32MB of storage on a hard disk volume.

If you connect a Hard Disk 40SC or Hard Disk 80SC to an Apple II, you must partition the hard disk -- that is, divide it into separate volumes. Each volume is then counted as one SCSI device.

Apple does not supply the software that does the partitioning and currently does not know of any other source for such software.

Tech Info Library Article Number:2530



Tech Info Library

A/UX: List of Included Berkeley Utilities (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: List of Included Berkeley Utilities (8/94)

Article Created: 5 February 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

A/UX: List of Included Berkeley Utilities. This list was originally compiled for A/UX 1.0 but is still applicable to later versions.

DISCUSSION -----

Berkeley Enhancements

Although A/UX is primarily based on AT&T System V, Apple has added many of the more popular and useful utilities from BSD 4.X (U.C. Berkeley's version of UNIX).

A/UX supports the following 4.2 BSD utilities:

addbib:create or extend bibliographic database
adventure:an exploration game
aliens:alien invaders attack the earth
apply:apply a command to a set of arguments
apropos:locate commands by keyword lookup
banner7:print large banner on printer
bcd:convert to antique media
biff:be notified if mail arrives and who it is from
ccat:compress and uncompress files, and cat them
chase:escape the killer robots
checknr:check nroff/troff files
chfn:change full name of user
chsh:change default login shell
clear:clears the user's terminal screen
colcrt:filter nroff output for CRT previewing
colrm:remove columns from a file
compact:compress and uncompress files, and cat them
cribbage:the card game cribbage

ctags:maintain a tags file for a C program
ctags:processes a source program to allow ex/vi editors to quickly find
function and type definitions.
diction:print wordy sentences; thesaurus for diction
dump:incremental file system dump
expand:expand tabs to spaces, and vice versa
eyacc:modified yacc allowing much improved error recovery
finger:user information lookup program
fish:"go fish" card game
fmt:simple text formatter
fold:fold long lines for finite width output device
fortune:print a random, hopefully interesting, adage
fpr:print Fortran file
from:who is my mail from?
fsplit:split f77, ratfor, or efl files
ftp:file transfer program
groups:show group memberships
head:print the first few lines of a file
hostname:set or print name of current host system
indent:indent and format C program source
indxbib:build inverted index for a bibliography, find references in a
bibliography
last:indicate last logins of a user
leave:remind you when you have to leave
lookbib:find and insert literature references in documents
lpc:line printer control program
lpd:line printer daemon
lpq:spool queue examination program
lpr:line printer spooler
lprm:remove jobs from the line printer spooling queue
ls7:list contents of directories BSD style
mkstr:create an error message file by massaging C source
netstat:show network status
number:convert Arabic numerals to English
pagesize:print system page size
printenv:print out the environment
rain:animated raindrops display
rcp:remote file copy
rdump:file system dump across the network
refer:find and insert literature references in documents
remsh:remote shell
renice:alter priority of running process by changing nice
reset:reset the terminal to a known state
restore:incremental file system restore
rev:reverse lines of a file
rlogin:remote login
roffbib:run off bibliographic database
rrestore:restore a file system dump across the network
ruptime:show host status of local machines on a network
rwho:who's logged in on local machines
sccs:front end to SCCS
script:make typescript of terminal session
see:see what a file has in it

soelim:eliminate .so's from nroff input
sortbib:sort bibliographic database
strings:find the printable strings in a object, or other binary file
style:analyze surface characteristics of a document
sysline:display system status on status line of a terminal
talk:talk to another user
telnet:user interface to the TELNET protocol
tip:connect to a remote system
trek:trekkie game
tset:set terminal modes to its power-on settings
ul:interprets backspacing to format underlining for line printers
uncompact:compress and uncompress files, and cat them
unexpand:expand tabs to spaces, and vice versa
uptime:show how long system has been up
users:compact list of users who are on the system
uudecode:encode/decode a binary file for transmission via mail
uuencode:encode/decode a binary file for transmission via mail
uusend:send a file to a remote host
vipw:edit the passwd file with vi
w:who is on and what they are doing
whatis:describe what a command is
whereis:locate source, binary, and or manual for program
which:locate a program file including aliases and paths (under csh only)
whoami:print effective current user id
worm:the growing worm game
worms:animate worms on a display terminal
xstr:extract strings from C programs to implement shared strings
yes:be repetively affirmative

C Shell

Also included is the U.C. Berkeley command interpreter (C shell). The C shell (csh) is a command interpreter that originated at the University of California at Berkeley. Its command language is somewhat like the C programming language. In addition to the C-like control flow features of its command language, the C shell also has a command history mechanism that enables the user to repeat and edit previous commands, permits commands to have an alternative name or alias, and has built-in job control functions.

Descriptions of the following commands and built-in functions can be found in the "csh(1)" man pages.

alias
break
breaksw
case
cd
chdir
continue
default
echo
else
end

endif
endsw
exec
exit
foreach
glob
goto
history
if
kill
login
logout
newgrp
nice
nohup
onintr
rehash
repeat
set
setenv
shift
source
switch
time
umask
unalias
unhash
unset
wait
while

Article Change History:

23 Aug 1994 - Reviewed and updated.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2531



Tech Info Library

Macintosh Computers: ROM Version Numbers (2/97)

Revised: 2/24/97
Security: Everyone

Macintosh Computers: ROM Version Numbers (2/97)

=====

Article Created: 26 June 1990
Article Reviewed/Updated: 24 February 1997

TOPIC -----

How do I determine the ROM version of my Macintosh computer?

DISCUSSION -----

Use the Programmer's Interrupt Switch to determine the ROM version number of your Macintosh Computer.

Step 1

Press the (programmer's) interrupt switch, or use the keyboard equivalent.

Step 2

Type:

DM 2AE

Step 3

Press return.

This displays the ROMbase global which is located at memory address \$0002AE. The ROMbase global is the number located in offset 0 and 2.

For example, a Quadra 660AV displays:
4080 0000 XXXX XXXX XXXX XXXX XXXX XXXX

Step 4

Type the ROMbase global

EXAMPLE: DM 40800000

The result is 5BF1 0FD1 0000 002A 077D XXXX XXXX XXXX

Step 5

The machine type and ROM version are at offset 8 or 077D in this case which is from a 660av Macintosh Computer. You could also add the 8 bytes to the memory address and have done DM 40800008 and the first two bytes would be the type and ID.

Macintosh ROM Version Table

System	Machine Type	ROM version
-----	-----	-----
Macintosh 128K	00	
Macintosh 512K	00	
Macintosh 512Ke	00	75
Macintosh Plus	00	75
Macintosh SE	02	76
Macintosh SE/30	01	78
Macintosh Classic	02	76
Macintosh Classic II	06	7C
Macintosh Color Classic	06	7C
Macintosh LC	06	7C
Macintosh LC II	06	7C
Macintosh LC III	06	7C
Macintosh LC 520	06	7C
Macintosh LC 550	06	7C
Macintosh LC 575	06	7C
Macintosh LC 475	06	7C
Macintosh LC 580	06	7C
Macintosh LC 630	06	7C
Macintosh TV	06	7C
Performa 200	06	7C
Performa 400, 405, 410, 430	06	7C
Performa 460, 466, 467	06	7C
Performa 475, 476	06	7C
Performa 550, 560	06	7C
Performa 575, 578, 580	06	7C
Performa 600, 600CD	06	7C
Performa 630, 631, 635, 636, 637, 638	06	7C
Performa 5200, 5215	07	7D
Performa 5260, 5300, 5320	07	7D
Performa 6110,6112,6115,6116,6117,6118	07	7D
Performa 6200,6205,6214,6216,6218,6220	07	7D

Performa 6230, 6290, 6300, 6310, 6320	07	7D
Performa 6360	07	7D
Performa 6400	07	7D
Macintosh II	01	78
Macintosh IIX	01	78
Macintosh IICx	01	78
Macintosh IICI	06	7C
Macintosh IISI	06	7C
Macintosh IIfx	06	7C
Macintosh Centris 610	06	7C
Macintosh Centris 650	06	7C
Macintosh Centris 660AV	07	7D
Macintosh Quadra 605	06	7C
Macintosh Quadra 610	06	7C
Macintosh Quadra 630	06	7C
Macintosh Quadra 650	06	7C
Macintosh Quadra 660AV	07	7D
Macintosh Quadra 700	06	7C
Macintosh Quadra 800	06	7C
Macintosh Quadra 840AV	07	7D
Macintosh Quadra 900	06	7C
Macintosh Quadra 950	06	7C
Macintosh Portable	03	78
PowerBook 100	03	7A
PowerBook 140	06	7C
PowerBook 145	06	7C
PowerBook 145B	06	7C
PowerBook 150	06	7C
PowerBook 160	06	7C
PowerBook 165	06	7C
PowerBook 165c	06	7C
PowerBook 170	06	7C
PowerBook 180	06	7C
PowerBook 180c	06	7C
PowerBook 190	07	7D
PowerBook Duo 210	06	7C
PowerBook Duo 230	06	7C
PowerBook Duo 250	06	7C
PowerBook Duo 270c	06	7C
PowerBook Duo 280	06	7C
PowerBook Duo 280c	06	7C
PowerBook Duo 2300	07	7D
PowerBook 520	06	7C
PowerBook 520c	06	7C
PowerBook 540	06	7C
PowerBook 540c	06	7C
PowerBook 5300	07	7D
Power Macintosh 4400/200	07	7D

Power Macintosh 5200/75 LC	07	7D
Power Macintosh 5300/100 LC	07	7D
Power Macintosh 5260/100	07	7D
Power Macintosh 5400/120	07	7D
Power Macintosh 5500/225	07	7D
Power Macintosh 6100 Series	07	7D
Power Macintosh 6500/225 & 6500/250	07	7D
Power Macintosh 7100 Series	07	7D
Power Macintosh 7200 Series	07	7D
Power Macintosh 7300 Series	07	7D
Power Macintosh 7500 Series	07	7D
Power Macintosh 7600 Series	07	7D
Power Macintosh 8100 Series	07	7D
Power Macintosh 8500 Series	07	7D
Power Macintosh 8600 Series	07	7D
Power Macintosh 9500 Series	07	7D
Power Macintosh 9600 Series	07	7D

NOTES:

- 1) The ROM version does not necessarily reflect slight differences in ROM sets. For example, the Macintosh IIfx ROMs are slightly different from the Macintosh IICI ROMs, even though the ROM version number is the same.
- 2) With the Centris 660AV and Quadra 840AV, a new 2 MB ROM was introduced.

Article Change History:

24 Feb 1997 - Added new computers.
05 Dec 1996 - Added 6360.
22 Oct 1996 - Added 6400.

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Tech Info Library Article Number:2532



Tech Info Library

LaserWriter: Composition of the Drum Coating

Revised: 2/13/88
Security: Everyone

LaserWriter: Composition of the Drum Coating

=====

This article last reviewed: 10 February 1988

The LaserWriter drum is an organic photo-conductive layer laid on the surface of an aluminum cylinder. The ingredients of the organic layer are:

	wt%		OSHA (PEL)	ACGIH (TLV)
aluminum alloy	95.0-98.0		-	-
titanium dioxide (13463-67-7)	0.5-2.0	*	15mg/m3(TWA)	10mg/m3(TWA)(Dust) (20mg/m3)(Stel)
Binder resin	0.5-2.0		-	-
Organic semiconductor	0.3-0.8		-	-

Carcinogens: no ingredient is listed on the latest NTP Annual Report on carcinogens, IARC Monograph, or OSHA listing.

*note - m3 = m to the power of 3

Tech Info Library Article Number:2533



Tech Info Library

ImageWriter LQ: No Additional Fonts From Apple

Revised: 11/22/91
Security: Everyone

ImageWriter LQ: No Additional Fonts From Apple

=====

This article last reviewed: 10 February 1988

The only ImageWriter LQ (3X) fonts Apple intends to distribute are:

- Times
- Helvetica
- Courier
- Symbol

We expect that other fonts will become available from third-party developers or designed by individuals using such programs as FONTastic Plus or Fontographer.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2534



Tech Info Library

LaserWriter IIntx: Don't Try To Put Macintosh II SIMMs In It

Revised: 9/22/89
Security: Everyone

LaserWriter IIntx: Don't Try To Put Macintosh II SIMMs In It

=====

This article last reviewed: 10 February 1988

There is no way to plug a Macintosh II SIMM into a LaserWriter IINTX, or vice versa. The two SIMMs are incompatible both physically and electrically.

The LaserWriter IINTX SIMM is .25" longer than a Macintosh II SIMM.

The LaserWriter IINTX SIMM has 128 contacts on the module, in four groups of 32 (64 on each side).

The Macintosh II SIMM has 60 contacts, 30 on each side of the module.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2536



Tech Info Library

Macintosh: Tick Rates vs. Draw Rates

Revised: 6/24/92
Security: Everyone

Macintosh: Tick Rates vs. Draw Rates

=====

Article Created: 10 February 1988
Article Last Reviewed: 23 June 1992
Article Last Updated:

TOPIC -----

What's the difference between tick rates and draw rates?

DISCUSSION -----

On all Macintosh computers, the tick rate is 60 ticks per second, regardless of processor type or speed. Ticks are available to the programmer to provide timing sequences that are constant, independent of machine type or the application.

Two different applications, on the other hand, may draw objects on the screen at varying rates, but this is due to the different drawing algorithms the applications use -- not to varying tick rates.

And the same application may draw at different speeds on different machines. For example, certain QuickDraw routines perform about 20 percent faster on a Macintosh SE than they do on a Macintosh Plus, due to the way memory is accessed. The Macintosh II, depending on video card settings, performs QuickDraw routines two to four times faster than a Macintosh Plus, because of its 68020 processor.

Some other factors that affect how fast a Macintosh draws an object on the screen:

- INITs
- VBL tasks
- hardware interrupts
- software interrupts
- Time Manager calls
- QuickDraw overhead
- memory

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2537



Tech Info Library

SAIC, Open System Division

Revised: 4/3/97
Security: Everyone

SAIC, Open System Division

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

SAIC

10260 Campus Point Dr.
San Diego, CA 92120
Attn: Tony Alfino
MS: D-1

619-552-5586
619-535-7441
619-535-7494

Fax: 619-535-7669

Company Profile:
Open Systems Division (acquired Touch Communications, Inc., Open System Division, February 1992), software, specializing in system integration and software development, including development tools based on OSI standards technology.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2539



Tech Info Library

Synergy Software

Revised: 4/3/97
Security: Everyone

Synergy Software

=====

Article created: 13 Feburary 1988
Article Reviewed/Updated: 3 April 1997

Synergy Software

2457 Perkiomen Ave.
Mt. Penn, PA 19606

215-779-0522
215-779-5800

Fax: 215-370-0548

Company Profile:
Software publisher, primarily Macintosh applications, i.e.
terminal emulation, networking products, data analysis, and graphing software.
Merged Maxwell, Inc. and their products in 1993.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2541



Tech Info Library

Manx Software Systems

Revised: 4/3/97
Security: Everyone

Manx Software Systems

=====

Article Created: 02/13/88
Article Reviewed: 07/13/93
Article Updated: 04/02/97

Manx Software Systems

P.O. Box 980
Freehold, NJ 07728

800-221-0440

908-308-3322 Fax

Company Profile:
Software, specializing primarily in Apple II and Macintosh development systems.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2544



Tech Info Library

Apple Software Duplication Rights, Licensing: Who To Contact

Revised: 6/6/91
Security: Everyone

Apple Software Duplication Rights, Licensing: Who To Contact

=====

This article last reviewed: 26 September 1989

If you want information about copying discontinued software, or about the copyright or licensing status of other Apple software, send your questions or requests in writing to:

Software Licensing
Apple Computer Inc.
20525 Mariani Ave., MS 38-I
Cupertino, CA 95014

OR Phone:

(408) 974-4667

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2545



Tech Info Library

Apple Video Card and Monitor: Gray Scale Specifications

Revised: 7/2/92
Security: Everyone

Apple Video Card and Monitor: "Gray Scale" Specifications

=====

Article Created: 22 January 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

The gray-scale capabilities of Apple video monitors are no different from those of other gray-scale monitors. ("Gray scale" is another name for a monochrome analog monitor.)

DISCUSSION -----

The Apple Macintosh II Video Card produces true gray-scale output, in the form of an analog RS-343 standard video signal. Apple monitors are also capable of displaying true gray-scale images. The RGB monitor even displays color information.

Apple's video displays 256 shades of gray (or colors) on an analog monitor. Some manufacturers have video cards that display up to 786,432 shades of gray or colors. Apple video cards have access to the same source (16.8 million different shades of gray or colors) as these others--the differences in the number of gray and color shades is due only to the amount of memory on the video card.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2547



Tech Info Library

Instant Pascal: Not Designed To Display Text In Color

Revised: 2/13/88
Security: Everyone

Instant Pascal: Not Designed To Display Text In Color

=====

This article last reviewed: 22 January 1988

Instant Pascal is not intended to display text in color. In fact, such text approaches being unreadable. The only solution is to use a monochrome display.

Tech Info Library Article Number:2548



Tech Info Library

HyperCard: Two Methods For Speeding Up New Sound Retrieval

Revised: 5/31/89
Security: Everyone

HyperCard: Two Methods For Speeding Up New Sound Retrieval

=====

This article last reviewed: 27 January 1988

If you want to load new sound resources into memory so that they can be accessed quickly on HyperCard -- normal drive response takes several seconds, which may be too long a delay for certain projects -- try one of these two methods:

- store the sounds on a small RAM disk

or

- use a resource editor such as ResEdit to PRELOAD the sound resources that you wish to speed up.

There are limitations to this preloading method: the initial stack launch time is slowed, and some sounds may be too large to reside in memory.

(NOTE: Make sure you back up your original stack before attempting this.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2549



Tech Info Library

Apple Hardware: International Certification Information

Revised: 6/24/92
Security: Everyone

Apple Hardware: International Certification Information

=====

Article Created: 2 September 1988
Article Last Reviewed: 23 June 1992
Article Last Updated: 23 April 1991

TOPIC -----

What types of international certification does Apple equipment meet?

DISCUSSION -----

Depending on the particular piece of equipment and the country in which it is distributed, all Apple equipment meets the following codes and standards:

- UL 544/478
- CSA
- VDE 0871
- FCC class B certification

Some Macintosh hardware, and other Apple Equipment, is produced in more than one version to meet specific country requirements. For example, Macintosh II monitors are built specifically for Germany to meet the VDE 0871 certification. Domestic Macintosh II monitors do NOT carry the VDE certification label.

Apple equipment is also tested by the following European countries and/or organizations prior to distribution.

SIMKO/Sweden
DEMKO/Denmark
NEMKO/Norway
FEI/Finland
Bureau of Viritas/Spain
AIB-Vincotte/Belgium

NOTE: Currently, Apple Computer does not test Apple equipment for hospital AAMI/ANSI compliance certifications. However, depending on an individual institution's certification requirements, Apple equipment may possibly be used in certain work areas. Before installing equipment, Apple customers need to check the hospitals certification requirements for the work area where the equipment is to be installed.

Apple equipment distributed in Belgium must meet the NBN C 79-204/NBN C 77-380 standards.

Almost all Apple Equipment is labelled with its exact certifications.

Copyright 1988, 1989, 1991, Apple Computer, Inc.

Tech Info Library Article Number:2550



Tech Info Library

Macintosh Built in Serial Ports: Not Identical

Revised: 6/17/92
Security: Everyone

Macintosh Built in Serial Ports: Not Identical

=====

Article Created: 25 January 1988
Article Last Reviewed: 9 June 1992
Article Last Updated:

TOPIC -----

Are there any differences between the two built-in serial ports on Macintosh computers?

DISCUSSION -----

The two built-in serial ports on Macintosh products are nearly identical, except for the differences detailed in this article. Here are the differences:

- Port A (the modem port) has a higher interrupt priority; it is more suitable for high-speed transmission.

Ordinarily, Port B (the printer port) should be used for output-only connections, or at low baud rates; the Port A (the modem port) has no such restrictions. Whenever interrupts are turned off for longer than 100 microseconds, the Serial Driver stores any data received through Port A (the modem port,) and later passes the data to the modem port's input driver.

Note: For more information, see "Inside Macintosh Volume 2."

- Port A on the Macintosh SE and Port A on the Macintosh II support synchronous transmission, but Port B does not. Earlier Macintosh products do not support synchronous transmission through either port.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:2551



Tech Info Library

MultiFinder: Works With TOPS 2.0 and Single Drive

Revised: 10/16/91
Security: Everyone

MultiFinder: Works With TOPS 2.0 and Single Drive

=====

Article Created: 21 January 1988
Article Last Reviewed: 16 October 1991
Article Last Updated: 16 October 1991

TOPIC -----

Will MultiFinder work with TOPS (version 2.0)?

DISCUSSION -----

MultiFinder works with TOPS version 2.0, and disk space can be found to use it with only a single floppy drive.

A bootable Macintosh disk using System Software 5.0 with MultiFinder requires at least these files:

- System
- Finder
- MultiFinder

You can save more room by removing unneeded desk accessories and Fonts from the System file. The System file must contain the TOPS DA, and four fonts: Chicago 12, Monaco 9, Geneva 9, and Geneva 12. All other fonts and DAs can be removed to save space.

NOTE: If you plan to access the Control Panel, you will need that DA installed, along with the CDEVs necessary to perform the desired functions: "General", for example.

We suggest you pare down a System 5.0 disk to your minimum requirements, leaving as much disk space as possible, then install TOPS 2.0.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2553



Tech Info Library

No AppleTalk ImageWriter LQ Message May Be Bad Software/Card

Revised: 8/21/89
Security: Everyone

"No AppleTalk ImageWriter LQ" Message May Be Bad Software/Card

=====

This article last reviewed: 26 January 1988

Have you had this problem while using AppleTalk and an ImageWriter LQ?:

- Upon starting the application "The Namer" and selecting the AppleTalk ImageWriter LQ icon, you get a message saying that NO AppleTalk ImageWriter LQ is connected to the network -- even though one is properly connected?

Rather than a configuration problem, you are probably using corrupted software or a bad AppleTalk card. Try the job again with one or both of these variables replaced.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2554



Tech Info Library

ALERT: Beware of Sexy Ladies Program

Revised: 5/26/92
Security: Everyone

ALERT: Beware of "Sexy Ladies" Program

=====

Article Created: 3 February 1988
Article Last Reviewed: 20 May 1992
Article Last Updated:

*** IMPORTANT ***

Watch out for a Trojan Horse program that was distributed at MacWorld in January 1988. It's called "Sexy Ladies". When you run the program, it puts an abusive message on your screen, then ERASES your hard drive. It was distributed on a floppy named "PD".

To prevent viruses and Trojan Horses from affecting your system, make sure you:

- Know the source of an application before using it.
- Try out any dubious programs on a test system.

For more information, please search on the term VIRUS.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2557



Tech Info Library

Macintosh Finder: How View Affects File Opening Order

Revised: 7/19/91
Security: Everyone

Macintosh Finder: How View Affects File Opening Order

=====

Article Created: 3 February 1988
Article Last Reviewed: 2 February 1991
Article Last Updated:

TOPIC -----

Why is it that when I surround multiple files in the Macintosh Finder 6.X with a selection rectangle, and then choose Open from the File menu, the order in which files open varies?

DISCUSSION -----

When you use the selection rectangle (also called a "marquee" or "marching ants"), the "View" you have selected affects the order in which the files open. Here are the view selections and their results:

- By Icon or By Small Icon: The most recently added, moved, clicked on, or changed file opens last. The next most recently added, moved, clicked on, or changed file opens NEXT to last, and so on.
- By Name: The files open in descending alphabetical order; for example, "Zero" would open after "Alice".
- By Date: The files open in last-modified date order; that is, the most recently modified file opens last.
- By Size: The files open in size order, smallest file opening last.
- By Kind: The files open in alphabetical order based on the kind of file. For example, a document file opens after an application file.
- By Color: The files open according to the color of their icons, based on the order of colors in the Finder's Color menu. The last color in the list opens last.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2560



Tech Info Library

Macintosh SE: Companies That Supply Option Card Products (8/94)

Revised: 8/8/94
Security: Everyone

Macintosh SE: Companies That Supply Option Card Products (8/94)

Article Created: 1 February 1988
Article Reviewed/Updated: 8 August 1994

TOPIC -----

The following companies produce option cards for the Macintosh SE expansion slot.

DISCUSSION -----

Expansion Chassis

ExpanSE -- from Second Wave, Inc. -- is an expansion chassis for the Macintosh SE. Its interface occupies the SE expansion slot, providing four slots. For more information on ExpanSE, search under: Second Wave, Inc.

Option Cards

The following companies have announced SE option card products for the Macintosh SE.

Please pay particular attention to the ADDRESS RANGES used by these SE option card products. To select a combination of four products to use in a Second Wave ExpanSE expansion chassis, choose products without overlapping address ranges. Products with switch-selectable addressing are the most flexible products to use in your chassis.

(NOTE: Information was not available for all products.)

Mac86: >800000->8FFFFFF
- AST Research, Inc.

MacMainFrame SE: >800000->81FFFF
- Avatar Technologies, Inc.

MacIRMA: Switch-selectable addressing

- Digital Communications Associates (DCA)

Epic 2400SE: Switch-selectable addressing

- Epic Technology, Inc.

The Big Picture: >780000->799400

- E-Machines Inc.

HyperCharger 020

- General Computer Corporation

(NOTE: does not implement the Apple 68000 bus protocol completely, and will therefore not operate in ExpanSE)

Pro Board by Addon Computer Corp.

- IO Inc.

EtherPort SE: >800000->80FFFF

- Kinetics, Inc.

Turbo SE: Math co-processor: >500000->50FFFF

- MacMemory Incorporated

Orion Galaxy LS: >540000->57FFFF

- MacPeak Systems

MegaScreen SE: >540000->57FFFF

MegaScreen SE*M: >5E0000->5FFFFFF

Math co-processor at >530000->530020

- MEGA Graphics Inc.

Micah Vision: >700000->87FFFF

- MICAH

Viking 1

- Moniterm Corporation

GPIOB-SE: >800000->8002FF, >500000->5000FF

- National Instruments

(NOTE: this card uses DMA.)

Stretch Screen

- Network Specialties, Inc.

(NOTE: does not use an SE option card)

MAC20

MAC20MX

- Novy Systems Inc.

Mac+PC

- PerfectTEK Corporation

Radius Accelerator: >680000->6FFFFFF, >800000->8FFFFFF, >C80000->CFFFFFF,
>FA0000->FFFFFF

Radius Full Page & Two Page Display: >600000->67FFFF, >700000->7FFFFF,
>C00000->C7FFFF, >F80000->F9FFFF

- Radius, Inc.

Inspector

- Seawell Microsystems

LaserView: >800000->8FFFFFF, >C00000->CFFFFFF

- Sigma Designs, Inc.

Analog Connection SE-12

Analog Connection SE-16

- Strawberry Tree Computers, Inc.

SuperView: Rev. C uses>A00000->AFFFFFF, Rev. E uses >C00000->C4008D &
>F80000->FBFFFF, the 68881 uses >C80000->C9FFFF

- SuperMac Technology

Apple PC 5.25 Drive: >800000->8FFFFFF

- Apple Computer, Inc.

NOTE

The Apple card does not strictly adhere to the 68000 Bus Arbitration Protocol. This protocol requires that after a bus request has been made and granted, the requesting device should send back a 'bus grant acknowledge' -- something the Apple card does not do.

In the case of Second Wave's ExpanSE, this signal notifies the processor to turn the trancivers around and guarantee full communication. Without this signal, the trancivers are never turned and an error message is returned -- "Unable to Read Disk" -- as the communication is only in one direction.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

08 Aug 1994 - Removed Dove Computer from listing.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:2562



Tech Info Library

Nihongo

Revised: 7/14/93
Security: Everyone

Nihongo

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 14 July 1993

Nihongo

30 Laurel Ave.
Stinson Beach, CA 94970

408-446-2168

408-446-2928

Company Profile:
Software, specializing in localization of Japanese applications for Macintosh.
Formerly EuroSoft International

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2564



Tech Info Library

Great Plains Software

Revised: 4/3/97
Security: Everyone

Great Plains Software

=====

Article Created: 02/13/88
Article Reviewed: 07/08/93
Article Updated:

Great Plains Software

1701 S.W. 38th Street
Fargo, ND 58103

800-456-0025

701-281-0550

701-281-3328 (Support) Fax
701-281-3171 (Customer Service & Sales) Fax

Company Profile:
Software, specializing primarily in accounting software.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2565



Tech Info Library

JAM Software

Revised: 4/3/97
Security: Everyone

JAM Software

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

JAM Software

P. O. Box 4036
Meriden, CT 06450

203-630-0055 (Customer Service)

203-630-0055 (Technical Support)

Fax:203-686-1900

Company Profile:
Software, specializing in desk accessories, time management and scheduling products.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2566



Tech Info Library

Microfinancial Flexware

Revised: 7/21/93
Security: Everyone

Microfinancial Flexware

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 21 July 1993

Microfinancial Flexware

2255 Westlake Blvd.
P.O. Box 68
Tahoe City, CA 96145

916-581-6999

800-527-6587

Fax: 916-581-6993

Company Profile:
Acquired by Manzanita, software, specializing primarily in accounting applications.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2567



Tech Info Library

Information Presentation Technologies (4/97)

Revised: 4/3/97
Security: Everyone

Information Presentation Technologies (4/97)

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

Information Presentation Technologies (IPT)

555 Chorro Street, Suite A
San Luis Obispo, CA 93405

805-541-3000

805-541-3076 Tech Support

805-541-3037 Fax

WWW: <http://www.iptech.com>

Company Profile:
Software, specializing in connectivity solutions.

Support Information Services

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2568



Tech Info Library

Mirror Technologies, Inc.

Revised: 4/3/97
Security: Everyone

Mirror Technologies, Inc.

=====

Article Created: 02/13/88
Article Reviewed: 07/13/93
Article Updated: 07/13/93

Mirror Technologies, Inc.

305 Second St. NW
St. Paul, MN 55112

800-654-5294 (Sales)

612-633-4450
612-633-2105 (Tech. Support)

612-633-3136 Fax

Company Profile:
Hardware, specializing in Macintosh storage, hard drives, scanners, and tape backup systems.

Article Change History: 07/13/93 Address changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2569



Tech Info Library

Dow Jones and Company, Inc. (Main Headquarters)

Revised: 7/7/93
Security: Everyone

Dow Jones and Company, Inc. (Main Headquarters)

=====

Article Created: 08/21/91
Article Reviewed: 07/07/93
Article Updated: 07/07/93

Dow Jones and Company, Inc. (Main Headquarters)

200 Liberty St.
New York, NY 10281

212-416-2000

Company Profile:

Dow Jones Publishers, software, specializing in electronic and print publishing involving technical analysis, with access to Dow Jones news retrieval, e-mail, and document control for portfolio management.

Article Change History: 07/07/93 New Article

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2570



Tech Info Library

Odesta Systems Corp.

Revised: 4/3/97
Security: Everyone

Odesta Systems Corp.

=====

Article Created: 13 February 88
Article Reviewed/Updated: 3 April 1997

Odesta Systems Corp.

4084 Commercial Ave.
Northbrook, IL 60062

708-498-5615

708-498-9917 Fax

Company Profile:
Software, specializing in data management system solutions for the Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2572



Tech Info Library

Shiva Corporation

Revised: 4/3/97
Security: Everyone

Shiva Corporation

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

Shiva Corporation

Northwest Park
63 Third Avenue
Burlington, MA 01803

800-458-3550 Sales

617-270-8500 Sales
617-270-8400 Tech Support
617-270-8852 FAX

Internet: support@shiva.com

CompuServe: 72747,715

CONNECT: SHIVAFORMGR

Shiva BBS: 617-273-0023
Modem Settings - 8,1,N 14.4 bps

Company Profile:
Hardware, specializing in remote connectivity and network products for
AppleTalk.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2573



Tech Info Library

Unison Tymlabs Corporation\Tymlabs Corporation

Revised: 4/3/97
Security: Everyone

Unison Tymlabs Corporation\Tymlabs Corporation

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Article Created: 13 February 1987
Article Reviewed/Updated: 3 April 1997

Unison Tymlabs Corporation

811 Barton Springs Rd.
Suite 611
Austin, TX 78704

512-478-0611

Fax: 512-479-0735

Company Profile:

Formerly Tymlabs Corporation, software, specializing in connectivity for Macintosh systems to Hewlett-Packard products, software for HP3000's

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2575



Tech Info Library

Software Ventures Corp. (4/97)

Revised: 4/3/97
Security: Everyone

Software Ventures Corp. (4/97)

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

Software Ventures Corp.

2907 Claremont Ave.
Berkeley, CA 94705

510-644-3232

510-644-1325 (Technical Support)

800-336-6477

Fax: 510-848-0885

WWW: <http://www.svcdudes.com>

Company Profile:
Software, specializing primarily in telecommunications applications: MicroPhone II and MicroPhone LT.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2576



Tech Info Library

ChipSoft, Inc.

Revised: 4/3/97
Security: Everyone

ChipSoft, Inc.

=====

Article Created: 11/06/91
Article Reviewed: 07/07/93
Article Updated: 04/02/97

ChipSoft, Inc.

Wherehouse
6330 Nancy Ridge Road
Suite 103
San Diego, CA 92122-5995

619-453-8722 (Main)
619-587-3939 (Mac Tech Support)
619-550-5008 (Mac Tech Support)

800-766-8890 (Tech Support) Fax
800-756-1040 (Order Services) Fax

Administration
6256 Greenweich Dr.
Suite 100
San Diego, CA 92122-5995

619-453-4446

Company Profile:
Software, specializing in forms creation and management, including tax preparation software. Note: ChipSoft has acquired Softview.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2577



Tech Info Library

WATCOM Products, Inc.

Revised: 4/3/97
Security: Everyone

WATCOM Products, Inc.

=====

Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

WATCOM Products, Inc.

415 Phillip St.
Waterloo, Ontario N2L 3X2
CANADA

800-265-4555

519-886-3700

Fax: 519-747-4971

Company Profile:
Software, specializing in programming tools and language compilers for both
mini and microcomputers.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2580



Tech Info Library

C Enterprises

Revised: 7/7/93
Security: Everyone

"C" Enterprises

=====
Article Created: 02/13/88
Article Reviewed: 07/07/93
Article Updated: 08/21/91

C Enterprises

310 Via Vera Cruz
Suite 110
San Marcos, CA 92069

800-334-3815

619-744-8182

619-744-1659 Fax

Company Profile:
Hardware, computer cabling systems and accessories, especially
fiber optic cabling and components.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2581



Tech Info Library

Second Wave, Inc.

Revised: 4/3/97
Security: Everyone

Second Wave, Inc.

=====

Article Created: 13 February 1991
Article Reviewed/Updated: 3 April 1997

Second Wave, Inc.

2525 Wallingwood Drive
Building #13
Austin, TX 78746-6932

512-329-9283

Fax: 512-329-9299

Company Profile:

Hardware, specializing in peripheral products for Macintosh including PCI (Peripheral Component Interconnect) cards, such as their Second Wave PCI-to-NuBus Bridge.

Article Change History:

06 Jun 1995 - Added information about new product and corrected address.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2582



Tech Info Library

Io Inc.

Revised: 7/9/93
Security: Everyone

Io Inc.

=====

Article Created: 02/13/88
Article Last Reviewed: 07/09/93
Article Last Updated: 07/09/93

Io Inc.

3895 N. Buisness Center Dr.
Suite 100
Tuscon, AZ 85705

602-6901709

Fax: 602-6901796

Company Profile:
Specializing in research and development of personal computer products for
the Macintosh, manufacture and develop VME-bus based computer date boards

Article Change History: 07/09/93 Address changed, phone number changed, new
product information added

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:2584



Tech Info Library

Great Wave Software

Revised: 4/3/97
Security: Everyone

Great Wave Software

=====
Article Created: 13 February 1988
Article Reviewed/Updated: 3 April 1997

Great Wave Software

5353 Scotts Valley Dr.
Scotts Valley, CA 95066

408-438-1990

408-438-7171 Fax

Company Profile:
Software, specializing in developing and publishing music, education, and
graphics software, such as Kids Math.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2586



Tech Info Library

Blank Software Ltd.

Revised: 4/3/97
Security: Everyone

Blank Software Ltd.

=====

Article Created: 02/18/91
Article Reviewed: 04/02/92
Article Updated: 04/03/97

Blank Software Ltd.

601 4th St.
Unit 104
San Francisco, CA 94107

415-540-5549

415-540-5549 Fax

Company Profile:
Software, specializing in music and sound sample- editing for the Macintosh family.

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Tech Info Library Article Number:2587



Tech Info Library

Digidesign, Inc. (6/96)

Revised: 6/17/96
Security: Everyone

Digidesign, Inc. (6/96)

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Article Created: 13 February 1988
Article Reviewed/Updated: 17 June 1996

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Company Profile:

Hardware and software, specializing in development of music products for the
Macintosh computer family.

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Tech Info Library Article Number:2588



Tech Info Library

ALTECH SYSTEMS

Revised: 4/3/97
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ALTECH SYSTEMS

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Article Created: 02/13/88
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Article Updated: 04/03/97

ALTECH SYSTEMS

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Hardware and software, specializing in MIDI music and various language systems
and resource documentation for Macintosh.

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Tech Info Library Article Number:2589



Tech Info Library

Apple IIGS Workstation Software: New Product Information

Revised: 5/25/89
Security: Everyone

Apple IIGS Workstation Software: New Product Information

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This article last reviewed: 1 March 1988

Overview

Apple IIGS Workstation Software lets you connect an Apple IIGS to a LocalTalk network. This software performs the same function as the Apple II Workstation Card for the Apple IIe. The software makes it possible to start up from an AppleShare File Server 2.0 and run an Apple IIGS without disk drives attached.

The only additional hardware needed is an Apple IIGS Memory Expansion Card containing at least 512K of RAM, and a LocalTalk System Connector Kit.

Apple IIGS Setup

Before you can use the Apple IIGS on the AppleTalk Network System, you must configure the system correctly.

From the Control Panel (accessed via Open Apple-Control-Esc):

1. Be sure the Maximum RAM Disk Size is at least 256K less than the Largest Selectable. For example, if the Largest Selectable is 1024K, then set the Maximum RAM Disk Size to 768K or less. The default value of 0K is best if you plan to run any Apple IIGS specific programs.

Control Panel	
RAM Disk	
X Minimum RAM Disk Size:	0K
X Maximum RAM Disk Size:	0K
-Largest Selectable	1024K-
-RAM Status-	

RAM Disk Size:	0K
Total Ram in Use:	84K
Total Free RAM:	1195K

(The numbers following Total RAM in Use and Total Free RAM will vary, depending on phase of startup process.)

2. Set Slot 1 or Slot 2 to "Your Card" (Slot 1 is recommended).

- If slot 1 = "Your Card", plug LocalTalk connector into the Printer Port.
- If slot 2 = "Your Card", plug LocalTalk connector into the Modem Port.

3. Set Slot 7 to "Built In AppleTalk"

4. Set Startup to Slot 7

Control Panel
Slots
Slot 1: Your Card
X Slot 2: Modem Port
X Slot 3: Built-in Text Display
X Slot 4: Mouse Port
X Slot 5: Smart Port
X Slot 6: Disk Port
Slot 7: Built-in AppleTalk
Startup Slot: 7

5. Exit the Control Panel. If you had to change the RAM Disk settings, you must POWER DOWN (with the power switch). This will reset the RAM Disk to the setting you have selected. It does not change RAM disk values until power down. This way, you can restart without loss of RAM Disk contents.



Tech Info Library

AppleShare File Server 2.0: New Product Information

Revised: 10/4/89
Security: Everyone

AppleShare File Server 2.0: New Product Information

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This article last reviewed: 1 March 1988

Overview

AppleShare File Server 2.0 (AFS) is an updated version of AppleShare. AFS allows you to store and share Macintosh documents, folders, and applications. The AFS software and your Macintosh Plus, Macintosh SE, or Macintosh II together create an AFS server. The server can run over any AppleTalk cable system, including LocalTalk and EtherTalk.

The rest of this article describes changes that have been made in AppleShare File Server 2.0.

Server Changes

AppleTalk Filing Protocol (AFP) 2.0

AFP has been modified to support Apple II workstations. AFP 2.0 is an extension of AFP 1.1. For more information, see "ProDOS Support" later in this article.

Large Volumes Start Up Faster

The time required to check each volume for consistency of the Parallel Directory Structure (PDS) has been reduced. During this process, all file and folders on the volume are cross-checked with the PDS file. The PDS file is used internally by AFS.

Automatic Repair At Startup

In the past, these errors were flagged, and you had to run the AppleShare Administrator to repair the PDS file. The server now repairs errors in the PDS when it finds a problem. This saves time, because you do not have to restart and run the AppleShare Administration program to start up your

server. If any repair is necessary, it will be listed in the AppleShare Messages listing.

Folder Locking

You can now lock a folder, thus preventing it from moving. The option is enabled from the Access Privileges desk accessory. Only the folder's owner can check or uncheck the folder lock option. When the folder is locked, ALL users are prevented from moving, renaming, and deleting the folder.

Support for Read-Only devices (CD-ROM)

AFS 2.0 supports HFS CDs. A PDS file and Desktop Database are created in the Server Folder on the startup volume. These files are created when the AppleShare Admin program is run to setup a CD volume. Only the Macintosh partition of the CD can be accessed by AFS. (AFS disables the option to eject the CD from the drive.)

From the workstation, you will see no difference (except volume size) in the server volumes. A CD is slower due, to the seek time of the drive. If multiple users are accessing different parts of the drive at the same time, there will be a noticeable slowdown.

Workstation

Set Password

Users can now change their passwords through the Chooser DA. An encrypted version of the password is sent to the Server, to ensure security for the password.

View Information

The view (by size, name, date, type...) of a file is set by the Owner of the folder. A user can change the view of a folder, but when the folder is opened by other AFS users, the view is set from the owner's settings.

Admin Changes

Online Administration

The AppleShare Administration program can be run concurrently with the AppleShare File Server 2.0. In the past, performing administrative tasks required bringing down AppleShare. AppleShare Admin now runs as a concurrent application -- so you can add users, groups, and perform other tasks while the AFS server is still running.

Administrator (Custodian)

AppleShare File Server 2.0 allows the Administrator to function as an all-knowing and all-powerful user. This is a special user that the old version of AppleShare called the custodian. The Administrator can see ALL

files and folders, create, rename, delete, and move files in any folder on the server volume, as if the administrator were the owner of the file or folder. The Administrator can also reassign any folder's owner, group, or access privileges.

Copy a volume

The Admin program lets you copy a full volume, keeping the access privileges intact for the entire volume. Although you can do this while the server is running, it's best to do it when the server is down. If you copy while the server is running, some files will not be copied, because of file locking. The server still allows users to access files, but in a very slow manner.

ProDOS Support

Apple II Admin Box

A check box to set up Apple II Administration is located in the Server Information box. Selecting this box creates the folder Users at the root level of the startup volume. It then creates a folder for each user, and places an empty Apple II boot file in each user folder. The administrator should have users entered in the User List before you perform this function.

After this box has been selected, a new APPLE II menu will appear, from which the administrator can set the printer, prefix, and startup application for each user. You first select the user from the user list, and then select Startup Information from the Apple II menu.

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Tech Info Library Article Number:2592



Tech Info Library

AppleShare Print Server: New Product Information

Revised: 11/2/88
Security: Everyone

AppleShare Print Server: New Product Information

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This article last reviewed: 1 March 1988

Overview

AppleShare Print Server (APS) is a new revision of the LaserShare print server.

- With APS, you can print a document without having to wait for an open printer.
- APS supports LocalTalk LaserWriters and LocalTalk ImageWriters.
- APS acts as a go-between for workstations and printers on your network.
- APS takes documents to be printed, temporarily stores them on disk, and sends them to the printer.
- The APS server is supported on a LocalTalk or EtherTalk network.
- APS can run either as a standalone application or as a concurrent application under AppleShare File Server 2.0. It does not run concurrently with older versions of AppleShare. You need to have a hard drive connected to the computer running APS.

The rest of this article describes the new features of the AppleShare Print Server.

Support of Multiple Printers

APS can act as a spooler for up to five printers. APS creates a new "printer" that is accessed from the chooser DA. Each printer that is spooled maintains a separate print log and print queue.

Warning: You can capture a printer in a different zone. The spooled printer

will appear, under Chooser, in the same zone as the APS server. If bypass printing, or allowing printing from both the spooler and workstation, is not allowed, the printer will no longer appear in the original zone. This can cause a user to think there is a problem with the printer. The user will have to select the zone of the APS server to see the spooled printer.

Automatic Reconnection To All Printers

When the APS server restarts, it connects with the printers and restarts any print jobs that were not completed.

Printer and Window Menu

To display the windows on the screen, select the printer and window from the Printer menu. This brings up a list of different printers, then uses a hierarchical menu to display the options, log, or queue window. (If the hierarchical menu does not come up, the user could be operating with older system software.)

You control the display of the queue, and log windows that appear on the screen, from the Window menu. There are options to Stack, Tile, or Hide the windows. You can also move the windows using standard Macintosh click and drag techniques. The server continues to spool documents, whether or not the queue or log windows are open.

Support of AppleTalk ImageWriter II and LQ

APS supports printing to the AppleTalk ImageWriter II and ImageWriter LQ. The Options dialog contains information about these printers.

When some applications print to an ImageWriter II or LQ, they treat each page as if it were a separate document. If two or more users print at the same time, pages from the various documents will be intermixed as they come off the printer. APS can group the pages into a single print job. This feature is called the Inter Page Timeout.

After APS receives a page from the workstation, it waits (five seconds is the default) to see if any more pages are sent from the same workstation. If APS receives another page in the allotted time, it assumes the page is part of the first document, and appends the page to the current document. If APS does not receive the document in the allotted time, APS assumes that it has received all of the document. If any additional pages come in, they are treated as a separate document.

Because applications differ in how long it takes to print a page, the time-out option is adjustable. You don't want to make the time between pages too large, because the spooler may combine two documents into one document. You can adjust the time-out from zero to 60 seconds, using Set intervals in the pop-up menu.

The LaserWriter logs list the Document Name and User Name. The ImageWriter drivers don't send the necessary information to display the Document and User Name, and the space is left blank. If you are printing a Draft style document to an ImageWriter printer, the first fifteen characters of the document appear in the document name field.

Print Queue and Logs

Print Queue and Print Log are now disk-based. The new maximum is 1,000 entries in each.

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Tech Info Library Article Number:2593



Tech Info Library

AppleCD SC: Using It With an Apple II

Revised: 5/17/89
Security: Everyone

AppleCD SC: Using It With an Apple II

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This article last reviewed: 29 February 1988

The AppleCD SC drive can be used with any Apple II that contains an Apple II SCSI Card with at least a revision C ROM. The recommended position is at the end of the SCSI chain. The drive must have a unique priority number on the SCSI bus. With the appropriate driver, you can access a compact disc that uses either audio, ProDOS, or High Sierra format.

The AppleCD SC's accessory kit contains a version of CD Remote software for both the Apple IIe and Apple IIGS.

- To play an audio CD from an Apple IIGS, copy the file CD.AUDIO from the Apple II disk (supplied with the AppleCD SC) to the DESK.ACCS folder on the Apple IIGS startup disk.
- On the Apple IIe, run the Apple IIe CD Remote program (included with the AppleCD SC drive).

A compact disc pressed in ProDOS format will be recognized by either ProDOS 8 or ProDOS 16, and used accordingly. ProDOS 8 retains its 32MB limitation, so compact discs are likely to be partitioned if they are intended to be used on an Apple IIe. ProDOS 16 is not limited to 32MB volume sizes.

Once a High Sierra driver is placed within the System Folder under ProDOS 16, the Apple IIGS will recognize a High Sierra disc as a storage device.

Because the Apple IIe doesn't support ProDOS 16, it can't take advantage of the Driver folder structure within the System Folder. Apple will supply interested developers with the High Sierra driver, which must then be incorporated into each application that supports High Sierra formatted discs on the Apple IIe.

The eject button on the AppleCD SC operates on all types of compact discs

used on an Apple II. As usual, if an application expects the volume to be on-line and the disc is ejected, ProDOS will ask the user to insert the disc.

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Tech Info Library Article Number:2594



Tech Info Library

AppleCD SC: General Description (Discontinued)

Revised: 6/1/94
Security: Everyone

AppleCD SC: General Description (Discontinued)

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This article last reviewed: 29 February 1988

The AppleCD SC is an audio-capable CD-ROM (Compact Disc - Read Only Media) device with Apple SCSI ports. This peripheral device, about the same size as an Apple SCSI hard disk drive, reads compact discs with up to 550 MB capacity.

Apple supports five formats for information on CDs:

- CD-Audio
- CD-ROM
- HFS
- ProDOS
- High Sierra

The AppleCD SC has a front-loading caddy for standard-size compact discs. The player accommodates stereo headphones or speakers through either the mini-phono jack in front or via the line level audio output ports in back of the device.

This compact disc player has second-generation CD hardware, which contains better error checking in firmware, a 64K RAM buffer, half-height size, better small-block handling capabilities, and better CD-Audio results than earlier CD-ROM players.

The AppleCD SC does a full-stroke seek and read in 500 milliseconds; its mode transfer rate is 154 KBytes per second. The hardware can recognize three compact disc data modes:

- mode 1 (with a 2048-byte data block size)
- mode 2 (with 2352-byte data blocks)
- audio

Since Apple systems request 512-byte data blocks, and our drivers interpret the data correctly in either case, the differences between mode 1 and mode 2 are indistinguishable to the user.

..TIL02595-AppleCD_SC-General_Description_Discontinued.pdf

The AppleCD SC can be used with both the Apple II and Macintosh families, using the appropriate supplied software drivers. It can also be used on an AppleShare File Server to provide network access to workstations.

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Tech Info Library Article Number:2595



Tech Info Library

AppleCD SC: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

AppleCD SC: Specifications (Discontinued)

Article Created: 1 March 1989
This article last reviewed: 25 January 1991

Physical Dimensions

depth	266 mm	(10.47 inches)
width	246 mm	(9.69 inches)
height	84 mm	(3.31 inches)
weight	4.0 kg	(8.8 lbs)

(the drive mechanism alone is 146 x 212 x 62mm)

Disc Specifications

recording surfaces	1
disc diameter	120 mm
disc center hole	15 mm
thickness	1.2 mm
track pitch	1.6 microns (15,875 tracks per inch)
scanning velocity	1.2 - 1.4 meters per second
rotation speed	Varies over radius, approximately 530 to 230 rpm
latency (average)	approximately 55 to 130 milliseconds
blocks per rotation	8.4 to 19.5 variable

Data Specifications

Data capacity	550 MB, mode 1 630 MB, mode 2
number of blocks/disc	270,000
data per block	2048 bytes, mode 1 2336 bytes, mode 2
address description	minutes, seconds, frames
playing time	1 hour

Data Streaming Rates

blocks per second	75 blocks per second
user bytes per second	153.6K, mode 1
	175.2K, mode 2
SCSI bus transfer rate	800K per second

Access Time

Average	Less than 600 milliseconds (500ms, typical)
Maximum (First to last block)	Less than 1.2 seconds (800ms, typical)

Modes Supported

CD-ROM modes 1 and 2
CD-Audio

Environmental

Noise (maximum)
Drive on (seek or non-seek) <46 dB(A)

Temperature

Operating Temperature	+10 degrees C to +40 degrees C
Storage (6 months)	-30 degrees C to +50 degrees C
Transit (72 hours)	-30 degrees C to +55 degrees C

Humidity Classified as Class 1 equipment

Power Requirements

AC Input (US and Canada) 120V AC +/- 10%, 58 to 62 Hz
AC Input (Universal) 100/120/200/220/240V AC +/- 10%, 48 to 62 Hz
The drive cannot be powered directly by a 12V power supply.

Power Consumption

Drive on 40 watts

Interface

SCSI expansion ports 50-pin connector

(NOTE: The AppleCD SC does not perform oversampling of the audio section.)

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Tech Info Library Article Number:2596



Tech Info Library

Three Compact Disc Formats Described

Revised: 3/30/94
Security: Everyone

Three Compact Disc Formats Described

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This article last reviewed: 22 October 1990

The AppleCD SC supports the following compact disc formats:

- the Red Book
- the Yellow Book
- High Sierra/ISO 9660
- HFS

Red Book

The first standard developed in the compact disc industry is known as the "Red Book" standard. It was proposed by Philips and Sony, and describes the CD hardware, form factors, and media specifications. Today, the Red Book is followed throughout the industry for CD-Audio. It also forms the basis for the Yellow Book and High Sierra standards discussed below.

The Red Book defines the way bit patterns are written to the compact disc, provides for synchronization bytes, and supports error correction within each "frame", or packet, of data. The overhead needed to accomplish this means that each frame, which represents 192 data bits (24 bytes), requires 588 channel bits on the compact disc.

The CD-Audio data correction algorithm is called the Cross Interleave Reed-Solomon Correction (CIRC) method and is intended to correct large runs of data that may be unreadable due to laser error or a defective or scratched disc. In this process, frames are interleaved and error checking is performed on the sum of this data. Error bursts of up to 450 data bytes in length can be corrected using this technique. CIRC recovery used on compact discs results in an observed error rate of less than one unrecoverable error in 2,000 discs.

CD-Audio reads digital sound samples at 44.1 KHz per second. With 16 bits per sample and two channels, the player reads 1,411,200 bits per second. Compact discs are capable of storing up to 75 minutes of sound per disc,

although 60 minutes is commonly quoted as CD-Audio's capacity.

Yellow Book

Philips and Sony also collaborated on the Yellow Book standard, which defines CD-ROM data addressing, and supplies a richer error detection and correction algorithm than is found on CD-Audio.

CD-ROM data is organized into blocks with 98 24-byte frames in each. Of the 2352 data bytes in each block, 2048 bytes, or 2 Kbytes, is user data. The compact disc player reads 75 blocks each second. At 75 minutes of playing time (the same as CD-Audio), the CD-ROM can hold 660 Mbytes of data. However, 60 minutes is generally used as the standard capacity, which equates to 550 Mbytes of CD-ROM data per disc.

Additional error detection and error correction (EDC/ECC) defined by the Yellow Book provide extra accuracy on CD-ROM discs. Each 2K data block is accompanied by 276 bytes used in a second layer of CIRC. Together with the Red Book's first layer of error correction, the algorithms result in an undetectable error rate of only 1 bit in 2 quadrillion discs.

High Sierra

In 1986, Apple was one of a number of interested parties that gathered at the High Sierra hotel, near Lake Tahoe, to come to a agreement on CD-ROM file formats. The result was a proposal, known as the High Sierra standard, which defines a hierarchical file system to be used on a CD-ROM.

The High Sierra file system is written with compact disc characteristics in mind. For example, it does not include instructions to delete or write to files, since compact discs are read-only media. High Sierra also addresses the relatively slow seek time of the compact disc by specifying a path table on each volume. When a host computer requests a file from a High Sierra CD, a single seek will give the location of the disc's file, no matter how deeply it may be buried in nested folders. This directory may also be cached within the CPU, so that the host computer can immediately request the compact disc player to move to the file on the CD.

High Sierra is system-independent, so that a disk (pressed with information conforming to High Sierra) could be conveniently read on Apple II, Macintosh, IBM PC, and other computers. All essential file data is written in palindrome format -- data is written twice: once as "high byte, low byte", and again as "low byte, high byte".

High Sierra discs are limited to no more than eight levels of "folders", and file names of no more than 31 characters.

NOTE: Prior to being adopted by the ISO Committee, ISO 9660 was know as High Sierra. Although some minor changes were made to High Sierra during the ISO standardizing process, Apple's driver will enable you to read CD-ROM discs pressed in either format. The two format names are often used interchangeably.

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Tech Info Library

CD-ROM: Glossary of Terms

Revised: 3/1/88
Security: Everyone

CD-ROM: Glossary of Terms

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This article last reviewed: 29 February 1988

CD-Audio

Industry standard for compact disc player hardware, compact disc media, and level 1 error correction and detection. Also known as the Red Book. Supported by AppleCD SC.

CD-I (Compact Disc - Interactive)

Proposal that includes a compact disc file structure definition. Also known as the Green Book.

CD-ROM (Compact Disc - Read-Only Media)

Defines data storage and error detection and correction on compact disk. Also known as the Yellow Book. Supported by AppleCD SC.

CD-V (Compact Disc - Video)

Definition for full-motion video on NTSC. Supports 200MB of CD-ROM information and five minutes of full-motion video in Laserdisk format.

CLV (Constant Linear Velocity)

Used on storage devices (among them compact discs) to maintain one speed at which data passes by the head. Requires varying rotation speeds as the radius of the track changes.

CVD (Compact Video Disc)

Full-motion video definition from SOCS Research.

DVI (Digital Video Interface)

..TIL02599-CD-ROM-Glossary_of_Terms.pdf

Definition for a full hour of video on compact disc at 30 frames per second.
Supports CD-ROM.

Green Book

See CD-I.

High Sierra

Hierarchical file structure definition for CD-ROM. System-independent.
Supported by AppleCD SC.

Land

Flat area on inner surface of compact disc. Reflects laser light back to
sensor. Represents data value "1".

Laser (Light Amplification by Stimulated Emission of Radiation)

Produces coherent light by exciting molecules of pure chemical substance.

Mastering

The process of creating the "golden" disc, which is then used to create
copies for use in compact disc manufacture.

Optical media

Any data storage device that operates using light to retrieve and/or write
data to storage medium. Typically uses laser to produce light. Compact disc
is one type of optical media.

Pit

"Bump" on inner surface of compact disc. Scatters laser light. Represents
data value "0".

Premastering

The process of adding error detection and correction bytes to user data.
Done prior to mastering disc.

Red Book

See CD-Audio.

WORM (Write Once - Read Many)

Removable optical media which accept new data only once. Data can be read
many times. Not compatible with compact discs.

Yellow Book

See CD-ROM.

Tech Info Library Article Number:2599



Tech Info Library

Apple II Workstation Card: Product Information (2/97)

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Security: Everyone

Apple II Workstation Card: Product Information (2/97)

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Article Created: 01 March 1988
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes the Apple II Workstation Card.

DISCUSSION -----

The Apple II Workstation Card provides an AppleTalk interface for the enhanced Apple IIe computer. It makes the Apple IIe an AppleTalk node on a LocalTalk network.

Hardware

The card has its own 65C02 processor, ROM, RAM, and a custom PAL chip. The card attaches to a connector module housing two Mini-8 serial ports. One of these ports supports AppleTalk, the other emulates a Super Serial Card.

The card can be installed in any Apple IIe slot except for slot 3 (the additional 64K of RAM on the Extended 80-Column card is assigned to slot 3, making it unavailable). Slot 7 is the usual choice for the Workstation Card.

The red and green LEDs indicate only that the card has passed an internal diagnostic, and do not indicate that the network interface is active.

The upper Mini-8 connector (PORT A) supports either the AppleTalk interface or a Super Serial interface. The lower Mini-8 connector (PORT B) supports only the serial interface.

Software

The Apple IIe Workstation Card contains AppleTalk code in ROM, code to allow printing over the network, printing at the workstation, and starting up over the network. The Apple IIe Workstation Card can start up either from a local disk, or remotely over the network from a startup server running on a file server.

Local Startup

When the workstation starts up from a local device, the card makes itself look like a Super Serial Card, with special ID bytes to indicate that it is actually an Apple II Workstation Card.

Network Startup

The card emulates a Disk II drive on power up to enable network startup, and, if in the highest number slot (normal practice) downloads the operating system from a network startup server, if available.

In addition, either of these other two methods can be used to start up over a network:

- Use the PR# command specifying the card's slot and hold down the Open Apple key while pressing Return. (Issuing the PR# command and pressing Return without pressing the Open Apple key causes printing to take place.)
- Using a BOOT call also causes the startup process to take place.

Printing Over the Network

The printing task begins when you issue a PR# command from the workstation. The application program sends print data out through the SSC entry points as defined by the PR# command. The card captures the stream of characters to be printed, because it appears to be a normal Super Serial Card in a slot and sends it to the selected printer or spooler.

Only ProDOS applications are supported on the network using the card. An important feature of the card is that it does not require the use of main memory, because most applications use all or almost all of Apple IIe memory (including "reserved" areas).

Article Change History:

28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:2600



Tech Info Library

Aristotle: Apple II Menu Management Software

Revised: 5/31/89
Security: Everyone

Aristotle: Apple II Menu Management Software

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This article last reviewed: 29 February 1988

Overview

Aristotle is Apple's Apple II menu manager, a user software interface. Aristotle was designed primarily for the classroom, but you can put it to work in any school, administrative, or business area. With Aristotle, users simply select from a menu, where without it they had to type complex path and prefix sequences.

With Aristotle, the network or workstation manager can control and simplify the user interface by setting up a menu of selectable applications for each student, class, and teacher. The individual can use the network server with all the network access, control, and storage needs, while enjoying the simple user interface.

Installation

Aristotle Menu Manager software is installed on an AppleShare File Server v2.0. Aristotle's software comprises the Teacher (Menu Manager) and the Student (Menu User).

The Menu Manager (or Teacher) is used only to set up the student menu selections. The AppleShare Network Administrator and the Aristotle Menu Manager (they can be the same person) work together to create specific user menus.

With Apple II Utilities, the Aristotle software is loaded from a 3.5" disk drive on a workstation (any server workstation will do) into an AppleShare File Server v2.0.

Hardware Requirements

For an Apple IIe to be a Menu Manager workstation, it must have:

- an Apple II mouse and mouse interface card
- Apple II Memory Expansion card with 256K
- the Apple II workstation card.

An Apple IIGS system can act as a Manager if the IIGS software is present in the server, and the IIGS has at least 1MB on the Apple IIGS Memory Card, to provide the needed storage area for the overlays. It is recommended that the application already be loaded into the server, so that the manager can actually see the specific path name.

Using Aristotle

After logging on, a student

1. sees a list of the teachers who have selected that student to be in any of their menus,
2. chooses a teacher,
3. see the class list (again, specific menu selections) for that teacher,
4. selects a class, and
5. chooses an application, which launches it.

Once the application is launched, quitting it returns the student to the Application menu, allowing selection of another (or the same) application.

There is no escape from the loop, and students don't have to memorize (or refer to) any ProDOS path or prefix for anything other than their own files.

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Tech Info Library Article Number:2601



Tech Info Library

Apple II: Turn Off Line Feed When Using 3rd Party Printers

Revised: 5/31/89
Security: Everyone

Apple II: Turn Off Line Feed When Using 3rd Party Printers

=====

This article last reviewed: 19 February 1988

Third party dot matrix impact printers need to receive a Carriage Return within a control code in order to set print densities to certain values.

Unfortunately, when a CR is sent from an Apple IIc or a Super Serial Card, the interface automatically sends a Line Feed as well. Temporarily turning off the interface's automatic LF can be done with a Control-I K. To turn automatic LF back on, use Control-I L.

The problem is, these characters may be ignored by the interface and sent to the printer instead.

There are other ways of getting back to default conditions on a printer, such as sending a 'RESET' code, or turning off/turning on the printer. The problem with this is that some printers take a long time resetting. This can be noisy and sometimes very time consuming, especially if done often.

Here is why this happens (and a solution):

The Super Serial Card (and its Apple IIc serial port equivalent) will forward control characters if preceded by a Control-I. While it's true that Control-I is the command to send to set up specific functions, in order to send the command to the card without it forwarding said command to the printer, you must send the command preceded by TWO Control-I's.

- The first Control-I alerts the card that a command it needs to operate on is forthcoming.
- The second Control-I is used by the card, along with its attendant characters, as the command string, to change interface functions.

If what follows the first Control-I is not a control character, the card (firmware) forwards the next characters to the printer.

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Tech Info Library Article Number:2603



Tech Info Library

TIFF (Tag Image File Format): Specifications (7 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (7 of 7)

=====

This article last reviewed: 12 February 1988

6. Examples

A binary image from a paint program might contain only SubfileType, ImageWidth, ImageLength, StripOffsets, and PhotometricInterpretation fields.

A typical line art scan might require that XResolution and YResolution be added to the above list.

7. Private Fields

An organization may wish to store with the image file information that is meaningful only to that organization. Tags numbered 32768 or higher are reserved for that purpose. Upon request, the administrator will allocate and register a block of private tags for an organization, to avoid possible conflicts with other organizations.

Private enumerated values can be accommodated in a similar fashion. Enumeration constants numbered 32768 or higher are reserved for private usage. Upon request, the administrator will allocate and register a block of enumerated values for a particular field, to avoid possible conflicts.

Tags and values which are allocated in the private number range are not prohibited from being included in a future revision of this specification. Several such instances can be found in this revision.

8. A List of Possible Future Enhancements

In the future TIFF will very likely be expanded to support more compression schemes, more photometric schemes, color lookup tables, and non-rectangular images. Please refer all questions regarding enhancements to TIFF to the contacts listed at the beginning of the document. Written submissions should be in Microsoft Windows Write format, to ensure timely and error-free

incorporation into the specification.

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Tech Info Library Article Number:2643



Tech Info Library

LaserWriter: Possible Causes of Curved/Skewed Straight Lines

Revised: 3/11/88
Security: Everyone

LaserWriter: Possible Causes of Curved/Skewed "Straight" Lines

=====

This article last reviewed: 15 February 1988

If a line drawn as a straight vertical lines on the Macintosh's screen is not a perfectly vertical line when printed on a LaserWriter, it may be due to:

- the type of paper stock being used
- a problem with the paper feed assembly
- a faulty laser scanner unit

If the line is straight but not perfectly vertical when printed, it may be due to the skew adjustment.

Tech Info Library Article Number:2644



Tech Info Library

HyperCard: How To Install Desk Accessories In Stacks

Revised: 6/16/92
Security: Everyone

HyperCard: How To Install Desk Accessories In Stacks

=====

Article Created: 14 March 1988
Article Last Reviewed: 27 May 1992
Article Last Updated: 27 May 1992

Note: The following information applies only to system software versions earlier than 7.0. Under System 7, the Font/DA Mover is no longer used, and desk accessories are opened just like regular applications.

TOPIC -----

I received a desk accessory (DA) that needs to be installed directly into a HyperCard stack. How can I do this?

DISCUSSION -----

Developers sometimes ship a desk accessory for use specifically with their software products, so that the DA is available in the Apple menu only while running their products. It's possible, for example, to install desk accessories into HyperCard. While in Font/DA Mover, hold down the Option key while clicking the Open button. This will allow you to select and open HyperCard. Copy the DA normally once the program is open in one of Font/DA Mover's windows. The DA is now installed in HyperCard's resource fork, and it will show up in the Apple menu whenever HyperCard is running.

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Tech Info Library Article Number:2655



Tech Info Library

HyperCard:How It Launches & Quits Applications Under MultiFinder

Revised: 4/6/92
Security: Everyone

HyperCard:How It Launches & Quits Applications Under MultiFinder

=====

Article Created: 22 March 1988
Article Last Reviewed: 6 April 1992
Article Last Updated: 6 April 1992

TOPIC -----

The following discusses the method in which HyperCard 1.2 launches and quits applications when running under MultiFinder.

DISCUSSION -----

Under the Finder, when you launch an application from HyperCard then quit that application, the "resume" system message is sent and you return to HyperCard instead of to the Finder.

MultiFinder, on the other hand, patches the "launch" ROM call and handles it before HyperCard is passed the launch information. And HyperCard is not informed when you quit from the application. Consequently, you don't always return to HyperCard when you quit from the application that was launched from HyperCard.

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Tech Info Library Article Number:2656



Tech Info Library

MS BASIC Interpreter 2.1: Problem With Macintosh Plus Sound

Revised: 3/22/88
Security: Everyone

MS BASIC Interpreter 2.1: Problem With Macintosh Plus Sound

=====

This article last reviewed: 15 February 1988

The Microsoft BASIC Interpreter version 2.1 has problems with the Macintosh Plus sound routines. The solution is to upgrade to the Microsoft BASIC Interpreter version 3.0.

Tech Info Library Article Number:2657



Tech Info Library

MultiFinder: How To Set The Launch Order Of Applications

Revised: 8/9/91
Security: Everyone

MultiFinder: How To Set The Launch Order Of Applications

=====

Article Created: 15 February 1988
Article Last Reviewed: 9 August 1991
Article Last Updated: 9 August 1991

TOPIC -----

I don't understand how MultiFinder determines the order for launching applications. I open them in the order I prefer and use Set Startup. However, they still open in random order.

DISCUSSION -----

When using 6.0.x, the order in which you open applications before using Set Startup doesn't determine launch order at startup. Study these three steps:

- 1) Open three applications in the order A-B-C.
- 2) Choose Set Startup and select Opened Applications and DAs.
- 3) Restart the system.

If you were to do this, MultiFinder may open the applications in B-C-A order, or in any other sequence.

The order the applications launch is by most-recently-modified application first, next-most-recently-modified application second, and so on. There's a way to ensure that applications open in a particular order.

- 1) Open all applications you want launched at startup.
- 2) From the Apple Menu, choose the application you want to open last.
- 3) Make some kind of change within the application: type some text or draw some graphics.

- 4) From the Apple Menu, select the application you want to open next to last.
- 5) Make some kind of change within this application.
- 6) Repeat steps 3 through 5 for each application.
- 7) Choose Set Startup and select Opened Applications and DAs.

As an example, open MacWrite, MacPaint, and Excel. Excel works best when launched first; MacWrite and MacPaint don't care. So, to make Excel launch first, MacPaint second, and MacWrite third.

- 1) From the Apple menu, choose MacWrite; type some text and press Return a few times.
- 2) From the Apple Menu, choose MacPaint; draw a circle or a box.
- 3) From the Apple menu, choose Excel; type some numbers and press Return a few times.
- 4) From the Apple menu, choose the Finder.
- 5) Choose Set Startup and select Open Applications and DAs.
- 6) Restart your system. Excel should open first, MacPaint second, and MacWrite third.

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Tech Info Library Article Number:2659



Tech Info Library

TIFF (Tag Image File Format): Specifications (1 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (1 of 7)

=====

This article last reviewed: 12 February 1988

This series of seven articles (prepared jointly by Aldus and Microsoft)
has eight parts:

article 1 of 7:	Introduction
	Revision Notes
	Abstract
article 2 of 7:	1. Conformance
	2. Structure
	3. Header and Directory
article 3 of 7:	4. Definitions
	5. The Fields
article 4 of 7:	The Fields, continued
article 5 of 7:	The Fields, continued
article 6 of 7:	The Fields, concluded
article 7 of 7:	6. Examples
	7. Private Fields
	8. List of Possible Future Enhancements

Introduction

This memorandum has been prepared jointly by Aldus and Microsoft in conjunction with leading scanner and printer manufacturers. This document does not represent a commitment on the part of either Microsoft or Aldus to provide support for this file format in any application. When responding to specific issues raised in this memo, or when requesting additional tag or field assignments, please address your correspondence to either:

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Revision Notes

This release of the TIFF specification has been given a Revision number. It is really the fourth major revision, so the Revision number was set to 4.0.

Abstract

This document describes TIFF, a tag based file format that is designed to promote the interchange of digital image data.

The fields were defined primarily with desktop publishing and related applications in mind, although it is conceivable that other sorts of imaging applications may find TIFF to be useful.

The general scenario for which TIFF was invented assumes that applications software for scanning or painting creates a TIFF file, which can then be read and incorporated into a "document" or "publication" by an application such as a desktop publishing package.

The intent of TIFF is to organize and codify existing practice with respect to the definition and usage of "desktop" digital data, not to blaze new paths or promote unproven techniques. Yet a very high priority has been given to structuring the data in such a way as to minimize the pain of future additions. TIFF was designed to be a very extensible interchange format.

TIFF is not a printer language or page description language, nor is it intended to be a general document interchange standard. It may be useful as is for some image editing applications, but is probably inappropriate for -- and would thus need to be translated into some intermediate data structures by -- other image editing applications. The primary design goal was to provide a rich environment within which the exchange of image data between application programs can be accomplished. This richness is required in order to take advantage of the varying capabilities of scanners and similar devices. TIFF is therefore designed to be a superset of existing image file formats for "desktop" scanners (and paint programs and anything else that produces images with pixels in them) and will be enhanced on a continuing basis as new capabilities arise.

Although TIFF is claimed to be in some sense a rich format, it can easily be used for simple scanners and applications as well, since the application developer need only be concerned with the capabilities that he requires. The mechanisms for accomplishing this goal are discussed in the next section.

TIFF is intended to be independent of specific operating systems, filing systems, compilers, and processors. The only significant assumption is that the storage medium supports something like a "file," defined as a sequence of 8-bit bytes, where the bytes are numbered from 0 to N. The largest possible TIFF file is 2**32 bytes. Since pointers (byte offsets) are used liberally, a TIFF file is most easily read from a random access device,

although it is possible to read and write TIFF files on sequential media such as magnetic tape.

The recommended MS-DOS file extension for TIFF files is ".TIF". The recommended Macintosh filetype is "TIFF". Conventions in other computing environments have not yet been established.

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Tech Info Library Article Number:2660



Tech Info Library

Parity Checking: Why Apple Doesn't Use It

Revised: 6/17/92
Security: Everyone

Parity Checking: Why Apple Doesn't Use It

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Article Created:
Article Last Reviewed: 1 June 1992
Article Last Updated: 1 June 1992

Background: Why Parity Checking Came About

Parity checking first became an issue when computer manufacturers started using early DRAM (Dynamic Random Access Memory) technologies. These chips were quite unreliable, and since they were relatively small (1KB - 4KB), vendors had to use a large number of them (increasing the odds of failure) to produce a system with a useful amount of memory. In that environment, parity checking ensured that if a soft error (one that can't be reproduced) occurred, a user would not be able to save potentially corrupted data back to disk.

Apple's Approach: Increased DRAM Reliability

Apple took a different approach and worked with its chip vendors to increase DRAM reliability. The result has been that each new generation of DRAMs seems to be twice as reliable as the previous generation. The mean time between soft errors doubles, even though the chip capacity quadruples. Thus, for a given amount of memory, each new generation of DRAMs has eight times the reliability of its predecessor.

As a practical matter, the reliability of current computer technology is not gated by the reliability of the hardware: system and application software fail (and corrupt data) several orders of magnitude more often than the hardware on which they run. There are also several good engineering reasons why Apple doesn't use parity checking:

- Cost. In addition to requiring more RAM, additional circuitry must be added to the logic board to detect parity errors.
- No Significant Reliability Improvement. The 256K DRAMs we currently use typically experience soft errors every 1,000,000 hours per device, or once every 3.5 years for a 1MB Macintosh system.

- No Real Protection. How a system reacts to a parity error is at least as important as checking for one in the first place. Most MS-DOS PCs react poorly and crash the system when they detect a parity error, threatening both the user's files and file system.

Apple is not alone in these conclusions. While early versions of IBM's 360 series of mainframes used parity checking, more recent versions have moved towards "error correcting code" to maintain system integrity.

System Reliability and System Performance

The Macintosh already checks its memory for hard failures as a part of the startup sequence. Apple could also adopt an error correction scheme similar to that used in most of today's mainframes, and totally protect the user against single bit soft errors. Essentially, this approach adds three bits to each byte so that the system can detect an error and correct it. This approach is expensive, and would require substantial changes to both our operating system and hardware.

More important, both parity checking and error correction code would impact the overall performance of future Macintosh systems. In essence, both these schemes require that the hardware detect a soft error in less time than it takes the microprocessor to execute an instruction. As Apple moves to faster microprocessors, less time is available for the hardware to test all of the memory during each instruction cycle. Given the choice between investing in faster, more reliable DRAM technology (and hence, faster systems) or investing in a parity checking algorithm that constrains system performance, most users would prefer the former. For customers who require parity checking, Apple does offer a model of the Macintosh IIci with parity checking.

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Tech Info Library Article Number:2661



Tech Info Library

Macintosh II: How to Sample Stereo Sound

Revised: 7/2/92
Security: Everyone

Macintosh II: How to Sample Stereo Sound

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Article Created: 16 February 1988
Article Last Reviewed: 29 June 1992
Article Last Updated:

TOPIC -----

How do I sample stereo sound with my Macintosh II?

DISCUSSION -----

The Farallon MacRecorder sound sampler allows you to sample stereo sounds on the Macintosh II.

Use the MacRecorder to record the left channel, then separately record the right channel. To record both channels simultaneously, connect two MacRecorders.

MacRecorder comes with a program called SoundEdit that allows for sound mixing, special effects (echo, flanger, noise, etc.), editing sampled sounds, and more.

Note: the Macintosh II internal speaker plays only the left channel -- to hear stereo sound, you must add external speakers.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:2663



Tech Info Library

Macintosh: How NFNT Format Differs From FONT Format

Revised: 11/5/91
Security: Everyone

Macintosh: How NFNT Format Differs From FONT Format

=====

Article Created: 22 March 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 5 November 1991

TOPIC -----

DISCUSSION -----

Macintosh fonts are stored as resources, either as type FONT or type NFNT. The two font types have the same format. NFNT (New FoNT) is new to the 128K ROM version of the Font Manager (64K ROMs ignore resources of type NFNT).

NFNT allows for many more fonts.

An NFNT resource type can also be used to mask all but plain fonts from appearing in a font menu. In this way, the system resource file can contain Times, Times Italic, Times Bold, and Times Bold Italic, yet only Times appears in the Font menu. (The user would need to choose Italic from the Style menu.)

For more information, see the Font Manager chapter of Inside Macintosh, Volume V.

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Tech Info Library Article Number:2664



Tech Info Library

TIFF (Tag Image File Format): Specifications (2 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (2 of 7)

=====

This article last reviewed: 12 February 1988

1. Conformance

Many of the application programs that read the contents of TIFF image files will not support all of the features described in this document. In some cases, little more than the default options will be supported. It is up to each organization to determine the costs and benefits associated with different levels of conformity. Therefore, claims of conformity to this specification should be interpreted with a certain amount of caution.

It follows that the usage of this specification does not preclude the need for coordination between image file writers and image file readers. It is up to the application designer that initially writes a file in this format to verify that the desired file options are supported by the applications that will read the file.

2. Structure

In TIFF, individual fields are identified with a unique tag. This allows particular fields to be present or absent from the file as required by the application.

Some TIFF files will have only a few fields in them; others will have many. Software that creates TIFF files should write out as many fields as it believes will be meaningful and useful (and no more). Software that reads TIFF files should do the best it can with the fields that it finds there.

There are many ways in which a tag-oriented file format scheme can be implemented. TIFF uses the following approach:

There are three main parts to a TIFF file. First is a short image file header. Next is a directory of all the fields that are to be found in this file. Finally, we have the data for the fields.

3. Header and Directory

A TIFF file begins with a small amount of positionally defined data, containing the following information:

Bytes 0-1:

The first word of the file serves to specify the byte order used within the file. The currently defined values are:

"II" (hex 4949)

"MM" (hex 4D4D)

In the "II" format, byte order is always from least significant to most significant, for both 16-bit and 32-bit integers.

In the "MM" format, byte order is always from most significant to least significant, for both 16-bit and 32-bit integers.

In both formats, character strings are stored into sequential byte locations.

It is certainly not required that all applications software be able to handle both formats. It should be apparent which is the native format for a particular machine.

Bytes 2-3:

The second word of the file is the TIFF version number. This number shouldn't change. This document describes Version 42, so 42 (2A in hex) should be stored in this word.

Bytes 4-7:

This long word contains the offset (in bytes) of the first Image File Directory. The directory may be at any location in the file after the header but must begin on a word boundary.

(The term "byte offset" is always used in this document to refer to a location with respect to the beginning of the file. The first byte of the file has an offset of 0.)

An IFD consists of a 2-byte count of the number of entries (i.e., the number of fields), followed by a sequence of 12-byte field entries, followed by a 4-byte offset of the next Image File Directory (or 0 if none). Each 12-byte field entry has the following format:

Bytes 0-1 contain the Tag for the field. Bytes 2-3 contain the field Type. Bytes 4-7 contain the Length ("Count" might have been a better term) of the field. Bytes 8-11 contain the file offset (in bytes) of the Value for the field. The Value is expected to begin on a word boundary; the corresponding file offset will thus be an even number.

The entries in an IFD must be sorted in ascending order by Tag. Note that this is not the order in which the fields are described in this document. The Values to which directory entries point need not be in any particular order in the file.

If the Value fits within 4 bytes, the Offset is interpreted to contain the Value instead of pointing to the Value, to save a little time and space. If the Value is less than 4 bytes, it is left-justified. Whether or not it fits within 4 bytes can be determined by looking at the Type and Length of the field.

The Length part is specified in terms of the data type. A single 16-bit word (SHORT) has a Length of 1, not 2, for example. The data types and their lengths are described below:

- 1 = BYTE. 8-bit unsigned integer.
- 2 = ASCII. 8-bit bytes that store ASCII codes; the last byte must be null.
- 3 = SHORT. A 16-bit (2-byte) unsigned integer.
- 4 = LONG. A 32-bit (4-byte) unsigned integer.
- 5 = RATIONAL. Two LONGs: the first represents the numerator of a fraction, the second the denominator.

The value of the Length part of an ASCII field entry includes the null. If padding is necessary, the Length does not include the pad byte.

The reader should check the type to ensure that it is what he expects. TIFF currently allows more than 1 valid type for a given field. For example, ImageWidth and ImageLength were specified as having type SHORT. Very large images with more than 64k rows or columns are possible with some devices even now. Rather than add parallel LONG tags for these fields, it is cleaner to allow both SHORT and LONG for ImageWidth and similar fields. Writers of TIFF files are, however, encouraged to use the default type values as indicated in this document to insure compatibility with existing TIFF reader applications.

Note that there may be more than one IFD. Each IFD is said to define a "subfile." One potential use of subsequent subfiles is to describe a "sub-image" that is somehow related to the main image, such as a reduced resolution or "screen resolution" image. Another use is to represent multiple "page" images -- for example, a facsimile document requiring more than one page. Subsequent IFDs will in general contain many of the same fields as the first IFD but will usually point to or contain different values for those fields.

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Tech Info Library Article Number:2665



Tech Info Library

TIFF (Tag Image File Format): Specifications (3 of 7)

Revised: 3/22/88
Security: Everyone

TIFF (Tag Image File Format): Specifications (3 of 7)

=====

This article last reviewed: 12 February 1988

4. Definitions

The TIFF structure itself is not specific to imaging applications in any way. It is only the definitions of the fields themselves that jointly describe an image. Before we begin describing the fields, a few image related definitions may be useful.

An image is defined to be a rectangular array of "pixels," each of which consists of one or more "samples." With monochromatic data, we have one sample per pixel, and "sample" and "pixel" can be used interchangeably. Color data usually contains three samples per pixel, as in, for example, an RGB scheme.

5. The Fields

The following fields are defined in this version of TIFF. More will be added in future versions, if possible in such a way so as not to break old software that encounters a newer TIFF file. An attempt has been made to group related fields, although the grouping is necessarily somewhat arbitrary.

The documentation for each field contains the name of the field (quite arbitrary, but convenient), the Tag value, the field Type, the Number of Values (N) expected (per IFD, in the case of multiple subfiles), comments describing the field, and the default, if any. The default value is used if the field does not exist.

A fairly large number of fields has already been defined, and the number will grow. Please keep in mind that many common images can be described using only a handful of these fields (see the Examples section).

General Description

SubfileType
Tag = 255 (FF)
Type = SHORT
N = 1

A general indication of the kind of data that is contained in this subfile. Currently defined values are:

- 1 = full resolution image data - ImageWidth, ImageLength, and StripOffsets are required fields.
- 2 = reduced resolution image data - ImageWidth, ImageLength, and StripOffsets are required fields. It is further assumed that a reduced resolution image is a reduced version of the entire extent of the corresponding full resolution data.
- 3 = Single page of a multi-page image (see the PageNumber tag description).

If your kind of image data doesn't fit nicely into either description, contact either Aldus or Microsoft to define an additional value. Note that both image types can be found in a single TIFF file, with each subfile described by its own IFD.
No default.

Data Architecture

ImageWidth
Tag = 256 (100)
Type = SHORT
N = 1

The image's width, in pixels (X: horizontal). The number of columns in the image.
No default.

ImageLength
Tag = 257 (101)
Type = SHORT
N = 1

The image's length (height) in pixels (Y: vertical). The number of rows (sometimes described as "scan lines") in the image. ImageLength and ImageWidth refer only to how the pixels are stored in the file and do not imply anything about where the visual "top" or "left side" of the image may be. See Orientation for this information.
No default.

RowsPerStrip
Tag = 278 (116)
Type = SHORT or LONG
N = 1

The number of rows per strip. The image data is organized into strips for fast access to individual rows when the data is compressed (though this field is valid even if the data is not compressed).

Note that either SHORT or LONG values can be used to specify RowsPerStrip. SHORT values may be used for small TIFF files. It should be noted, however, that earlier TIFF specifications required LONG values and that some software may not expect SHORT values.

Default is $2^{32} - 1$, which is effectively infinity. That is, the entire image is one strip.

[StripsPerImage]

N = 1

The number of strips per image. This value is not a field, since it can be computed from two other fields, but it is convenient to give it a name in order to clarify the use of other fields. The equation to use is $\text{StripsPerImage} = (\text{ImageLength} + \text{RowsPerStrip} - 1) / \text{RowsPerStrip}$, assuming integer arithmetic.

StripOffsets

Tag = 273 (111)

Type = SHORT or LONG

N = StripsPerImage for PlanarConfiguration equal to 1.

= SamplesPerPixel * StripsPerImage for PlanarConfiguration equal to 2

For each strip, the byte offset of that strip. The offset is specified with respect to the beginning of the TIFF file. Note that this implies that each strip has a location independent of the locations of other strips. This feature may be useful for certain editing applications. This field is the only way for a reader to find the image data, and hence must exist.

Note that either SHORT or LONG values can be used to specify the strip offsets. SHORT values may be used for small TIFF files. It should be noted, however, that earlier TIFF specifications required LONG strip offsets and that some software may not expect SHORT values.
No default.

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Tech Info Library Article Number:2666



Tech Info Library

Apple IIGS Memory Expansion Cards: RAM Chip Specs & Vendors

Revised: 2/10/93
Security: Everyone

Apple IIGS Memory Expansion Cards: RAM Chip Specs & Vendors

Article Created: 22 March 1988

Article Change History

02/09/93 - UPDATED
 • Micron Technology acquired by Xceed Technologies.
04/20/88 - REVIEWED
 • Reviewed for accuracy.

The RAM chips on the memory expansion card for the Apple IIGS must be 150ns chips of 256K bits organized in 256K by 1 bit; they also must have CAS (Column Address Strobe) before RAS (Row Address Strobe) refresh.

Unless the RAM chips on the expansion board conform to these specifications, the Apple IIGS will have intermittent errors. These errors can take the form of system crashes, lock ups, memory errors, etc.

The only memory chips RECOMMENDED for use on memory expansion cards for the Apple IIGS are Apple part #334-0021. The following are among the vendors that manufacture RAM that is COMPATIBLE with the Apple IIGSS.

- Fujitsu America, Inc.	MB81256-15P
- NEC Microcomputers, Inc.	UPD41256C-15
- Texas Instruments	TMS4256-15NL
- Mitsubishi Electronics	M5M4256AP-15
- Hitachi	HM50256P-15
- OKI Semiconductor	M41256-15
- Xceed Technologies	MT1259-15
- Samsung	KM41256AP-15
- Motorola	MCM6256BP-15
- Toshiba America	TMM41256P-15

NOTE: This list is not complete and is intended for reference only.

To locate a vendor's address and phone numbers, use the vendor name as a search

string.

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Tech Info Library Article Number:2668



Tech Info Library

IBM PC/AT Serial Connector: DB-25 Equivalent Pinouts

Revised: 6/17/92
Security: Everyone

IBM PC/AT Serial Connector: DB-25 Equivalent Pinouts

Article Created: 16 February 1988
Article Last Reviewed: 9 June 1992
Article Last Updated:

TOPIC -----

Can you give me the RS-232 (DB-25) equivalent pinouts for the IBM PC/AT (DB-9) serial connector?

DISCUSSION -----

Here are the RS-232 (DB-25) equivalent pinouts for the IBM PC/AT (DB-9) serial connector:

IBM PC/AT DB-9 -----	DB-25 (DTE) equivalent -----	
1	8	(CD)
2	3	(RXD)
3	2	(TXD)
4	20	(DTR)
5	7	(SG)
6	6	(DSR)
7	4	(RTS)
8	5	(CTS)
9	22	(RI)

Reference

RS-232 Signal (DB-25)

- 1 - Sig Gnd: Normally Shield or Chassis Ground
- 2 - TXD: Transmit Data
- 3 - RXD: Receive Data

4 - RTS: Request to Send
5 - CTS: Clear to Send
6 - DSR: Data Set Ready
7 - GND: SIGNAL Ground
8 - DCD: Data Carrier Detect
20 - DTR: Data Terminal Ready
22 - RI: Ring Indicate

Copyright, 1991 Apple Computer, Inc.

Tech Info Library Article Number:2670



Tech Info Library

Null Modem and Modem Eliminator: Pinouts

Revised: 3/22/88
Security: Everyone

Null Modem and Modem Eliminator: Pinouts

=====

This article last reviewed: 16 February 1988

Here are pinouts for Null Modem, Modem Eliminator, and Null Modem With Handshake using DB-25 signal pinouts:

Null Modem			Modem Eliminator			Null Modem w/handshake		
from		to	from		to	from		to
1	-	1	1	-	1	1	-	1
2	-	3	2	-	3	2	-	3
3	-	2	3	-	2	3	-	2
4,5	-	8	7	-	7	4	-	5
6	-	20	4,5	-	NC	5	-	4
7	-	7	6,8,20	-	NC	6	-	8,20
20	-	6				7	-	7
8	-	4,5				8,20	-	6

Reference:

RS232 Signal

1 - Sig Gnd	- Normally Shield or Chassis Ground
2 - TXD	- Transmit Data
3 - RXD	- Receive Data
4 - RTS	- Request to Send
5 - CTS	- Clear to Send
6 - DSR	- Data Set Ready
7 - GND	- SIGNAL Ground
8 - DCD	- Data Carrier Detect
20 - DTR	- Data Terminal Ready

Note: Ring Indicate (RI) is not used or needed in computer-to-computer (DTE to DTE) direct connect configurations.



Tech Info Library

HyperCard Handles: Q and A

Revised: 6/24/90
Security: Everyone

HyperCard Handles: Q and A

=====

This article last reviewed: 17 February 1988

Q. When in my XFCN, I'm given a handle to the parameter string. Is the handle locked? Should I lock it if I de-reference it? Is it OK to unlock it? Can I operate on the string in memory and just pass back the handle that was given to me?

A. Never assume a handle to be in a certain state -- locked, unlocked, purgable, unpurgable, etc. If you wish to ensure the handle is in a known state, call HGetState to retrieve the current state of the handle. The HLock and HUnlock procedures allow you to set the flag as you like.

At the end of your routine, reset the flag as it was, by passing back the original flag.

This technique should be used if you wish to modify the state bits of any handle not created by your program.

Q. How do I treat a handle that really belongs to another process?

A. If a handle belongs to another process, don't call HUnlock if locked, or HPurge if unpurgable flag is set -- HyperCard has set those flags that way for a reason, and they shouldn't be tampered with.

Q. When I set the return handle, does HyperCard dispose of it for me?

A. HyperCard disposes of the handle when you're through with it.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2673



Tech Info Library

ImageWriter II & LQ: How To Get Them Into Hex Mode

Revised: 3/22/88
Security: Everyone

ImageWriter II & LQ: How To Get Them Into Hex Mode

=====

This article last reviewed: 17 February 1988

Putting the ImageWriter II Into Hex Mode

The only way to put the ImageWriter II into hex mode is to hold down the select button while powering it on. Sending an escape-c afterwards should restore (software reset) the printer to its standard instruction set. (Alternatively, you write a program to convert the ASCII to hex, then print.)

If the ImageWriter II Drops into Hex Mode

After a logic error in the printer, the ImageWriter II sometimes prints in hex -- usually random garbage. If a printer consistently "drops" into hex mode, consider exchanging its logic board.

Putting the ImageWriter LQ Into Hex Mode

The ImageWriter LQ can be placed in hex mode via the software command:

esc,6

Your data will then print in hex until the printer is powered off, or until you send a software reset, esc-c.

Tech Info Library Article Number:2674



Tech Info Library

LaserWriter IISC: It Requires System 4.3

Revised: 3/22/88
Security: Everyone

LaserWriter IISC: It Requires System 4.3

=====

This article last reviewed: 17 February 1988

The LaserWriter IISC is being shipped with the four new System Software 5.1 disks. These disks include System file version 4.3, which is required for the LaserWriter IISC to function properly.

Tech Info Library Article Number:2675



Tech Info Library

Apple II Family: Using With LaserWriter (2/97)

Revised: 2/18/97
Security: Everyone

Apple II Family: Using With LaserWriter (2/97)

=====

Article Created: 22 March 1988
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article discusses using a LaserWriter printer with the Apple II family of computers.

DISCUSSION -----

A LaserWriter can be connected to any Apple II containing a Super Serial Card, or the serial ports (modem port and printer port) in an Apple IIc or Apple IIGS.

This is made possible by setting the serial interface to use XON/XOFF protocol using one of the following two methods.

1st Method

Send the following code exactly as shown. The Super Serial Card must be in communications mode (jumper block set to "modem"), because print mode (jumper block set to "terminal") doesn't support XON/XOFF.

Apple IIc/IIGS printer port:	Control-I X E
Apple IIc/IIGS modem port:	Control-A X E
Super Serial Card:	Control-I X

- Control-I (or Control-A) tells the firmware that you are sending a character to act on.

- The X tells the firmware to use XON/XOFF protocol.

- The E says 'Enable the function designated by the next printable character.'

2nd Method

Set up the LaserWriter for DTR handshake (requires version 2 or greater of the LaserWriter ROMs). This can be done by sending the following code segment to the LaserWriter with the switch set to 9600:

```
serverdict begin 0 exitserver
statusdict begin
25 9600 7 setsccbatch
end
```

This sets the 25-pin connector to 9600 baud, DTR flow control, no parity. Substituting 9 for 25 sets the 9-pin connector to the same parameters. This change is written into EEROM, and remains as what is called a persistent parameter until changed back. To change the printer back to XON/XOFF, send this code segment:

```
serverdict begin 0 exitserver
statusdict begin
25 9600 3 setsccbatch
end
```

Article Change History:

17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-97, Apple Computer, Inc

Tech Info Library Article Number:2676



Tech Info Library

Avenue Software, Inc.

Revised: 4/3/97
Security: Everyone

Avenue Software, Inc.

=====

Article Created: 03/22/88
Article Reviewed: 07/02/93
Article Updated: 04/03/97

Avenue Software, Inc.

2162 W. Charest Blvd.
Saint Foy, Quebec G1N 2G3
CANADA

418-682-3088
418-682-3089

418-681-1055 Fax

Company Profile:
Software, specializing in terminal emulators, keyboard customizers, and Mac
school.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2677



Tech Info Library

Simware, Inc.

Revised: 4/3/97
Security: Everyone

Simware, Inc.

=====

Article Created: 22 March 1988
Article Reviewed/Updated: 3 April 1997

Simware, Inc.

2 Gurdwara Rd.
Ottawa, Ontario K2E 1A2
CANADA

613-727-1779

800-267-9991 (Sales)

Company Profile:
Software, specializing primarily in communications and connectivity.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2678



Tech Info Library

Olduvai Corp.

Revised: 4/3/97
Security: Everyone

Olduvai Corp.

=====

Article Created: 22 March 1988
Article Reviewed/Updated: 3 April 1997

Olduvai Corp.

9200 S. Dadeland Blvd.
Suite 725
Miami, FL 33156

800-822-0772 (Orders Only)

305-670-1112

305-670-1992 Fax

Company Profile:
Software, specializing in OCR, utilities, and color paint publications.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2679



Tech Info Library

Macintosh: How To Bypass Internal Hard Disk At Startup (5/96)

Revised: 5/23/96
Security: Everyone

Macintosh: How To Bypass Internal Hard Disk At Startup (5/96)

Article Created: 23 February 1988
Article Reviewed/Updated: 23 May 1996

TOPIC -----

How can I bypass the internal hard disk at startup? I know the Macintosh will boot from a floppy disk if I insert one. But what if I want to boot from an external hard disk or CD-ROM?

DISCUSSION -----

There's a way to start up your system from the next bootable SCSI device in the chain (an external hard disk, CD-ROM, and so on), or floppy disk, while keeping the internal hard disk off line. There's no way to start a Macintosh without also powering on the internal hard disk.

Note: Any Apple system (Macintosh IIci or newer) equipped with an Apple compatible CD-ROM drive (that works with Apple's CD-ROM driver) can startup from the Install Me First CD-ROM. For detailed instructions reference the article, "Macintosh: Starting From Floppy or CD-ROM Disk," Article 0018059 in the Tech Info Library.

Examples -- When You Need to Bypass the Hard Disk

You might want to bypass the hard disk when trying out some new software of dubious origin on a floppy disk. It's also useful in a situation where the proper System Enabler is no longer in your internal hard disk System Folder, but is in the System Folder of some other device in the SCSI chain.

How To Do It

Hold down four (yes, four!) keys while you start up:

Command-Shift-Option-Delete

In the case of a compact Macintosh, with its power switch in the back of

the main unit, you'll have to either get someone to help you, or use a pencil clamped in your teeth as a "third hand."

The system starts up from the floppy disk or the next bootable SCSI device in the chain beginning with ID 6, and the internal hard disk doesn't even appear on the desktop.

Article Change History

23 May 1996 - Added reference to booting from CD-ROM drive

21 May 1993 - REVISED

- To include an example, and to mention CD-ROMs and other devices that may be present in a SCSI chain.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:2680



Tech Info Library

MacLink Plus 2.0: For Latest AFE Translators, Order the Upgrade

Revised: 7/13/88
Security: Everyone

MacLink Plus 2.0: For Latest AFE Translators, Order the Upgrade

=====

This article last reviewed: 22 March 1988

DataViz's upgrade to MacLink Plus 2.0 includes these AFE translators:

- MultiMate <-> MacWrite, Microsoft Word
- WordPerfect <-> MacWrite, Microsoft Word
- WordStar <-> MacWrite, Microsoft Word
- DCA-RFT <-> MacWrite, Microsoft Word
- Microsoft Word <-> DCA-RFT, WordPerfect, MultiMate, WordStar
- MacWrite <-> DCA-RFT, Microsoft Word, WordPerfect, MultiMate, WordStar
- Lotus <-> Comma Values, Excel (WKS), Tab Values, Tab Text
- dBase <-> Comma Values, Excel (WKS), Tab Values, Tab Text
- Excel (WKS) <-> Comma Values, Lotus, Tab Values, Tab Text

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Tech Info Library Article Number:2681



Tech Info Library

HyperCard: Setting Default Of Auto Hilite To True

Revised: 6/24/90
Security: Everyone

HyperCard: Setting Default Of Auto Hilite To True

=====

This article last reviewed: 23 February 1988

To set the default of autohilite to true, simply add the following script to your stack script. Then, any new buttons you add to that stack will automatically have autohilite set to true.

```
on newButton
    set autohilite of button "New Button" to true
end newButton
```

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2682



Tech Info Library

Virginia Systems, Inc.

Revised: 4/3/97
Security: Everyone

Virginia Systems, Inc.

=====

Article Created: 22 March 1988
Article Reviewed/Updated: 3 April 1997

Virginia Systems, Inc.

5509 West Bay Court
Midlothian, VA 23112

804-739-3200

Fax: 804-739-8376

Company Profile:
Consulting for business and government, Macintosh software.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2683



Tech Info Library

EDUCORP Computer Services

Revised: 4/3/97
Security: Everyone

EDUCORP Computer Services

=====

Article Created: 03/22/88
Article Reviewed: 07/08/93
Article Updated: 04/03/97

EDUCORP Computer Services

7434 Trade St.
San Diego, CA 92121

800-843-9497 (Orders only)

619-536-9999

619-536-2345 Fax

Company Profile:

Software, specializing primarily in public domain, shareware, and
CD-ROM products for Macintosh and IBM.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2684



Tech Info Library

List Of Disk Recovery Tools For The Macintosh (9/94)

Revised: 2/17/97
Security: Everyone

List Of Disk Recovery Tools For The Macintosh (9/94)

Article Created: 22 March 1988
Article Reviewed/Updated: 21 September 1994

TOPIC -----

Here is a list of disk recovery tools, with some comments.

DISCUSSION -----

1st Aid Kit, by Datawatch Corp. (formerly 1stAid Software)

Audience Level: Novice to Intermediate.

A general trouble-shooting package, including file and disk recovery. The main feature of the system is its 300-page manual. This manual describes many of the errors a user may receive, including printing/Chooser errors, memory problems, and Finder messages (such as, "Trash could not be emptied,") and lists procedures to solve that problem. It also includes detailed information on what can go wrong with a disk, and how 1st Aid Kit can fix it. The manual is fully indexed and cross-referenced.

It includes a software program intended to aid in the recovery and identification of lost or deleted files, and also contains capabilities for extracting files from crashed disks. It does NOT alter the original crashed disk, or offer sector editing. This program contains extensive on-line help.

The File menu includes: Eject All, Archive volume Info, Check for Uninitialized Disk, Erase Deleted Files, Initialize, Help, and Quit.

The Edit menu includes: Undo, Cut, Copy, Paste, Clear, and Help.

The Disk Repair menu includes: Diagnose & Recover, Salvage Files by Tags, Zero Out Bad Sectors, Fix Boot Blocks, and Help.

The File Repair menu includes: Work on File, Undelete Files, Rejoin File, and Help.

Disk First Aid v7.2, by Apple Computer, Inc.

Audience Level: Novice to Expert

Disk First Aid is a utility which verifies the directory structure of any hierarchical file system (HFS) based storage volume. Many hard disk drives, floppy disk and compact disk (CD) drives are examples of HFS-based storage volumes.

If imperfections are found within a volume, Disk First Aid can be used as a "first step" to repair the defects/ if a volume has suffered several corruption other utility programs or repair methods may need to be used.

Disk First Aid 7.2 (released August 1993) checks for and repairs following volume attributes:

- Disk volume
- Extent B-tree
- Extent File
- Catalog B-tree
- Catalog File
- Catalog Hierarchy
- Volume Info
- Search for locked volume name

You can save the results of a verification or repair scan as a TeachText (text) document.

Disk First Aid cannot scan for deleted or trashed files or folders on a volume. There are several third party products which perform these tasks, however.

FEdit, by MacMaster Systems

Audience Level: Intermediate to Expert

This is a Block Editing system for HFS and MFS floppies and hard disks.

Version 1.0.5 lets you open either a file or disk volume for examining and editing. You can read sectors in their raw form, or view the VIB, Boot Blocks, and file headers in an interpreted form. You can perform sequential and multiple read/writes using multiple block buffers. Editing and display can be set to Hex or ASCII. File options allow you to open either the Data or Resource fork, and even exchange them. Search capabilities let you enter either Hex or ASCII data, and will even search the sector tags if present. Special options let you create or delete files, set the end of a file, recreate the volume bit map, analyze the state of file fragmentation, and recover deleted files. Support for HFS file recovery and display is not fully implemented.

Version 2.0 now contains support for full HFS recovery, including the use of sector tags for file recovery and low-level SCSI routines.

MacTools, by Central Point Software, Inc.

(Disk Editor and File Utility included with Copy II Mac)

Audience Level: Intermediate to Expert

This program includes: Copy files/disk, rename files/disk, verify that a file/disk has no errors, view and edit file and disk sectors, format a disk, delete a file, lock and unlock files, make file visible or invisible to the Finder, protect or unprotect files from normal copying, change the startup application on a disk to something other than the Finder, recover deleted files and repair some damaged disk, look or change the information stored on disk, print a list of files on the disk.

MacTools offers two methods of files recovery. The first uses the tag information on floppies and hard disks that support them. The second involves an INIT program that saves information about deleted files into a data file as they are deleted. A routine in MacTools can then be used to extract that information and recover the deleted files.

MacTools also offers a limited form of disk recovery. If a disk cannot be mounted (the Finder displays the "This disk is damaged" dialog box,) you can use MacTools to mount the disk, erasing the directory at the same time. If the disk supports tags, you can use MacTools to recover them. If you don't want to erase the directory, you can use a disk editor provided with MacTools to examine and patch the disk.

MacZap, by Micro Analyst

Audience Level: Intermediate to Expert

This is a three-part disk and memory utility. It contains many programs that can be used to recover some damaged files and disks, to compare disks, analyze disk structure, and make back-up copies of most disks.

Version 5.0 includes Disk Clinic, a program that helps diagnose a disk and recommends recovery procedures.

Norton Utilities v2.0.3, by Symantec

Audience Level: Novice to Expert

Data recovery, disk repair and backup Macintosh Plus or larger; 2 MB of RAM (3 MB for System 7); hard disk drive; System 6.0.4 or later.

Norton Utilities for Macintosh combines and enhances the features from two products: SUM II and Norton Utilities. The combination of these two products results in a utility software package that offers fully integrated advanced disk repair and recovery, automatic backup, data security, productivity tools and

system enhancements in one informative, easy-to-use product. Version 2.0.3 goes deeper to recover lost or damaged data in a wider variety of circumstances, and the Norton Disk Doctor diagnoses and repairs damaged hard disks and floppies automatically with a single click of the mouse. Norton Utilities allows users to protect valuable data and make day-to-day functions a breeze.

Public Utilities by 5th Generation Systems (bought by Symantec)

Audience Level: Novice to Expert

Public Utilities is a disk recovery utility for Macintosh hard drives. It contains a prevention monitor that keeps the hard drive from crashing.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

21 Sep 1994 - Reformatted and corrected utility names.
16 Sep 1993 - Added Disk First Aid, Norton Utilities, and Public Utilities
26 Jul 1993 - Company title updated from Datawatch to Datawatch Corp.

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Tech Info Library Article Number:2686



Tech Info Library

A/UX: Program Portability (Machine Independence)

Revised: 9/16/92
Security: Everyone

A/UX: Program Portability (Machine Independence)

=====

Article Created: 1 March 1988

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

Any A/UX application is potentially portable (machine independent) to other System V.2 platforms.

DISCUSSION -----

In other words, you should be able to compile and run any A/UX application under System V.2, as long as the A/UX application does NOT either interact with hardware or make library calls to the Apple enhancements to System V -- such as Toolbox, rpc services, BNet (sockets), etc.

The reverse is also true: because A/UX has passed SVVS (System V Validation Suite), any System V program that follows the SVID (System V Interface Definition) will run under A/UX.

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Tech Info Library Article Number:2687



Tech Info Library

A/UX: How to Improve File Access Speed (6/93)

Revised: 8/18/93
Security: Everyone

A/UX: How to Improve File Access Speed (6/93)

Article Created: 25 March 1988
Article Reviewed/Updated: 18 August 1993

TOPIC -----

How can I improve file access speed under A/UX?

DISCUSSION -----

There is no way to increase the physical access speed of a SCSI drive while running under A/UX. However, there are several things you can do with software and hardware additions to increase file-access performance:

- Increasing RAM to more than 8MB is a good beginning. The more the system can store in memory, the less frequently it needs to access the disk for the next call of the same blocks.
- For systems with 8MB, bring A/UX up single-user, then run these commands:

```
# kconfig -n /unix
NBUF=2500
NINODE=600
NFILE=400
<control-d>
# sync
# sync
# sync
# reboot
```

- Add a second hard disk and place the swap there, along with any directories that don't see high activity. That way, the CPU can search for files on the primarily disk, while searching the swap for others.
- Add as much free space as possible by deleting all files not really necessary for your system -- man pages, source, networking, games, and so on.

For more information, search under: "A/UX" and "space", "free", or "minimum".

Article Change History:

18 Aug 1993 - Updated for A/UX 3.x.

25 Mar 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:2688



Tech Info Library

CS/2200 Terminal Emulator: Macintosh to Wang Connectivity

Revised: 8/3/89
Security: Everyone

CS/2200 Terminal Emulator: Macintosh to Wang Connectivity

=====

This article last reviewed: 25 February 1988

If you need a Wang CS/2200 terminal emulator package, Mac2200 from Vermont Software supports:

- cutting and pasting
- Desk Accessories
- access to all features provided by the 32 function keys on the CS/2200 keyboard.

This package also supports Switcher and Hayes compatible modems.

Mac2200 is compatible with the Macintosh 512KE, Macintosh Plus, Macintosh SE, and Macintosh II. It requires a Wang 2200/MVP, LVP, SVP, MicroVP, or CS system with a 2236 MXD or MXE terminal controller.

For more information, search under: "Vermont Software".

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Tech Info Library Article Number:2690



Tech Info Library

SCSI Cables: Extenders And Pinouts (4/94)

Revised: 4/5/94
Security: Everyone

SCSI Cables: Extenders And Pinouts (4/94)

=====

Article Created: 1 March 1988
Article Reviewed/Updated: 5 April 1994

TOPIC -----

How many SCSI Cable Extenders can I use on my SCSI chain?

DISCUSSION -----

With the use of multiple SCSI Cable Extenders, a SCSI bus can safely cover a distance of up to 21 feet (seven meters) between two devices, such as a CPU and hard drive. Typically, extender cables are 1 meter in length.

Both the Peripheral Interface Cable and the Cable Extender have a straight-through pin configuration (1-1, 2-2, 3-3, etc.), though pins 10, 12-15, 17, 35-37, 39, 40, and 42 are not connected.

Article Change History:
5 April 1994 - Revised format, clarified issue, added info on pins not connected.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:2691



Tech Info Library

LaserWriter IINTX: How To Use IBM Fonts (8/95)

Revised: 8/23/95
Security: Everyone

LaserWriter IINTX: How To Use IBM Fonts (8/95)

=====
Article Created: 22 March 1988
Article Reviewed/Updated 22 August 1995

TOPIC -----
Can I download my IBM fonts to the hard disk attached to my LaserWriter IINTX?

DISCUSSION -----

You can't download IBM fonts to a LaserWriter IINTX hard disk: the IBM downloader currently downloads only to RAM.

However, screen fonts common to both Macintosh AND a given IBM can be downloaded from Macintosh and then accessed through the IBM.

An example: if you download the "Garamond" font from a Macintosh to the LaserWriter IINTX hard disk, you can then access that font from an IBM, if "Garamond" is an installed screen font on that IBM.

Article Change History
22 August 1995 - Made minor formatting corrections.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2693



Tech Info Library

Diversified I/O

Revised: 7/8/93
Security: Everyone

Diversified I/O

=====

Article Created: 02/18/91
Article Reviewed: 07/08/93
Article Updated: 08/21/91

Diversified I/O

P.O. Box 390876
Mountain View, CA 94039

415-961-5933

415-961-6405 Fax

Company Profile:

Diversified I/O, software and hardware, specializing in backup software and utility products for the Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2695



Tech Info Library

FWB, Inc.

Revised: 4/3/97
Security: Everyone

FWB, Inc.

=====

Article Created: 22 March 1988
Article Reviewed/Updated: 3 April 1997

FWB, Inc.

1555 Adams Drive
Menlo Park, CA 94025

415-325-4FWB (4392) Main/Local Phone Number

415-833-4580 Technical Support

800-581-4392 Upgrades

415-833-4615 FAX

Company Profile:

Hardware and software, specializing in high-performance, light-capacity hard drives and tape units, mass storage systems, software utilities for hard disks, PCI (Peripheral Component Interconnect) cards, and software to improve CD-ROM performance.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2696



Tech Info Library

Comparison of LaserJet Plus and IINTX LaserJet Plus Emulation

Revised: 3/4/90
Security: Everyone

Comparison of LaserJet Plus and IINTX LaserJet Plus Emulation

=====

This article last reviewed: 8 March 1988

Adobe Systems has performed tests comparing LaserWriter IINTX and LaserJet Plus. Their finding is that a LaserWriter IINTX in LaserJet Plus emulation mode is generally faster than a LaserJet Plus.

Although you can't download bitmapped LaserJet Plus Fonts to the LaserWriter IINTX, you CAN use any of the PostScript Fonts, including downloaded fonts. Unlike the LaserJet fonts, PostScript Fonts can be scaled, resulting in much more precise output.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2697



Tech Info Library

Apple IIGS: Using LaserWriters via AppleTalk

Revised: 3/31/88
Security: Everyone

Apple IIGS: Using LaserWriters via AppleTalk

=====

This article last reviewed: 15 March 1988

The Apple IIGS can print to the PostScript devices LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX. Because the Apple IIGS ImageWriter Emulator isn't compatible with the System Tools 5.0 Laser Prep files for the Macintosh, the IIGS must download its Prep file and reinitialize the printer if you're using the newer Prep files on the Macintosh.

Because the Apple IIGS' QuickDraw II differs from Macintosh QuickDraw, there is currently no driver for the Apple IIGS that would let it print to the LaserWriter IISC, as SCSI/QuickDraw device; and Apple has no plans for one.

The IIGS Chooser is being modified for use with the ImageWriter LQ over AppleTalk.

Tech Info Library Article Number:2698



Tech Info Library

Editing the ImageWriter File for Custom Paper Sizes

Revised: 11/6/91
Security: Everyone

Editing the ImageWriter File for Custom Paper Sizes

=====

Article Created: 31 March 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 31 March 1988

TOPIC -----

This article describes how the page size can be changed for the ImageWriter and ImageWriter II if the page sizes in the Page Setup box do not meet your needs.

DISCUSSION -----

If the five paper sizes offered in the ImageWriter's Page Setup dialog don't meet your needs, you can use ResEdit to change ImageWriter resources. This is NOT a solution that Apple can support, so you make these changes at your own risk. Detailed instructions are provided in MacWorld magazine, January 1986, pages 58-63.

ResEdit is available through the Apple Programmers and Developers Association.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2700



Tech Info Library

LaserWriter II: Removing the Protective Cover

Revised: 1/17/89
Security: Everyone

LaserWriter II: Removing the "Protective Cover"

=====

This article last reviewed: 22 March 1988

The LaserWriter II's installation instructions refer to a "protective cover" that must be removed. This is the styrofoam that is taped across the opening of the controller board slot. This styrofoam is to keep debris out of the controller board area during shipment.

The antistatic insulator taped to the bottom panel of the LaserWriter II "engine" should NOT be removed. It will cause no problems when left in place.

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Tech Info Library Article Number:2701



Tech Info Library

Macintosh II Hi-Res RGB: Contrast & Brightness Reversed (9/95)

Revised: 9/19/95
Security: Everyone

Macintosh II Hi-Res RGB: Contrast & Brightness Reversed (9/95)

Article Created: 31 March 1988
Article Reviewed/Updated: 19 September 1995

TOPIC -----

Why do the contrast and brightness adjustments on my Macintosh II Hi-Res RGB Monitor not work correctly?

DISCUSSION -----

The contrast and brightness knobs on some early Macintosh II Hi-Res RGB Monitors were reversed: The control labeled with the brightness icon is actually the contrast control, and the control labeled with the contrast icon is actually the brightness control.

Article Change History:
19 Sep 1995 - Reformatted to meet current standards.
10 Mar 1988 - Reviewed for technical accuracy

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2704



Tech Info Library

Rasmussen Software, Inc. (formerly Rasmussen an Assoc.)

Revised: 7/19/93
Security: Everyone

Rasmussen Software, Inc. (formerly Rasmussen an Assoc.)

=====

Article Created: 31 March 1988
Article Reviewed/Updated: 14 July 1993

Rasmussen Software, Inc.

10260 SW Nimbus
Suite M2A
Portland, OR 97223

503-624-0360

503-624-0760 Fax

Company Profile:
Formerly Rasmussen an Assoc., software developer, specializing primarily in
NCR tools, PC and Macintosh connectivity tools

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2705



Tech Info Library

Apple IIGS Finder: Two Desktop Update Problems

Revised: 8/28/90
Security: Everyone

Apple IIGS Finder: Two Desktop Update Problems

=====

This article last reviewed: 10 March 1988

These problems have been reported and may be fixed in the next revision of the Apple IIGS Finder:

- The Clipboard window is not updated when it is open and changes occur. If you select a desk accessory that permits copy and/or cut when the Clipboard window is open, nothing changes until you force an update by moving something over the Clipboard window.
- The Finder window or an open Desk Accessory window does not become inactive when a diskette icon is clicked. Double-clicking on the diskette name starts the process of a rename (the name is surrounded by a rectangle), but typing is not possible or directed to an open desk accessory.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2706



Tech Info Library

AppleWorks Spreadsheet: Displayed Numbers Are Sometimes Rounded

Revised: 3/31/88
Security: Everyone

AppleWorks Spreadsheet: Displayed Numbers Are Sometimes Rounded

=====

This article last reviewed: 16 March 1988

The AppleWorks spreadsheet displays numbers as close to the calculated value as it can, given the display format chosen by the user. Even if the user specifies that only two places are displayed, AppleWorks still calculates it up to nine digits, and can display up to nine digits (seven digits past the decimal point).

For example, the calculation $.07 * 2.5$ results in .175, but if the display is set to just two decimal places, the number displayed is .18. Any subsequent calculations will be based on the actual value .175, not on the displayed value of .18. AppleWorks calculates to all significant digits and displays according to display values set by the user.

Tech Info Library Article Number:2707



Tech Info Library

HyperCard: Specifying the Answer Command's Default Button

Revised: 6/24/90
Security: Everyone

HyperCard: Specifying the Answer Command's Default Button

=====

This article last reviewed: 15 March 1988

HyperCard's Answer command produces a dialog box with up to three buttons, where the rightmost button is the default.

To specify which of the buttons is to be the default button, make it the last definition in the list. (There is no way to avoid having a default button.)

At this point, we know of no XCMDs or XFCNs that customize the dialog box to include more text or buttons. It would be much easier to trap the "answer" message and have it execute an XFCN instead.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2709



Tech Info Library

AppleShare PC: Can't Be Put Entirely In Extended Memory

Revised: 5/24/89
Security: Everyone

AppleShare PC: Can't Be Put Entirely In Extended Memory

=====

This article last reviewed: 16 March 1988

Some AppleShare PC users have asked if there is a way to put all of AppleShare PC in extended memory. It seems that many new applications for the PC (particularly those with Microsoft Windows) don't have enough memory when AppleShare PC is installed. We know of no present way to put all of Appleshare PC into extended memory.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2710



Tech Info Library

TTY Emulation for Macintosh

Revised: 5/10/89
Security: Everyone

TTY Emulation for Macintosh

=====

This article last reviewed: 16 March 1988

Many terminal emulation packages include a TTY or "telex" option. Two examples: MacTerminal and Telescape from Mainstay. For more information, search on MacTerminal and Mainstay.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2711



Tech Info Library

A/UX Includes Two Text Formatters

Revised: 9/18/92
Security: Everyone

A/UX Includes Two Text Formatters

=====

Article Created: 16 March 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

What text formatters are available under A/UX?

DISCUSSION -----

The text formatters that are available under A/UX are the UNIX standards nroff and troff. There are also some Macintosh applications, such as MORE (tm) that may also run on the ToolBox.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2712



Tech Info Library

A/UX: All Versions Support IPC (6/93)

Revised: 8/12/93
Security: Everyone

A/UX: All Versions Support IPC (6/93)

=====

Article Created: 16 March 1988
Article Reviewed/Updated: 25 June 1993

TOPIC -----

What versions of A/UX support IPC (inter-process communications) mechanisms?

DISCUSSION -----

All versions of A/UX support IPC mechanisms, like semaphores, shared memory, and message queues. This includes A/UX 3.0.1.

Article Change History:

25 Jun 1993 - Updated to include A/UX 3.x.
16 Mar 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:2713



Tech Info Library

ImageWriter II: A Gentle Way to Make Ditto Masters

Revised: 3/31/88
Security: Everyone

ImageWriter II: A Gentle Way to Make Ditto Masters

=====

This article last reviewed: 15 March 1988

Schools have asked if it was possible to make ditto masters with the ImageWriter II. Apple has suggested removing the ribbon from the printer and moving the forms thickness lever back to the third or fourth position. This is supposed to help keep the print head from damaging the fragile master. The problem is that this method keeps the printer in single color-mode which, in most cases, doesn't transfer enough ink to the master -- not from the non-existent ribbon, but by the impact of the wires -- to produce a good image. This is due, in part, to the density of the actual top page of the ditto master itself and the size of the wires in the head of the ImageWriter II.

Here is another method -- one that will improve the quality of the ditto master:

1. Remove the ribbon from an ImageWriter II color ribbon cartridge.
2. Insert this empty cartridge in the printer. This will close the color micro-switch on the carrier assembly, and fool the printer into believing it has a color ribbon installed.
3. Through your software, tell the printer, via control codes, to print in either Orange, Green, or Purple. Because these three colors are normally created by making two passes with two different colors, and the printer believes it has a color ribbon installed, the print density will be doubled, improving the quality of the ditto master.

Without the color ribbon installed, and with a color selected that requires two passes to create, the printer will effectively be in double strike mode, which is not a selectable mode otherwise. With double strike, the dots are almost completely re-struck, which produces a better image while not abusing the ditto master itself. (Boldface could be used but that mode does not overstrike dots completely, rather it strikes a dot that partially overlays the previous dot, which produces a broader image that may not be acceptable

..TIL02714-ImageWriter_II-A_Gentle_Way_to_Make_Ditto_Masters_(TA37880).pdf

on ditto masters.)

Tech Info Library Article Number:2714



Tech Info Library

MacTerminal: How to Send VT100 PF Key Sequences

Revised: 3/31/88
Security: Everyone

MacTerminal: How to Send VT100 PF Key Sequences

=====

This article last reviewed: 24 March 1988

To send PF(n), type:

esc [(n) p

For example, to send PF16:

1. Press esc (the esc key on new keyboards, or reverse accent/tilde key on older ones).
2. Press the [key.
3. Press the 1 key, then the 6 key.
4. Press the p key (note lower case).

For the HELP key, send PF0 (esc [0 p).

Tech Info Library Article Number:2715



Tech Info Library

LaserWriter IISC: Can Print Any Screen Font

Revised: 3/31/88
Security: Everyone

LaserWriter IISC: Can Print Any Screen Font

=====

This article last reviewed: 23 March 1988

The LaserWriter IISC can print any bit-mapped screen font -- including those you create yourself using programs such as Fontastic Plus -- not just the ones supplied with the system.

For optimum printing resolution, it's best to have the 4x font available, but not essential. If the 4x font isn't available, the Font Manager will look for the next best font to scale:

- a font twice the size of the desired four times font
- a font half the size of the desired four times font
- the next larger font
- the next smaller font or the display font.

If the 4x font isn't available, it is advisable to choose Text Smoothing in Page Setup.

Using the Altsys program Fontographer, you can convert any Altsys PostScript font into a rough bit-map screen font. We'd recommend then using the Altsys program Fontastic Plus to edit the rough screen font into something more suited for printing.

For more information on Fontographer or Fontastic, search the Tech Info Library for Altsys.

Tech Info Library Article Number:2716



Tech Info Library

M/H Group

Revised: 4/3/97
Security: Everyone

M/H Group

=====

Article Created: 03/31/88
Article Reviewed: 07/13/93
Article Updated: 04/03/97

M/H Group

300 West Adams St.
Suite 840
Chicago, IL 60606

312-443-1222

312-443-1377 Fax

Company Profile:
Software, specializing in Wang connectivity products.

Copyright 1988-937, Apple Computer, Inc.

Tech Info Library Article Number:2717



Tech Info Library

System Software 5.0 Installer Works Only On Its Own System File

Revised: 5/10/89
Security: Everyone

System Software 5.0 Installer Works Only On Its Own System File

=====

This article last reviewed: 23 March 1988

The System Software 5.0 Installer works only with System files that are exact copies of the System file included on the Installer disk.

When you use the Installer to install the System folder onto a disk, only the files and resources necessary for the Macintosh system you are installing for are copied to that disk. There are more resources in the System file on the Installer disk than the System file it installs on another disk. The error

error -192, Can't find Scrapbook file for Macintosh xx Installer

is generated when the Installer tries to find a particular resource (the Scrapbook in this example) that is not present in the "installed" System file.

The only workaround is to "drag copy" the System file from the Installer disk to your hard disk. The Installer should then function correctly.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2718



Tech Info Library

Japanese ImageWriter II is Universal Model

Revised: 6/29/90
Security: Everyone

Japanese ImageWriter II is Universal Model

=====

This article last reviewed: 23 March 1988

The ImageWriter II sold in Japan is the universal model. It supports:

100 VAC +/- 10%, and 50/60Hz
120 VAC +/- 10%, and 50/60Hz
140 VAC +/- 10%, and 50/60Hz
200 VAC +/- 10%, and 50/60Hz
220 VAC +/- 10%, and 50/60Hz
240 VAC +/- 10%, and 50/60Hz

If the line voltage drops below these levels, the printer will not function properly. A step-up transformer or a voltage stabilizer should be used under other conditions.

The ImageWriter II sold in the U.S. requires 120 volts (+/- 10%), and 60Hz.

This information is also found on page 85 of the ImageWriter II Owner's Manual, and in the Tech Info Library article titled "ImageWriter II: Spec Sheet."

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Tech Info Library Article Number:2719



Tech Info Library

Apple II: Disabling Keyboard During Serial I/O (2/97)

Revised: 2/18/97
Security: Everyone

Apple II: Disabling Keyboard During Serial I/O (2/97)

=====

Article Created: 31 March 1988
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article disucsses how to disable the keyboard during serial I/O on the Apple IIc, Apple IIGS and Apple IIe Super Serial card.

DISCUSSION -----

The Apple II serial interface (Apple IIc serial port, Apple IIGS serial port, and Apple IIe Super Serial Card) has a built-in command that disables the keyboard during serial I/O. The command is FD. Here's how to send it from BASIC:

```
10 print chr$(4);"pr#2"  
20 print chr$(1);"FD": REM Disable the keyboard...
```

Article Change History:
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2721



Tech Info Library

MGlobal

Revised: 4/3/97
Security: Everyone

MGlobal

=====

Article Created: 03/31/88
Article Reviewed: 07/13/93
Article Updated:

MGlobal

20900 Weslayan
Suite 415
Houston, TX 77027

713-960-0205

713-960-1522 Fax

Company Profile:
Software, specializing primarily in MUMPS products, language, and operating systems.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2722



Tech Info Library

Digital Technology International

Revised: 4/3/97
Security: Everyone

Digital Technology International

=====

Article Created: 03/31/88
Article Reviewed: 07/08/93
Article Updated: 04/03/97

Digital Technology International

500 West 1200 South
Orem, UT 84058

801-226-2984

801-226-8438 Fax

Company Profile:
Hardware and software, specializing in publishing applications.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2724



Tech Info Library

MacSoft Inc.

Revised: 4/3/97
Security: Everyone

MacSoft Inc.

=====

Article Created: 03/31/88
Article Reviewed: 07/13/93
Article Updated: 04/03/97

MacSoft Inc.

1800 19th St.
Bakersfield, CA 93301

805-324-4291

805-324-1437 Fax

Company Profile:
Software, specializing in communications software, primarily for Wang
emulation.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2726



Tech Info Library

Apple MIDI: How To Make It SMPTE Compatible

Revised: 9/16/88
Security: Everyone

Apple MIDI: How To Make It SMPTE Compatible

=====

This article last reviewed: 9 September 1988

The Apple MIDI Interface does not transmit or receive the SMPTE (Society of Motion Picture and Television Engineers) Time Code data stream. SMPTE Time Code is transmitted over separate cabling, most often by way of 1/4-inch (sometimes RCA) plugs.

This type of connection is not supported on the Apple MIDI Interface. Also, the Apple MIDI Interface would need a microprocessor to accommodate SMPTE Time Code. The Apple MIDI Interface does not contain a microprocessor.

Certain pieces of hardware can accept SMPTE Time Code and, in turn, generate MIDI Time Code (MTC). MTC is imbedded into the standard MIDI data stream, and thus, can be transmitted via MIDI cables. Should MTC be in the data stream when arriving at the Apple MIDI Interface, MTC will be passed with no changes. Programs that understand MTC may then perform their operations according to MTC timing data.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2728



Tech Info Library

AppleLine Not Responding May Be Cable Problem

Revised: 3/31/88
Security: Everyone

AppleLine Not Responding May Be Cable Problem

=====

This article last reviewed: 2 March 1988

If AppleLine is not responding, you may be using the wrong cable.

IF you have set up your Macintosh with a terminal program
(such as MacTerminal) and an AppleLine in the following manner:

- AppleLine is connected to the Macintosh by an Apple IIe to ImageWriter II cable and gender changer. Both are connected to a 3174 cluster controller.
- After the AppleLine warms up, the yellow and green lights alternately flash, whether the AppleLine is connected or not.
- MacTerminal has been configured as specified in the manual.

AND, when the AppleLine Supervisor document is opened and you press Shift-Enter and Return, NOTHING HAPPENS -- whether the AppleLine is connected to the cluster controller or not

THEN, your problem is probably a wrong cable.

To connect an AppleLine to a Macintosh Plus, Macintosh SE, or Macintosh II, you must use one of these:

- the A2C0311 590-0331-B Tan
- the A2C0312 590-0555-A Platinum cable

These cables have a DIN 8 at one end and a 25 pin on the other.

Tech Info Library Article Number:2729



Tech Info Library

Cleaning Equipment That May Have Asbestos Contamination

Revised: 5/3/88
Security: Everyone

Cleaning Equipment That May Have Asbestos Contamination

=====

This article last reviewed: 28 April 1988

Some Apple computer users, due to asbestos contamination at their building sites, have asked about cleaning potentially contaminated hardware.

Depending upon the extent of the asbestos contamination, each internal assembly or part of the equipment may need to be disassembled and cleaned. A QUALIFIED ASBESTOS SCREENING CONTRACTOR OR AGENCY MUST MAKE THIS DETERMINATION.

Each piece of equipment must be opened to obtain dust samples for the tests. After the testing, if the equipment needs to be decontaminated, you MUST work with a qualified Apple dealer service tech for the cleaning.

The cleaning of the equipment may be as simple as using a vacuum to remove the asbestos dust, or as difficult as washing down each assembly with de-ionized water and then drying each assembly. In either case, care must be taken to follow ESD (Electrostatic Discharge) procedures.

Tech Info Library Article Number:2730



Tech Info Library

AppleTalk and IBM Type 1 Cabling

Revised: 11/2/88
Security: Everyone

AppleTalk and IBM Type 1 Cabling

=====

This article last reviewed: 3 March 1988

Some users have asked about running AppleTalk over IBM Type 1 Cabling.

While Apple does not know of anyone currently running such a configuration, IBM Type 1 cable is two sets of twisted pairs 22-AWG with a braided shield, so there is no reason why one pair of the twisted pairs could not be used for an AppleTalk network.

The connectors for the Type 1 cable, however, might be a problem. One possible solution would be to use PhoneNet connection modules and attach RJ11 phone connectors to the Type 1 cable.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2731



Tech Info Library

MPW 2.0.x and Long LaserWriter Printouts: Font Problem

Revised: 11/5/91
Security: Everyone

MPW 2.0.x and Long LaserWriter Printouts: Font Problem

=====

Article Created: 31 March 1988
Article Last Reviewed: 5 November 1991
Article Last Updated: 5 November 1991

If you are printing from MPW v2.0.1 or v2.0.2 on your Macintosh to a LaserWriter Plus, and using something previous to System Software version 7.0, you may experience the following problem on long printouts: the listing will spontaneously switch to a bitmapped version of the font. Here are some possible solutions.

You may be experiencing a collision in memory between the System file (and its fonts) and the document being printed. This problem depends on several variables -- the amount of memory installed in the system, the number of applications loaded into memory, how large a RAM cache has been set, whether background printing turned on, etc.

To isolate the problem, remove as many variables as possible. For example:

- use the Finder rather than MultiFinder for pre-System 7.0 software.
- turn off the RAM Cache from the Control Panel.
- do not use Background printing.

Other possible problem areas include: bad parameter RAM, a corrupted font resource, a corrupted System file, or a corrupted printer driver.

Reinstall the system software and drivers and then try running under the finder, NOT under MultiFinder, when printing from MPW.

Another solution would be to upgrade to MPW 3.0 or higher.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2732



Tech Info Library

Laserwriter IISC Requires System V4.3

Revised: 10/18/88
Security: Everyone

Laserwriter IISC Requires System V4.3

=====

This article last reviewed: 3 March 1988

If you are having trouble printing to the Laserwriter IISC from AppleLink, and you have the correct driver to print from other software, you may be using the wrong System file.

You MUST use System version 4.3 with the LaserWriter IISC.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2734



Tech Info Library

LocalTalk PC Card Can't Be Used by OS/2, MicroChannel

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card Can't Be Used by OS/2, MicroChannel

=====

This article last reviewed: 8 March 1988

Apple's LocalTalk PC Card is not currently hardware-compatible with the MicroChannel bus architecture, nor is it software-compatible with OS/2.

The LocalTalk PC Card WILL work with the new PS/2 Model 25 and 30, just as it works with existing PC XTs, ATs, and most clones.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2737



Tech Info Library

HyperCard & Macintosh II: Visual Effects Require 2-Color Mode

Revised: 5/31/89
Security: Everyone

HyperCard & Macintosh II: Visual Effects Require 2-Color Mode

=====

This article last reviewed: 10 March 1988

HyperCard 1.1 visual effects do not work on a Macintosh II unless the video card is set to two-color mode. Color QuickDraw is not fast enough to do the visual effects correctly.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2739



Tech Info Library

Identifying Apple IIGS Keyboards

Revised: 3/31/88
Security: Everyone

Identifying Apple IIGS Keyboards

=====

This article last reviewed: 10 March 1988

If you are developing applications with the Apple IIGS, you may need to be able to identify which keyboard is being used: the ADB or the Apple IIe (that is, the logic board connector for the keyboard located at site J13).

Since the Apple IIGS was primarily designed to use an ADB keyboard, the only way to determine if a keyboard is connected to J13 and not the ADB bus is to make an assumption. The assumption will be made by a response -- or lack of response -- from the AsyncADBReceive (\$0D09) Toolbox routine.

The AsyncADBReceive routine will NOT receive a keyboard response if there is no ADB keyboard present.

(NOTE: A wrong assumption could be made at this point -- for instance, with an Apple IIGS with its ADB keyboard disconnected. The application being constructed should ask if the user is ACTUALLY using an Apple IIe which has been upgraded to an Apple IIGS.)

Complete information about the AsyncADBReceive routine can be found in the Apple IIGS Toolbox Reference (ISBN #0-201-17746-3): Volume 1, Section 3, page 14.

Tech Info Library Article Number:2740



Tech Info Library

American Macintosh Works With International ImageWriter

Revised: 11/17/94
Security: Everyone

American Macintosh Works With International ImageWriter

=====

Article Created: 10 March 1988
Article Reviewed/Updated: 17 November 1994

TOPIC -----

Can I use an ImageWriter made outside of the United States with my Macintosh computer?

DISCUSSION -----

A domestic Macintosh may be used with an international version of the ImageWriter (such as the Japanese or European version).

Even though the power specifications change from country to country, or region to region, the RS232 and AppleTalk standards are universal throughout the world.

Article Change History:
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2741



Tech Info Library

No Guarantee On Domestic Apple Equipment's Foreign Operation

Revised: 3/31/88
Security: Everyone

No Guarantee On Domestic Apple Equipment's Foreign Operation

=====

This article last reviewed: 10 March 1988

Apple makes no guarantee of successful operation of Apple equipment when it is used outside of the equipment specifications -- including its operation in a foreign country with different voltage levels, etc.

Even though a piece of equipment may APPEAR to function correctly when operating outside of the specifications, unexpected results may be encountered due to additional variables. These variables include the number of peripheral cards installed in the system, and fluctuations in line voltage.

Such variables make it impossible for us to guarantee that, for instance, a domestic Macintosh II will correctly function at 85-90 volts in Japan.

Tech Info Library Article Number:2742



Tech Info Library

HyperCard: Video Disk Searches Must Be Slowed On a Macintosh II

Revised: 6/24/90
Security: Everyone

HyperCard: Video Disk Searches Must Be Slowed On a Macintosh II

=====

This article last reviewed: 10 March 1988

Some users have found that the Macintosh II, working from HyperCard, cannot search and then play a laser disk video selection with a script like the following (which seems like it should work, and does with a Macintosh SE):

```
On MouseUp
  video search, 10600
  video play, till, 10900
End MouseUp
```

The reason is that, unlike the SE, the Macintosh II is TOO FAST. If the laser disk receives messages too closely together, it won't accept the second command.

This script should solve the problem:

```
On MouseUp
  video search, 10600
  wait 30
  video play, till, 10900
End MouseUp
```

The "wait 30" is 30 clicks -- a half-second wait that gives the laser disk time to react.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:2743



Tech Info Library

Printing Serial PostScript To LaserWriter: Dictionary Is Problem

Revised: 3/31/88
Security: Everyone

Printing Serial PostScript To LaserWriter: Dictionary Is Problem

=====

This article last reviewed: 11 March 1988

Some users have experienced a problem printing a PostScript file generated on the Macintosh through a serial device (such as a Sun 3/280) to a LaserWriter: there is no printout.

Generally, PostScript files generated on a Macintosh are "encapsulated" PostScript. Encapsulated PostScript files require that a dictionary of definitions be downloaded to the printer prior to the document being sent -- otherwise, the PostScript interpreter within the LaserWriter will not understand the abbreviated PostScript code, and the document will not be printed.

When printing a file directly to a LaserWriter from a Macintosh, the Macintosh usually verifies first that the correct dictionary of definitions has been sent to the LaserWriter. If the dictionary of definitions in the LaserWriter is NOT correct, then a header file (Laser Prep) is added to the beginning of the print job that prepares the printer for the forthcoming print job.

However, when the printer is placed into the serial mode, the dictionary of definitions is NOT retained, and MUST BE APPENDED to the beginning of each print job. This is done by holding down the Command and K keys when printing the Macintosh document. The same file may be generated without the header information by holding down the Command and F keys when printing.

The only exception to this is if the Macintosh file was saved as a FULL PostScript format (perhaps from an application like Adobe Illustrator.) In this case, because there are no abbreviations, there is no need to download a dictionary of definitions.

Tech Info Library Article Number:2746



Tech Info Library

Sources of UNIX Training

Revised: 9/14/92
Security: Everyone

Sources of UNIX Training

=====

Article Created: 31 March 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy

TOPIC -----

Some users have asked about UNIX training courses.

There is no one course that will teach UNIX, and learning UNIX takes years of concentrated work on a UNIX system. However, there are different types of courses that suit different areas or levels where assistance is needed.

Here are some recommendations from Apple engineers on a few of the UNIX courses with which they are familiar. This is a VERY LIMITED sample, and does not reflect Apple Computer's official position on ANY courses, listed or unlisted.

DISCUSSION -----

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AT&T Computer Systems Training

Reservations and information: (800) 247-1212

Classes are currently held in New Jersey, Illinois, Georgia, Ohio, and Northern and Southern California. Shorter tutorials are also offered in Massachusetts, Virginia, New Jersey, Colorado, and Northern and Southern California.

These offer a wide curriculum for different levels of expertise.
(NOTE: The more technical classes require proof of a source license.)

Some Apple engineers have recommended the Internals, System Administration, and/or Shell programming classes for field engineers who are required to support A/UX and have some basic user knowledge of UNIX. Introductory-level classes are also available, as well as training tapes.

User Training Services Group

Jim Corcoran (415) 322-0460

This is an interactive audio digital cassette tape training that offers a low - medium level of expertise in UNIX basics. They also have a smaller curriculum aimed at beginning UNIX users. Monthly rentals of the tape courses are also available.

Computer Technology Group

Reservations and information: (800) 323-UNIX

Classes are currently held in Massachusetts, Chicago, Texas, Canada, England, Washington D.C, and Northern and Southern California.

These classes, and the tape-trainings, are a more accessible but less rigorous course than, for instance, the AT&T offering.

Gawain Group and Jim Joyce's UNIX BookStore

Registration and information: (415) 626-7581

This organization offers courses customized for your location and semi-regular classes held in Toronto and Northern California. The trainers are experienced in the industry and often are the authors of the code.

The Bookstore also offers a most extensive collection of UNIX and C programming books, with bulk discounts available. They also offer short evaluations that might assist you in selecting reading material to augment or substitute for your training.

Three UNIX resources Apple engineers have recommended are:

- "The Design of the UNIX Operating System" by Maurice Bach
(A "Bible" offering a comprehensive overview and a detailed study of internals)
- "UNIX in a Nutshell" from O'Reilly and Associates
(An easy to read reference to augment the bulky UNIX manuals)
- "UNIX Communications" by the Waite Group
(An easy-to-follow guide the communications utilities built into UNIX)

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Tech Info Library Article Number:2749



Tech Info Library

AppleWorks: Modifying For Single Keystroke Operation

Revised: 1/19/93
Security: Everyone

AppleWorks: Modifying For Single Keystroke Operation

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Article Created: 31 March 1988

Article Change History

1/19/93 - UPDATED
• Beagle Brothers now WordPerfect Corporation.
03/8/88 - REVIEWED
• For accuracy.

If you wish to modify AppleWorks by combining multiple-keystroke operations into one keystroke (an important modification for disabled users), you may be interested in two products from WordPerfect Corporation (formerly Beagle Brothers, Inc.):

- Macroworks, for AppleWorks 1.3 or earlier
- SuperMacroWorks, for AppleWorks 2.0

If you need to modify something other than AppleWorks, check the AppleLink database under the Technical Support icon. Preface your query string with 'sped' -- this will access the information on third party materials posted by Apple's Office of Special Education.

To locate a vendor's address or phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:2750



Tech Info Library

ImageWriter LQ: Odd Test Print May Be Bad Ribbon Installation

Revised: 11/22/91
Security: Everyone

ImageWriter LQ: Odd Test Print May Be Bad Ribbon Installation

=====

This article last reviewed: 16 March 1988

If you have an ImageWriter LQ, you may get a strange test print of varying print density which is caused by an incorrectly installed black print ribbon.

If you get a test print with a black ribbon that shows four lines of light print followed by three lines of dark print, the pattern continuing as long as the test print is generated (the ribbon may also move vertically), here is the reason for the problem -- and the solution.

The black ribbon has a small tab on the left-hand end which actuates a micro-switch located in the left-front of the printer near the control panel. This indicates to the printer that it does not have a color ribbon installed (the color ribbon does not have this tab.)

When a COLOR ribbon is installed the micro-switch is not depressed, which sets in motion the various color functions of the printer, such as ribbon vertical motion, overstrike for certain colors, etc.

When the BLACK ribbon is installed, the micro-switch should be depressed, setting the printer into single-color mode.

The characteristics of a color test print are such that four lines are printed in single colors and three lines are generated with overlaid colors. With a color ribbon installed this will result in a color sequence as follows:

- Black, Yellow, Red, Blue, Orange, Green, Purple (the last three are the overlaid colors.)

However, if the black ribbon is installed but the micro-switch is NOT depressed, the printer believes it is in color mode and will generate a test print accordingly. This will result in four lines of light print (printer thinks it is printing single colors and does a single pass with

the print head) and three lines of dark print (printer thinks it is printing overlaid colors and does a double pass with the print head, moving the ribbon vertically as needed to access the second color.)

If you have this problem, make sure the black ribbon is correctly installed in the printer. Correct installation will depress the micro-switch and set the printer in single color mode, which will generate a test print of uniform density.

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Tech Info Library Article Number:2752



Tech Info Library

Part Available For Using ImageWriter II And LQ Overseas

Revised: 11/10/88
Security: Everyone

Part Available For Using ImageWriter II And LQ Overseas

=====

This article last reviewed: 10 November 1988

Domestic 110V ImageWriter II and ImageWriter LQ printers can be used on voltages greater than 110V.

One solution is to use a step-down transformer. Unfortunately, with this method you sacrifice some horizontal and vertical print registration, and force the internal DC stepper motors to run hotter, thus becoming unreliable in a shorter period of time than normal. Apple does NOT recommend or support this method.

A better solution is to use a transformer/voltage switch assembly (Apple Service Part #915-0029). With the installation of this part, an ImageWriter II can be converted from 110V to a universal printer (which be altered to suit power supplies of different voltages.) This switch assembly contains a built-in selector switch, and is designed for an operating range of 100V to 240V, and a frequency range of 48 to 62 Hertz.

The catch is that this particular part is currently not sold domestically (US and Canada,) but only abroad. The #915-0029 transformer/voltage switch assembly is only installed in printers expected to be sold in areas of the world where the operating frequency is in the 48 to 62 Hertz range. However, a consumer CAN request that an international service provider sell them this part.

The transformer/voltage switch assembly is the ONLY part that differs from a 110V printer. It is included in all International-manufactured printers. The transformer assembly used in 110V printers works properly in the operating range of 58 to 62 Hertz only.

(NOTE: Part #915-0029 is for ImageWriter II ONLY. The universal transformer/voltage switch assembly for the ImageWriter LQ is Apple Part #915-0031.)

Most printers sold outside of the United States and Canada are equipped

with the universal, or selectable, power supply, therefore no change -- other than switch position -- is required. Once the printer is converted, no other hardware (such as a step-down transformer) is required.

Here are the frequency operating ranges of ImageWriter II and ImageWriter LQ printers:

- Domestic Units 110V units @ 58 - 62 Hertz
- International Units 110V to 240V units @ 48 - 62 Hertz

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Tech Info Library Article Number:2753



Tech Info Library

Networks With Mac 512Ks Shouldn't Use LaserWriter 5.0 or 5.1

Revised: 11/4/91
Security: Everyone

Networks With Mac 512Ks Shouldn't Use LaserWriter 5.0 or 5.1

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Article Created: 31 March 1988
Article Last Reviewed: 4 November 1991
Article Last Updated: 4 November 1991

TOPIC -----

This article describes issues with networking Macintosh 512K machines to a LaserWriter in which newer Macintoshes are also networked.

DISCUSSION -----

If you have a multi-Macintosh network, you may have compatibility problems between the new versions of the LaserWriter print drivers and older versions of system software. These are the new print drivers:

- Version 5.0 LaserWriter printer driver, currently being shipped with Macintosh system software
- Version 5.1, which is being shipped with the new LaserWriter II printers, and includes some problem fixes.

Unfortunately, the revision of the LaserWriter drivers for the new printers has resulted in a NEW problem, which affects their compatibility with Macintosh 512K system software.

When the new LaserWriter drivers are running on the LAST supported system software for the Macintosh 512K (System 3.2 and 3.3 with Finder 5.3 and 5.4 respectively), problems are created on networks that are running with both Macintosh 512K systems and 1MB Macintosh systems (such as Macintosh Plus, SE, or II).

If users of the Macintosh Plus, SE, or II install either of the new drivers named above on their systems, this will create a conflict with Macintosh 512K users who use an older version of the LaserWriter Prep file.

In other words, if you have a network that includes both Macintosh 512K and other Macintosh systems, NO user on that network should upgrade to version 5.0 or 5.1 drivers. Otherwise, if some users upgrade you will have to re-initialize the LaserWriter every time use of the printer passes from Macintosh 512K users -- who are using pre-5.1 prep file and driver -- to users of the Macintosh Plus (or newer) who have upgraded to print drivers 5.0 or 5.1 on a hard disk.

The new LaserWriter II family of printers are compatible with previous versions of the printer drivers. However, network users should continue using the same versions of print resources they have been using until the compatibility problems have been solved.

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Tech Info Library Article Number:2754



Tech Info Library

Don't Rely On Network Events To Signify Completed Operations

Revised: 3/31/88
Security: Everyone

Don't Rely On "Network Events" To Signify Completed Operations

=====

This article last reviewed: 22 March 1988

You should not rely on "network events" to signify when an operation is completed. Network events may be purged from the event queue if it overflows, thus preventing the application from ever receiving them.

In general, you should avoid using anything other than disk-inserted or device driver events: although disk-inserted and device driver events don't have any higher priority than network events, they are much less likely to get removed from the queue because of a queue overflow. (Network events have this purging problem because multiple ATP requests may complete simultaneously, generating lots of events.)

NOTE: Another major reason not to use network events is because Apple can't guarantee to support them in the future.

It is not necessary to find alternatives to disk or driver events.

Most applications do not need to respond to disk-inserted events. By the time a disk-inserted event reaches the application, the system has already attempted to mount the volume. Most applications use Standard File, which does the response to disk-inserted events for you.

NOTE: If your application DOES need to react to disk-inserted events, it should receive this event in the regular fashion, as described in the "Event Manager" chapter of "Inside Macintosh" (page I-241, Apple Part #030-1277-A).

Also, applications usually don't have to respond to device driver events, either; in most cases, you will use higher level managers. For example, most applications depend on the File Manager, rather than the Disk Driver. Another example: the Sound Driver allows you to make a call to SoundDone to find out if an asynchronous sound is finished.

In the case of device drivers, when an asynchronous call is made you can

poll the ioResult field of the parameter block to see if the call has completed. (This field is set to 1 when the call is made.) Control is returned to the application immediately, even though the call hasn't necessarily completed. The ioResult field receives the actual result code on completion of the call, so you can determine if the call has completed by periodically checking to see if ioResult is still 1.

NOTE: See the Device Manager chapter of the above-mentioned "Inside Macintosh" (page II-173) for more details.

Tech Info Library Article Number:2755



Tech Info Library

A/UX Meets SVVS/SVID Standards

Revised: 9/14/92
Security: Everyone

A/UX Meets SVVS/SVID Standards

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Article Created: 31 March 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy

TOPIC -----

A/UX and SVVS/SVID Standards

DISCUSSION -----

A/UX is SVID-compatible and SVVS Issue 1 & 2 certified.

SVID (System V Interface Definition) is a set of specifications (somewhat like manual pages), of how internal components -- such as system calls, parameters, etc. -- should look. This specification standard allows a higher degree of code portability to other machines.

SVVS (System V Validation Suite) Issue 2 is a series of programs for System V.2 that test the System V.2 porting for about 4-5 hours. If the tests are passed with no modification, the porting (in this case, A/UX) is said to be SVID-compatible.

A/UX Version 1.0 is SVID-compatible. It passes the SVVS Issue 2 certification tests. (Issue 2 is in fact the latest and only appropriate release for our system.)

(NOTE: There is a paragraph stating SVVS-conformance on the back of the cover page of the A/UX Release Notes.)

Not only does A/UX pass the standard test with no modifications required, but it also passes the optional Kernel Extensions test, which is not required for SVID-compatibility.

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Tech Info Library Article Number:2757



Tech Info Library

Using Brother IF-50 And IF-60 Interface Boxes With Apple IIGS

Revised: 3/31/88
Security: Everyone

Using Brother IF-50 And IF-60 Interface Boxes With Apple IIGS

=====

This article last reviewed: 23 March 1988

You can interface your Apple IIGS with a Brother typewriter, using either the Brother IF-50 or IF-60 interface box.

These are the pin-outs for the cable:

Apple IIGS	Brother
-----	-----
1	6
2	20
3	3
5	2
4,7,8 (tied together)	7
	4,5,8 (tied together)

Tech Info Library Article Number:2758



Tech Info Library

HyperCard Write to File Command: How To Replace Old Text

Revised: 6/24/90
Security: Everyone

HyperCard "Write to File" Command: How To Replace Old Text

=====

This article last reviewed: 24 March 1988

You may have experienced a problem with the write command in HyperCard: when you write text to an existing file, HyperCard merely appends the new text to the old, rather than replacing the existing text.

The write command causes HyperCard to copy the specified text into the specified disk file.

Here is a script that should DUPLICATE your problem. First, create a file called "test 1" with the text "ABCD" in it:

```
on mouseUp
  open file "test 1"
  write "ABCD" to file "test 1"
  close file "test 1"
end mouseUp
```

The following scripts reads the text "ABCD" from the file "test 1" and then appends "EFGH" to the file demonstrating your problem:

```
on mouseUp
  open file "test 1"
  read from file "test 1" for 4
  write "EFGH" to file "test 1"
  close file "test 1"
end mouseUp
```

Here is a script that should SOLVE your problem. This script reads the text "ABCD" from the file "test 1" and then REPLACES the text in "test 1" with the text "EFGH":

```
on mouseUp
  open file "test 1"
  read from file "test 1" for 4
```

```
    close file "test 1"  
    open file "test 1"  
    write "EFGH" to file "test 1"  
    close file "test 1"  
end mouseUp
```

The key to replacing text instead of appending text is closing the file "test 1" and then reopening the file "test 1". If you open "test 1" and read for 2 characters, then write "EFGH" to "test 1" you will get "ABEFGH" in your file. In other words, you will append text starting where the read or write statement stopped.

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Tech Info Library Article Number:2759



Tech Info Library

Macintosh II Users Need Excel v1.06

Revised: 3/31/88
Security: Everyone

Macintosh II Users Need Excel v1.06

=====

This article last reviewed: 23 March 1988

Macintosh II users may experience system crashes when printing with Excel version 1.04, and should update to version 1.06.

(NOTE: This is not a consistent problem and is not experienced by all users.)

Excel v1.04 contains code that modifies itself; this causes problems with the 68020 instruction cache. The end result can be a system crash.

This problem has been solved on Excel v1.06. Owners of Excel, registered or otherwise, who have NOT received v1.06 should contact Microsoft for details on how to update.

Tech Info Library Article Number:2760



Tech Info Library

LaserWriter II: Fuser Temperature, Paper Speed

Revised: 5/10/89
Security: Everyone

LaserWriter II: Fuser Temperature, Paper Speed

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This article last reviewed: 31 March 1988

When choosing an acetate transparency for use in a LaserWriter II, it is important to consider the temperature of the printer's fuser roller and the amount of time the acetate sheet is in contract with the roller.

The temperature of the LaserWriter II fuser roller varies from:

- 329 to 356 degrees Fahrenheit
- 165 to 180 degrees centigrade

An 8.5" by 11" sheet of paper or acetate takes approximately 5.8 seconds to travel over the fuser roll. This works out to be about 1.5 inches per second.

The LaserWriter II accepts medium weight photocopier transparencies such as Scotch #503, catalog # 15921-3.

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Tech Info Library Article Number:2763



Tech Info Library

LaserWriter II: Troubleshooting & Environmental Factors (9/95)

Revised: 9/20/95
Security: Everyone

LaserWriter II: Troubleshooting & Environmental Factors (9/95)

=====

Article Created: 9 March 1988
Article Reviewed/Updated: 20 September 1995

TOPIC -----

This article describes how to troubleshoot a LaserWriter II for possible environmental conditions which could contribute to malfunctions.

DISCUSSION -----

Environmental Considerations

During the winter, if the LaserWriter II is moved from a cold area to a warm one or vice versa, condensation can occur inside the printer. This temperature change will result in image defects.

The printer should be allowed to come to room temperature before being used. This will take approximately 1 to 2 hours.

- Condensation on optical surfaces, such as the scanning mirror, lenses, or mirror assembly will result in a light print image.
- If the photosensitive drum in the toner cartridge is cold, the electrical resistance of the photosensitive layer will be high, causing image contrast problems.
- Condensation on the corona assemblies will cause corona charge leakage, resulting in poor print quality.
- Condensation on the pickup guide and feed guide plate will result in paper transport problems.

If condensation does occur, wipe the appropriate assembly or part with a dry cloth or leave the printer turned off for 10 to 20 minutes.

- Toner: During the winter, if the toner cartridge is unsealed soon

after being moved from a cold area to a warm one, condensation can occur inside the toner cartridge. This will also result in image defects. The toner cartridge should be allowed to come to room temperature before being unsealed. This will take approximately 1 to 2 hours, depending upon the temperature of the room.

Preliminary Checks

The following chart lists common problems that have simple solutions. Checking for these problems when you begin troubleshooting can save you time and effort.

Check Here First - Verify that:

- The line voltage does not vary more than 10% from the voltage shown on the serial number plate.
- The LaserWriter II is installed on a solid and level surface.
- The room temperature is kept between 10 degrees C and 32.5 degrees C.
- The relative humidity is kept between 20 and 80 percent.
- The LaserWriter II is not exposed to ammonia or other harmful gases.
- The LaserWriter II is not exposed to direct sunlight.
- The room is well ventilated.
- The LaserWriter II is not located near an open flame.
- The LaserWriter II is not located in a dusty or dirty environment.

Article Change History:

20 Sep 1995 - Reformatted to meet current standards.

03 Mar 1988 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2767



Tech Info Library

Macintosh II or Macintosh SE: MacDraw 1.9 Grey Page

Revised: 1/17/92
Security: Everyone

Macintosh II or Macintosh SE: MacDraw 1.9 Grey Page

=====

This article last reviewed: 10 February 1988

PROBLEM: When opening MacDraw 1.9 on a Macintosh II or Macintosh SE using System 4.2, and Finder 6.0, the page comes out grey and the application does not allow any further use of the program.

CAUSE: Either there are no print drivers or the print drivers are damaged.

CURE: If there are no print drivers, install the desired print drivers on the system. If the print drivers exist but are possibly damaged, discard the current drivers and reinstall the new ones. The old print drivers MUST be thrown in the TRASH.

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Tech Info Library Article Number:2768



Tech Info Library

Apple IIGS and Third Party Joysticks

Revised: 7/20/92
Security: Everyone

Apple IIGS and Third Party Joysticks

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Article Created: 21 March 1988
Article Last Reviewed: 17 July 1992
Article Last Updated:

PROBLEM: When using the IIGS with a joystick and the appropriate software, the "fire" button appears to be stuck on or inoperative. Replacing the logic board takes care of the problem temporarily, but within one to two weeks the system comes back in with the same symptoms. Again, replacing the logic board takes care of the problem. The option or the open-Apple key may appear to be depressed continuously.

CURE: Check the customer's joystick carefully. There are several vendors shipping joysticks which can be made compatible with other manufacturers' systems by flipping a switch on the joystick. Permanent damage to the logic board can occur if the joystick configuration switch is set to the wrong position for any length of time. Replacing the logic board will cure the problem, but be sure to instruct the customer about the cause of the damage and the importance of leaving the switch in the correct position.

This type of damage is not covered by Apple's customer or service warranty.

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Tech Info Library Article Number:2770



Tech Info Library

A/UX: Streams Defines Standard Interfaces For I/O (9/94)

Revised: 9/19/94
Security: Everyone

A/UX: Streams Defines Standard Interfaces For I/O (9/94)

=====

Article Created: 21 April 1988
Article Reviewed/Updated: 19 September 1994

TOPIC -----

What are UNIX STREAMS?

DISCUSSION -----

STREAMS defines standard interfaces for character I/O within the UNIX kernel and between the kernel and the user level. It consists of a set of structures, kernel facilities, system calls, and kernel utility routines. This collection can create, use, and dismantle a "Stream".

By connecting a selection of STREAMS components, a Stream is created -- a full-duplex processing and data transfer path between a driver in kernel space and a process in user space. The primary components of a Stream are a Stream head, a driver, and 0 or more added modules between the Stream head and driver. It is similar in concept to a Shell pipeline, except that data flow and processing are bidirectional.

STREAMS can best be described as a kernel mechanism that provides a uniform method of implementing network protocols and supporting different network media. It enables the development of application software that is independent of the underlying network services and data communication drivers. A change in medium or protocol can be accommodated through the substitution of STREAMS modules, without need for modification of the application software. It also enables the modular development of protocol software. Portability of software that performs network services is facilitated through the isolation of hardware dependencies in particular modules.

The development process is simplified by the ability to combine STREAMS modules to perform more sophisticated network services and to use the same modules over different media and in different network architectures. The STREAMS feature within A/UX is provided in addition to the existing device driver mechanisms.

In A/UX, the ADB (Apple DeskTop Bus) connection to the keyboard and mouse are supported by STREAMS I/O device drivers.

STREAMS is normally not available with UNIX System V.2. Through special licensing arrangements, a proper subset of the feature is available in A/UX.

For more information on STREAMS, see:

- AT&T's "UNIX System V STREAMS Primer"
- AT&T's "The STREAMS Programmer's Guide"
- AT&T's "System V Interface Definition"
- "Design of the UNIX Operating System" by Maurice Bach.

Article Change History:

19 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:2787



Tech Info Library

HD Setup: Use V1.3 Only To Restore Disk Formatted With V1.3

Revised: 5/9/89
Security: Everyone

HD Setup: Use V1.3 Only To Restore Disk Formatted With V1.3

=====

This article last reviewed: 25 March 1988

Full-volume backups taken from a hard drive formatted with HD Setup 1.3 are incompatible for restoring to drives formatted with HD Setup version 1.5. Also, depending on the manufacture of the hard drive, the formatted disk space for the same size drive will vary by as much as 1MB to 2MB, depending on which version of HD Setup is used.

Use HD Setup 1.3 only when it's necessary to restore a backup that was taken from a drive that was FORMATTED with HD Setup 1.3.

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Tech Info Library Article Number:2788



Tech Info Library

LaserWriter: Changing Baud Rate From Software

Revised: 10/18/88
Security: Everyone

LaserWriter: Changing Baud Rate From Software

=====

This article last reviewed: 28 March 1988

To reset a LaserWriter's baud rate, even to a rate not available though the hardware DIP switches, send the following PostScript code to the LaserWriter:

```
statusdict begin 25 sccbatch exch pop
68 eq {stop} if
serverdict begin 0 exitserver
statusdict begin 25 19200 68 setsccbatch
```

This example sets the LaserWriter to 19,200 baud (using 8 data bits and DTR flow control). The change does not take effect until the end of the current job. The current job, in this case, is the PostScript code you are sending. These settings are then in effect for the duration of the next print job, and in any case will be reset within 30 seconds by the switch polling function described below. This means you must start your print job within 30 seconds in order to retain the new parameters.

If the hardware switches are used to reset the bud rate, the switches override the rate set via software.

(The test sheet will not show 19,200 because the LaserWriter defaults back to switch settings when powered up.)

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Tech Info Library Article Number:2789



Tech Info Library

Apple III QuickFile: Converting Data to Macintosh

Revised: 4/28/88
Security: Everyone

Apple III QuickFile: Converting Data to Macintosh

=====

This article last reviewed: 25 March 1988

One method of moving Apple III QuickFile data to a Macintosh involves AppleWorks running on an Apple II with both a 5.25" disk drive and a 3.5" disk drive.

1. Because Apple III SOS and Apple II ProDOS are file-compatible, AppleWorks running on an Apple II can read QuickFile files from an Apple III's 5.25" disk.
2. The AppleWorks files can then be saved to a 3.5 disk.
3. A Macintosh running AFE (Apple File Exchange) can then read, via AFE's Works-to-Works transporter, the files into Microsoft Works.

Tech Info Library Article Number:2790



Tech Info Library

Apple HD SC: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple HD SC: Specifications (Discontinued)

=====

Article Created: 28 April 1988
This article last reviewed: 28 March 1988

	Head Movement Method	Average Access Time

HD-20 SC	Open Loop Stepper Actuator	65 ms
HD-40 SC	Rotary Voice Coil	30 ms
HD-80 SC	Rotary Voice Coil	30 ms

Interleave Factor

No specific interleave factor is recommended, but these are the ones used:

Apple II	3 to 1
Macintosh Plus	3 to 1
Macintosh SE	2 to 1
Macintosh II	1 to 1

SCSI Transfer Rates

1.25 MB maximum

actuals: Macintosh Plus	265 KB
Macintosh SE	660 KB
Macintosh II	937 KB

Apple II Peripheral Bus Transfer Rate: 1 MB maximum

Macintosh Slot Transfer Rates:

Macintosh SE Expansion Bus	7.8336 MB
Macintosh II NuBus	10 MB maximum

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Tech Info Library Article Number:2791



Tech Info Library

LocalTalk PC Card: Version 2.0 Changes

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card: Version 2.0 Changes

=====

This article last reviewed: 30 March 1988

Version 2.0 of the LocalTalk PC Card driver (ATALK.EXE) does not use the card's hardware interrupt feature. This means that the default card settings do not conflict with a COM2 serial port, and the LocalTalk PC Card can coexist with other devices using hardware interrupts.

Conflicts with other cards are unlikely because the LocalTalk PC Card driver uses relatively little used address spaces and M60 software interrupts.

No changes were made to the LocalTalk PC Card driver with respect to the DMA channels or card address range. The driver was rewritten and code optimized to take up less space, and a numeration problem was fixed.

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Tech Info Library Article Number:2792



Tech Info Library

Floppy Disks: How They Are Affected By Magnetic Fields

Revised: 9/16/88
Security: Everyone

Floppy Disks: How They Are Affected By Magnetic Fields

=====

This article last reviewed: 25 March 1988

Apple Technical Support is sometimes asked how to measure a magnet to determine if it can damage the data on diskettes. Specifications of this nature are not very informative, because there are numerous variables. Besides, not many users have instrumentation to test the magnetic field to insure the safety of the information stored on the diskette.

Some of the variables:

- the strength and proximity of the magnet
- the flux field of the magnet, which may be highly influenced by the ferrite material to which it is attached
- the age of the disk and the age of the data on the disk
- the age of the disk drive
- the condition, alignment, and cleanliness of the disk drive
- the orientation of the disk in relationship to the field

Our recommendation is always to isolate diskettes from magnetic sources, including telephones, certain monitors, even the cover of the ImageWriter I (which contains a small magnet as part the interlock switching mechanism).

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Tech Info Library Article Number:2793



Tech Info Library

MultiFinder's Backgrounder: Where to Find Documentation

Revised: 8/7/91
Security: Everyone

MultiFinder's Backgrounder: Where to Find Documentation

=====

Article Created: 25 March 1988
Article Last Reviewed: 7 August 1991
Article Last Updated: 7 August 1991

TOPIC -----

Where can I find documentation on MultiFinder's Backgrounder?

DISCUSSION -----

The Backgrounder is documented in Tech Notes 126, 158, 177, and 180. Tech Notes can be found in the Developer Tech Answers Library on AppleLink. To locate this library, use the BB Pathfinder in the AppleLink Information icon.

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Tech Info Library Article Number:2794



Tech Info Library

Macintosh SCSI Hard Disk Drives: How Capacities Are Calculated

Revised: 9/29/90
Security: Everyone

Macintosh SCSI Hard Disk Drives: How Capacities Are Calculated

=====

This article last reviewed: 30 March 1988

After a hard disk is formatted, the Finder shows the "available" storage in kilobytes. With a given drive, this number varies with the version of HD Setup software used. For example:

Drive	HD Setup 1.3	HD Setup 1.5

HD 40SC	41,439K	39,333K
HD 80SC	76,911K	76,869K

To calculate the drive's capacity in bytes, multiply the number of kilobytes (K) by 1,024. To calculate the drive's capacity in megabytes, divide the number of kilobytes by 1,024. The capacity of the drives after being formatted with HD Setup 1.5 is:

HD 40SC	39,333K	=	40,276,992 bytes	=	38.4MB
HD 80SC	76,869K	=	78,713,856 bytes	=	75.1MB

The sizes of formatted drives varies between manufacturers, depending on the intelligence of the drive controller. Some drive controllers spare bad blocks automatically or allocate a range of blocks that can be swapped with bad blocks. It is the industry practice to quote the size of a formatted drive even though the size of the drive will vary depending on the operating system with which the drive is formatted.

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Tech Info Library Article Number:2796



Tech Info Library

AppleShare 2.0: Can't Administrate With Print Server Running

Revised: 11/2/88
Security: Everyone

AppleShare 2.0: Can't Administrate With Print Server Running

=====

This article last reviewed: 30 March 1988

The AppleShare Administrator and the AppleShare Print Server are both concurrent applications, meaning they run at the same time. Since the AppleShare File Server supports only one concurrent application at a time, you won't be able to administer the AppleShare File Server with the AppleShare Print Server running concurrently.

To perform administrative functions, quit the AppleShare Print Server and start up the AppleShare Administrator program from the "Server" menu.

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Tech Info Library Article Number:2797



Tech Info Library

RasterOps Corporation

Revised: 4/3/97
Security: Everyone

RasterOps Corporation

=====

Article Created: 18 September 1989
Article Reviewed/Updated: 3 April 1997

RasterOps Corporation

2500 Walsh Ave.
Santa Clara, CA 95051

408-562-4200

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Company Profile:

Hardware manufacturer, primarily video products for the Macintosh, including video conference (videoconference) products.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2799



Tech Info Library

Apple High-Res RGB Monitor Convergence Adjustment

Revised: 1/17/92
Security: Everyone

Apple High-Res RGB Monitor Convergence Adjustment

=====

This article last reviewed: 26 April 1988

Because the adjustment potentiometers on the main logic board of the Apple High-Res RGB monitor can accidentally be bumped during installation, the monitor screen's vertical convergence can sometimes be off by as much as 1/8".

Adjusting the V-twist control will allow only a small section of the screen to show the correct vertical adjustment, while the top and bottom borders remain ill-adjusted. While the center of the screen may appear to be adjusted correctly, there will be distinct red-, green- and blue-shadowed images at the top and bottom of the screen. These shadowed images will appear in different sizes (i.e. the green image is larger than the red image, and the red image is larger than the blue image.)

The top and bottom sections of the screen can be adjusted correctly by adjusting the V-TOP and V-BOTTOM controls on the main logic board.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2800



Tech Info Library

ImageWriter II High Quality Print Problem/Cure

Revised: 1/17/92
Security: Everyone

ImageWriter II High Quality Print Problem/Cure

=====

This article last reviewed: 26 April 1988

BEFORE YOU START: Familiarize yourself with the ImageWriter II Technical Procedures. Be sure to follow proper ESD procedures.

During the printing of a high quality page on an ImageWriter II, after two-thirds of a page has printed, the carriage will move quickly to the left side of the printer and then continue printing the page, with the left and right margins incorrect.

Check the following:

1. Clean the guide rail with alcohol and relubricate with new lubricant. A dirty guide rail can cause the carriage to stall momentarily, which affects the timing of the carriage motor control circuit.
2. Remove the printhead and paper guide and print the document again. (This won't print, of course, but the carriage will still move as if it was.)

If the symptom goes away, then perform the following steps:

- A. Reinstall and properly adjust the paper guide, making sure it is not rubbing on the platen.
- B. One of the pins in the printhead may not retract fast enough and will drag on the platen while the carriage is moving. Replace the printhead and perform the test again.

If the above suggestions do not solve the problem refer to the AppleLink Technical Information Library or the ImageWriter II Technical Procedures for more information on troubleshooting ImageWriter IIs.

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Tech Info Library Article Number:2801



Tech Info Library

Personal Services/PC and Personal Services/370 Described

Revised: 7/26/89
Security: Everyone

Personal Services/PC and Personal Services/370 Described

=====

This article last reviewed: 6 July 1989

Personal Services/PC is an office-oriented mail management system for the IBM PC user. It communicates with Office Systems Nodes (OSNs) using Document Interchange Architecture (DIA).

DIA provides four services:

- DDS (Document Distribution Services)
- DLS (Document Library Services)
- FTS (File Transfer Services)
- and APS (Application Processing Service)

DIA can also communicate with other PCs running PS/PC, peer-to-peer without the use of an OSN. PS/PC lets the PC user maintain a local "file cabinet" that contains items that have been sent or received. It also allows the user to develop and store distribution lists, including a "nickname" file. PS/PC requires a minimum of 224K to run on the IBM PC.

For a Macintosh to work in this environment, Personal Services/370, a mainframe version of Personal Services, must be installed on the host mainframe.

PS/370 is active in the OSN, and using the OSN, can distribute documents to other nodes using DIA as its transport and management mechanism. The "file cabinet" and lists are maintained on the mainframe. Documents transported via DIA use DCA (Document Content Architecture) as the document definition language.

Using Apple File Exchange, you can reformat a Macintosh document into DCA then distribute it to other PS nodes.

You can successfully integrate Macintosh into a DISOSS office network. Follow these basic steps:

- 1) Using the Personal Services/370 application and its MEMO format option on an MVS host, export DISOSS documents to a TSO partitioned data set.
- 2) Use a TSO file transfer program (AppleLine, Avatar, Netway, DCA, and the like) in text mode to download the document to a Macintosh.
- 3) Do the required reformatting with any Macintosh word processor.

You can just as easily upload text documents to TSO, and then import them into DISOSS using the same PS/370 MEMO option. PS/370 can also route the document to other users. A Macintosh can access PS/370 as a 3270 terminal through the file transfer package.

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Tech Info Library Article Number:2802



Tech Info Library

MacTerminal: Edit MacTerminal Documents Only With MacTerminal

Revised: 5/3/88
Security: Everyone

MacTerminal: Edit MacTerminal Documents Only With MacTerminal

=====

This article last reviewed: 31 March 1988

If you:

- create a MacTerminal document,
 - save it, then
 - use a text editor other than MacTerminal itself to make changes to the document,
- then MacTerminal may refuse to open the document, saying that the document has been modified by another application.

Here's the reason. All present versions of MacTerminal store text in the data fork of the file, and information on carriage returns in its resource fork. When MacTerminal opens the file, it compares what the resource fork states where the carriage returns should be located with where they actually exist in the data fork. If the information differs, the file will not open.

This is a known problem that will most likely be eliminated in a future version of MacTerminal. Until then, there are two workarounds:

- edit MacTerminal documents only with MacTerminal, or
- edit MacTerminal documents with another application or desk accessory, using Copy and Paste to move the information to and from MacTerminal.

Tech Info Library Article Number:2803



Tech Info Library

EtherTalk Card Software: v.1.1 Improves DECnet Compatibility

Revised: 5/3/88
Security: Everyone

EtherTalk Card Software: v.1.1 Improves DECnet Compatibility

=====

This article last reviewed: 31 March 1988

Version 1.1 of the EtherTalk software supports multicast message selection and can set the Ethernet address of the EtherTalk card. This enhancement makes the EtherTalk Card more compatible with DECnet.

Version 1.1 of the EtherTalk software is currently shipping with the EtherTalk cards.

Tech Info Library Article Number:2804



Tech Info Library

Apple Tape Backup 40SC: How 1.1 Differs From 1.0

Revised: 5/9/89
Security: Everyone

Apple Tape Backup 40SC: How 1.1 Differs From 1.0

=====

This article last reviewed: 31 March 1988

Backups taken with version 1.1 of Apple Tape Backup 40SC Software often take less time than those taken with version 1.0, even with exactly the same amount of data to back up. And a backup that requires a second tape cartridge with version 1.0 may need only one cartridge with version 1.1. Here's why:

- Version 1.0 backs up all sectors from the hard disk, both used and unused sectors. This is why version 1.0 always needs a second tape cartridge to back up a 40MB disk, even if the disk held less data than the tape theoretically holds, 38.5MB.
- Version 1.1 backs up only through the last used sector. Unused sectors may still get backed up, but none that are beyond the last used sector. Version 1.1 needs a second tape cartridge only when the last used sector is beyond the 38.5MB point on the disk. If, for example, you have 30MB of data to back up, only one tape is required.

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Tech Info Library Article Number:2805



Tech Info Library

Apple Personal Modem: Correction to User's Manual

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Correction to User's Manual

=====

This article last reviewed: 30 March 1988

In the Apple Personal Modem User's Manual (P/N 030-2001-C), page 84, Figure F-1, the picture and pin numbering of the 8-pin connector are incorrect. The APM port should be numbered from right to left, starting with the two-pin row at the bottom. The APM connector should (generally) look like this:

"Female" mini din-8	8	7	6
connector	5	4	3
	2	1	

Here's the diagram for the cable plugs:

"Male" mini din-8	6	7	8
connector	3	4	5
	1	2	

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Tech Info Library Article Number:2807



Tech Info Library

ImageWriter LQ: Correction to Owner's Guide

Revised: 5/3/88
Security: Everyone

ImageWriter LQ: Correction to Owner's Guide

=====

This article last reviewed: 30 March 1988

In the ImageWriter LQ Owner's Guide (P/N 030-3068-A), page 190, Figure C-1 should have pin 4 closer to pin 3:

"Female" mini din-8	8	7	6
connector	5	4	3
	2	1	

The numbering is correct for the port on the ImageWriter LQ.

Tech Info Library Article Number:2808



Tech Info Library

Macintosh Monitors: Eliminating Scan Lines From Video Recordings

Revised: 9/15/92
Security: Everyone

Macintosh Monitors: Eliminating Scan Lines From Video Recordings

=====

Article Created: 31 March 1988

Article Change History

9/15/92 - REVIEWED
• For technical accuracy.

TOPIC -----

A scan line sometimes rolls down the screen on video recordings of a Macintosh screen.

DISCUSSION -----

The best way to get rid of the scan line is to use a modification that lets the Macintosh accept an external composite sync. This genlocks the Macintosh screen to the camera.

One GenLock interface, for Macintosh through SE, is supplied by Digital Design Labs.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:2809



Tech Info Library

LaserWriter IINTX: Switching Modes Using Software, 1 of 2 (2/95)

Revised: 2/21/95
Security: Everyone

LaserWriter IINTX: Switching Modes Using Software, 1 of 2 (2/95)

Article Created: 29 April 1988
Article Reviewed/Updated: 21 February 1995

TOPIC -----

It is possible to connect a LaserWriter IINTX to two devices (for example, to a Macintosh via the AppleTalk port and to another device via the serial port) and to switch between them via softswitches.

DISCUSSION -----

It is not necessary to use the DIP switches, which are not rated for large numbers of cycles. The LaserWriter IINTX checks the position of the DIP switches at regular intervals (<30 Sec) and if the switch position does not agree with the software-set parameters, the printer updates the parameters to the switch settings. Since there is no switch setting for 8-bit data, it will default back to the 7-bit default setting of the switches. This was intended to be a feature.

All changes to the persistent parameters must take place outside the server loop. This is done by exiting the server loop, then sending the necessary changes. The PostScript syntax is listed below.

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
25 9600 3 setsccbatch
end
```

```
%  
% End PostScript Code  
%=====
```

This sets the 25-pin serial interface to 9600 baud with mark parity.

It is possible to have both RS-232 and AppleTalk connected at the same time, but it's necessary to turn off the AppleTalk RS-422 channel before turning on the RS-232 channel. This is done by sending this PostScript code:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
9 0 3 setsccinteractive <-- new line
25 9600 3 setsccbatch
end
%
% End PostScript Code
%=====
```

This turns off the DB-9 (and Mini-8) channel and turns on the DB-25 serial channel for use at 9600 baud. The reverse is possible by changing the appropriate codes.

There are softswitch modes within the LaserWriter IINTX. By using the setsoftwareiomode command, you can specify which software interface will be used to communicate. The options are:

```
0    PostScript Batch
1    PostScript interactive
2    Diablo 630
3,4  Not Used
5    H-P LaserJet Plus emulation
```

In addition to setting setsoftwareiomode, it is necessary to use sethardwareiomode to set the hardware method of communication. The setsoftwareiomode must be done outside the server loop, but the sethardwareiomode can be done within the server loop, which indicates it will not be persistent -- by the old definition of persistent -- but will be in effect only for the duration of the print job.

A complete listing of what we currently believe would perform all the functions with only one code segment might look like this:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver    % leave server loop
statusdict begin                % push statusdictionary on the stack
9 0 3 setsccinteractive          % turn off RS-422 channel (AppleTalk)
25 9600 3 setsccbatch            % turn on DB-25 serial channel
```

```
setting setsoftwareiomode 5      % Use H-P LaserJet + mode
setting sethardwareiomode 0      % use serial communications
e3,                              % end changes to statusdict
%
% End PostScript Code
%=====
```

If every print job is preceding by this code, or something similar, the parameters should be available when they're needed.

LaserWriter IINT note: The LaserWriter IINT still uses EEROM to store persistent parameters: write life per address of 10,000. The LaserWriter IINTX has a Zero Power RAM with unlimited write cycles to any given address.

Article Change History:

21 Feb 1995 - Reformatted and added PostScript caution.

Support Information Services

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Tech Info Library Article Number:2810



Tech Info Library

LaserWriter IINTX: Switching Modes Using Software, 2 of 2 (2/95)

Revised: 2/23/95
Security: Everyone

LaserWriter IINTX: Switching Modes Using Software, 2 of 2 (2/95)

Article Created: 20 April 1988
Article Reviewed/Updated: 23 February 1995

TOPIC -----

Continuation of how to switch modes using the LaserWriter IINTX.

DISCUSSION -----

You cannot switch FROM an emulation mode on the LaserWriter IINTX using software. It is possible to change TO emulation modes from PostScript mode through software, but you must cycle the DIP switches to get back into PostScript.

If two Macintosh systems, one on AppleTalk and one on a serial connection, are connected to a LaserWriter IINTX, and if the switches are set for LocalTalk (all switches down), you can print from AppleTalk. The following PostScript program changes the printer mode to Diablo 630 and serial communications at 9600 baud:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver    % exit server loop
statusdict begin                % push statusdict on the stack
9 0 3 setsccbatch               % turn off RS-422 channel
25 9600 3 setsccbatch           % turn on serial channel
2 setsoftwareiomode             % set software mode to Diablo 630
0 sethardwareiomode             % set hardware to serial communications
end                             % end changes to status dictionary
%
% end PostScript Code
%=====
```

This code is similar to that in part 1 of this article, except:

- the syntax on the setsoftwareiomode and sethardwareiomode commands are

corrected

- the sethardwareiomode command is outside the server loop
- secsccinteractive is changed to setsccbatach

This code, if downloaded from an AppleTalked Macintosh, changes the LaserWriter IINTX into Diablo emulation mode and set the serial channel on the DB-25 to 9600 baud. This was verified by sending more PostScript code from the AppleTalked Macintosh, which was ignored. If the printer is power cycled now, the test print will show Diablo mode at 9600, which verifies not only that the printer is in a different mode, but that the persistent parameters do remain after a power off, as they did on a LaserWriter Plus.

Now, a problem: there is a known, but undocumented, problem in the ROMs that does not allow switching the LaserWriter IINTX out of LaserJet mode via software. There is also a problem that does not allow switching out of Diablo emulation mode via software either.

The command sequence is Escape-Delete-0 followed by a Control (Command)-D. This is supposed to interrupt execution of an emulation mode and allow mode changing. When the first part of this code is sent to the printer in an emulation mode, the green light flashes, because the printer sees the code coming in, but the printer will do nothing without the Control (Command)-D. If you then send the Control (Command)-D, the green light stops flashing but the printer is still in emulation mode. This can be verified by sending another file over the serial connection. This problem is being addressed.

In order to get out of any emulation mode with the current version of the ROMs, it is necessary to cycle the DIP switches, to get the printer back into PostScript mode. Power cycling will not accomplish this, but changing the switches will.

To switch modes:

Step 1:

Connect serial device to LaserWriter IINTX via DB-25.

Step 2:

Connect Macintosh via Mini-8 LocalTalk connector.

Step 3:

Set all switches to DOWN position (reversed from manual).

Step 4:

On power-up, test print should show PostScript and AppleTalk on. The printer will now print from the Macintosh.

Step 5:

From Macintosh via a PostScript downloader, send code to switch to serial. The

printer is now accessible from the RS-232 device.

Step 6:

Cycle DIP switches 1 & 2 up, wait 30 seconds, then down again. The printer is now back in PostScript Appletalk mode. If the power is now cycled off and on, the test print will show PostScript and AppleTalk once again.

Here is a code segment that may be of some value when attempting to software switch between modes. Adobe provided this short program that allows going into Diablo emulation mode without actually changing switch settings. This is an internal call to the emulation mode and the mode change persists only for the duration of the print job. Send the following code from PostScript serial mode or PostScript batch mode. Terminate the print job with a Control-D.

CAUTION:

This code could hang the AppleTalk network if both LocalTalk and serial cables/devices are connected at the same time, and this mode is selected via software from the serial (RS-232) connector, and if the AppleTalk channel is not set to the 0-baud rate. This is an undocumented and unsupported feature and neither Adobe nor Apple will be responsible for any problems arising from the use of this code.

```
%=====
% Begin PostScript Code
%
%%Title: Invoke Diablo Emulation
%%For: Apple Computer Inc.
%%End Comments
%%BeginProcSet: doDiablo
40 0 translate
\doDiablo { printpageflag false def
{statusdict begin (Courier) (Courier-Bold) 10 0 \diablo load end exec }
stopped pop printpageflag { showpage } if } def
%%EndProcSet
%% EndProlog
%% BeginSetup
%%EndSetup
doDiablo
%
% end PostScript Code
%=====
```

Article Change History:

23 Feb 1995 - Added PostScript Caution and reformatted.

Support Information Services

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Tech Info Library Article Number:2811



Tech Info Library

System Software: Why All Apple Products Don't Use Same Version

Revised: 5/3/88
Security: Everyone

System Software: Why All Apple Products Don't Use Same Version

=====

This article last reviewed: 21 April 1988

Various Apple products, even though they leave the factory at the same time, may contain different versions of system software. Here are some reasons why:

- The product may be shipped with the version of system software under which the product was tested. With many Apple products, there is a long test cycle, and it is difficult to re-test the product and change the system software version just before the product's release.
- When new system software is released, it takes time, due to build schedules, for the new software version to be incorporated into the product's packaging.
- Sometimes, a specific modification to the system software is required for a new product. For example, the LaserWriter IISC, which required modifications to the System file and was shipped with System 4.3, which was not a general release.

Tech Info Library Article Number:2812



Tech Info Library

DiskExpress: It Can Erase Hard Disks to Military Specifications

Revised: 8/4/89
Security: Everyone

DiskExpress: It Can Erase Hard Disks to Military Specifications

=====

This article last reviewed: 21 April 1988

If you need software that can erase Macintosh hard disks to military specifications (that is, writes zeros to every location, then ones to every location), a product called DiskExpress may meet your need.

DiskExpress is a disk optimizer for fragmented files and can erase unused blocks. It offers two options to erase unused blocks or the entire volume:

- erase once, writing binary zeros
- erase three times, first writing binary zeros, then binary ones, and finally binary zeros again.

DiskExpress is AppleShare compatible.

For more information, search the Tech Info Library on ALSoft, the publisher of DiskExpress.

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Tech Info Library Article Number:2814



Tech Info Library

A/UX: Changing Kernel Parameters (6/93)

Revised: 8/12/93
Security: Everyone

A/UX: Changing Kernel Parameters (6/93)

Article Created: 14 June 1990
Article Reviewed/Updated: 25 June 1993

TOPIC -----

Where can I find information on kernel parameters? How can I change kernel parameters?

DISCUSSION -----

Beyond minor references in the A/UX documentation suite, there are two places to find information on kernel parameters:

- See the man page for `kconfig(1M)`.
- See `kconfig(1M)` in the "A/UX System Administration's Reference"

Type this command to get a list of current Kernel parameters:

```
kconfig -av /unix
```

The MSGxxx parameters (the ones that deal with messages) and SHMxxx parameters (the ones that deal with shared memory) cannot be viewed or modified via the "kconfig" command, because they are defined and initialized separately inside the kernel. But, by using "adb" (a kernel debugger), you may be able to change these parameters. The last part of this article describes how to change the kernel parameters for the Shared Memory, Messaging Operations, and Semaphores within A/UX 1.0.

The Shared Memory, Semaphore, and Message Operation structures are defined in:

/usr/include/sys/shm.h	Shared Memory
/usr/include/sys/sem.h	Semaphore
/usr/include/sys/msg.h	Message Operations

..TIL02815-A-UX-Changing_Kernel_Parameters_6-93_(TA37949).pdf

The structure members are initialized in /usr/include/sys/space.h.
The values used for initialization are defined in two locations:

```
/usr/include/sys/config.h
../psn/cf/bnetconfig.h
```

The bnetconfig.h file is found only in the source code and is the last file to be read in the build process, so it "overrides" the values in the config.h file. The values listed within this article are those found in bnetconfig.h. In the original version of this article, we verified them by looking at the virgin A/UX 1.0 binary (/newunix).

If you have a version of A/UX prior to Release 3.0.1, you can change parameters with ADB. In A/UX 3.0.1, you can use kconig to set share memory parameters.

Using adb to Change Parameters

Here is how to change the shmseg value from 6 to 12:

```
$ adb -w /unix          # you type the adb command
cannot open core        # system displays
ready                   # system displays
shminfo+c?D             # you type to display the value
                        # in Decimal
shminfo+0xC:            6      # system displays
.?W 0d12                # you type to change the value
                        # in decimal
shminfo+0xC:            0x6 = 0xC # system displays
$q                      # to quit adb, you type
```

To determine the offset and value, look at the tables below, i.e. shmseg is at shminfo+C.

Shared Memory

```
-----
shminfo+0:  262144
    int      shmmax      /* max shared memory segment size */
    #define  SHMMAX      262144
shminfo+4:   1
    int      shmmin      /* min shared memory segment size */
    #define  SHMMIN      1
shminfo+8:  100
    int      shmmni      /* # of shared memory identifiers */
    #define  SHMNMI      100
shminfo+C:   6
    int      shmseg      /* max attached shared memory segments per process */
    #define  SHMSEG      6
shminfo+10:  0
    int      shmbrk      /* gap (in clicks) used between data and shared
                        memory */
                        0
shminfo+14:  512
```

```
int      shmall      /* max total shared memory system wide (in clicks) */
#define   SHMALL      512

Semaphores
-----
seminfo+0:  50
int      semmap      /* # of entries in semaphore map */
#define   SEMMAP      50
seminfo+4:  50
int      semmni      /* # of semaphore identifiers */
#define   SEMMNI      50
seminfo+8:  300
int      semmns      /* # of semaphores in system */
#define   SEMMNS      300
seminfo+C:  30
int      semmnu      /* # of undo structures in system */
#define   SEMMNU      30
seminfo+10: 25
int      semmsl      /* max # of semaphores per id */
#define   SEMMSL      25
seminfo+14: 10
int      semopm      /* max # of operations per semop call */
#define   SEMOPM      10
seminfo+18: 10
int      semume      /* max # of undo entries per process */
#define   SEMUME      10
seminfo+1C: 94
int      semusz      /* size in bytes of undo structure */
#define   SEMUSZ      (sizeof(struct sem_undo)+sizeof(struct undo)*SEMUME)
seminfo+20: 32767
int      semvmx      /* semaphore maximum value */
#define   SEMVMX      32767
seminfo+24: 16384
int      semaem      /* adjust on exit max value */
#define   SEMAEM      16384

Message Operations
-----
msginfo+0:  100
int      msgmap      /* # of entries in msg map */
#define   MSGMAP      100
msginfo+4:  8192
int      msgmax      /* max message size */
#define   MSGMAX      8192
msginfo+8:  16384
int      msgmb      /* max # bytes on queue */
#define   MSGMB      16384
msginfo+C:  50
int      msgmni      /* # of message queue identifiers */
#define   MSGMNI      50
msginfo+10:  8
int      msgssz      /* msg segment size (should be word size multiple) */
#define   MSGSSZ      8
```

```
msginfo+14:    200
    int         msgtql      /* # of system message headers */
    #define     MSGTQL      200
msginfo+18:    8192
    ushort      msgseg      /* # of msg segments (MUST BE < 32768) */
    #define     MSGSEG      8192
```

Article Change History:

25 Jun 1993 - Revised for clarity.

31 Aug 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:2815



Tech Info Library

Macintosh II: Thermal Switch Prevents Overheating

Revised: 7/2/92
Security: Everyone

Macintosh II: Thermal Switch Prevents Overheating

=====

Article Created: 25 April 1988
Article Last Reviewed: 29 June 1992
Article Last Updated:

TOPIC -----

What prevents my Macintosh II from overheating if fan fails?

DISCUSSION -----

The Macintosh II power circuit has a safety feature that prevents the system from overheating in the case of a fan failure or blocked ventilation. If the temperature exceeds 65 degrees C (149 degrees F), a thermal switch on the +5V Power Fail Warning current path, through a 220-ohm resistor, opens. The opening of this switch turns off the power supply within 2 ms.

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Tech Info Library Article Number:2817



Tech Info Library

Computer Viruses (part 1 of 4)

Revised: 9/26/94
Security: Everyone

Computer "Viruses" (part 1 of 4)

=====

This article last reviewed: 15 April 1988

GENERAL ISSUES

What is a virus?

A virus is a program with two distinct functions:

- It spreads itself from machine to machine (self-reproducing code). This includes the actual infection of other systems as well as the stashing away of code into as many "carriers" as possible.
- It implements the "symptoms" planned by the perpetrator of the virus. This could be any number of things, up to and including erasing a disk on a specific date.

A Bit of History

Computer viruses have been around for almost as long as computers. John Van Neumann, the father of the modern computer, toyed with the idea of self-reproducing computer code as early as 1948. In the late 1970s, there was even a training ground for the writing of viruses. It was a program called Core Wars that implemented an artificial environment pitting two virus programs against each other.

Viruses Are Not Unique to the Macintosh

The Macintosh is not the only system to be plagued by viruses. Mainframe and minicomputers are also targets for virus programmers. One of the more recent mainframe incidents was the virus that invaded IBM's mail system and brought it to its knees for a couple of days. IBM PC users have been experiencing viruses for several years now. The most common method of attack is through the COMMAND.COM file. The Macintosh community has been lucky to have gone so long without virus programming becoming the thing to do.

Not All Viruses Are Meant To Be Damaging, But...

Viruses are not all meant to be damaging. The programmer may just want to prove he can do it and have the satisfaction of reading about it in magazines and on the BBS network. Sometimes, these viruses can cause problems anyway. For example, the virus that has prompted this series of articles was meant to be benign except in specific cases. However, it takes up memory and processing time and has caused random side effects such as printing problems and system crashes.

Don't Panic; Don't Overreact

If you think that you have a virus, it's important to not overreact. It is important to take a step back and evaluate the situation calmly. Once you know that you have a virus and what it has infected, it is a relatively easy thing to combat. This document contains enough information for you to deal with most viruses.

Unix Viruses

In all of this, there has not been much discussion of Unix viruses, but they do exist, and the spread of public domain software is almost as great in the Unix world as it is in the microcomputer world.

THE GREAT VIRUS HUNT

When Do You Suspect You Might Have a Virus?

When your computer begins to do things out of the ordinary, or when it stops being able to do things it has always done in the past. The problem with this is that corrupted system files can lead to similar symptoms even though a virus isn't involved. When problems occur, they are much more likely to be the result of non-virus difficulties. When you have ruled out the standard problem areas, you should look into the possibility that your system has been infected by a virus.

What to Look For If You Think You Have a Virus

Look for invisible files in your System folder that don't belong there. Unless you specifically have an application that creates invisible files in the System folder, every invisible file in the System folder should be suspect. Also, a general check of all the files in your System folder for resources that don't belong in those files is well worth the effort.

Files and Resources a Virus Might Infect

- Any and all applications
- HyperCard Stacks (the MacMag virus was spread via a HyperCard stack)
- Files in the System folder, including:

System
Finder
Note Pad file
Scrapbook file
Clipboard file
Easy Access
Sound
Mouse
Startup Device
Monitors
Color
General
Keyboard
LaserWriter
ImageWriter
AppleTalk ImageWriter
ImageWriter LQ

In other words, all system files.

Files a Virus Might Damage Inadvertently

- Any file on an infected volume or system, including system files, documents, applications, etc.

Public Domain Issues

Most viruses spread via public bulletin board systems and are hidden in public domain programs. "Sexy Ladies," a program distributed at a MacWorld Expo in San Francisco, erased whatever hard disk or floppy disk it was on when it was launched.

Network Issues

The use of networks can easily enhance the spread of a virus. Different scenarios are possible, with the simplest being a public domain folder on a server that everyone gets the latest neat stuff from. Also, shared applications residing on a server could become infected, which would then infect every machine that those applications were run on.

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Tech Info Library

Computer Viruses (part 2 of 4)

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Security: Everyone

Computer "Viruses" (part 2 of 4)

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TECHNICAL ISSUES

How Viruses Propagate

Viruses can propagate by a variety of methods. The most common way for a Macintosh virus to replicate itself is to have an INIT that installs a background (VBL) task that checks for specific occurrences, such as a disk insertion, and then copies itself somewhere to that disk.

VBL Tasks

The Macintosh has always had a limited form of background processing available to it through the use of the Vertical BLanking queue. Every time the screen on a Macintosh (except for a Macintosh II) is refreshed, any routines installed in the queue are executed. The Macintosh II has a dummy VBL queue for compatibility reasons since the advent of a variety of screens has led to different vertical retrace periods.

VBL tasks can be installed in the queue by any program. The program has to load a routine into a section of memory and install the routine into the VBL queue by calling the Vinstall ROM routine. It is the responsibility of the installing program to make sure the segment of memory containing the routine remains available even after the program has exited. Each VBL task has a specified time period it should be left "asleep" before it is called. Every time the routine is executed, a counter is decremented for that routine. When that counter reaches zero, the routine is deleted from the queue unless the routine itself resets the counter.

Lengthy VBL tasks such as the one that might be used to replicate a virus can interfere with the normal operation of the Macintosh by interrupting processes that shouldn't be interrupted. A perfect example of this is printing to a LaserWriter over an AppleTalk network. If a VBL task takes too long in its execution, the printing process could terminate abnormally

and leave the machine's connection to the network in an unstable state.

For the purposes of a virus, an INIT is most likely to be the culprit responsible for installing a VBL task.

INITs

INITs are routines that are run when the Macintosh is booted. For the most part, they have full access to all of the commands normally available to a standard Macintosh program. The major difference is that the low memory globals have not been set up yet, so any INIT needing access to structures normally stored in low memory must create its own.

INITs in the System file:

When a Macintosh boots, the INITs in the System file in the "blessed" folder are the first code to be executed. These INITs should generally be Apple INITs only -- any non-Apple INITs should be considered suspect.

The INIT 31 mechanism:

A special INIT in the System file, INIT 31, was created to allow for the execution of non-Apple INITs without having them installed in the System file itself. When all of the other INITs in the System file have been executed, INIT 31 walks through the System folder looking for files of types INIT, RDEV, cdev, and executes any INIT resources it finds in these files. The order in which the files get loaded is alphabetical. Needless to say, a simple way for hiding parts of a virus is to drop INITs into legitimate files already existing in the System folder with these file types.

CDEVs

The file type cdev indicates a file containing a Control Panel device. When the Control Panel is loaded, it walks through the directory of the System folder looking for any files of type 'cdev'. When it finds a file of this type, it loads the ICN# of that file (assuming it has one) into the list of icons shown on the left side of the Control Panel. When you click on the icon of the cdev in the Control Panel, the code in the cdev resource in the file of type 'cdev' is executed. A virus could easily use this mechanism as a way to infect a system, install a VBL task, etc.

Many cdev files have INITs in them with the cdev controlling the settings that the INIT will use when it is installed. A good example of this is the settings for a screen blanker. The INIT actually installs the VBL task, but the cdev controls when dimming occurs. None of the standard Apple system cdev files have INITs in them, but there is nothing to prevent a virus installing an INIT in these files as a way of hiding its code.

DRVRs

DRVR resources typically can have one of two functions: they can be the code for a desk accessory, or the code for drivers necessary for the system to perform some function such as printing. Once again, the key word here

is 'code'. Whenever code is involved, the potential arises for the perpetrator of a virus to take advantage of it.

Just as with cdevs, when a DRVr gets opened, either by the choosing of a desk accessory or by the system, code is executed at that point. This is the stage at which a virus might fulfill its purpose.

CODE Resources

Each application has at least two CODE resources. The first of these CODE resources has an id of 0 and contains what is known as the jump table. This table provides the basic information necessary for various parts of a program to call routines in other CODE segments. The current rage in viruses is to modify the CODE ID = 0 resource of an application so that a CODE segment it installs in the application gets called before the application is actually run. This CODE segment could go out and check if the virus has infected the current system, and if it hasn't, install itself. All the perpetrator of a virus has to do at this point is upload a copy of an infected application to a BBS, and it spreads across the world.

Applications that allow external procedures:

Viruses could take advantage of the external procedures that are allowed by some applications. The perfect example of this is HyperCard, with its XCMDs and XFCNs. This is how the MacMag virus was transmitted.

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Computer Viruses (part 3 of 4)

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Computer "Viruses" (part 3 of 4)

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KNOWN VIRUSES

The Scores Virus

You can be almost positive your system has been infected by the Scores virus if the icons of your Note Pad file and Scrapbook file look like document icons instead of system icons. Launch ResEdit and look in your System folder. If you see files called "Desktop" and "Scores" you can be 99% sure that you have the Scores virus.

How Scores Spreads and What It Does

The Scores virus is relatively harmless. The initial infection is caused by an application with a modified CODE ID = 0 resource, and an additional CODE resource (first unused ID number plus 1). When the 'carrier' application is launched, the CODE ID = 0 resource runs the virus installer code. This code checks for previous installation of the Scores virus. If the virus is not there, the virus files are installed. The virus consists of three INITs, one atpl, and one DATA resource found in the files listed below:

FILE	TYPE	CREATOR	RESOURCES		SIZE

Desktop (invisible)	INIT	FNDR	atpl	ID = 128	2410 bytes
			DATA	ID = -4001	7026 bytes
			INIT	ID = 10	1020 bytes
Note Pad File	INIT	ZSYS	INIT	ID = 6	772 bytes
Scores (invisible)	RDEV	ZSYS	atpl	ID = 128	2410 bytes
			DATA	ID = -4001	7026 bytes
			INIT	ID = 10	1020 bytes

Scrapbook File	RDEV	ZSYS	INIT	ID = 6	772 bytes
				ID = 17	480 bytes
System File	ZSYS	MACS	atpl	ID = 128	2410 bytes
			DATA	ID = -4001	7026 bytes
			INIT	ID = 6	772 bytes
			INIT	ID = 10	1020 bytes
			INIT	ID = 17	480 bytes

If the Note Pad and Scrapbook files do not exist, they are created. If they exist, the type and creator of the files are altered to those listed above, and the corresponding resources are added to the files. The files still appear to function normally with the Note Pad and Scrapbook DAs, but their icons change to document icons. The Desktop and Scores files are invisible, and are created during the infection process.

The next time the infected system is rebooted, the INITs are loaded into memory and are ready to infect other applications. The INITs install a VBL task that actually modifies and installs resources into an application. After an application has been launched, an internal timer is started. Somewhere between two and three minutes later, the open application is infected and becomes a carrier. A new CODE resource is added to the infected application, and the application's CODE ID = 0 resource is modified to execute the new CODE resource first, then continues with the application.

To determine if an application is infected, examine the CODE ID = 0 resource. If the eleventh word of the resource (third word on the third line in the ResEdit listing) is NOT "0001", the application is suspect. If the third word is something other than "0001", convert the value to its decimal equivalent (the numbers are in hexadecimal). Then determine the resource number of the CODE resource at the top of the ResEdit resource list. If these numbers are the same, the application is probably infected, and should be replaced. Some applications will appear to be infected even though they are not. If the eleventh word of CODE ID = 0 is not 1, check the tenth word; if it is '4EED' the application is most likely not infected.

How to Get Rid of the Scores Virus

It is not hard to remove this virus from a system, but it may take some time. Here's how:

1. Use Font/DA Mover to copy all fonts and DAs that you do not have backups of to font and DA suitcase files (this virus does not attach itself to DAs).
2. Start the system from a locked, not infected, floppy disk.
3. Throw away the System folder on the infected disk.
4. Use ResEdit to identify all suspect applications on the infected disk.
5. Make a list of all suspect applications.

6. Throw all suspect applications in the trash, and empty the trash.
7. Reinstall the system software from a known good System Tools installer disk.
8. Using locked masters, recopy any applications that were deleted from the infected disk (it is important to verify that the master disks have not been infected).
9. You're all done.

The nVIR Virus

How the nVIR Virus Spreads and What It Does

The nVIR virus is similar to the Scores virus in many ways. It does not appear to have malicious intent and is relatively harmless. Initial infection of a system is also caused by an application with a modified CODE ID = 0 resource. When a nVir carrier application is launched, the virus' code segment is executed first. This code checks for its INIT in the System File, and if it doesn't find it, the code copies the INIT there. Along with the INIT resource, eight 'nVIR' resources (0-7) are added to the System file.

The next time the system is restarted, the INIT ID = 32 is loaded into memory and tries to infect every application that is launched. The nVir virus adds a CODE ID = 256 resource and modifies the CODE ID = 0 so that the nVir code is executed first.

Again, infection of an application is determined by examination of the CODE ID = 0 resource. If the eleventh word of the resource (third word on the third line in the ResEdit listing) is NOT "0001", the application is suspect. If the third word is something other than "0001", convert the value to its decimal equivalent (the numbers are in hexadecimal). Then determine the resource number of the CODE resource at the top of the ResEdit resource list. If these numbers are the same, the application is probably infected, and should be replaced. Some applications will appear to be infected even though they are not. If the eleventh word of CODE ID = 0 is not 1, check the tenth word; if it is '4EED' the application is most likely not infected. The tenth word normally contains '3F3C'.

When launching an infected application, there is a one in sixteen chance that you will hear a short system beep. We have been told that if MacinTalk is installed you will hear the words "don't panic".

How to Get Rid of the nVIR Virus

Remove the nVIR virus the same way you remove the Scores virus except you do not need to throw away all of the files in the System Folder; just throw away the System file.

The MacMag Virus

We don't have much information regarding the MacMag virus. It was apparently uploaded to CompuServe, inside a HyperCard stack, in the form of an XCMD, and it installed an INIT ID = 6 with a name of 'RR'. Its sole purpose in life was to display a "universal message of peace" on your computer on March 2, 1988. The virus removed itself after displaying this message and should be of little concern now.

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Computer Viruses (part 4 of 4)

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Computer "Viruses" (part 4 of 4)

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SAFEGUARDING YOUR SYSTEMS

What Makes Our System Susceptible to Viruses

The various mechanisms described in part 2 of this article make our system easy to infiltrate by a virus. Remember that it is those same mechanisms that add to the flexibility and "look and feel" of the Macintosh. For instance, the INIT mechanism is used by mail systems to load their code in. AppleShare uses the INIT mechanism to mount network volumes at boot time.

Why Vaccine Works in This Case, But Is Easy to Bypass

Vaccine, a public domain INIT written to block viruses, does a good job of alerting you when the three known viruses are trying to infect your system. The problem with Vaccine: once a cure is found for one set of viruses, a new strain may appear that knows how to bypass the existing defenses.

Some Suggestions

- Lock your master diskettes

Always keep original "Master" disks locked. This prevents a virus from spreading to your original disks. Our disk locking mechanism is hardware based -- viruses can't infect locked disks!

- Protect your networks

Network administrators should not allow just anyone to put software on the server. Applications on a network server should come only from known good masters.

- Be wary of public domain software

Public domain software should be checked quite thoroughly on a floppy-based system for any infections before being copied to a hard disk based system. This will also protect you from any "Trojan Horse" programs such as "Sexy Ladies."

- Quarantine infected systems

If you identify a system as being infected with a virus, immediately isolate (quarantine) it from other systems. This means disconnecting it from any network and not allowing anyone to take any files from the exposed system to another system. Once the system has been 'disinfected,' you can allow the files to be copied or moved.

- Use ResEdit

ResEdit is a good tool to look for viruses on your disks. There is very little that can be hidden from ResEdit, so you can use it to remove troublemaking files and resources.

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Tech Info Library

HyperCard 2.x, HyperCard Player: Error Code List (12/93)

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Security: Everyone

HyperCard 2.x, HyperCard Player: Error Code List (12/93)

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Article Created: 13 December 1993

TOPIC -----

What error information does HyperCard 2.x and the HyperCard Player report?

DISCUSSION -----

Both HyperCard 2.x and the HyperCard Player use a similar format for reporting errors. While HyperCard 2.x delivers an error number and explanation, the HyperCard Player simply reports the error number.

HyperCard Player Error Message Details

HyperCard Player Error Messages are reported in the following format:

"Error number <errorNumber> occurred"

In this format, errorNumber is a string consisting of two parts:

- (1) The letter code indicating which error string list to refer to.
- (2) The string number within that resource to refer to. The letter codes for the string resources are:

Letter -- String Resource
e -- Error Strings
t -- Talk Errors
s -- Script Strings
d -- Dialog Strings

For example, an error message might state:

"Error number t100 occurred"

In this example, the "t" refers to the string resource "Talk Errors" and "100" is string number 100 within that resource ("Handler Too Long").

Another example might state:

"Failed to Compact Stack. Error number e55 occurred."

In this example, HyperCard couldn't compact a stack, because some resources were still in use. The "e" refers to string resource "Error Strings" and "55" refers to string number 55 ("Resources are in use").

For a complete listing of Error Strings, Script Strings, HyperTalk Errors and Dialog Strings, see the appropriate portion of this article.

(Errors marked with asterisks (*) are not included in the HyperCard Player)

Error Strings - string #140

- 1--This version of HyperCard requires System 6.0.5 or later.
- 2--HyperCard does not have enough memory to continue.
- 3--That tool is not available at the current user level.
- 4*--Couldn't edit script of that object.
- 5*--Can't open script editor.
- 6*--Can't open Message Watcher window.
- 7*--Can't open Variable Watcher window.
- 8*--Failed to open icon editor. Couldn't read resource file.
- 9*--Can't use that ID. The ID must be a number in the range 128 to 32767.
- 10--Passwords don't match.
- 11--Can't save changes to text.
- 12--Can't save changes to picture.
- 13--Nothing to copy. Try background.
- 14--Can't modify this stack.
- 15--This stack is read only.
- 16--This stack has not been converted. It must be converted before it can be modified.
- 17--Failed to copy picture.
- 18--Failed to create new card.
- 19--Failed to copy card.
- 20--Failed to paste card.
- 21--The clipboard is too big to paste.
- 22--Picture too big to cut or copy. Try copying in sections.
- 23--Can't delete last card. Use delete stack instead.
- 24--Can't delete protected card.
- 25--Can't delete last card of protected background.
- 26*--Can't find the Home stack.
- 27--Can't open stack "^0".
- 28--Not enough memory to ^0.
- 29--import paint
- 30--export paint
- 31--delete stack
- 32--rename stack
- 33--copy stack
- 34--create stack
- 35--compact stack
- 36*--edit icon

37*--continue debugging
38--complete that command
39--use the painting tools
40--show the recent cards
41--display the card picture
42--display the background picture
43--copy the selection to the Clipboard
44--Failed to ^0. ^1
45--Can't open stack "^0". ^1
46--File system error ^2.
47--Disk is full.
48--Too many files open.
49--File is busy.
50--File is locked.
51--File access denied.
52--Existing file is not a HyperCard stack.
53--Existing file is not a MacPaint document.
54--Can't replace an existing file.
55*--Resources are in use.
56--Stack may be corrupted.
57--Stack is protected.
58*--It is the current Home stack.
59--Colon not allowed in name.
60--Return not allowed in name.
61--Bad data in MacPaint file.
62--File system error ^0 while ^1 the disk.
63--reading from
64--writing to
65--New file format requires new version of HyperCard.
66--Old file format.
67--The file is not a HyperCard stack.
68--Can't type more than 30,000 characters into a field.
69--Not enough memory to display the text for this field. Try compacting
the stack.
70--HyperCard needs more memory to run at this color setting. Please set
the monitor back to Black & White.
71--HyperCard needs more memory to run at this color setting.
72--No more windows can be opened.
73--The first character of a stack name can't be a period.
74--Can't edit scripts while debugging.
75*--Can't choose from HyperCard's menus here.
76*--You can choose only from the Debugger menu while debugging.
77
78--Can't replace an existing file that's of a different type.
79--replace

Script Strings - string #135

1*--on mouseUp
end mouseUp
2*--Not enough memory to print.
3*--Selection too large.
4*--Not enough memory to open script editor.

5*--Can't modify this script.
6*--Not enough memory to format script.
7*--Failed to save script.
8*--Got error ^0 when trying to open script editor.
9*--Can't set more than 16 checkpoints in a script.
10*--Set Checkpoint
11*--Clear Checkpoint
12*--Clear All Checkpoints
13*--Print Script
14*--Print Selection
15*--Close Script
16*--Close All Scripts
17*--
18*--Not enough memory to use the Message Watcher.
19*--Not enough memory to use the Variable Watcher.
20*--Not enough memory to use Script Editor.
21--Oh yeah?
22*--The changes to your script will not be saved because the stack can't be
modified (unlock the stack if you want to save the changes).
23*--Not enough memory to edit that variable.
24*--Save changes to ^0?
25*--Failed to revert changes.
26*--Do you really want to discard changes to ^0?
27*--Hide unused messages
28*--Hide idle
29*--This script has been changed since it was last saved. Do you wish to
continue?
30--button
31--Display what picture?
32--

Talk Errors - string #132

1*--No such stack.
2*--No such card.
3*--Can't access fields or buttons in other stacks. Use "go".
4*--Can't DIV by zero.
5*--Can't MOD by zero.
6*--Destination does not contain a number.
7*--No open file named "^0".
8*--Can't find menu item "^0".
9*--Translator failed to translate the message box into English.
10*--Can't find "^0".
11*--Can't open any more files.
12*--Can't close that window.
13*--Got error ^0 while trying to open file "^1".
14*--There is no ^0 ^1 number ^2.
15*--Not enough memory to read from file.
16*--Got file system error ^0.
17*--No such button or field.
18*--Can't set that ^0 property.
19*--There is no ^0 ^1 id ^2.
20--button

21--field
22--card
23--bkgnd
24--stack
25--HyperCard
26--window
27*--Not a scrolling field.
28*--Can't set properties of that object.
29*--Sort by what?
30*--Not enough memory to sort this stack.
31*--Error writing to file "^0".
32*--Translator failed to indent.
33*--Fields can't hold more than 30000 characters.
34*--Couldn't set that field.
35*--Couldn't load external command.
36*--Too much recursion.
37--Out of memory.
38--HyperCard Help
39*--Can't find icon named "^0".
40*--Script of
41*--Expected ")" but found "^0".
42*--Expected ")".
43*--Too many nested repeats.
44*--Can't understand that message.
45*--Only fields, buttons, cards, and backgrounds have numbers.
46*--Can't take the value of that expression.
47*--Can't get that property.
48--Can't understand arguments of "^0".
49*--Found "exit repeat" outside a repeat loop.
50*--Already have a local variable named ^0.
51*--Too many pending messages.
52*--"^0" is not an application.
53*--There is no ^0 ^1 named "^2".
54*--There isn't any selection.
55*--Too many nested blocks.
56*--end of line
57*--Found "next repeat" outside a repeat loop.
58*--Translator failed to translate indent strings.
59*--Translator failed to initialize itself.
60*--Can't load that translator.
61*--Can't find a translator for that language.
62*--Old translator failed on quit.
63*--Can't understand "^0".
64--Script too silly to execute.
65*--Failed to sort this stack.
66*--User level is too low to edit scripts.
67*--Can't edit script of HyperCard.
68*--Couldn't edit script of that object.
69*--Only cards and backgrounds have pictures.
70*--^0 was not a valid expression for any card.
71*--Can't have more than 16 parameters for an external command.
72*--Only start and stop using can change the stacksInUse.
73*--Can't modify that menu.

74*--That ^0 name is too long.
75*--File "^0" is already open.
76*--Too many types.
77*--Too many responses.
78*--No such bkgnd.
79*--Can't create that file.
80*--The sort key
81*--Stack not in use.
82*--Expected "of" after this function.
83*--Can't understand arguments to this function.
84*--Can't understand arguments to this keyword.
85*--Can have "else" only after "then".
86*--Can't have "end" here.
87*--Too many "exit repeats".
88*--Expected "end if" after "then".
89*--Expected end of line after "end if".
90*--Can't duplicate stack.
91*--Expected "end if" after "if".
92*--Expected "end if" after "else".
93*--"On" can appear only once per handler.
94*--Expected "end" after "on".
95*--Expected "end ^0"
96*--Extra statements after end of handler.
97*-- Expected "end repeat" after "repeat".
98* --Expected end of line after "end repeat".
99*-- Can have "then" only after "if".
100*--Handler too long.
101*--Can't get scroll of that window.
102*--Expected a variable name but found ^0
103*--Can't set scroll of that window.
104*--Can't set rectangle of that window.
105*--Can't set that property.
106*--String too long.
107*--No such menu item.
108*--Menus don't have that property.
109*--menu
110*--No such menu.
111*--Too many menus with messages.
112*--That button or field has been deleted.
113*--Expected ^0 here.
114*--Expected stack here.
115*--Already have a menu named ^0.
116*--Expected a field here but found a button.
117*--Expected a button or field here.
118*--Expected a point but found ^0.
119*--Expected a rectangle but found ^0.
120*--No such card or bkgnd.
121*--Can't start using that stack.
122*--Can't start using home.
123*--Too many stacks in use.
124*--The translator failed to translate that script into English.
125*--Not handled by target program.
126*--Expected "true" or "false" here but found ^0.

127*--Number of menu messages must be equal to number of menu items.
128*--Couldn't send to that window.
129*--Don't know how to tell if something is a ^0.
130*--Can't open the Message Watcher named ^0.
131*--Can't open the Variable Watcher named ^0.
132*--Can't load that external.
133*--Expression too complicated.
134*--Can't open stack
135*--Can't open stack's resource fork.
136*--Couldn't open that application.
137*--Couldn't import paint.
138*--Couldn't export paint.
139*--Invalid date.
140*--Invalid expression.
141*--Couldn't create stack.
142*--Can't find that icon.
143*--No such window.
144*--number
145*--integer
146*--true or false
147*--Can't understand this.
148*--No current Apple® event.
149*--Too many windows open.
150*--Can't modify this stack.
151*--Not supported by this version of the system.
152*--No such program.
153*--Expected a number between 1 and 255 here.
154*--Expected a single character here.
155
156--An error occurred (^0).
157--Script error (^0).

Dialog Strings - string #129

1*--^0 out of ^1
2*--Card
3*--Bkgnd
4--Where is ^0?
5--What's the password?
6--New stack name:
7--Save a copy of stack as:
8--Copy of ^0
9--Save Paint document as:
10--Import Paint from...
11--Display what picture?
12--Button Text Style
13--Paint Text Style
14--Selected Text Style
15--Sample
16--button
17--buttons
18--field
19--fields

20--card
21--cards
22--background
23--backgrounds
24*--Icon ID: ^0^1 ^2
25*--(none)
26*--"^0"
27*--from "^0"
28--Small
29--Standard 9"
30--Mac II 12"
31--MacPaint
32--Window
33--Screen
34--Custom
35*--Effect for ^0 button id ^1:
36*--Script of ^0^1
37*--card
38*--bkgnd
39*--^1 button id ^0
40*--^1 field id ^0
41*--card id ^0
42*--background id ^0
43*--stack ^0
44*--= "^0"
45*--Global Variables
46*--^0 of ^1

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Tech Info Library Article Number:2825



Tech Info Library

LaserWriter IINT/NTX: Two Corrections to Owner's Guide

Revised: 5/2/88
Security: Everyone

LaserWriter IINT/NTX: Two Corrections to Owner's Guide

=====

This article last reviewed: 19 April 1988

The "LaserWriter IINT/NTX Owner's Guide" (030-315-A), in the section titled "Using the 25-pin connector," fails to mention that a modem eliminator is needed. The complete connection is:

25-pin serial cable
to
25-pin Apple Modem Eliminator (590-0166-A)
to
serial port on LaserWriter II

In the subsection "Making the connection," step 6, the MS-DOS commands should be:

```
MODE COM1:96,N,8,1,P  
MODE LPT1:=COM1:
```

With the commands in the manual, Shift-* doesn't print the screen as it's supposed to.

Tech Info Library Article Number:2826



Tech Info Library

Addison-Wesley Publishing Company, Inc. (4/95)

Revised: 4/3/95
Security: Everyone

Addison-Wesley Publishing Company, Inc. (4/95)

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 3 April 1995

Addison-Wesley Publishing Company, Inc.

1 Jacob Way
Reading, MA 01867

800-822-6339 (Order Dept.)
800-358-4566 (Information)

617-944-3700

617-942-1117 (Order Dept.) Fax
617-944-8243 (fax)

Company Profile:
Publisher (in cooperation with Apple Computer) of the Apple Technical Library.

Article Change History:
03 Apr 1995 - Added new phone numbers.
02 Jul 1993 - Phone number changed

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:2827



Tech Info Library

Absoft Corp.

Revised: 4/3/97
Security: Everyone

Absoft Corp.

=====

Article Created: 05/02/88
Article Reviewed: 07/02/93
Article Updated: 04/03/97

Absoft Corp.

2781 Bond Street
Rochester Hills, MI 48309

313-853-0050

313-853-0108 Fax

Company Profile:
Software, primarily languages.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:2828



Tech Info Library

Alsoft Inc.

Revised: 4/3/97
Security: Everyone

Alsoft Inc.

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 3 April 1997

Alsoft Inc.

2557 Alding Westfield
Suite 122
Spring, TX 77373

800-257-6381 (Sales)

713-353-4090 (Sales)

713-353-1510 (Tech. Support)

713-353-9868 Fax

Company Profile:

Specializing in utilities and tools like DiskExpress II hard drive compression software and MasterJuggler Font manager.

Article Change History:

05 Jun 1996 - Updated for technical accuracy.
30 Aug 1995 - Added online services addresses.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2829



Tech Info Library

Alsys Inc.

Revised: 4/3/97
Security: Everyone

Alsys Inc.

=====

Article Created: 05/02/88
Article Reviewed: 07/02/93
Article Updated: 04/03/97

Alsys Inc.

67 S. Bedford St.
Burlington, MA 08103

617-270-0030

617-270-6882 Fax

Company Profile:
Specializing in compilers and development tools.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2830



Tech Info Library

Axonix Corp.

Revised: 7/2/93
Security: Everyone

Axonix Corp.

=====

Article Created: 05/02/88
Article Reviewed: 07/02/93
Article Updated: 11/06/92

Axonix Corp

1214 Wilmington Ave.
Suite 201
Salt Lake City, UT 84106

800-866-9797

801-466-9797

801-485-6204 Fax

Company Profile:

Hardware, specializing primarily in peripherals (esp. expansion stations for laptop and portable computers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2831



Tech Info Library

Cayman Systems Inc.

Revised: 4/3/97
Security: Everyone

Cayman Systems Inc.

=====
Article Created: 05/02/88
Article Reviewed: 07/07/93
Article Updated: 04/03/97

Cayman Systems Inc.

26 Landsdowne St.
Cambridge, MA 02139

800-473-4776

617-494-1999

Company Profile:
Hardware and software, specializing in networking products.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2832



Tech Info Library

Digital Design Inc.

Revised: 4/3/97
Security: Everyone

Digital Design Inc.

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 04/03/97

Digital Design Inc.

3060 Business Park Dr.
Norcross, GA 30071

404-447-0274

404-263-0405 Fax

Company Profile:
Digital Design Inc., hardware, specializing in image processing and
industrial vision systems for quality control.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2833



Tech Info Library

GTCO Corp.

Revised: 7/8/93
Security: Everyone

GTCO Corp.

=====

Article Created: 05/02/88
Article Reviewed: 07/08/93
Article Updated: 04/03/92

GTCO Corp.

7125 Riverwood Dr.
Columbia, MD 21046

410-381-6688

410-290-9065 Fax

Company Profile:
Hardware, specializing primarily in digitizers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2834



Tech Info Library

Connor (formerly Maynard Electronics)

Revised: 4/3/97
Security: Everyone

Connor (formerly Maynard Electronics)

=====

Article Created: 05/02/88
Article Reviewed: 07/09/93
Article Updated: 04/03/97

Connor

36 Skyline Dr.
Lake Mary, FL 32746

800-227-6296
800-421-1879

Fax: 407-263-3585

Company Profile:
(formerly Maynard Electronics, product line still exists), hardware,
specializing in magnetic storage and tape drives.

Article Change History: 07/09/93 Phone number changed, name changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2835



Tech Info Library

Koala Aquisitions Inc.

Revised: 4/3/97
Security: Everyone

Koala Aquisitions Inc.

=====

Article Created: 05-02-88
Article Reviewed: 07-09-93
Article Updated: 04/03/97

Koala Aquisitions Inc.

16055 Caputo Dr., Unit H
Morgan Hill, CA 95037

408-776-8181

Fax: 408-776-8187

Company Profile:
Hardware and software, specializing primarily in graphics input devices.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:2836



Tech Info Library

Oracle Corporation

Revised: 4/3/97
Security: Everyone

Oracle Corporation

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 3 April 1997

Oracle Corporation (Headquarters)

500 Oracle Pkwy.
Redwood Shores, CA 94065

800-345-3267 (Corporate Sales and Marketing)

415-506-7000

415-506-7200 Fax

Company Profile:
Software, specializing in relational database management systems.a

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2838



Tech Info Library

RSYS

Revised: 7/21/93
Security: Everyone

RSYS

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 21 July 1993

RSYS

10920 Switzer Ave.
Suite 113
Dallas, TX 75238

214-343-9210

Fax: 214-343-9483

Company Profile:
Software, specializing primarily in UNIX applications for office automation.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2839



Tech Info Library

SoftQuad Inc.

Revised: 7/19/93
Security: Everyone

SoftQuad Inc.

=====

Article Created: 2 May 1988
Article Reviewed/Updated: 19 July 1993

SoftQuad Inc.

56 Aber Foyle Crescent
Suite 810
Toronto, Ontario M8X 2W4
CANADA

416-239-4801

800-387-2777 (USA only)

Fax: 416-239-7105

Company Profile:
Software, specializing in electronic publishing applications.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2840



Tech Info Library

LaserWriter IINTX: Printing in H-P LaserJet+ Mode

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX: Printing in H-P LaserJet+ Mode

=====

This article last reviewed: 19 April 1988

H-P LaserJet+ Emulation mode is a command emulation mode: most of the H-P LaserJet+ commands are accepted by the LaserWriter IINTX. This does NOT mean that the output will always duplicate exactly the output from an H-P LaserJet+.

While a command may be accepted, the output will be calculated and performed by the same line-drawing routines and functions used when PostScript commands are printed. The LaserWriter IINTX is not optimized for the H-P LaserJet graphics commands.

This difference may cause problems with MS-DOS programs that require H-P LaserJet+ graphics precision. For example, with a bar-code printing program, the lines may not meet the exact tolerances (width or size) of the H-P LaserJet+.

In H-P LaserJet+ emulation mode, the LaserWriter IINTX is not as fast as in PostScript mode, because graphics must be interpreted by PostScript. In addition, in H-P LaserJet+ emulation mode, the LaserWriter IINTX is not as fast as the H-P LaserJet+ itself.

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Tech Info Library Article Number:2841



Tech Info Library

PostScript LaserWriter and Font RAM Availability (3/94)

Revised: 3/31/94
Security: Everyone

PostScript LaserWriter and Font RAM Availability (3/94)

=====

Article Created: 16 March 1988
Article Reviewed/Updated: 2 September 1993

TOPIC -----

This article describes PostScript LaserWriter font RAM availability.

DISCUSSION -----

The available RAM for downloadable fonts on PostScript LaserWriters is dynamic, and is affected by several factors. Two of these are paper size and downloaded PostScript programs (for example, the ImageWriter Emulator used by Apple II users). Note that downloadable fonts use RAM that may be needed by a complex print job. Loading up the RAM with too many may result in limitcheck or other memory errors when printing.

The following PostScript program will print a page with the available Virtual Memory (VM):

```
/Helvetica findfont 12 scalefont setfont
72 720 moveto
(Available VM: ) show
vmstatus exch sub 10 string cvs show
showpage
```

If the number returned is greater than the number of bytes in the font file, there should be enough room to download the font.

The available RAM for fonts also changes depending on paper size. The larger the paper, the less RAM available for downloadable fonts.

If you have built-in typefaces, there is no limit to the number of different fonts used on a single page. The available RAM in the LaserWriter will limit the variety of downloadable typefaces.

On the LaserWriter IISC, Personal LaserWriter SC, Personal LaserWriter LS,

Personal LaserWriter 300 and LaserWriter Select 300, the only limit on the number of different fonts on a single sheet will be the number of fonts available via the font selection process of a particular application.

Article Change History

31 March 1994 - Updated formatting.

2 September 1993 - changed the method for finding Virtual Memory

Support Information Services

Copyright 1991-94 Apple Computer, Inc.

Tech Info Library Article Number:2842



Tech Info Library

Enhanced Apple IIe: MouseText Problem Solved By AppleWorks V2.0

Revised: 5/3/88
Security: Everyone

Enhanced Apple IIe: MouseText Problem Solved By AppleWorks V2.0

=====

This article last reviewed: 30 March 1988

Some users have asked about a version of AppleWriter for the enhanced Apple IIe, since there are conflicts with the enhanced Apple IIe's MouseText function (you can tell if the computer is enhanced if it displays "Apple //e" rather than "Apple][" on the screen at startup).

AppleWriter 2.0, ProDOS version, resolved this problem for the enhanced Apple IIe, but is no longer on the price list.

If you don't have this version, you may use an alternate word processing program. One such program that does not conflict with MouseText is AppleWorks 2.0.

Tech Info Library Article Number:2844



Tech Info Library

AppleShare 2.0: Questions About New Features

Revised: 10/4/89
Security: Everyone

AppleShare 2.0: Questions About New Features

=====

This article last reviewed: 30 March 1988

Here are three questions (and answers) about AppleShare 2.0:

Q. Is AppleShare File Server 2.0 only a server software upgrade, or is the workstation software upgraded as well?

A. AppleShare File Server 2.0 comes with updated workstation software (version 2.0).

Q. Does version 1.1 workstation software work properly with 2.0 server software?

A. Version 1.1 workstation software can access the Appleshare File Server 2.0, but does NOT access the new features that version 2.0 workstation software provides.

Q. Are you still limited to one group at a time while accessing privileges?

A. Only one group at a time can be accessed while accessing privileges.

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Tech Info Library Article Number:2845



Tech Info Library

How to Prevent Changes to Application Names

Revised: 5/17/89
Security: Everyone

How to Prevent Changes to Application Names

=====

Article Created: 5 April 1988
Article Last Reviewed: 14 July 1992
Article Last Updated: 14 July 1992

You can prevent someone from changing a file name (such as the name of an application), without having to lock it. You can use the same method that makes the System file's name unchangeable.

The System file's name cannot be changed because the "System" bit in its Finder information section has been set.

You can set the "System" bit of ANY application using ResEdit (for this example ResEdit 2.1.1 was used):

1. Run ResEdit.
2. Select "File/Folder Info..." from the File menu.
3. Find the application and open it.
4. Find the checkbox to the right of the application name on the top line.
6. Click once in the box.
7. Click in the Close box of the window.
8. Click on the "Yes" button to save the settings.
9. Repeat steps 2 through 8 until all the applications are changed.

(NOTE: If a file with the "System" bit set is duplicated using the Duplicate command in the Finder's File menu, the new file will not have the "System" bit set.)

Copyright 1988, 1992, Apple Computer, Inc.

Tech Info Library Article Number:2850



Tech Info Library

A/UX: Printing And Shared Spooling Without AppleTalk (8/95)

Revised: 8/23/95
Security: Everyone

A/UX: Printing And Shared Spooling Without AppleTalk (8/95)

=====

Article Created: 14 February 1989
Article Reviewed/Updated: 23 August 1995

TOPIC -----

You can serially connect any of the following printers to any Macintosh on the network and set up an A/UX spooler on that system even without AppleTalk and LaserShare:

- LaserWriter
- LaserWriter Plus
- LaserWriter IINT
- LaserWriter IINTX
- ImageWriter
- ImageWriter II
- ImageWriter LQ

Other A/UX Macintosh computers will then have access to the printer via remote commands.

DISCUSSION -----

Making the Connection

1. Connect an Apple IIe Modem-8 cable to the DB-25 port on the printer. The ImageWriter II and ImageWriter LQ require an Apple System/Peripheral 8 Cable. (Search the Technical Info DataBase on "A/UX and printer and cable" for more information on the various cables you can use.)
2. Connect the mini-circular 8 end to the printer port on the Macintosh (tty1) only.
3. Adjust LaserWriters to Serial Settings (ImageWriter LQ may also need to be reset from default):

a. LaserWriter and LaserWriter Plus:

When hooking up serially, the switch in the back of the LaserWriter or LaserWriter Plus MUST be turned to 9600 baud (as opposed to AppleBus). Without special serial drivers that can communicate PostScript, files cannot be printed from within the Macintosh Operating System without switching the Baud to AppleBus and the cable to AppleTalk.

(For additional information, see the A/UX Local System Administration manual chapter on "Managing Printers, Terminals and Modems".)

b. LaserWriter IINTX:

Set the dip switches on the back to:

1, 2 down (1:up and 2:down will also work)

4-6 up

On powerup, the test page should indicate Postscript at 9600 Baud

NOTE: On some NTX prototypes, the settings should be reversed: down instead of up. Reverse the switch directions if the test page reflects a difference. (For additional information, consult the LaserWriter II Owner's Guide.)

c. LaserWriter IINT:

Set the dip switches on the back to:

1 up

2 down

On powerup, the test page should indicate Postscript at RS-232 9600 Baud.

NOTE: On some NT prototypes, the settings are reversed; that is, down instead of up. Reverse the switch directions if the test page reflects a difference (for additional information, consult the LaserWriter II Owner's Guide).

d. ImageWriter LQ:

A/UX software additions must be made if you wish to use the 19200 Baud instead of 9600 Baud. (See Spooling below for 19.2K setup instructions) For 9600 Baud the dip switches are: set 2: 1,2 closed for 9600.

Spooling

The complicated and time-consuming chore of setting up a spooler is reduced to an invaluable shell script that will automatically set up the entire spooling system by simply naming the printer and the port to which it is attached.

"ADD_IW ImageWriter tty1" will set up an ImageWriter I or II (or 9600 Baud ImageWriter LQ, see *** below) spooler with the name "ImageWriter"

"ADD_LW LaserWriter tty1" will set up any LaserWriter spooler with the name "LaserWriter"

"RM_PR printername" will remove that spooler.

NOTE: If you have jobs in the queue destined for that printer, you will not be able to remove it until you remove the jobs ("cancel request_id(s)"). This will happen if you disconnect the printer while it still has jobs it hasn't printed yet, or is unable to print.

NOTE: A/UX Release 1.0 does not contain lp interface software for 19200 Baud printers. If you want to use the LQ at 19200 Baud follow the directions below:

1. Copy the ImageWriter model (located in "/usr/spool/lp/model") to iw19.2
2. Edit by adding 19200 to the "stty" command.
3. Save it.
4. Copy the file "/usr/spool/lp/ADD_IW19.2" to "/usr/spool/lp/ADD_IW19.2"
5. Substitute ImageWriter for iw19.2 in the /usr/spool/lp/ADD_IW19.2 by
":1,\$s/ImageWriter/iw19.2/".

You will now have a 19.2 interface. When you wish to use the LQ at 19200 Baud issue the command, "lp -diw19.2 filename"

If the dip switches are set to 9600 Baud issue the command, "lp -diw filename" (If ImageWriter is your default, the -d option is unnecessary)

Remote Printing

If you are on an Ethernet system, issue the command:

```
"cat myfile | remsh PrinterNodeName lp printername"
```

where:

- "myfile" is the file you wish to print.
- "PrinterNodeName" is the hostname of the A/UX system that has the printer attached.
- "printername" is the name you have assigned to the printer (such as LaserWriter with the ADD_LaserWriter command).

Article Change History:

- 23 Aug 1995 - Made minor corrections.
- 23 Aug 1994 - Reviewed and updated.
- 31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:2851



Tech Info Library

AppleShare Works Across Ungermann-Bass

Revised: 11/2/88
Security: Everyone

AppleShare Works Across Ungermann-Bass

=====

This article last reviewed: 5 April 1988

AppleShare executes properly across the Ungermann-Bass Multiport Transceiver.

When a Macintosh II is connected to the U-B MPT via thick Ethernet, it can communicate with a Macintosh Plus/Kinetics combination at another thicknet connection. This is true regardless of which station is the server.

(NOTE: TOPS does NOT work in this situation.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2852



Tech Info Library

Macintosh II: MacFortran Error When Making New Palette Calls

Revised: 5/3/88
Security: Everyone

Macintosh II: MacFortran Error When Making "New Palette" Calls

=====

This article last reviewed: 5 April 1988

Some users have experienced a problem using Absoft's MacFortran on the Macintosh II:

The software includes a sample Fortran routine for addressing the palette manager (Call to New Palette). When running the routine on a Macintosh II WITHOUT expanded video memory, the routine will return a proper handle.

However, when run on a Macintosh II with expanded video memory, a null handle may be returned (even when set for 16 colors). Addressing the resource file with Get New Palette has the same results.

One possible solution is increasing the application stack size. If you have a default of 24K, it may be too small for creating your own palette to handle the additional colors. An example program demonstrating how to increase the application stack size is shipped with MacFortran.

Also, if you are running your program under MultiFinder, try increasing the program size (Select Program, then choose Get Info from File menu). The default setting is approximately 385K; you might increase this to 512K or more (depending on your program requirements, and how much RAM you have in your system).

Tech Info Library Article Number:2853



Tech Info Library

Macintosh II Video Cable: Length Affects Performance

Revised: 7/2/92
Security: Everyone

Macintosh II Video Cable: Length Affects Performance

=====

Article Created: 29 March 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

What is the maximum length of Video Cable that can be used with the Apple High Resolution Monitors?

DISCUSSION -----

Apple formally supports only the monitor cables and cable lengths available through Apple--but theoretically, using 75 ohm impedance value cable (usually RG59U standard coaxial video cable), the signal will be very reliable up to 50 feet.

The distance is limited by the loss of signal strength through cable resistance:

- Specifications: 75 ohm impedance cable
- Signal strength: 13.33 amps; 1 volt
- Signal in MHz: 30.24

The DB loss per foot (or attenuation) using an RG59U standard cable is approximately .0015--resulting in a power loss of 4% of the original 1 volt signal at 100 feet.

The signal will drop to 50% at 2000 feet, with a 3 DB drop in power. Apple recommends staying within 95% percent of the signal, which would be under 150 feet. Increasing the monitor brightness control can correct for some of the signal loss.

(NOTE: Because of the TTL sync signal for the Apple High Resolution Monitors, it is unlikely the monitor will work correctly with sync signals under 4 volts, which would be a cable about 650 feet in length.)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:2857



Tech Info Library

Apple IIGS: International Model Outputs PAL-Compatible Video

Revised: 5/3/88
Security: Everyone

Apple IIGS: International Model Outputs PAL-Compatible Video

=====

This article last reviewed: 29 March 1988

Users have asked whether an Apple IIGS can output a PAL-compatible video signals.

The International Apple IIGS unit outputs PAL (Phase Alternation Line system) compatible video -- for use with PAL televisions in Europe, South America, parts of Africa, etc. -- from the composite video-out connector.

Tech Info Library Article Number:2859



Tech Info Library

LocalTalk PC Card: Works With IBM 3270 PC

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card: Works With IBM 3270 PC

=====

This article last reviewed: 6 April 1988

The LocalTalk PC Card can work with an IBM 3270 PC.

The IBM 3270 PC is an IBM XT or AT personal computer (depending on model) that has a System/370 processor card, memory card, and a 3277 emulation card installed.

The LocalTalk PC card will work as long as the 3270 is operating in the DOS environment. You must also ensure that you have IRQ 2,3, or 4 available for use.

(NOTE: The IRQ addresses that are available will vary depending on what cards are already installed.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2861



Tech Info Library

LocalTalk PC Card Must Use 8-Bit Slots In AT&T 6300

Revised: 11/2/88
Security: Everyone

LocalTalk PC Card Must Use 8-Bit Slots In AT&T 6300

=====

This article last reviewed: 6 April 1988

Some users have experienced difficulty using the AppleTalk PC Card with AT&T 6300 computers. The AppleTalk PC Card design group tested the card extensively with the AT&T 6300, so the products do work together.

The AT&T 6300 has seven built-in expansion slots; two of these slots are programmed to accept cards that take advantage of the 8086's 16-bit addressing capabilities.

Make sure that the AppleTalk PC card is being used in one of the 8-bit slots. You must also ensure that you have either IRQ 2,3, or 4 available for use. (The IRQ addresses that are available will vary, depending on what cards are already installed.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2862



Tech Info Library

AppleShare and AppleShare PC: How Much RAM Does It Use?

Revised: 8/25/89
Security: Everyone

AppleShare and AppleShare PC: How Much RAM Does It Use?

=====

This article last reviewed: August 23 1989

Some users have asked how much RAM is used when AppleShare is loaded into a Macintosh (used as a workstation) to connect to an AppleShare server, and how much RAM is used when AppleShare PC is loaded into an IBM PC (used as a workstation) to connect to a AppleShare server.

The System Heap RAM on a Macintosh used for AppleShare is 10K. Most of the code required is within the Chooser driver and DA or already available in AppleTalk resources.

The amount of memory used for AppleShare PC is 127,344 bytes without a resident DA or other options.

- For AppleShare PC with the DA resident and the expanded memory option, the amount of memory used is 190,176 bytes.
- For AppleShare PC with the DA resident and no graphics or memory options, the amount of memory used is 200,416 bytes.
- For AppleShare PC with the DA resident and high-resolution graphics support, the amount of memory used is 215,776 bytes.

NOTE: The totals for the PC files loaded into memory include AppleTalk.EXE, ASHARE.COM, MINSES.EXE, REDIR.EXE, DA.EXE, DA.DTA, DA.HLP, and ANET.EXE.

AppleShare PC 1.1 will use about the same amount of RAM as AppleShare PC 1.0. If there is a difference, it will be plus or minus 1K or so.

Not all of these programs are loaded at once. Those that are not loaded have code segments or overlays sharing allocated space.

For this reason, the file size is not the same as the allocated memory size. These numbers represent the allocated total space within memory for the mentioned files.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2864



Tech Info Library

HyperCard: Damage To Large Stack May Be Command-Period Problem

Revised: 6/17/92
Security: Everyone

HyperCard: Damage To Large Stack May Be "Command-Period" Problem

=====

Article Created: 7 April 1988
Article Last Reviewed: 3 June 1992
Article Last Updated: 3 June 1992

NOTE: The inability to compress large stacks was discovered and corrected in versions of HyperCard after release 1.0.1. The problem caused by pressing command-period when creating a new card was discovered and corrected in versions of HyperCard after release 1.1. The following information is for those using previous versions.

Some users have experienced damage to large HyperCard stacks, resulting in inaccessible stacks, and - in cases where the stacks were not backed up - potential loss of valuable data and time.

Damage to a stack may be the result of using the command-period keystroke to stop the creation of a new card. Stacks most susceptible to this problem are those containing "create a card" scripts, some of them written to test HyperCard's card limits. Stopping the creation of a card using command-period prevents HyperCard from completely creating the data structures needed to support the card. This is compounded when you attempt to compact the stack.

After backing up the file, try these methods:

- Launch HyperCard with any stack other than the damaged stack, such as the Home stack. Then, open the damaged stack with the Open Stack option (File menu).
- From the Message box or script, type: "go card 3 of stack 'your stack'".
- From a script, set lockScreen and lockMessages to true; then attempt to go to a specific card.

If any of these suggestions work, you might be able to write a retrieval script that will go from card-to-card within your stack and copy the

contents elsewhere.

If you are not able to display any portion of your stack following the suggestions above, the stack's data structure is damaged to the point of requiring more powerful data recovery tools. FEdit or a similar disk editor may allow you to open your file, then copy and paste that information into another file.

Meanwhile:

1. ALWAYS back up your files regardless of the size or the applications used to create them. Tools, such as Apple's Tape Backup 40SC, make this relatively painless, particularly when you compare that to the time and expense of having to recreate the data when a problem of this nature occurs.
2. DON'T type command-period when creating a new card.
3. Compact your stacks regularly, as often as after every 10 cards when creating or deleting.

Copyright 1990, 1992, Apple Computer, Inc.

Tech Info Library Article Number:2866



Tech Info Library

Apple Tape Backup 40SC: Won't Back Up Busy Files (9/95)

Revised: 9/20/95
Security: Everyone

Apple Tape Backup 40SC: Won't Back Up Busy Files (9/95)

=====

Article Created: 4 May 1988
Article Reviewed/Updated: 20 September 1995

TOPIC -----

Can files that are in use still be backed up by my 40SC Tape Back-up?

DISCUSSION -----

A file that is in use, whether it is an application you are using, or an open file you are editing/viewing, is marked by the system software as being "busy" and therefore can NOT be backed up by the 40SC Tape Back-up.

To back up these files or applications, close the file and quit the application before running the back-up program.

In addition, the System file, Finder, and other like files in the System Folder on your start-up volume are marked as "busy". To back up system software, you need to start up from a different volume before running the 40SC Tape Back-up application.

Article Change History:
20 Sep 1995 - Reformatted to meet current standards.
07 Apr 1988 - Reviewed for technical accuracy.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:2867



Tech Info Library

Apple IIGS: You Must Optimize Applications for RGB Video Display

Revised: 5/25/89
Security: Everyone

Apple IIGS: You Must Optimize Applications for RGB Video Display

=====

This article last reviewed: 7 April 1988

Some users have reported display problems with the Apple IIGS and the RGB monitor. Some packages mentioned included Wizardry, Chuck Yeager's Flight Simulator, Reader Rabbit, and Bismark.

The problems sometimes occur only with text, and sometimes show up as "bleeding" on the video display.

Programs that are written to run on non-RGB systems do not concern themselves with where, or how, the display is generated -- in other words, "video is video" for non-RGB systems.

With RGB video, there are other constraints, and many programs do not adhere to them, even if they are modified to run on the Apple IIGS. Many times the package reads "Runs on the GS in IIe emulation mode", which indicates the video will be normal for composite monitors and NOT optimized for RGB.

This usually indicates that it should be run with the system speed at Normal--not at Fast.

(Wizardry was written for the Apple IIe a number of years ago; Chuck Yeager's Flight Simulator is recent but still written for the Apple IIe -- and is not optimized for RGB.)

When a program is written for use on the Apple IIGS, it is usually optimized for RGB, which looks fine when displayed on composite monitors.

Tech Info Library Article Number:2868



Tech Info Library

ImageWriter II, LQ Interleaving Problem: An AppleShare Solution

Revised: 11/2/88
Security: Everyone

ImageWriter II, LQ Interleaving Problem: An AppleShare Solution

=====

This article last reviewed: 7 April 1988

The ImageWriter II and ImageWriter LQ interleaving problem (where two or more different printing jobs are interleaved together) is a carry-over from the days of the 128K/512K systems. Because of the limited memory of those systems, it was necessary to spool the file being printed to one page at a time. This meant a multi-page document would be sent as a series of print jobs -- not as one complete job. Software manufacturers knew of this limitation and wrote their applications accordingly.

Many of these manufacturers continue to use the same print routines, with additions for new features, rather than rewrite them to more fully use the features of the drivers.

Print drivers maintain connections with any networked printer for the duration of the current print job. As long as applications still use the older style of one-page-per-job, the interleave problem will continue. Many newer manufacturers are now writing the applications as recommended by Apple in "Inside Macintosh", so the problem is slowly diminishing.

AppleShare Print Server will resolve this problem. It contains a process whereby the user can specify the time-out interval between pages of a print job.

If the time-out is set to 1 minute (for example), any jobs sent by a user, with less than a minute between them, will be printed as one job. However, if a short interval (perhaps 10 seconds) is set, and it takes 15 seconds to send the next page, another user's job could be queued in between the two pages, and the interleave problem would still exist. There is no set value for the time-out feature that will work with every application. The default value is 5 seconds. Some applications may need a higher value if they require more time to set up the print job.

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Tech Info Library Article Number:2869



Tech Info Library

ImageWriter LQ: Why Top Half of Ribbon Wears Faster

Revised: 11/22/91
Security: Everyone

ImageWriter LQ: Why Top Half of Ribbon Wears Faster

=====

This article last reviewed: 7 April 1988

Some users have asked why their ImageWriter LQ printer seems to print only on the top third of the ribbon.

The ImageWriter LQ adjusts the ribbon height with every page it prints, in a four-page cycle. If you print predominantly single- or double-page documents, you will see wear only on the upper half of the ribbon.

You use the ribbon fully only when you print documents of at least four pages. After that, the fifth page uses the same ribbon section as page one, page six the same as two, etc.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2870



Tech Info Library

LaserWriter Family: Adjusting Default Timeout Values (2/95)

Revised: 2/24/95
Security: Everyone

LaserWriter Family: Adjusting Default Timeout Values (2/95)

Article Created: 5 May 1988
Article Reviewed/Updated: 24 February 1995

TOPIC -----

The following information discusses LaserWriter timeouts and the default values of these timeouts.

DISCUSSION -----

The LaserWriter family has three types of "timeouts" that cancel an existing job on expiration:

- Job timeout: duration time of the job.
- Feed timeout: time allowed to manually feed the paper.
- Wait timeout: time the printer waits for additional input on the current job.

The following are the default values of these timeouts; a PostScript program can be used to change the defaults for a current job, if necessary (see below).

	Job Timeout	Manual Feed Timeout	Wait Timeout
	-----	-----	-----
LaserWriter	0 (never)	60 seconds	30 seconds
LaserWriter Plus (Rev. 38 or before)	0 (never)	60 seconds	30 seconds
LaserWriter Plus (Rev. 47 ROMs)	0 (never)	60 seconds	40 seconds
LaserWriter IINT/NTX	0 (never)	60 seconds	40 seconds
LaserWriter IIIf/IIg	0 (never)	60 seconds	300 seconds

LaserWriter Pro 600/630	0 (never)	60 seconds	300 seconds
LaserWriter PRO 810	0 (never)	60 seconds	40 seconds
Personal LaserWriter NT	0 (never)	60 seconds	300 seconds
Personal LaserWriter NTR	0 (never)	60 seconds	300 seconds
Personal LaserWriter 320	0 (never)	60 seconds	300 seconds
LaserWriter Select 360	0 (never)	60 seconds	300 seconds
LaserWriter Pro 16/600 PS	0 (never)	60 seconds	300 seconds

Note:

Appendix D of "PostScript Language: Reference Manual", available from Addison-Wesley (ISBN# 0-201-10174-2), contains additional information on timeouts and default adjustments.

Changing the timeout is done with the "setdefaulttimeouts" PostScript operator. This operator establishes the default values, job, manual feed, and wait for the three timeouts.

At the beginning of each job, these values are used to initialize the job, manual feed, and wait timeouts. Each parameter must be a non-negative integer denoting the length of a timeout in seconds. The value of 0 indicates that the corresponding timeout should never occur. A PostScript program, like the one that follows, can be sent to the printer to change timeout values.

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
# # # setdefaulttimeouts
end
%
% end PostScript Code
%=====
```

where # # # should be replaced by the job, manual-feed, and wait-timeout values in seconds. For example, if you want to change the manual-feed timeout of the LaserWriter IIg to 120 seconds and keep the other values at their default setting, the PostScript program should look like this:

```
%=====
% Begin PostScript Code
```

```
%  
serverdict begin 0 exitserver  
statusdict begin  
0 120 300 setdefaultttimeouts  
end  
%  
% end PostScript Code  
%=====
```

The PostScript program then can be downloaded to the printer using the
LaserWriter Utility 7.1 (or later).

Article Change History

24 Feb 1995 - Added LaserWriter Pro 16/600 PS

14 Apr 1994 - Updated to include the latest printers.

02 Sep 1993 - Updated to include information on LaserWriter Pro 600/630

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2873



Tech Info Library

Apple Personal Modem: Can't Be Used In All Countries

Revised: 8/3/89
Security: Everyone

Apple Personal Modem: Can't Be Used In All Countries

=====

This article last reviewed: 13 April 1988

The Apple Personal Modem can't be used in Australia (or in many other countries).

The modem may tolerate lower foreign voltages (as low as 50 Hz), but this is not the primary problem.

Factors affecting modem operation vary from country to country. Some countries confiscate computer equipment if you are found using a modem within their borders. Other countries allow unrestricted use of modems, but most have their own frequency standards.

The Apple Personal Modem adheres to Bell 103 and Bell 212 standards, but these are U.S. standards -- most other countries do not meet these specifications. There are also different standards for the grade (quality) of phone lines. Modems must be able to use the physical media available in the country of use.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:2874



Tech Info Library

HyperCard: How to Find Programmers/Consultants

Revised: 6/17/92
Security: Everyone

HyperCard: How to Find Programmers/Consultants

=====

Article Created: 13 April 1988
Article Last Reviewed: 3 June 1992
Article Last Updated: 3 June 1992

There are several avenues for a business or other user to make contact with HyperCard programmers and consultants.

A request posted on AppleLink, in the Developer Services or User Groups bulletin board, will reach a wide number of Apple-oriented developers. Also, the readers of these bulletin boards network in turn with an even greater number of potential candidates.

Don't overlook the many electronic services, which include: GEnie, Source, America Online, and CompuServe. Many of the most highly skilled and up-to-date programmers regularly access these services.

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Tech Info Library Article Number:2875



Tech Info Library

A/UX: Non-SCSI HD20 Not Supported

Revised: 9/29/92
Security: Everyone

A/UX: Non-SCSI HD20 Not Supported

=====

Article Created: 13 April 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

A/UX Engineering does not now -- and does not plan to -- support the original HD20 disk drive for use with A/UX. Its size, cost, and performance make it unsuitable for the majority of UNIX work.

Apple will continue supporting the HD20 SC SCSI disk, as well as HD40 SC, HD80 SC, and any future drives designed to be used with A/UX.

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Tech Info Library Article Number:2878



Tech Info Library

RFT: DisplayWrite Compatibility

Revised: 8/10/92
Security: Everyone

RFT: DisplayWrite Compatibility

=====

Article Created: 14 April 1988
Article Last Reviewed: 7 August 1992
Article Last Updated:

TOPIC -----

Can the RFT (Revisable Form Text) converters be used to interchange files with DisplayWrite 370 running on an IBM mainframe running VM/CMS?

DISCUSSION -----

Apple's compatibility guarantee only applies to characters and codes present in DisplayWrite 3/4 and DisplayWrite 370. These three IBM programs are not totally compatible with one another. This is particularly true in their use of formatting control codes and ASCII-Extended Character Set.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:2880



Tech Info Library

Obtaining TCP/IP and PC/IP Protocols for Macintosh and IBM PC

Revised: 5/11/89
Security: Everyone

Obtaining TCP/IP and PC/IP Protocols for Macintosh and IBM PC

=====

This article last reviewed: 14 April 1988

Some users utilizing NCSA Telnet are interested in running TCP/IP protocols across all their PCs, and have asked if there is a compatible IP version for the IBM PC side.

NCSA Telnet was developed by the National Center for Supercomputer Applications; they have created software for both the Macintosh and the IBM PC.

The IBM software is known as PC/IP. You may contact the Center for more information concerning this package.

For more information, search under: "NCSA".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2881



Tech Info Library

Moving Apple II DOS 3.3 Data to Macintosh

Revised: 5/5/88
Security: Everyone

Moving Apple II DOS 3.3 Data to Macintosh

=====

This article last reviewed: 21 April 1988

If you wish to run Apple II DOS 3.3 files on a Macintosh (512Ke or newer), you must do the following:

1. If the Apple II Plus is the only Apple II available (NOTE: if an Apple IIe is available, see below), then you need:
 - a minimum of 64K in the Apple II Plus
 - one 5.25" drive
 - one 3.5" drive
 - the program "Convert" from a ProDOS System Disk, V1.0, on a bootable 3.5" disk
 - the collected data on a 5.25" disk
- and
- one Macintosh (512Ke, Plus, SE, or II)
 - two disk drives (two 800K floppies or one 800K floppy and a hard drive)
 - Apple File Exchange (on one of the floppies or on the the hard drive).

Once these items are together, follow these steps:

- a. Insert the ProDOS disk in the 3.5" drive and the data disk in the 5.25" drive.
- b. Run "Convert".
- c. Transfer the data ("Convert" defaults to 5.25" --> 3.5").
- d. Eject the 3.5" disk, which now has the data converted to ProDOS format.

- e. Launch Apple File Exchange on the Macintosh.
- f. Insert the ProDOS 3.5" disk in the Macintosh drive. (AFE displays its disk in one window and the ProDOS disk in another.)
- g. Select the data file from the ProDOS disk, and click the transfer button.

2. If there is an Apple IIe available, you need:

- a minimum of 128K in the Apple IIe
- one 5.25" drive
- one 3.5" drive
- System Utilities 3.0 on a bootable 3.5" disk
- the collected data on a 5.25" disk

and

- one Macintosh (512Ke, Plus, SE, or II)
- two disk drives (two 800K floppies or one 800K floppy and a hard drive)
- Apple File Exchange (on one of the floppies or on the the hard drive).

Once these items are together, follow these steps:

- a. Insert the ProDOS disk in the 3.5" drive and the data disk in the 5.25" drive.
- b. Run System Utilities (labeled SYSUTIL.SYSTEM).
- c. Copy the data file from the 5.25" disk to the 3.5" disk using "Copy Files".
- d. Eject the 3.5" disk, which now has the data converted to ProDOS format.
- e. Launch Apple File Exchange on the Macintosh.
- f. Insert the ProDOS 3.5" disk in the Macintosh drive. (AFE displays its disk in one window and the ProDOS disk in another.)
- g. Select the data file from the ProDOS disk, and click the transfer button.

Using either method, the data from the test instrument is now a Macintosh text file. Once in the Macintosh text file format, it can be loaded into a variety of Macintosh applications.



Tech Info Library

Central Point Software, Inc.

Revised: 3/15/94
Security: Everyone

Central Point Software, Inc.

=====

Article Created: 5 May 1998
Article Reviewed/Updated: 15 March 1994

Central Point Software, Inc.

15220 North West Greenbrier Parkway
Suite 200
Beaverton, OR 97006

800-626-2778 (Sales)
800-888-8199 (Customer Service)
1-800-964-6896 (Upgrades, upgrade information)

503-690-8080 (Main)
503-690-8090 (Customer Service)
503-629-9440 (Macintosh products Technical Support)

503-690-2660 Fax
503-690-8083 Fax

Company Profile:
develops and markets of disk troubleshooting and repair software.

Support Information Services

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:2883



Tech Info Library

Macintosh II: Specifications (Discontinued 1/90)

Revised: 9/27/93
Security: Everyone

Macintosh II: Specifications (Discontinued 1/90)

Article Created: 29 April 1988
Article Last Reviewed: 29 June 1992

TOPIC -----

This articles gives technical specifications for the Macintosh II.

DISCUSSION -----

MICROPROCESSOR

- MC68020, 32-bit architecture, 15.6672MHz clock frequency
- MC68881 floating-point unit (IEEE standards)
- Optional 68851 PMMU (Paged Memory Management Unit)

MEMORY

- 1MB RAM, expandable to 68 MB on board; expandable to 2 GB in NuBus slots; 120ns or faster SIMMs.
- 256K ROM

DISK DRIVES

- Built-in 800K floppy disk drive; support for one additional 800K floppy disk drive. Support for 1.4MB floppy drive with either Macintosh IIfx or Macintosh IIfx upgrade kits.
- Support for one internal SCSI device

DISPLAY

- Support for up to six Nubus display cards

INTERFACES

- Two mini-circular 8 serial (RS-422) ports
- One DB-25 SCSI port
- Two Apple Desktop Bus ports
- Six NuBus internal slots supporting full 32-bit address and data lines

MOUSE

..TIL02884-Macintosh_II-Specifications_Discontinued_1-90_(193_Mac).pdf

- Apple Desktop Bus Mouse; mechanical tracking, optical shaft, or contact encoding

SOUND GENERATOR

- Custom sound chip drives stereo miniature phone jack headphones or stereo equipment.

CLOCK/CALENDAR

- Custom chip with long-life lithium battery

ELECTRICAL REQUIREMENTS

- Line voltage: 90 to 140 VAC and 170 to 270 VAC, automatically configured
- Frequency: 48 to 62 Hz
- Power: 230 watts, not including monitor power

OPERATING ENVIRONMENT

- Operating temperature: 10 to 35 degrees C (50 to 95 degrees F)
- Storage temperature: -40 to 47 degrees C (-40 to 110.6 degrees F)
- Relative humidity: 5% to 95% noncondensing
- Maximum altitude: 3,048 m (0 to 10,000 ft)

SIZE AND WEIGHT

- Main unit
 - Height 14.0 cm (5.5 in)
 - Width 47.4 cm (18.7 in)
 - Depth 36.5 cm (14.4 in)
 - Weight 10.9 kg (24 lbs)*
- Mouse
 - Height 2.8 cm (1.1 in)
 - Width 5.3 cm (2.1 in)
 - Depth 9.7 cm (3.8 in)
 - Weight .17 kg (6 oz.)

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Tech Info Library Article Number:2884



Tech Info Library

Extron Electronics

Revised: 7/8/93
Security: Everyone

Extron Electronics

=====

Article Created: 05/05/88
Article Reviewed: 07/08/93
Article Updated: 11/06/92

Extron Electronics

13554 Larwin Circle
Santa Fe Springs, CA 90670

800-633-9876 (Outside CA)

310-802-8804

310-802-2741 Fax

Company Profile:
Hardware, specializing in video interface products.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2885



Tech Info Library

Abacus Concepts, Inc.

Revised: 4/3/97
Security: Everyone

Abacus Concepts, Inc.

=====

Article Created: 05/05/88
Article Reviewed: 07/02/93
Article Updated: 03/30/92

Abacus Concepts, Inc.

1984 Bonita Ave.
Berkeley, CA 94704

510-540-1949

510-540-0260 Fax

Company Profile:

Software, specializing in graphics and statistical applications.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:2886



Tech Info Library

Franz Inc.

Revised: 7/8/93
Security: Everyone

Franz Inc.

=====
Article Created: 05/05/88
Article Reviewed: 07/08/93
Article Updated: 11/06/92

Franz Inc.

1995 University Ave.
Suite 275
Berkeley, CA 94704

800-333-7260

510-548-3600

510-548-8253 Fax

Company Profile:
Software, specializing in LISP products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2887



Tech Info Library

Uniplex Integration Systems Inc.(Formerly Uniplex Dist. Inc.)

Revised: 7/21/93
Security: Everyone

Uniplex Integration Systems Inc.(Formerly Uniplex Dist. Inc.)

=====

Article Created: 5 May 1988
Article Reviewed/Updated: 20 July 1993

Uniplex Integration Systems Inc.

600 E. Las Colinas
Irving, TX 75039

214-556-0106

800-338-9940

Fax: 214-831-7102

Company Profile:
Formerly Uniplex Distribution Inc., software, specializing in office
automation.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:2888



Tech Info Library

Hard Disk File Recovery Suggestions

Revised: 5/5/88
Security: Everyone

Hard Disk File Recovery Suggestions

=====

This article last reviewed: 28 April 1988

Some people have asked about how to salvage files when a backup that uses the HDBackup program to back up a large file (more than 800K) does not restore properly.

One problem specifically mentioned occurred when the backup itself had been completed without any problems, but when an attempt was made to restore the file, a "Disk Full" message appeared after the last disk was inserted.

Unfortunately, recovering the data in such a situation can be difficult and time-consuming; the recovery effort is compounded by the file being split between two or more diskettes.

Usually, if the "restore from backup" fails, each diskette containing the backed up information can be inserted, and each file copied with the Finder. When the back-up data is split among many diskettes, recovering the data depends on the type of file, the file format, and your persistence.

Here are some suggestions to aid recovery:

1. Make a copy of the files.
2. Recovering a file may be as easy as launching an application, then choosing to display the file. Since the file is divided between two diskettes, it needs to be rejoined using Copy and Paste.
3. If you're unable to open the file, consider changing the file type with ResEdit to an appropriate file type, such as text if it is a word processing file. This may enable you to open the files separately and rejoin them using a text editor or word processor.
4. If the file is a spreadsheet or any "text-based" type of file, you should still consider changing the file type to text. This may allow you to open the file -- but would require more work to re-establish the

delimiters before exporting it back into the original file type.

If you are not able to recover any portion of the files by following the suggestions above, then important file structures are either incomplete or missing -- which means that more powerful data recovery tools are required. FEdit or a similar disk editor may allow the files to be opened, then copied and pasted into another file.

(NOTE: Running under MultiFinder will speed up the copying and pasting process.)

More difficult recovery procedures involve using file format information and a disk editor to perform specific repairs to the files -- namely, to decipher and extract recoverable data. If the file is compressed or encrypted, file recovery is likely to be very difficult. You must first decipher the scheme used, then decipher or translate the data, byte by byte. Getting access to the file format is essential -- and you will need lots of time and patience as well.

Tech Info Library Article Number:2889



Tech Info Library

SL/IP and CSL/IP Releases

Revised: 9/24/92
Security: Everyone

SL/IP and CSL/IP Releases

=====

Article Created: 28 april 1988

Article Change History

08/31/92 - REVIEWED
 o For technical accuracy.
08/31/92 - UPDATED
 o To include A/UX 3.0 Information.

TOPIC -----

SL/IP -- Serial Line Internet Protocol -- provides a line discipline for the transmission/reception of IP (Internet Protocol) packets over a point-to-point serial data line, such as RS232 or RS422 interface lines.

SL/IP is included and supported in A/UX 2.0 and CSL/IP is supported in A/UX 3.0.

Keywords: slip, SLIP, cslip, CSLIP

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Tech Info Library Article Number:2890



Tech Info Library

ResCopy XCMD Is Copyrighted by Apple

Revised: 6/24/90
Security: Everyone

ResCopy XCMD Is Copyrighted by Apple

=====

This article last reviewed: 26 September 1989

Some users have asked about posting the HyperCard stack ResCopy 4.0b17 on a bulletin board.

The ResCopy XCMD 4.0b17 is under an Apple copyright 1987-1988 and is NOT in the public domain. The distribution of ResCopy XCMD 4.0b17 is limited and controlled via license agreements through Apple Software Licensing.

For complete details about the distribution limitations of ResCopy XCMD 4.0b17 (and other Apple software), contact Apple Software Licensing.

For address information search on Software Licensing.

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Tech Info Library Article Number:2892



Tech Info Library

LaserWriter IINT/NTX: Default Values For Font Cache

Revised: 9/22/89
Security: Everyone

LaserWriter IINT/NTX: Default Values For Font Cache

=====

This article last reviewed: 29 April 1988

Default values are set for the font cache in the LaserWriter IINT and LaserWriter IINTX, as well as for the display list and communications buffer. Font cache and display list sizes are persistent parameters and can be reset.

The default values are (in hex):

	2MB or less	3MB or less	3MB or more
Font Cache size	\$286000	\$330000	10% RAM size
Display List size	\$10000	\$150000	10% RAM size

These parameters permit setting the RAM allocation in the LaserWriter IINTX.

(IMPORTANT NOTE: If the RAM allocations are set incorrectly, it could have a VERY BAD effect on the operation of the printer. Do not adjust these unless you know what you are doing, or have consulted with someone who does!)

Normally, these values are set to 0 in the EEROM (ZPRAM), which tells the printer to calculate the necessary sizes based on RAM size.

Also, a change has been made to the operation of the font cache in more recent LaserWriters. Formerly, there was a single limit on the number of bytes occupied by a character in the cache; a character larger than the limit would not be cached. Now there are two cache thresholds, an upper one and a lower one.

If a character is larger than the upper threshold (as determined by the bounding box specified to setcachedevice), the character is still not cached; if smaller, it is.

Once the character is cached, if it's larger than the lower threshold it is compressed; if not, it is stored as a full-pixel array.

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Tech Info Library Article Number:2893



Tech Info Library

Foreign File Formats: AppleSingle and AppleDouble (9/94)

Revised: 9/21/94
Security: Everyone

Foreign File Formats: AppleSingle and AppleDouble (9/94)

=====

Article Created: 29 April 1988
Article Reviewed/Updated: 21 September 1994

TOPIC -----

Apple provides two standards for representing files on foreign file systems. The goal is to preserve all attributes of the file's home file system on file systems that don't otherwise support the same attributes.

DISCUSSION -----

Experience indicates that one format is inadequate to cover all cases. Two closely related formats, however, can serve most needs. The primary reason for developing these formats is to allow storage of Macintosh files on file systems that don't support the notion of two forks. However, the proposed formats are general enough for use in representing a file from any file system on any other file system.

AppleSingle

AppleSingle format keeps all contents and attributes of a file in a single file on the foreign file system. For example, both forks of a Macintosh file, the Finder information and associated icons, and so on, are arranged in a single file with a simple structure. The intention is to use this format primarily as a storage format; that is, for Macintosh files that must be stored on a foreign file system and later reconstructed into true Macintosh files.

An AppleSingle file contains a header followed by data. The header consists of several fixed fields and a list of "entry descriptors," each pointing to an "entry." Apple defines these standard entries as Data Fork, Resource Fork, Real Name (name in the home file system), Comment, Icon, and File Info. Each entry is optional and may or may not appear in the file.

AppleDouble

AppleDouble format is more appropriate for applications in which the users of the foreign file system want to modify the contents of the file. Since most Macintosh applications keep the file data in the data fork, AppleDouble format saves the contents of the data fork in one file, and all other file attributes are kept in a separate file.

AppleDouble format is the same as AppleSingle format, except that the data is kept in a separate foreign file. The file containing the data fork is called the "AppleDouble Data File," and the other file is called "AppleDouble Header File."

The AppleDouble Data file contains only the standard Macintosh data fork, with no extra header. The AppleDouble Header File has exactly the same format as the AppleSingle file, except that it DOESN'T contain a data fork entry.

Applications

- Standard for Transferring Files Between Host Computers (Interhost)
For example, Macintosh files could be shipped easily and completely among different systems if they all understood one of these common formats. Any existing e-mail system or file transfer utility could be used without modification.
- Standard for Operating on Foreign Files within a Single Host (Intrahost)
A possible example would be UNIX applications that can build and manipulate Macintosh resource forks (perhaps a cross-development system). If host computer users want to write Macintosh-aware applications, they can use a common storage format, such as AppleSingle and AppleDouble.

AppleSingle and AppleDouble Specifications

There is a document titled "AppleSingle/AppleDouble Formats for Foreign Files Developer's Notes." It describes version 2 of the AppleSingle/AppleDouble file formats. These formats were originally developed for storing Macintosh files on an A/UX file system, but have since been adapted for storing files from various operating systems (not just Macintosh) on foreign file systems.

You can obtain a printed version of this document from APDA. You can also find this document in the Technical Information Library under the title "AppleSingle/AppleDouble Formats: Developer's Note".

Article Change History:

21 Sep 1994 - Removed binary file.
02 Feb 1993 - Updated.
06 Jan 1993 - Revised to move 'fcnvt' information to a separate article.

Support Information Services

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Tech Info Library Article Number:2894



Tech Info Library

How To Prevent Switch-Launching Between Floppy Disks

Revised: 9/16/88
Security: Everyone

How To Prevent Switch-Launching Between Floppy Disks

=====

This article last reviewed: 29 April 1988

Some users have asked if there is a way to prevent switch-launching between floppies on a floppy-based system.

The "Technical Introduction to the Macintosh Family" states: "You can prevent this switch-launching by holding down the Option key when you start the application."

Actually, switch-launching is either prevented OR allowed by this procedure, depending on the kind of disks in the system.

Hard Disk Systems

Switch-launching is generally PREVENTED in a hard disk system. To force a switch-launch:

1. Hold down the Option and Command keys while opening an application.
2. Set the Finder Flags for the application to "Always switch-launch" (Get Info on the file using ResEdit).

Floppy Disk Systems

In floppy-based systems, the system generally switches to the System files on the diskette that contains the application being opened.

Holding down the Option key while opening an application on a floppy-based system will NOT prevent switch-launching (as is incorrectly stated in the "Technical Introduction to the Macintosh Family".) Therefore, to prevent switch-launching to a diskette on a floppy-based system:

1. Remove the System Folder.

2. Place either the System file or Finder -- but not both -- into another folder, or at root.
3. Use MultiFinder, which prevents switch-launching (if there is sufficient RAM to support both MultiFinder and the applications).

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Tech Info Library Article Number:2895



Tech Info Library

Macintosh Plus Doesn't Provide Termination Power

Revised: 7/24/92
Security: Everyone

Macintosh Plus Doesn't Provide Termination Power

Article Created: 29 April 1988
Article Last Reviewed: 24 July 1992
Article Last Updated:

TOPIC -----

Some users have experienced problems with SCSI hard drives that don't start up on a Macintosh Plus if they are the only SCSI device, but the same drive may work correctly when hooked up to a Macintosh SE or Macintosh II.

DISCUSSION -----

This is usually a termination problem. That is, if you have correctly configured your SCSI bus with the proper number of terminators (you can refer to the SCSI Cable System manual, Apple Part #030-2042-B), the problem probably lies with your hard disk's inability to provide termination power to the terminator(s).

The drive doesn't work when connected to a Macintosh Plus because the Macintosh Plus does NOT provide termination power. The same drive works when connected to a Macintosh II or Macintosh SE -- or when another SCSI device is connected to the bus -- because these devices supply termination power.

Sometimes SCSI peripherals will work without proper termination -- usually only when the data lines are "clean" enough to support communication. This cannot be relied on to continue; therefore, you should:

- Repair the drive so that it provides termination (as it should if it were working correctly.)

OR

- Connect another SCSI device providing termination power.

OR

- Use this hard disk on another system that provides termination power, such as a Macintosh II or Macintosh SE.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2896



Tech Info Library

PMMU's Advantages in a Multitasking Operating System

Revised: 7/20/92
Security: Everyone

PMMU's Advantages in a Multitasking Operating System

=====

Article Created: 29 April 1988
Article Last Reviewed: 20 July 1992
Article Last Updated: 20 July 1992

TOPIC -----

Some users have asked whether the Macintosh II computer's PMMU (Paged Memory Management Unit) -- which handles the translation from 24 bits to 32 bits, and supports the 32-bit operating system -- provides any special advantages, such as speed.

DISCUSSION -----

The 68851 PMMU does not provide any advantage over the standard HMMU when used with System 6. The HMMU and PMMU BOTH handle the 24-bit-to-32-bit translation, which allows the existing Macintosh software to run on a Macintosh II. There is also no increase in speed when using the PMMU instead of the HMMU.

However, the advantages of PMMU become apparent when used with multitasking operating systems, such as UNIX and System 7. Such systems use virtual memory and require a logical-to-physical translation of an address from the processor; this is where the 68851 PMMU becomes an absolute necessity.

For more information on the advantages of the 68851 PMMU in a multi-tasking, 32-bit operating system, see: "Technical Introduction to the Macintosh Family" (ISBN#: 0-201-17765-X) page 206.

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Tech Info Library Article Number:2897



Tech Info Library

Apple IIGS: How To Correct Point Size Printing Problems

Revised: 3/23/89
Security: Everyone

Apple IIGS: How To Correct Point Size Printing Problems

=====

This article last reviewed: 12 May 1988

Currently, there is a font size printing problem with the Apple IIGS with an ImageWriter II when using various programs, including Activision's Writer's Choice Elite. The problem is that the fonts that come with the program do not print the proper point sizes. The 8-point size measures nearer to 12 points, and so on. (These are apparently Apple fonts, licensed by Activision.) Until Apple releases new system fonts, you can choose either of two solutions:

- The better solution is to make sure you get the Apple IIGS System Disk, Version 3.1 or later. It contains the Page Setup Dialog version 1.3 or later. Starting with version 1.3, the Page Setup Dialog contains an area for vertical sizing offering either normal or condensed print. Select Normal for an exact duplicate of the font's screen size. Select Condensed for the selected point size.
- The other solution is to print in Draft and use the built-in NLQ mode of the ImageWriter II. Unfortunately, this method creates a problem with the spacing between words -- just like on the Macintosh.

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Tech Info Library Article Number:2902



Tech Info Library

A/UX 3.0: Reading DOS floppy disks (8/94)

Revised: 5/24/95
Security: Everyone

A/UX 3.0: Reading DOS floppy disks (8/94)

=====
Article Created: 12 May 1988
Article Reviewed/Updated: 19 August 1994

TOPIC -----

Some A/UX users need to read data from standard 360K DOS-formatted floppies.

DISCUSSION -----

You can read 3 1/2" disks with Apple's PC Exchange, Dayna's DOS mounter, or Insignia's SoftPC will use the floppy drives to read DOS formatted floppies.

Article Change History:
19 Aug 94 - Reviewed. Changed title to show A/UX 3.0 information
31 Aug 92 - REVIEWED For technical accuracy.

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Tech Info Library Article Number:2903



Tech Info Library

Macintosh II: Cure For Vertical Green Lines at Bottom of Screen

Revised: 7/2/92
Security: Everyone

Macintosh II: Cure For Vertical Green Lines at Bottom of Screen

=====

Article Created: 12 May 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

I have a problem that occurs on a Macintosh II with a color monitor and a video expansion card: Vertical green lines appear on the lower third of the screen when you select the 256-bit mode from the control panel. However, when in the 16-bit mode, the monitor behaves normally.

DISCUSSION -----

The problem may be a video RAM problem. Try replacing the eight extended video RAM chips with known, good video RAM. If the problem persists, you may need to replace a defective video card.

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Tech Info Library Article Number:2904



Tech Info Library

A/UX: Source of Keyboard Delay During Log-In

Revised: 9/24/92
Security: Everyone

A/UX: Source of Keyboard Delay During Log-In

=====

Article Created: 10 May 1988

Article Change History

08/31/92 - REVIEWED
o For technical accuracy.

TOPIC -----

When A/UX starts up, there's a delay in the keyboard response: it takes a couple of keystrokes before anything appears in response to the "login:" prompt. Here's why: during the log-in sequence ("getty" to "login"), /etc/getty waits one second after issuing the following log-in prompt message:

Apple Computer, Inc. A/UX

login:

DISCUSSION -----

This one-second delay keeps noise from being passed to the "login" process, ensuring that phone lines are clean before dialing.

To avoid the keyboard delay, just wait one second before responding to the log-in prompt. It isn't necessary to wait one second after the other "login" or "Password" prompts, because they're generated by the "login" process not the "getty" process.

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Tech Info Library Article Number:2906



Tech Info Library

X Window System: Its Official Names

Revised: 9/18/92
Security: Everyone

X Window System: Its Official Names

=====

Article Created: 10 May 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

What is the official name of the X Window System?

DISCUSSION -----

According to its developers, the official names are:

- X
- X Window System
- X Version 11
- X Window System Version 11
- X11

Note that the phrases "X.11", "X-11", and "X-Windows" are not included; they SHOULD NOT be used to describe the X Window System.

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Tech Info Library Article Number:2907



Tech Info Library

X Window System: Some Compatibility Questions

Revised: 9/8/92
Security: Everyone

X Window System: Some Compatibility Questions

Article Created: 10 May 1988
Article Last Reviewed: 10 August 1992
Article Last Updated:

TOPIC -----

Compatibility with X means that the client-side application and the X display server communicate according to the X Version 11 protocol, and that the server correctly implements the drawing (output) semantics and delivers events (input) as specified in that protocol. The X protocol is the communication language used between the X client and the X server. The X server listens to display instructions sent by the client according to the protocol and responds by drawing on the screen and returning events (like keystrokes and mouse movements).

Following are some questions and answers about X Window System compatibility.

DISCUSSION -----

Is X Window System Available on any Machine NOT Running UNIX?

The majority of X implementations are for UNIX systems. However, there are other (compatible) implementations that run on VMS, Apollo DOMAIN, and others. When using a true multitasking operating system, an X client (like an engineering design application) can be run on the same CPU as the X display server. In fact, this is the usual pattern for using X: display server and multiple clients running on the same (multitasking) CPU.

Does Compatibility Mean the Macintosh OS Being Able Run to Window X?

You can also run an X display server on a single-user operating system, such as the Macintosh OS or MS-DOS. These implementations require all the X client applications to be run remotely. Some terminal manufacturers (Wyse is one example) have produced intelligent terminals that operate as X

display servers. (These terminals must have a powerful, dedicated CPU, buffering capabilities, and some form of networking built in.)

Can a MacWorkStation-to-X Window System Interface Be Written?

An X server and a remote X client application communicate over a network using a "reliable byte-stream" built on top of a network protocol, such as TCP-IP or DECNet. The same kind of mechanism is used by MacWorkStation to communicate with an IBM mainframe (but the protocol used and many other details differ from X).

The X protocol provides for vendor-specific extensions (a trap door), which allows clients to access special functions in the server. It might be possible for a Macintosh-based X server to offer an extension that offers clients use of Macintosh Toolbox components (like MacWorkStation), but we don't know of any plans to implement such an extension.

Is X Window System like PostScript?

X and PostScript are similar, because they both are used to generate graphic images on bit-map devices (in this sense, QuickDraw is also similar). However, X and PostScript have very different "imaging models." X regards the screen as a rectangular collection of pixels--each may be individually addressed by giving its horizontal and vertical coordinates (like QuickDraw). Lines, curves, and shapes are specified in terms of these device-dependent coordinates.

PostScript, on the other hand, hides many of the device-dependent details (like discreteness of pixels) and gives the programmer the illusion of painting on a canvas in any convenient coordinate system. The PostScript model is, in many ways, richer and easier to use. In addition, PostScript is a true programming language and allows for concise and compact expression of complicated graphic images.

The Sun NeWS window system is based on PostScript. A NeWS application is a collection of PostScript procedures that are sent to a NeWS server (perhaps remotely via a network connection). The server interprets the PostScript procedures and renders graphics in a window on the display's bit-map screen. NeWS extends PostScript by allowing interactive input: the PostScript procedures can respond to user input--keystrokes, mouse motion, and mouse clicks. Some of NeWS is written in PostScript (after all, PostScript is a programming language). In particular, the NeWS window manager is a PostScript procedure.

How Is X Window System Comparable to Display PostScript?

Display PostScript (licensed by Adobe) lets a PostScript procedure render graphics on a bit-map screen (in the same manner as a LaserWriter with its built-in PostScript lets a PostScript procedure render graphics on a sheet of paper). Display PostScript differs from NeWS in that it does not take into account interactive input. X and Display PostScript can be used together: Display PostScript is a front end that accepts a client's PostScript procedure and then issues commands to X causing the appropriate

graphics to be drawn in an X window.

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Tech Info Library Article Number:2908



Tech Info Library

Macintosh 128K and 512K: Upgrade Paths

Revised: 5/11/89
Security: Everyone

Macintosh 128K and 512K: Upgrade Paths

=====

This article last reviewed: 10 May 1988

Macintosh 128K

To upgrade a 128K Macintosh to a Macintosh Plus, a Level I Service Technician installs both:

- M2516 Macintosh Plus Disk Drive Kit, and
- M2518 Macintosh Plus Logic Board Kit (128K)

The M2519 Keyboard is optional.

Macintosh 512K

The Macintosh 512K can be upgraded to three different configurations:

Option 1 - Macintosh 512Ke

Option 2 - Macintosh Plus with a Macintosh 512K keyboard (no numeric pad)

Option 3 - Macintosh Plus with a Macintosh Plus keyboard (includes the numeric pad)

Option 1

To upgrade a Macintosh 512K to the Macintosh 512Ke, a Level I Service Technician installs a M2516 Macintosh Plus Disk Drive Kit. This kit contains the 128K ROMs and an internal 800K floppy disk drive (they replace the Macintosh 512K's 64K ROMs and internal 400K floppy disk drive).

Option 2

To upgrade a Macintosh 512K to a Macintosh Plus (without a numeric pad), a Level I Service Technician does the Macintosh 512K-to-Macintosh 512Ke upgrade first; that is, installs the 800K disk drive. Next, the technician installs a M2518 Macintosh Plus Logic Board Kit (512K) and inserts the 128K ROMs in the Macintosh Plus Logic Board. The result is a Macintosh Plus with the Macintosh 512K keyboard.

Option 3

To upgrade a Macintosh 512K to a Macintosh Plus (with numeric pad), after the Service Technician installs both M2516 and M2518 (as in Option 2), a M2519 Macintosh Plus Keyboard is plugged in. The result is a full-featured Macintosh Plus.

Using an External 800K Drive With a Macintosh 512K

An external 800K drive can be used with a Macintosh 512K that hasn't been upgraded to a Macintosh 512Ke or Macintosh Plus, provided the system file named HD20 Startup is in the System Folder. HD20 Startup was used before the HFS (128K) ROMs were introduced, to allow connection of the original non-SCSI HD20. This system file also works with 800K floppy drives on a Macintosh 512K.

Part Numbers

M2516 Macintosh Plus Disk Drive Kit
M2518 Macintosh Plus Logic Board Kit (512K)
M2518 Macintosh Plus Logic Board Kit (128K)
M2519 Macintosh Plus Keyboard

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Tech Info Library Article Number:2910



Tech Info Library

MouseText: Apple IIC Tecnical Reference Manual Errata

Revised: 5/23/88
Security: Everyone

MouseText: Apple IIC Tecnical Reference Manual Errata

=====

This article last reviewed: 13 May 1988

The Apple IIC Technical Reference Manual (ISBN#: 0-201-17752-8) shows, on pages 90 and 91, a chart of Apple IIC MouseText Characters. The MouseText equivalents for F and G are shown as four horizontal lines, whose purpose is to make window title bars. This is not correct. On an Apple IIC or Apple IIe (either enhanced beige or platinum), the MouseText characters for F and G are the two halves of the "running man" character.

The horizontal line characters are available only in the Apple IIGS MouseText character set. There is no ROM upgrade to add these new characters to an Apple IIe or Apple IIC.

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Tech Info Library Article Number:2911



Tech Info Library

A/UX: Problem With atan2 Function (9/94)

Revised: 9/20/94
Security: Everyone

A/UX: Problem With atan2 Function (9/94)

Article Created: 17 May 1988
Article Reviewed/Updated: 20 September 1994

TOPIC -----

The math library function atan2 gives an incorrect answer for the arguments (-1,0). A/UX returns 0; it should return 3.141593 (pi).

This problem has been fixed in A/UX 2.0.1 and 3.0.

DISCUSSION -----

Here's a sample program:

```
#include<math.h>
main()
{
printf("atan2( 0, 1) = %9.6f\n", atan2( 0., 1.));
printf("atan2( 1, 0) = %9.6f\n", atan2( 1., 0.));
printf("atan2( 0,-1) = %9.6f\n", atan2( 0.,-1.));
printf("atan2(-1, 0) = %9.6f\n", atan2(-1., 0.));
}
```

This program returns:

```
atan2( 0, 1) = 0.000000
atan2( 1, 0) = 1.570796
atan2( 0,-1) = 0.000000
atan2(-1, 0) = -1.570796
```

The result SHOULD be:

```
atan2( 0, 1) = 0.000000
atan2( 1, 0) = 1.570796
atan2( 0,-1) = 3.141593
atan2(-1, 0) = -1.570796
```

This anomaly affects the conversion of rectangular-to-polar coordinates, a common use of the atan2 function.

Article Change History:

20 Sep 1994 - Reviewed.

27 Aug 1992 - UPDATED to include A/UX 3.0 Information.

Support Information Services

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Tech Info Library Article Number:2912



Tech Info Library

A/UX: Problem With NaN, printf

Revised: 9/16/92
Security: Everyone

A/UX: Problem With NaN, printf

=====

Article Created: 17 May 1988

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

The IEEE floating point format used by the Macintosh II allows these special floating values:

- NaN (Not-a-Number)
- +infinity
- -infinity

DISCUSSION -----

These are created by certain math library functions. For example, `log(0)` is `-infinity`. The `printf(3s)` C library functions should give these values special treatment; that is, print them as special strings. Instead, passing the value as a double prints the numerical value of `-HUGE`; passing the value as a float gives segmentation violations.

Here's a sample program:

```
#include<math.h>
main()
{
    double d;
    float f;
    d = log(0.);
    printf("double: %g\n", d);
    f = d;
    printf("float: %g\n", f);
}
```

```
}
```

On A/UX, this program returns:

```
double: -1.79769e+308
Floating exception (core dumped)
```

For comparison, on SunOS, it gives the right answer except for the sign:

```
double: Infinity
float:  Infinity
```

On IBM AIX, it returns:

```
double: -INF
float:  -INF
```

The results with NaN are similar.

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Tech Info Library Article Number:2913



Tech Info Library

Component Software Corp. (formerly Hyperpress Publ.)

Revised: 7/12/93
Security: Everyone

Component Software Corp. (formerly Hyperpress Publ.)

=====
Article Created: 05/23/88
Article Last Reviewed: 07/09/93
Article Last Updated: 07/09/93

Component Software Corp.

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Company Profile:
Hardware, development tools to corporate developers, end-user consumer products

Article Change History: 07/09/93 Address changed, phone number changed, new product information added, name changed

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Tech Info Library Article Number:2915



Tech Info Library

Informix Software, Inc.

Revised: 4/3/97
Security: Everyone

Informix Software, Inc.

=====
Article Created: 05/23/88
Article Reviewed: 07/09/93
Article Updated: 04/03/97

Informix Software, Inc. (1)

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Company Profile:
Software, specializing in UNIX and SQL applications.

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Tech Info Library Article Number:2916



Tech Info Library

Insignia Solutions, Inc.

Revised: 4/3/97
Security: Everyone

Insignia Solutions, Inc.

=====

Article Created: 18 February 1991
Article Reviewed/Updated: 3 April 1997

Insignia Solutions, Inc.

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America Online: InsigniaTS (Technical Support)

InterNet:

<http://www.insignia.com>
[ftp.insignia.com](ftp://www.insignia.com)

Company Profile:

Software, specializing in Windows and DOS emulation software, including AccessPC, SoftWindows (for Power Macintosh) and SoftPC for Macintosh 680x0 models.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2917



Tech Info Library

Symantec Corp.

Revised: 4/3/97
Security: Everyone

Symantec Corp.

=====

Article Created: 23 May 1988
Article Reviewed/Updated: 3 April 1997

Symantec Corp.

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CompuServe:
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KEYWORD SYMANTEC

Company Profile:
Software, specializing in business productivity applications for Macintosh
and IBM PC computers. Has acquired Peter Norton Computing, Leonard Development

Group, and Fifth Generation Systems product lines.

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Tech Info Library Article Number:2918



Tech Info Library

Macintosh II Video Card Pinouts

Revised: 3/9/89
Security: Everyone

Macintosh II Video Card Pinouts

=====

This article last reviewed: 5 May 1988

Here are the pinouts for the Apple Macintosh II Video Card:

Pin	Signal
1	GND
2	Analog Red Channel
3	TTL Composite Sync
4	GND
5	Analog Green Channel with composite sync- used as Monochrome Signal
6	GND
7	NC
8	NC
9	Analog Blue Channel
10	NC
11	GND
12	Analog Green Channel with composite sync(not used)
13	GND
14	GND
15	NC

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Tech Info Library Article Number:2919



Tech Info Library

MS-DOS Filename Conventions: AppleShare V2.0 Same As V1.1

Revised: 5/24/88
Security: Everyone

MS-DOS Filename Conventions: AppleShare V2.0 Same As V1.1

=====

This article last reviewed: 5 May 1988

Under AppleShare 1.1, an MS-DOS user sees a modified version of any name over eight characters; for example:

Macintosh volume name:	Oxford Blues
AppleShare PC name:	!Oxford .Blu

Some users have asked if AppleShare 2.0 lets the administrator determine the volume names that the PC sees -- that is, make it possible to assign names that are different from the Macintosh names, but readable by MS-DOS -- or if not, whether there is any way to make the names easier to read and type WITHOUT constraining original volume names to eight characters or less?

This problem occurs because of file-naming constraints in MS-DOS, which allow only a maximum of eight characters with a three-character extension (such as 12345678.123) for file names. The Macintosh and AppleShare (1.1 or 2.0) both allow filenames up to 31 characters in length.

Although AppleShare allows filenames to be 31 characters long, it also stores the filenames as "short names", which adhere to the MS-DOS file-naming conventions. These "short names" are used when an MS-DOS machine accesses files from an AppleShare server that have names longer than eight characters. These "short names" are generated by a predefined algorithm of the characters in the actual name, and CANNOT be controlled by the system administrator.

This is true for both AppleShare versions 1.1 and 2.0. If file names must be easy to read and type, assign names of eight characters or less.

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Tech Info Library Article Number:2921



Tech Info Library

AppleColor Hi-Res Monitor Needs Composite TTL Sync

Revised: 7/7/88
Security: Everyone

AppleColor Hi-Res Monitor Needs Composite TTL Sync

=====

This article last reviewed: 6 May 1988

A user asks whether the Macintosh II High-Resolution Color Monitor requires the external sync (TTL sync) signal that comes off the Macintosh II Video Card on pin 3, or does the monitor derive the sync from the green video -- that is, does the monitor work with just red, green, and blue signals?

The AppleColor High-Resolution RGB Monitor requires the composite TTL sync from pin 3 -- the AppleColor Monitor CANNOT use the composite sync from the analog green channel with composite sync (pin 5).

The necessary connections are shown below:

AppleColor Monitor		Apple Video Card
1 Red video return	---->	1 Ground
2 Red video	---->	2 Analog red channel
3 Composite TTL sync	---->	3 Composite TTL sync
4 Composite sync return	---->	4 Ground
5 Green video	---->	5 Analog green channel with sync
6 Green video return	---->	6 Ground
7 (not used)		7 (not used)
8 (not used)		8 (not used)
9 Blue Video	---->	9 Analog blue channel
10 (not used)		10 (not used)
11 (not used)		11 Ground
12 (not used)		12 Analog green channel with sync (not used)
13 Blue video return	---->	13 Ground
14 (not used)		14 Ground
15 (not used)		15 (not used)
Shell (Shield Ground)		

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2925



Tech Info Library

LaserWriter Initialization Limits

Revised: 5/24/88
Security: Everyone

LaserWriter Initialization Limits

=====

This article last reviewed: 6 May 1988

There is no limit to the number of times a LaserWriter can be initialized (or restarted). The EEROM in the LaserWriter printers may be written to 10,000 times.

NOTE: If you are downloading programs to the LaserWriter and writing to the EEROM, this 10,000 limit could eventually become a problem.

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Tech Info Library Article Number:2926



Tech Info Library

AppleCD Power Requirements

Revised: 5/24/89
Security: Everyone

AppleCD Power Requirements

=====

This article last reviewed: 6 May 1988

Some users who want to rig a battery-driven power supply to support a CD-ROM have asked about the DC power requirements and the frequency inputs to the drive.

The power requirements for the CD-ROM are:

+12VDC (+/- 5%) with a current capacity of 1.5 amps peak (for 300 ms at 30% duty cycle).

+5VDC (+/- 5%) at a current capacity of 1 amp maximum.

The power supply must also supply terminator power through a diode to Pin 26 of the SCSI connector.

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Tech Info Library Article Number:2927



Tech Info Library

HyperCard 1.1: Workaround For Delete Card Problem

Revised: 10/18/88
Security: Everyone

HyperCard 1.1: Workaround For "Delete Card" Problem

=====

This article last reviewed: 6 May 1988

Users of HyperCard 1.1 stacks find that an attempt to do a "delete card" sometimes calls up an error message -- "Unexpected error 54321" -- and a "sorry" button, which quits HyperCard. (This problem does not occur with HyperCard 1.0.1.)

This IS a problem with HyperCard 1.1: if there is an "onOpen Card" handler on the card after the one you are attempting to delete, or an "onDelete Card" handler in the script of the card you are trying to delete, when you try to delete that card, you receive the error. If there is an "onDelete Card" or "onOpen Card" handler in the background -- or stack -- script, you also get the error when you try to delete the card.

An example of this can be seen in any HyperCard 1.1 Home stack. When trying to delete the card titled, "Look for Documents In:", you get the error. In the script for the last card in the Home stack, there is an "onOpen Card" section of code.

The Workaround

Insert two hyphens and a space before each line of the above-mentioned code. You can then delete that card.

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Tech Info Library Article Number:2928



Tech Info Library

ImageWriter LQ Doesn't Have 50% Reduction Capability

Revised: 5/24/88
Security: Everyone

ImageWriter LQ Doesn't Have 50% Reduction Capability

=====

This article last reviewed: 6 May 1988

Some users have asked why the ImageWriter LQ options for reduction are 33% and 66% only, instead of a 50% reduction as with the ImageWriter II.

The reason is this: the Macintosh screen is 72 dpi, and the ImageWriter LQ in Best mode prints at 216 dpi. If you take the image on the screen, and do not scale it in any way before sending it to the ImageWriter LQ (printing at 216 dpi), the output reduction is 33% -- that is, 72/216.

If you scale this screen image by a factor of two and print it on the same printer at 216 dpi, the result is a 66% reduction -- or, 144/216.

This is the difference from the ImageWriter II, which prints at 144 dpi. The unscaled screen image, when sent to the printer, automatically prints at 50% reduction -- at 72/144.

The reduction modes chosen for the ImageWriter II and ImageWriter LQ printers represent the "natural" reduction modes for each, depending on the printer resolution, and the way the ImageWriter printer drivers handle bit-map printing.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2929



Tech Info Library

LaserWriter: Laser Power Adjustment

Revised: 7/28/89
Security: Everyone

LaserWriter: Laser Power Adjustment

=====

This article last reviewed: 10 November 1988

When the laser is replaced in a first-generation LaserWriter (LaserWriter and LaserWriter Plus), the laser power must be adjusted by a pot on the DC controller board.

In the LaserWriter II, there is no pot on the DC controller board. Power adjustment is not needed during laser replacement.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2930



Tech Info Library

LaserWriter IISC: How To Print In Background Under MultiFinder

Revised: 5/24/88
Security: Everyone

LaserWriter IISC: How To Print In Background Under MultiFinder

=====

This article last reviewed: 6 May 1988

The LaserWriter IISC does print in the background under MultiFinder, but only under these conditions:

- You must use System 4.3. (This is documented in the Owners Manual.)
- You must INSTALL (not drag) the LaserWriter IISC driver into the System folder. If you drag the driver into the System folder, it will not work correctly when printing in the background. (This is not documented.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2931



Tech Info Library

ImageWriter Custom Characters: How To Get Rid Of Underlines

Revised: 5/24/88
Security: Everyone

ImageWriter Custom Characters: How To Get Rid Of Underlines

=====

This article last reviewed: 10 May 1988

Some users have discovered that when they try to create custom characters with the ImageWriter I and II printers, the resulting character is always underlined -- whether they want it that way or not.

The Apple ImageWriter I and ImageWriter II printers -- as well as the Apple Dot Matrix Printer -- have special modes that allow them to generate custom-design characters. For the most definition on each character, it is useful to control all eight data bits sent to the printer.

This Applesoft BASIC program has been tested for the underlining problem, and will work correctly (that is, the character will appear as desired):

```
10 D$ = CHR$(4)
20 FOR I = 768 TO 773: READ J: POKE I,J: NEXT I
30 PRINT D$;"PR#1"
40 FOR I = 1 TO 14: READ J: POKE 769,J: CALL 768: NEXT I
50 PRINT CHR$(27)"*&&&" CHR$(27)"$"
60 PRINT D$;"PR#0"
70 DATA 169,4,76,237,253,96
80 DATA 27,45,27,73,166,71,0,72,72,126,72,72,0,4
```

Line 20 reads the data from line 70, and POKES a machine language routine into the computer. Line 30 activates the printer. Line 40 reads the data from line 80, which is a string of data defining a custom character (in this case, the plus/minus character shown in the ImageWriter manual). It is defined using eight bit data where all eight bits are required. Line 50 uses the custom character, and line 60 returns the output to the screen.

For more information on these procedures, see pages 69 and 70 of the ImageWriter User's Manual, Part 1 (Apple Part #030-0730).

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2932



Tech Info Library

Command-Period Doesn't Cancel Print to LaserWriter IISC

Revised: 5/24/88
Security: Everyone

Command-Period Doesn't Cancel Print to LaserWriter IISC

=====

This article last reviewed: 10 May 1988

When using the LaserWriter IISC, printing within an application (such as MacPaint) that contains a dialog box requiring the "command-period" to stop printing, you may experience this problem: the "command-period" does NOT stop or interrupt the printing.

However, if you are printing within an application that uses a dialog box with a "cancel" button, the cancel button DOES stop the printing.

This is a problem characteristic of the LaserWriter IISC driver, not the PostScript printer drivers. Currently, you CANNOT cancel most print jobs when programs display a printing message stating "To cancel, hold down the command key and type a period (.)"

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2934



Tech Info Library

LocalTalk PC Card: Compatibility With MS-DOS Systems

Revised: 5/24/88
Security: Everyone

LocalTalk PC Card: Compatibility With MS-DOS Systems

=====

This article last reviewed: 11 May 1988

Apple's LocalTalk PC card is compatible with:

- IBM PS/2, models 25 and 30
- PC XT
- PC AT

and most clones, all of which use the PC bus.

Apple's LocalTalk PC card is NOT compatible with:

- IBM 3270 Communication card
- PCs using MicroChannel bus architecture
- PCs using OS/2

TOPS "FlashCard" works with the 3270 Communication card and may be a viable workaround.

Tangent Technologies has announced a card that works with PCs having the MicroChannel bus architecture.

For more information, search under: "Tangent Technologies" and "TOPS"

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2935



Tech Info Library

AppleShare PC: Memory Use

Revised: 5/24/89
Security: Everyone

AppleShare PC: Memory Use

=====

This article last reviewed: 11 May 1988

Some users have asked about the amount of RAM that AppleShare PC occupies in a PC.

The amount of memory used is:

- | | |
|---|---------------|
| - No resident DA or other options: | 127,344 bytes |
| - DA resident with expanded memory option: | 90,176 bytes |
| - DA resident (no graphics or memory options): | 200,416 bytes |
| - DA resident and high-resolution graphics support: | 215,776 bytes |

The totals for the PC files loaded into memory include ATALK.EXE, ASHARE.COM, MINSES.EXE, REDIR.EXE, DA.EXE, DA.DTA, DA.HLP, and ANET.EXE.

Not all of the programs are loaded at once. Those that are not loaded have code segments or overlays sharing allocated space. For this reason, the file size is not the same as the allocated memory size. These numbers represent the allocated total space within memory for the mentioned files.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2936



Tech Info Library

HyperCard: Using It To Control A Multimedia Presentation

Revised: 5/31/89
Security: Everyone

HyperCard: Using It To Control A Multimedia Presentation

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This article last reviewed: 10 February 1989

An interactive multimedia presentation (such as one using 35mm slide projectors, cassette recorders, and lights) can be controlled using the Apple MIDI device, the J.L. Cooper Electronics MIDI Mute, and the XCMD from the HyperMIDI stack.

The J.L. Cooper MIDI Mute contains eight reed relays in one unit that can be controlled with the MIDI XCMD found in the HyperMIDI stack. Apple's MIDI device is the interface between the Macintosh and the J.L. Cooper MIDI Mute.

The control of a particular audio/visual device depends on that device's control interface. For example, the wired remote control found with slide projectors can be easily replaced with the MIDI Mute. The AC power to that same slide projector, however, will require a custom-built power switch that connects to the MIDI Mute. An infrared remote is not a trivial project.

(NOTE: Some knowledge of MIDI codes is also required to complete this system.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2937



Tech Info Library

List Of Font ID Numbers (Apple No Longer Assigns Them)

Revised: 10/18/88
Security: Everyone

List Of Font ID Numbers (Apple No Longer Assigns Them)

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This article last reviewed: 12 May 1988

Some users have asked about importing fonts under ID numbers already reserved to Apple fonts (although not necessarily filled by existing fonts).

The Font Manager chapter of Inside Macintosh, Volume IV (Apple Part #030-1389-A), states that font family numbers 0 through 127 are reserved for Apple's use, and numbers 128 through 255 are assigned by Apple for fonts created by software developers.

This is no longer true: Developer Technical Support does NOT assign font family numbers.

When you copy a font into the System file (using the Font/DA Mover), and there is an ID number conflict, the ID number of the font being copied is changed.

Here is a list of fonts and their ID numbers:

New York	ID = 2	Geneva	ID = 3
Monaco	ID = 4	Venice	ID = 5
London	ID = 6	Athens	ID = 7
San Francisco	ID = 8	Toronto	ID = 9
Cairo	ID = 11	Los Angeles	ID = 12
Times	ID = 20	Helvetica	ID = 21
Courier	ID = 22	Symbol	ID = 23
Taliesin/Mobile	ID = 24		

These are the ID numbers for the LaserWriter Plus fonts:

Zapf Dingbats	ID = 13	Bookman	ID = 14
Helvetica Narrow	ID = 15	Palatino	ID = 16
Zapf Chancery	ID = 18	Avant Garde	ID = 33
New Century School Book	ID = 34		

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2938



Tech Info Library

Alpha MicroSystems

Revised: 7/23/93
Security: Everyone

Alpha MicroSystems

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Article Created: 24 May 88
Article Reviewed/Updated: 22 July 1993

Alpha MicroSystems

3511 W. Sunflower Ave.
Santa Ana, CA 92704

800-773-7872

714-957-8500

714-957-8705 Fax

Company Profile:

Hardware, specializing in video backup and data broadcasting products for
Macintosh and IBM PC systems.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2939



Tech Info Library

COVID, Inc.

Revised: 7/7/93
Security: Everyone

COVID, Inc.

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Article Created: 05/24/88
Article Reviewed: 07/07/93
Article Updated: 04/01/92

COVID, Inc.

1725 W. 17th St.
Tempe, AZ 85281

800-638-6104

602-966-2221

602-966-6728 Fax

Company Profile:
Hardware, specializing in video interfaces, switchers, low-loss coax cables,
and other related products.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2940



Tech Info Library

AppleShare 1.0, 1.1; LaserShare: How to Upgrade

Revised: 11/2/88
Security: Everyone

AppleShare 1.0, 1.1; LaserShare: How to Upgrade

=====

This article last reviewed: 20 May 1988

Two upgrades are available:

- You can upgrade AppleShare 1.0 or 1.1 to the new AppleShare File Server Version 2.0.
- You can also upgrade your copy of LaserShare to AppleShare Print Server.

Price

The upgrades are free to customers who purchased AppleShare or LaserShare on or after March 1, 1988. Product purchased before March 1, 1988 can be upgraded for \$50.00 for each copy of AppleShare or LaserShare.

How to Upgrade

The upgrade form was sent out in the March 20, 1988 AppleGram. All upgrades must use the official upgrade form. No substitutes, facsimiles, or photocopies will be accepted. If you need additional copies, contact your Sales Rep.

You must send back the ORIGINAL AppleShare or LaserShare installer disk. One installer disk is required for each upgrade. For upgrades purchased on or after March 1, 1988, please include your dated original itemized sales invoice. Keep a copy for your records. Products purchased before that date can be upgraded for \$50 each. No orders will be processed until July 1, 1988. After that date, allow six to eight weeks for delivery. If you have questions about the offer, please call (503) 644-4456.

When and Where

The upgrade request must be postmarked before September 30, 1988.

The address for the upgrade is:

AppleShare/AppleShare Print Server Upgrade Program
c/o Apple Computer, Inc.
P.O. Box 8028
Beaverton, OR 97076

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2941



Tech Info Library

HyperCard: Variable Space

Revised: 6/24/90
Security: Everyone

HyperCard: Variable Space

=====

This article last reviewed: 17 May 1988

HyperCard 1.1 limits the programmer to 255 global variables. When writing complex stacks, you can run out of variable space. This does not mean you've used your allotted 255 variables. It can mean that the amount of data you've put into the variables exceeds available memory. If you run into this problem, you three things you can do:

First, rethink your use of variables. Can you redesign so that you don't need so many?

Second, you can put empty into a global variable and increase space for other global variables.

Third, if you really need more than 255 global variables, there is a workaround. The following script demonstrates how you can reduce the number of global variables by treat a variable as two-dimensional array:

```
on mouseUp
  global globalVar
  put "Test" into item 32 of line 1000 of globalVar
  put " it worked!!" into item 1 of line 1 of globalVar
  put item 32 of line 1000 of globalVar into item 1 of localVar
  put item 1 of line 1 of globalVar into item 2 of localVar
  put line 1 of localVar into msg
end mouseUp
```

This example, which creates a global variable, "globalVar," having 32,000 elements, shows a more economical handling of variables. Note: A variable can contain only 32,767 characters.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2942



Tech Info Library

HyperCard Sorts According to ASCII Values

Revised: 7/17/92
Security: Everyone

HyperCard Sorts According to ASCII Values

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Article Created: 17 May 1988
Article Last Reviewed: 8 July 1992
Article Last Updated:

TOPIC -----

In what order does HyperCard sort text?

DISCUSSION -----

HyperCard sorts text based on the assigned ASCII value for each character. This means that ascending sorts will place text beginning with symbols first, then numbers, and finally alphabetic characters.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2943



Tech Info Library

Apple Tape Backup 40SC: Don't Try To Backup Over A Network

Revised: 5/24/88
Security: Everyone

Apple Tape Backup 40SC: Don't Try To Backup Over A Network

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This article last reviewed: 18 May 1988

You will probably have a problem if you try to back up data over a TOPS network to an Apple Tape Backup 40SC. The reason is that Apple Tape Backup software is designed for local backup only. In fact, if you try to back up files from a computer other than the one you've connected the backup unit to, the backup software returns an error message that it cannot back up server files.

Other products let you back up over a network. SuperMac Software's Network DiskFit is one product that is designed specifically for backing up AppleShare or TOPS servers and workstations.

For more information, search the Tech Info Library for "SuperMac".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2944



Tech Info Library

LaserWriter: Data Can't Be Stolen From Print Buffers

Revised: 5/25/88
Security: Everyone

LaserWriter: Data Can't Be Stolen From Print Buffers

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This article last reviewed: 18 May 1988

Some LaserWriter users -- particularly those with defense work -- have asked if it is possible to extract the contents of the LaserWriter or LaserWriter II print buffer after the page has been printed. The answer is no. Once the information has been downloaded into the printer, there is no way (that we know of) to retrieve it. There is the possibility that by adding hardware to the LaserWriter, data could be captured. But creating and connecting such a piece of equipment would be a very difficult job in itself.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2945



Tech Info Library

Micro Focus

Revised: 7/13/93
Security: Everyone

Micro Focus

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Article Created: 05/25/88
Article Reviewed: 07/13/93
Article Updated:

MicroFocus (USA)

2465 E. Bayshore Rd.
Suite 400
Palo Alto, CA 94303

415-856-4161

800-872-6265 (Sales Only)

Fax: 415-856-6134

MicroFocus (UK)

26 West Street
Newbury, Berkshire RG13 1JT
ENGLAND

011-0635-32-646

Fax: 011-0635-33-966

Company Profile:
Software, specializing in programmer productivity tools for COBOL programmers.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2947



Tech Info Library

Linotype-Hell Company

Revised: 5/24/95
Security: Everyone

Linotype-Hell Company

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Article Created: 25 May 1992
Article Reviewed/Updated: 24 May 1995

Linotype-Hell Company

425 Oser Ave.
Hauppauge, NY 11788

800-633-1900 (USA number for typeface/font information)

800-842-9721 (USA number for PCI card information)

516-434-2000
212-695-5466 (New York number for typeface/font information)

516-434-2748 Fax

Company Profile:

Hardware, specializing in computerized publishing and composition systems, imagesetters, and PCI cards including the MacCTU. This card provides a Color Transformation Unit that offers fast, easy, and high-quality image data transformation and color management.

Article Change History:

24 May 1995 - Added PCI card information.
12 Jul 1993 - Name information added.

Support Information Services

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:2948



Tech Info Library

Symmetry Software Corp.

Revised: 4/3/97
Security: Everyone

Symmetry Software Corp.

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Article Created: 25 May 1988
Article Reviewed/Updated: 3 April 1997

Symmetry Software Corp.

8603 E Royal Palm Rd.
Suite 110
Scottsdale, AZ 85258

602-998-9106

Fax: 602-991-0572

Company Profile:
Software, specializing in Macintosh applications and desk accessories.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2949



Tech Info Library

Macintosh-To-Novell NetWare With AppleTalk (Part 1 Of 3)

Revised: 5/10/89
Security: Everyone

Macintosh-To-Novell NetWare With AppleTalk (Part 1 Of 3)

=====

This article last reviewed: 17 May 1988

This is the first of three parts.

Many users have asked about connecting Macintosh to a Novell network, and for up-to-date information on the status of Macintosh NetWare.

The ability of AppleTalk to communicate over broadband networks is done by using:

1. A FastPath (AppleTalk-to-Ethernet converter).
2. A broadband multiplexer (like those sold by Allen-Bradley: VistaMap 10MBps).
3. Another broadband multiplexer to convert the signal back on to Ethernet.
4. A receiving FastPath to convert back onto AppleTalk.

Complete information about NetWare can be obtained by connecting to the Novell demo BBS. The number is (800) 444-4472

Compatibility settings are: 8 bits, parity=none, stops=1, 1200-baud; the access code is NVSOF4.

Here is a brief overview of the Novell information:

With 32 Original Equipment Manufacturers (OEMs) reselling NetWare and with an installed base of over 145,000 file server-based networks, NetWare has become an unofficial standard in the LAN industry.

Netware-Supported Configurations

The following is a list of NetWare-supported networks.

BASEBAND NETWORKS

Linear Bus Networks

Asher-G	AST PCnet II	AST-RSN
AST Starport	AST Turbostar	AT&T StarLAN
Codenoll Ethernet	Cordata InterNet Link	Cordata InterNet Link 286
Corvus Omninet	Gateway G-Net	IBM PC Cluster
IBM PC Network Baseband	MICOM-Interlan Ethernet	NEC Omninet
Network vLAN	Network Elan	North Star Dimension
Novell NetWare Ethernet	Novell NetWare G-Net	Orchid PCnet
Racal-Milgo PLANET	Racore LAN Pac	Santa Clara PCnet/Ethernet
Texas Instruments Ethernet	Torus Ethernet	3Com EtherLink
3Com EtherLink Plus	Ungermann-Bass Net/	Unisys Usernet-86
Univation StarLAN	One Ethernet	Western Digital StarLAN

TOKEN-PASSING NETWORKS

Asher-P	Star Networks:
Comterm ARCNET	
Davong Multilink	TeleVideo Personal Mini
IBM Token-Ring	Novell S-Net
Kaypro ARCNET	
Nestar PLAN 2000	
Novell NetWare RX-Net	
Proteon ProNET-4	
Proteon ProNET-10	
Pure Data ARCNET	
Standard Microsystems ARCnet	
Torus Token-Ring	

BROADBAND NETWORKS

Linear Bus Networks

IBM PC Network
Sytek System 6000
Allen-Bradley Vista

IBM Personal System/2

Advanced NetWare and System Fault Tolerant NetWare provide workstation and file server support for IBM's Personal System/2 series of microcomputer products. Novell also offers a software bridge to link the IBM PC network, the new Token-Ring Network, and other NetWare-supported networks.

Netware Operating System Software

Just as DOS was designed specifically for standalone workstations, NetWare was designed specifically for networking. The NetWare operating system runs

in the file server, which manages shared resources. DOS runs in the workstations, allowing for local processing.

A software component called the NetWare "shell" lets the file server communicate with DOS and application software in the workstations. The shell sends DOS functions to the workstation, but sends NetWare functions to the file server to be handled by the LAN operating system. NetWare remains unchanged, regardless of what software is running in the workstations, which is why NetWare can support many hardware types, and can support multiple versions of DOS on the network simultaneously.

NetWare operating system software offers several powerful features, including DOS 3.x compatibility. DOS compatibility allows multiuser software applications that are developed for DOS to run unmodified on NetWare. Another feature, internal bridging, permits as many as four networks to bridge through the file server.

NetWare is fully compatible with NetBIOS, an industry standard that controls the way software interfaces with IBM and IBM-compatible networks. NetWare's NetBIOS compatibility means that NetWare supports all software and hardware designed around NetBIOS, including software and hardware developed for the IBM PC and Token-Ring networks.

This article is continued in "Macintosh-To-Novell Netware With AppleTalk, Part 2 of 3."

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Tech Info Library Article Number:2950



Tech Info Library

Macintosh-To-Novell NetWare With AppleTalk (Part 2 Of 3)

Revised: 2/1/93
Security: Everyone

Macintosh-To-Novell NetWare With AppleTalk (Part 2 Of 3)

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Article Created: 25 May 1988

Article Change History

02/01/93 - REVISED

- To add information about volume limits of 1MB less than 2GB under EXPANDABILITY.

This is the second of three parts.

About The NetWare Operating System

NetWare is the foundation of Novell's product line. It was introduced in 1983, and is now in its seventh generation of development. NetWare offers tremendous connectivity, expandability, and communications capabilities.

NetWare Operating System Software supports 45 popular LAN hardware configurations.

Compatibility

NetWare is compatible with virtually all PC networking software and hardware.

NETWORK HARDWARE

NetWare supports every major network topology and every major manufacturer's hardware (including IBM's PC and Token-Ring networks, AT&T StarLAN, ARCNET, and many Ethernet-type networks). NetWare preserves current hardware investments and lets clients choose the hardware that best suits their price/performance needs. Best of all, the NetWare user interface remains the same regardless of the hardware it is running on.

COEXISTENCE WITH NON-NETWARE PRODUCTS

NetWare can coexist with many non-NetWare products, such as packages developed by IBM for PC-to-mainframe communications. Since both NetWare and non-NetWare products can run on the same network simultaneously, clients are not limited to using only NetWare on a NetWare network. For example, using the TCP/IP Gateway Option, a file server can use both NetWare and TCP environments simultaneously. NetWare also supports important new products being developed by IBM (APPC/LU 6.2 protocols) and other vendors.

CONNECTIVITY

NetWare lets clients interconnect networks through either gateways or bridges. Bridged networks communicate and share information in a way that is transparent to the user. This lets clients purchase networks or add networks, as necessary, without making the original hardware obsolete. Connectivity protects investments in training, software, and hardware.

EXPANDABILITY

NetWare networks can grow easily when the single network limit is reached, clients can simply bridge the network to another network and continue adding workstations and file servers.

It is easy to increase the disk storage and memory capacity of a NetWare network. Disk subsystems may be added to increase hard disk storage capacity to as much as to 2GB. Currently, we have found that a partition size at least 1MB smaller than 2GB seems to work acceptably. Larger volume sizes might cause negative file sizes, inability to copy files because "More space is needed" even though plenty of space is available. You might encounter these symptoms when Novell servers publish volumes larger than 2GB over the network.

Because NetWare can run in protected mode on 286-type file servers, NetWare supports up to 8MB of Random Access Memory (RAM). Additional RAM improves hard disk performance.

DISTRIBUTED PROCESSING

Under NetWare, each workstation is an independent computer performing its own processing. The file server manages the shared resources and coordinates network activity but does not actually process data. This method of managing data is called "distributed processing".

Because each workstation has its own processing power, adding PCs to the network does not decrease the file server's performance. In contrast, terminals connected to mini and mainframe systems share the processing power, which decreases the power available to each user.

OPERATING SYSTEM TECHNIQUES

Reading from and writing to the file server hard disk occurs more

frequently than any other network task. NetWare is specifically designed to perform fast file reads and writes. Other performance enhancements include:

SINGLE-TASKING VERSUS MULTITASKING

NetWare is a multitasking operating system. Performance degradation in the single-tasking environment is magnified with every workstation on the network. Unlike single-tasking operating systems such as DOS, NetWare can service many workstation requests and many hard disks simultaneously.

DIRECTORY HASHING

NetWare minimizes file searching time by efficiently organizing information. Specifically, NetWare indexes directory entries so it can quickly find a file (similar to the way that dictionary entries are alphabetized to enable the user to locate the entry at once).

DIRECTORY CACHING

NetWare saves time by putting a copy of each directory in the file server's RAM. RAM access is much faster than hard disk access, so directory caching significantly increases network performance. Since the disk is accessed less frequently, directory caching also helps eliminate disk-related bottlenecks.

FILE CACHING

NetWare continually tracks parts of files used most often and stores them in RAM. NetWare increases performance by anticipating subsequent requests and reading large blocks of information into RAM. This increases performance by saving "seeks" to the disk, which reduces access time and helps eliminate bottlenecks.

ELEVATOR SEEKING

The disk read-write head travels across the disk and picks up files in its direction of travel, much like an elevator taking floor requests. When a head reaches the end of the disk, it goes in the other direction, picking up new requests. This significantly decreases disk wear and tear and increases disk throughput by up to 50%.

Security

A network supervisor controls network security, which may be implemented on the file server, directory, and file levels. Access to network resources is based on user profiles that the supervisor assigns. Individuals can also protect their personal data without the assistance of a network supervisor.

Value-Added Processes

NetWare offers an elegant solution for developers who would like to place

value-added servers and services on the internet. A common File Service Interface provides for the implementation of value-added processes (VAP) in NetWare servers and bridges. Value-added processes bring new services to Advanced NetWare--namely, specialized servers, the incorporation of third-party devices and specialized technologies. Examples of VAPs are data base servers, communications servers, and print servers.

MHS

Message Handling Service (MHS) is a value-added service that provides message transfer and routing services for LAN-based applications. NetWare MHS moves messages between PC LAN, minicomputer, and mainframe environments throughout a dispersed wide-area network. In the future, MHS will support protocols such as X.25, HDLC, SNA, SDLC, and more.

Continued in "Macintosh-To-Novell Netware With AppleTalk, Part 3 of 3."

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Tech Info Library Article Number:2951



Tech Info Library

Macintosh-To-Novell NetWare With AppleTalk (Part 3 of 3)

Revised: 2/1/93
Security: Everyone

Macintosh-To-Novell NetWare With AppleTalk (Part 3 of 3)

=====

Article Created: 25 May 1988

Article Change History

02/01/93 - REVISED

- To add note about volume size limitation.

This is the third of three parts.

Connectivity

The purpose of a LAN is to connect users to equipment and information that isn't directly connected to their personal computers. To fulfill this mission, LAN users must be able to talk to more than just devices on their LAN--they must also be able to communicate with other LANs and with other data processing equipment.

Note that a Macintosh accessing a volume larger than 2GB can run into problems. A volume size at least 1MB smaller than 2GB seems to work acceptably. Larger volume sizes might cause negative file sizes, and inability to copy files because "More space is needed" even though plenty of space is available. You might encounter these symptoms when accessing volumes larger than 2GB published on Novell servers over the network.

LAN-TO-NEARBY LAN

Novell offers internetwork bridging to allow multiple nearby LANs to communicate with each other. On a NetWare LAN, the bridge connection in a LAN is transparent--the connected LANs appear like a single network with multiple file servers.

Bridging is accomplished by putting boards from as many as four different LANs in a file server (this is called an internal bridge), or by having up to four LANs share a workstation (external bridging). Either way, the

results are transparent to the user.

LAN-TO-REMOTE LAN

When LANs are too far apart to be bridged locally, other less comprehensive and less convenient connection methods become necessary. There are two basic choices: terminal emulation or remote bridging.

There are many terminal emulation packages available for personal computers that work on LANs. They vary in connection strategies and features offered.

The simplest packages presume you have a local modem board and ask your workstation on the LAN to appear like a VT-100 terminal. The most sophisticated emulators can take advantage of communal modem gateway boards located on the LAN that can serve many users.

High performance, transparent connections are just becoming available for LAN-to-remote LAN bridges. Two of these are Novell's Asynchronous Remote Bridge and Novell's X.25 Remote Bridge.

The asynch version makes a simple point-to-point connection between two LANs. The X.25 link is useful for multipoint connections--where more than two remote LANs are tied together--and for attaching to public data communications networks. X.25 is also useful for attaching to various commercial electronic mail and document-processing systems.

UNA: THE BRIDGE OF THE FUTURE

Novell's Universal NetWare Architecture (UNA) allows a LAN workstation user to access files on many different kinds of computer systems, such as IBM PCs, IBM mainframes, Apples, or DEC's. When the files appear on the screen or are used by an application program, they will always show up in the format of the workstation. A Macintosh user in New York on a UNA LAN, for instance, could look at files on a DEC VAX located in Los Angeles, also on a UNA LAN. The user would see the files displayed as icons just like those used to indicate the Macintosh's own local files. Another UNA user on a PC in Dallas could see the same VAX files by typing DIR on the drive mapped to the VAX.

Conversely, the VAX user in Los Angeles could use the same UNA abilities to explore Macintosh- or PC-originated files, and view them as if they were VMS or UNIX files.

The alternative to UNA is terminal emulation, in which the local workstation acts as a remote terminal on some other computer system. With terminal emulation as the method of connecting, the user must learn and use a new set of commands for each system.

The advantage of UNA is that users and application programs don't have to learn how to use different kinds of machines. The LAN and all the resources on it act like local drives and other local peripherals.

Novell Hardware Solutions

Novell has developed four file servers and two disk drive subsystems for NetWare-supported LANs.

NETWARE FILE SERVERS

NetWare Server 68B

The NetWare Server 68B is specifically designed to be a NetWare file server.

The 68B combines the Motorola MC68000 processor with an S-Net LAN board or an RX-Net LAN board to produce a powerful network "engine."

The 68B supports a combination of four S-Net LAN or RX-Net LAN boards. The NetWare RX-Net LAN board enables the network to support as many as 25 active physical nodes.

Performance is further enhanced by the Parallel/Serial Printer Board (PSPB) which allows parallel and serial ports to be added to the 68B file server. The 68B simultaneously supports as many as five network printers.

NetWare Server 286A

NetWare Servers 286A and T286A are high-performance file servers based on the Intel 80286 16-bit processor.

The 286A offers 1MB of memory on the motherboard, expandable to 8MB with additional boards. The 286A has eight expansion slots, three printer ports, zero-wait-state memory and 6 MHz or 8 MHz clock speed. It supports network LAN boards and other peripherals designed for use with the IBM AT.

NetWare Server 286B

NetWare Servers 286B and T286B are file servers based on the Intel 80286 16-bit processor. The 286B comes with zero-wait-state memory and an 8 MHz clock speed. This file server supports network LAN boards and other peripherals designed for use with the IBM AT.

The 286B offers 2MB of memory on the motherboard, nine expansion slots, and three printer ports. With nine slots, the expansion capabilities of the 286B surpass those of a standard IBM AT and other AT compatibles.

NetWare Server 386A

The NetWare Server 386A comes with 1MB of memory, expandable to 4MB of memory on the motherboard and can support up to 2GB of disk storage with external disk drives. Two 32-bit expansion slots, five 16-bit expansion slots and one 8-bit slot are included in the server.

NETWARE NDS2 AND NDS4

The NetWare Drive Subsystems NDS2 and NDS4 provide additional drive storage capacity for NetWare Servers 68B, 286A, and 286B. The NDS2 and NDS4 provide the following:

- More Network Storage:

The NetWare Server 286A is equipped with a 42MB drive, and the NetWare Server 286B is equipped with a 109MB or 183MB drive. As LAN requirements expand to accommodate more users and more complex application programs, original drives may not provide adequate data storage.

- Disk Mirroring for SFT Level II:

With the SFT NetWare operating system on a NetWare Server 286A or 286B, an NDS2 or NDS4 can provide duplicate network drives.

- Network Drives for 68B-based LANs:

Because the NetWare Server 68B cannot support internal drives, network data storage must be external.

An NDS2 or an NDS4 accommodates a maximum of two or four drives, respectively. Several drive configurations are available.

NETWARE DISK COPROCESSOR BOARD

The NetWare Disk Coprocessor Board (DCB) streamlines the performance of disk reads and writes (disk I/O) for NetWare Servers 286A and 286B, as well as IBM AT file servers.

The DCB controls the drive buffer and provides complete read-after-write verification. The addition of a DCB to a file server improves performance by approximately one-third.

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Tech Info Library Article Number:2952



Tech Info Library

NuBus: Transfer Rate

Revised: 7/21/92
Security: Everyone

NuBus: Transfer Rate

=====

Article Created: 17 May 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

Some users have asked about the speed of the NuBus data exchange.

DISCUSSION -----

NuBus transfer rate is approximately 2.5MB/sec at 10 MHz.

An average time is 700ns per transaction--"average" because the time is influenced by the type of data being transferred, and by other processes being transmitted across NuBus.

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Tech Info Library Article Number:2953



Tech Info Library

PostScript Language Tutorial and Cookbook: Correction To Manual

Revised: 5/26/88
Security: Everyone

PostScript Language Tutorial and Cookbook: Correction To Manual

=====

This article last reviewed: 18 May 1988

If you are trying to program in PostScript, you may find that THIS program runs perfectly well:

```
/Helvetica findfont
27 scalefont setfont
/rays
{0 1.5 179
{gsave rotate 0 0 moveto 108 0 lineto stroke grestore } for
} def
300 400 translate
.25 setlinewidth
newpath
0 0 moveto
(Pharmaceutical Research) true charpath
stroke
54 -15 translate
rays
showpage
```

Whereas this second program -- which is designed according to the Adobe PostScript programming manual -- does NOT. (The only difference: the word "stroke" was replaced with "clip".)

```
/Helvetica findfont
27 scalefont setfont
/rays
{0 1.5 179
{gsave rotate 0 0 moveto 108 0 lineto stroke grestore } for
} def
300 400 translate
.25 setlinewidth
newpath
0 0 moveto
```

```
(Pharmaceutical Research) true charpath
clip
54 -15 translate
rays
showpage
```

There are two reasons why this second program does not work:

1. The program shown is copied directly from page 103 of the PostScript Language Tutorial and Cookbook (ISBN #0-201-10179-3), except the name "StarLines" is replaced by "Pharmaceutical Research". The output should be the name "Pharmaceutical Research" in outlined letters with the ray pattern inside the letters.

Close examination of the program on page 103 shows that the user left out one critical line. The last five lines in the user's program read:

```
(Pharmaceutical Research) true charpath
clip
54 -15 translate
rays
showpage
```

These lines should read:

```
(Pharmaceutical Research) true charpath
clip
newpath      %-----new line added-----
54 -15 translate
rays
showpage
```

On page 128 of the PostScript Language Reference Manual (ISBN #0-201-10174-2) is a description of the `-clip-` operator, and the last paragraph states:

"Unlike `FILL` and `STROKE`, `CLIP` does not implicitly perform a `NEWPATH` after it has finished using the current path. Any subsequent path construction operators will append to the current path unless `NEWPATH` is executed explicitly. This can be a source of unexpected behavior."

2. On pages 260 and 261 of the PostScript Language Reference Manual, Appendix B (Implementation Limits), there is a list of limits that cannot be exceeded. The `PATH` limit (page 261) indicates the maximum number of points specified in all active path descriptions, including the current path, clip path, and paths saved by `SAVE` and `GSAVE`, cannot exceed 1500.

In this particular case, using the name "Pharmaceutical Research" exceeds the 1500-point limit; thus, the error "limitcheck Offending Command `-clip-`" when using the `clip` operator. If the name is reduced to "Pharmaceutical Rese", the program will execute properly. Adding even one letter to the name will generate the limitcheck error again.

There is a possible workaround for the output wanted. By doing a "gsave" and "grestore" to reset the clip region to its original size, it is possible to make the number of points on the clipping path small enough to avoid the error.

Here is a program that demonstrates one possible solution:

```
/Helvetica findfont
27 scalefont setfont
/rays
{0 1.5 179
{gsave rotate 0 0 moveto 108 0 lineto stroke grestore } for
} def
100 300 translate
.25 setlinewidth
gsave
newpath
0 0 moveto
(Pharmaceutical>true
charpath clip
newpath
100 -15 translate
rays
newpath
grestore
200 0 translate
0 0 moveto
(Research>true
charpath clip
newpath
60 -15 translate
rays
showpage
```

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2954



Tech Info Library

ImageWriter II: Connecting to a VT320 Terminal

Revised: 5/26/88
Security: Everyone

ImageWriter II: Connecting to a VT320 Terminal

=====

This article last reviewed: 20 May 1988

Here's how to connect an ImageWriter II as a slave printer to a DEC VT320 terminal.

Acquire these parts:

DEC cable #BCE16E-xx (MMJ to MMJ) (xx = number of feet)

DEC adapter #H8751-F (MMJ to DB25 male)

Apple Cable M0333 (DIN-8 to DB25 female)

Set up the terminal-to-slave port as a printer port, and set the speed to 9600 baud. You can also select just the scrolling area as the print area, or the whole screen.

Remember to change DIP switch #3 on bank 2 to "off" on the ImageWriter. The printscreen key on the keyboard is the second from the left on the top row (it is usually labelled) and is functional.

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Tech Info Library Article Number:2956



Tech Info Library

Mac286 vs. SoftPC Performance Update: July 1988

Revised: 9/2/88
Security: Everyone

Mac286 vs. SoftPC Performance Update: July 1988

=====

This article last reviewed: 20 July 1988

Here's an update on MS-DOS emulation on the Mac II -- a rerunning of May's benchmark tests. The latest results for the Norton System Information Indexes, DBASE III Plus, and Lotus 1-2-3 version 2.01. are listed below. (All results are in seconds except for the Norton indexes and the accuracy test in 1-2-3.) The old figures for version 1.0 of Mac286 are for comparison purposes.

Monitor setting	Mono	Color	Mono
AST's Mac286	V1.0	V1.01	Insignia's SoftPC
-----	-----	-----	-----
Norton SI Indexes:			

Computing Index:	8.2	8.2	1.2
Disk Index:	3.7	3.7	3.4
Performance Index:	6.7	6.7	1.9
DBase III Plus:			

Launch Program:	7.7	5.8	10.4
Search*:	7.2	4.6	6.7

*: Search 100 record (12 fields) database.

1-2-3 Version 2.01:

Launch Program:	5.6	4.8	10.5
Add Integers:	1.1	1.5	4.0
Add Floating Pt.:	1.1	1.9	5.3
Multiply Integer:	1.3	2.0	4.6
Multiply Floating Pt.:	1.4	2.0	6.2
Integer/SIN:	3.8	4.8	29.0
Load Multiply FP File:	4.0	3.8	10.5

Save Multiply FP File:	3.5	3.2	5.1
Accuracy (SQRT)**:	99.99999936	99.99999936	99.99999936

*: Result of taking the square root of 100 twenty-five times, then squaring that result 25 times. The final result should be 100.

The add, multiply, and integer/SIN tests were done in a 25X25 matrix where the result in each cell was dependent on another cell above or to the left of it.

General Comments:

The hardware setup was as follows: Macintosh II w/2mb RAM, 2-800k floppy drives, 40Mg internal hard disk, 80Mg external hard disk, and a color monitor. All tests with the software were run from the 80Mg external hard disk. The monitor was set to color mode with 256 grey levels for V1.01 tests. This was the only change made from the previous comparison. For version 1.0 of Mac 286 and SoftPC, the monitor was set to mono and 2 grey levels.

A problem in version Mac286 1.01 is that resizing the screen in graphics mode and then returning to text mode causes a 1" margin on the left side of the screen. This is only an annoyance, because you can avoid this problem by moving the horizontal scroll bar to the left and then back to the right edge before returning to text mode. Also, Mac286 sometimes "loses" the cursor when running certain programs (Dollars and Sense, for example).

For more information, search the Tech Info Library for Insignia Solutions and AST Research.

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Tech Info Library Article Number:2957



Tech Info Library

Utilities for Automatic Periodic Saves

Revised: 7/7/92
Security: Everyone

Utilities for Automatic Periodic Saves

=====

Article Created: 20 May 1988
Article Last Reviewed: 7 July 1992
Article Last Updated: 7 July 1992

TOPIC -----

A user needs a way to save his files automatically and at certain intervals as he works on them. Is there any product which will do this?

DISCUSSION -----

The AutoSave desk accessory from Magic Software automatically saves data from any Macintosh application to the currently logged disk by periodically invoking the Save command from the File menu. The user can set the frequency of saves from 1 minute to 1 hour, as well as stop the automatic save at any time.

NowSave, a module of the Now Utilities package, also works with any application and saves at preset, user defined intervals (either based on time or the number of keystrokes or mouse clicks).

For vendor information, search under: Magic Software and Now Software.

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Tech Info Library Article Number:2958



Tech Info Library

Inter•Poll 1.0: Can Be Either Installed or Drag Copied

Revised: 3/1/93
Security: Everyone

Inter•Poll 1.0: Can Be Either Installed or Drag Copied

=====

This article last reviewed: 20 May 1988

The Inter•Poll 1.0 Installer script installs nothing into the System File; it only installs the Responder INIT in the System Folder. There is no difference between using the Installer script to install Responder or drag-copying Responder into the System Folder.

The Installer script uses the reference to the System File to locate the folder, not to copy an INIT into the System File.

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Tech Info Library Article Number:2960



Tech Info Library

HPGL-To-Macintosh Conversion: A Utility Is Available

Revised: 5/26/88
Security: Everyone

HPGL-To-Macintosh Conversion: A Utility Is Available

=====

This article last reviewed: 24 May 1988

HPGL is Hewlett-Packard's Graphics Language. Hewlett-Packard uses the HPGL commands in their plotters for consistency and ease of interface. The Macintosh can plot to a Hewlett-Packard plotter (HP plotter-driver for the Macintosh) using the HPGL commands. (NOTE: This is strictly for Macintosh applications and Macintosh files for plotting, and has nothing to do with using HPGL files on a Macintosh.)

Stevens Creek Software, Inc. makes a software package -- called MacHP -- that emulates Hewlett-Packard Co. plotters, allowing scientists, engineers, and others to produce plots of scientific data directly on a Macintosh screen.

MacHP allows the Macintosh to emulate the HP7475 and HP7550 plotters. The plotter emulation program converts the Hewlett-Packard Graphics Language (HPGL) commands into screen images on the Macintosh.

Because MacHP plots are object-oriented and use the standard Macintosh PICT format, they can be moved to the Clipboard or saved to a file.

MacHP site licenses are also available. For more information, search under: Stevens Creek Software.

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Tech Info Library Article Number:2961



Tech Info Library

Intelligent Music

Revised: 4/3/97
Security: Everyone

Intelligent Music

=====

Article Created: 05/26/88
Article Reviewed: 07/09/93
Article Updated: 04/03/97

Intelligent Music (Intelligent Computer Music Systems, Inc.)

116 N. Lake Ave.
Albany, NY 12206

518-434-4110

FAX: 518-434-0308

Company Profile:
Hardware, specializing in developing and distributing music computer hardware.

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Tech Info Library Article Number:2962



Tech Info Library

Interfacing Macintosh and Cullinet

Revised: 7/26/89
Security: Everyone

Interfacing Macintosh and Cullinet

=====

This article last reviewed: 7 July 1989

This article describes how to interface Macintosh to Cullinet using InTalk CCL scripts. Note: Palantir Software no longer publishes InTalk. A similar package is FutureSoft's DynamComm. Search the Tech Info Library for "FutureSoft".

It developed from an actual case in which an all-IBM customer was running a package from Cullinet on a 370-type host. The package consists of IDMS-R (database), IDMS-DC (communications monitor), and ICMS. Their PCs communicate with Cullinet using a package called Golden Gate.

Golden Gate is an MS-DOS-based, multi-module application designed to work with IDMS applications. It contains a relational database, spreadsheet, a document processor, and business graphics.

There is no equivalent package to Golden Gate for the Macintosh. However, you can achieve similar results running InTalk with Microsoft Excel or Microsoft Works. Here's how:

Using the CCL script of InTalk, a Macintosh can log on as a TSO user, and issue TSO commands. These commands can extract data from a mainframe file, format the data into a tab-delimited text file, and transfer the formatted file to the Macintosh via the mainframe's PCTrans (or similar Yterm transfer). A script these actions could make the whole process transparent to the user of the Macintosh/InTalk workstation.

Once the tab-delimited text file has been transferred to the Macintosh, a variety of Macintosh applications can open the file. Microsoft Works has most of the functionality of Golden Gate. Omnis 3, Double Helix, 4th Dimension, or other stand-alone database management systems could handle more sophisticated database activities, if needed.

Besides emulating Golden Gate, InTalk CCL scripts can navigate other Cullinet applications via point and click buttons.

MultiFinder allows the InTalk connection to be maintained while working with a Macintosh application.

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Tech Info Library Article Number:2966



Tech Info Library

AutoCad-to-VersaCad Translators Update

Revised: 6/2/88
Security: Everyone

AutoCad-to-VersaCad Translators Update

=====

This article last reviewed: 18 May 1988

People looking for ways to read AutoCAD and/or ComputerVision files into the Macintosh can use VersaCAD and VersaLINK, a file translation program that ships with VersaCAD.

VersaLINK translates at least two types of AutoCAD files into a format VersaCAD can use: Initial Graphics Exchange Specifications (IGES) and Document X-fer File (DXF).

ComputerVision supports the IGES rev 3.0 file format. Therefore, you should be able to translate the files using VersaLINK or other tools, like translators and CAD applications. These are well documented on AppleLink in the Tech Info Library. Search on a combination of IGES, CAD, and AutoCAD.

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Tech Info Library Article Number:2967



Tech Info Library

AFE: Works-to-Works Date Problem Corrected

Revised: 12/3/88
Security: Everyone

AFE: Works-to-Works Date Problem Corrected

=====

This article last reviewed: 25 May 1988

The "Works-to-Works" translator converts an AppleWorks database to a Microsoft Works database. However, early versions of the "Works-to-Works" translator, working with Apple File Exchange, did not convert dates properly. January dates and partial dates (such as Jan 3 88 or Apr 88) are scrambled, while other dates lose a month in the process.

The newest version of the Works-to-Works translator converts dates correctly. To verify that you are using the latest version, check the Get Info of the translator while in the Finder. The dates should be:

Created: Jun 24, 1987 11:01AM
Modified: Jan 29, 1988 6:35PM

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Tech Info Library Article Number:2968



Tech Info Library

HyperCard: Problem Printing to ImageWriter II

Revised: 5/2/89
Security: Everyone

HyperCard: Problem Printing to ImageWriter II

=====

This article last reviewed: 25 May 1988

The ImageWriter II has shown a tendency to drop one or two rows of pins (about 1.5" from the top of the page) only when printing from HyperCard. This starts on the second page and continues randomly on other pages. People who experience this also note that other applications print fine.

HyperCard sends a reverse line feed, advances the paper, and tries to resume printing where it stopped. In doing this, it misses two to three pixels consistently, about 1.5" from the top of the page. This anomaly has been reported to the HyperCard Testing group.

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Tech Info Library Article Number:2969



Tech Info Library

HyperCard: The Degree of Compacting Depends on Several Factors

Revised: 5/9/89
Security: Everyone

HyperCard: The Degree of Compacting Depends on Several Factors

=====

Article Created: 25 May 1988
Article Last Reviewed: 9 July 1992
Article Last Updated: 9 July 1992

TOPIC -----

How far can HyperCard compress a stack and how do different elements affect stack and card size (in bytes)?

DISCUSSION -----

Compacting a stack with only one blank card results in no change (5K on disk, regardless of the card size). The amount of compression for a single card (a single blank card requires 64 bytes) depends on the complexity of the graphics, number of fields, and number of buttons. Adding a simple drawing to the card can bring compression to 45% to 50% (depending on the graphics used). However, the addition of a simple button or field can lower that to 40%.

The location of buttons and fields also has an effect. A button or field located on the background creates a smaller size stack. Therefore, the stack shows a smaller percentage of change after compacting because there are fewer objects and less data to be compacted.

HyperCard compression also depends on these factors:

- Graphics -- are they on the card or background?
- Buttons -- are they on the card or background?
- Fields -- are they on the card or background?
- The size of card, button, and field scripts.
- The size of the stack script.

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Tech Info Library Article Number:2971



Tech Info Library

LaserWriter IINT: Printing Speed from IBM PC

Revised: 6/2/88
Security: Everyone

LaserWriter IINT: Printing Speed from IBM PC

=====

This article last reviewed: 24 May 1988

When printing to a LaserWriter IINT from an IBM PC or XT using the Epson LQ2500 emulation, a reasonable speed is 30 to 60 seconds per page. The printing probably would be faster using an AT, 80286, or 80386 system. Some PC-style computers perform better than others.

The LQ2500 emulation mode, under AppleShare PC, translates all Epson commands and text into PostScript commands before sending the job to the LaserWriter. Aside from normal network traffic delays, the speed of the computer doing the translation greatly increases or decreases performance.

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Tech Info Library Article Number:2972



Tech Info Library

AppleShare: Limited Launch of Applications

Revised: 11/2/88
Security: Everyone

AppleShare: Limited Launch of Applications

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This article last reviewed: 25 May 1988

If you need to limit an application, running under AppleShare, to launching a specified number of copies, your best bet is the application's developer. The developer can implement limited multiple launch within a program using AppleTalk/AppleShare tools. This approach also makes sense in terms of licensing and associated pricing structure issues.

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Tech Info Library Article Number:2973



Tech Info Library

A/UX sendmail: How to Resolve Address Path and Rebuild (9/94)

Revised: 9/14/94
Security: Everyone

A/UX sendmail: How to Resolve Address Path and Rebuild (9/94)

=====

Article Created: 31 May 1988

TOPIC -----

A/UX sendmail: How to Resolve Address Path and Rebuild

DISCUSSION -----

The "/usr/lib/sendmail.cf" file in A/UX is configured with four rules for resolving the address path:

1. For the root@host type of mail syntax, is host in the /usr/lib/uucp/L.sys file?
 - If yes, then path is via "uucp".
 - If no, then path is via "tcp".
2. For the root@host.uucp type of mail syntax, is host in the /usr/lib/uucp/L.sys file?
 - If yes, then path is via "uucp".
 - If no, then path is via "uumail".

(Note that "uumail" is a foreign mailer not yet included in A/UX.)

3. For the root@host.<any domain except uucp> type of mail syntax:

path is via "tcp" (it doesn't matter whether the host is in the /usr/lib/uucp/L.sys or /etc/hosts file).

4. For the host!root type of mail syntax:

path is via "uucp" (it doesn't matter whether the host is in the /usr/lib/uucp/L.sys or /etc/hosts file).

To rebuild a "sendmail.fc" (sendmail frozen configuration file) that might be corrupted or out of date, run the following command:

```
/usr/lib/sendmail -bz
```

Whenever modifying the "sendmail.cf", you should run this command to update the "sendmail.fc" file, because the sendmail daemon reads it to resolve the destination address.

Article Change History:

13 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:2975



Tech Info Library

A/UX 1.0: The m_expand returning to 0 Kernel Message (8/93)

Revised: 8/20/93
Security: Everyone

A/UX 1.0: The "m_expand returning to 0" Kernel Message (8/93)

=====

Article Created: 31 May 1988
Article Reviewed/Updated: 20 August 1993

TOPIC -----

This article describes a solution to the "m_expand returning to 0" Kernel message.

DISCUSSION -----

When you encounter the "m_expand returning to 0" kernel message, perform the following command:

```
netstat -m
```

An example of output from this command:

```
56/500 mbufs in use:
    21 mbufs allocated to socket structures
    29 mbufs allocated to protocol control blocks
    4 mbufs allocated to routing table entries
    2 mbufs allocated to interface addresses
0/32 mapped pages in use
157 Kbytes allocated to network (8% in use)
0 requests for memory denied
```

This lets you see how many "mbufs" (memory space) are allocated in your networked system versus the total mbufs allocated. In the example, 500 mbufs are allocated in the system, 56 mbufs are currently used, and 157 Kbytes (256 bytes/mbuf x 500) are allocated to the network. Note the last line: "n requests for memory denied".

If the currently used mbufs are almost equal to or greater than the total allocated mbufs, and/or there are any memory requests denied, you should adjust your kernel parameter on NMBUFS (number of buffers for networking).

Use "kconfig -av" to display the current kernel parameters before modifying them.

Depending on the amount of RAM in your system and network activities, the NMBUFS can be adjusted with the "kconfig" command. For example:

```
# kconfig -n /unix
NMBUFS=1024
<Control-d>
# sync
# sync
# sync
# reboot
```

You also should check these kernel parameters (which may or may not affect your network:

- NBUF (number of system block I/O buffers),
- NINODE (size of system inode table), and
- NFILE (size of system file table pool)

The distributed A/UX 1.0 is configured for a system with 2MB of memory. If you have 5MB RAM installed, you should change the values of NBUF, NINODE, and NFILE to 1000, 200, and 200, respectively. This is mentioned in the A/UX Release Notes 1.0.

Article Change History:

20 Aug 1993 - Cleaned up to format.

31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:2976



Tech Info Library

A/UX: How to Recover From a Corrupted Toolbox

Revised: 9/2/92
Security: Everyone

A/UX: How to Recover From a Corrupted Toolbox

=====

Article Created: 31 May 1988
Article Last Reviewed: 31 August 1992
Article Last Updated : 31 August 1992

TOPIC -----

What does the following error message indicate?

```
/etc/toolboxdaemon: error opening user interface device: No such device
```

DISCUSSION -----

The error message:

```
/etc/toolboxdaemon: error opening user interface device: No such device
```

may mean that your toolbox user interface device may be corrupted or may have disappeared.

Check to see if the toolbox-specific device `/dev/uinter0` exists. The mode of toolbox-specific device should be:

```
crw-rw-rw-  1 root    sys      4,  0   May 3   16:30  /dev/uinter0
```

If this device file is corrupted or has disappeared, here is how to recover:

1. Bring the system to the single-user mode.
2. In single-user mode, type the command

```
# /etc/newunix toolbox
```
3. Type the command

```
# /etc/autoconfig -u -v -o /unix -S /etc/startup
```
4. Type the commands:

```
# sync  
# sync  
# sync
```

7. Reboot with the command
reboot

This should not happen in A/UX 2.0 and beyond.

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Tech Info Library Article Number:2977



Tech Info Library

TI 2108 Printer Can Be Used With Macintosh

Revised: 5/9/89
Security: Everyone

TI 2108 Printer Can Be Used With Macintosh

=====

This article last reviewed: 26 May 1988

The Texas Instruments Model 2108 printer can be used with the Macintosh.
Here are some of its features:

- LocalTalk connection
- based on the Ricoh laser engine
- contains 2M of RAM for imaging
- prints at 8 pages-per-minute (8ppm)
- 13 resident fonts
- slots for font cartridges (also accepts downloadable fonts)
- Centronics/IBM parallel connector
- RS-232 serial connector
- RS-422 connector
- resolution: 300 dots-per-inch
- page description language is PostScript
- emulates:
 - Diablo 630
 - Epson dot matrix family
 - HP LaserJet/LaserJet+
 - Qume Sprint
 - TI 855

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2979



Tech Info Library

LaserWriter IINT and IINTX: How Its 2MB RAM Is Allocated

Revised: 4/7/92
Security: Everyone

LaserWriter IINT and IINTX: How Its 2MB RAM Is Allocated

=====

Article Created: 26 May 1988
Article Last Reviewed: 7 April 1992
Article Last Updated: 7 April 1992

TOPIC -----

How is the RAM allocated on the LaserWriter II series of printers?

DISCUSSION -----

The 2MB of installed RAM is allocated approximately like this:

- 1MB is reserved for the frame buffer. This is where the page is assembled from the PostScript descriptions sent by the computer.
- 200K is reserved for font caching, display list, and the AppleTalk communications buffer. This is where font bitmaps are stored to speed the font access when used again. It is also where the display list is generated by the downloaded PostScript before it is sent to the frame buffer for actual page description.
- 300K is reserved for the PostScript interpreter as well as the server and user dictionaries.
- This leaves about 500K of virtual memory (VM) for fonts, prep files, and program memory. Tech Comm checked the VM with the "vmstatus" operator within PostScript and found that 511,316 bytes were available on a freshly-reset LaserWriter IINT with 2MB of memory. Of that amount, 81,850 bytes were used (possibly for the PostScript interpreter), which leaves about 429K.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:2980



Tech Info Library

LaserWriter II: Why Its Image Area Is Limited

Revised: 6/2/88
Security: Everyone

LaserWriter II: Why Its Image Area Is Limited

=====

This article last reviewed: 26 May 1988

Users have asked whether the LaserWriter II, with its support for large RAM, can print a complete legal size page instead of the 6.72-inch by 12.84-inch area formerly available per page?

The LaserWriter drivers and most current applications were written before Apple introduced the LaserWriter II with increased memory. When this software was written, there were memory constraints in the LaserWriter that had to be worked around.

Although these memory constraints are going away, the application still assumes the same printer memory limitations. Other limitations were/are added by the driver.

Many applications have large margins, differing in size but larger than the LaserWriter requires.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2981



Tech Info Library

IBM 3151 Terminal: How to Connect to a Macintosh

Revised: 10/4/89
Security: Everyone

IBM 3151 Terminal: How to Connect to a Macintosh

=====

This article last reviewed: 1 June 1988

The IBM 3151 is IBM's configurable ASCII terminal -- in its "vanilla" mode, it's just an ASCII "dumb" terminal. It can accept "personality" modules that allow it to appear as a DEC VT100 or IBM 3101-compatible terminal.

To connect: hook up the Macintosh. Use a communications application such as MacTerminal to capture the text to a disk file for later manipulation.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2982



Tech Info Library

CLEO Communications

Revised: 7/7/93
Security: Everyone

CLEO Communications

=====

Article Created: 06/02/88
Article Reviewed: 07/07/93
Article Updated:

CLEO Communications

3796 Plaza Dr.
Ann Arbor, MI 48108

800-233-2536

313-662-2002

313-662-1965 Fax

Company Profile:
Hardware and software, specializing in telecommunication products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:2984



Tech Info Library

AppleLine: Version 3.35 ROMs Correct Missing 25th Line

Revised: 6/2/88
Security: Everyone

AppleLine: Version 3.35 ROMs Correct Missing 25th Line

=====

This article last reviewed: 2 June 1988

Some AppleLine users have reported that, in MacTerminal, they can't access the 25th line on the mainframe screen.

The recent ROM revision (version 3.35), which added 3174 support to the AppleLine, is supposed to automatically bring the AppleLine up in the mode that displays the 25th line. The old ROMs did not do this: before this upgrade, the terminal type had to be set to MacTerminal in the AppleLine Supervisor to display the 25th line.

When AppleLines display the 25th line, either:

- they have the newer ROMs, or
- the AppleLine Supervisor has been set up to display it.

In either case, all AppleLines should have the newest ROMs installed to ensure compatibility with other possible configurations.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2985



Tech Info Library

Macintosh Internal Hard Drives: Vibration Testing

Revised: 9/22/89
Security: Everyone

Macintosh Internal Hard Drives: Vibration Testing

=====

This article last reviewed: 2 June 1988

The shock limit for the Macintosh SE's internal hard disk drive is defined as 40G -- for an inactive drive.

Apple tests the drive (only) to these limits:

Macintosh SE

.25G, 3 to 300 Hz in the vertical direction (Z-Axis) only. Testing frequency is held for 15 minutes at drive resonance as determined by attached accelerometers.

Macintosh II

.25G, 3 to 300 Hz in all three directions (X-axis, Y-axis, Z-Axis).

Airplane frequencies are at the higher end of the tested frequency spectrum and could easily exceed those frequencies at higher amplitudes.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2986



Tech Info Library

AppleShare: Date Problems May Be due to Mixed Versions

Revised: 6/2/88
Security: Everyone

AppleShare: Date Problems May Be due to Mixed Versions

=====

This article last reviewed: 2 June 1988

If you encounter problems with dates on an AppleShare server -- for example, one user reported seeing, from a workstation, file modification dates that were 40 years off -- be sure your workstations are all running the same version of AppleShare software that the server is running.

The way AppleShare 1.1 sends dates over the network is different from the way version 1.0 did it. Mixing the two versions on one network can result in erroneous dates.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:2987



Tech Info Library

LocalTalk Over IBM Cabling (10/96)

Revised: 10/1/96
Security: Everyone

LocalTalk Over IBM Cabling (10/96)

=====

Article Created: 1 June 1988
Article Reviewed/Updated: 1 October 1996

TOPIC -----

This article describes using LocalTalk over IBM cabling.

DISCUSSION -----

You can run LocalTalk over the IBM Cabling System. If your customer has installed the IBM Cabling System, there are several cabling types and all of them can be used to construct an LocalTalk network using PhoneNET Connectors and the PhoneNET StarController.

- Type 1 Data Cable has two individually shielded twisted pairs of 22 gauge solid copper wire.
- Type 1 Outdoor Data Cable is Type 1 Data Cable with a corrugated metallic shield.
- Type 1 Plenum Data Cable is Type 1 Data Cable with plenum rated plastic (most plenum cable uses teflon)
- Type 2 Data & Telephone Cable has Type 1 Data Cable and four pairs of unshielded solid copper 22 gauge wire.
- Type 2 Data & Telephone Plenum Cable is Type 2 Data & Telephone with plenum rated plastic
- Type 5 Fiber Optics Cable has two optical fibers.
- Type 6 Data Cable is the same as Type 1 Data Cable, except that the wire size is 26 gauge.

The IBM Cabling System uses three types of cable ends. All the cable ends are color-coded, making it easy to put the right wires to the right posts.

- The Data Connector is a unisex connector system with four conductors. It does everything. Two of them will mate together, so there is no male or female version.
- The Three-Pair Modular Telephone Jack Connector is a RJ12 (six pins) with barrel connection posts on the back.
- The Four-Pair Telephone Jack Connector is a RJ45 (eight pins) with barrel connection posts on the back.

All wires go from a face plate back to a distribution panel in the wiring room. The face plate can either have just a data connector or it can have a data connector and a three-pair telephone Jack. The distribution panel mounts in a standard 19-inch rack. The maximum wire length from an office to the distribution panel is always much less than the distance limitations of a PhoneNET wiring scheme.

The preferred method of attaching to the IBM Cabling System is to use the fourth telephone wire pair in the Type 2 Data Cable. Wire a normal RJ11 wall jack next to the fancy IBM data connector face plate and attach the spare pair to pins 2 and 5 (yellow and black) on the RJ11. (This is the preferred wiring method, but in some places that have the IBM Cabling System the telephone people typically won't let the data communication people touch anything that looks like telephone cabling and most certainly not their new IBM Cabling. Of course, if you have only Type 1 Cabling, then you have no telephone cabling and you have to go to plan B.

The alternate plan is to use a special expensive adapter so that the data cables can be used. Farallon sells a special Data Connector that has an RJ11 female socket on it. Farallon Part Number: TE300, IBM Cabling System Line Tap. Two are required for each office to go onto the network, one in the office to provide a place for the modular cable from the PhoneNET to attach into and one at the Distribution Panel. If the network is just four offices on the same floor, you can rig a Passive Star PhoneNET network.

More common is to install a PhoneNET StarController on each floor and to buy the special 19-inch rack-mount StarController Wiring Kit TE347. Normal telephone modular cable can be connected from the TE300 into the RJ11s on the StarController Patch Panel.

This information provided by Farallon Computing.

Article Change History:

01 Oct 1996 - Changed article to reflect a LocalTalk network.

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Tech Info Library Article Number:2988



Tech Info Library

Applied Creative Technology, Inc.

Revised: 4/3/97
Security: Everyone

Applied Creative Technology, Inc.

=====

Article Created: 06/02/88
Article Reviewed: 07/02/93
Article Updated: 04/03/97

Applied Creative Technology, Inc.

13355 Noel
Suite 1600
Dallas, TX 75240

800-433-5373

214-233-8800

214-239-6490 Fax

Company Profile:

Hardware, specializing in buffers and adapters.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:2989



Tech Info Library

Attachmate Corp (formerly DCA, Inc.) - 5/95

Revised: 5/8/95
Security: Everyone

Attachmate Corp (formerly DCA, Inc.) - 5/95

=====

Article Created: 2 June 1988
Article Reviewed/Updated: 8 May 1995

Attachmate (formerly DCA, Inc. and formerly Avatar Technology)

1000 Alderman Drive
Alpharetta, GA 30202-4199

404-442-4000 (Main Office)
404-740-0300 (Tech. Support)

404-442-4358 (Tech. Support) Fax

Company Profile:
Software and hardware, specializing in terminal emulation and peripheral cards.

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:2990



Tech Info Library

HSV-To-RGB Mapping and Color Models (Part 1 Of 2)

Revised: 7/2/92
Security: Everyone

HSV-To-RGB Mapping and Color Models (Part 1 Of 2)

=====

Article Created: 24 May 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

This is the first of a two-part article on HSV-to-RGB mapping and color models.

DISCUSSION -----

There are several color models for color monitors. The most common are:

- HSV
- HSL (synonymous with HIS)
- CMY
- RGB
- YIQ

(NOTE: The Color Picker Package defines parameter values from 0 to 65535 for each of these models.)

The Macintosh II Color Picker Package uses the RGB, CMY, HSV, and HSL models. Each of them is described below.

The RGB and CMY Models (Red-Green-Blue and Cyan-Magenta-Yellow)

The RGB model defines its colors as mixtures of the additive primary colors: red, green, and blue. The RGB model organizes colors into a three-dimensional cube. Differing values of red, green, and blue define the model. (The human eye can see all visible colors in combinations of three base colors.)

The CMY model features cyan, magenta, and yellow values. These are the

subtractive (or complementary) primary colors. The model works in the same manner as the RGB model--that is, a three-dimensional cube is fashioned with the three color values.

The association between RGB and CMY is one-to-one: cyan is the complement of red, magenta the complement of green, and yellow the complement of blue. A color defined in values for red, green, and blue in the RGB model is defined in values of cyan, magenta, and yellow in the CMY model. For conversion purposes, each of these two models is the other's complement.

For example, given a maximum value of 65535 and a minimum value of 0, a pure red color in the RGB model containing 65535 red, 0 green, and 0 blue has a CMY color of 0 cyan, 65535 magenta, and 65535 yellow.

The HSV Model (Hue-Saturation-Value)

The HSV model appears as a color cone. The three parameters describing this cone are hue, saturation, and value.

"Hue" describes the primary attributes of a color. A color hue for purple has both red and blue primary attributes or hues. A given purple may contain more blue than red; therefore, the hue of that particular purple is blue.

"Saturation" is a value measuring the amount of mixing between primary colors like red, green, and blue. A fully-saturated red contains only the color red and has no other primary color attributes; that is, no mixtures of blue or green. Colors that are slightly or minimally saturated contain mixtures of the primary colors and might contain red, green, and blue. A color that has no saturation at all is white. In the HSV model, the primary colors appear along the edges. They mix together toward the center, growing lighter in hue and becoming less saturated as they near the center. The center is white, and contains equal amounts of all the colors.

"Value" describes the brightness of a color. A red can be made brighter or darker by adjusting its value. A white in the center of the HSV model becomes darker, grows to gray, and finally becomes black if followed along the center of HSV model to its point.

The HSV model is a single-cone shape based on the coordinate values of hue, saturation, and value. Colors are mixed within the cone and appear as primaries along the edges, spaced every 60 degrees. For example, starting with the color green on the perimeter, the colors following are yellow, red, magenta, blue, cyan, and back to green (or the reverse, depending on direction around the cone). The color white is anywhere on the center line of the cone where all of the colors are mixed evenly and the value or brightness is at a high level.

In the HSV model, the apex describes the lowest intensity level, and the base describes the highest intensity level of a color. Points within the cone are colors made up of mixtures of hue and saturation. A color's intensity is the point's distance above the base.

Visualize a cone with a hexagon just fitting the mouth of the cone. In this cone, these edges represent the primary colors. The center of the hexagon is a white wire with one end at the tip of the cone. The wire, while white at the wide end or base, grows more gray as it recedes to the tip, where it at last becomes black.

The HSL (Hue-Saturation-Luminance)

The HSL (or HIS, hue-intensity-saturation) model is a double cone with the bases connected. It follows the same parameters as the HSV model, but the colors filling the base and sides have values rising and falling to each apex of the cones. The apexes are defined as the brightest color point (white) and the lowest color point (black)--similar to the HSV model, where the apex gradually darkens, and all colors fade to black. However, in HSL the colors fade to black AND white. The colors rise in value, becoming brighter, but are also brought closer together by the angle of cone's surface toward the white center. This model is used in Tektronix display devices.

"Intensity" and "luminance" both define the strength or brightness of a color. This is like the "value" parameter of the HSV model, but is defined with the brightest primary color values occurring in the center of the model rather than at one end. The colors could become brighter near the white point, but lose their identity when they mix with other colors as they approach the white apex.

To model HSL/HIS, two cones are connected to make a hollow shape with the hexagon sandwiched inside. The lines extending from the points on the hexagons connect to the points on both cones.

This article is continued in "HSV-To-RGB Mapping and Color Models, Part 2 Of 2."

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Tech Info Library Article Number:2991



Tech Info Library

HSV-To-RGB Mapping and Color Models (Part 2 Of 2)

Revised: 7/2/92
Security: Everyone

HSV-To-RGB Mapping and Color Models (Part 2 Of 2)

=====

Article Created: 24 May 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

This is the second of a two-part article on HSV-to-RGB mapping and color models.

DISCUSSION -----

Converting from RGB to HSV or HIS

When converting HSV to RGB, the HSV model always has at least one RGB value equalling the intensity or value of the HSV model color.

When converting HSV to RGB, the HSV model sets the value parameter to the largest RGB value.

When converting RGB to HSL/HIS, the HSL model always sets the luminance or intensity parameter to equal the midrange of the RGB values.

The hue values for the HSV model always equal the hue values from the HSL model.

References

"Raster Graphics Handbook" Conrac Division, Conrac Corporation Van Nostrand Reinhold Company Inc. 135 West 50th Street New York, New York 10020

"Fundamentals of Interactive Computer Graphics" James D. Foley, Andries Van Dam, Addison-Wesley Publishing Company Menlo Park, CA

For the HSL model (also called HIS), both books use "Status Report of the Graphics Standards Committee," Computer Graphics volume 13, number 3, Association for Computing Machinery, New York, August, 1979.

The HSL model provided in both books is based on the SIGGRAPH article. There is a typographical error in the calculation for converting from RGB to HSL. This error appears in the article and is replicated in the books.

The correct calculation for color saturation from red, green, and blue values is:

```
If luminance <=.5 then
    saturation := (max - min) / (max + min)
else
    saturation := (max-min) / (2 - min - max)
```

Apple Computer uses the corrected calculation in its Color Picker Package.

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Tech Info Library Article Number:2992



Tech Info Library

MacSchool Now Incorporates NCS 3000 Grade Scanner

Revised: 6/2/88
Security: Everyone

MacSchool Now Incorporates NCS 3000 Grade Scanner

=====

This article last reviewed: 24 May 1988

Some of our education-industry users have asked if there is a driver for the NCS 3000 test grade scanner.

For those users in search of a complete educational-administration solution, Chancery Software has just incorporated the NCS 3000 into MacSchool. MacSchool can now read cards for daily attendance confirmation, do grade reporting for grade card preparation, and handle student course request and registration.

Cabling

If the MacSchool system is installed, the cable between the NCS 3000 and the Macintosh is already in place. If the school only wants to grade tests (without installing MacSchool), they need to make the cable. Since the NCS 3000 uses a serial interface to communicate with a computer, a hardware technician should have no trouble making the cable.

Software

4th Dimension is designed to collect data from the serial port and store the collected data for further processing. Its scripting language contains functions for reading the serial port. If HyperCard will be used, there are XCMDs in the public domain for reading serial ports. In both cases, software must be written to address the specifics of scoring tests.

For more information, search under: "National Computer Systems" and "Chancery Software"

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Tech Info Library Article Number:2993



Tech Info Library

LaserWriter IISC: Compared to H-P DeskJet

Revised: 6/2/88
Security: Everyone

LaserWriter IISC: Compared to H-P DeskJet

=====

This article last reviewed: 24 May 1988

Here are the functional differences between the Hewlett-Packard DeskJet and the Apple LaserWriter SC.

The HP DeskJet has two draft modes: 300x150 dpi and letter quality (300x300 dpi).

It is rated at two pages-per-minute (2ppm), compared to the LaserWriter SC at eight pages-per-minute (8ppm). The DeskJet pauses between pages to allow the ink to dry.

The DeskJet is designed for lower volumes (40 to 50 pages-per-day), while the LaserWriter SC can work at 150+ pages per day.

The DeskJet comes with one typeface family of nine fonts (Courier, Courier Bold, and Courier Compressed at 10, 16.67, and 20 characters-per-inch -- all at the same point size).

The LaserWriter SC comes with four typeface families (Courier, Times, Helvetica, and Symbol) each with bold, italic, underline, outline, subscript/superscript, and (with some applications) small caps each in 9-, 10-, 12-, 14-, 18-, and 24-point sizes -- approximately 1,000 fonts altogether.

The DeskJet fonts must be selected from the front panel, so font mixing is limited. The LaserWriter SC is able to deal with a wide variety of fonts, and the changes are made on the screen in the traditional Macintosh method.

The DeskJet ink cartridges must be changed every 500 to 800 sheets and cost approximately \$20 each. DeskJet cartridges cost about \$20 per 3000 sheets more than LaserWriter toner cartridges.

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Tech Info Library Article Number:2994



Tech Info Library

A/UX: Making an A/UX System Run as a Sun/NFS Client (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Making an A/UX System Run as a Sun/NFS Client (8/94)

Article Created: 29 June 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

Making an A/UX System run as a Sun/NFS Client.

DISCUSSION -----

To get your A/UX system running as an NFS client, follow these steps:

1. You must have already set up bnet (basic network). bnet is a prerequisite for running NFS. The command is: `newconfig bnet nfs`. For details, see "Configuring and Managing a TCP/IP Network" in the A/UX Network System Administration manual.
2. Make sure a set of network daemons -- `"/etc/inetd"` -- is installed and running from the `/etc/inittab` file. The daemon in the `/etc/inittab` entry should state:

```
net9:2:respawn:/etc/inetd      # set to "respawn" for networking
```

The `nfs` kernel module is also required and is included if you run the `newconfig bnet nfs` command described above.

3. The `"/etc/biod 4"` and `"/etc/mount -at nfs >/dev/syscon 2>&1"` daemons must be installed and running from the `/etc/inittab` file. Here are the two daemons in the `/etc/inittab` entries:

```
nfs4:2:wait:/etc/biod 4      # set to "wait" for NFS client
nfs8:2:once:/etc/mount -at nfs > /dev/syscon 2>&1 # set to "once" for NFS
```

For more detail, see "Configuring and Managing the Network File System" in the A/UX Network System Administration manual.

4. After you have completed these steps, use `"ps -ef"` to verify that the

above processes are running.

5. Use "showmount -e remote_nfs_server" to see which filesystems of remote_nfs_server machine have been exported to you.
6. Issue the "mount" command for the exported filesystem(s). If either the "showmount" or "mount" command fails, chances are that the remote NFS server might not be up or the permissions are not granted for you to mount the remote server.

Article Change History:

23 Aug 1994 - Reviewed and updated.

31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:3004



Tech Info Library

A/UX: Developer Services Offers Developer Support (9/94)

Revised: 9/7/94
Security: Everyone

A/UX: Developer Services Offers Developer Support (9/94)

=====

Article Created: 29 June 1988
Article Last Reviewed: 6 September 1994

TOPIC -----

A/UX: Developer Services

DISCUSSION -----

Some A/UX users have asked about customizing A/UX code, such as writing a diskless boot routine. Such a task would most likely require A/UX or NFS source code and licensing.

Anyone wishing to write code for A/UX should contact Developer Services to see about becoming a Certified Developer. Commercial Certified developers have access to Developer Technical Support.

Article Change History:
6 Sept 1994 - Reviewed.

Support Information Services

Copyright 1988-94 Apple Computer, Inc.

Tech Info Library Article Number:3005



Tech Info Library

A/UX: How to Check for Files without Changing Them (8/94)

Revised: 8/25/94
Security: Everyone

A/UX: How to Check for Files without Changing Them (8/94)

=====

Article Created: 1 June 1988
Article Reviewed/Updated: 24 August 1994

TOPIC -----

In attempting to check for the presence of a file without correcting any errors, an A/UX user tried the following command from the SASH (Stand Alone Shell) application's command line:

```
esch -v -b -f
```

This command automatically corrected a permissions error on a file.

(Editor's Note: SASH is equivalent to the A/UX 3.0 Startup shell.)

DISCUSSION -----

The reason is that "escher" begins the autorecovery process. It does generate a report when it discovers a file that does not match the rules in the CML (Configuration Master List). It also updates the CML but it will not tell you what was updated.

For instance, "escher" does not distinguish between changed permissions and changed contents. It only asks if you want to update the autorecovery file system with each changed file. It also does not create checksums for files. For this reason, use of escher is discouraged.

The "-m" option would probably be better if you do not wish to answer all the questions. This option merely mails a list of updated and missing files.

Refer to the A/UX Local System Administration manual section on "Managing Disks" for details about the use of autorecovery.

Article Change History:
24 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1988-94 Apple Computer, Inc.

Tech Info Library Article Number:3006



Tech Info Library

A/UX 3.0: Memory Requirements (8/94)

Revised: 8/23/94
Security: Everyone

A/UX 3.0: Memory Requirements (8/94)

=====

Article Reviewed/Updated: 22 August 1994

DISCUSSION -----

The RAM memory requirements for A/UX 3.0 are 8 MB minimum.

The hard disk memory requirements are 80 MB minimum (160 MB recommended).

You will also need a SCSI CD-ROM drive to install the software.

Article Change History:

22 Aug 1994 - Updated for A/UX 3.0

01 Jun 1988 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3007



Tech Info Library

A/UX: troff(1) Information

Revised: 9/28/92
Security: Everyone

A/UX: troff(1) Information

=====

Article Created: 31 May 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

The /usr/lib/font/devpsc directory describes the available set of PostScript-device fonts supported in the A/UX version of troff(1). The *.map files in that directory describe the fonts. You may also see font(5) for the explanation. troff(1), however, does not support a complete set of resident PostScript fonts in the LaserWriter Plus or the LaserWriter II.

troff does have a screen previewer. You must have a 4014/4015 terminal emulation program such as Versaterm's or X Windows'. Issue the tc(1) command this way:

```
troff filename | tc
```

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3008



Tech Info Library

A/UX: sigwinch and /usr/ucb/vi.43

Revised: 9/18/92
Security: Everyone

A/UX: sigwinch and /usr/ucb/vi.43

Article Created: 31 May 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

All versions of A/UX: sigwinch and /usr/ucb/vi.43

DISCUSSION -----

/usr/ucb/vi.43 is Berkeley-specific version of vi. /usr/bin/vi (A/UX default vi) is driven from AT&T SysV. /usr/ucb/vi.43 DOES support sigwinch (signal window change) and /usr/bin/vi DOES NOT.

If you wish to implement sigwinch, use vi.43 instead of vi.

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Tech Info Library Article Number:3009



Tech Info Library

A/UX: Entering Control Sequences Using vi (6/93)

Revised: 8/12/93
Security: Everyone

A/UX: Entering Control Sequences Using vi (6/93)

=====

Article Created: 31 May 1988
Article Reviewed/Updated: 25 June 1993

TOPIC -----

How do I enter character sequences like Control-V, Control-Q, and Control-S into a file?

DISCUSSION -----

vi(1) doesn't disable xon/xoff mode when it sees a Control-V, nor does it let you type Control-S or Control-Q into a file. The reason is that Control-S and Control-Q are special characters for controlling output flow.

If you precede your "vi" with "stty -ixon", flow control will be disabled, allowing generation of these characters within your file.

"stty ixon" is the default on login.

Article Change History:
06 Jun 1993 - Revised for clarity.
31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:3010



Tech Info Library

A/UX: Booting from the A/UX Standalone Shell Floppy

Revised: 9/29/92
Security: Everyone

A/UX: Booting from the "A/UX Standalone Shell" Floppy

=====

Article Created: 1 June 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

In theory, A/UX can run from a hard disk having only two partitions, root/usr and a swap. (Tech Comm does not recommend this, as repartitioning is not an easy task.) Because A/UX boots from the SASH program within the Macintosh Operating System, use the boot floppy labeled "A/UX Standalone Shell". It contains the SASH application and utilities and the System file (but not the Finder).

DISCUSSION -----

Here is how to boot A/UX from the floppy:

1. To open the SASH application, insert the floppy "A/UX Standalone Shell" and click Cancel.
2. Within the General Preferences menu item, set the root directory to the hard disk address of the kernel you want to launch.
3. Type "launch" on the SASH command line and press [Return].

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Tech Info Library Article Number:3012



Tech Info Library

A/UX: How to View the Release Date and Version Number (8/93)

Revised: 8/23/93
Security: Everyone

A/UX: How to View the Release Date and Version Number (8/93)

=====

Article Created: 6 June 1988
Article Reviewed/Updated: 20 August 1993

TOPIC -----

How to View the Release Date and Version Number.

DISCUSSION -----

To find out your release date and version number, type:

```
cat /etc/RELEASE_ID
```

Article Change History:
20 Aug 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:3014



Tech Info Library

EtherTalk: How It Handles Multiple Protocols (6/93)

Revised: 8/12/93
Security: Everyone

EtherTalk: How It Handles Multiple Protocols (6/93)

Article Created: 6 June 1988
Article Reviewed/Updated: 25 June 1993

TOPIC -----

This article describes how EtherTalk handles multiple protocols.

DISCUSSION -----

The EtherTalk card is a low-level transport mechanism which can move a variety of protocols over an Ethernet network. "Low-level" means that the EtherTalk card only addresses itself to the lower two layers of the ISO reference model -- the physical layer and the data-link layer. The upper layers of the session are controlled by whatever protocol you implement over these two lower layers. Two examples of upper layer implementations are AppleTalk and TCP/IP.

The card, using the software driver, places these upper-layer protocol packets (either AppleTalk packets or TCP/IP packets) in the data field of the Ethernet transport frame. The Ethernet frame properly addresses these packets to their "target" devices. The target device strips off the frame and then processes the packet contained inside. On the Ethernet wire, a device doesn't care about what a frame contains, unless that frame is directed at that device.

Therefore, you can use different, upper-layer protocols -- like TCP/IP, XNS, or AppleTalk (among others) -- on the same physical wire. These encapsulated packets can co-exist on a single Ethernet without interference, because a device does not look at what's inside the packet, unless it's addressed to that device.

The software shipped with EtherTalk is a driver for the Macintosh II that redirects AppleTalk packets to the EtherTalk card rather than to the printer port. The EtherTalk card then encapsulates the AppleTalk packet in an Ethernet frame for delivery to a device on Ethernet that understands AppleTalk packets.

For example, picture two Macintosh II computers connected directly to Ethernet. One runs AppleShare and acts as an EtherTalk server. The second acts as an EtherTalk workstation. Both of these devices use Ethernet only as a physical connection with delivery assurance and error correction capabilities.

An example of what the EtherTalk card can do is encapsulate TCP/IP under A/UX. Here, an Ethernet frame is again used, but the packet contained inside the frame is TCP/IP, rather than AppleTalk. You can also use other protocols, like XNS, with the same card, using the same Ethernet frame. The only thing that changes is the frame contents.

With Ethernet, you can also have one device "push" more than one protocol over the same physical connection. An example is a VAX running VMS with AlisaTalk and DECnet installed. AlisaTalk delivers AppleTalk packets to the VAX that encapsulates them in an Ethernet frame and sends them out onto the Ethernet network. The VAX can also "push" DECnet packets encapsulated in the Ethernet frame over the same card and physical connection.

All this happens serially (rather than in parallel), because Ethernet is a baseband network. In our example, the AppleTalk packet goes out first, followed by the DECnet packet over the same wire, obeying the rules of Carrier Sense Multiple Access/Collision Detect (CSMA/CD). Again, Ethernet provides the delivery assurance and error correction.

The table below shows the software deliverables associated with the EtherTalk card available from Apple:

Operating System	Upper Layer Protocol	How Delivered
-----	-----	-----
Macintosh OS	AppleTalk	EtherTalk
A/UX	TCP/IP	A/UX

Article Change History:

25 Jun 1993 - Revised for clarity.

06 Jun 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:3016



Tech Info Library

A/UX and the Macintosh Operating System: Each Stands Alone

Revised: 9/2/92
Security: Everyone

A/UX and the Macintosh Operating System: Each Stands Alone

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Article Created: 6 June 1988

Article Change History

08/31/92 - RREVIEWED
•For technical accuracy

TOPIC -----

What is the relationship between A/UX and the Macintosh operating system?

DISCUSSION -----

A/UX and the Macintosh operating system are two distinct entities. The user boots the Macintosh II either into the Macintosh OS or into A/UX. One operating system is not a window or shell in another. Each stands alone.

A/UX includes Macintosh ToolBox support. Thus, an A/UX application might LOOK like a Macintosh application, with windows, menus, and so on. In fact, a "well-behaved" Macintosh application can be ported to A/UX and run under UNIX using the same toolbox calls it did under the Macintosh operating system.

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Tech Info Library Article Number:3017



Tech Info Library

A/UX: Bad PMMU May Prevent Boot

Revised: 11/6/92
Security: Everyone

A/UX: Bad PMMU May Prevent Boot

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Article Created: 6 June 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

If your A/UX system appears to lock up when booting A/UX from SASH, it may be a bad PMMU chip. The hang occurs during the "Sysinitre" phase, right after displaying the amount of RAM installed. If this happens, have the PMMU replaced.

Keywords: locking up, hanging

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Tech Info Library Article Number:3018



Tech Info Library

A/UX, Macintosh OS, and Desk Accessories

Revised: 9/2/92
Security: Everyone

A/UX, Macintosh OS, and Desk Accessories

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Article Created: 30 June 1988

Article Change History

08/31/92 - REVIEWED
•For technical accuracy

TOPIC -----

A/UX supports most of the Macintosh Toolbox routines, but does not support Desk Accessories

DISCUSSION -----

As an example, we will discuss the Scrapbook. Under A/UX, you can cut and paste while in a Macintosh Toolbox application. However, you cannot cut from one application and paste to another. When you quit the application and return to the A/UX shell, all Clipboard information is lost.

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Tech Info Library Article Number:3020



Tech Info Library

A/UX: The rwhod Daemon Increases Network Traffic (9/94)

Revised: 9/19/94
Security: Everyone

A/UX: The "rwhod" Daemon Increases Network Traffic (9/94)

=====

Article Created: 8 June 1988
Article Reviewed/Updated: 19 September 1994

TOPIC -----

The "rwhod" daemon ("in.rwhod" in A/UX) maintains the database used by the "rwho" and "ruptime" programs.

DISCUSSION -----

Doing this causes a lot of network traffic. Approximately every 60 seconds the daemon broadcasts and queries the state of each system (host) on the network. This action is network intensive (meaning the network response time becomes slower) on an already user-loaded network.

Suggestion: If you have a heavily loaded network and system performance is a concern, turn off the "in.rwhod" daemon. Note: The output of "rwho" and "ruptime" commands is meaningless if "in.rwhod" is not running.

Article Change History:
19 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3022



Tech Info Library

CMS Enhancements, Inc.

Revised: 4/3/97
Security: Everyone

CMS Enhancements, Inc.

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Article Created: 06/28/88
Article Reviewed: 07/07/93
Article Updated: 11/06/92

CMS Enhancements, Inc.

2722 Michelson Dr.
Irvine, CA 92715

714-222-6000

714-549-4004 Fax

Company Profile:

Hardware and software, specializing in large-capacity hard disks and related software.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3025



Tech Info Library

YARC Systems Corporation (4/97)

Revised: 4/3/97
Security: Everyone

YARC Systems Corporation (4/97)

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Article Created: 18 February 1991
Article Reviewed/Updated: 3 April 1997

YARC Systems Corporation

975 Business Center Circle
Newbury Park, CA 91320

1-800-ASK-YARC

805-499-9444

805-499-4048 (FAX)

Company Profile:
Hardware, specializing in coprocessors and PCI cards including the PostScript
RIP.

Article Change History:
24 May 1995 - Added information about PCI card.

Support Information Services

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Tech Info Library Article Number:3026



Tech Info Library

AppleLine and Hayes Cable: Requires a Null Modem

Revised: 6/29/88
Security: Everyone

AppleLine and Hayes Cable: Requires a Null Modem

=====

This article last reviewed: 10 June 1988

The AppleLine is a DTE (Data Terminal Equipment) device. If it is used with the Hayes cable, which is configured for DCE (Data Communications Equipment) devices, a null modem cable is required.

The gender changer in the AppleLine package does not serve as a null modem.

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Tech Info Library Article Number:3027



Tech Info Library

EtherTalk Can Handle 254 Nodes

Revised: 6/8/89
Security: Everyone

EtherTalk Can Handle 254 Nodes

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This article last reviewed: 10 June 1988

With EtherTalk, there is no distinction between servers and workstations, which means you have access to 254 node IDs (0 and 255 are still reserved). So you can have 254 users on a single EtherTalk network, instead of the 127 available with LocalTalk. This is because EtherTalk uses ELAP, not ALAP (a different Link Access Layer).

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Tech Info Library Article Number:3029



Tech Info Library

HyperCard 1.2 and Mediagenic Reports: Problem and Workaround

Revised: 5/31/89
Security: Everyone

HyperCard 1.2 and Mediagenic Reports: Problem and Workaround

=====

This article last reviewed: 17 June 1988

When you upgrade from HyperCard 1.1 to HyperCard 1.2, Reports by Mediagenic (formerly Activision) may not work correctly.

Here's the problem. In the background script of the report card are these lines in the InvokeReports handler:

```
- on InvokeReports docName:

    if the version is "1.0", then
        if MultiFinder(), then
            ...
    else if the version is "1.1", then
```

Here's the workaround: change the last line to read:

```
    else if the version >= "1.1", then
```

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Tech Info Library Article Number:3030



Tech Info Library

Apple IIGS: Some Memory Upgrades Have Faulty RAM

Revised: 11/10/88
Security: Everyone

Apple IIGS: Some Memory Upgrades Have Faulty RAM

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This article last reviewed: 10 November 1988

There has been a problem with certain RAM chips used in the Apple IIGS RAM expansion card. It is a refresh problem, not a loading problem. One symptom: AppleWorks crashes after being in use for a while.

Service stock has been purged of RAM upgrade kits with suspected bad RAM chips, so any new upgrades should have no problem.

If you suspect bad RAM, check the date codes on the chip. The suspected bad numbers are 8752 and 8801.

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Tech Info Library Article Number:3032



Tech Info Library

Macintosh II, IIfx & IIfx: Power Up Questions And Answers

Revised: 11/29/95
Security: Everyone

Macintosh II, IIfx & IIfx: Power Up Questions And Answers

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Article Created: 10 November 1988
Article Last Reviewed/Updated: 29 November 1995

TOPIC -----

This article covers several questions about powering up a Macintosh II, Macintosh IIfx, and Macintosh IIfx.

DISCUSSION -----

Question: Is there a way to power up the Macintosh when AC power is supplied, instead of toggling the keyboard button or the power button on the back of the Macintosh II?

Answer: There is a way to power up the Macintosh without pressing a button. However, this requires modifying the power supply or using a power supply other than the one supplied.

Circuitry in the Macintosh II, IIfx and IIfx power supply senses a level transition from the logic board, which is initiated by pressing either the button on the back of the machine or the Power On key on the ADB keyboard. The power supply must sense the transition to being the power-up cycle. If this transition does not occur, the power-up sequence does not start. Therefore, if the power supply is modified to provide (or another power supply is used that provides) a steady voltage to the power fail signal line of the power supply, the power-up sequence does not start.

Question: How does the power button on the back of the Macintosh work? Does it short pins 2 and 4 on the ADB port, or does it do something else?

Answer: Pin 2 of the ADB port is the power on (PwrOn) signal line; pin 4 is ground (Gnd). When the reset key is pressed, pin 4 (Gnd) is connected to pin 2 (PwrOn) through a 1N914 diode. This supplies Gnd to the input of a CMOS chip on the logic board, which turns on a transistor and applies approximately +6VDC to the power fail warning (PFW) signal line. This level shift on the PFW signal

line initiates the power-up sequence in the power supply. Once the power supply is powered up, +5VDC is applied through a diode to the same line, which keeps the power supply powered up.

Question: Can the power button on the back of the Macintosh be replaced with a power-sensing switch?

Answer: When replacing the switch on the back of the Macintosh:

- Ensure that all connections are correct (the switch is a double-pole, double-throw type).
- Ensure that the new switch performs the same functions as the original switch (that is, it switches ground in to the shut-down circuit to shut off the system, and it switches power in to the circuit to turn on the system).

Question: Can the logic in the power supply be bypassed so that it does not sense anything from the motherboard?

Answer: It may be possible to bypass the power fail logic in the power supply; however, it is probably easier to replace the power supply with one having the same functions, but that handles power fail differently. A power fail-type circuit is necessary because there is a thermal sensor on the Macintosh II logic board that shuts down the system if high temperature is detected. This same circuit also shuts off the power supply in response to the Shut Down menu command.

Another possible solution is to create a circuit that plugs into the ADB port, which generates pulses between 3.0VDC and 6.8VDC for >1.5 seconds on pins 2 and 4. This would trigger the power fail circuit in the present power supply to power it up.

The logic in the power supply also generates a PFW signal to the system when there is an AC input voltage failure. If AC power is removed, the power fail circuit pulls PFW low at least 2 ms before the DC power fails.

For further information on operational restrictions, see the "Designing Cards and Drivers for the Macintosh II and Macintosh SE" manual (Addison-Wesley, ISBN 0-201-19256-X), chapter 6, page 4.

All of these factors should be taken into consideration before removing the existing power supply.

Article Change History:

29 Nov 1995 - Updated format.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:3033



Tech Info Library

Macintosh System Software 6.0 Changes (part 1 of 4)

Revised: 5/10/89
Security: Everyone

Macintosh System Software 6.0 Changes (part 1 of 4)

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This article last reviewed: 15 June 1988

Introduction

This article is an overview of the most notable changes made to the Macintosh System Software since the 5.0 release. For more detailed information, see parts 2 through 4.

QuickerGraf

Color QuickDraw now incorporates Andy Hertzfeld's QuickerGraf. Previous public domain versions of QuickerGraf were made available in the form of INIT and CDEV files, but in System Software 6.0, it's in the System file. Users should throw away QuickerGraf INIT or CDEV files when upgrading to System Software 6.0.

Pop-Up Menus

Pop-Up menus work on multiple Macintosh II monitors when running under MultiFinder.

Version Information

The Get Info window now has a field for reporting the file's version. For files, such as documents, that have no version information, the value "Not Available" appears.

Disk Copies

When copying an entire floppy disk to another, the Finder now uses an image copy to create an exact duplicate of the original disk.

MultiFinder

Double-clicking on a document, when the application is already open, now

activates the application and then opens the document.

Printer Tools

Five printer drivers are included with System Software 6.0:

- ImageWriter
- AppleTalk ImageWriter
- LaserWriter IISC
- LaserWriter IINT
- LaserWriter IINTX

The LaserWriter Drivers now support 11" x 17" paper. A new radio button in the Page Setup dialog box makes this new size available.

There is a new check box in the Page Setup dialog, and another has been modified. The Text Smoothing option smooths bit-map fonts that are downloaded, and the Graphics Smoothing option smooths bit maps other than text. Because of this new feature, this version is incompatible with all previous versions of LaserWriter Prep.

HD SC Setup

HD SC Setup now lets users divide a Hard Disk into multiple partitions. This is particularly useful to A/UX users.

Installer Scripts

Mini-Scripts for the Installer are included. They create a system that is configured only for the type of Macintosh that it was created for. Patches for the other Macintosh types are not installed with Mini-Scripts. Starting up a system configured for one Macintosh type on a different Macintosh type will cause an alert box indicating that the system was intended for a different Macintosh configuration.

CloseView

The new CloseView utility lets users magnify the screen image. This is particularly useful to visually impaired users. Because CloseView is a CDEV, it's accessed via the Control Panel.

Map

The new Map CDEV records and displays the longitude, latitude, and time of locations anywhere in the world.

Macro Maker

The new Macro Maker utility lets users to create macros that automate repetitive tasks. Macro Maker is an INIT that's made available through an icon that appears in the menu bar.

Continued

This article continued in "Macintosh System Software 6.0 Changes (part 2 of 4)".

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Tech Info Library Article Number:3034



Tech Info Library

Macintosh System Software 6.0 Changes (part 2 of 4)

Revised: 5/10/89
Security: Everyone

Macintosh System Software 6.0 Changes (part 2 of 4)

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This article last reviewed: 15 June 1988

Macintosh System Software 6.0 includes four disks:

- System Tools
- Printer Tools
- Macintosh Utilities 1
- Macintosh Utilities 2

The contents of these four disks are described in the three articles
"Macintosh System Software 6.0 Changes" (parts 2 through 4).

SYSTEM TOOLS DISK

System File

Color Picker Package

When using 8-bit mode on a device with a CLUT, Color Picker now displays
36 slices in the color wheel rather than six.

Known Color Picker Bugs

- Gray scale fonts can look blotchy with ColorPicker in 16-color mode,
because the grays used in the font can be changed while the package is
running.
- The ColorPicker uses a fair amount of memory, and its error checking for
out of memory conditions is lax. If you call GetColor in low memory
situations, you are likely to run into a system error.
- GetColor assumes that the color environment is stable when it is installed.
If you have used Palette Manager or Color Manager to change the color
environment, GetColor often initially selects the wrong color. Almost
any user action will cause ColorPicker to refresh the colors, and

therefore correct this situation.

Color QuickDraw

Color QuickDraw now incorporates Andy Hertzfeld's QuickerGraf. Previously, the color used as the transparent color (for arithmetic transfer mode #36) was the port's RGBBkColor. Now, in CGrafPorts only, the transparent color is specified by the port's rgbOpColor -- transparent mode drawing in old GrafPorts will continue to use bkColor to determine the index of the transparent color.

Menu Manager

Pop-Up menus work on multiple Macintosh II monitors when running MultiFinder.

Notification Manager

The Notification Manager allows a process, such as an application, desk accessory, or device driver to asynchronously alert the user that it wants or needs attention.

Operating System Utilities

A fix has been made to the System file to correct a long-standing problem in UpString, which selectively uppercases and de-diacriticalizes strings for operating system use. Strings that included the accent grave (\$60), when passed to UpString, returned a lower case 'a' instead of leaving the accent unchanged.

Palette Manager

A bug has been fixed that caused a crash if more than 16 palettes were used.

The problem that resulted when calling PmBackColor with a palette entry whose usage was pmExplicit has been fixed.

When a palette is activated, all gDevice CLUT entries are unprotected on all devices affected by the palette.

pmTolerant entries, other than black and white, can now occupy position zero in a palette.

A bug relating to color table animation and changing depths has been fixed.

Palates can be used with more than one window.

QuickDraw

An old QuickDraw region bug has been fixed. Performing a region operation (UnionRgn) on two regions that total more than 16K in size used to produce garbage. This is no longer the case.

Painting polygons is now faster and more stable.

Script Manager

The tools and capabilities provided for developers by the Script Manager have been extended in three areas: text, date, and numbers. In addition, some minor bugs were fixed and performance enhancements incorporated.

The new text language routine capabilities include:

- lexically interpreting different scripts (in macro languages, for example)
- allocating justification to different format runs within a line
- ordering format runs properly with bi-directional (Hebrew, Arabic) text
- quickly separating Roman from non-Roman text, and determining word-wrap in text processing.

The international utilities text comparison routines are significantly improved in performance, by 25% to 94%.

The Macintosh date routines are extended to provide a larger range (roughly 35,000 years), and more information. This allows programs that need larger range of dates to use system routines rather than produce their own, which may not be internationally compatible.

The new number routines supplement SANE, allowing applications to display formatted numbers in the manner of Microsoft Excel or 4th Dimension, and to read both formatted and simple numbers. The formatting strings allow natural display and entry of numbers and editing of format strings even though the original numbers and the format strings were entered in a language other than the final user's.

Sound Manager

SndPlay is fixed to work with Format 2 snd resources.

A new resource ID mapping scheme was added for snth resources.

Working MIDI synthesizers are added.

A RAM-based version of Sound Manager to run on the Macintosh Plus and SE is added.

SampledSynth and NoteSynth for the Macintosh Plus and SE are added.

A new version of SystemBeep, for the Macintosh Plus and SE, is added -- with the ability to set a sound to be used with SysBeep.

Sampled Sound Synth can now play at 44.1 kHz sounds without a crash.

The problem of Synth hanging when there is lots of AppleTalk traffic is fixed.

The "Sound" Control Panel device, and its sound list, now appear on the Macintosh Plus and Macintosh SE only if the new sound manager is installed (if the _SndPlay trap exists).

Standard File Package

If CurDirStore or SFSaveDisk is changed when the ReBuildList result is returned from the dialog filter, the current directory is changed to the directory specified by CurDirStore and SFSaveDisk.

System Error Handler

New system errors were assigned for WDEFnFnd (87) and CDEFnFnd (88).

TextEdit

Changes are made to some TextEdit routines, and new routines are added.

The bug in TESTylInsert when inserting 0 length text has been fixed.

ReCalLines has been patched to properly shrink the lineStarts array.

GetStyleScrap was changed to return a proper scrap record, even if there is no selection range (prevents applications from having to special-case insertion points).

References to faces are now byte- instead of word-length.

A bug in TEGetHeight, when there were no characters in the buffer, is fixed. It returned 0 height, but now returns height of the next character to be typed.

Toolbox Event Manager

_WaitNextEvent is now implemented in the System as well as MultiFinder.

Window Manager

A bug was fixed in GrowWindow on the Macintosh II, where it used to return an incorrect result when the window size didn't change.

A bug in WDEF, which caused screen garbage on Macintosh II under rare

circumstances, is fixed.

Continued

This article continued in "Macintosh System Software 6.0 Changes (part 3 of 4)".

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Tech Info Library Article Number:3035



Tech Info Library

Macintosh System Software 6.0 Changes (part 3 of 4)

Revised: 5/10/89
Security: Everyone

Macintosh System Software 6.0 Changes (part 3 of 4)

=====

This article last reviewed: 15 June 1988

System File, Continued

New and Changed Resources

ptch	id = 0	TextEdit, no longer in all three PTCH files.
ptch	id = 1	Menu Manager, no longer in Plus & SE PTCH files.
ptch	id = 2	Notification Manager, new (see separate note).
ptch	id = 3	Sound Manager, new and improved.
PTCH	id = -1	Checks for missing patch resources at startup.
MBDF	id = 0	The id has been changed (was MBDF id=8).
vers	id = -2	New 'version' resource for files; see explanation below.
vers	id = -102	New 'version' resource for products; see explanation.

Removed Resources

PACK	id = 4	SANE, floating point package (now in all ROMs).
PACK	id = 5	SANE, elementary math functions (now in all ROMs).
PACK	id = 7	SANE, various conversion routines (now in all ROMs).
WDEF	id = 0	Window definition procedure (now in all ROMs).
DRVr	id = 9	AppleTalk, protocol package handler (now in all ROMs).
DRVr	id = 10	AppleTalk, transaction protocol handler (now in all ROMs).
NBPC	1 & 2	Now obsolete.

Version Resource

To avoid confusion, all system files are now version 6.0, with the exception of the Finder, which is 6.1. With System Software 7.0, ALL files will have the same version number. Other files in the System Software Update now contain "System Software Update 6.0" in the "Get Info" window as well as their logical version number.

The Finder now displays version information according to a file's 'vers' resources.

Fonts

New York 20, 24 and Geneva 20, 24 have been removed from the System on the Utility 1 disk to resolve space problems.

The Chooser

- The bug of not closing device files (except, of course, the current printer) has been fixed.
- Chooser now remembers the window position.
- Chooser now uses the Palette Manager.
- Chooser can now list sounds in the Suitcase files (below the System file).
- The scramble bug, if a cdev (Color) called _DrawDialog, was fixed.

Other Desk Accessories

- The Alarm Clock now remembers the window position. You can now set hours greater than 12 by typing if Alarm Clock was opened in 12-hour mode and then 24-hour mode was set (using the Control panel).
- The Calculator now remembers the window position.
- Find File now remembers the window position.
- Scrapbook now remembers the window position.

Installer Scripts and Resources

PTCH id = -1 is a new patch resource that checks if the machine you are starting up on has the proper PTCH resource(s) in the system file. If the proper patch code is not present, the user can't boot (a message will appear). This was designed specifically for use with MiniScripts (see below), so this patch is installed during MiniScript installation.

The bug of not deleting owned resources unless the owner was in the src file has been fixed.

Empty System files are now created on MFS disks too for installing on blank MFS disks.

The Installer now looks for a AppleShare server before blessed folder.

Font/DA Mover

Support for NFNTs and styled fonts has been added.

A confirmation alert was added for the Remove process.

Finder File

Disk Copy: when copying an entire 800K disk to another, the Finder now uses an "image" copy to create an exact duplicate of the original.

The name of the Print Catalog command has been changed to Print Directory.

The maximum number of windows can be set by changing the last word in the LAYO resource.

MultiFinder File

New Features

MultiFinder now copies the WDs of an application that calls _Launch and includes them in the AppParmHandle.

PrintMonitor is broken down into 5 segments, to allow it to perform in 72K instead of 78K.

Print Monitor now gives visual notification when printing has been stopped via the PrintMonitor window.

MultiFinder Fixes

Double-clicking on a document, when the application is already open, now opens the document. The user no longer sees "The application is already open." Including the resources 'mstr' #102 and 'mstr' #103 in an application allows you to override the default "File" and "Open..." strings respectively when MultiFinder searches for the open menu item. Resources 'mst#' #102 and #103 can be used instead, if necessary (for multiple languages). The Standard File package was patched to implement this.

Background notification support is added. See the section on Notification Manager.

There is a new bit (bit 9) in the SIZE resource, to allow an application to get mouse clicks in its front window during layer switches.

MultiFinder 6.0 does not work with pre System 4.2 files (notified through an alert box). This was done to save 3K on the System Disk.

Developers should be even more careful about fooling around with the enable flag for the Apple menu. In particular, applications are making assumptions that the second item is a dashed line, and then disabling it (often directly and not by calling `_DisableItem`) on the fly. The suggested way to do this is to set the flags correctly in the "Menu" resource for the Apple menu at compile time.

The menu bar Icon no longer inverts during shutdown.

The bug where an application in the foreground should not call `WaitNextEvent` with a sleep value > 50 is fixed.

The bug that would cause an application to crash when selecting a menu key for a pop-up menu has been fixed.

Mouse clicks no longer get lost.

Files opened by an application will be closed, even if the application crashes (MultiFinder monitors the files opened by each application and closes remaining files itself).

MultiFinder no longer crashes with applications that have no Apple menu, but do use hierarchical menus.

String list resources ('mst#',100) and ('mst#', 101) can be used instead of the old 'mstr' strings to override the names used when MultiFinder looks for the "Quit" menu item.

The old `_Launch` call, which applications still use (for example, in `Transfer...` menu items), now just switch to an application that is already running. As a consequence, trying to close the working directory of the launched application's resource file returns an error.

Applications no longer have to pass fake (de)activate events to DAs in their layers when they receive suspend/resume events.

Applications that have the MultiLaunch bit set will no longer lose their SIZE resource attributes if switch-launched from an application other than the Finder.

The "Out of Memory" alert no longer appears if a DA could not be found; a more appropriate message appears.

The clipboard is no longer lost when the user chooses Cut in the Edit menu. It turns out that this never worked!

Before, running two applications with the same name trashed the icon, in the Apple menu, of the launched application when quitting the other. This problem has been fixed.

Resource manager code that was causing crashes because of a bug in the MPW grow zone procedure has been fixed. The problem was that MPW was calling

_CloseResFile inside the grow zone Proc, which was getting called from _GetResource. This caused a reentrancy problem for the MultiFinder resource Manager patches.

Synthesized fonts are no longer being put in the application heap.

MultiFinder's temporary memory requests should be located higher in memory, and are thus less likely to pin down the system heap.

The icon in the menu bar is now exactly the same color as the text in the menu bar.

Background applications that crash before the first call to _GetNextEvent no longer crash the system.

DrawMenuBar will not do anything when called from an application that is in the process of being switched out. This significantly cuts down on menu bar flicker.

Drivers that are part of an application now get SystemTask time if the application gets background time.

MacroMaker no longer crashes with Print Monitor.

Applications that call _Launch on themselves no longer crash.

Mouse-moved events now show up more often. Is is still arguable as to whether they work correctly.

MultiFinder now handles the case where a background application has called _InitWindows, but has not yet called _GetNextEvent. In the past, it would quit or crash. Previously, _ExitToShell would return to the caller.

MultiFinder now calls _Sound Dead when an application quits. This fixes the bug where system beep stopped working.

The bug where despooling would never occur when background printing from a HyperCard script has been fixed.

The bug where booting on a Macintosh II with >1 bit depth and a large number of INITs would crash MultiFinder on startup has been fixed.

Continued

This article continued in "Macintosh System Software 6.0 Changes (part 4 of 4)".

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Tech Info Library Article Number:3036



Tech Info Library

Macintosh System Software 6.0 Changes (part 4 of 4)

Revised: 5/10/89
Security: Everyone

Macintosh System Software 6.0 Changes (part 4 of 4)

=====

This article last reviewed: 15 June 1988

PRINTER TOOLS DISK

This disk contains printer drivers for:

- ImageWriter
- AppleTalk ImageWriter
- LaserWriter IISC
- LaserWriter IINT
- LaserWriter IINTX

LaserWriter Driver

Support for 11" x 17" paper is now available via a radio button in the Page Setup dialog box.

The "Page Setup" dialog contains two new check boxes that replace one earlier one:

- The "Text Smoothing" option smooths bitmap fonts that are downloaded.
- The "Graphics Smoothing" option smooths bitmaps other than text.

With the addition of this feature, all previous versions of LaserWriter Prep are incompatible.

LaserWriter 5.2 fixes a problem inherent with printing large bit maps (fonts over 100 points).

Extended rotation picture comments were added, to allow for fractional rotation angles.

A problem with the dashed line comment (the dashed line interval was getting scaled with the pen size) has been fixed.

The srcBic mode (white on black) text problem is fixed (if you drew 2 lines of text in srcBic mode, the second line would not print).

LaserWriter IISC Driver

A problem in the LaserWriter IISC driver that caused icons to disappear when doing the Finder's "Print Catalog" command has been fixed. This problem was introduced in version 1.1B1.

A problem in the LaserWriter IISC driver that caused gaps in straight lines drawn with non-square pen has also been fixed.

A problem in the LaserWriter IISC driver that caused gaps in the outline of a roundRect drawn with a non-square pen has been fixed.

The LaserWriter driver will not print a bitmap if the width or height is zero.

There was a problem in the LaserWriter driver with dashed line intervals. Dashed lines with more than two elements in their patterns did not print correctly. This has been fixed.

A problem with downloading large bitmap fonts (96 points) has been fixed.

MACINTOSH UTILITIES 1

----- HD SC Setup

HD SC Setup was rewritten, for A/UX, to support multiple partitions.

When quitting from HD SC Setup, a call to SCSIDispatch is made with the opcode "QuantumFix".

Mini Installer Scripts

Mini-Scripts creates a system that is appropriate only for the particular Macintosh it was created for. All patches for the other systems are not available when a system is created with mini-scripts. Booting a system configured for one machine on a different flavor Macintosh causes an alert box.

Mini-Scripts are designed to be used on floppy-based systems and to be installed on disks that do NOT currently contain a System. If you install a mini-script over an existing System, you will not get a fully updated System file.

MACINTOSH UTILITIES 2

----- CloseView

The CloseView utility lets users magnify the Macintosh screen, making it easier for visually impaired users to use the computer. It also makes it possible to invert the screen (white on black instead of the usual black on white).

CloseView restores color window manager ports as well as regular window manager ports on screen base address changes.

Map

Map is a Macintosh utility that records and displays the time, longitude, and latitude of locations anywhere in the world.

Problem fixes from older versions: Chicago's time zone has been fixed, and partial names can be used with Find.

MacroMaker

MacroMaker is an Init allowing users to create macros.

Miscellaneous Changes and Problem Fixes

Disk First Aid has been adjusted to support disks larger than 800K.

All Macintosh II patches were changed to support A/UX.

The problem that caused the PRAM on the Macintosh II to sometimes get trashed has been fixed.

If you switch temporarily to one monitor, then back to two, icons on the desktop return to their original positions (unless you move them).

If you try to switch-launch but can't, you are asked to confirm that you want to continue launching the application.

Two problems that caused disk-swapping when switch-launching on a single-drive system have been fixed.

A problem where the 'type' and 'creator' would be written by the application then overwritten by the Finder has been fixed.

The problem that caused a Macintosh to hang if the LAYO spacing was wide and the windows were narrow has been fixed.

A problem with the 'Protect Bit' (AppleShare-related) has been fixed.

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Tech Info Library Article Number:3037



Tech Info Library

LaserWriter IISC: Command-Period Doesn't Cancel Print

Revised: 6/30/88
Security: Everyone

LaserWriter IISC: Command-Period Doesn't Cancel Print

=====

This article last reviewed: 3 June 1988

When using the LaserWriter IISC, printing within an application (such as MacPaint) that contains a dialog box requiring the "command-period" to stop printing, you may experience this problem: the "command-period" does NOT stop or interrupt the printing.

However, if you are printing within an application that uses a dialog box with a "cancel" button, the cancel button DOES stop the printing.

This is a problem in the LaserWriter IISC driver, not the PostScript printer drivers. Currently, you CANNOT cancel most print jobs when programs display a printing message stating "To cancel, hold down the command key and type a period (.)"

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Tech Info Library Article Number:3038



Tech Info Library

Macintosh II Label M5400/A Means HyperCard Included

Revised: 6/17/92
Security: Everyone

Macintosh II Label "M5400/A" Means HyperCard Included

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Article Created: 3 June 1988
Article Last Reviewed: 3 June 1992
Article Last Updated:

Macintosh II systems that are labeled M5400 do NOT have HyperCard bundled with them. Systems labeled M5400/A contain HyperCard.

The letter "A" following the part number denotes a change in the contents of the box.

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Tech Info Library Article Number:3039



Tech Info Library

LaserWriter IINT, IINTX: Icons Disappear from Chooser

Revised: 9/25/92
Security: Everyone

LaserWriter IINT, IINTX: Icons Disappear from Chooser

=====

Article Created: 2 June 1988

Article Change History

06/09/92 - REVIEWED

- For technical accuracy.

TOPIC -----

When I open the Chooser of my Macintosh, the icon for LaserWriter IINTX is gone. It was there the last time I opened the Chooser, and I have not changed any connections. I am on a network with MS-DOS computers.

DISCUSSION -----

If you have attached your LaserWriter to an MS-DOS computer which has an AppleTalk PC card, and you are running your Macintosh in serial port configuration, and printing to a LaserWriter IINT or LaserWriter IINTX, you may find that the LaserWriter icon appears and disappears at random.

This will probably be true for all other Macintosh computers on the network. As you watch the Choosers, the LaserWriter icons may appear and disappear with no obvious pattern.

This is a normal response to an unworkable configuration. Because of this problem (and possibly others), the "LaserWriter IINT-NTX Owner's Guide" warns that you should disconnect any serial cable attached to the printer before using LocalTalk, and conversely that you disconnect the LocalTalk cable from the printer before connecting a cable to the RS-232 serial port. See the appendix on Connecting to and Printing With an MS-DOS Computer in the "LaserWriter IINT-NTX Owner's Guide" for more information.

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Tech Info Library Article Number:3040



Tech Info Library

LaserWriter and LaserWriter II: Serial Configurations Differ

Revised: 7/27/89
Security: Everyone

LaserWriter and LaserWriter II: Serial Configurations Differ

=====

This article last reviewed: 22 June 1989

The default serial port configuration of the LaserWriter and LaserWriter Plus is: no parity, 8 data bits, 1 stop bit.

The default serial port configuration of the LaserWriter IINT and LaserWriter IINTX is: no parity, 7 data bits, 1 stop bit.

The difference in the default data bits may cause a problem for a PC communicating with

- a LaserWriter IINT in Diablo emulation
- a LaserWriter IINTX in HP LaserJet+ emulation or Diablo emulation (if the PC is configured for communication with a LaserWriter or LaserWriter Plus).

The PC and the LaserWriter must be configured with the same data bit settings. Search on "LaserWriter" and "serial connection" for specific instructions for configuring the LaserWriter and a PC for serial communications.

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Tech Info Library Article Number:3041



Tech Info Library

AppleShare PC and MS-DOS: Memory Problem Workaround

Revised: 5/24/89
Security: Everyone

AppleShare PC and MS-DOS: Memory Problem Workaround

=====

This article last reviewed: 2 June 1988

Some users have experienced a memory problem when trying to load the AppleShare PC software and an MS-DOS application at the same time.

In the MS-DOS world, there are a number of programs that manage DOS TSR (Terminate and Stay Resident) programs. One such program that Apple engineers have used is a public domain package called "TSR 1.7". There are other programs that work in the same manner which may also serve the purpose.

By combining one of these TSR managers and the AppleShare PC software, we were able to load and unload AppleShare PC at will. The basic flow of the MS-DOS .BAT files:

.BAT file to load AppleShare PC

```
ECHO OFF
CD C:\UTILITY
MARK
AppleTalk
CD \ASHAREPC
... rest of AppleShare PC batch file commands
CD \
```

.BAT file to unload AppleShare PC

```
ECHO OFF
CD \ASHAREPC
ANET LOGOFF /ALL          -- Disconnect all connections from
                           AppleShare PC. This is imperative for
                           MS-DOS ReDirector to function properly and
                           AppleShare to know who's logged on at the
                           current time.

CD \UTILITY
RELEASE
CD \
```

```
COMMAND C:\  /P      -- Load a new copy of the DOS Command Processor.  
                        We had some problems with either  
                        AppleShare PC or the TSR Manager and  
                        discovered that reloading COMMAND.COM fixed  
                        the memory problems.  After this command,  
                        DOS is at the root directory.
```

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Tech Info Library Article Number:3042



Tech Info Library

LaserWriter IINTX LaserJet Emulation: Characters Are Limited

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX LaserJet Emulation: Characters Are Limited

=====

This article last reviewed: 23 August 1989

The LaserWriter IINTX's HP LaserJet+ emulation mode is limited to the Roman-8 symbol set, which prints Courier, Times, and Helvetica typefaces (all the styles of the Roman-8 symbol set).

Math characters are not available in this "standard" character set provided with the HP LaserJet+ printers.

Other characters missing from the LaserJet emulation set:

The gray patch for "rubout" (decimal 127)
Overline (decimal 176)
Degree sign (decimal 179)
Uppercase D with stroke (Eth) (decimal 227)
Lowercase d with stroke (eth) (decimal 228)
Uppercase Thorn (decimal 240)
Lowercase Thorn (decimal 241)
The "one-fourth" symbol (decimal 247)
The "one-half" symbol (decimal 248)
Solid black square (decimal 252)

The one-fourth and one-half symbols are present but appear in a 1/4 and 1/2 configuration instead of the proper:

1	1
-	-
4	and 2

characters.

If these missing characters create a problem, a possible solution is to use a downloadable, bit-mapped font, available from third-party font packages for the HP LaserJet Plus.

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Tech Info Library Article Number:3044



Tech Info Library

AppleTalk: Description of SP_INIT and SP_GET_SESSION

Revised: 11/2/88
Security: Everyone

AppleTalk: Description of SP_INIT and SP_GET_SESSION

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This article last reviewed: 3 June 1988

Some users involved in AppleTalk programming have asked for more information about some of the ASP routines described in "Inside AppleTalk" -- especially SP_INIT and SP_GET_SESSION.

The SP_INIT and SP_GET_SESSION routines have been more completely documented in the newest printing of Inside AppleTalk (July 14, 1986).

Here is a reprint of the SP_INIT and SP_GET_SESSION documentation from section XI, pages 6 and 7:

Before any workstation can open a session with a server, the server's SLS must be established. This must be done by the ASP client at the server end. This client must issue an OPEN-ATP-Responding-socket call to create the SLS. Then it must call NBP to register the appropriate server entity name on this socket. At this point, the SLS is set up so that a workstation can discover its own network address through an NBP lookup.

However, a workstation still cannot open sessions with this client entity. For this purpose, the ASP client in the server must now issue an SPInit call to ASP (passing to ASP the network address, known as the SLSEntityIdentifier), followed by one or more SPGetSession calls.

SP_Init

Inputs:

SLSEntityIdentifier -- SLS network identifier
ServiceStatusBlock -- block with status information
ServiceStatusBlockSize -- size of status information block

Outputs:

SPError -- error code returned by ASP
SLSRefNum -- reference number for SLS

Errors:

TooManyClients -- ASP implementation cannot support another client
SizeErr -- ServiceStatusBlockSize is greater than QuantumSize

This call is issued by the ASP client after having opened and named the SLS. The call passes the (network-dependent) SLSEntityIdentifier to ASP as well as a ServiceStatusBlock. This block is used to hold the service status information to be returned in reply to GetStatus request received at the SLS. The SLSEntityIdentifier is the complete internet address of the SLS.

SPInit returns the SLSRefNum (this is unique among all SLSs on the same server node) that is used in the SPGetSession call to make reference to the SLS passed in the SPInit call.

SP_Get_Session

Inputs:

SLSRefNum -- reference number for the SLS

Outputs:

SPError -- error code returned by ASP
SessRefNum -- session reference number

Errors:

ParamErr -- unknown SLSRefNum
NoMoreSessions -- implementation cannot support another session

This call is issued by the ASP client to allow it to accept an OpenSession command received on the SLS identified by the SLSRefNum. Each SPGetSession request authorizes ASP to accept one more OpenSession request.

The call completes when such a request is received on the SLS and a corresponding session has been opened. The SessRefNum is returned to the server ASP client and must be used in all further calls to ASP that refer to this session.

Clearly, the SessRefNum must be unique among all sessions open to the server.

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Tech Info Library Article Number:3045



Tech Info Library

Apple/DEC Alliance and AppleTalk for VMS

Revised: 11/2/88
Security: Everyone

Apple/DEC Alliance and "AppleTalk for VMS"

=====

This article last reviewed: 3 June 1988

In January 1988, Apple Computer and Digital Equipment announced a joint development agreement under which the two companies would work together to integrate Macintosh and the AppleTalk network system with the VAX and DECnet.

Apple and DEC are focusing on nine areas of development. Some of these areas (such as mail, distributed applications, and terminal emulation) will result in specifications and tools that allow third parties to build even greater functionality into their future products. In other areas, the two companies will work together at the fundamental architectural level to create new products (for example, tools that allow network managers, using DECnet network management, to view and manage a combined AppleTalk/DECnet network as a single entity).

The good news for customers is that many of the capabilities discussed by Apple and DEC are available today from third parties, and these products have been built on the architecture that Apple and DEC have endorsed. Since Apple and DEC will be making development specifications available to these third parties, they will be able to engineer their products to take full advantage of the Apple/DEC development efforts.

In summary, Apple and DEC have agreed to lay the foundation for compatibility and cooperation between Macintosh/AppleTalk and VAX/DECnet. This foundation includes specifications and tools that allow developers to build products with greater functionality.

However, it is not necessary to wait for the Apple/Digital agreement. Alisa Systems, Odesta, Pacer Software, and Telos have products based on "AppleTalk for VMS", which is one of the first tools available.

- Thursby Software's NSSnet, distributed by Alisa, fully supports DECnet protocols.

..TIL03046-Apple-DEC_Alliance_and_AppleTalk_for_VMS_(TA38504).pdf

- All-in-1 support is available from Telos Software with their MacNOW product.
- Color terminal emulation is available using VersaTerm or VersaTerm-PRO.

For more information, search under: Alisa Systems, Odesta Corporation, Pacer Software, Telos Software, VersaTerm.

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Tech Info Library Article Number:3046



Tech Info Library

AppleShare PC: Mapping Lotus Files for Excel

Revised: 10/18/88
Security: Everyone

AppleShare PC: Mapping Lotus Files for Excel

=====

This article last reviewed: 3 June 1988

If you are using AppleShare to store Lotus files for access from Excel, you may have had a problem like this:

When a Lotus worksheet is copied to AppleShare, it gets TYPE-set to "J123" and CREATOR-set to "MJAZ" (Modern Jazz settings). This file, however, is not recognized by Excel. If you use Apple File Exchange to copy the SAME file from a 5.25" drive, it gets TYPE-set to "BINA" and CREATOR-set to "mdos", which Excel accepts, and the file opens.

You have encountered the default Extension Mapping of AppleShare PC. Control of Extension Mapping is under the "Special" menu of DA (our AppleShare PC program) using the "Change Extension Mappings" item.

AppleShare PC automatically sets a Macintosh file icon-type for files created on file server volumes. These type assignments are based on the three-character DOS filename extension.

"Change Extension Mapping" lets you select an icon-type for a file extension. This icon-type is assigned to all appropriate new files created on server volumes; existing files are not affected.

In the example problem given above, the WKS and WK1 extensions from Lotus 1,2,3 default to an extension map called "JAZZ-Lotus" instead of mapping to "Excel".

To change this mapping for all new files created, select the "Change Extension Mapping" item from the DA "Special" menu. A dialog (or pane) displays something similar to "Extension: XXX = Binary", followed by a scroll box "Select Type:". Use the cursor keys to scroll to and highlight item number 4, which is the map called "Excel". Press F2 to reset the map from "JAZZ-Lotus" to "Excel".

Until this process is reversed, all new files are saved with the Excel map.

All existing files need to be reopened and saved under a new name for this mapping to affect them. Once saved with the Excel mapping, double clicking the documents launches Excel. The documents have a "plain" document icon.

Any DOS document can be forced to have the

TYPE-set = BINA and CREATOR-set = mdos

by adding an unmapped extension to the end of the of the document name. For example, when saving the document "Anything.ABC", AppleShare PC provides the BINA/mdos labels. To view the mapping of any given PC, type:

anet map

This lists currently assigned extensions and their mapping.

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Tech Info Library Article Number:3047



Tech Info Library

European Apple II: No Color With U.S. Monitor (2/97)

Revised: 2/18/97
Security: Everyone

European Apple II: No Color With U.S. Monitor (2/97)

Article Created: 01 July 1988
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article discusses the problem of the European Apple II not producing color when used with a U.S. Apple Color Monitor.

DISCUSSION -----

A European Apple II produces either PAL or SECAM video output, both of which are compatible with European television standards. However, these signals are incompatible with the NTSC signal required for U.S. monitors. The signal is close enough in video content to be resolved in black and white, but the frequency of the color burst is incorrect for an NTSC monitor.

Using a European Apple II system in North America, you can get an acceptable color display from your European monitor, although there may be some problems due to the different line frequency in North America.

Article Change History:
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3048



Tech Info Library

LaserWriter and System Software for Mixed Installations

Revised: 7/7/88
Security: Everyone

LaserWriter and System Software for Mixed Installations

=====

This article last reviewed: 16 June 1988

Anyone dealing with a variety of Macintosh models (including Macintosh 512Ke systems) in work group networks with a recent LaserWriter model (such as the LaserWriter IINT) needs to be aware of the different combinations of System/Finder versions and LaserWriter software. The Tech Info Library article "Macintosh: Recommended System Software Configurations" contains most of the information needed to determine which System/Finder versions to use on each system.

LaserWriter versions later than 4.0 offer the advantages of faster and larger bitmap printing and overall faster operation. However, Apple does not recommend the use of LaserWriter drivers later than 4.0 when using Macintosh 512K or 512Ke systems.

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Tech Info Library Article Number:3049



Tech Info Library

Macintosh II: NuBus Problems and ROM Upgrade (9/95)

Revised: 9/1/95
Security: Everyone

Macintosh II: NuBus Problems and ROM Upgrade (9/95)

Article Created: 16 June 1988
Article Reviewed/Updated: 1 September 1995

TOPIC -----

The original release of the Macintosh II ROM had a problem in the Slot Manager. Units shipped after February 1, 1988, contain an upgraded ROM. If your Macintosh was built after that date, or if you do not use a NuBus card that addresses over 1MB, the Slot Manager problem does not affect you.

DISCUSSION -----

The Slot Manager is a section of the Macintosh II ROM that contains a set of routines that makes it possible to identify and communicate with cards plugged into NuBus slots in the Macintosh II.

The problem is that the Slot Manager does not recognize cards that need more than 1MB of address space to function. This is because the Slot Manager runs in the 24-bit addressing mode and should be running in the 32-bit addressing mode.

The 68020 uses these two modes for interpreting memory addresses. In the 24-bit mode, the Macintosh can access only 1MB of memory for each card. If the card exceeds this limit, the Macintosh won't recognize that the card is in the slot. This is because of the way Apple recommends that developers format their cards. If the card can fit all of its code into 1MB, there is no problem.

For details on Macintosh operation in either 32-bit or 24-bit mode, see the Operating System Utilities chapter of "Inside Macintosh, Volume V" (ISBN 0-201-17719-6). For details on the use of address space by NuBus cards, see Chapter 4 of "Designing Cards and Drivers for Macintosh II and Macintosh SE" (ISBN 0-201-19256-X).

Identifying Your ROM Version

The problem was fixed via a patch to the Macintosh II ROMs and was rolled into production around February, 1988. All Macintosh IIs manufactured since then

have the fix installed.

You can identify the upgraded ROM by "Revision B" on the chip. In addition, manufacturers of NuBus cards requiring the fix usually included a small software application that can be run to determine if you have the new ROM. Apple-authorized service providers may also have this application.

Please note that the change to the Macintosh ROM was done as an object overlay only. This means that the object code was patched, and the ROM was not rebuilt.

Only minor changes were made to allow the Slot Manager to work in 32-bit mode instead of 24-bit mode, thus ensuring that it recognizes cards requiring more than 1MB of address space.

The Upgrade Program

Because of the Slot Manager problem, Apple patched the ROM and offered a free upgrade program to customers who bought NuBus cards requiring this fix.

The service program to replace the logic board has expired. Logic boards experiencing this issue can be replaced, but it will not be a free replacement.

Article Change History:

01 Sep 1995 - Combined information from several articles for consistency.
23 Dec 1994 - Noted that SuperDrive upgrade requires Rev. B logic board.

Support Information Services

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Tech Info Library Article Number:3050



Tech Info Library

Macintosh System 6.0 Installation Recommendations

Revised: 8/1/88
Security: Everyone

Macintosh System 6.0 Installation Recommendations

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This article last reviewed: 16 June 1988

When updating Macintosh system software to version 6.0, be sure to start up from the System Tools disk. Do not just switch-launch to it. Without a clean restart, programs and INITs can interfere with proper installation.

After performing what seemed to be proper installations on a variety of Macintoshes, engineers were getting consistent (though sometimes intermittent) error messages when restarting the systems. The errors included:

- "Unable to load needed resources" on startup.
- ID errors 02, 07, 10, 11, etc. when running applications or performing simple events.
- RAM Cache could be changed only to 1596.

These errors varied, depending on the type of Macintosh on which the installation was performed and the types of CDevs and INITs contained in the System files when upgraded. For example, it mattered if either Menu Clock or Vaccine (even though turned off) were present.

The above errors disappeared after deleting the recently updated System Folder, restarting the Macintosh with the System Tools disk, and reinstalling the software. Therefore, always start up from the Installer disk when installing or upgrading software to ensure a complete installation takes place.

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Tech Info Library Article Number:3051



Tech Info Library

MacTerminal 2.3 Does Not Use F Keys

Revised: 10/4/89
Security: Everyone

MacTerminal 2.3 Does Not Use F Keys

=====

This article last reviewed: 16 June 1988

MacTerminal 2.3 does not use the function keys on the extended keyboard. However, it still contains the PF key menu for VT100 and IBM 3278 as in previous versions. You can use MacroMaker to select the keys, and then assign a recording of the PF key menu selection to each function key. You can also type and record keyboard sequence with MacroMaker.

The key sequences for the VT100 PF keys are: (ESC OP)=PF1, (ESC OQ)=PF2, (ESC OR)=PF3, (ESC OS)=PF4.

The IBM 3278 PF keys are:

Key Sequence	Menu option
[ESC 1, ESC 2,... ESC 9, ESC 0, ESC -, ESC =]	= PF1, PF2, ... PF12
[ESC !, ESC @,... ESC (, ESC), ESC _, ESC +]	= PF13, PF14, ... PF 24
[ESC [, ESC],	= PA 1 and PA 2

ASCII	Key Sequence	Menu option
<SOH>	= CONTROL A	= Attn
<DLE>	= CONTROL P	= Home
<FS>	= CONTROL \	= Print
<ACK>	= CONTROL F	= Erase EOF
	= CONTROL (Backspace or Delete)	= Delete
<FF>	= CONTROL L	= Erase Input
<GS>	= CONTROL]	= Insert
<DC2>	= CONTROL R	= Reset
<STX>	= CONTROL B	= Sys Req
<ENQ>	= CONTROL E	= Clear

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Tech Info Library Article Number:3053



Tech Info Library

PICT 2 Files Supported by Third-Party Applications

Revised: 6/12/92
Security: Everyone

PICT 2 Files Supported by Third-Party Applications

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Article Created: 16 June 1988
Article Last Reviewed: 20 May 1992
Article Last Updated: 4 August 1989

Some applications require PICT 2 files. This has created interest in how a user can "create" or convert PICT 2 files.

"PICT 2" refers to the PICT version 2 format documented in "Inside Macintosh Volume V" under Color QuickDraw. The file format defines color PICT support - something previously not implemented.

A number of third-party applications support the color PICT format. Most scanners and digitizers support the color PICT format, as do many color or grayscale paint applications. Pixel Paint, for example, reads and writes a number of different formats, including color PICT and MacPaint. Also, the shareware application Giffer reads PICT 1 files (MacDraw PICT) and saves them as PICT 2. It opens both PICT formats but writes only the PICT 2 format. Giffer also converts other file types commonly found on bulletin board systems.

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Tech Info Library Article Number:3054



Tech Info Library

ADB: Building or Selling ADB Peripheral Requires License (1/95)

Revised: 1/6/95
Security: Everyone

ADB: Building or Selling ADB Peripheral Requires License (1/95)

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Article Created: 7 June 1989
Article Reviewed/Updated: 6 January 1995

TOPIC -----

Do I need a license to build or sell an Apple Desktop Bus (ADB) device?

DISCUSSION -----

Apple requires developers to have a license before building or selling an ADB peripheral device. Contact Software Licensing for more information.

Software Licensing
Apple Computer, Inc.
2420 Ridgpoint Drive MS: 198SWL
Austin, Texas 78754

(512) 919-2645
(512) 919-2120 - Fax

Article Change History:
06 Jan 1995 - Article reviewed and address updated.

Support Information Services

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Tech Info Library Article Number:3055



Tech Info Library

Resource Editor: Where to Get It

Revised: 5/17/89
Security: Everyone

Resource Editor: Where to Get It

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This article last reviewed: 16 June 1988

The Resource Editor is a development tool and is distributed under an Apple license agreement. Therefore, the Resource Editor is not in the public domain and is not for general posting or distribution. The Resource Editor can be purchased from the Apple Programmer's & Developer's Association (APDA).

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Tech Info Library Article Number:3057



Tech Info Library

PostScript: Displaying It on the Macintosh Screen

Revised: 7/7/88
Security: Everyone

PostScript: Displaying It on the Macintosh Screen

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This article last reviewed: 16 June 1988

Macintosh print drivers let you view PostScript commands for editing purposes. Before printing, press and hold the Command and "F" keys after selecting OK from the print dialog box. You'll see the message "Creating PostScript File." The file is named PostScript0, PostScript1, etc. -- a standard text file that can be opened by most word processing and text editing programs.

Apple has no plans to display graphics based on PostScript language routines. Nor are any third-party companies working on such a large project. This capability would require a rewrite of the Macintosh operating system so that it displayed graphics via PostScript instead of QuickDraw.

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Tech Info Library Article Number:3058



Tech Info Library

AppleLine and IBM 3174 Controller Upgrade

Revised: 7/7/88
Security: Everyone

AppleLine and IBM 3174 Controller Upgrade

=====

This article last reviewed: 16 June 1988

IBM has recently upgraded the microcode for IBM 3174 controllers. Versions 3.0 and 3.1 allow command chaining, an enhancement for the 3174's that increases throughput.

The increase in speed has caused a problem with the timing within AppleLine. This problem appears as half displayed screens. The effect is not dramatic, but it is a nuisance. To refresh the screen, type Control-C.

Apple is studying compatibility between AppleLine and the new 3174 controller code.

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Tech Info Library Article Number:3059



Tech Info Library

VT220 Keyboard Overlay for Macintosh

Revised: 7/7/88
Security: Everyone

VT220 Keyboard Overlay for Macintosh

=====

This article last reviewed: 16 June 1988

DEC has a rubber numeric keyboard overlay for their terminals that fits perfectly on the ADB keyboards for the Macintosh. It includes many of the "GOLD" key functions necessary for applications such as AllInOne and so on. If you want/need to know which keys on the Macintosh correspond to a VT220 terminal, this overlay provides the answers.

part number: LK201-KH KED/EDT NUM KYPD OVLY(10/BOX

Contact your local DEC representative for further information.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3060



Tech Info Library

Macintosh II Screen And NTSC Video Camera Synchronization

Revised: 7/2/92
Security: Everyone

Macintosh II Screen And NTSC Video Camera Synchronization

=====

Article Created: 21 June 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

This article discusses methods of synchronizing video camera output with the Macintosh II screen. Read the entire article, including warnings, before attempting any of the procedures described.

There is another article that describes VideoSync, a software product from Apple which may be a solution as well. Search under "VideoSync" for more info.

DISCUSSION -----

Some video boards currently provide NTSC output. However, these conversions do not solve the problem of screen flicker that a camera records. The problem is inherent in NTSC and PAL standards, because they impose limitations based on screen resolutions and display rates.

Screen flicker, as recorded by video cameras, occurs because the scan rates of NTSC and PAL video cameras are slower than the scan rates of high resolution RGB monitors like the Macintosh II monitor. PAL rates of 50 Hz make the flickering image worse.

RESETTING TO RS-170 MODE

Parameters on the Macintosh II video card can be set for an RS-170 mode. RS-170 is an interlaced 59.97 Hz signal. While the board is capable of a 60 Hz RS-170 Mode (nearer to the NTSC rate), the problem of screen refresh remains. At the 60 Hz setting, the card operates an interlace scan that causes fields to be updated at 30 Hz (because of the odd and even retrace of lines that occurs in 60 Hz interlace mode). This produces an NTSC signal on the green pin without the color burst (black and white video).

This signal is not compatible with Apple High Resolution Monitors, but can be viewed in color from a MultiSync monitor or an Apple Color RGB monitor when the red, green, and blue video lines are connected.

ANOTHER SOLUTION

Because of the extended retrace time of 60Hz interlace, the phosphor decay rate of most monitors causes the phosphors to "turn off" long before the phosphor is rescanned. This causes flickering. To correct this, do either of two things:

- Use high persistence phosphors (Princeton Graphics and Commodore carry long persistence phosphor displays).
- Set the video card to display 60 Hz non-interlace (progressive scan). This cannot be done through software. It is possible only by a hardware modification to the card.

THE MODIFICATION

NOTE: For those lacking the technical resources for this modification, TVA Production Services provides a computer synchronization service. TVA has been synching computers since 1983 and has the experience necessary to successfully synchronize your computer.

You will need a new pixel clock (to replace the 30.24 Mhz clock on the video card) or an external pixel clock generator. If you have a variable clock generator, you can probably do the necessary slowing of the video signal. Simply remove the oscillator from the card and substitute your pixel clock signal.

However, this will not synchronize the camera to the screen. As a result, a visible horizontal retrace line might appear from the offset of the two timings. The best method is to use an external adjustable clock and "tune" it to move the retrace line off the screen. Finally, reset to the proper clock timing.

You may have noticed that a clock is not the same as the sync. The clock is the master timing device that controls each pixel period and all timing parameters--including vertical and horizontal scans. The vertical sync is normally 66.67 Hz and the horizontal sync is 35Khz on a Macintosh II video card. A 59.94 Hz non-interlaced screen for the Macintosh II video needs an oscillator (pixel clock) of 27.188807 Mhz.

If you do not want to remove the clock, do two things. First, ground pin 14 of the J3 connector on the card (pins 1,2,3,5,7,9, and 11 of J3 are grounds). Second, connect the external clock to pin 4 of the J3 connector. This will cause the external clock to be selected over the Macintosh II video card's 30.24 Mhz oscillator. Most signal synthesizers provide a BNC signal function-out connector.

Note: The J3 connector is not the external port but a connector on the video card. Usually, it is located under the serial number sticker.

The generator must be on for the video card to function. Set the waveform for a 5-volt square wave at 27.188807 MHz. This method also voids your warranty. The pinouts and signal descriptions of the Macintosh II Video Card are in the article, "Macintosh II Video Signals."

On an Apple High Resolution RGB Monitor, using a 27.188807 MHz clock, the video locks at 59.94 Hz, but still needs to be adjusted for horizontal sync.

WARNING: This technique voids any warranty on the monitor and may result in damage to the monitor and even physical injury to an untrained technician.

To make this adjustment, tune the H-Hold pot on the main logic board of the monitor. If the display fails to black, it is probably because the H-Hold pot is out of adjustment.

Note: RasterOps makes a video board which can accomplish this as well.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3061



Tech Info Library

Black Box Corp.

Revised: 7/6/93
Security: Everyone

Black Box Corp.

=====

Article Created: 02/18/91
Article Reviewed: 07/06/93
Article Updated: 07/06/93

Black Box Corp.

P.O. Box 12800
Pittsburgh, PA 15241

412-746-5500
412-746-5530 (Customer Relations)

412-746-0746 Fax

Telex: 6848082

Company Profile:
Hardware, specializing in data communications.

Article Change History: 07/06/93 Phone number removed

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3063



Tech Info Library

Television Associates, Inc. (TVA)

Revised: 4/3/97
Security: Everyone

Television Associates, Inc. (TVA)

=====

Article Created: 7 July 1988
Article Reviewed/Updated: 3 April 1997

Television Associates, Inc. (TVA)

2410 Charleston Road
Mountain View, CA 94043-1683

415-967-6040

Fax: 415-964-2453

Company Profile:
Software, specializing in video production, duplication, and multimedia, and
closed captioning

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3064



Tech Info Library

Apple FAX Modem: No Background File Transfers Under MultiFinder

Revised: 10/16/91
Security: Everyone

Apple FAX Modem: No Background File Transfers Under MultiFinder

=====

Article Created: 23 June 1988
Article Last Reviewed: 16 October 1991
Article Last Updated: 16 October 1991

TOPIC -----

Does the AppleFax Modem support background file transfers under MultiFinder?

DISCUSSION -----

The Apple FAX Modem does not support background file transfers when launched under MultiFinder. The FAX software needs to be the foreground application under MultiFinder before files can be sent or received.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:3065



Tech Info Library

Macintosh II: Most Paint Programs Need Colors Set To 2 Grays

Revised: 8/4/89
Security: Everyone

Macintosh II: Most Paint Programs Need Colors Set To "2 Grays"

=====

Article Created: 23 June 1988
Article Last Reviewed: 31 July 1992
Article Last Updated: 31 July 1992

TOPIC -----

On my Macintosh II, I can't get MacPaint, FullPaint, SuperPaint, or other painting programs to work correctly. The menubar disappears, and sometimes the programs don't function at all.

DISCUSSION -----

Try resetting the color or gray scale setting. Go to the Control Panel and select the "Monitors" icon, then set the color to "gray" and the number of gray scales to "2".

If you are still having problems, call the developers of your specific software packages and check on compatibility with your Macintosh and the version of system software you are running. You may need to upgrade your software.

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Tech Info Library Article Number:3066



Tech Info Library

LocalTalk PC Card: IRQ Issues

Revised: 12/19/91
Security: Everyone

LocalTalk PC Card: IRQ Issues

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Article Created: 23 June 1988
Article Last Reviewed: 30 July 1992
Article Last Updated: 30 July 1992

TOPIC -----

The LocalTalk (formerly known as "AppleTalk") PC Card can function only with IRQ (interrupt request priorities) 2, IRQ 3, or IRQ 4.

DISCUSSION -----

Many users of the LocalTalk PC Card have found that if the IBM PC has two serial ports, each serial port uses an IRQ, and that the PC itself uses the third one - leaving none available for the LocalTalk PC Card.

The best solution is to move one of the IRQ lines coming from one of the serial ports (examine the manufacturer's instructions before doing this) to an IRQ number that can't be used by the LocalTalk PC Card - like IRQ 5. Then, the LocalTalk PC Card can use the newly-available IRQ line 2, 3, or 4.

Users who have installed LocalTalk PC cards in IBM PC-ATs find that nearly all of the IBM PC-ATs use both COM1 and COM2. So, using IRQ priority level 4 or 3 is not possible, and they are forced to consider using IRQ2 -- but the LocalTalk PC card manual states: "Do NOT use switch 3 (IRQ2) if you have an IBM PC-AT computer."

Fortunately, if you have AppleShare PC 2.0, this configuration (using IRQ priority level 2) should work fine.

Quoting the README.DOC file on the AppleShare PC disk:

"The 2.0 version of the LocalTalk PC Card driver (AppleTalk.EXE, included on this disk) does not use the card's hardware interrupt feature. This means that the default card settings will not conflict with a COM2 serial port,

as your card manual indicates. The 2.0 driver ignores the /cardint command line parameter."

Some users of the LocalTalk PC card have reported problems after installing the card and changing the IRQ (Interrupt Request line). Symptoms have included:

- When printing to "*", the LaserWriter just hangs.
- Selecting a printer causes the "Looking for AppleTalk Zones" to blink forever.
- AppleShare hangs also.
- Inter-Poll can't see anything from the outside.
- Reloading software doesn't help.
- Reducing the number of machines on the network doesn't help.
- Changing LocalTalk PC cards doesn't help.

The key is that you must tell DOS when you change IRQs. To do this, put the command "/cardint=x" in the AUTOEXEC.BAT file of your boot disk, where x is the new IRQ level (either 2 or 4). Check the LocalTalk PC card manual under the subtitle "Driver configuration options" for more information.

Note: The LocalTalk PC Card is now owned, sold, distributed and supported by Farallon Computing. Search under "Farallon" for contact information.

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Tech Info Library Article Number:3067



Tech Info Library

ProDOS 1.4 And Backup II 1.1 Incompatibility: Use ProDOS 1.1.1

Revised: 7/7/88
Security: Everyone

ProDOS 1.4 And Backup II 1.1 Incompatibility: Use ProDOS 1.1.1

=====

This article last reviewed: 23 June 1988

ProDOS version 1.4 does not work properly with Backup II version 1.1 -- using them together results in "random errors". If you already have Backup II v1.1, you can work around the problem by launching with a disk configured for ProDOS 1.1.1.

This incompatibility has been solved in the current version of Backup II (v1.1.1), which will function perfectly well with ProDOS 1.4, and which also solves some other problems found in Backup II v1.1, such as failures of the "restore" function.

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Tech Info Library Article Number:3068



Tech Info Library

TOPS Installer: Problem With System Incompatibility

Revised: 4/9/91
Security: Everyone

TOPS Installer: Problem With System Incompatibility

=====

This article last reviewed: 23 June 1988

Some users who have multi-Macintosh networks (all running the most current System) using TOPS as a file server have experienced system bombs and problems initializing new disks.

TOPS comes on a single-sided disk that also contains System 3.2. When TOPS is installed from this original disk, it copies resources from System 3.2 and places them in the System file of the destination volume -- usually a more current system, incompatible with System 3.2.

The solution is to copy TOPS from its original disk onto a double-sided disk (current systems will not fit on a single-sided disk), then use the System Installer to update this new disk with the version of System and Finder your destination volume is using. Now TOPS can be installed without causing problems.

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Tech Info Library Article Number:3069



Tech Info Library

Apple FAX Modem Work With Any Standard FAX

Revised: 8/3/89
Security: Everyone

Apple FAX Modem Work With Any Standard FAX

=====

This article last reviewed: 13 July 1988

Apple's FAX modem, operating over normal telephone lines, will transmit or receive documents with any FAX device that supports the CCITT Group 3 FAX standard.

All modems take digital information and modulate it into analog form when sending a file. The information is then demodulated into digital form when the file is received.

The CCITT Group 3 standard is in use by the majority of installed FAX devices.

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Tech Info Library Article Number:3070



Tech Info Library

EtherTalk and AppleTalk bridges: An Installation Example

Revised: 11/2/88
Security: Everyone

EtherTalk and AppleTalk bridges: An Installation Example

=====

This article last reviewed: 27 June 1988

Here is a brief description of a corporation's Ethernet installation. They have used Ethernet as the primary communications medium for achieving transparent connectivity throughout the system.

Number of segments	> 50
Number of nodes	>500
Span of network	> 20 KM (using Ethernet bridges)
Number of campuses	4
Number of Kinetics FastPath Gateways	= 9

When a Macintosh communicates with a device on another network, it routes packets over AppleTalk bridges. The Macintosh's RTMP stub algorithm does not keep track of which bridge supports which Network ID. Rather, it listens to RTMP routing packets and keeps track of which one it heard from last.

When the Macintosh is ready to transmit a packet to another network, it sends the packet to the bridge it heard from last. This bridge then forwards the packet to the correct bridge, which then completes the request. The Macintosh uses this two-bridge routing throughout the transfer.

If the intermediate bridge is on another campus or in another state, this algorithm can seriously affect throughput and Ethernet loading. For example, printing to an Apple LaserWriter is approximately 25% slower on Ethernet than on LocalTalk.

Is there a suggested solution for this problem?

The speed decrease is accurate. When printing, the packets must cross LocalTalk to get to the printer. For example, assign a time unit of 4 to identify the time a packet takes to travel across a LocalTalk network and a time unit of 1 to a large EtherTalk network. Thus, a packet crossing EtherTalk and LocalTalk to a LocalTalk device takes a total of 5 time units, whereas a packet on the LocalTalk network takes only 4 time units.

The EtherTalk-originated packets cannot move "faster" than those from a LocalTalk system on a LocalTalk network. The EtherTalk packets additionally must travel across the EtherTalk network to get to the LocalTalk network. To decrease the time it takes to get control back when printing, use LaserShare servers connected directly to Ethernet with EtherTalk boards. This eliminates the LocalTalk slowdown.

The routing of the RTMP packets is a problem, which Apple is looking into. Part of the reason is because AppleTalk was created on the 128K and 512K Macintoshes, and memory was not available for large routing tables capable of mapping a large network. The time difference while taking trips to the source of the last RTMP packet is generally not significant.

The Apple specifications for the RTMP suggest 10-second update periods. This time has been found to work correctly at sites with 60 or more FastPaths. If you have trouble with extreme slowdowns, troubleshoot the network. That is, reinstall software and check all Net and Zone ID's. One site (containing a large, varied network) was able to remove a network zone-delay problem by updating all FastPaths and InterBridges to current ROM and Software levels.

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Tech Info Library Article Number:3071



Tech Info Library

EtherTalk: The Number of Possible Nodes in a System

Revised: 7/13/88
Security: Everyone

EtherTalk: The Number of Possible Nodes in a System

=====

This article last reviewed: 27 June 1988

Here is a brief description of a corporation's EtherNet installation. They have used Ethernet as the primary communications medium for achieving transparent connectivity throughout the system.

Number of segments	> 50
Number of nodes	>500
Span of network	> 20 KM (using Ethernet bridges)
Number of campuses	4
Number of Kinetics FastPath Gateways	= 9

The current Node ID field allows only 127 individual stations. Does that mean only 128 Macintosh computers can be connected directly to the Ethernet? What about software bridges like Liaison? What about GatorBox, which promises to become the InterBridge of EtherTalk?

EtherTalk makes no distinction (through node IDs) between users and servers. Rather, it reserves two nodes for "send to self" and "send to all" addresses. This leaves 254 of 256 possible nodes available for users and servers.

Customers use Zone and Net IDs to divide users into zones. Gatorbox's Ethernet-to-Ethernet bridging capabilities allow EtherTalk networks to extend well beyond the 254 nodes available. Under Gatorbox, you can directly connect Ethernet Macintoshes by routing Zone and Net IDs similar to the zoning done with InterBridges.

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Tech Info Library Article Number:3072



Tech Info Library

Apple IIGS to Apple Modem 300/1200 Cabling

Revised: 8/3/89
Security: Everyone

Apple IIGS to Apple Modem 300/1200 Cabling

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This article last reviewed: 16 June 1988

The Peripheral Interface Guide (page 5.8) states that the Apple Modem 300/1200 590-0197 cable works with the 590-0341 (M01089 Beige) or 590-0553 (M0199 Platinum) on an Apple IIGS, Macintosh Plus, Macintosh SE, or a Macintosh II. You can also build a cable using the pinouts listed below.

Apple IIGS (Mini-8) 30/1200 Modem (DB-9)

HSKO	2	2	DSR
TD-	3	9	TD
Gnd	4	8	GND
RD-	5	5	RD
TD+	6	3	SGND
RD+	8	8	SGND

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Tech Info Library Article Number:3073



Tech Info Library

A/UX: Setting sash Variable From the Menu

Revised: 9/18/92
Security: Everyone

A/UX: Setting "sash" Variable From the Menu

Article Created: 29 June 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Setting "sash" Variable From the Menu

DISCUSSION -----

If the root directory controller number is changed in the Preferences menu, the "sash" variable is not adjusted to the new value. To pick up the change, you have quit from the "sash" and rerun it.

Normally, when "sash" is first invoked, it performs a "chroot" command to whatever "sash" variable "ROOT" was set to in a previous session. If the root directory controller number in the menu is changed, the "sash" variable "ROOT" changes to that number -- but it is not "export"ed.

To launch A/UX from a different drive, choose either of the following methods:

- Issue the "launch (x, y, z)/unix" command.
- or -
- 1) Issue the "chroot (x, y, z)" command (where x is the SCSI ID, y is SCSI subdrive ID, and z is the slice number in the drive).
- 2) Then issue the "launch" command. (Selecting a different controller number from the menu or setting the variable "ROOT" immediately does not affect the change on the root directory.)

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Tech Info Library Article Number:3077



Tech Info Library

Inter•Poll: Why It Doesn't Detect Bridges or Gateways

Revised: 3/1/93
Security: Everyone

Inter•Poll: Why It Doesn't Detect Bridges or Gateways

=====

This article last reviewed: 29 June 1988

Some users have noticed that Inter•Poll only displays local bridges when encountering bridges or gateways, like a FastPath. For example, in an office with an Ethernet backbone and three Kinetics FastPaths, Inter•Poll finds all devices on AppleTalk and Ethernet. However, it ignores two FastPaths that reside outside the Inter•Poll workstation zone.

The reason for this is that unnamed network devices, like bridges or gateways, do not respond to echo packets outside their assigned networks. Therefore, Inter•Poll fails to detect bridges and gateways located beyond the local network.

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Tech Info Library Article Number:3078



Tech Info Library

NuBus Card: Parts for Custom-Building

Revised: 6/17/92
Security: Everyone

NuBus Card: Parts for Custom-Building

=====
Article Created: 29 June 1988
Article Last Reviewed: 16 June 1992
Article Last Updated:

TOPIC -----

This article contains questions and answers about sources and specifications, for anyone interested in building a NuBus video card to drive multiple displays from one board.

DISCUSSION -----

- Where do you purchase male DIN 8 connectors?

Male DIN 8 connectors are available from Advanced Electronic Support Products, Inc. (AESP).

- What is the Belden part number for the video cable used by Apple? If this is not available, what is the cable configuration, and can it be expanded to 50 feet?

The Macintosh II video cable is custom built for Apple. However, companies (like Advanced Electronic Support Products) manufacture cables to client specifications.

Here is the cable configuration. There are four video signals and four ground pins on the Macintosh II video card DB-15 female connector:

- 1 RED VIDEO GROUND
- 2 RED (analog)
- 3 CSYNC* (TTL) used by Apple Displays
- 4 CSYNC GROUND
- 5 GREEN + CSYNC (analog) used for monochrome; CSYNC not used by Apple displays
- 6 GREEN CSYNC GROUND

9	BLUE	(analog)
12	GREEN + CSYNC	(analog) not used
13	BLUE VIDEO GROUND	

*Composite sync (vertical and horizontal).

A custom video extension cable for a Macintosh II requires a cable with a 75-ohm impedance value (usually RG59U standard coaxial video cable). Each line ties to the appropriate pin at the connector, and the shield is connected to the signal ground pin.

Impedance: 75 ohm
Signal Strength: 13.33 amps, 1 volt

The video signal can be extended 1,000 feet (although there is some color loss at this distance). The signal should be reliable up to 50 feet. The distance is limited by the loss of signal strength through cable resistance.

For more information on pin-outs, cable wiring, and technical specifications, search on "Macintosh II Video Signals".

- Who manufactures the edge connectors--the connector that goes out the back of the Macintosh II, not the motherboard connector--for the NuBus cards?

A source for the video connectors (Part Number:745782-6) is AMP, Inc., of Southeastern, PA.

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Tech Info Library Article Number:3079



Tech Info Library

SCSI Cable Connection and Termination

Revised: 7/8/92
Security: Everyone

SCSI Cable Connection and Termination

=====

Article Created: 29 June 1988
Article Last Reviewed: 9 July 1992
Article Last Updated: 9 July 1992

TOPIC -----

This article answers three questions about SCSI cable connection and termination. The answers are most significant where users share SCSI devices.

DISCUSSION -----

1. Can a SCSI system cable with terminator be left connected to a Macintosh without the other cable end being attached to a SCSI device?

Yes, the SCSI can be terminated and connected. There shouldn't be any difficulties with this setup.

2. If a SCSI peripheral is attached (for example, system cable to HD 80SC), can the SCSI extender or SCSI peripheral cable be attached to the last "real" SCSI device with the other end of the cable left unattached?

SCSI cables can be connected to the last SCSI device in the chain, provided they are terminated.

3. Does a terminator go on the last device, or at the end of the last piece of cable?

As long as these cables are connected, they are considered part of the SCSI bus -- whether connected to a device or not. As part of the bus, you need to terminate the cables.

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Tech Info Library Article Number:3080



Tech Info Library

MacTerminal: MacroMaker for Sending Escape Sequences

Revised: 6/24/90
Security: Everyone

MacTerminal: MacroMaker for Sending Escape Sequences

=====

This article last reviewed: 29 June 1988

Some users want to send application commands with the keypad in VT100 mode. However, when using MTMOD, the keypad sends only the character code for the number, while showing the correct setting on the screen. For example, when you press the "9" on the keypad, MacTerminal sends "9" instead of Esc,"O","Y".

To send an escape sequence instead of a number use MacroMaker, part of the recently released System Software 6.0. MacroMaker can send the escape sequence correctly. You can redefine the "9" on the keypad, because MacroMaker understands the keypad as a separate set of keys.

Note: MTMOD does not work with later versions of MacTerminal.

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Tech Info Library Article Number:3081



Tech Info Library

Macintosh Boot Block: General Information

Revised: 7/13/88
Security: Everyone

Macintosh Boot Block: General Information

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This article last reviewed: 29 June 1988

Here are three questions about boot blocks and how they are copied to System disks. The appropriate answer follows each question.

1. When are the boot blocks copied to a new hard disk or floppy?

The boot blocks are copied to a new hard disk or floppy disk when you copy a System file to the disk.

2. Are the boot blocks taken from the "boot" resource in the System file being copied or from the boot blocks on the source disk?

The boot blocks are taken from the source disk unless that disk does not have a valid copy of the boot blocks or the disk is a file server. In these cases, the boot blocks are taken from the "boot" resource in the System file being copied.

3. Are the boot blocks rewritten when copying a new System and Finder to a System disk?

Yes, the boot blocks are rewritten when copying a new System file to a disk.

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Tech Info Library Article Number:3082



Tech Info Library

HyperCard and Excessive Disk Access

Revised: 6/24/90
Security: Everyone

HyperCard and Excessive Disk Access

=====

This article last reviewed: 29 June 1988

Some users have reported seemingly continuous disk activity when running large HyperCard stacks (in one case, 13000 cards amounting to 3.8M of disk space). Disconnecting from a network made no difference.

The probable reason for continuous access is a HyperTalk statement that adds or changes information in a field on a card. Any of three commands (particularly when paired with a large number of cards) can contribute to excessive disk access:

- the time
- the long time
- on idle

Putting "the time" into a field changes the field and thereby initiates drive access -- once every minute.

Putting "the long time" into a field causes access once every second! HyperCard performance may suffer from such continual disk I/O process.

Also, an "on idle" routine in a stack script or a card script of the current card initiates disk I/O, because it adds or updates information within the stack.

Slow down with large stacks also occurs when HyperCard preloads card index pages during idle time. With many cards, there are many card index pages. The first pages are unloaded when the latter ones are loaded. Therefore, HyperCard keeps loading them, which results in the disk activity. HyperCard 1.2 seems to correct the problem.

To summarize: where appropriate, change from "the long time" to "the time" and review the use of "on idle" routines. Also check for any XCMDs and XFCNs that may be initiating disk activity.

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Tech Info Library Article Number:3085



Tech Info Library

Northern Telecom

Revised: 10/8/93
Security: Everyone

Northern Telecom

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Article Created: 13 July 1988
Article Reviewed/Updated: 8 October 1993

Northern Telecom, Inc.
U.S. Headquarters
200 Athens Way
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800-667-8437
615-734-5116 (fax)

Northern Telecom
Data Center Division
100 Phoenix Drive
Ann Arbor, MI 48108
313-973-4000
313-973-4572 Fax

Company Profile:
Hardware and software, specializing in data communications, including
video conferencing (videoconference) products.

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Tech Info Library Article Number:3086



Tech Info Library

Macintosh System Software 6.0 Compatibility Report (Part 1 of 3)

Revised: 5/31/89
Security: Everyone

Macintosh System Software 6.0 Compatibility Report (Part 1 of 3)

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This article last reviewed: 29 June 1988

This is the first part of a three part article:

System Software 6.0 Compatibility Report

This is a list of third-party software applications that have been tested by Apple with System Software 6.0.

(NOTE: This report does not cover all Macintosh application software, only those applications that have been reviewed by Apple. For more detailed information on the compatibility of any application with System Software 6.0, please contact the developer or publisher of the software in question.)

This examination did not test every feature of the application. Instead, each application was run through a series of "quick looks" -- launch, open a simple document, open DAs, Cut/Paste, and print.

This report reflects compatibility information on the version number of the application listed, and does not necessarily reflect the most current version of a particular application.

Testing was done on Macintosh(R) Plus, Macintosh SE and Macintosh II personal computers using System Software 6.0. Single Finder was not used unless a memory constraint existed. Ratings for all applications indicate performance of the application running on release CPUs and released System Software.

Where possible, Apple will update this list with new information. Please check HotLinks on AppleLink for updated versions of this report.

The following applications have been rated with an 'A' status.
A = The application runs under System Software 6.0.

Product	CPU	Company
Intermail 1.42	ALL	Interactive
LightSpeed C 2.15	ALL	Think Technologies
Mac3D 2.0	Mac +, SE	Challenger SW
SmartCom II 2.0	ALL	Hayes
ComServe 1.0	ALL	Info Sphere Inc.
DeskTop Express 1.0	ALL	Dow Jones
Dow Jones MMGR+ 1.01	ALL	Dow Jones
FileMaker Plus 2.1	ALL	Forethought
Graphidex 1.01	ALL	BrainPower
MacPaint 2.0	ALL	Claris
MacProject II 1.	ALL	Claris
MacSpin 1.5	ALL	D2 SW
Math View 1.00	ALL	BrainPower
MicroPhone 1.0	ALL	Software Ventures
Picture Base 1.2.3	ALL	Symmetry
ReadySetGo 4.0	ALL	LetraSet
Smart Scrap & Clipper	ALL	Solutions, Int.
SpellsWell 1.3J	ALL	Greene, Johnson
StatView 512+ 1.1	ALL	Abacus
Turbo Pascal 1.1	ALL	Borland
Versa Term Pro 1.20	ALL	Peripherals Computers
MacTerminal 2.3	ALL	Apple Computer, Inc.

This article continued in: "Macintosh System Software 6.0 Compatibility Report (Part 2 of 3)".

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Tech Info Library Article Number:3087



Tech Info Library

LaserWriter IINTX: PostScript Batch Mode For Serial PCs (8/95)

Revised: 8/23/95
Security: Everyone

LaserWriter IINTX: PostScript Batch Mode For Serial PCs (8/95)

=====

Article Created: 13 July 1988
Article Reviewed/Updated: 22 August 1995

TOPIC -----

This article describes printing from a PC using a serial connection.

DISCUSSION -----

If you need to print with LaserWriter IINTX in PostScript batch mode, here is the method for serial connection from a PC:

Step 1: Connection

Connect a serial cable from the PC serial port to the printer serial port.

Step 2: Switch Settings

While the LaserWriter IINTX is off, set the printers DIP switch settings to:

- 1 UP
- 2 DOWN
- 3 UP
- 4 UP
- 5 UP
- 6 DOWN

These switch settings place the LaserWriter IINTX in:

PostScript Batch Mode,
RS-232 9600 Baud,
RS-422 9600 Baud,
7 data bits, No parity, 1 stop bit, with DTR/DSR handshake.

Step 3: Power On

Turn on the LaserWriter IINTX and the PC. After a few seconds, the LaserWriter IINTX will print a test page containing its current settings.

Step 4: PostScript Code

The PostScript code that follows is used to switch the LaserWriter IINTX into 8 data bit PostScript batch mode.

NOTE:

The "%" characters and following comments are not necessary, and can be omitted when typing in the program. Also, instances of control-z in parentheses mean hold down the control key and press z. The word "Return" in parentheses means to press your carriage return or enter key.

CAUTION:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter IINTX into a condition requiring service.

- For DTR/DSR, from the DOS prompt, type:

COPY CON POST.TXT

```
serverdict begin 0 exitserver %This exits the PostScript server loop
statusdict begin           %We're using an operator from statusdict
25 9600 68 setsccbatch      %set 25 pin port for 9600 Baud, 8, 1, DTR
end                         %Pop statusdict from the dictionary stack
(control-z) (Return)
```

- For XON/XOFF, from the DOS prompt, type:

COPY CON POST.TXT

```
serverdict begin 0 exitserver %This exits the PostScript server loop
statusdict begin           %Start modifying settings
25 9600 64 setsccbatch      %set 25 pin port for 9600 Baud, 8, 1, Xon/Xoff
end                         %Pop statusdict from the dictionary stack
(control-z) (Return)
```

Step 5: Batch File

A batch file needs to be created to set up the PCs communications port and to send the PostScript code to the printer. From the DOS prompt, type:

COPY CON POST.BAT

```
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
copy POST.TXT LPT1
(control-z) (Return)
```

Step 6: Change LaserWriter IINTX to 8 data bit PostScript batch mode

Type POST from the DOS prompt to set the NTX to 8 data bit PostScript batch mode. The printer will internally switch from the 7 data bit PostScript batch mode to 8 data bit PostScript batch mode.

Step 7: PostScript Code for testing the mode change

CAUTION:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter IINTX into a condition requiring service.

The PostScript code that follows tests the mode change. From the DOS prompt, type:

```
COPY CON TEST.TXT
/Helvetica findfont 14 scalefont setfont
72 720 moveto
(The Options number for the 25-pin port is:) show
statusdict begin 25 sccbatch 10 string cvs show
pop showpage
(control-z) (Return)
```

Step 8: Test mode change

To test the mode change, type the following from the DOS prompt:
COPY TEST.TXT LPT1

After a few seconds, the LaserWriter IINTX should print a page containing the following text:

'The Options number for the 25-pin port is xx'

Where 'xx' equals the third number in the third line of the PostScript code created in step 4 (either 68 or 64).

Problem Solving
=====

LaserWriter IINTX does not print after test PostScript code is sent:

Check cable connections and paper supply to the LaserWriter IINTX. Turn off any spooler commands that may be implemented on the PC. Check the PostScript files (POST.TXT) and (TEST.TXT) along with the (POST.BAT) batch file for any typing errors. If none are apparent, we suggest re-typing the code of both PostScript files from scratch.

If the LaserWriter IINTX does not receive the PostScript code character for character, the mode change or test will not work. Once the code has been re-typed, send it to the LaserWriter IINTX. If the LaserWriter IINTX prints the page, then all is well. If the LaserWriter IINTX does nothing, then start over from step 1.

LaserWriter IINTX will not print from within an application:

Check the applications print settings to ensure that it is sending output to LPT1 or COM1. The application must support PostScript, and must be set to output to a PostScript device.

Article Change History:

22 Aug 1995 - Made minor corrections.

09 Feb 1995 - Added PostScript caution and reformatted article.

Support Information Services

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Tech Info Library Article Number:3088



Tech Info Library

LW IINTX In HP LaserJet+ Emulation Mode: Serial Connect From PC

Revised: 3/4/90
Security: Everyone

LW IINTX In HP LaserJet+ Emulation Mode: Serial Connect From PC

=====

This article last reviewed: 7 July 1988

Here are a few suggestions about printing to LaserWriter IINTX in LaserJet Plus emulation mode:

(NOTE: You may experience a communications problem printing in this configuration when the emulation mode is set by the DIP switches. The problem appears when printing the upper 127 ASCII characters and graphics, and is due to the serial port DIP setting of 7 data bits.)

Currently, there is no available method of software switching back to PostScript or any other emulation mode once leaving the PostScript mode. The correct method is to change the DIP switch settings and wait 30 seconds. If PostScript is desired, switch one should be set to DOWN. Wait 30 seconds and place switch back to the UP position.

To attain full emulation, the serial port can be configured as follows:

1) Connection:

Connect an Apple 25 pin Serial cable (590-0037) to an Apple Modem Eliminator (590-0166). Take one end and connect it to the 25 pin serial port on the LaserWriter IINTX. Connect the other end to a serial port on the PC.

(NOTE: Most serial ports for PCs use a male DB 25 connector. Since both ends of the Apple 25 pin serial cable are male, a female-to-female gender changer is required for connection to a PC serial port. An alternative is to use a straight pin-to-pin female-to-male DB 25 cable.)

2) Switch Settings:

While the LaserWriter IINTX is off, set the printers DIP switch settings to:

- 1 UP
- 2 DOWN

3 UP
4 UP
5 UP
6 DOWN

These switch settings place the LaserWriter IINTX in:

PostScript Batch Mode,
RS-232 9600 Baud,
RS-422 9600 Baud,
7 data bits, No parity check, 1 stop bit, with DTR/DSR handshake.

3) Power On:

Turn on the LaserWriter IINTX and the PC. After a few seconds the LaserWriter II will print a test page containing its current settings (listed above).

4) PostScript Code:

The PostScript code that follows is used to switch the LaserWriter II into LaserJet+ emulation mode.

(NOTE: The "%" characters and following comments are not necessary. Remove them when typing in the program.)

- For DTR/DSR, from the DOS prompt type:

```
COPY CON POST.TXT
serverdict begin 0 exitserver %This exits the printer server loop.
statusdict begin %Start modifying settings.
9 0 3 setsccbatch %Turns off the RS-422 9600 Baud port.
25 9600 68 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data
                        bits.
5 setsoftwareiomode %Set printer to HP LaserJet+ mode.
0 sethardwareiomode %Set communications mode to serial.
end %This is the end of the mode switch routine.
systemdict/quit get exec %Force an error to cause a system start test
                           page.
(control z) %The keyboard control key and the z key together.
              This ends text editing and saves the file.
```

- For XON/XOFF, from the DOS prompt type:

```
COPY CON POST.TXT
serverdict begin 0 exitserver %This exits the printer server loop.
statusdict begin %Start modifying settings.
9 0 3 setsccbatch %Turns off the RS-422 9600 Baud port.
25 9600 64 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data
                        bits.
5 setsoftwareiomode %Set printer to HP LaserJet+ mode.
0 sethardwareiomode %Set communications mode to serial.
end %This is the end of the mode switch routine.
```

```
systemdict/quit get exec      %Force an error to cause a system start test
                                page.
(control z)                   %The keyboard control key and the z key together.
                                This ends text editing and saves the file.
```

5) Batch File:

A batch file must be created to set up the PC's communications port, and to send the PostScript code to the printer.

From the DOS prompt type:

```
COPY CON HPMODE.BAT
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
TYPE POST.TXT > LPT1
(control z)
```

6) Change LaserWriter II to LaserJet+ emulation mode:

Type HPMODE from the DOS prompt to set the NTX to LaserJet+ emulation. The printer will internally switch from the PostScript Batch mode to LaserJet+ emulation, and after a few seconds it will print a test page displaying the new settings.

Your printer will now print graphics and text properly with the emulation provided by the Adobe PostScript ROMS. This fixes the problem of losing the 8th data bit for special text and graphics. This also fixes the problem of the "print screen" keyboard command not functioning.

Problem Solving:

LaserWriter II will not print test page to indicate HP emulation mode:

Check cable connections and paper supply to the LaserWriter II. Turn off any spooler commands that may be implemented on the PC.

Check the PostScript file (POST.TXT) and the batch file (HPMODE.BAT) for any typing errors. If none are apparent, try re-typing the PostScript code from scratch. If the LaserWriter II does not receive the PostScript code character for character, the mode change will not work.

Once the code has been re-typed, send it to the LaserWriter II. If the LaserWriter II prints a test page, then all is well. If the LaserWriter II prints out a page containing the PostScript code, it is in LaserJet+ emulation mode, but a test page will not be printed (there is an error in the PostScript code that instructs the LaserWriter II to print a test page, but the mode switch was successful). If the LaserWriter II does nothing, then start over from step 1.

LaserWriter II will not print from within an application:

Check the applications print settings to ensure that it is sending output to

LPT1 or COM1. The application also must be set up to print to a LaserJet+ using Times, Helvetica, or Courier.

NOTE: When printing from DOS, always follow the print command with a 'Control D'. A 'Control D' tells the LaserWriter II that the data transmission is completed and printing can now begin. The best method is to create another text file with a 'Control D' inside.

Enter the following from the DOS prompt-

```
COPY CON D.TXT
```

```
(Control D)
```

```
(Control Z) or (F6)
```

Now, you make a batch file to send the end of page marker to the printer.

From the DOS prompt enter-

```
COPY CON END.BAT
```

```
TYPE D.TXT > LPT1
```

```
(Control Z) or (F6)
```

After doing a TYPE or Print Screen or DIR to the printer, just type END, and the printer will print any remaining data in the buffer.

If your print job does not have a Control-D (end of page) character, you will have to wait for your print job until a time-out, or until another job is printed that is larger than a page.

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Tech Info Library Article Number:3089



Tech Info Library

LaserWriter IINT: Serial PostScript Batch Mode From DOS (8/95)

Revised: 8/23/95
Security: Everyone

LaserWriter IINT: Serial PostScript Batch Mode From DOS (8/95)

=====

Article Created: 7 July 1988
Article Reviewed/Updated: 22 August 1995

TOPIC -----

If you need to print with LaserWriter IINT in PostScript batch mode, here is the method for serial connection from a PC.

DISCUSSION -----

Step 1

Connection:

Connect a 25-pin Serial cable from the LaserWriter IINT to the serial port on the MS-DOS PC.

Step 2

Switch Settings:

While the LaserWriter IINT is off, set the printers DIP switch settings to:

- 1 UP
- 2 DOWN

These switch settings place the LaserWriter IINT in:

PostScript Batch Mode,
RS-232 9600 Baud,
RS-422 9600 Baud,
7 data bits, No parity check, 1 stop bit, with XON/XOFF handshake.

Step 3

Power On:

Turn on the LaserWriter IINTX and the PC. After a few seconds the LaserWriter IINT will print a test page containing its current settings (listed above).

Step 4

PostScript Code:

The PostScript code that follows is used to switch the LaserWriter IINT into 8 data bit PostScript batch mode.

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter IINT into a condition requiring service.

NOTE:

The "%" characters and following comments are not necessary. Remove them when typing in the program.

- For DTR/DSR, from the DOS prompt type:

COPY CON POST.TXT

%=====

% Begin PostScript Code

%

serverdict begin 0 exitserver %This exits the printer server loop.

statusdict begin %Start modifying settings.

25 9600 68 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data bits.

% end %This is the end of the mode switch routine.

(control z) %The keyboard control key and the z key together. This ends text editing and saves the file.

% End PostScript Code

%=====

- For XON/XOFF, from the DOS prompt type:

COPY CON POST.TXT

%=====

% Begin PostScript Code

%

serverdict begin 0 exitserver %This exits the printer server loop

statusdict begin %Start modifying settings

25 9600 64 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data bits

% end %This is the end of the mode switch routine

(control z) %The keyboard control key and the z key together. This ends text editing and saves the file.

%

```
% End PostScript Code
```

```
%=====
```

Step 5

Batch File:

A batch file must be created to set up the PC's communications port, and to send the PostScript code to the printer. From the DOS prompt type:

```
COPY CON POST.BAT
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
TYPE POST.TXT > LPT1
(control z)
```

Step 6

Change LaserWriter IINT to 8 data bit PostScript batch mode:

Type POST from the DOS prompt to set the NT to 8 data bit PostScript batch mode. The printer will switch internally from the 7 data bit PostScript batch mode to 8 data bit PostScript batch mode.

Step 7

PostScript Code for testing the mode change:

The PostScript code that follows tests the mode change. From the DOS prompt type:

```
COPY CON TEST.TXT
%=====
% Begin PostScript Code
%
/Helvetica findfont 14 scalefont setfont
30 500 moveto
(The Options number for the 25-pin port is:)
show statusdict begin 25 sccbatch 10 string cvs show
pop showpage
(control z)
%
% End PostScript Code
%=====
```

Step 8

Test mode change:

To test the mode change, type the following from the DOS prompt:

```
TYPE TEST.TXT > LPT1
```

After a few seconds, the LaserWriter IINT should print a page containing the

following text:

'The Options number for the 25-pin port is xx'

Where 'xx' equals the third number in the third line of the PostScript code created in step 4 (either 68 or 64).

NOTE:

The LaserWriter IINT does not support software switching between configurations. For example, PostScript and Diablo or LocalTalk and serial.

Problem Solving:
=====

LaserWriter IINT does not print after test PostScript code is sent:

Check cable connections and paper supply to the LaserWriter IINT. Turn off any spooler commands that may be implemented on the PC.

Check the PostScript files (POST.TXT) and (TEST.TXT) along with the (POST.BAT) batch file for any typing errors. If none are apparent, we suggest re-typing the code of both PostScript files from scratch. If the LaserWriter IINT does not receive the PostScript code character for character, the mode change or test will not work. If you have the ability to copy and paste the PostScript Code into a text file, you should do this instead.

Once the code has been re-typed, send it to the LaserWriter IINT. If the LaserWriter IINT prints the page, then all is well. If the LaserWriter IINT does nothing, then start over from step 1.

LaserWriter IINT will not print from within an application:

Check the applications print settings to ensure that it is sending output to LPT1 or COM1. The application must support PostScript, and must be set to output to a PostScript device.

Article Change History:

22 Aug 1995 - Made minor corrections.

21 Feb 1995 - Reformatted and added PostScript caution.

Support Information Services

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Tech Info Library Article Number:3090



Tech Info Library

Stevens Creek Software

Revised: 4/3/97
Security: Everyone

Stevens Creek Software

=====

Article Created: 14 July 1988
Article Reviewed/Updated: 3 April 1997

Stevens Creek Software

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Cupertino, CA 95014

408-725-0424

Fax: 408-725-0424

Company Profile:
Software, specializing in HP plotter emulators and a special database for athletes.

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Tech Info Library Article Number:3092



Tech Info Library

EtherTalk Speeds Up MultiUser AppleShare Application

Revised: 12/6/89
Security: Everyone

EtherTalk Speeds Up MultiUser AppleShare Application

=====

This article last reviewed: 29 June 1988

Here are the results of some tests performed on the EtherTalk card and the AppleTalk card. They suggest some speed advantages using the EtherTalk card in a multiuser AppleShare application.

Some Hints:

The EtherTalk boards come preset for thick-wire EtherNet. To change them to thin-wire it is necessary to move a jumper on the board. This procedure is well documented in the EtherTalk Interface Card manual.

It is also mandatory that the cable itself be terminated on both ends. Terminators must fit on the open end of the T-connection on each card. (The testing group took one from their FastPath for these explorations.)

Also, the EtherTalk software must be installed into the system via Installer, so that it shows up in the Control Panel as a Network icon on the left, which -- when selected -- allows you to choose the built-in port or the EtherTalk card. If you are connected to two networks, one AppleTalk and one EtherTalk, you can toggle back and forth with the Network icon in the Control Panel. This is not a gateway from one to the other, just a means of switching back and forth.

The Benchmarks:

As part of the test, some benchmarks were performed which are documented below. The numbers are representative of the differences, but will change according to configurations, number of users, and the application being run.

- For one benchmark, Excel was opened on the server from the workstation in both modes: EtherTalk and AppleTalk. The AppleTalk time was roughly 30 seconds; the EtherTalk time roughly 19 seconds -- approximately 37% faster.
- Another test was running HyperCard from the server itself. EtherTalk seemed

to be at least 95% as fast at showing all cards in the address stack as HyperCard would be from a local hard disk.

Finally, the most comprehensive benchmarks. Two sets of tests were run, called Configuration A and Configuration B.

Configuration A:

- These were done on a Macintosh Plus-based system with a 4MB Macintosh Plus as the AppleShare server, and a 2MB Macintosh Plus as the workstation. RAM cache on the server was automatically set by AppleShare v1.1 at 32k.

(NOTE: Larger RAM cache settings actually slowed down the response times!)

The workstation was operating from a single floppy containing Finder 6.0b2 and System 4.1. The application 4th Dimension (runtime version) was running off the file server, since there wasn't room for the application on the floppy containing System and Finder. 4th Dimension was running in multi-user mode with one user. The network was AppleTalk, both cable and protocol. The server used an Apple 40SC drive.

Configuration B:

- Tests were done on a Macintosh II based system with a 5mb Macintosh II as the workstation and a 1mb Macintosh II as the server. Both Macintoshes were connected using EtherTalk. The server disk was the same Apple 40SC as in Configuration A. Again, the tests were done with the workstation using a floppy-based System v4.1 and Finder v6.0b2. RAM cache settings were not recorded. 4th Dimension was running in multi-user mode with one user off the server volume.

The time tests involved two parts: timing the launch of the data base, then timing a series of typical operations. These operations typically involved reading and/or writing data, and the reading of screen layouts (mostly dialogs).

The Results:

TEST	CONF. A (seconds)	CONF. B (seconds)	% DIFFERENCE
----	-----	-----	-----
Launch	359	124	35%
Oper.1	12	5	42%
Oper.2	26	10	38%
Oper.3	15	6	40%
Oper.4	28	11	39%
Oper.5	18	6	33%

Oper.6

35

12

34%

It appears from these tests that the Macintosh II in combination with EtherTalk is two or three times faster than the Macintosh Plus with LocalTalk cabling.

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Tech Info Library Article Number:3093



Tech Info Library

LaserWriter Documents Sent To Off-Line Printer Won't Re-direct

Revised: 7/14/88
Security: Everyone

LaserWriter Documents Sent To Off-Line Printer Won't Re-direct

=====

This article last reviewed: 28 June 1988

LaserWriters using Print Monitor have a problem when they spool to a printer that is no longer connected to the network, but is still named in the Chooser.

Spooled files may only be printed by Print Monitor, and only to a LaserWriter with the same name as selected in Chooser at the time the document was spooled. If a file is spooled to a printer that is no longer attached to the network, it can't be re-directed. You must instead tell the Print Monitor to "wait until later", or cancel the job outright.

The only current workaround is to use the Namer to re-name a printer attached to the network, then change its name back after the job has been printed.

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Tech Info Library Article Number:3094



Tech Info Library

Macintosh System Software 6.0 Compatibility Report (Part 2 of 3)

Revised: 5/31/89
Security: Everyone

Macintosh System Software 6.0 Compatibility Report (Part 2 of 3)

=====

This article last reviewed: 29 June 1988

This article continued from: "Macintosh System Software 6.0 Compatibility Report (Part 1 of 3)".

System Software 6.0 Compatibility Report as of 6/20/88

The following applications have been rated with a 'B' status. B = The following applications have cosmetic (display only) problems running under System Software 6.0.

Product	CPU	Company
Mac3D 2.0	Mac II	Challenger SW
MacDraw 1.9.5	ALL	Claris
Excel 1.06	ALL	Microsoft
Adobe Illustrator 1.1	ALL	Adobe
Color More 1.1c	Mac+, SE	Living VideoText
CricketDraw 1.1	ALL	Cricket SW
CricketGraph 1.2	ALL	Cricket SW
FullPaint 1.1	ALL	Ann Arbor
MacWrite 5.0	ALL	Claris
MGMStation 2.09	Mac+, SE	Micro CAD/CAM
Pixel Paint	Mac II	SuperMac

PowerPoint 1.0	ALL	Forethought
Red Ryder 10.3	ALL	Freesoft Computer
Graphic Works 1.1	ALL	MindScape
Suitcase 1.2.1	ALL	Software Supply
CAT 1.00	ALL	Chang Labs
Microsoft Word 3.02	ALL	Microsoft
Plain & Simple 1.02	ALL	Great Plains
Frame Mac 1.10	ALL	Compuneering

This article continued in: "Macintosh System Software 6.0 Compatibility Report, (Part 3 of 3)".

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Tech Info Library Article Number:3097



Tech Info Library

Macintosh System Software 6.0 Compatibility Report (3 of 3) 3/93

Revised: 3/15/93
Security: Everyone

Macintosh System Software 6.0 Compatibility Report (3 of 3) 3/93

Article Created: 14 July 1988

Article Change History

03/15/93 - UPDATED
• Acius now ACI US, Inc.

This article continued from: "Macintosh System Software 6.0 Compatibility Report (Part 2 of 3)".

System Software 6.0 Compatibility Report as of 6/20/88

The following applications have been rated with a 'C' status. C = The application is now having minor loss of functionality running under System Software 6.0.

Product	CPU	Company
Color More 1.1c	Mac II	Living VideoText

Invisible files created by Color More 1.1c are visible and openable from the desktop. Color More 1.1c also rated a "C" with System 5.0.

Frame Mac 1.10	Mac II	Compuneering
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Documents must be opened from within the application. Frame Mac 1.10 also rated a "C" with System 5.0.

Guide 1.0	ALL	Owl, Int.
-----------	-----	-----------

Unable to print to LaserWriter and/or ImageWriter. No work-around known. Guide 1.0 also rated a "C" with System 5.0

Mac Cogo 1.01	ALL	Compuneering
Problem with the circle tool at 200% page resolution. Mac Cogo 1.01 is not compatible with MacroMaker. Mac Cogo 1.01 also rated a "C" with System 5.0.		
Works 1.1	ALL	Microsoft
Works 1.1 is not compatible with MultiFinder, use single Finder until you receive Microsoft's planned patch.		
McNet 2.12	ALL	Argus Software
Screen refresh problems with 2.12. You are only able to switch layers under MultiFinder while in Drawing mode. McNet 2.12 also rated a "C" with System 5.0.		
MGMStation 2.09	Mac II	Micro CAD/CAM
Numerous screen refresh problems. Small problems with application errors. Overall rating of MGMStation 2.09 has not changed from 5.0 to 6.0.		
Omnis 3+ 3.24	ALL	Blyth
You should increase default memory size in "Get Info" Box on Mac IIs. Avoid using "Go To Utilities" in the "Options" menu. Omnis 3+ 3.24 also rated a "C" with System 5.0.		
PageMaker 2.0a	ALL	Aldus
Avoid using MacroMaker with PageMaker 2.0a. PageMaker 2.0a also rated a "C" with System 5.0.		
Trapeze 2.0	Mac+,SE	Data Tailor
No new problems introduced with 6.0 on the Plus or SE. Trapeze 2.0 also rated a "C" with System 5.0 on the Plus and SE.		
VideoWorks II 2.0	ALL	Broderbund
VideoWorks II 2.0 draws over active windows under MultiFinder. VideoWorks II 2.0 also rated a "C" with System 5.0.		
Microsoft File 1.05	ALL	Microsoft
"Page Setup" is not displayed after selecting another printer with Chooser. File also has some screen refresh problems after using DAs.		
WriteNow 1.07	ALL	Ann Arbor
Cut & Paste is not fully reliable. Margin problems when printing in 2 column.		

The following applications have been rated with a 'D' status. D = The application is experiencing major loss of functionality and is not compatible with System Software 6.0.

Product	CPU	Company
DBase Mac 1.0	ALL	Borland International

With the exception of an incompatibility with MacroMaker, no other problems were introduced with 6.0

MacDraft 1.2a	ALL	
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Due to numerous compatibility problems, do not use MacDraft 1.2a with 6.0.

MacTex 2.0	ALL	STL Systems
------------	-----	-------------

System hangs as you attempt to launch on Mac SE or II. Numerous crashes on the Plus. MacTex also rated a "D" with System 5.0.

ResEdit 1.1b3	ALL	
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Due to numerous compatibility problems, do not use ResEdit 1.1b3 with 6.0. ResEdit 1.1b3 also rated a "D" with System 5.0.

Trapeze 2.0	Mac II	Data Tailor
-------------	--------	-------------

Due to numerous compatibility problems, do not use ResEdit Trapeze 2.0 with 6.0 on a Mac II. Trapeze 2.0 also rated a "D" with System 5.0 on the Mac II.

4th Dimension 1.0.4	ALL	ACI US, Inc.
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4D crashes as you enter the 4D Layout Editor.4D rated a "C" with System 5.0.

Insight General Ledger 2.0	ALL	Layered
----------------------------	-----	---------

Insight General Ledger 2.0 is not able to print. Avoid using the "Change Company" option under "File". Insight General Ledger 2.0 had been rated as a "C" with System 5.0

Excel 1.04	ALL	Microsoft
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System crash as you open an Excel document if MacroMaker was launched at start-up. Excel users should be using Excel 1.06 or 1.5 with System 6.0.

This concludes "Macintosh System Software 6.0 Compatibility Report"

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Tech Info Library Article Number:3098



Tech Info Library

APPLE III: Keyboard Replacement

Revised: 7/17/92
Security: Everyone

APPLE III: Keyboard Replacement

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Article Created: 12 July 1988
Article Last Reviewed: 17 July 1992
Article Last Updated:

The Apple III keyboard (P/N 661-91022) is no longer available as a replacement module. If you order an Apple III keyboard, you will receive an Apple III Plus keyboard, keyboard cover, and keyboard encoder ROM. To replace a defective Apple III keyboard, exchange the old Apple III keyboard, keyboard cover, and keyboard encoder ROM with the new Apple III Plus keyboard, keyboard cover, and keyboard encoder ROM.

BEFORE YOU START: Familiarize yourself with the Apple III Technical Procedures. Be sure to follow proper ESD procedures.

Materials Required:

- Grounded workbench and wriststrap
- Medium flatblade screwdriver
- Small phillips screwdriver
- Medium phillips screwdriver
- IC extractor
- Keyboard encoder ROM P/N 342-0136 (included with new keyboard)
- Apple III Plus keyboard (included with new keyboard)
- Apple III Plus keyboard cover (included with new keyboard)

Replacement Procedure: To replace the Apple III keyboard:

1. Power off the Apple III and disconnect the AC power cord.
2. Disconnect all other external cables from the back of the Apple III.
3. Remove the main logic assembly (refer to Section 2, Take-Apart, of the Apple III and Apple III Plus Technical Procedures).

4. Place the main logic board on a grounded workbench pad and put on your grounding wriststrap.
5. Locate the keyboard encoder ROM at coordinate J13 on the main logic board and verify that it is the old ROM (P/N 341-0035).
6. Using an IC extractor, remove the old ROM at location J13.
7. Install the new keyboard encoder ROM (P/N 342-0136) at the same location, J13 on the main logic board. There is a small notch on the ROM. This notch should face away from the output connectors.
8. Replace the main logic assembly (refer to Section 2, Take-Apart, of the Apple III and Apple III Plus Technical Procedures).
9. Remove the keyboard and keyboard cover (refer to Section 2, Take-Apart, of the Apple III and Apple III Plus Technical Procedures).
10. Install the Apple III Plus keyboard and keyboard cover (refer to Section 2, Take-Apart, of the Apple III and Apple III Plus Technical Procedures).

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Tech Info Library Article Number:3099



Tech Info Library

Hard Disk 20: Hard Drive Diagnostic 4.0 Problem/Cure

Revised: 7/22/88
Security: Everyone

Hard Disk 20: Hard Drive Diagnostic 4.0 Problem/Cure

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This article last reviewed: 8 July 1988

PROBLEM: When testing a Hard Disk 20 (i.e. non SCSI hard disk) on a Macintosh SE, the test will always fail a Hard Disk 20, even if the Hard Disk 20 is a known good unit.

CURE: This problem with Hard Disk Drive Diagnostic 4.0 is caused by a bug in the software which will cause it to falsely fail a non-SCSI Hard Disk 20 when tested on a Macintosh SE. The solution is to test the Hard Disk 20 ONLY on a Macintosh Plus.

PROBLEM: If the Hard Disk 20 was formatted on a Macintosh SE, the HD20 still fails MacTest Drive Diagnostics 4.0 on the Macintosh Plus.

CURE: Format the Hard Disk 20 on the Macintosh Plus and test the drive again.

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Tech Info Library Article Number:3100



Tech Info Library

ImageWriter & Dot Matrix Printer: Stops Printing Problem/Cure

Revised: 7/22/88
Security: Everyone

ImageWriter & Dot Matrix Printer: Stops Printing Problem/Cure

=====

This article last reviewed: 13 July 1988

Problem:

Symptom #1: During printing the Dot Matrix Printer or Imagewriter may halt printing for no apparent reason and the select light will go out. Restarting the printer or pressing the select button seems to correct the problem temporarily.

Symptom #2: During power up the carriage assembly moves to the far left position as in the normal power on sequence, but the carriage assembly then fails to make its characteristic 3/4" movement to the right and then back to the left position. In addition, the 'select' light fails to appear. Powering off and on the printer repeatedly fails to produce the results above unless the carriage assembly is moved to somewhere other than the far left position. Instead, the platen will advance and retract approximately 1/4", and the carriage assembly will move approx. 1/16" and halt.

Cure:

Replace the right margin disable switch which is available for the Imagewriter as part # 970-0715 (Power Switch/Control Panel Cable Assembly). For the DMP the switch itself needs to be removed and a replacement keyswitch (705-0079) needs to be used since the complete assembly is no longer available for the DMP.

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Tech Info Library Article Number:3101



Tech Info Library

LaserWriter: LaserJet Plus Emulation Over AppleTalk

Revised: 9/10/92
Security: Everyone

LaserWriter: LaserJet Plus Emulation Over AppleTalk

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Article Created: 12 July 1988

Article Change History

08/20/92 - UPDATED

- To include Personal LaserWriter NT and NTR.

TOPIC -----

How can I print from a PC with the LaserWriter IINTX or Personal LaserWriter NT or NTR in HP LaserJet Plus emulation mode over AppleTalk (that is, with an AppleTalk card in the PC)?

DISCUSSION -----

Here are the steps you need to follow. The article concludes with two troubleshooting sections:

Step One: Connection

1) Connect a LocalTalk connector box to the appropriate port on the PC. (An AppleTalk interface card must be installed inside the PC.)

2) Connect another LocalTalk connector box to the LaserWriter.

3) Using a LocalTalk cable, connect the two connector boxes together.

(Note: If more devices are to be added to the AppleTalk network, consult the manual that came with your LocalTalk cables and connectors.)

Step Two: Switch Settings

While the LaserWriter is off, set the printer switches according to the

following list.

These switch settings place the LaserWriter IINTX in PostScript Batch Mode, AppleTalk:

- 1 UP
- 2 UP
- 3 UP
- 4 UP
- 5 UP (any position)
- 6 UP (any position)

To place the Personal LaserWriter NT in PostScript Batch Mode, AppleTalk, set the single pushwheel switch to either position "0" or "7."

Step Three: Power On

Turn on the LaserWriter and the PC. After a few seconds, the LaserWriter prints a test page containing its current settings.

Step Four: Change LaserWriter to LaserJet Plus Emulation Mode

The following PostScript code switches the LaserWriter into LaserJet Plus emulation mode. Note: The "%" characters and following comments are not necessary. You can omit them when typing in the program. From the DOS prompt, type the following:

```
COPY CON POST.TXT
serverdict begin 0 exitserver %This exits the printer server loop.
statusdict begin           %Start modifying settings.
5 setsoftwareiomode        %Set printer to HP LaserJet+ mode.
end                         %This is the end of the mode switch routine.
systemdict/quit get exec   %Force an error to cause a system start test
                           %page.
(control z)                %Press the keyboard control key and the z key
                           %together. This ends text editing and saves
                           %the file.
```

Step Five: PostScript Code

Send the PostScript file through a PostScript download utility (included with most AppleTalk interface cards for the PC) or an application like Microsoft Word (which contains PostScript code printing). Once the file has been sent, the printer switches internally from the PostScript batch mode to LaserJet Plus emulation. After a few seconds, it prints a test page displaying the new settings.

Note: Currently, there is no method of software switching back to PostScript or to any other emulation mode once you have left PostScript mode on the LaserWriter. The correct method is to change the DIP switch settings and wait 30 seconds. If you want to use PostScript, switch one should be set to DOWN. Wait 30 seconds and move the switch back to the UP position.

Troubleshooting: No test page

If the LaserWriter will not print a test page to indicate HP emulation mode, follow these steps:

- 1) Check cable, connector box connections, and paper supply to the LaserWriter.
- 2) Turn off any spooler commands that may be implemented on the PC.
- 3) Check the PostScript file (POST.TXT) for any typing errors. If none are apparent, we suggest re-typing the PostScript code from scratch. If the LaserWriter II does not get the PostScript code character for character, the mode change will not work.
- 4) Once the code has been retyped, send it to the LaserWriter. If the LaserWriter prints a test page, then all is well. If the LaserWriter prints out a page containing the PostScript code, it is in LaserJet+ emulation mode, but a test page will not be printed. (There is an error in the PostScript code that instructs the LaserWriter IINTX to print a test page, but the mode switch was successful.)
- 5) If the LaserWriter does nothing, then start over from step 1.

Troubleshooting: No printing from within an application

If the LaserWriter won't print from within an application, check these things:

- The application must also be set up to print to a LaserJet+ using Times, Helvetica, or Courier.
- The application must be capable of sending output over an AppleTalk network.

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Tech Info Library Article Number:3103



Tech Info Library

LW IINTX: Diablo 630 Emulation Mode

Revised: 1/7/92
Security: Everyone

LW IINTX: Diablo 630 Emulation Mode

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Article Created: 12 July 1988
Article Last Reviewed: 29 May 1991
Article Last Updated:

TOPIC -----

If you want to print from a PC to a LaserWriter IINTX set in Diablo 630 emulation mode, this article contains some suggestions.

DISCUSSION -----

Preliminary Note: You may experience a problem printing to the LaserWriter IINTX in Diablo mode when the emulation mode is set by the DIP switches. A communication problem appears when printing the upper 127 ASCII characters. The problem is related to the serial port DIP setting of 7 data bits. To attain full emulation, the serial port can be configured detailed in this article.

Currently, there is no method of software switching back to PostScript or to any other emulation mode once you have left the PostScript mode. The correct method is to change the DIP switch settings and wait 30 seconds. If you want to use PostScript, switch one should be set to DOWN. Wait 30 seconds and move the switch back to the UP position.

Step One: Connection

Connect an Apple 25-pin Serial cable (590-0037) to an Apple Modem Eliminator (590-0166). Take one end and connect it to the 25-pin serial port on the LaserWriter IINTX. Connect the other end to a serial port on the PC.

Note: Most serial ports for PCs use a male DB-25 connector. Because both ends of the Apple 25-pin serial cable are male, you need a female-to-female "gender mender" to connect to a PC serial port. Alternatively, you can use a straight, pin-to-pin, female-to-male, DB-25 cable.

Step Two: Switch Settings

While the LaserWriter IINTX is off, set these printer DIP switch settings:

- 1 UP
- 2 DOWN
- 3 UP
- 4 UP
- 5 UP
- 6 DOWN

These switch settings place the LaserWriter IINTX in:

- PostScript Batch Mode,
- RS-232 9600 Baud
- RS-422 9600 Baud
- 7 data bits, No parity check, 1 stop bit, with DTR/DSR handshake

Step Three: Power On

Turn on the LaserWriter IINTX and the PC. After a few seconds, the LaserWriter IINTX prints a test page containing its current settings (listed above).

Step Four: PostScript Code

The following PostScript code switches the LaserWriter II into LaserJet+ emulation mode. Note: The "%" characters and following comments are not necessary. You can omit them when typing in the program. For DTR/DSR, from the DOS prompt type:

```
COPY CON POST.TXT
serverdict begin 0 exitserver %This exits the printer server loop.
statusdict begin           %Start modifying stuff.
9 0 3 setsccbatch          %Turns off the RS-422 9600 Baud port.
25 9600 68 setsccbatch     %set the 25 pin RS-232 9600 Baud port-8 data
                           bits.
2 setsoftwareiomode        %Set printer to Diablo 630 emulation mode.
0 sethardwareiomode        %Set communications mode to serial.
end                        %This is the end of the mode switch routine.
systemdict/quit get exec   %Set the printer up for a fall.
30 400 moveto              %Force an error to cause a system start test
                           %page.
(control z)                %The keyboard control key and the z key
                           %together. This ends text editing and saves
                           %the file.
```

For XON/XOFF, from the DOS prompt type:

```
COPY CON POST.TXT
serverdict begin 0 exitserver %This exits the printer server loop.
statusdict begin           %Start modifying stuff.
9 0 3 setsccbatch          %Turns off the RS-422 9600 Baud port.
```

```
25 9600 64 setscbatch      %set the 25 pin RS-232 9600 Baud port-8 data
                           %bits.
2 setsoftwareiomode       %Set printer to Diablo 630 emulation mode.
0 sethardwareiomode       %Set communications mode to serial.
end                       %This is the end of the mode switch routine.
systemdict/quit get exec  %Set the printer up for a fall.
30 400 moveto             %Force an error to cause a system start test
                           %page.
(control z)               %The keyboard control key and the z key
                           %together. This ends text editing and saves
                           %the file.
```

Step Five: Batch File

You need to create a batch file to set up the PC's communications port and to send the PostScript code to the printer.

1) From the DOS prompt, type:

```
COPY CON DIABLO.BAT
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
TYPE POST.TXT > LPT1
```

2) Press Control-Z to conclude.

Step Six: Change LaserWriter IINTX to Diablo 630 Emulation Mode

Type DIABLO from the DOS prompt to set the NTX to Diablo emulation. The printer switches internally from the PostScript Batch mode to Diablo 630 emulation. After a few seconds, it prints a test page displaying the new settings.

Your printer will now print graphics and text properly with the emulation provided by the Adobe PostScript ROMS. This solves the problem of losing the 8th data bit for special text and graphics, as well as the problem with the "print screen" keyboard command not functioning.

Troubleshooting: No test page

The LaserWriter IINTX will not print a test page to indicate Diablo emulation mode, follow these steps:

- 1) Check cable, connector box connections, and paper supply to the LaserWriter II.
- 2) Turn off any spooler commands that may be implemented on the PC.
- 3) Check the PostScript file (POST.TXT) and the batch file (DIABLO.BAT) for any typing errors. If none is apparent, we suggest re-typing the PostScript code from scratch. If the LaserWriter II does not get the PostScript code character-for-character, the mode change will not work.

- 4) Once the code has been retyped, send it to the LaserWriter IINTX. If the LaserWriter IINTX prints a test page, then all is well. If the LaserWriter IINTX prints out a page containing the PostScript code, it is in Diablo emulation mode, but a test page will not be printed. (There is an error in the PostScript code that instructs the LaserWriter IINTX to print a test page, but the mode switch was successful.)
- 5) If the LaserWriter II does nothing, then start over from step 1.

Troubleshooting: Not printing from an application

If the LaserWriter IINTX will not print from within an application, do these steps:

- 1) Check the applications print settings to ensure that it is sending output to LPT1 or COM1.

(Note: When printing from DOS, always follow the print command with a "Control D." A "Control D" tells the LaserWriter IINTX that the data transmission is completed and printing can now begin. The best method is to create another text file with a "Control D" inside.

Enter the following from the DOS prompt:

```
COPY CON D.TXT
(Control D)
(Control Z) or (F6)
```

Now, make a batch file to send the end-of-page marker to the printer.

From the DOS prompt, enter:

```
COPY CON END.BAT
TYPE D.TXT > LPT1
(Control Z) or (F6)
```

After doing a TYPE or Print Screen or DIR to the printer, just type END, and the printer will print any remaining data in the buffer.

If your print job does not have a Control-D (end of page) character, you will have to wait for a job time-out for your print job or until another job (that is longer than a page) is printed.

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Tech Info Library Article Number:3104



Tech Info Library

ImageWriter LQ & A4: Workaround To Paper Length Problem

Revised: 8/1/88
Security: Everyone

ImageWriter LQ & A4: Workaround To Paper Length Problem

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This article last reviewed: 12 July 1988

An ImageWriter LQ has a DIP switch that configures the form length of continuous paper at 11 or 12 inches. A4 is 11.69 inches. When printing from the driver with A4 and continuous paper selected, the perforation position changes -- for obvious reasons.

Changing the position of switch 1-4 (Page Length) makes no difference in the page length when printing from a Macintosh. The page length remains 11 inches whether switch 1-4 is in the ON or OFF position.

To correct this problem, change the position of switch 1-5 (Perforation Skip), then select A4 page length and continuous paper, and print.

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Tech Info Library Article Number:3105



Tech Info Library

Printing Envelopes With the LaserWriter II

Revised: 8/1/88
Security: Everyone

Printing Envelopes With the LaserWriter II

=====

This article last reviewed: 12 July 1988

Here are the answers to some commonly asked questions about printing envelopes on the LaserWriter II, including:

- Which printer driver supports the envelope sheet feeder for the LaserWriter II family?
- What paper size must be chosen in the Page Setup menu?
- Can a custom paper size be used?

There is no need to specify paper sizes when printing envelopes on the LaserWriter II.

Tests done with Microsoft Works (v1.1), Microsoft Word (v3.01), and MacWrite (v4.6) showed differences in the address block locations when printed from these applications. However, most were correctable within a couple of tries.

Printing parameters used for all three applications:

Left Margin	3.5"
Carriage Returns from Top	12
Courier Font	14-point

The results:

	Distance from Left Edge of Envelope	Distance from Top of Envelope
Microsoft Works	4-5/16"	1-9/16"
Microsoft Word	4-5/16"	1-3/8"
MacWrite 4.6	3-7/8"	1"

..TIL03106-Printing_Envelopes_With_the_LaserWriter_II_(TA38884).pdf

As a workaround, save the print parameters for envelopes in a file, and use this file only to print to envelopes.

The LaserWriter IINT/NTX manual specifications state: "Type the address block with an upper margin of approximately 1.5 inches and a left margin that centers it on the screen." Use this as a starting point for final placement.

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Tech Info Library Article Number:3106



Tech Info Library

LaserWriter IINTX: Calculating Font Caching RAM

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX: Calculating Font Caching RAM

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This article last reviewed: 12 July 1988

Some users who want to use multiple font families have asked if there is a way to estimate or calculate the increase in font cache size to allow more font families in the cache.

This is to enable the user to find the minimum amount of RAM to add to the LaserWriter IINTX that will allow the use of several font families without having to download the font per print request.

Font cache and display list sizes are persistent parameters and can be reset.

The default values (in hex) are:

	2MB or less	3MB or less	3MB or more
Font Cache size	\$28600	\$33000	10% RAM size
Display List size	\$10000	\$15000	10% RAM size

These parameters allow setting the RAM allocation in the LaserWriter IINTX. HOWEVER, if used incorrectly, they could have DISASTROUS effects on the operation of the printer. (Normally these values are set to 0 in the EEROM (ZPRAM), which tells the printer to calculate the necessary sizes based on RAM size.)

As determined from the above information, if the LaserWriter has 3MB or more RAM installed, the printer allocates 10% to font cache. If you know the amount of space each font family occupies, you can determine the amount of memory available for font caching.

Or, a hard disk can be attached to the LaserWriter IINTX, which would have more than enough space for a group of font families.

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Tech Info Library Article Number:3107



Tech Info Library

System 5.0 PrintMonitor & LW Drivers: Use Install Method

Revised: 11/4/91
Security: Everyone

System 5.0 PrintMonitor & LW Drivers: Use "Install" Method

=====

Article Created: 1 August 1988
Article Last Reviewed: 4 November 1991
Article Last Updated: 3 May 1989

TOPIC -----

This articles describes using PrintMonitor with System Software 5.0

DISCUSSION -----

Some Macintosh users, running System 5.0, have discovered that background printing can't be selected in the Chooser.

This situation is probably due to the PrintMonitor and LaserWriter drivers having been installed using the "drag" method.

With System Software 5.0, it is necessary to use the "Background LaserWriter (5.0)" installer script on System Tools Disk #2 to use background printing. After installation is complete you must select a LaserWriter as the print device; then the Background Printing option becomes available in the Chooser window.

(NOTE: This procedure is NOT necessary with System Software 6.0.)

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Tech Info Library Article Number:3109



Tech Info Library

LaserWriter IINTX: Does Not Support 6MB Configuration

Revised: 4/4/91
Security: Everyone

LaserWriter IINTX: Does Not Support 6MB Configuration

=====

Article Created: 13 July 1988
Article Last Reviewed: 28 March 1991
Article Last Updated: 28 March 1991

TOPIC -----

Can you upgrade the LaserWriter IINTX memory to 6MB of RAM?

DISCUSSION -----

Specified memory configurations for the LaserWriter IINTX include 2, 3, 4, 5, 8, 9, and 12MB RAM.

The 6MB configuration is not supported by the LaserWriter IINTX hardware and firmware. It is physically possible to plug 6MB into the printer, but the printer will not recognize the extra memory.

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Tech Info Library Article Number:3110



Tech Info Library

AppleShare 1.1 & Srvr 2.0 Limit: Maximum Of 16 Volumes (11/94)

Revised: 11/21/94
Security: Everyone

AppleShare 1.1 & Srvr 2.0 Limit: Maximum Of 16 Volumes (11/94)

=====

Article Created: 13 July 1988
Article Reviewed/Updated: 21 November 1994

TOPIC -----

Some users are operating large databanks as an AppleShare server. When you create more than 16 partitions on their databank, you will find that only 16 of those partitions appear upon accessing AppleShare (V1.1, File Server v2.0).

DISCUSSION -----

The reason for this has remained undocumented so far, and there has been some confusion as to whether this is a Finder problem or an AppleShare problem.

AppleShare v1.1 and AppleShare File Server v2.0 provide access to a MAXIMUM of 16 server volumes. It is NOT a Finder limitation; there is no way around this limit.

Article Change History:
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3112



Tech Info Library

ImageWriter LQ: Matching ImageWriter II Font Sizes

Revised: 8/1/88
Security: Everyone

ImageWriter LQ: Matching ImageWriter II Font Sizes

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This article last reviewed: 14 July 1988

Some customers using ImageWriter II to fill in forms from a database application find that when they switch to ImageWriter LQ -- using the same fonts and sizes as with ImageWriter II -- the printouts no longer fit the forms.

Such a problem may be due the print quality -- "Draft", "Faster", or "Best" -- used with the application.

When the application in use makes a Font Manager call to print text, the Font Manager asks the printer driver for a scaling call to relate the printer font to the screen font.

When "Faster" quality printing is requested, the ImageWriter LQ printer driver returns a scaling factor of 1:1 (both horizontal and vertical). The Font Manager then selects the exact same font as on the screen and sends it for printing.

The ImageWriter LQ printer driver sets the ImageWriter LQ to standard resolution graphics mode, turns on boldface printing, and sends the text to the printer as graphics data. (Boldface printing is used to print in "Faster" mode because the print density would be too light at the standard-resolution vertical dot spacing of 72 dpi.)

If "Best" quality printing is used, the Font Manager finds a font to use. If there is no 3X font installed in the system, the Font Manager uses:

1. A font twice the size desired, or:
2. A font half the size desired, or:
3. The next larger font it can find, or:
4. The next smaller font it can find.

If there is no screen font for the selected font family, the Font Manager uses a default application font. If there is no default application font, the Font

Manager uses a default system font.

Also, the ImageWriter LQ, even in draft mode, has a minimum character width of 12 dots with a normal size of 16 dots, while the ImageWriter II has a MAXIMUM character width of 7 dots with a normal size of 5 dots. This is why the fonts are closer in size to the LaserWriter than the ImageWriter.

A possible workaround is to remove any font size larger than the size being printed, which forces the Font Manager to use the next smaller size it finds. The Font Manager may scale the smaller font to an appropriate size for printing from 4th Dimension.

Further information on Macintosh fonts for the ImageWriter LQ begins on page 215 of Appendix D in the ImageWriter LQ Reference manual from Addison-Wesley (ISBN 0-201-17751-X).

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Tech Info Library Article Number:3113



Tech Info Library

ImageWriter II: Makes Buzzing Noise And Left Margin Changes

Revised: 8/2/88
Security: Everyone

ImageWriter II: Makes Buzzing Noise And Left Margin Changes

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This article last reviewed: 18 July 1988

PROBLEM:

During printing, the ImageWriter II carriage assembly may intermittently halt its movement and the carriage motor momentarily makes a high pitched buzzing noise. If the printer does resume its printing then the left margin will have changed and the carriage assembly will probably have moved to the right, forcing the carriage to slam into the right side of the frame.

IDENTIFYING THE PROBLEM:

Turn the power off on the printer and remove the top cover. Slowly move the carriage assembly back and forth across the full length of the carriage and watch the metal paper deflector for any slight movement of 1/16th of an inch or less. If movement is present, it indicates that the paper guide is rubbing on the paper deflector.

CURE:

This problem occurs when the paper guide has been improperly adjusted, and the paper thickness lever is in its full forward position. It can also occur if the paper deflector (076-0008) is defective.

In order to correct this problem try reinstalling the paper guide according to the procedures in the ImageWriter II Technical Procedures. If the problem still occurs then it may be necessary to replace the paper deflector. After performing the adjustment verify that the paper deflector no longer moves when sliding the carriage back and forth.

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Tech Info Library Article Number:3114



Tech Info Library

LaserWriter Plus: Additional Error Codes

Revised: 8/2/88
Security: Everyone

LaserWriter Plus: Additional Error Codes

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This article last reviewed: 19 July 1988

BEFORE YOU START: Familiarize yourself with the LaserWriter Plus Technical Procedures, especially the section on the built-in diagnostics. Be sure to follow proper ESD procedures when replacing ROMs.

When using the built-in diagnostics of a LaserWriter Plus to test the ROMs on the I/O board sometimes an error code will occur that the instructions on error codes in the LaserWriter Technical Procedures do not help with. In all cases, only the last 2 digits of the error code are of concern.

If the error code was 024B 1E08, the H3 ROM and/or L3 ROM would be bad, or if the error code was 024B 1E80 the H7 ROM and/or L7 ROM would be bad, as indicated by the LaserWriter Plus Technical Procedures.

Now, suppose that the error code received is 024B 1E0A, since only the last 2 numbers have any meaning, we are only concerned with the "0A" at the end of the number. Decoding this error code becomes more difficult because error codes are added together if more than 1 ROM set is detected by the built-in diagnostics as bad. The addition is of 2 hexadecimal numbers so adding 08 and 02 in hexadecimal gives 0A and the corresponding error code 024B 1E0A. This indicates that there are possibly 4 bad ROMs instead of 2. In this example, the possible bad ROMs are either H3 or L3 and H1 or L1. This was determined by checking which of the error codes would add up to "0A" in hexadecimal.

Below is a list of other possible error codes that might occur. This list only gives those that would indicate 2 or more sets of bad ROMs. Be sure to refer to the LaserWriter Technical Procedures for more information on running and diagnosing the failures. If the error codes indicate several bad ROMs, the failure may be in the I/O board itself. In this event, exchange the I/O board.

ERROR CODE	POSSIBLE BAD ROMs
------------	-------------------

Lower Bank	
------------	--

XXXX XX03	H1, L1, H0, L0
XXXX XX05	H2, L2, H0, L0
XXXX XX06	H2, L2, H1, L1
XXXX XX07	H2, L2, H1, L1, H0, L0
XXXX XX09	H3, L3, H0, L0
XXXX XX0A	H3, L3, H1, L1
XXXX XX0B	H3, L3, H2, L2, H0, L0
XXXX XX0C	H3, L3, H2, L2
XXXX XX0D	H3, L3, H2, L2, H0, L0
XXXX XX0E	H3, L3, H2, L2, H1, L1
XXXX XX0F	All 8 LOWER ROMs

Upper Bank

XXXX XX03	H5, L5, H4, L4
XXXX XX50	H6, L6, H4, L4
XXXX XX60	H6, L6, H5, L5
XXXX XX70	H6, L6, H5, L5, H4, L4
XXXX XX90	H7, L7, H4, L4
XXXX XXA0	H7, L7, H5, L5
XXXX XXB0	H7, L7, H6, L6, H4, L4
XXXX XXC0	H7, L7, H6, L6
XXXX XXD0	H7, L7, H6, L6, H4, L4
XXXX XXE0	H7, L7, H6, L6, H5, L5
XXXX XXF0	All 8 UPPER ROMs

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Tech Info Library Article Number:3115



Tech Info Library

High-Res RGB Monitor Cure for Jitters

Revised: 8/2/88
Security: Everyone

High-Res RGB Monitor Cure for Jitters

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This article last reviewed: 20 July 1988

Recently, dealers have reported a two phase problem with the High-Res RGB Monitor. To cure the jitter problem, they replace main logic board. Once the board is replaced, they find themselves with a strange convergence problem.

None of the adjustments listed in Tech Procedures (including V-Twist, H-Stat) cure the problem. Convergence can be as bad as 1/8" vertically. Adjusting the V-twist control only brings in a small section of the screen leaving the top and bottom borders way off. If the center section is adjusted correctly then the picture gradually get worse towards the top and bottom borders where distinct red, green (yellow), and blue shadowed images can be seen on the screen.

The part that made this different than a normal convergence problem was the fact that the shadowed images were all of different sizes. That is, green was larger than the red, and blue was smaller than the red).

The solution is amazingly simple: Adjust the V-Top and V-Bottom controls on the main logic board. This immediately brings the monitor into adjustment. No parts replacements were necessary.

Interestingly enough, this board was supposedly received DOA from the Campbell Support Center. It is possible that the apparent DOA condition was caused by a dealer technician bumping these potentiometers when installing the replacement board. It is also possible that these boards were not properly adjusted from the factory.

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Tech Info Library Article Number:3116



Tech Info Library

ImageWriter II: Keeps Printing Without Paper: Problem/Cure

Revised: 8/2/88
Security: Everyone

ImageWriter II: Keeps Printing Without Paper: Problem/Cure

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This article last reviewed: 20 July 1988

A common problem for older the ImageWriter II is that it continues to print after the paper has run out. The fix is easy: Replace the platen or use a solvent such as Fedron to clean the platen surface.

This works because the optical sensor assembly relies on the reflectiveness of white paper and the light absorbing characteristics of the black platen to determine when paper is installed in the printer. As the printer becomes older, the platen tends to take on a shiny (reflective) appearance from the build up of ink and paper deposits. Over time, this can reflect enough light to tell the the paper-out sensor that paper is in place when in fact there is no paper in the printer.

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Tech Info Library Article Number:3117



Tech Info Library

LaserWriter: Adjustments for Darkening Output

Revised: 8/2/88
Security: Everyone

LaserWriter: Adjustments for Darkening Output

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This article last reviewed: 20 July 1988

Dealers and customers report problems with the LaserWriter and LaserWriter Plus when printing dark areas. Dark areas of print are consistently lighter than on other Laserwriters printing the same document. Changing the toner cartridge has little effect. Further, the laser power adjustment shows that everything is within recommended specifications.

A Level 1 technician can solve the problem using Technical Procedures. First, remove the transfer corona assembly and look at the underside. You will notice that there are two clear plastic screws, one at each end of the assembly.

These screws raise or lower the corona wire 0.5 mm per revolution. Raising the wire increases the charge that attracts the toner to the paper from the drum thereby increasing the amount of toner pulled from the drum onto the toner.

Important: If problems earlier in the printing process restrict the amount of toner deposited on the photosensitive drum, then this adjustment will have no effect on the print quality. Therefore, be sure to troubleshoot the printer thoroughly and rule out other possible causes before performing this adjustment.

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Tech Info Library Article Number:3118



Tech Info Library

System Software 6.0: Known Problems

Revised: 8/2/88
Security: Everyone

System Software 6.0: Known Problems

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This article last reviewed: 20 July 1988

This article documents known bugs in System 6.0 software.

Sound Manager bugs

1. SoundAndMod purge bug:

"In low memory situations, SndAddModifier can purge the 'snth' resource before it is locked." This is the same problem as with SndPlay.

2. MIDI-In debug problem:

"When initializing a channel with the MIDI In synth. (7) the code drops into the debugger." A call to the debugger was inadvertently left in the code for 6.0.

3. MIDI amplitude scaling:

"Velocity values received from and sent to MIDI are scaled wrong." A scaling factor of two is missing in the code. The code runs fine, but can send some funny values for velocity.

4. MIDI timing to SCC on a Macintosh Plus:

"The timing to the SCC on the Mac Plus is wrong." The Macintosh Plus and SE need extra time after accessing the SCC. This is accomplished with extra instructions in the code. The macro we use in the MIDI driver code doesn't include enough of them (it has one but needs two).

5. SoundPlay purge bug:

"When memory is tight, SndPlay will purge the 'snd' resources as soon as it gets it."

6. Simple Beep is garbled

"On some Macintosh Plus and SE systems the simple beep is distorted."

Copybits bug in VideoWorks

"Copybits from a bitmap to a pixmap while in 8 bit mode." VideoWorks HyperCard driver is effected. The bug lies in QuickerGraf, and a 2 line fix was made.

Script Manager bug

1. "The Script Manager allocates too much space above the bufptr for some games."
2. "6.0 does not properly support IUDatePString and IUTimePString".
3. "KanjiTalk, which has not yet been built with 6.0, would not work with 6.0 because of a confusion in the definition of the area set aside for private and public verbs."

Palette Manager Bugs

1. "Provide support for devices that have no Color Look-Up Tables, that is, for boards like the E-Machine's board which only supports a fixed set of colors." This bug causes crashes in Adobe Illustrator and Color MORE when they de-reference NIL handles that would not be NIL in if a CLUT device was being used.
2. "The Palette Manager was calling Front Window at inappropriate times when the Window list should not be referenced." This bug causes the system to crash between applications that exercise the Palette Manager. Again, bad addresses are being de-referenced.
3. "When a window is hidden and DisposePalette is called, the palette in the hidden window was not disposed."
4. "The file system was being called during Disk Swap (SysErr)." This is a situation when things can be moved in memory. The file system will randomly crash when called."
5. "A colored menu bar was getting confused (and ugly)." This bug was caused by the fact that only the Apple in the menu bar was being redrawn with the Palette Manager. Now the whole menubar is redrawn. This is only a cosmetic bug, but it is a very safe and minimal change.
6. "When applications used the Palette Manager under both Single and MultiFinder, the Color Desktops would change to random colors. This looks extremely ugly." Again, this is only a cosmetic bug, but a fix was made to both the Palette Manager and MultiFinder to fix it.

MultiFinder Bugs

1. "If a volume is unmounted by an application other than the Finder (Disk First Aid, for example) the desktop database could be lost. This would cause the user to loose their Finder comments for that disk."
2. "The check for drivers in Background Apps is incorrect. This can cause slow response time on occasion, and conceivably cause crashes (though we have no specific cases reported)."

TextEdit Bug

"A de-referenced handle was maintained across a call that moved things in the heap. This could cause crashes."

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Tech Info Library Article Number:3119



Tech Info Library

MWS/MacAPPC Won't Work With IBM Application System

Revised: 5/10/89
Security: Everyone

MWS/MacAPPC Won't Work With IBM Application System

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This article last reviewed: 19 July 1988

MacAPPC and/or MacWorkStation will not currently work with IBM's Application System.

The IBM Application System is a 3270-based decision support tool, which runs under the MVS and VM operating systems, and is IBM's high-level decision support software product for business planning, statistical analysis, and project management.

The IBM Application System has extensions that allow direct access via DB2 and SQL databases and other IBM products, such as Query Management Facility (QMF) and Data Extract (DXT). However, it does NOT currently take advantage of intelligent desktop devices.

IBM says that "the direction of future development of the Application System product line is to provide support consistent with the need to use workstations that may have local intelligence" (or, simply, "it doesn't do it now, but it will someday.")

So, at present IBM's Application System supports neither LU6.2, IBM's flagship peer-to-peer protocol, or 3270 API implementations.

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Tech Info Library Article Number:3120



Tech Info Library

EtherTalk: Why The Packet Buffering Space Is Both 16K And 32K

Revised: 7/2/92
Security: Everyone

EtherTalk: Why The Packet Buffering Space Is Both 16K And 32K

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Article Created: 21 July 1988
Article Last Reviewed: 26 June 1992
Article Last Updated:

TOPIC -----

The Technical Specifications on the EtherTalk card data sheet contains the following information:

"Packet buffering

- Multipacket, using 16-kilobyte dual-ported local memory ROM space
- 32 kilobytes"

How can the packet buffering space be both 16K and 32K?

DISCUSSION -----

The EtherTalk card has 16K of dual-ported RAM used for packet buffering. The card ALSO has 32K of ROM for storing the Ethernet address and NuBus slot information.

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Tech Info Library Article Number:3122



Tech Info Library

ImageWriter LQ: Bin Selection And Envelope Feeder Problems

Revised: 8/2/88
Security: Everyone

ImageWriter LQ: Bin Selection And Envelope Feeder Problems

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This article last reviewed: 21 July 1988

If you have installed additional feeder bins and envelope attachments to your ImageWriter LQ, you may experience one of both of the following problems:

Bin Selection: The application used with your ImageWriter LQ will not switch bins successfully. Even though you may want to print from first one bin, then another, the ImageWriter will only print the complete job from the first bin selected.

Envelope Feeder: With the envelope feeder fitted, the first envelope is fed through without being printed; then, several envelopes try to make their way around the platen at the same time.

The Solutions:

Bin Selection

This is an application problem -- not a print driver problem. If the application in use treats every page of a document as a separate print job, bin selection is negated.

For the bin selection to be effective, an application must know that a job consists of more than one page and that these pages are to be treated as extensions of the first page.

Envelope Feeder

For the envelope problem, try fanning and flexing the envelopes before inserting them into the feeder.

Another thing that might help is to load fewer envelopes in the feeder. Excessive tension caused by the weight of the envelopes or by having too many envelopes in the feeder may be creating sufficient friction between the

envelopes to cause the multifeed situation.

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Tech Info Library Article Number:3124



Tech Info Library

LaserWriter & LaserWriter Plus: Change Cleaning Felt Regularly

Revised: 8/2/88
Security: Everyone

LaserWriter & LaserWriter Plus: Change Cleaning Felt Regularly

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This article last reviewed: 21 July 1988

Some users have noted a problem with the Canon engine in both the LaserWriter and LaserWriter Plus that could lead to trouble without proper maintenance.

Under the green cover, which hides the fuser roller, are four orange rubber "fingers" that touch the roller. As toner builds up on these fingers, it crystallizes and becomes abrasive. This residue then scrapes off the teflon coating on the roller.

When the teflon coating wears through, toner no longer fuses to the paper at that position. (The finger on the far right as you face the roller seems to be affected the most.) The only fix at this point is to completely replace the fuser assembly, which is a very expensive solution.

You can prevent this from happening by ALWAYS replacing the cleaning felt (the green plastic strip that comes packed with the toner cartridge) every time the toner cartridge is replaced.

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Tech Info Library Article Number:3125



Tech Info Library

HyperCard: Text In Buttons Treated As Bit-Map Graphics

Revised: 5/9/89
Security: Everyone

HyperCard: Text In Buttons Treated As Bit-Map Graphics

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Article Created: 21 July 1988
Article Last Reviewed: 10 July 1992
Article Last Updated: 10 July 1992

TOPIC -----

Why does the text inside my HyperCard buttons (the button name, for instance) look different from text in the same font and size used in a field?

DISCUSSION -----

The reason for this is that the button, including the text in it, is treated as a bitmap graphic and is printed as such. Text in a field works off the font, whether it is Postscript, TrueType, or bitmap.

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Tech Info Library Article Number:3126



Tech Info Library

Macintosh: Avoiding Font ID Conflicts

Revised: 4/7/93
Security: Everyone

Macintosh: Avoiding Font ID Conflicts

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Article Created: 21 July 1988

Article Change History

03/29/93 - REVISED

- To encompass System 7.1.

TOPIC -----

Some of the fonts in my System are not showing up. After investigating, I found that some of the fonts have the same ID numbers. How do I prevent this?

DISCUSSION -----

If you find that two fonts with the same ID have been installed in the same system software, it is most likely the method of installation that is at fault.

System 6 and Before

When running System 6.0.x or earlier, always use the Font/DA Mover to copy fonts into the System file. This method will automatically resolve any font ID conflicts that exist. The Font/DA Mover is the only program that should be used to copy a font to or from any file under System 6.0.x or earlier. This ensures that all the necessary resources are copied with the font. The same applies for desk accessories.

System 7

This problem is rare in System 7. The proper way to install fonts in the System file is to drag them directly to the System Folder:

- With System 7.0.x, the fonts will be moved into the System file itself.
- With System 7.1 or later, when you drag fonts to the System Folder icon,

they will be moved into a Fonts folder within the System Folder.

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Tech Info Library Article Number:3127



Tech Info Library

HyperCard: Cannot Write Null Characters Without X-Command

Revised: 6/24/90
Security: Everyone

HyperCard: Cannot Write Null Characters Without X-Command

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This article last reviewed: 21 July 1988

There is, at present, no easy way for HyperCard to write a Null character -- hex 00 -- into a text file using "write <source> to file <file name>".

A Null character like hex 00 is often used as a formatting flag in text documents.

Here is a HyperCard script a user has written to demonstrate the problem:

```
on mouseUp
  open file "i/o test"
  write "+++" to file "i/o test" -- so we can see where the information starts
  write empty to file "i/o test" -- try to put the null constant into file
  write "*" to file "i/o test" -- a marker after the null char.
  repeat with x = 0 to 10
    write the numToChar of x to file "i/o test" -- try to generate it this way
  end repeat
  write "+++" & empty & "*" to file "i/o test" -- try to put a null in a string
  write "eof" to file "i/o test" -- write out an end of file marker for us
  beep 2
  close file "i/o test"
end mouseUp
```

Hypercard uses the C string format in which the Null is identified as the "end of string" marker. When HyperCard converts the variable in numToChar, the result of numToChar is placed into a container as a string, which in this case is a Null, interpreted as the "end of string", and thus ignored.

The only way HyperCard can currently place a Null character into a text file would be through an XCMD or XFCN.

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Tech Info Library Article Number:3128



Tech Info Library

AppleWorks: Superscript Codes For ImageWriter

Revised: 8/2/88
Security: Everyone

AppleWorks: Superscript Codes For ImageWriter

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This article last reviewed: 27 July 1988

Here are the codes to begin Superscript on an ImageWriter:

Superscript Begin: ESCAPE l1 ESCAPE r ESCAPE T20 CONTROL J
Superscript End: ESCAPE f CONTROL J ESCAPE T24 (66 lines per page)
Superscript End: ESCAPE f CONTROL J ESCAPE T18 (72 lines per page)

An ESCAPE c should not be used in the Superscript End code string. The ESCAPE c generates a carriage return which will, depending upon the setting for carriage return line feed, force all text following the Superscript end to be printed over the first part of the same line or on a new line.

Also, when giving the codes for Superscripting, the ESCAPE T20 may be adjusted to a greater or lesser value depending on the height of the desired Superscript. For 66 lines per page, an ESCAPE T value of 20 is almost a full character above the current text line, where as, an ESCAPE T value of 12 is about 1/2 character above the current text line.

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Tech Info Library Article Number:3129



Tech Info Library

LaserWriter IINTX: Available Fonts In HP LaserJet Emulation Mode

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX: Available Fonts In HP LaserJet Emulation Mode

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This article last reviewed: 25 July 1988

LaserWriter IINTX's HP LaserJet Plus emulation provides access to the Roman, Bold, Italic, and Bold Italic faces for Courier, Times-Roman, and Helvetica fonts.

These are the only PostScript fonts accessible by the emulation. If other symbols or typefaces are desired, they must be purchased as downloadable fonts for the HP LaserJet Plus.

Font styles and typefaces on the LaserWriter IINTX in HP emulation are controlled with HP LaserJet Printer commands. If you need more direct information on font substitution, you can obtain an HP LaserJet manual. You can also purchase a utility like Hewlett-Packard's PCLPak Printer Software Utility (which does printer parameter modification). Such a utility will also download fonts to the HP LaserJet, but will not allow the definition of fonts.

Hewlett-Packard does provide many downloadable fonts for the PC. These fonts are provided in 3.5 and 5.25 inch MS-DOS disks, and cover most of the HP cartridge font units available for the HP LaserJet printers.

For more information, search under: Hewlett-Packard, Inc.

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Tech Info Library Article Number:3130



Tech Info Library

AppleShare PC: What All The Beeps Signify

Revised: 10/18/88
Security: Everyone

AppleShare PC: What All The Beeps Signify

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This article last reviewed: 25 July 1988

Users of AppleShare PC have asked about the alarm beeps that sound at various times during the printing process.

The beeps that a customer may hear most frequently are those found within the AppleShare DA program environment. These usually signify that the application doesn't understand something -- often an illegal key stroke.

The alarms that sound during a DOS application are a single beep and two trills:

- The single beep represents end of print job, and will occur regardless of whether the print job printed correctly or not.
- The first of the trills is an alert from AppleShare to check the DA for messages that have been received from the server or some AppleTalk application; this trill will repeat until the user executes the DA.
- Another type of trill will occur when the DA application is Hot Keyed, but cannot "pop up". This is because the application is not friendly to resident applications, and a DOS busy flag is set. The flag is then tested by the DA, and a trill is sounded when the flag is set. This tells the user that the DA has acknowledged the hot key, but could not "pop up" at that time.

The executing application keeps the stack and registers in such a way that a "pop up" application could erase necessary information.

Many PC applications trap the keyboard input, which input is also passed to other keyboard handlers as well, such as the Hot Key. If an application does not pass off the keyboard data, no alert will sound, and the DA will just not be available. The AppleShare application will still sound within these applications when an AppleTalk alert is received by the workstation.

AppleShare will also beep and display network timeout or errors when

connecting. These most often occur when connecting to a net with many zones.
Upgrading ROMS and software and reinstalling software seems to be the answer in most of these cases.

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Tech Info Library Article Number:3131



Tech Info Library

ImageWriter LQ: Sheet Feeder Must Be Removed To Use Pin Feeder

Revised: 8/2/88
Security: Everyone

ImageWriter LQ: Sheet Feeder Must Be Removed To Use Pin Feeder

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This article last reviewed: 25 July 1988

Some users have asked if pin feed paper (computer paper with holes on the edge) can be used in the Imagewriter LQ while the cut sheet feeder is installed.

In fact, you must REMOVE the cut sheet feeder from the ImageWriter LQ before using computer paper.

If you have the cut sheet feeder installed, a sensor in the printer will register this fact. There is another sensor which indicates which type of paper feed is selected.

When the cut sheet feeder is installed, and the paper feed lever is set to tractor feed, conflicting signals will then be sent to the CPU in the printer. One says "don't use the sheet feeder", the other says "use the sheet feeder". The result is an error light.

Also, since the paper guide must move the paper from the sheet feeder into the proper position for the platen rollers to pull it into the platen paper path. Thus, if you use the cut sheet feeder, the paper guide must be in place to allow the printer to place the paper correctly for printing.

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Tech Info Library Article Number:3132



Tech Info Library

Apple IIGS: Printing To A LaserWriter With ImageWriter Emulation

Revised: 3/23/89
Security: Everyone

Apple IIGS: Printing To A LaserWriter With ImageWriter Emulation

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This article last reviewed: 10 August 1988

Apple IIGS users who want to print to any type of LaserWriter using an application that does not support PostScript (such as AppleWorks) need to follow the following instructions:

Run Chooser II BEFORE using the LaserWriter from your application on an Apple IIGS. Chooser II works much like the Macintosh Chooser desk accessory, except that it is a stand-alone application. When the LaserWriter is selected, Chooser II will check the LaserWriter to verify the presence of the ImageWriter Emulator.

The ImageWriter Emulator (IWEM) is a PostScript file that is downloaded into the LaserWriter. If the IWEM is not present, Chooser II will download the file. If IWEM is present in the LaserWriter, Chooser II will acknowledge and not download.

The ImageWriter Emulator understands all of the standard features of the ImageWriters I and II, including boldface, underline, superscript and subscript in the default font, Proportional-1 font and Proportional-2 font.

The ImageWriter Emulator defaults to Courier at 12 characters-per-inch, unless you have specified Proportional-1 or Proportional-2 in the Open-Apple-0 printing options.

With ImageWriter Emulator version 1.1.2, Times Roman will be selected for Proportional-1 and Times Bold will be selected for Proportional-2. If you use the characters-per-inch option, this will cause Courier to be selected and printed at the CPI you specify.

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Tech Info Library Article Number:3133



Tech Info Library

Apollo To Macintosh II Connectivity

Revised: 8/2/88
Security: Everyone

Apollo To Macintosh II Connectivity

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This article last reviewed: 27 July 1988

Some users have asked about exchanging Interleaf documents between a Macintosh II running Interleaf, and an Apollo DN3000 workstation (also running Interleaf).

There are two methods of connecting the Macintosh II to the Apollo:

- A serial connection (either direct or via modem) using Kermit to move the file in either direction.
- Apollo has two network environments, Apollo's Domain and Ethernet. In the Domain environment, Macintosh and Apollo have no way to connect over the network. However, if the Apollo system has the Ethernet option installed, Macintosh and Apollo can move files via NCSA (National Center for Supercomputer Applications) Telnet & FTP.

For more information, search under: "Kermit File Transfer Protocol", and "National Center for Supercomputer Applications"

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Tech Info Library Article Number:3134



Tech Info Library

Apple Scanner: How Its Internal Circuitry Works

Revised: 5/24/89
Security: Everyone

Apple Scanner: How Its Internal Circuitry Works

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This article last reviewed: 12 August 1988

- Scanner circuitry

A scan is initiated when the microprocessor, inside the Apple Scanner, signals the carrier arm assembly electronics. At this point, the carrier arm, containing both the fluorescent lamp and CCD sensors, begins the scan. The scan proceeds line-by-line until the entire document is scanned. The reflected light from the scan is detected by the CCD sensors which are arranged in three rows of 2592 individual sensors. Each sensor in the first row holds one picture element (PEL), or pixel, of a scan line. The elements in rows 2 and 3 are used as data buffers prior to being sent to the image processing logic.

As the carrier arm assembly passes under the original document, the first row of CCD sensors capture the image reflection from the fluorescent light. The sensors produce analog signals that represent the original as tiny dots, or pixels, that make up a bit image. To manipulate and correct the various image distortions that can result from interference, the analog signal outputs from the CCD sensors are sent to the image-processing logic for conversion to digital signals.

The converted digital signals are sent either directly from the image-processing logic to the scanner main memory for transmission to the host computer; or, if the resolution is less than 300 dpi, the signals are sent through the line memory, PEL correction memory for transmission to the host. Data transfer from main memory to the host computer is done under control of the DMAC through the SCSI cable.

- Image-sensing circuitry

The components of the image-sensing logic include the CCD sensors and the analog circuitry which together are responsible for sensing, filtering, and amplifying the bit image of the scanned original. As the original is scanned, the CCD circuitry senses the image reflected by the fluorescent light. The

three CCD sensors are used to support one line of pixels. The second and third rows of sensors are primarily used to buffer the image data. The reflected light from each pixel charges the front-row of CCD sensors. The charged front row of sensors then shifts their contents to the second row of sensors which in turn shifts their contents to the third row of sensors. The third row of sensors are then serially shifts out, one element at a time, for clean-up and amplification. The signals from the amplifier, are then sent through a low pass filter and attenuator to the image processor where the signals are distortion corrected and converted from analog-to-digital.

- Flow of the CCD-sensing process

Also included in the image-sensing logic is the black-level reference voltage and auto background-adjustment circuitry. The black-level reference voltage determines the threshold value for the black level of the pixels; that is, will be represented as a black dot or white dot in the overall image. This part of the circuitry is driven by the seven signals (VBLO-6), from the microprocessor. The auto background-adjustment circuitry receives digitized signals from the image-processing logic to integrate the amplified CCD outputs as the background level. The integrated signals serve as the background level of the original and change dynamically during the scan.

- Image-processing logic

After the image has been scanned, the analog signals from the CCD elements are sent through the image-processing logic. The image-processing logic is responsible for processing the scanned image and contains the major portion of the scanner logic. The major components of the image processing logic are:

- DIPP (document-image pre-processor)
- Gate array 1
- Line memory and PEL correction memory
- Gate array 2

Most of the actual processing is done by the DIPP. The gate arrays, line memory, and PEL correction memory are support logic for the DIPP functions.

The DIPP is an image-signal processor which takes the analog image data from the CCD elements and corrects any distortion of the data, digitizes the corrected data, and transfers the digital data to main memory. These steps are accomplished with the support of the gate arrays.

In Line Art and Halftone composition scans, the DIPP passes the digitized signals to line memory for horizontal-resolution conversion for the selected resolution level.

The output from the DIPP differs depending upon the composition of the scan. When the scanner uses Line Art or Halftone composition, the output from the DIPP is 1 bit for every pixel. However, when the scanner uses Grayscale composition, the output is 4 bits per pixel. The additional bits enable the scanner software to create a more accurate representation of the individual

dots within the image. On the Macintosh II, the 4 bits drive the grayscale monitor or the color monitor.

The DIPP uses gate array 1 to support reduction options by controlling the line memory. When an image requires reduction, it is sent to the line memory for buffering prior to being sent to main memory. Gate array 1 also provides these additional functions:

- Address generation
- Memory control
- Bus interface
- Grayscale horizontal-resolution conversion
- CCD control

The PEL correction memory and line memory (2-Kbytes RAM) are used to buffer data from the DIPP before transfer to main memory.

Gate array 2 is used to support these functions of the DIPP:

- DMAC (two channel)
- Bus arbitration
- interrupt control
- Carrier arm-motor control
- Address latch
- Chip-select control

The microprocessor logic controls the functions of the gate arrays, DMAC, and carrier arm-motor control. The scanner uses an 8-bit NEC (7809) microprocessor. This processor runs at a 12-MHz clock rate and is supported by 256 bytes of RAM, an input/output port, a timer, and interrupt circuitry.

The clock-generation circuitry provides all the necessary timing pulses for the circuits in the scanner. The scanner has 2 separate clocks, a 12-MHz which is used by the microprocessor, and an 8-MHz clock used by gate array 2. Also, the 8-MHz clock is divided by 2 to provide a 4-MHz clocking for the DIPP, gate array 1, and the DMAC.

Main memory of the scanner contains two 16-Kbyte banks of RAM and 32-Kbytes of ROM. The ROM firmware is used to control the scanner, while the two banks of RAM are used to buffer the image data and provide the microprocessor with working space for parameter information.

The DMAC IC is used to improve the scanners performance by off-loading the burden of data transfer from the microprocessor. This process results in faster data transfer between the scanner and the host system.

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Tech Info Library Article Number:3136



Tech Info Library

Scanner Glossary: A Definition Of Terms And Graphic Formats

Revised: 5/24/89
Security: Everyone

Scanner Glossary: A Definition Of Terms And Graphic Formats

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This article last reviewed: 12 August 1988

Brightness:
refers to the overall whiteness of the scanned image.

Charge-Coupled Device (CCD):
is used to sense the reflected light as an image is scanned. It consists of three layers of elements, collecting each line of image data as an array. The first layer converts the reflected light into an analog signal while the second and third layers act as buffers.

Compositions:
is the methods of recording or interpreting scanned data. There are three common compositions: Line Art, Halftone, Gray-scale.

Contrast:
refers to the range between black and white; a low contrast would emphasize shades of grays where as high contrast would emphasize blacks and whites.

EPSF, Encapsulated PostScript File Format:
EPSF is the format used for importing PostScript files between many environments. This format was designed and implemented by Adobe. Basically an EPSF file follows the same standards as a PostScript file. Following is a brief summary of the exceptions: The EPSF file begins with a header of structuring comments which include: required comments (version, bounding box), general information comments (creator, title, date, end), font management comments (list of fonts in document, needed fonts) file inclusion comments (for including a separate file). A QuickDraw representation of the PostScript file may be saved in the resource fork in PICT format for screen display on a Macintosh. Or use MetaFile or TIFF for screen display in an MS-DOS environment. If a screen representation is not included, a gray box will be displayed matching the size defined by the bounding box in the header. These screen images can be manipulated within the application into which they have been imported. The application will be responsible for tracking the changes to the image and relaying this information in Postscript prior to the EPSF file.

Flatbed scanner:

is an imaging device where the document to be scanned remains stationary while the optical sensing assembly moves down the document one scan-line at a time much like a photocopier. This method allows for a more accurate scan and permits scanning of books or other thick materials.

Graymap:

is the relationship between the number of gray levels used in scanning and the densities detected in the original. The number of gray levels can be linear so that there is an equal number of light shades and dark shades or curved so that more variations would be detected within the darker tones.

Grayscale:

composition which records 4 to 8 bits of information for each dot, permitting 16 to 256 shades of gray. Grayscale requires large amounts of memory for data storage. Primarily used for scanning pictures which will be displayed on equipment that supports gray scales. Images created in gray scales are best stored either on large hard disks or CD-ROM.

Halftone Pattern/Dither:

is a matrix of threshold values that determine the patterns of black and white dots used to represent different shades of gray. The threshold levels contained in the matrix are applied to corresponding groups of scanned data. Primarily used for scanning pictures which will be displayed on equipment that does not support gray scales.

Halftone:

is the composition method of using combinations of black and white dots which form patterns to represent gray shades. Primarily used for scanning pictures which will be reprinted.

Image processing algorithms:

are used to manipulate the scanned data. An example would be inversing the scanned image.

Line Art:

is bi-level scanning which records only black and white data. This composition is used primarily for scanning text or line drawings containing no gray shades. Primarily used for scanning text.

Optical Character Recognition (OCR):

is software that enables a digitizing device or bit mapped image to be translate into editable text .

PICT:

Apple's QuickDraw Picture definition. The PICT file is a data fork file with a header, followed by a picture data structure. This data fork file contains a QuickDraw data structure within which a graphic application places drawing primitives, data structures that specify the geometry of basic graphical shapes, to represent an object or image graphic data. The pictures consist of opcodes followed by picture data. (Opcodes are predefined numbers which the QuickDraw function DrawPicture uses to determine what object to draw or what

mode to change.) PICT2 opcodes are 2 bytes in length. PICT2 opcodes support color QuickDraw. A picComment opcode provides a means for passing data and commands, that are not supported by QuickDraw, directly to an output device.

PTNG:

MacPaint Document Format. MacPaint documents use only the data fork. It contains a 512 byte header consisting of the version number and patterns, followed by the compressed data representing a single bit map of 576 x 720 pixels. The PackBits procedure in the Macintosh ROM is used to compress the data into 720 scanlines. This condenses a typical MacPaint document to 10K bytes that would occupy 52K of disk

Reflective Density:

is the measure of reflected light of each element. Black reflects less light than white, gray shades reflect varying measures between those of black and white.

Resolution:

is expressed in dots per inch. Most scanning devices available for the Macintosh are capable of reading images at resolutions of 75 dpi to 300 dpi. The selected scan resolution value should match the capability of the output device. For example, if the image will only be displayed on a Macintosh screen 75 dpi would be an acceptable resolution but if the output will be to a LaserWriter you would want to select 300 dpi as the resolution of the scanned image.

Scanning Digitizer:

consists of precision optical devices sensing light and dark areas of printed material by measuring reflected light.

Sheet-feed Scanner:

is an imaging device where the optical sensing assembly remains stationary as the document is mechanically fed through the device.

Threshold:

setting which determines the level or scanned density at which a gray shade is recorded as black or white.

TIFF:

Tag Image File Format. TIFF was designed through the combined efforts of Aldus and Microsoft for the interchange of digital image data independent of specific operating systems, file systems or processors. It has been designed for flexibility and ease of expanding to incorporate future advances in image processing (for example, color lookup tables). The TIFF file consists of a short header (specifying byte order, version number, offset to the Image File Directory), the Image File Directory (number of fields, field entries, next IFD offset), and the data. The field entry bytes contain the Tag, field type, length, offset to field value. A collection of fields describe the image.

Video Digitizer:

converts video signals into digital data. Because it is accepting video input you are able to digitize three dimensional and two dimensional objects.

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Tech Info Library Article Number:3137



Tech Info Library

Apple Scanner: Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Scanner: Specifications (Discontinued)

Article Created: 12 August 1988
This article last reviewed: 9 September 1988

Technical:

Scanner type	Flatbed
Maximum document size	8.5-inch by 14.0-inch
Interface	SCSI
Dropout color	Green
Performance	20.4 seconds/11-inch, 300dpi scan, Line Art
Composition types	Line Art, Halftone, Grayscale
Grayscale	16 levels (4 bits)
Scaling	25% to 400%, depending upon output resolution
Output resolution	75 dpi to 300 dpi
Contrast levels	8
Brightness levels	16
Threshold values	16
Graymap settings	3
Halftone patterns	Spiral, Bayer, 2x2, Straght line, User-definable patterns, Adapive dithering

Physical:

Depth	21.8 in (545 mm)
Width	13.6 in (340 mm)
Height	4.4 in (110 mm)
Weight	20 lbs. (9.072 kg)

Power Requirements:

AC input (US and Canada)	120V AC+/-10%, 58 to 62Hz
AC input (Universal)	100/120/200/240V AC +/-10%, 48 to 62 Hz
Power consumption	Standby 35 Watts, Scanning 65 Watts

Environmental:

Noise (Maximum)	Standby <30 dbA, Scanning <55 dbA
Temperature	Operating Temperature +10 to +40 degrees C Storage (6 months) -40 to +47 degrees C Transit (72 hours) -40 to +65 degrees C
Humidity	Classified as Class 1 equipment

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Tech Info Library Article Number:3138



Tech Info Library

A/UX: How To Get An AT&T Right to Copy Licenses and Updates

Revised: 9/14/92
Security: Everyone

A/UX: How To Get An AT&T Right to Copy Licenses and Updates

=====

Article Created: 2 September 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy

TOPIC -----

How To Get An AT&T Right to Copy (RTC) Licenses and Updates

DISCUSSION -----

Apple sells a subscription with an RTC for a given number of users and an update subscription for the same number. You receive only one software package, regardless of the number of copies you are licensed to create. You mount this copy on your server, so workstations can use it. Similarly, you receive one update software package and mount it for your users.

For example, if you buy an RTC for 10 users, you also need to buy a software update for 10 users. It doesn't matter if fewer than 10 users are active. You can take advantage of your remaining count when you add new users.

This structure is necessary, because Apple must track A/UX copies for AT&T's royalty reports.

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Tech Info Library Article Number:3139



Tech Info Library

UNIX: KIP and CAP Information (6/94)

Revised: 6/27/94
Security: Everyone

UNIX: KIP and CAP Information (6/94)

=====
Article Created: 4 September 1988
Article Reviewed/Updated: 27 June 1994

TOPIC -----

This article discusses KIP and CAP software.

DISCUSSION -----

KIP is the IP-ETHER/APPLETALK gateway software used with the Kinetics KFPS. Developed by Bill Croft at SUMEX, Stanford University, KIP is public domain.

The Columbia AppleTalk Package (CAP) for UNIX was written by Bill Schilit and Charlie C. Kim of Columbia University. A library of routines enables a UNIX host to communicate using the AppleTalk Transaction Protocol (ATP), AppleTalk Session Protocol (ASP), Printer Access Protocol (PAP), Name Binding Protocol (NBP), and the AppleTalk Filing Protocol (AFP--client side). It, too, is public-domain software

The first major applications written using these libraries is the AppleTalk Filing Protocol UNIX File Server (AUFS), which is the server part of AFP. AUFS requires that AppleShare workstation software be installed on the client Macintosh. CAP includes applications that can be used to print to a LaserWriter, spool for a LaserWriter, and act as UNIX-based, AppleShare-compatible file server.

The CAP libraries currently require use of the UDP protocol from the DARPA TCP/IP suite of protocols and other features generally provided only in Unix systems based on 4.2 BSD Unix.

If you have Internet access, you can "ftp" the following KIP files from the <info-mac> directory on sumex-aim.stanford.edu machine. Use login name "anonymous" with FTP.

- at-kip.shar gateway and daemon source
- at-gw.srec latest gateway 'binary' in S-record hex format

- at-ddt.shar source for the network debugger.

The following information is from CAP distribution:

The CAP distribution is via anonymous FTP from cunixc.columbia.edu [128.59.32.130]. The directory is cap and the files in that directory are:

- INFO is an information file
- README contains release notes
- MODIFICATIONS is a list of modifications from distribution 4 to 5
- cap.tar.Z is the distribution in tar format "compress"ed using "compress"
- shar/cap50.1shar is the first half of cap dist - shell archive
- shar/cap50.2shar is the second half of cap dist - shell archive

Article Change History:

27 Jun 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3142



Tech Info Library

A/UX: Imported AT&T 3B1 Code Won't Work Unless It's Re-Compiled

Revised: 9/15/92
Security: Everyone

A/UX: Imported AT&T 3B1 Code Won't Work Unless It's Re-Compiled

=====

Article Created: 24 August 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy

TOPIC -----

This article discusses issues that have arisen when customers try to port code from an AT&T 3B1 to A/UX.

DISCUSSION -----

The customers have a large application already running under many UNIX platforms. The source to be ported is System V running on an AT&T 3B1. They have compiled very large object libraries which they would also like to port as object code rather than re-compile. The processor in the 3B1 is a 68010 and the customers were under the impression that object code for the 68010 would run under the 68020.

They tried compiling some of their own code and linking to an object library transferred from the 3B1, but the attempt failed. The attempt to transfer some standard C object code without non-standard library calls also failed. When they compiled the same C source code under A/UX, they noticed that the size of the object code was much larger under A/UX.

The following discusses the issues involved:

In theory, one could have 68010 object codes run under 68020, because 68020 machine instructions set is a super set of 68010. But with different architectures and/or operating systems (like the AT&T 3B1 and Macintosh II A/UX), you can't move object code to another CPU even though both are running System V (The current release A/UX is based on System V Release 2). Some

factors that might affect the upward compatibility between 3B1's Sys V and A/UX are:

- The data structure of systems calls might be different.
- The method of subroutine parameters parsing might be different.
- The stack addressing manipulation might be different.
- The internal registers usage might be different.
- The specific hard memory management unit (PMMU in Macintosh II A/UX might have a different approach to memory management.

The reason that the same C source code compiled under A/UX resulted in larger object code (assuming it is absolute executable code) than that which the 3B1 produced is that the 3B1 System V might run with shared library and A/UX does not have shared library. (A/UX 3.0 has shared libraries)

A/UX supports 4.2BSD-style signals and 4.2BSD-style networking system calls. It also supports the STREAMS feature which is normally available only with System V.3. Therefore, the library routines will not be identical with other System V software.

These are the reasons why directly porting 3B1 68010 object code to A/UX does not work without under A/UX without re-compiling.

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Tech Info Library Article Number:3143



Tech Info Library

Macintosh: How To Change Font Names (8/95)

Revised: 8/7/95
Security: Everyone

Macintosh: How To Change Font Names (8/95)

=====

Article Created: 23 August 1988
Article Reviewed/Updated: 7 August 1995

TOPIC -----

I've had problems changing the names of fonts. For example, the system shows both font names. This brings up questions concerning where font names are saved and what steps I should follow to change font names.

DISCUSSION -----

To rename a font properly, you must change the font's name in three places: the FOND, FONT, and sfnt resources. To change a font name, follow these steps:

WARNING:

The instructions in this article refer to using ResEdit to alter your system software. Apple Computer, Inc., is not liable for any damage done to your software through the use of ResEdit to alter the software. The User Assistance Center phone representatives (at 800-SOS-APPL) do not provide technical support for ResEdit. It is supported by APDA. For contact information on APDA, search the Tech Info Library under "APDA".

Step 1

Use ResEdit to open the System file or file that contains the font to be renamed.

Step 2

Find and open the FOND resource.

Step 3

Find the font name to be changed, and click it once.

Step 4

Go to the Resource menu, and select Get Info.

Step 5

Type the new font name in the Name field.

Step 6

Close the Get Info and FOND windows.

Step 7

Hold down the Option key and open the FONT resource.

Step 8

Click the font name to be changed.

Step 9

Go to the Resource menu and select Get Info.

Step 10

Type the new font name in the Name field.

Step 11

Close the Get Info and FONT windows.

Step 12

Quit ResEdit and ensure that the changes are saved when prompted.

NOTE: If you change the name of a font on one Macintosh and then move a document containing the font to another Macintosh that does not have the font name changed, you may have to reset the font manually.

FONT and NFNT resources are essentially the same, the main difference being that the FONT resource only allows 256 IDs while the NFNT resource allows 32768 font IDs. The sfnt resource is used for TrueType fonts and is documented in The TrueType Font Format Specification, APDA catalog number M0825LL/A. Also see the Macintosh Technical Note, "Font Family Numbers" and "Inside Macintosh."

A clean install of 7.0.1• gives no FONT resources. Apple recommends that developers use the NFNT resource, but the Font Manager uses either FONT or NFNT resources. A 7.0 system could still have FONT resources if the install was done over an existing system, or if older fonts are installed using the Font/DA Mover. Dragging a font suitcase onto the System Folder doesn't appear to create a FONT resource. There are no names in the NFNT resource, therefore those

resources do not have to be modified to change a font name.

Notes:

- Apple officially recommends that applications make all references to font families by name rather than ID number, however some applications may still refer to fonts by ID number. The difference between reference by name and ID may be a problem in Windows also.
- The sfnt resource contains a table with additional font name information that isn't in wide use currently, but may become used in the future. This could create problems when trying to rename fonts. This leads to this final disclaimer: Apple does not recommend that you rename fonts; you do so at your own risk.

Article Change History:

07 Aug 1995 - Reformatted, reviewed, corrected minor errors.

25 Nov 1992 - Included information about NFNT and sfnt resources.

Support Information Services

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Tech Info Library Article Number:3146



Tech Info Library

MacWorkStation/MacAPPC Won't Work with an IBM Application

Revised: 5/10/89
Security: Everyone

MacWorkStation/MacAPPC Won't Work with an IBM Application System

=====

This article last reviewed: 20 July 1988

A customer is running IBM's Application System on an IBM 9370 and wants to redistribute some of the processing to the Macintosh. Can MacAPPC and/or MacWorkStation work with IBM's Application System?

Not yet.

Currently, the IBM Application System is a 3270-based, decision-support tool, running under the MVS and VM operating systems. It is IBM's high-level decision-support software product for business planning, statistical analysis, and project management. It has extensions that allow direct access via DB2 and SQL databases and other IBM products, like Query Management Facility (QMF) and Data Extract (DXT). It currently does not take advantage of intelligent desktop devices.

IBM says that, "The direction of future development of the Application System product line is to provide support consistent with the need to use workstations that may have local intelligence." This translates to, "It doesn't do it now, but it will someday."

As IBM's stated communications direction is SAA, many believe this product will eventually support LU6.2, IBM's flagship peer-to-peer protocol. Likewise, there is a strong possibility that it will support 3270 API implementations. Our information is that Application System supports neither of these implementations at the present time.

The Apple LU6.2 product has proven its interoperability with IBM LU6.2 via IBM's interoperability testing facility in Raleigh, N.C. Therefore, MacAPPC should work with this product when it supports LU6.2 protocol suites.

Presently, MacWorkStation, too, would be difficult to implement in this environment.

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Tech Info Library Article Number:3147



Tech Info Library

A/UX: How To Mount a Remote Toolbox Over NFS (9/94)

Revised: 9/2/94
Security: Everyone

A/UX: How To Mount a Remote Toolbox Over NFS (9/94)

=====

Article Created: 20 July 1988
Article Reviewed/Updated: 1 September 1994

TOPIC -----

Some users have reported an NFS/ToolBox Problem.

In one instance, the systems have 40MB hard drives with only 20MB used by A/UX. To achieve this, users divided the total space required by A/UX between local disk storage and remotely mounted NFS disk storage across NFS on a VAX and a Sequent.

With this kind of mounting, however, Toolbox applications would no longer run. Most just crashed; however, "rez" produced the following error message while making %sample in "/usr/lib/mac/examples":

```
SysError(23)
pc = 0x1002653a (ROM = 0x10000000 -> 0x10040000)
Fatal error in Toolbox
```

DISCUSSION -----

Error 23 is an international utilities package load error documented as "package 6 not present". The A/UX System file, "/usr/lib/mac/System", may have been the problem. It was remote-mounted, and once it was copied back to the local machine, the problem disappeared.

You can get around the problem by keeping a local copy of the System file on each machine and using a symbolic link on the NFS-mounted file system to refer to the local copy.

A testing group reproduced the problem. After remote-mounting "/usr/lib/mac", they always got "Memory fault". However, removing "/usr/lib/mac" gave the same message with the text "core dumped" tagged on.

Note: Making "/dev/console" readable for all was not enough to run

`"/etc/toolboxdaemon"` as normal user.

The solution to this begins with the realization that `"/usr/lib/mac/System"` is a system-dependent file that must be found by the local `"/etc/toolboxdaemon."` To run Toolbox applications over the NFS:

1. Assume `"/usr/toolboxbin"` and `"/usr/lib/mac"` are not available in the local A/UX system but do exist in the remote NFS machine.
2. Launch `"/etc/toolboxdaemon"` from the local A/UX. (You don't need to be "root" to launch "toolboxdaemon". Any normal user can run "toolboxdaemon" if `"/dev/systty"`, `"/dev/console"`, and `"/dev/syscon"` are set mode to 0666.)
3. Mount a remote NFS machine; for example:

```
mount remote-machine-name:/ /mnt
```

4. Symbolically link a remote Toolbox Library to local machine; for example:

```
ln -s /mnt/usr/lib/mac /usr/lib/mac
```

5. Try to launch any Toolbox Application program; for example:

```
term
```

Article Change History:

1 Sept 1994 - Reviewed

Support Information Services

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Tech Info Library Article Number:3148



Tech Info Library

A/UX: biff Requires localhost in /etc/hosts File (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: "biff" Requires "localhost" in "/etc/hosts" File (8/94)

=====

Article Created: 20 July 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

Some users have tried to set up their systems for automatic notification of mail upon log in, but have failed. They report that although "biff y" in the ".profile" file works fine when in the Bourne shell, it fails in the Korn or C shell. Including "biff y" in both the ".login" and ".cshrc" files doesn't seem to help.

DISCUSSION -----

To solve this problem, first ensure that the "localhost" entry is present in the "/etc/hosts" file.

The "biff" notification is invoked by the sender's mailer (in this case, "/bin/mail"), which calls the "gethostbyname()" system call with "localhost" as its argument. This connects to the receiver's comsat server, which in turn alerts the receiver.

If your "/etc/hosts" file does not have the "localhost" entry, the "bin/mail" program will not try to call the receiver's comsat program.

Unfortunately, the "localhost" entry is not included in the distributed "/etc/hosts" file.

To make it possible for "/bin/mail" to connect to comsat, add the "localhost" name in the local loop back entry line in the "/etc/hosts" file:

```
127.0.0.1    localhost    loop lo loo
```

This doesn't work under any shell without the "localhost" name in the "/etc/hosts" file.

Article Change History:

23 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:3149



Tech Info Library

J.L. Cooper Electronics

Revised: 4/3/97
Security: Everyone

J.L. Cooper Electronics

=====

Article Created: 09/02/88
Article Reviewed: 07/12/93
Article Updated: 04/03/97

J.L. Cooper Electronics

12500 Bitress St.
Los Angeles, CA 90066

310-306-4131

Fax: 310-822-2252

Company Profile:

Hardware, specializing in console automation systems, synchronizers, switching systems, and other MIDI products.

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Tech Info Library Article Number:3151



Tech Info Library

Apple IIGS: Printing To Networked LaserWriter (9/95)

Revised: 9/20/95
Security: Everyone

Apple IIGS: Printing To Networked LaserWriter (9/95)

=====

Article Created: 6 September 1988
Article Reviewed/Updated: 20 September 1995

TOPIC -----

I have an Apple IIGS on their network which has mostly Macintosh computers on it. Can you tell me what will happen if the Apple IIGS sends something to be printed, but the LaserWriter is already in use?

DISCUSSION -----

The Apple IIGS will respond in the same way as a Macintosh computer without background printing or spooling. The Apple IIGS will take its place in line and wait until the LaserWriter is available. Then the IIGS will print its documents.

Article Change History:
20 Sep 1995 - Reformatted to meet current standards.
10 Aug 1988 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3153



Tech Info Library

Macintosh II To Convergent Technologies Connectivity

Revised: 1/21/93
Security: Everyone

Macintosh II To Convergent Technologies Connectivity

=====

Article Created: 6 September 1988

Article Change History

1/20/93 - UPDATED
• Vendor information.
8/04/88 - REVIEWED
• For accuracy.

Users who want to connect a Macintosh to Convergent Technologies equipment running their proprietary operating environment, CT*OS, take note:

Midwest Data Source makes a software package called Contact which will allow connection into BTOS (you can connect as a Burroghs MT-983, TD-730, or an ET-2000 terminal).

BTOS is an extension of CT*OS, and Contact supports the Burroghs B2X family running BTOS. The package supports also supports file transfer.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3155



Tech Info Library

Macintosh: How To Disable Disk Eject

Revised: 6/18/92
Security: Everyone

Macintosh: How To Disable Disk Eject

=====

Article Created: 4 August 1988
Article Last Reviewed: 18 June 1992
Article Last Updated:

TOPIC -----

How can I prevent someone from ejecting a floppy disk out of a Macintosh?

DISCUSSION -----

Some educational users have asked about disabling disk-ejecting procedures to prevent students from taking startup disks from their lab computers. Here are two methods:

1. Replace the Eject trap through an INIT so that the internal drive does not eject disks.

(NOTE: This is not completely effective, since the user only needs to restart the Macintosh while holding down the mouse button and the disk will eject. The student could also use a paper clip to eject the disk manually.)

2. Physically cover the drive opening. This would be the preferred method, since the student would not have access to the startup disk at all. When the Macintosh was restarted the disk would reinsert itself and the system would start up again.

Ergotron, Inc. makes a product, called "The Muzzle", that protects a Macintosh SE startup disk, as do other third-party companies.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3159



Tech Info Library

Apple 256K, 1 MB SIMMs: Specifications

Revised: 6/24/92
Security: Everyone

Apple 256K, 1 MB SIMMs: Specifications

=====

Article Created: 3 August 1988
Article Last Reviewed: 23 June 1992
Article Last Updated:

TOPIC -----

What are Apple's specifications for 256K and 1 MB SIMMs?

DISCUSSION -----

Here are the Apple specifications for 256 KB and 1 MB SIMMs:

Description: A Dynamic Random Access Memory Module organized by 8 bits in a 30 pin Single-in-Line-Package, comprised of:

- 256K X 1 bit Dynamic RAMs in Plastic Leaded Chip Carriers mounted on a PCB substrate.
- 1 MB X 1 bit Dynamic RAMs in SOJ packages mounted on a PCB substrate.

Pin #	Func.	Pin #	Func.	Pin #	Func.
1	Vcc	11	A4	21	/WE
2	/CAS	12	A5	22	Vss
3	D0	13	D3	23	D6
4	A0	14	A6	24	NC
5	A1	15	A7	25	D7
6	D1	16	D4	26	NC
7	A2	17	A8	27	/RAS
8	A3	18	NC*	28	NC
9	Vss	19	NC	29	NC
10	D2	20	D5	30	Vcc

Pin #18 is A9 on 1MB SIMM boards.

PIN NOMENCLATURE

Ax = Address input
/CAS = Column Address Strobe
Dx = Data Inputs/Data Outputs
NC = No Connection
/RAS = Row Address Strobe
Vcc = +5VDC
Vss = 0 VCD
/WE = Write Enable

Coarse pcb dimensions*:

1.27 mm thick
5.08 mm thick (incl. RAM)
16.8 mm tall
88.9 mm overall width
2.54 mm between pin centers

(*more specific dimensions available on request)

DYNAMIC PARAMETERS

256Kb X 8, 150ns

TA = 0 TO 70 degrees C, Vcc = 5V +/- 10 percent, Vss = 0V

Symbol	Min.	Max.	Unit	Symbol	Min.	Max.	Unit
tRAC		150	ns	tRP	100		ns
tCAC		75	ns	tRAS	150	10K	ns
tOFF		40	ns	tCAS	75	10K	ns
tT	3	35	ns	tRCD	25	75	ns
tRC	230		ns	tRSH	75		ns

256Kb X 8, 120ns

TA = 0 TO 70 degrees C, Vcc = 5V +/- 10 percent, Vss = 0V

Symbol	Min.	Max.	Unit	Symbol	Min.	Max.	Unit
tRAC		120	ns	tRP	100		ns
tCAC		60	ns	tRAS	120	10K	ns
tOFF		35	ns	tCAS	90	10K	ns
tT	3	50	ns	tRCD	25	50	ns
tRC	240		ns	tRSH	60		ns

1Mb X 8, 120ns

TA = 0 TO 70 degrees C, Vcc = 5V +/- 10 percent, Vss = 0V

Symbol	Min.	Max.	Unit	Symbol	Min.	Max.	Unit
tRAC		120	ns	tRP	100		ns
tCAC		60	ns	tRAS	120	10K	ns
tOFF		35	ns	tCAS	90	10K	ns
tT	3	50	ns	tRCD	25	50	ns
tRC	240		ns	tRSH	60		ns

PARAMETERS NOMENCLATURE

tRAC = Access Time from /RAS
tCAC = Access Time from /CAS
tOFF = Output buffer Turn off Delay
tT = Transition Time (Rise and Fall)
tRC = Random Read and Write Cycle Time
tRP = /RAS Recharge Time
tRAS = /RAS Pulse Width
tCAS = /CAS Pulse Width
tRCD = /RAS to CAS Delay Time
tRSH = /RAS Hold Time

For more information, search under: "SIMMs" and "Macintosh".

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Tech Info Library Article Number:3160



Tech Info Library

ImageWriter LQ: How To Make The Ribbon Advance Correctly

Revised: 9/6/88
Security: Everyone

ImageWriter LQ: How To Make The Ribbon Advance Correctly

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This article last reviewed: 3 August 1988

ImageWriter LQ Ribbon Usage

The ImageWriter LQ is designed to do a ribbon shift per page on a multipage document, but every time you turn off the printer, the ribbon is reset back to band #1.

If your ImageWriter LQ doesn't step the ribbon down a track every page, it may be due to one of the following reasons:

- A tab on the left side of the black ribbon cassette (not present on the color ribbon) engages a switch that enables ribbon shift. It's possible that even if the tab is present and the ribbon is securely seated, the tab on the ribbon box might not press down the switch enough preventing the ribbon shift.

To work around this problem:

- Tape the switch down

OR

- Wrap tape around the cartridge tab, making it thicker so it will apply more pressure on the switch.

If you tape the switch down and the ribbon still doesn't shift, this indicates a non-functional sensor. The printer hardware requires service.

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Tech Info Library Article Number:3161



Tech Info Library

Macintosh System Size Varies With Amount of RAM Available

Revised: 9/6/88
Security: Everyone

Macintosh System Size Varies With Amount of RAM Available

=====

This article last reviewed: 4 August 1988

Some users have noticed that the amount of memory taken up by the Macintosh system seems to depend on the amount of RAM available.

For instance, in a Macintosh II with 1MB RAM, the system often occupies only 300-400K of memory, but in one user's Macintosh II with 8MB ram, the system took up 2.6 MB of memory!

The answer is to be found in the Start Manager, which on system startup assesses a number of variables, including:

- which microprocessor is present
- amount of RAM installed
- whether the RAM Cache is set and for what amount (although this has a greater impact on the application heap than on the system heap).

The Start Manager dynamically installs what it considers the optimum number of System resources, Fonts, Inits, DAs, drivers, to give the Macintosh the best performance. You do NOT have control over what system resources and code are installed at this point.

You can, however, control the amount of RAM consumed by extraneous Inits and RDevs, as well as the memory set aside for RAM Cache. Eliminate any extraneous CDevs containing Inits and RDevs, and choose a smaller RAM Cache setting -- or turn it off entirely.

As an example, eliminating a couple of CDevs such as Sound Master and ColorDesk could free up 650K of system heap space, memory that you may need for your applications.

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Tech Info Library Article Number:3162



Tech Info Library

HD Backup: Rejoining Backed-Up Files

Revised: 12/4/89
Security: Everyone

HD Backup: Rejoining Backed-Up Files

=====

This article last reviewed: 2 August 1988

Some users have asked about recovering and rejoining data backed up on HD Backup:

- If one 3.5 disk is re-written, missing, or otherwise unrecoverable, HD Backup can not recover any of the other disks. Also, if a file is larger than 800K, it is split up and placed on separate floppies.

The best solution, of course, is to avoid the situation in the first place. WRITE PROTECT your backup diskettes, then use them only to restore files.

Once the problem has occurred, there are a few options for recovering the information:

- Insert the diskettes. From the Finder, copy files back to the hard disk.
- Rejoin split files using FEdit or some other utility

The second option might be a little challenging for some users:

DATA FORK

- If the data fork of the file is split over two disks, patch the files back together using Fedit's Multiple Sector Write, or a utility of your own.

RESOURCE FORK

- Rejoining a resource fork split over two diskettes is a little more complicated. The portion of the resource fork located on the first diskette should be normal. The portion on the second diskette contains a 512 byte header that should be disregarded. Again, rejoin the two halves with Fedit, or other utility.

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Tech Info Library

AppleCD SC: Audio Specifications (Discontinued)

Revised: 9/13/93
Security: Everyone

AppleCD SC: Audio Specifications (Discontinued)

Article Created: 6 September 1988
This article last reviewed: 2 August 1988

Here are the specifications for the playing of compact audio discs on the AppleCD SC Drive. These are the minimum standards that the drives must meet before they are sold:

S/N ratio	>83 db
distortion	<0.01%
frequency range	20 - 20KHz
frequency response	100 Hz +/- 0.5 db
	20 KHz + 0.5 db
	- 3.0 db
channel separation	not specified

A sampling of AppleCD SC Drives were tested by Sony. Their test results show that the lot examined contained drives that exceeded our specifications:

S/N	90 db
distortion	.008%
crosstalk (channel seperation)	70 db

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Tech Info Library Article Number:3164



Tech Info Library

Appleshare PC 1.1: Doesn't Support 3rd Party PC LocalTalk Cards

Revised: 8/28/90
Security: Everyone

Appleshare PC 1.1: Doesn't Support 3rd Party PC LocalTalk Cards

=====

This article last reviewed: 6 October 1988

AppleShare PC 1.1 is not designed to work with third-party PC LocalTalk cards such as the Hercules Video/Appletalk card, TOPS or Flash LocalTalk cards. This is because the current protocol stack writes directly to Apple's LocalTalk PC Card.

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Tech Info Library Article Number:3165



Tech Info Library

LaserWriter IINT: Setting up PostScript Connection To PC (4/95)

Revised: 4/21/95
Security: Everyone

LaserWriter IINT: Setting up PostScript Connection To PC (4/95)

=====

Article Created: 10 August 1988
Article Reviewed/Updated: 21 April 1995

TOPIC -----

This article describes how to use a LaserWriter IINT in the PostScript mode with a MS-DOS/Windows computer.

DISCUSSION -----

Step 1 - Connection

Connect a 25-pin Serial cable to the 25-pin serial port on the LaserWriter IINT. Connect the other end to a serial port on the PC.

NOTE:

Most serial ports for PCs use a male DB-25 connector. The LaserWriter IINT 25-pin serial port uses a female DB-25 connector. You need to use a null modem (transmit pin goes to receive pin) female-to-male DB-25 cable.

Step 2 - Switch Settings

While the LaserWriter IINT is off, set the printers DIP switch settings to:

- 1 UP
- 2 DOWN

These switch settings place the LaserWriter IINT in:

PostScript Batch Mode,
RS-232 9600 Baud,
RS-422 9600 Baud,
8 data bits , No parity check, 1 stop bit, with XON/XOFF handshake.

Step 3 - Power On

Turn on the LaserWriter IINTX and the PC. After a few seconds, the LaserWriter II will print a test page containing its current settings (as listed above).

Step 4 - PostScript Code

The PostScript code that follows is used to switch the LaserWriter II into 8 data bit PostScript batch mode.

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

NOTE:

The "%" characters and following comments are not necessary. You can remove them when typing in the program.

For DTR/DSR, from the DOS prompt type:

```
COPY CON POST.TXT
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver %This exits the printer server loop
statusdict begin           %Start modifying settings
25 9600 68 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data bits
end                         %This is the end of the mode switch routine
(control z)                %The keyboard control key and the z key together
%                           This ends text editing and saves the file.
%
% End PostScript Code
%=====
```

For XON/XOFF, from the DOS prompt type:

```
COPY CON POST.TXT
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver %This exits the printer server loop
statusdict begin           %Start modifying settings
25 9600 64 setsccbatch %set the 25 pin RS-232 9600 Baud port-8 data bits
end                         %This is the end of the mode switch routine
(control z)                %The keyboard control key and the z key together
%                           This ends text editing and saves the file.
%
% End PostScript Code
```

%=====

Step 5 - Batch File

A batch file needs to be created to set up the PCs communications port and to send the PostScript code to the printer. From the DOS prompt, type:

```
COPY CON POST.BAT
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
TYPE POST.TXT > LPT1
(control z)
```

Step 6 - Change to 8 data bit PostScript batch mode

Type POST from the DOS prompt to set the NT to 8 data bit PostScript batch mode. The printer will switch from the 7 data bit PostScript batch mode to 8 data bit PostScript batch mode.

Step 7 - PostScript Code for testing the mode change

The PostScript code that follows tests the mode change. From the DOS prompt, type:

```
COPY CON TEST.TXT
%=====
% Begin PostScript Code
%
/Helvetica findfont 14 scalefont setfont
30 500 moveto
(The Options number for the 25-pin port is ) show
statusdict begin 25 sccbatch 10 string cvs show
pop showpage
(control z)
%
% End PostScript Code
%=====
```

Step 8 - Test mode change

To test the mode change, type the following from the DOS prompt:

```
TYPE TEST.TXT > LPT1
```

After a few seconds, the LaserWriter II should print a page containing the following text:

'The Options number for the 25-pin port is xx'

('xx' equals the third number in the third line of the PostScript code created in step 4 (either 68 or 64).

Problem Solving:

=====

LaserWriter IINT does not print after test PostScript code is sent:

- Check cable connections and paper supply to the LaserWriter IINT. Turn off any spooler commands that may be implemented on the PC.
- Check the PostScript files (POST.TXT) and (TEST.TXT) along with the (POST.BAT) batch file for any typing errors. If none are apparent, try re-typing the code of both PostScript files from scratch. If you have the ability to copy and paste the PostScript directly from this article, you should do this.

If the LaserWriter IINT does not receive the PostScript code character for character, the mode change or test will not work. Once the code has been re-typed, send it to the LaserWriter II. If the LaserWriter II prints the page, then all is well. If the LaserWriter II does nothing, then start over from step #1.

LaserWriter IINT will not print from within an application:

- Check the applications print settings to ensure that it is sending output to LPT1 or COM1. The application must support PostScript, and must be set to output to a PostScript device.

NOTE:

The LaserWriter IINT does not support software switching between configurations, such as PostScript and Diablo, or LocalTalk and serial.

Article Change History:

- 21 Apr 1995 - Corrected Data bits and cable information.
- 22 Feb 1995 - Added PostScript caution and reformatted article.

Support Information Services

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Tech Info Library Article Number:3168



Tech Info Library

LaserWriter IINT: Diablo 630 Emulation Mode (8/95)

Revised: 8/22/95
Security: Everyone

LaserWriter IINT: Diablo 630 Emulation Mode (8/95)

=====

Article Created: 21 November 1988
Article Reviewed/Updated: 21 August 1995

TOPIC -----

I need to print from my LaserWriter IINT in Diablo 630 emulation mode. How do I accomplish this?

DISCUSSION -----

Here is the method for serial connection from a PC to the LaserWriter IINT in Diablo 630 emulation mode:

1) Connection:

Connect an Apple 25 pin Serial cable (590-0037) to an Apple Modem Eliminator (590-0166). Connect one end to the 25 pin serial port on the LaserWriter IINT. Connect the other end to a serial port on the PC.

NOTE: Most serial ports for PCs use a male DB 25 connector. Since both ends of the Apple 25 pin serial cable are male, a female-to-female gender changer is required for connection to a PC serial port. An alternative is to use a straight pin-to-pin female-to-male DB 25 cable.

2) Switch Settings:

While the LaserWriter IINT is off, set the printers DIP switch settings to:

- 1 DOWN
- 2 UP

These switch settings place the LaserWriter IINT in:

Diablo 630 emulation,
RS-232 9600 Baud,
7 data bits, No parity check, 1 stop bit, with XON/XOFF handshake.

3) Power On:

Turn on the LaserWriter IINT and the PC. After a few seconds the LaserWriter IINT will print a test page containing its current settings (as listed above).

4) Set PC Communications port:

From the DOS prompt type:

```
MODE COM1:96,N,7,1,P
MODE LPT1:=COM1
```

NOTE: The LaserWriter IINT does not support 8 data bit Diablo emulation mode, meaning that ASCII characters 128-255 -- special graphic characters -- cannot be printed.

5) When printing from DOS, always follow the print command with a 'Control D'. A 'Control D' tells the LaserWriter IINT that the data transmission is completed, and printing can now begin. The best method is to create another text file with a 'Control D' inside. Enter the following from the DOS prompt:

```
COPY CON D.TXT
(Control D)
(Control Z) or (F6)
```

Now, make a batch file to send the end-of-page marker to the printer. From the DOS prompt enter:

```
COPY CON END.BAT
TYPE D.TXT > LPT1
(Control Z) or (F6)
```

After doing a TYPE or DIR to the printer, just type END, and the printer will print any remaining data in the buffer.

If your print job does not have a Control-D (end of page) character, you will have to wait for a job time-out for your print job or until another job is printed that is larger than a page.

NOTES:

The LaserWriter IINT does not support Diablo 630 mode over an AppleTalk network.

The LaserWriter IINT does not support software switching between configurations, for example, PostScript and Diablo or LocalTalk and serial.

There is also no available software for switching back to PostScript or any other emulation mode once leaving the PostScript mode. The correct method is to change the DIP switch settings and wait 30 seconds. If PostScript is desired, switch one should be set to DOWN. Wait 30 seconds and place switch back to the UP position.

Article Change History:

21 Aug 1995 - Corrected minor errors.

23 Sep 1992 - Rewritten to combine with similar articles.

Support Information Services

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Tech Info Library Article Number:3169



Tech Info Library

Using Non-Apple SIMMs In Macintosh

Revised: 7/21/92
Security: Everyone

Using Non-Apple SIMMs In Macintosh

Article Created: 3 August 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

Many users have asked about the differences between Apple SIMMs and those in other vendors' products -- particularly physical size differences, speed differences, and parity checking.

DISCUSSION -----

Numerous third party vendors offer SIMMs that seem to work fine in the Macintosh. Although we don't specify the technical requirements of third-party SIMMs, many of those suppliers have either obtained Apple's specification or determined our system requirements, designing their chips accordingly.

Many of these vendors may be located by searching in Macintosh periodicals.

IBM is another computer manufacturer that is using SIMMs in their PS2s. Some differences are:

	Parity Checking	Basic Configuration	Speed
	<hr/>	<hr/>	<hr/>
IBM	yes	256Kb x 9 1Mb x 9	variable
Apple	no	256Kb x 8 1Mb x 8	120,150ns 120ns

A SIMM that provides for parity checking doesn't EXCLUDE that RAM from being used in a Macintosh. Such SIMMs could be used if all other timing

and pinouts were compatible, since the Macintosh will merely ignore that extra line.

Apple engineers have experimented with 2 IBM Model 30 256Kb x 9 SIMMs in a Macintosh Plus, and although the testing has not been extensive, these SIMMs have functioned using routine applications -- Excel, HyperCard, Microsoft Word, etc. -- and have passed a short and extended memory test.

However, just because these SIMMs appear to work doesn't mean that Apple can endorse the use of "IBM" SIMMs in our systems. IBM suppliers and PS2 third party vendors use differing RAM and designs to meet PS2's requirements, not ours.

Also, "IBM" SIMMs are available in a variety of speeds, including: 80, 100, 120 and 150ns. The 150ns chips should definitely NOT be used in a Macintosh II which requires at least 120ns SIMMs.

SIMM size:

- Apple currently uses surface mount technology (SMT) RAM, but there shouldn't be a problem using DIP through-hole chips. DIP chips tend to stand a little taller than SMT chips; but as long as they aren't so tall that they interfere with other SIMMs, they should work fine.

Another consideration is the height of the board itself: it must not be so tall as to interfere with expansion cards in a Macintosh SE (if any), or the chassis in a Macintosh Plus. However, there ought to be plenty of vertical room in a Macintosh II.

(NOTE: Apple LaserWriter SIMMs are physically and electronically incompatible with Macintosh SIMMs.)

For more information, search under: "SIMMs"

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Tech Info Library Article Number:3170



Tech Info Library

Products That Enable Shared Serial Devices on AppleTalk

Revised: 9/6/88
Security: Everyone

Products That Enable Shared Serial Devices on AppleTalk

=====

This article last reviewed: 2 August 1988

If you need to share serially-attached products on an AppleTalk-based LAN -- such as Hewlett-Packard plotters, or HP LaserJets -- Mesa Graphics' Plot-It driver will drive a variety of plotters, including Hewlett-Packard models.

When used with Shiva's NetSerial product, Plot-It can drive a plotter over an AppleTalk network.

Both NetSerial AND Plot-It may be obtained through Mesa Graphics.

For more information, search under: "Mesa Graphics" or "Shiva Corporation"

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Tech Info Library Article Number:3171



Tech Info Library

A/UX: Non-Apple Systems Can Used As Archives

Revised: 9/29/92
Security: Everyone

A/UX: Non-Apple Systems Can Used As Archives

=====

Article Created: 20 July 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Non-Apple systems incapable of booting A/UX software can be used to create A/UX archival copies or can have Right to Copy (RTC) masters put on them.

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Tech Info Library Article Number:3173



Tech Info Library

Sound Samplers: Descriptions of Some Third-Party Products

Revised: 5/24/89
Security: Everyone

Sound Samplers: Descriptions of Some Third-Party Products

=====

This article last reviewed: 10 May 1989

MacLab System from WPI Instruments, Inc.

ADC and DAC in a box that connects to modem port of any Mac.
Sample rates to 40k/sec.
Comes with wave display and wave statistics software.

LabMaster II from Scientific Solutions

NuBus board for Mac II.
12-bit ADC, Two 12-bit DAC's, 24 lines of digital I/O, Five 16-bit counter/timers. Sample rates to 40k/sec. (100k/sec. with TM-100 option). Comes with "device drivers for multi-language application development."

MacAdios 411 from GW Instruments, Inc.

Add-on box that connects to modem port of Mac 128, 512, Plus or SE.
12-bit ADC and DAC, with 8 differential input channels and 4 output channels. Sample rates to 20,833/sec. 16 digital input lines, 16 digital output lines. Interface code in Microsoft BASIC and Aztec C, library of data acquisition/analysis routines.

MacAdios II from GW Instruments, Inc.

NuBus board for Mac II.
12-bit ADC and DAC, with 16 single-ended input channels.
(8 differential) and 2 output channels. Sample rates to 142k/sec.
8 digital input lines, 8 digital output lines. 3 15-bit counter/timers.
Up to 3 optional daughter boards can be added:
12-bit, 833k/sec ADC
12-bit, 142k/sec ADC
16-bit, 100k/sec DAC
16-bit, 16k/sec DAC
16-bit, 50k/sec ADC

Multiplexor card (additional 32 single-ended, or 16 diff. inputs)
Digital I/O (additional 16 digital inputs and 16 digital outputs)
Analog filter (programmable lowpass)
Prototype card

Interface routines callable from Aztec C, Consulair C, Microsoft BASIC, DCM FORTRAN, Lightspeed Pascal, Lightspeed C, library of data acquisition/analysis routines.

National Instruments NB-MIO-16 from National Instruments, Inc.

NuBus board for Mac II.

12-bit ADC with 16 single-ended input channels (8 differential).

2 12-bit DACs, 8 digital I/O lines, 3 16-bit counter/timers.

Sample rates to 40k/sec. Up to 111k/sec with optional convertors.

Can be set up for DMA if used with NB-DMA-8 controller card.

Strawberry Tree ACM2-12 and ACM2-16 from Strawberry Tree Computers

NuBus boards for Mac II.

Each has ADC and DAC. Number of analog and digital I/O channels depends on board option selected. Sample rates up to 500k/sec.

ACM2-12 is 12-bit, ASCM2-16 is 16-bit. On-board counter/timer.

Strawberry Tree ACSE-12 and ACSE-16 from Strawberry Tree Computers

Plug-in boards for Mac SE.

ADC with 8 differential input channels. 10k/sec. sampling rate.

ACSE-12 is 12-bit, ACSE-16 is 16-bit.

8 digital I/O lines. On-board counter/timer.

Comments

The GW Instruments MacAdios 411 box which has MacSpeech Lab software and MacSpeech Lab II for the Mac II. The MacSpeech Lab II package is useful for analyzing and editing digitized waveforms, especially speech or animal vocalizations. It has time-domain waveform displays, FFT, LPC, envelope and energy displays, and a grayscale spectrogram display.

The GW hardware and the boards from National Instruments can be used with the LabView software package from National. LabView is a Macintosh-like system for configuring data acquisition systems by connecting icons in a dataflow diagram. Strawberry Tree has a somewhat similar software package called "Analog Connection Workbench" that works with their hardware.

One bit of warning for anyone considering the purchase of a 16-bit sampling device that plugs into a computer slot. Just because the board has 16 bits of resolution does NOT mean that you can obtain 16-bits worth of wideband signal-to-noise ratio from it. That takes some very careful design work. Often, designers of these products are not primarily concerned with this kind of compact-disc-like noise level.

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Tech Info Library Article Number:3174



Tech Info Library

A/UX: Serial Buffer Size And Storage Issues

Revised: 9/29/92
Security: Everyone

A/UX: Serial Buffer Size And Storage Issues

Article Created: 24 August 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.

TOPIC -----

This article discusses the input serial buffer, including questions concerning the default size of this buffer, whether it can be changed, and where the size of this buffer is stored. Answers involve the SCC (Serial Communication Controller) chip and the A/UX TTY device driver.

DISCUSSION -----

On the hardware side, the SCC chip has a three-character buffer. It is doubtful that the built-in buffer size can be changed.

The A/UX TTY device driver uses the "clist" style of character buffering. The "cblocks" in A/UX are only 26 bytes. This is a defined constant value in the kernel (#define CLSIZE 26 in /usr/include/sys/tty.h). To change it, you must re-compile the kernel.

In general, a hardware overrun error occurs, if the SCC buffer overflows because the input device driver doesn't read it often enough. A software overrun error occurs if an input device driver's buffer overflows because the application (like a communication program) doesn't issue read calls to the driver often enough, .

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Tech Info Library Article Number:3176



Tech Info Library

Macintosh To CDC Cyber Connectivity

Revised: 5/10/89
Security: Everyone

Macintosh To CDC Cyber Connectivity

=====

This article last reviewed: 25 August 1988

The only package currently known to Apple that provides connectivity from Macintoshes to CDC's (Control Data Corporation's) Cyber mainframe computers is called "CONNECT", and is available from CDC.

CONNECT provides terminal emulation and file transfers under protocol protection for the Macintosh. Terminal emulation supports both line mode and screen mode processing, and is augmented with features such as customized key definitions, use of color, national character set support, menus, configuration control, etc.

For more information, search under: Control Data Corporation

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Tech Info Library Article Number:3177



Tech Info Library

AppleTalk: A Discussion Of Problems Caused By Hello Broadcasts

Revised: 11/2/88
Security: Everyone

AppleTalk: A Discussion Of Problems Caused By "Hello" Broadcasts

=====

This article last reviewed: 29 August 1988

Customers with large networks comprising large numbers of computers (usually of diverse makes and kinds) have had to deal with two classes of AppleTalk problem.

The first problem has to do with the Routing Table Maintenance Protocol (RTMP) which causes AppleTalk devices to broadcast a "hello" message every 10 seconds, a message each device on the network must analyze. Some stated that Appletalk devices were the most talkative devices on the network.

The second problem is the limitation of 254 nodes on a single AppleTalk segment. Because there is no bridging provided by the standard EtherNet bridges AppleTalk sees all segments as one large network. Therefore, it does not take long to exceed this limit with Ethertalk and Fastpaths.

According to AppleTalk/EtherTalk engineering, if any workstations on a network have an AppleShare volume mounted, they will see increased traffic. When a workstation has an AppleShare volume mounted, it sends a request to the AppleShare server every 10 seconds asking for an update of the folder information for that volume. However, this is NOT a broadcast; it is a directed transaction to the AppleShare server that consists of one request from the workstation and one response from the server. This additional traffic should not cause a problem.

The only nodes that send broadcasts every 10 seconds are bridges and routers. They broadcast routing table information every 10 seconds, so that other routers can update their tables. Non-router nodes also listen to these broadcasts so they can keep track of a router address for next time they have to send a message across the internet.

Currently, EtherTalk (AppleTalk) network information packets also become Ethernet broadcasts. This means that non-AppleTalk nodes will get routing table and other broadcasts. A future release of EtherTalk will add a feature to send an EtherTalk broadcast that is NOT an Ethernet broadcast.

Lastly, AppleTalk/EtherTalk engineering is working on the AppleTalk's 254 nodes limit problem tentatively set for release in 1989.

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Tech Info Library Article Number:3178



Tech Info Library

CADAM Software on Macintosh

Revised: 9/6/88
Security: Everyone

CADAM Software on Macintosh

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This article last reviewed: 29 August 1988

For those of you running CADAM software on a Spectrographics workstation and storing files on an Amdahl Mainframe, here is some information to keep in mind:

While CADAM does output files in an IGES format when using the Mainframe version of the software, it does NOT output IGES format when running the mini or micro version of the software. To transfer a drawing into the Macintosh environment you need a utility like CadMover. CadMover converts IGES file format to other formats including those used by the Macintosh. Its capabilities include:

IGES -> MiniCad
IGES -> DXF
IGES -> MacDraw
IGES -> PICT
IGES -> MSC/pal

For more information, contact Kandou Software Corporation.

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Tech Info Library Article Number:3179



Tech Info Library

35mm Color Slide Makers: DICOMED DDC Format Conversion

Revised: 4/9/91
Security: Everyone

35mm Color Slide Makers: DICOMED DDC Format Conversion Utilities

=====

This article last reviewed: 29 August 1988

There have been requests for a product that takes presentation graphics (35mm color slides) prepared on a DICOMED system and converts them for use, editing, or display, on a color Macintosh II. DICOMED has two file formats. The "DDC" file format works with DICOMED's film recorder. The "DICOMEDia" file format works with other DICOMED equipment.

The 'DDC' file format is included in the film recorder's documentation. Currently there is no product that can translate DDC to/from Macintosh. However, with documentation available for both 'DDC' and Macintosh, a translator could be written.

The 'DICOMEDia' file format is propriety. An application exists that converts Macintosh images to the 'DICOMEDia' format. However, it does not convert 'DICOMEDia' to Macintosh. This program is available from Stradeware of Denver, Colorado.

For more information, search on "Stradeware".

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Tech Info Library Article Number:3180



Tech Info Library

Applied Computer Services

Revised: 8/5/93
Security: Everyone

Applied Computer Services

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Article Created: 6 September 1988
Article Reviewed/Updated: 15 March 1993

Applied Computer Services

P.O. Box 2193
Norwalk, CT 06852

203-849-9557

203-849-9890 Fax

Company Profile:
Applied Computer Services, software, specializing in industrial engineering.

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Tech Info Library Article Number:3181



Tech Info Library

GW Instruments, Inc.

Revised: 4/3/97
Security: Everyone

GW Instruments, Inc.

=====
Article Created: 09/06/88
Article Reviewed: 07/08/93
Article Updated: 04/03/97

GW Instruments, Inc.

35 Medford St.
Summerville, MA 02143

617-625-4096

617-625-1322 Fax

Company Profile:

Software and hardware, specializing in sound sampling, NuBus boards, SCSI interfaces, esp. interfaces from Mac to scientific equipment.

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Tech Info Library Article Number:3183



Tech Info Library

Scientific Solutions

Revised: 4/3/97
Security: Everyone

Scientific Solutions

=====

Article Created: 6 September 1988
Article Reviewed/Updated: 3 April 1997

Scientific Solutions

6225 Cochran Road
Solon, OH 44139

216-349-4030

800-344-4463 (General)
800-624-8560 (Sales)

Fax: 216-349-0851

Company Profile:
Hardware, specializing in NuBus boards for sound sampling and a tape backup unit.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3184



Tech Info Library

Strawberry Tree Computers

Revised: 4/3/97
Security: Everyone

Strawberry Tree Computers

=====

Article Created: 6 September 1988
Article Reviewed/Updated: 3 April 1997

Strawberry Tree Computers

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408-736-3083
408-736-8800 (Main)

Fax: 408-736-1041

Company Profile:
Hardware, specializing in NuBus boards for the Macintosh II and plug-in boards
for the Macintosh SE.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3186



Tech Info Library

WPI Instruments, Inc.

Revised: 7/20/93
Security: Everyone

WPI Instruments, Inc.

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Article Created: 6 September 1988
Article Reviewed/Updated: 20 July 1993

WPI Instruments, Inc.

175 Sarasota Center Blvd.
Sarasota, FL 34240

813-371-1003

Fax: 813-377-5428

Company Profile:
Hardware, specializing in medical equipment for neuro-science research.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3187



Tech Info Library

Seagate Technology

Revised: 4/3/97
Security: Everyone

Seagate Technology

=====

Article Created: 6 September 1988
Article Reviewed/Updated: 3 April 1997

Seagate Technology Corporate HQ

920 Disk Dr.
Scotts Valley, CA 95066

408-438-6550 (Main)
408-438-8222 (Technical Support)
408-438-8771 (BBS)

408-429-6256 (Fax)

Minnisota District:
7801 Computer Ave.
Bloomington, MN 55435

612-844-8000

Fax: 612-844-7012

Company Profile:
Formwely Control Data Corp. Data Storage Division, hardware, specializing in
high-capacity disk drives.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3188



Tech Info Library

DayStar Digital Inc. (4/97)

Revised: 4/2/97
Security: Everyone

DayStar Digital Inc. (4/97)

=====
Article Created: 06 September 1988
Article Reviewed/Updated: 02 April 1997

TOPIC -----

DayStar Digital, Inc.

DISCUSSION -----

DayStar Digital, Inc.
5556 Atlanta Highway
Flowery Branch, GA 30542

Main Phone: (707) 967-2077
Sales Phone: (800) 962-2077
Main Fax: (707) 967-3018

Immediate Fax Back System: 1-800-438-0370

WWW URL: <http://www.daystar.com/>

Company Profile:
DayStar Digital, Inc., hardware and software, specializing in connectivity products and PowerPC PDS card upgrades for selected 68040- based Macintosh models.

Article Change History:
11 Mar 1994 - Added Immediate Fax Back System info.
7 Dec 1993 - Added info on PowerPC upgrades to company profile.
7 July 1993 - Phone Information Corrected
02 Apr 1997 - Fax back number corrected and URL added.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3190



Tech Info Library

TPS Electronics

Revised: 4/3/97
Security: Everyone

TPS Electronics

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Article Created: 6 September 1988
Article Reviewed/Updated: 3 April 1997

TPS Electronics

4047 Transport St.
Palo Alto, CA 94303

415-856-6833

800-526-5920

Fax: 415-856-3843

Company Profile:
Hardware, specializing in magnetic strip and bar code readers.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3191



Tech Info Library

System 6.0: Old Smart Alarms and Macromaker Incompatibility

Revised: 9/6/88
Security: Everyone

System 6.0: Old Smart Alarms and Macromaker Incompatibility

=====

This article last reviewed: 2 August 1988

Some users may have had problems copying of files while running Macromaker under System v6.0.

One common problem occurs when the file name starting with a "." is reached. At this point, the Finder disappears and then restarts. The file with the "." is partially copied, and cannot be deleted until the system is rebooted.

This problem may be due to vestigial resources from Smart Alarms residing within the system. Many people used Smart Alarms until compatibility problems began to appear with System v5.0, and the remaining resources can cause even greater incompatibility difficulties with System v6.0.

One solution is for anyone who has previously used Smart Alarms to completely replace their system file.

However, Imagine Software has also made an inexpensive update for Smart Alarms which allows System v6.0 to function smoothly.

For more information, search under: "Imagine Software"

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3192



Tech Info Library

MacTerminal and VT100

Revised: 4/1/94
Security: Everyone

MacTerminal and VT100

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This article last reviewed: 24 August 1988

It is possible for MacTerminal to change into application keypad mode without using MacroMaker. Since MacTerminal acts as a VT100 terminal, it will respond to VT100 escape sequences sent to it from a host computer.

To get MacTerminal to send application commands with the keypad, all you need to do is have the host system send <escape>=, where <escape> is the escape character. Likewise, to get MacTerminal to return to normal mode, send <escape>> (escape greater than) from the host to MacTerminal.

Tech Info Library Article Number:3193



Tech Info Library

LaserWriters: How To Print Mathematical Symbols Under MS-DOS

Revised: 3/4/90
Security: Everyone

LaserWriters: How To Print Mathematical Symbols Under MS-DOS

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This article last reviewed: 13 March 1989

This article describes how to generate mathematical symbols on various models of the LaserWriter, from an MS-DOS application, like PC/Write.

LaserWriter IINTX

If you're using a LaserWriter IINTX in HP LaserJet mode, you can purchase from Hewlett-Packard the "Letter Gothic Base Set" (HP 33412A), 5.25-inch MS-DOS. The Math 7 and Math 8 fonts are included in this set, and these fonts can be downloaded into the LaserWriter for use in HP LaserJet mode. These are extended characters, meaning 8 bit mode must be in effect, both computer and printer. (The 8-bit mode lets the extended characters pass from the computer to the printer.)

Other LaserWriters

If you are using PostScript with a LaserWriter model other than the LaserWriter IINTX, your application should provide some method for dealing with different typefaces. Choose the Symbol font and type the key equivalent for the math symbols.

(NOTE: Printing the Macintosh screen while in Key Caps will provide a map to the Symbol key equivalents.)

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Tech Info Library Article Number:3195



Tech Info Library

AppleColor RGB Monitors: No Anti-Glare Facing For U.S. Models

Revised: 9/6/88
Security: Everyone

AppleColor RGB Monitors: No Anti-Glare Facing For U.S. Models

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This article last reviewed: 9 August 1988

The U.S. versions of the color monitor for the Macintosh II and the Hi-Res color monitor for the Apple IIGS do NOT have an anti-glare facing. UL, FCC, and CSA standards do not require such facing.

However, these monitors ARE anti-glare faced for some European countries. For example, Germany operates on the VDE standard which does specify an anti-glare facing.

Apple decided that the anti-glare facing detracted from the sharpness of the image on color monitors, and so specified that the anti-glare not be place on the color monitors except in those countries where required.

Apple does not know of any U.S. agencies currently working on an ergonomic specification of this type. Inside the US, the purchase of monitors with an anti-glare facing, or the addition of an anti-glare filter, is currently left to the discretion of the buyer.

Apple only performs reflectivity tests on those monitors which require certification of the anti-glare face to meet a specific country's requirements.

Current testing of the European monitors is done to meet the DIN 67530 standard:

- 15% - 75% reflectivity required @ 60% light incidence
- 20% - 50% reflectivity recommended @ 60% light incidence

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3196



Tech Info Library

Apple IIGS 3.2 System: ATLOAD.0 Conflict

Revised: 6/29/90
Security: Everyone

Apple IIGS 3.2 System: ATLOAD.0 Conflict

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This article last reviewed: 18 August 1988

When installing the new System 3.2 on an existing ProDOS disk (such as a hard disk), make sure to remove the ATLOAD.0 file from the /SYSTEM/SYSTEM.SETUP folder.

There appears to be a conflict with this file and the new AppleTalk setup files. If this file is not removed, the system will drop into Monitor mode during the boot process.

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Tech Info Library Article Number:3197



Tech Info Library

3Com 3+: Some Incompatibilities With The Macintosh

Revised: 4/9/91
Security: Everyone

3Com 3+: Some Incompatibilities With The Macintosh

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This article last reviewed: 18 August 1988

Some users have asked about the AFP compatibility of 3Com's 3+ with the Macintosh family.

The 3+ network operating system for Macintoshes and MS-DOS compatible computers provides transparent file sharing between Macintosh and IBM PC-compatible computers. The 3+ software is only AFP-compatible in that you can use the software at the same time that you have an AppleShare volume mounted. The 3+ software was written before AFP specifications were made public, and does not implement any AFP calls. It has not been updated to use AFP.

3+Share software also looks quite different than AppleShare software. You cannot mount a 3+Share volume using the standard AppleShare chooser method. The interface for such tasks as network administration, setting passwords, and setting access privileges is not the same as the AppleShare interface, either.

The 3+ network operating system is an ALTERNATIVE to the AppleShare File Server and Print Server. It provides file service, print service, naming service, and internetwork routing service, and should be considered compatible with AppleShare only in that it doesn't actively interfere.

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Tech Info Library Article Number:3198



Tech Info Library

Why No Kana Operating System Exists For The Macintosh

Revised: 9/25/92
Security: Everyone

Why No Kana Operating System Exists For The Macintosh

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Article Created: 18 August 1988

Article Change History:

09/24/92 - REVIEWED

- For technical accuracy.

Some users have asked about a Kana operating system for the Macintosh. Not only is Apple not aware of any such OS, it is unlikely there would be one.

To better explain how this all works, let's look at how the Japanese written language has developed:

Japanese writing is a blend of four written character sets: Kanji, Hiragana, Katakana and Romaji. Characters from all four sets can occur in a single sentence. Hiragana and Katakana are two elements of what is known as Kana.

Kanji

Written communication in Japan began with the direct importation of the Chinese picture characters the Japanese call Kanji. Initially, each Kanji symbol was used in Japanese to represent a single word.

Kana (Hiragana & Katakana)

Eventually, the Japanese devised two separate phonetic syllabaries called Hiragana and Katakana, or simply Kana. Hiragana and Katakana are two different styles of writing the same sounds. Unlike the Kanji, each Kana character represents a syllable rather than a word or concept. Both are used in conjunction with Kanji to form the Japanese written system of today.

Romaji

..TIL03199-Why_No_Kana_Operating_System_Exists_For_The_Macintosh.pdf

Romaji are Roman alphabetic characters. These characters are rarely used except in dealing with foreigners and occasionally a company name.

Given these facts, a Kana OS would be a subset of KanjiTalk.

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Tech Info Library Article Number:3199



Tech Info Library

Inter•Poll's Responder Broadcasts Only On Request

Revised: 11/2/88
Security: Everyone

Inter•Poll's Responder Broadcasts Only On Request

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Article Created: 24 August 1988

Article Change History

08/25/92 - REVISED
• In correct format.

TOPIC -----

Does Inter•Poll's Responder INIT increases the number of packets on the network when an inquiry is not currently outstanding? In other words, if Inter•Poll is not polling, is Responder broadcasting any packets?

DISCUSSION -----

The Responder INIT that comes with Inter•Poll does not broadcast any packets over a network unless Inter•Poll sends a request for Responder to do so.

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Tech Info Library Article Number:3201



Tech Info Library

Macintosh: Serial Ports Do Not Provide Power For Peripherals

Revised: 7/16/92
Security: Everyone

Macintosh: Serial Ports Do Not Provide Power For Peripherals

=====

Article Created: 1 July 1985
Article Last Reviewed: 30 June 1992
Article Last Updated: 30 June 1992

TOPIC -----

Is there any way to get power through the serial port to a peripheral?

DISCUSSION -----

Devices (such as modems) may NOT draw power from the Macintosh serial ports. On the Macintosh 128K, 512K and 512K enhanced (which use DB-9 connectors for the modem and printer ports), Pin 6, the +12V pin, is strictly a power-on indicator and may not be used as a power source of any kind.

Macintosh Plus and later computers (which switched to Mini DIN-8 connectors for the serial ports) lack the +5 and +12 Volt signals from the earlier models.

Despite warnings from Apple that the +5 and +12 Volt signals found on the DB-9 serial ports on the 128K and 512K Macintoshes could be removed in the future, some manufacturers designed peripherals that relied on one or both of those signals. These peripherals (e.g. Thunderscan) may not work properly on a Macintosh Plus or later Macintosh due to the removal of the above-mentioned signals. If this is the case, contact the manufacturer of the peripheral for a suggested solution. Some manufacturers offer external power supplies to take the place of the absent signals.

This change also means that a Macintosh application may have to control a peripheral's DTR line.

The serial ports from the Macintosh Plus and later models do not provide power for any peripheral devices. The DTR line (Pin 1) is intended to provide an output handshake signal only, NOT to power external devices.

Any devices connected to the serial ports of the Macintosh Plus or newer models must get their power from an external source, separate from the Macintosh system. Apple does not support devices that receive their power from serial ports.

The solution is to use a separate power source to supply the voltage needed for these modems or peripherals.

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Tech Info Library Article Number:3202



Tech Info Library

AI: Some Working Definitions Of The Terminology (Part 2 of 2)

Revised: 6/17/92
Security: Everyone

AI: Some Working Definitions Of The Terminology (Part 2 of 2)

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Article Created: 19 August 1988
Article Last Reviewed: 9 June 1992
Article Last Updated:

This article continued from "Working Definitions Of Some "AI" Terminology (Part 1 of 2)"

Expert Systems:

Computer systems that address subjects previously requiring a human expert on hand. An excellent example of this is AppleCat diagnostics from Apple. This software can be used to isolate a Macintosh hardware problem that previously required a service person (expert).

Flavors:

The Object Orientated Programming implementation used by the Explorer.

Garbage Collection:

LISP programs inherently involve frequent memory allocation and deallocation. Garbage collection is the process of reclaiming memory that was allocated, but is no longer required by the application. While LISP machines address garbage collection through hardware, any conventional machine must duplicate this effort in software, typically forcing frequent delays while waiting for the machine to return to the user (think of printing with and without a spooler). This is one of the reasons for the claim that LISP is a slow language or could never be used for real-time processing.

LISP Language vs. LISP environment vs. LISP machine:

The LISP language is the implementation of LISP, the syntax of the language.

Most of the industry recognizes that Common LISP is becoming the standard language for LISP. When we talk of a LISP environment, we are referring to the programming features offered to assist one in programming in LISP, such as the LISP listener (interpreter), debugger, inspector, object-oriented programming implementation, compiler, tag implementation, and garbage collection utilities to name a few. These are available (in a varying degree) for whatever LISP you are using. When we mention a LISP machine, we are referring to a processor/computer built specifically for running the LISP language, with hardware features optimized to run LISP.

Knowledge Engineering:

Using AI programming techniques (methodologies) -- such as knowledge representation, search, or reasoning strategies -- to solve applications requiring symbolic processing.

Knowledge Engineer :

This title gets a lot of attention these days, and often a considerably higher salary for the software developer/ programmer/ analyst familiar with AI programming techniques, languages and shells and their proper implementation.

LISP Machine:

A computer specifically designed to run the LISP language. Includes hardware support for critical "LISP" functions, such as garbage collection and data type processing.

Object Orientated Programming:

A method of programming with abstraction that allows a more natural representation of real world items (or objects). An object can be defined as a "class" that can have associated or inherited procedures, arguments, or component-objects.

An example of this is to define a new "class" of object called "COMPUTER". Each COMPUTER can be defined to have associated with it such items as a keyboard, monitor and CPU. New classes can then be defined based on this class -- a "MACINTOSH" can be a type of "COMPUTER", and as such we can assume that it has a keyboard and monitor.

When we create this new class MACINTOSH, we can also define a default CPU type of 68000. We could go on and define a procedure for the MACINTOSH called HOW-TO-RUN-APPLICATION which has a value of CLICK-ICON, (whereas the procedure for the original COMPUTER class may have an associated HOW-TO-RUN-APPLICATION value of ENTER-ARCHAIC-COMMAND). The idea is that with Object Orientated Programming, we are able to define objects in a way that more closely associates how we naturally think of the objects. Also, once we know an object

is defined, and what values it has, we don't have to worry about HOW it was defined -- as long as it works. This leads to a "Black Box" approach, where we do not concern ourselves with what is in the Black Box as long as we know it is available and works.

Rapid Prototyping:

The process of using a short "develop-test-modify" cycle, with frequent feedback, as a way to help define the final system solution. The idea is to work on the conceptual level to define a proper solution and worry about the final implementation details later, as opposed to a programmer spending significant time in development, only to arrive at a working solution that does not address the original problem correctly.

Tagged Architecture:

Hardware support for implementing Data Type Processing on LISP Machines. This allows processing "tags" in parallel with other instructions. Any conventional hardware running LISP must duplicate this effort in software.

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Tech Info Library Article Number:3203



Tech Info Library

AI: Some Working Definitions Of The Terminology (Part 1 of 2)

Revised: 6/17/92
Security: Everyone

AI: Some Working Definitions Of The Terminology (Part 1 of 2)

=====

Article Created: 19 August 1988
Article Last Reviewed: 9 June 1992
Article Last Updated:

As with any other computer field, "AI" (Artificial Intelligence) has a distinguishing set of buzzwords. Following are a few working definitions that either are used in this paper, or that one can expect to hear when talking with a typical "AI" professionals.

Artificial Intelligence, or AI:

Trying to define AI is similar to trying to define exactly what HyperCard is to someone who has never seen it (or worse, never worked with a Macintosh). The field of AI includes many areas, such as speech, vision, robotics, natural language interfaces, neural networks, machine learning, automated programming, intelligent agents and expert systems. Typically, when someone thinks of AI, they are associating a computer/robot with a more specifically human activity (thinking, seeing, hearing, understanding, moving).

Common LISP:

With the various versions of LISP available, Common LISP is recognized as the emerging industry standard for LISP today. This should help lead to a portability and consistency among architectures, allowing a complex problem to be developed with a LISP machine, while being delivered on a less expensive, possibly non-LISP architecture.

Conventional vs. Symbolic Processing:

Conventional software has typically been used for problems that are more algorithmic or numeric in nature and well understood, with the computer use being to perform very rapid calculations or to process very large amounts of

data in an orderly fashion.

Symbolic processing deals with information that is more conceptual ("symbolic") in nature, such as: "Given a certain CAD/CAM/CAE design criteria, what is the ideal design (lowest cost, most accurate, simplest to manufacture, most reliable)." While people will typically argue that you can do anything with any language (given enough memory, disk space, programmer time...), the main advantage of symbolic processing is to free the programmer/developer from dealing with the lower levels of implementation, allowing him to focus on a higher, conceptual level of abstraction to address his real problem at hand.

Another way to think of symbolic processing is the concept of symbols. Typically a symbol represents more than just physical definition. If someone asks for a "pen", they are probably not as interested in the physical features (gold cross, BIC, apple logo or size = 5.75 inches) but rather are asking for something that will write in ink.

Data Type Processing:

LISP programs typically use a "tag" implementation that allows data types to be checked at run-time, as opposed to mandating that data types be declared in advance. This gives applications more flexibility to deal with complex and changing situations over the development life cycle.

Development vs. Delivery machines:

This distinction indicates the difference between the computer system on which an application is developed , and the computer on which the final application is delivered to the end user.

An example: a company might use a LISP machine and AI software package (which may total well over \$100,000 for initial hardware/software costs) to develop a solution, but deliver it on a microExplorer or Mac II for a much lower cost per end-user. The idea is to have the ideal development environment to save development cost and increase programmer productivity, while also being able to deliver the solution in a relatively inexpensive environment.

Domain Expert:

One typically recognized as an expert in a field (domain).

This article is continued in "AI: Some Working Definitions Of The Terminology (Part 2 of 2)".

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Tech Info Library Article Number:3204



Tech Info Library

Basic Macintosh Reference Books

Revised: 9/15/92
Security: Everyone

Basic Macintosh Reference Books

=====

Article Created: 25 August 1988

Article Change History

9/15/92 - UPDATED

- To include Inside Macintosh Volume VI.

TOPIC -----

Where can I get information on things like INITs, DRVRs, cdevs, etc.?

DISCUSSION -----

Here are some excellent Macintosh books that should help the basic user and beginning specialist understand all those annoying references to things like resources, forks, INITs, DRVRs, cdevs, etc.:

- Programmer's Introduction to the Macintosh Family (ISBN# 0-201-19254-3)
- Technical Introduction to the Macintosh Family (ISBN# 0-201-17765-X)
- Inside Macintosh, Volume I-III (ISBN# 0-201-17737-4)
 - " Volume IV (ISBN# 0-201-05409-4)
 - " Volume V (ISBN# 0-201-17719-6)
 - " Volume VI (ISBN# 0-201-57755-0)

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Tech Info Library Article Number:3205



Tech Info Library

Apple IIGS: The Differences Between Spanish And USA Characters

Revised: 9/6/88
Security: Everyone

Apple IIGS: The Differences Between Spanish And USA Characters

=====

This article last reviewed: 24 August 1988

The differences between the Apple IIGS's USA character set and its Spanish character set are listed below. The USA characters are found on the key caps. The Spanish character is displayed when Spanish is selected from the Control Panel. All other keys generate the characters displayed on the key caps.

USA	Spanish
---	-----
[	upside down exclamation mark
]	upside down question mark
\	lower-case "n" with tilde above
|	upper-case "N" with tilde above
{	degree symbol
}	lower-case "c" with cedilla
#	British pound (currency) symbol
@	section symbol

The standard "?" was generated using the shifted backslash in both USA and Spanish character sets. We were unable to locate the right accent mark in either character set.

(Unfortunately, the current version of AppleLink is unable to reproduce these special characters graphically, which is why we can't just show you the characters in this article.)

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Tech Info Library Article Number:3206



Tech Info Library

LaserWriter IINTX/IIf/IIg: Third-Party Hard Drive Compatibility

Revised: 4/14/92
Security: Everyone

LaserWriter IINTX/IIf/IIg: Third-Party Hard Drive Compatibility

=====

Article Created: 24 August 1988
Article Last Reviewed: 8 April 1992
Article Last Updated: 8 April 1992

TOPIC -----

What third-party SCSI hard drives are compatible with the LaserWriter IINTX and LaserWriter IIf/IIg?

DISCUSSION -----

Apple doesn't maintain a formal list of compatible third-party hard drives. The following information explains the conditions for compatibility.

To use a third-party drive with the LaserWriter IINTX, two conditions must be met:

- It must report SCSI termination power to the printer.
- It must report the volume size to the printer.

To use a third-party drive with the LaserWriter IIf/IIg, an additional condition must be met:

- It must report the SCSI unit attention command to the printer.

If these conditions are not met, the formatting fails and the hard drive will not work with the printer.

Note

Even when all conditions are met, some drives still may not be compatible with the printer. If you experience this problem, contact the hard drive manufacturer for compatibility information and possible workarounds.

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Tech Info Library Article Number:3207



Tech Info Library

ImageWriter LQ: List Of Escape Codes Used For Switching Bins

Revised: 9/6/88
Security: Everyone

ImageWriter LQ: List Of Escape Codes Used For Switching Bins

=====

This article last reviewed: 25 August 1988

Here are the escape codes needed to switch between bins on an ImageWriter LQ:

(NOTE: The 'Select Bin X' codes select bins only; they do not cause paper feeding.)

Function	Keystrokes	ASCII Code
Select Bin 1	Esc @ 0	27 64 48
Select Bin 2	Esc @ 1	27 64 49
Select Bin 3	Esc @ 2	27 64 50
Feed to Top of Form	Control-L	12
Set Top of Form	Esc v	27 118

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Tech Info Library Article Number:3209



Tech Info Library

HyperCard: HyperMIDI And MIDI XCMD

Revised: 6/24/90
Security: Everyone

HyperCard: HyperMIDI And MIDI XCMD

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This article last reviewed: 10 February 1989

Here are two XCMD sets for interfacing HyperCard to MIDI devices:

HyperMIDI 1.1a is a set of XCMDs for sending and receiving MIDI data from within HyperCard. It comes with several cards demonstrating different methods of managing MIDI data. One of the features of the XCMDs is the ability to place graphic sliders on cards. These sliders can be assigned to control any MIDI parameter.

HyperMIDI is available on many electronic bulletin boards and commercial software distributors.

A second set of XCMDs for HyperCard and MIDI is MIDI XCMD. This stack is not as fully featured as HyperMIDI, but will allow the recording and playback of your MIDI performance.

MIDI XCMD is available on many electronic bulletin boards and commercial software distributors.

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Tech Info Library Article Number:3211



Tech Info Library

AppleShare PC: Why It Can't Delete Extension Mapping Icons

Revised: 10/18/88
Security: Everyone

AppleShare PC: Why It Can't Delete Extension Mapping Icons

=====

This article last reviewed: 30 August 1988

AppleShare PC users have asked how to eliminate an unwanted Macintosh icon mapping -- for instance, an inadvertently-created "extra" DOS filename extension.

Actually, the number of extension mapping icons are static: they cannot be deleted. However, a file extension can be changed back to default, or to some other extension.

GENERAL INFORMATION:

AppleShare PC automatically sets a Macintosh file icon type for files created on file server volumes. These type assignments are based on the three-character DOS filename extension. DA also uses the file type and file extension information to recognize DOS text files and Macintosh file text files for potential conversion while copying.

Change Extension Mapping lets you select an icon type for a given file extension. This icon type will be assigned to all appropriate new files created on server volumes; existing files are not affected. For example, you can set all files that you created with the extension WXT to be file type Binary; whenever you create a file whose extension is WXT on the file server, it will automatically be assigned the Binary icon.

To see a list of already-mapped extensions (other than Binary), at the DOS prompt enter the command: ANET MAP

You type the extension of interest at the Extension prompt. (You don't type the initial period, and wildcards aren't allowed.) You press the Enter or Tab key to move the Type pane; then press the number of the type you want to associate with the extension you type. (You can also use the Up and Down Arrows keys to move through the list in Type pane.)

Icons for files on the server at the time you set the mapping remain unchanged.

You can change the icon type of an existing individual DOS file. Pressing F2 brings up an information window on the icon highlighted. You can change the file's type to any listed by pressing the number of the type you want to use. (Use the Up or Down Arrow key to scroll through all options.)

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Tech Info Library Article Number:3212



Tech Info Library

Apple IIe: Only Enhanced ROMs Support The Mini Assembler

Revised: 9/6/88
Security: Everyone

Apple IIe: Only Enhanced ROMs Support The Mini Assembler

=====

This article last reviewed: 30 August 1988

Not all Apple IIe systems support the mini assembler; only Apple IIe systems with the enhanced ROMs contain the mini assembler routines. (To reach this routine, type an "!" and return from the monitor.)

The enhanced ROMs starting shipping in Apple IIe systems in mid-1985.

The only supported list of monitor entry points for the Apple IIe may be found in the "Apple IIe Technical Reference Manual".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3214



Tech Info Library

AppleFax Modem: Wrong-Tone Problem May Be Misplugged Cable

Revised: 8/3/89
Security: Everyone

AppleFax Modem: Wrong-Tone Problem May Be Misplugged Cable

=====

This article last reviewed: 30 August 1988

Here is a problem some users have experienced:

When the AppleFax Modem software is loaded, and another fax machine tries to dial in, the software on the AppleFax Modem station asks the user if it should answer the phone.

When the end-user selects "Answer Phone", the person at the AppleFax Modem hears the series of tones used to establish the connection between the 2 fax machines. However, the originator of the phone call still hears that the phone is dialing, and that the destination AppleFax Modem HAS NOT answered the phone call.

This is probably because the phone cable between the AppleFax Modem and the wall is plugged into the wrong RJ-11 jack (the one with the telephone icon below it) on the back of the AppleFax Modem.

The phone cable between the AppleFax Modem and the wall should be plugged into the RJ-11 jack with the RJ-11 icon below it.

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Tech Info Library Article Number:3215



Tech Info Library

HyperCard Polygon Tool Not Supported For HyperTalk Drawing

Revised: 6/24/90
Security: Everyone

HyperCard Polygon Tool Not Supported For HyperTalk Drawing

=====

This article last reviewed: 30 August 1988

Some of you have asked why selecting the polygon tool through a script does not allow you to draw, even though drawing coordinate points are given in the script.

The polygon tool is not supported for drawing through HyperTalk, despite the fact that you can select it with the "Choose Tool" command. (This was documented in earlier version of the HyperTalk Release Notes, but has since been removed from consequent drafts of the notes.)

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Tech Info Library Article Number:3216



Tech Info Library

AppleTalk: Where to Get Licensing Information

Revised: 1/7/92
Security: Everyone

AppleTalk: Where to Get Licensing Information

=====

Article Created: 30 August 1988
Article Last Reviewed: 10 August 1992
Article Last Updated:

TOPIC -----

Can I license the source code for both standard AppleTalk and AppleTalk for VMS?

DISCUSSION -----

To do this, you must submit a written proposal to Apple Software Licensing for approval. For information on how to proceed in this matter, please contact Apple Software Licensing. Use the 408-996-1010 general Apple number to connect to the Software Licensing group.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:3218



Tech Info Library

LaserWriter Plus: Understanding How Font Downloading Is Handled

Revised: 9/6/88
Security: Everyone

LaserWriter Plus: Understanding How Font Downloading Is Handled

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This article last reviewed: 31 August 1988

Users who have created a bitmapped font (with Fontographer) and installed it in their system, then designed a spline (printer) font and written it in PostScript have asked:

What can be done so the Macintosh application will automatically download the font to LaserWriter Plus when using the screen font.

When both the bitmapped (screen) font and the spline (printer) font have been designed in Fontographer, there are two methods of downloading available:

1. Many Macintosh applications will automatically download fonts to the printer as they are needed. Whenever such a program needs a font that is not already in the printer, it searches the Macintosh disk drives for a file containing that font and downloads it. The font files must be in the current folder, the root directory, or the system folder of the startup disk. They may also be on an on-line server, if one is available. When automatically downloaded, a font is deleted at the finish of the document for which it was chosen (or, for PageMaker, at the finish of the text block.)
2. You can also download fonts to the printer manually, using the font downloading program supplied with Fontographer. When manually downloaded, a font remains in the printer, ready to be used, until you turn the printer off.

CAUTION: For most applications, four to six fonts can be downloaded to the printer before it runs out of memory. The actual number depends on the particular printer, applications and fonts you are using. (The LaserWriter IINTX with expanded memory provides more than described) If the fonts sent to the printer, both manually and automatically, exceed the printer's capacity, the printer will restart itself, ejecting a startup page and erasing all the downloaded fonts.

If some method other than Fontographer is used to generate the PostScript spline (printer) font, it is likely that the screen font and the printer font will not properly bond to one another.

Fontographer provides the proper bonding that is required for screen and printer fonts. If it is possible to open the PostScript printer file with Fontographer, Fontographer should then be able to generate the properly bonded screen and printer font files.

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Tech Info Library Article Number:3219



Tech Info Library

LaserWriter: Bold Symbol Font Can't Be Printed

Revised: 9/6/88
Security: Everyone

LaserWriter: Bold Symbol Font Can't Be Printed

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This article last reviewed: 31 August 1988

There is no way to print the Symbol font in bold when using a standard text editor.

It is possible to do this by manipulating the Symbol font information through PostScript, but this is not simple or practical.

Adobe Illustrator allows manipulation of the Symbol font in a variety of ways, but Adobe says that no bold version of Symbol is currently available.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3220



Tech Info Library

Inter•Poll: List Of Name Binding Protocol (NBP) Types & Comments

Revised: 2/16/93
Security: Everyone

Inter•Poll: List Of Name Binding Protocol (NBP) Types & Comments

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This article last reviewed: 06 March 1989

Here is a current collection of AppleTalk NBP (Name Binding Protocol) types as shown by Inter-Poll:

NBP type	Comment
=====	
AFPServer	AppleShare or AFP compatible server
Apple IIe Boot	AppleShare, w/Apple IIe boot support
Apple IIgs	AppleShare, w/Apple IIgs boot support
Apple IIe	Apple AppleTalk Card
Apple IIgs	Apple AppleTalk GS
ASManager	VAX, AlisaShare AFP Manager
ATK/VMS Bridge	VAX, Alisa, Virtual AppleTalk bridge
C-Server	Solana C-Server
ChooserName	Farallon RegisterName node
DNGate	Alisa, DECnet gateway
I-Server	Solana, AppleTalk-AppleTalk bridge
ImageWriter II	AppleTalk ImageWriter II
InBox Mailserver	InBox Mail server node
Interbridge	Hayes, AppleTalk-AppleTalk bridge
LaserShared	Spooled LaserWriter
LaserWriter	LaserWriter or LaserShare
LQ	AppleTalk ImageWriter LQ
Macintosh II	Macintosh II Apple Responder node
Macintosh Plus	Macintosh Plus Apple Responder node
Macintosh SE	Macintosh SE Apple Responder node
MS-DOS 3.3	MS-DOS PC Apple LocalTalk Card
MultiTalk	Abaton MultiTalk (Discontinued Product)
NetBridge	Shiva, AppleTalk-Async bridge
NetModem	Shiva NetModem
NetSerial	Shiva NetSerial
NMClient	Shiva NetModem client
Node	SilverServer node
NSClient	Shiva NetSerial client

Odesta MultiUser Helix	Helix Data Base Server
pcLINK	VAX, Pacer, Virtual AppleTalk bridge
ProDOS 16 Image	AppleShare, w/Apple IIgs boot support
QMServer	CE Software QuickMail server
QMSNtest	Quick Mail beta 5 node
QuickMai	Quick Mail beta 5 client node
R-Server	Solana, AppleTalk-Async bridge
ResourceServer	Microsoft Mail server node
SerialX	SilverServer node
Spooler	AppleShare Print Services Spooler
TFTPServer	Cayman GatorBox download server
Timbuktu Host	WOS Timbuktu host node
Timbuktu Serial	WOS Timbuktu node
Top2Serial	TOPS node
Top2Server	TOPS server node
Top2Station	TOPS client node

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Tech Info Library Article Number:3221



Tech Info Library

Iomega Bernoulli SCSI Drive Can Be Used As AppleShare Server

Revised: 9/6/88
Security: Everyone

Iomega Bernoulli SCSI Drive Can Be Used As AppleShare Server

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This article last reviewed: 31 August 1988

An Iomega Bernoulli SCSI drive can be used as an AppleShare server. The two 20mb drives must be separate volumes.

You will notice little or no difference in performance versus other drives with similar performance specifications.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3223



Tech Info Library

Tandy TRS-80 to Macintosh Connectivity

Revised: 5/10/89
Security: Everyone

Tandy TRS-80 to Macintosh Connectivity

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This article last reviewed: 8 September 1988

To transfer text files from a Tandy TRS-80 Model 4 to a Macintosh, you can attach the Macintosh via RS-232 cable and make the TRS-80 think the Macintosh is a printer. This is a simple inexpensive solution, necessary because the TRS-80 uses TRSDOS, a disk operating system that is not compatible with other systems' 5 1/4 inch floppy diskette formats. Here's how to do it:

- 1) From an appropriate application, save the files you want to transfer as text only.
- 2) Convert these files from TRS DOS 1.3 to TRS DOS 6.0, if necessary. This is required because the commands in steps 3 and 4 are not supported in 1.3. This is done using the TRSDOS 6.0 command CONV, which can be applied to a whole disk (for example, CONV :1 :2) or to a given file (for example, CONV filename:1 :2).
- 3) To set *CL (the RS-232 communication line device) to the appropriate driver, issue the command SET *CL TO COM/DVR
- 4) To direct print output to the RS-232 port instead of the parallel port (the default), issue the command ROUTE *PR TO *CL
- 5) For each file, issue the command LIST <filename> (PRT). This will "print" the file to the serial port.

Microsoft Works is a good program to have on the receiving end of this process, because it doesn't add the unwanted carriage returns that plague other communications program. Use the "Capture Text" choice under the Communications menu to specify where to save incoming data.

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Tech Info Library Article Number:3228



Tech Info Library

A/UX 3.0.x: Compliance With POSIX Standard (9/94)

Revised: 9/19/94
Security: Everyone

A/UX 3.0.x: Compliance With POSIX Standard (9/94)

=====

Article Created: 12 September 1988
Article Reviewed/Updated: 19 September 1994

TOPIC -----

This article describes A/UX compliance with the POSIX Standard.

DISCUSSION -----

On August 1, 1988 at Uniforum, Apple announced a release of A/UX that meets current draft 12 compliance. As with other vendors, we are waiting for a formal Portable Operating System Interface for Computer Environments (POSIX) standard to be validated.

A/UX version 3.0.x is POSIX compliant as follows:

- POSIX 1003.1b - yes
- POSIX 1003.12 - no
- POSIX 1003.2 - no

Below is a brief description of POSIX 1003.1b, POSIX 1003.12, and POSIX 1003.2.

POSIX 1003.1b: Is part of POSIX 1003.1, and POSIX 1003.1 specifies interfaces to basic system services such as processes, the file system, I/O, devices, and related identifiers and environment variables. POSIX 1003.1b is for things that did not get into POSIX 1003.1a in time for various deadlines.

POSIX 1003.12: Addresses "Protocol Independent Interface" on top of the transport layer, which include both BSD sockets and AT&T TLI (or XTI which is X/Open's version of AT&T TLI), plus DNI and SNI. DNI stands for Detailed Network Interface, it is a general interface to the transport layer, and can be used for most network programming. SNI stands for Simple Network Interface, designed for applications that do not need the flexibility of DNI. Applications can talk to either DNI or SNI or both, both DNI and SNI can talk to either sockets and/or TLI(XTI).

POSIX 1003.2: Specifies programming interface to the shell and related utilities, it has two parts. The first part (largest) describes the facilities required for the portability of shell scripts. The second part is called "User Portability Extension" (UPE), which includes interactive commands required for user portability, such as: vi.

Article Change History:

19 Sep 1994 - Added brief description of POSIX Standards, and A/UX compliance.

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:3231



Tech Info Library

Digital Audio Disc Corporation (DADC)

Revised: 7/7/93
Security: Everyone

Digital Audio Disc Corporation (DADC)

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Article Created: 09/12/88
Article Reviewed: 07/07/93
Article Updated: 07/07/93

Digital Audio Disc Corporation (DADC)

1800 N. Fruitridge Avenue
Terre Haute, IN 47803-1788

812-462-8100

812-466-9125 Fax

Company Profile:

Digital Audio Disc Corporation (DADC), hardware, specializing in compact disc mastering and pressing, mini disc and lazer disc

Article Change History: 07/07/93 New Product Information Added, Address Information Corrected

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3233



Tech Info Library

METATEC, Corp.

Revised: 4/3/97
Security: Everyone

METATEC, Corp.

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Article Created: 09/12/88
Article Reviewed: 07/13/93
Article Updated: 04/03/97

METATEC Corp.

7001 Discovery Blvd.
Dublin, OH 43017

614-761-2000

614-761-4258 Fax

Company Profile:
Hardware, specializing in compact disc mastering and pressing.

Article Change History: 07/13/93 Name changed

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3234



Tech Info Library

Dataware Technologies, Inc. (formerly Reference Technology)

Revised: 7/16/93
Security: Everyone

Dataware Technologies, Inc. (formerly Reference Technology)

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Article Created: 12 August 1988
Article Reviewed/Updated: 16 July 1993

Dataware Technologies, Inc.

5775 Flatiron Parkway
Suite 220
Boulder, CO 80301

303-449-4157

303-442-1816 Fax

Company Profile:

Dataware Technologies, Inc. (formerly Reference Technology, Inc.), hardware and software, specializing in preparing data for compact discs.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3235



Tech Info Library

Wolfram Research

Revised: 4/3/97
Security: Everyone

Wolfram Research

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Article Created: 18 February 1991
Article Reviewed/Updated: 23 April 1997

Wolfram Research

100 Trade Center Dr.
P.O. Box 6059
Champagne, IL 61820

217-398-0700

800-441-MATH (6284)

Company Profile:
Software, specializing in scientific and technical mathematical packages.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3236



Tech Info Library

Fonts: How Screen Fonts And PostScript Fonts Are Associated

Revised: 9/10/92
Security: Everyone

Fonts: How Screen Fonts And PostScript Fonts Are Associated

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Article Created: 8 September 1988

Article Change History

09/10/92 - REVIEWED
• For technical accuracy.
02/02/91 - UPDATED

TOPIC -----

If I'm not using Fontographer, and the bitmapped font is defined (using ResEdit, for example), and the spline font has been defined in raw PostScript, how are the two fonts "bonded" together?

That is, how are the two fonts connected so that the Macintosh knows when the bitmapped font is referenced it should look for and download the "bonded" PostScript font?

DISCUSSION -----

The necessary resources for font reproduction on a LaserWriter, when using a printer font, are:

- The screen FONT
- The printer FONT
- FOND

The screen FONT is used to select the desired font from within an application. The printer FONT is a defined font, either a bit-map or B-spline for a PostScript printer.

The FOND resource is needed to list the associated FONTS for the Font and Printing Managers to select an appropriate font. Because the user does not

have a FOND to list the association of the spline font with the screen font, the Print Manager cannot select the printer font to be downloaded.

When you give the LaserWriter driver a screen font to print, the driver queries LaserWriter for a list of available fonts. If a downloadable font is not available but is listed in the screen font's FOND resource, that font is downloaded and used for printing.

The method of designating the downloadable font is to provide the downloadable font within the FOND resource, a font class, and a font name.

A font, previously downloaded, can be "uncoordinated." That is, it does not need to be referenced in the FOND listing, because when querying the LaserWriter, the LaserWriter driver selects the name of the pre-downloaded font. In the case of a font that is temporarily downloaded, the font must be "coordinated" with the screen font in the FOND.

The style-mapping table of the FOND resource contains the font class as the first two bytes. The font class designators of the LaserWriter driver v3.0 contain 16 (0 to 15) values (10 through 15 are reserved).

Font class designators describe the font and allow or disallow encoding functions, like condensing or outlining.

The style-mapping table contains indexes of all downloadable font names for the font's available styles. If the font name is found in the table, the Font Manager searches for the font in root directories of all available volumes. The name is determined by the first five letters of the font name in the style-mapping table and the first three letters of the font style. The first letter of the base name and the first letter of the style suffix are capitalized.

The resource type of the downloadable font must be an unbundled "LWFN" whose creator is "LWRT". It is suggested that the font information be kept in several "POST"-type resources, rather than one with IDs beginning with 501 decimal. This avoids memory conflict during loading of the font resource. Each resource must begin with a two-byte data field containing the data type in the first byte and binary zero in the second. The balance of the resource is the data to be downloaded. The data type consists of values 0 to 5 and describes the resource data as text, binary, comment, eof, and so on.

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Tech Info Library Article Number:3238



Tech Info Library

LaserWriter: How To Get Hardcopy Error Printouts

Revised: 9/12/88
Security: Everyone

LaserWriter: How To Get Hardcopy Error Printouts

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This article last reviewed: 8 September 1988

Some users want to set the LaserWriter to print errors on a page rather than sending the message back to the host. Many of these users have heard that a variable in "errordict" needs to be changed, and have asked about the name of the variable.

Getting the LaserWriter to print errors is certainly possible, but it is not as simple as changing the value of a variable. Adobe Systems provides a PostScript program, "The Error Handler", that will do the job.

For more information, search under: Adobe Systems

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Tech Info Library Article Number:3239



Tech Info Library

LaserWriter II: Turns On Automatically To Redistribute Toner

Revised: 9/12/88
Security: Everyone

LaserWriter II: Turns On Automatically To Redistribute Toner

=====

This article last reviewed: 8 September 1988

Every so often, the LaserWriter II sounds like it is starting to print, and then just stops. Needless to say, many users have inquired about this strange process.

In fact, it's only the LaserWriter II's way of redistributing the toner in the toner cartridge to ensure consistent, high-quality printouts.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3240



Tech Info Library

Macintosh: How To Add On Serial Ports (10/94)

Revised: 10/12/94
Security: Everyone

Macintosh: How To Add On Serial Ports (10/94)

Article Created: 8 September 1988
Article Reviewed/Updated: 12 October 1994

TOPIC -----

How can I add serial ports to my NuBus equipped Macintosh?

DISCUSSION -----

To add serial ports to your Macintosh equipped with one or more open NuBus slots, both Apple Computer and Creative Solutions offer cards for the Macintosh.

- The Apple Serial NB card adds four serial ports which can be configured to operate at different speeds. The card can be installed in a Macintosh serving as a gateway to other networks, such as SNA with the SDLC protocol and X.25 with the HDLC protocol. This card is designed to be a platform for various serial communications applications (initially, MacAPPC and MacX25).
- The Creative Solutions Hustler and Hurdler HQS offer 2 and 4 additional serial ports respectively for use with modems or other serial devices.

For more information, search under "Serial NB card" or "Creative Solutions".

Article Change History:
12 Oct 1994 - Revised Serial NB card info, updated serial port vendor.

Support Information Services

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Tech Info Library Article Number:3241



Tech Info Library

LaserWriter: How To Reset It Via PostScript

Revised: 8/23/89
Security: Everyone

LaserWriter: How To Reset It Via PostScript

=====

This article last reviewed: 8 September 1989

The PostScript command:

```
systemdict begin quit end
```

resets the LaserWriter when connected to the LaserWriter in PostScript batch mode via AppleTalk.

This command removes the Laser Prep file, as well as any Postscript program that has been entered into the LaserWriter. A test page prints after the command has been executed -- if that option is turned on.

NOTE: To send the previous command, you MUST be in the PostScript batch mode of the PostScript interactive mode.

The following command can be used in ANY PostScript mode:

```
serverdict begin 0 exitserver  
systemdict begin quit end
```

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3242



Tech Info Library

LaserWriter IINT/NTX: Manual Correction For Clearing Paper Jam

Revised: 1/17/89
Security: Everyone

LaserWriter IINT/NTX: Manual Correction For Clearing Paper Jam

=====

This article last reviewed: 8 September 1988

On pages 91 and 92 of the LaserWriter IINT/IINTX User Manual (Apple part #030-3215-A) the user is instructed to open the printer to check for jammed paper. The user is then instructed to remove the cassette and pull out the paper.

The illustration shows the printer closed as the user is pulling out the paper. Although the instructions do not state to close the printer, the customer did and broke the toner cartridge.

The illustration is misleading. The printer should remain open until the cassette has been replaced.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3243



Tech Info Library

LaserWriter IINTX SIMM: Specifications (8/95)

Revised: 8/23/95
Security: Everyone

LaserWriter IINTX SIMM: Specifications (8/95)

Article Created: 29 July 1988
Article Reviewed/Updated: 22 August 1995

TOPIC -----

This article describes the specifications for SIMMs used in the LaserWriter IINTX.

NOTE: This product has been discontinued and is no longer available.

DISCUSSION -----

Some of the vendors and vendors part numbers for the 64 pin SIMMs used on LaserWriter IINTX I/O boards are listed below. The SIMMs are 120 nanosecond RAM with CAS before RAS refresh.

256K SIMMs (64 pin)

Manufacturer	Vendor Part Number
TOSHIBA	TC511000-10
NEC	MC141

1 Megabyte SIMMs (64 pin)

Manufacturer	Vendor Part Number
HITACHI	HB56A000108AP1

Note that the SIMMs for the LaserWriter IINTX are different from the SIMMs used in CPUs.

Article Change History:

22 Aug 1995 - Made minor corrections.

31 Aug 1994 - Removed "Discontinued" from title. Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:3244



Tech Info Library

SCSI Hard Disk Problem/Cure

Revised: 9/13/88
Security: Everyone

SCSI Hard Disk Problem/Cure

=====

This article last reviewed: 5 August 1988

PROBLEM:

When an external SCSI hard disk is connected to either a Macintosh SE or Macintosh II with an internal SCSI hard disk, neither hard disk is recognized by the system. When the external drive is disconnected, the internal hard disk works correctly.

Terms used in this article:

UUT = unit under test

CURE:

- 1) Does the system with the internal drive come up ok by itself and do diagnostics pass ok?

Yes -- Go on to Step 2

No -- Repair machine with normal diagnostic techniques and then retest configuration

- 2) Does the external SCSI device operate correctly on a Macintosh Plus, Macintosh SE with two 800Kb drives, or on the UUT when the internal SCSI cable is disconnected from the motherboard?

Yes -- Go on to step 3

No -- Repair external device using normal diagnostic techniques then re-test the configuration.

- 3) a) Fix or replace the SCSI address select switch on the external SCSI device
b) Fix or replace the SCSI Device select cable on the external SCSI device
c) Check or replace the external device's SCSI terminator.

Explanation: If the drives (internal and external) work independently of each other, chances are they conflict in one of two possible areas: Either there is

a SCSI address conflict or the SCSI buss is not terminated properly.

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Tech Info Library Article Number:3245



Tech Info Library

AppleFax Modem Problem/Cure

Revised: 4/26/89
Security: Everyone

AppleFax Modem Problem/Cure

=====

This article last reviewed: 5 August 1988

PROBLEM:

A Macintosh with the AppleFax Modem connected, the software loaded and another fax machine tries to dial in. On the AppleFax Modem station, the software asks the user if it should answer the phone. When the user selects "Answer Phone", the person at the AppleFax Modem hears the series of tones used to establish the connection between the two fax machines. The originator of the phone call still hears that the phone is dialing and that the destination AppleFax Modem HAS NOT answered the phone call.

CURE:

The problem above is caused when the telephone cable between the AppleFax Modem and the wall is plugged into the wrong RJ-11 jack, the one with the telephone icon below it, on the back of the AppleFax Modem. Plug the cable from the wall jack into the jack with the RJ-11 icon below it.

EXPLANATION:

There are 2 RJ-11 phone jacks on the AppleFax modem, one has an icon of a telephone and the other has an icon of an RJ-11 jack. Unlike other Apple modems the RJ-11 jacks on the AppleFax modem require that the telephone be plugged into the jack with the telephone icon and the line from the wall be plugged into the jack with the RJ-11 icon on it. The RJ-11 jacks are not interchangeable.

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Tech Info Library Article Number:3246



Tech Info Library

Apple IIC Plus: Specifications (Discontinued 11/90)

Revised: 10/7/93
Security: Everyone

Apple IIC Plus: Specifications (Discontinued 11/90)

=====

This article last reviewed: 13 September 1988

Here are specifications for the Apple IIC Plus:

CENTRAL PROCESSING UNIT (CPU)

- Microprocessor: 4 Mhz 65C02
- Clock Speed: 1 or 4 Mhz (user selectable -- press ESC key when you power the unit on)
- Address bus: 16 bits
- Address range: 65,536 bytes (64K)
- Data bus: 8 bits
- Registers (8 bit): accumulator, two index registers, stack pointer, and processor status register

MEMORY

- 128K of RAM (random-access memory), optionally expandable to 1.125 megabytes
- 32K of ROM (read-only memory), containing:
 - System monitor
 - AppleSoft BASIC interpreter
 - 80-column display firmware

TEXT DISPLAY MODES

- 80-column text (80 columns by 24 lines)
- 40-column text (40 columns by 24 lines)
- All text can appear on the screen as normal, inverse, flashing, or MouseText characters

GRAPHICS DISPLAY MODES

- Double high-resolution (560 dots horizontally by 192 dots vertically; 16 colors)
- High-resolution (280 dots horizontally by 192 dots vertically; 6 colors)
- Low-resolution (40 dots horizontally by 48 dots vertically; 16 colors)
- All graphics can be configured to allow four lines of text at the bottom of the screen.

KEYBOARD

- 63-key full-sized keyboard
- Full 128-character ASCII, including 96 uppercase and lowercase alphanumeric characters, and 32 control characters
- Special-purpose keys: shift, caps lock, control, escape, return, tab, delete, up arrow, down arrow, left arrow, right arrow, reset, open apple, option
- Keyboard is switchable between QWERTY and Dvorak layouts
- Includes volume slide control for speaker

DISK DRIVE

- Disk size: 3.5 inches
- Capacity: 800 kilobytes
- Recording surfaces: 2
- Tracks per surface: 80
- Blocks per disk: 1,600
- Push button for motorized eject

INTERFACES

- External disk drive port using 19-pin, D-style connector, allows a daisy-chain connection of up to three additional drives (Apple 3.5 Drive, UniDisk 3.5, and/or Apple 5.25)
- Two RS-232 serial ports with 8-pin minicircular connectors (for printer, modem, and other accessories)
- NTSC (composite) color video, via RCA phone jack
- 15-pin, D-style connector for video expansion
- 9-pin, D-style connector for mouse, joystick, hand controllers, or other accessories
- Internal, 34-pin connector for memory expansion up to 1.125 megabytes
- Standard, 3-pin grounded power plug

ELECTRICAL REQUIRMENTS

- Line voltage: 90 to 130 volts AC
- Line frequency: 50 to 60 hertz
- Maximum power consumption: 20 watts continuous
- Supply voltages:
 - +5 volts (+-5%)
 - +12 volts (+-10%)
 - 12 volts (+-10%)
- Maximum supply currents:
 - +5 volts=1.5 amps
 - 5 volts= 30 milliamps
 - +12 volts= 0.9 amps continuous -- 1.5 amps intermittent
 - 12 volts= 100 milliamps

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 TO 40 degrees C)
- Relative humidity: 20% to 95%

SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 11 Office Appliances and Business Equipment

SIZE AND WEIGHT

..TIL03247-Apple_IIfc_Plus-Specifications_Discontinued_11-90.pdf

- Height: 2.5 inches (6.35 cm)
- Width: 12 inches (30.48 cm)
- Depth: 11.5 inches (29.2 cm)
- Weight: 7lb. (3.2 kg)

Included with the Apple IIfc Plus package:

- Apple IIfc Plus personal computer with built-in 800K disk drive
- Power cord
- Apple II System Disk
- Tutorial disk
- Owner's guide
- Apple II System Disk User's Guide
- A Touch of AppleSoft BASIC manual
- Limited warranty statement
- Packing list

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Tech Info Library Article Number:3247



Tech Info Library

GS/OS: Needs Latest ROM Revision To Work With ProFile

Revised: 9/22/89
Security: Everyone

GS/OS: Needs Latest ROM Revision To Work With ProFile

=====

This article last reviewed: 11 November 1988

When using GS/OS under Apple IIGS System Disk 4.0 with a 5MB ProFile, be sure you are using the latest ProFile ROM revision.

A 5MB ProFile needs the 341-0299 ROM revision to work correctly with GS/OS.

If you have problems formatting, or receive a message stating that your drive appears to be damaged, you need the new ROM.

(NOTE: This ROM is a service part, and is located on the Apple II price pages.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3248



Tech Info Library

Apple SuperDrive: Using And Formatting Disks

Revised: 8/22/91
Security: Everyone

Apple SuperDrive: Using And Formatting Disks

=====

Article Created: 16 September 1988
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article tells the proper way to format Apple SuperDrive disks, and the precautions to take in using them.

DISCUSSION -----

Although the Apple SuperDrive (formerly Apple FDHD) supports both the Group Code Recording (GCR) and Modified Frequency Modulation (MFM) formats, the 1.4MB format requires that you use only Apple SuperDrive disks.

These disks have a special thin recording surface that allows the higher data rates. You CAN still use 800K disks, but they will only format as 400/800K disks. Apple SuperDrive media are identifiable by the 2 holes on the disk -- one on the upper left, the other on the upper right. The bonus hole in the upper left looks like an extra write-protect notch.

The SuperDrive disks will only format to 1.4MB. The drive will sense if a high-density disk is inserted.

Don't use these disks in older 800K disk drives: if you format the disk in an 800K drive, it will not work in the SuperDrive. The drive will try to read in MFM mode when it notices the bonus hole in the media, and then ask if you want the disk formatted. There is no option in the dialog box to format to any other size.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:3249



Tech Info Library

GS/OS: Correction To Formatting Options Error In The Manual

Revised: 9/22/89
Security: Everyone

GS/OS: Correction To Formatting Options Error In The Manual

=====

This article last reviewed: 14 September 1988

The Apple IIGS System Disk Users Guide, (Apple Part #030-1495-B) has an error on page 47.

The first paragraph on page 47 SHOULD read:

"The format options for 3.5-inch disks are 800K 2:1, 800K 4:1, and 400K 2:1. 800K and 400K refer to the capacity. 2:1 and 4:1 refer to different layouts of tracks and sectors on a disk. Choose 800K 2:1 for ProDOS 16 or GS/OS files and 800K 4:1 for ProDOS 8 files (or for a combination of ProDOS 8 and Macintosh files). The only time you should choose 400K is if you're using a single-sided 3.5" disk. The format option for 5.25-inch disk is 140K."

The essential (and correct) information in the new paragraph is:

When using ProDOS 8, select a 4:1 layout and ProDOS 16 and GS/OS should use a 2:1 layout.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3250



Tech Info Library

Macintosh IIX: General Description (Discontinued)

Revised: 6/7/94
Security: Everyone

Macintosh IIX: General Description (Discontinued)

Article Created: 16 September 1988
Article Reviewed/Updated: 17 July 1992

TOPIC -----

This article describes the Macintosh IIX.

DISCUSSION -----

The Macintosh IIX computer is a modification of the Macintosh II design that uses a Motorola MC68030 microprocessor and a MC68882 numerics coprocessor. The Macintosh IIX uses the new Apple SuperDrive (formerly Apple FDHD) 1440K floppy drive. Upgrades for the Macintosh II will be available for both the drive and the logic board.

MC68030

The Macintosh IIX uses the Motorola MC68030 at 15.6672 MHz, the same speed as the existing Macintosh II. The MC68030 is Motorola's second-generation 32-bit microprocessor, and combines a central processing unit, a data cache, an instruction cache, an enhanced bus controller, and a memory management unit into a single VLSI device. Internal function blocks of the microprocessor are designed to operate in parallel, allowing instruction execution to be overlapped.

The MC68030 integrates the functionality of the MC68020 32-bit microprocessor with a subset of the MC68851 Paged Memory Management Unit (PMMU). Commonly called the 030 (pronounced "oh-three-oh"), the MC68030 is compatible with Macintosh II timing and software.

MC68882

The MC68882 numerics coprocessor (also called the Floating Point Unit, or FPU) provides high speed, extremely accurate floating point computation to

IEEE standards.

The processor operates in parallel with the MC68030, and is clocked at 15.6672 MHz using the same clock signal as the MC68030. Calls to the Apple SANE routines will use the MC68882. The MC68882, also called the 882 (pronounced "eight-eighty two"), is pin- and electrically-compatible with the MC68881 coprocessor in the Macintosh II.

Both processors use the same base instruction set -- the major advantage of the MC68882 is increased speed. With the MC68882, you can perform both memory moves and chip operations in parallel -- as long as they don't conflict -- thus boosting floating point performance by about 15%.

Memory Management

Macintosh IIX can support the A/UX operating system without adding the PMMU, thanks to on-chip memory management by the MC68030. The MC68030 allows true 32-bit address translation with hardware page replacement. The built-in memory unit is also capable of ignoring the high 8-bits of the address to allow Macintosh software to run in 24-bit mode.

(NOTE: The MC68030 PMMU is a subset of the MC68851 PMMU, rather than an exact replacement.)

Wait States

- The Macintosh IIX uses one wait state to access the RAM.
- The Macintosh II has two wait states, one for RAM, and one for the HMMU or PMMU.

Given the CPU clock speed, you need one wait state to make sure you read from RAM at 120ns. The 15.6672 clock frequency has an active period of 63.8276ns. If the CPU reads without wait states, you would need 60ns RAM. Given the limited availability of these 60ns chips, Apple has chosen one wait state and 120ns RAM chips.

Apple SuperDrive (formerly Apple FDHD)

The Apple SuperDrive can read and write to any of the major 3.5-inch disk formats, including Macintosh (GCR 400K, 800K, and MFM 1.44MB), Apple II (800K), MS-DOS and OS/2 (MFM 720 and 1.44MB).

GCR stands for Group Code Recording; MFM stands for Modified Frequency Modulation. MFM and GCR only effect how the bits are placed on the disk, not the directory structure. The drive is supported by the SWIM (Sander, Woz Integrated Machine) chip.

(NOTE: There is special 1.44MB media that should NOT be used in the older 400K or 800K drives.)

SWIM Chip

The SWIM chip is a single-chip combination MFM/GCR controller for internal and external floppy drives. It was designed for the SuperDrive, but is compatible with the current 400K and 800K drives. The SWIM chip replaces the IWM chip, and is pin- and function-compatible with that device.

Copyright 1988, 1991-1994 Apple Computer, Inc.

Tech Info Library Article Number:3251



Tech Info Library

Apple IIGS System Software 4.0: GS/OS General Information

Revised: 9/22/89
Security: Everyone

Apple IIGS System Software 4.0: GS/OS General Information

=====

This article last reviewed: 14 September 1988

The heart of Apple IIGS System Software 4.0 is GS/OS, the first 16-bit, native-mode operating system written in 65816 code.

GS/OS significantly speeds up boot time, disk access time, and program launch time, and increases the performance of disk-intensive applications. GS/OS is file system independent. Applications that make GS/OS calls will be able to read and write many different and seemingly incompatible file systems.

An added benefit is the ability to access file systems that support very large files and storage media (up to 4 gigabytes). GS/OS is compatible with Apple IIGS ProDOS 16, and will run applications that follow ProDOS 16 design guidelines.

Apple IIGS System Software 4.0 contains two disks:

SYSTEM.DISK
SYSTEM.TOOLS

There are also two new manuals:

Apple IIGS System Disk User's Guide
Apple IIGS System Tools

The user's guide explains the Finder. The System Tools manual explains the programs on the SYSTEM.TOOLS disk.

System Requirements:

A 512K Apple IIGS System with ROM revision #01 is required to run System Software 4.0. On system-boot, the first revision of the Apple IIGS ROM displayed "Apple IIGS" at the top of the screen with nothing at the bottom. The rev 01 ROM displays "Apple IIGS" at the top with copyright and "ROM rev" at the bottom.

The INSTALLER

The Installer is a new program for installing files on your startup (boot) disk. The Installer is located on the SYSTEM.TOOLS disk along with the other utility programs.

The Installer allows users to update System Files without having to drag files to the correct location in the System Folder. The SYSTEM.DISK contains a minimum set of files the "standard user" will need to be able to operate. If you want support for the following products and programs, you MUST run the Installer:

- Apple 5.25" Disk Drives
- UniDisk 3.5" Disk Drives
- SCSI Hard Drives
- AppleCD SC (High Sierra)
- ImageWriter LQ
- LaserWriter
- AppleTalk ImageWriter or AppleTalk ImageWriter LQ
- Apple MIDI Interface
- Epson Printer
- Chooser II
- Namer II
- Advanced Disk Utility

The Installer program runs like the Font/DA mover on the Macintosh. If you do not run the Installer to add support for connected device, it will not be accessed while running GS/OS -- for example, if an Apple 5.25" disk drive is connected, it will not show up in the finder or while running applications until the Driver file is installed.

NOTE: When using the Installer, make sure you do not remove any files from the Apple IIGS SYSTEM.DISK or SYSTEM.TOOLS disks. Both disks are needed to update other disks. The tool files are located only on the SYSTEM.DISK and AppleTalk Utilities are located only on the SYSTEM.TOOLS disk.

File System Translators

GS/OS uses a generic file interface that communicates with applications. This operating system uses a File System Translator (FST) that acts as an

intermediary between GS/OS and the specific file system and device. ProDOS and ISO/High Sierra FSTs are included with GS/OS.

This organization will allow GS/OS to read many different kinds of disks (only two are supported at this time). Some file systems may have calls that are not supported by GS/OS; for example a hard drive with tape backup may have a command to backup the volume to tape. Moreover, some FSTs can not support all of the GS/OS calls. The High Sierra FSTs do not permit write calls because CD-ROM is a read-only medium.

Advanced Disk Utility

The Advanced Disk Utility lets you divide hard disks into multiple volumes, called partitions. You can use the Advanced Disk Utility to initialize, erase, and zero hard disks, partitions of hard disks, 3.5" disks, 5.25" disks, and RAM disks. All of the functions, except partitioning and zeroing a disk, can be done at the Finder level.

Partitioning

The Advanced Disk Utility partition option has more options than the partition program supplied with the SCSI card. To support SCSI devices you must have the SCSI ROM revision installed, ROM part # 341-0437-A.

The new features are:

- Initialize partitions on the same hard drive with different file systems
- Up to 7 partitions per hard drive, but total of 7 partitions can be accessed for each SCSI card, regardless of the slot the SCSI card is in.
- Uses the full 80MB on an 80MB hard drive (3 partitions).

Zeroing

Zeroing a volume wipes out everything on the volume. Unlike erasing, zeroing removes not only the volume directory, but also all the files, the file system, and even tracks and sectors. After zeroing, a volume must be initialized again before it can receive data. Zeroing writes over all the data, so no one can reconstruct the information that was contained on the drive.

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Tech Info Library Article Number:3252



Tech Info Library

GS/OS: Why It Causes UniDisk 3.5 Drive Motor Noise

Revised: 9/22/89
Security: Everyone

GS/OS: Why It Causes UniDisk 3.5" Drive Motor Noise

=====

This article last reviewed: 14 September 1988

When using a UniDisk 3.5" with GS/OS you will notice something different: the drive light will flash about 2 times per second, and the motor will seem to be starting up. (With the more familiar ProDOS 16, the light flashed but the motor did not behave in this fashion.) This seemingly odd behavior is caused by a new feature of GS/OS.

GS/OS lets the application know when a disk is ejected or switched from the drive. In order for GS/OS to check for disk switch events it sends a small program to the controller located in the UniDisk 3.5". When this program executes, the UniDisk 3.5" get ready for a disk access, causing the drive light to turn on and start up the motor.

The disk switch event allows the application to check the drive before it writes out information and changes the directory. This change also allows the DISK CACHE desk accessory to function correctly with the UniDisk 3.5.

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Tech Info Library Article Number:3253



Tech Info Library

Macintosh II: How To Simultaneously Access AppleShare And UNIX

Revised: 6/29/90
Security: Everyone

Macintosh II: How To Simultaneously Access AppleShare And UNIX

=====

This article last reviewed: 24 August 1988

It is possible for a Macintosh II to have simultaneous access of an AppleShare file server and a UNIX machine. There are two ways to go about this.

The first way is to use K-Term and K-TALK/Host software. K-Term provides a multi-window terminal emulator for the Macintosh. With it, a single Macintosh can emulate as many as four terminals for any UNIX host computer running K-TALK/Host via the same LocalTalk cable. By making AppleTalk protocols available to the UNIX system, this software makes it possible for the UNIX system to communicate with AppleTalk devices.

Important: To run K-Term and K-TALK/Host softwares, the Kinetics FastPath gateway box is required between the UNIX machine and AppleTalk.

The second way is to combine UNIX and LocalTalk with NCSA Telnet 2.2 software. This package provides interactive access from a Macintosh II to Telnet hosts on TCP/IP networks. The hardware configuration requires a Macintosh connected to AppleTalk and a Kinetics FastPath that connects AppleTalk to Ethernet.

Note: Telnet is public domain software from The National Center for Supercomputing Applications at The University of Illinois at Urbana-Champaign.

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Tech Info Library Article Number:3255



Tech Info Library

A/UX: How To Recover dev/syscon

Revised: 9/18/92
Security: Everyone

A/UX: How To Recover "dev/syscon"

=====

Article Created: 15 September 1988

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

08/31/92 - Updated

- Removed obsolete information.

TOPIC -----

This article discusses what happens when the "dev/syscon" file is corrupted and two ways to recover.

--- problem description -----

On system startup, the system went to the point where it checks the total amount of memory and hung. It didn't get to the point where it asks if a check of the file system should be made.

Running "esch -v" returned the system messages:

```
Running autorecovery esch -v
fscheck - dev/dsk/c5d0s0
```

The system completed phases 1, 2, and 3 of the file system check with no problems. Then, in phase 4, it found problems:

```
free inode count wrong and superbk -- fixed
file system modified
```

It went through a few other file systems. Then, in the section where A/UX starts validating the files, it showed a permissions error on major/minor device number. Then, it showed replacing "/dev/syscon".

It started validating other files. Then, it bombed leaving these messages:

```
/dev/syscon was not replaceable
exiting file check.
```

After this, you cannot get his kernel up and running nor can you launch on "/newunix".

DISCUSSION -----

Most likely, the "/dev/syscon" file was corrupted. There are two ways you might be able to recover it from SASH:

Here are the two ways:

- a. Directly copy /dev/syscon from one of the Eschatology partitions.

For example:

```
pname -s 3 "Eschatology 1"
rm -f /dev/syscon /dev/console /dev/systty
cp (0,0,3)/dev/syscon /dev/syscon
ln /dev/syscon /dev/console
ln /dev/syscon /dev/systty
```

- b. Create /dev/syscon from scratch.

```
rm -f /dev/syscon /dev/console /dev/systty
mknod /dev/syscon c 7 0
chmod 722 /dev/syscon
ln /dev/syscon /dev/console
ln /dev/syscon /dev/systty
```

Note that "/dev/console", "/dev/syscon", and "/dev/systty" are all hard-linked.

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Tech Info Library Article Number:3257



Tech Info Library

Getting Permission To Reprint Technical Library Information

Revised: 4/9/91
Security: Everyone

Getting Permission To Reprint Technical Library Information

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This article last reviewed: 13 September 1988

Here's how to obtain permission to reprint information (articles, specifications, etc.) posted in the Apple Technical Information Library.

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Apple Legal Department, mailstop: 38-I
Apple Computer, Inc.
10431 N. De Anza Blvd.
Cupertino, CA 95014

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Tech Info Library Article Number:3259



Tech Info Library

AppleFax Modem: It Waits 2 Minutes After A Call To Disconnect

Revised: 8/3/89
Security: Everyone

AppleFax Modem: It Waits 2 Minutes After A Call To Disconnect

=====

This article last reviewed: 13 September 1988

Some people have asked why the AppleFax modem seems not to disconnect automatically if the modem was dialed accidentally from an outside line (for example, a wrong number).

Although the caller has hung up, the modem does not immediately disconnect.

The AppleFax modem eventually DOES time out and disconnect. However, the timeout does not occur until 2 minutes into the "no modem found" condition.

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Tech Info Library Article Number:3260



Tech Info Library

Apple Scanner: Fixing Save As Untitled Settings 2 Problem (9/95)

Revised: 9/20/95
Security: Everyone

Apple Scanner: Fixing Save As Untitled Settings 2 Problem (9/95)

Article Created: 16 September 1988
Article Reviewed/Updated: 20 September 1995

TOPIC -----

Whenever I scan and save a new image and then I try to save the resulting new settings I get a System Error ID 12. What is wrong?

DISCUSSION -----

In the AppleScanner software, the brightness and contrast settings can be saved. Each setting that is saved has to be named; the default name is "Untitled Settings".

If the settings are saved as "Untitled Settings", the next default name is "Untitled Settings 2". The problem occurs when saving these new settings as "Untitled Settings 2": when an image is scanned and saved, a System Error ID 12 occurs.

The reason for the error is that maximum length for a setting name is 16 characters, and "Untitled Settings 2" violates this rule.

To work around this problem, each time a new setting is saved, use the "Save as..." option, and give the file a name of 16 or fewer characters.

Article Change History:
20 Sep 1995 - Reformatted to meet current standards.
13 Sep 1988 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3261



Tech Info Library

Apple IIGS: How To Change The Control Panel Key Repeat Function

Revised: 3/23/89
Security: Everyone

Apple IIGS: How To Change The Control Panel Key Repeat Function

=====

This article last reviewed: 13 September 1988

Here's how to reset or disable the key repeat function of the Apple IIGS Control Panel:

1. Select the Options menu on the Control Panel.
2. Move the asterisk on "REPEAT DELAY" all the way to the right of the sliding scale, and the "REPEAT SPEED" all the way to the left.
3. To save these changes, press the Return key.

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Tech Info Library Article Number:3262



Tech Info Library

AppleFax Modem: It Can Only Answer After Four Rings

Revised: 8/3/89
Security: Everyone

AppleFax Modem: It Can Only Answer After Four Rings

=====

This article last reviewed: 13 September 1988

Some users have discovered that they cannot get the AppleFax Modem to answer on the first ring instead of the fourth ring from within the AppleFax application software.

When the AppleFax application is launched, it forces the AppleFax modem into its default (answer on fourth ring) setting.

Apple currently has no solution to this problem.

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Tech Info Library Article Number:3263



Tech Info Library

PC Transporter: IIGS Driver Not Available For AppleShare

Revised: 3/9/92
Security: Everyone

PC Transporter: IIGS Driver Not Available For AppleShare

=====

Article Created: 16 September 1988
Article Last Reviewed: 27 January 1992
Article Last Updated: 27 January 1992

TOPIC -----

Can I use PC Transporter with an AppleShare File Server?

DISCUSSION -----

Applied Engineering's PC Transporter, the MS-DOS card for the Apple II family, can theoretically work with the AppleShare File Server. Specifically, you can use the server as drive "D" when using the MS-DOS software, as well as Apple IIGS mode.

However, such a driver that can access the AppleTalk resources of the Apple IIGS doesn't currently exist. Development of the driver is typically the responsibility of the card's manufacturer.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:3264



Tech Info Library

ProDOS Applications Need Chooser II To Select A Printer

Revised: 9/16/88
Security: Everyone

ProDOS Applications Need "Chooser II" To Select A Printer

=====

This article last reviewed: 13 September 1988

Some users running AppleShare networks have had problems getting the ProDOS applications to print.

To get a ProDOS application to print correctly, you need to run the "Chooser II" program, which is in the AppleTalk folder on Apple II Workstation disk. This program allows you to select a printer.

(NOTE: If the printer selected is a LaserWriter, the ImageWriter emulator is downloaded immediately. "Chooser II" can run from either the server or the work-station. Ensure that the application is printing to slot 7. If printing to a LaserWriter, set up the program for printing to an ImageWriter.)

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Tech Info Library Article Number:3265



Tech Info Library

LaserWriter II: Front Panel Light Explanation

Revised: 1/17/89
Security: Everyone

LaserWriter II: Front Panel Light Explanation

=====

This article last reviewed: 19 September 1988

The front panel lights will act differently depending on the type of the controller board installed in the LaserWriter II. Each of the 3 controller boards, the IISC, NT, and NTX, will produce different displays.

With the printer operating correctly, turn the printer ON. After the user print comes out, open the cover wait 10 seconds, and close the cover. Each of the LaserWriter II controller boards will act differently. The following chart show how each of the boards react.

LaserWriter IISC - ALL THE LIGHTS GO OFF. After closing the cover the READY light comes ON.

LaserWriter IINT - ALL THE LIGHTS GO OFF and TONER light comes ON solid. After closing the cover the READY light comes ON, and the TONER light stays ON. But after printing a document the TONER light goes OFF.

LaserWriter IINTX - ALL THE LIGHTS GO OFF and TONER light comes ON blinking. After closing the cover READY light comes ON, and the TONER light goes OFF.

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Tech Info Library Article Number:3266



Tech Info Library

LaserWriter II: Multiple Paper Feed Problem/Cure

Revised: 1/17/89
Security: Everyone

LaserWriter II: Multiple Paper Feed Problem/Cure

=====

This article last reviewed: 19 September 1988

SYMPTOM: Multiple pieces of paper are being fed into the printer, eventually causing a paper jam to occur.

CURE: The paper feed roller assembly and/or the transfer guide assembly may be defective.

Replace the paper feed roller assembly (971-0017) first, if this does not solve the problem replace the transfer guide assembly (971-0019). Replacing the parts rather than fixing them is the best way to do it. Remember that a defective motor (971-0014) or gears could also exaggerate the problem.

ADDITIONAL INFORMATION:

The paper feed roller assembly (971-0017) is feeding the page to the transfer guide assembly (971-0019) and then paper feed roller should stop. The transfer guide assembly should align the page and then feed through. At the time when the transfer guide assembly is feeding the page the paper feed roller should return to home position. If the paper feed roller is defective (roller itself or clutch are bad) the timing will be off and the paper feed roller will attempt feeding second page. When the transfer guide assembly is slippery or defective it will cause a slight delay in the paper transfer causing paper jam.

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Tech Info Library Article Number:3267



Tech Info Library

LaserWriter II: Excess Toner Spilling Inside

Revised: 1/17/89
Security: Everyone

LaserWriter II: Excess Toner Spilling Inside

=====

This article last reviewed: 19 September 1988

Symptom: After repair the LaserWriter II will spill excess toner during printing into the body of the LaserWriter II.

Cause: This is caused by a loose or missing screw that attaches the high voltage power supply to the chassis in the area where the capacitor is mounted to the chassis through the chassis lug. The missing screw prevented proper grounding of the high voltage power supply to the LaserWriter II chassis.

Additional Information:

The printer was initially repaired for a lack of printout. The high voltage power supply was found to be defective. When the high voltage power supply was replaced the LaserWriter II started spilling toner badly during printing. While the printer was properly diagnosed, during re-assembly a screw in the high voltage power supply mounting was not re-installed. This caused a bad ground connection for the high voltage power supply which caused excess toner to be dumped from the cartridge.

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Tech Info Library Article Number:3268



Tech Info Library

AppleShare: Third-Party Compatibility (AppleShare-Aware) 3/93

Revised: 3/15/93
Security: Everyone

AppleShare: Third-Party Compatibility (AppleShare-Aware) 3/93

=====

Article Created: 29 September 1988

Article Change History

03/15/93 - UPDATED

- Acius now ACI US, Inc.

The following applications have successfully passed Apple testing for compatibility with AppleShare 1.1. They are both multiuser and multilaunch, and work correctly and safely in a shared environment. These applications and their files can be launched, opened and saved from AppleShare the same as they would be from a local disk.

*** DISCLAIMER

This list is not an endorsement or advertisement for products. It is meant to provide you with the best information that we can give regarding AppleShare-Aware applications. Questions on specific products are best answered by the manufacturers themselves. Remember, there is no substitute for hands-on use on the appropriate hardware and software configuration you intend to sell or buy.

The products listed here reflect ONLY those products tested by Apple. There are hundreds of Macintosh applications that were not tested. If you have a question about a product that is not listed, please contact the product's manufacturer directly.

Product Name	Manufacturer
-----	-----
PictureBase	Symmetry
PageMaker, 2.0	Aldus
Fourth Dimension	ACI US, Inc.
MacWrite	Claris
MS Word, 3.01	Microsoft

MS Works, 1.1	Microsoft
PowerPoint, 1.0	Microsoft
Insight, 2.0	Layered
Intermail, 1.41 & 42	Microsoft
Inbox	Think
MORE 1.1	LVT
MS Excel, 1.04	Microsoft
RSG4!	LetraSet
FileMaker Plus	Nashoba Systems West
Omnis III Plus	Blythe
MacProject	Claris
Great Plains MU Acct.	Great Plains
MacinUse 2.04	SoftView
Eureka	Borland
SuperPaint	Silicon Beach (now Aldus Consumer Div.)

For those of you interested in how to create an AppleShare-Aware application, you may refer to the following resources:

1) Inside Macintosh Volume 5

Available through the Apple Programmers and Developers Association (AppleLink: APDA) or in technical bookstores. This book is published by Addison Wesley.

2) Applications Development in a Shared Environment

Available through APDA

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Tech Info Library Article Number:3269



Tech Info Library

3M Corp.

Revised: 4/3/97
Security: Everyone

3M Corp.

=====

Article Created: 29 September 1988
Article Reviewed/Updated: 3 April 1997

3M Corp. (Data Storage, Magnetic Media, and Optical Recording Divisions)

Building 223-5S-01
3M Center
St. Paul, MN 55144-1000

612-733-1110 (Main Desk Directory)
612-733-2142
612-736-3274 (Preoptical Recording)
612-736-5399 (Identification Recorders - ICSD)

800-343-8077 (Magnetic Media and Optical Recording Divisions)
800-854-0033 (Data Storage Division)

Fax: 800-862-0099 (Data Storage Division)
Fax: 612-733-2142 (Prerecording Optical Media)
Fax: 612-736-1246

3M Corp. (Audio Visual Division)

Building 216-3S-04
St. Paul, MN 55144-1000

612-733-6304

800-942-8051

Fax: 612-736-0043

Company Profile:
Hardware Data Storage, Magnetic Media, and Optical Recording Divisions,

specializing in disks and tapes for data storage, compact disc and video disc
mastering, formatting and pressing LaserDiscs. Audio-Visual Division
specializing in printer-compatible transparencies.
Local Sales Office:

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Tech Info Library Article Number:3270



Tech Info Library

Avery Dennison Corp. (Avery Division, Dennison Division)

Revised: 4/3/97
Security: Everyone

Avery Dennison Corp. (Avery Division, Dennison Division)

=====

Article Created: 29 September 1989
Article Reviewed/Updated: 3 April 1997

Avery Dennison Corp.

Avery Division
20955 Pathfinder Rd.
Diamond Bar, CA 91765

800-541-5507

909-869-7711

818-331-1261 Fax
800-442-4575 Fax

Company Profile:

Paper products, specializing in adhesive labels, transparencies, other paper products, and labels for the LaserWriter. Dennison Division: paper related products, specializing in highlighters, legal and letter pads.

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Tech Info Library Article Number:3271



Tech Info Library

James River Corp. (Riegal Packaging Papers Div.)

Revised: 8/5/93
Security: Everyone

James River Corp. (Riegal Packaging Papers Div.)

=====

Article Created: 29 September 1988
Article Last Reviewed/Updated: 6 April 1992

James River Corp. (Riegal Packaging Papers Div.)

P.O.Box 780
Milford, NJ 08848

201-995-2411

201-995-9339 Fax

AppleLink: RIEGEL

Company profile:
Hardware, specializing in paper, film, and adhesive labels for the LaserWriter.

Copyright 1988, 1991, Apple Computer, Inc.

Tech Info Library Article Number:3273



Tech Info Library

LaserWriter IINTX: Emulating The HP LaserJet's Printer Language

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX: Emulating The HP LaserJet's Printer Language

=====

This article last reviewed: 24 September 1988

Some users of LaserWriter IINTX have asked: what is "PCL", and how is it different from PostScript and LaserJet?

PCL is an acronym for Printer Control Language, and is the language on which the HP LaserJet Plus is based. PCL lacks the overall power of PostScript, but is adequate for standard printing needs.

Apple's emulation of the HP LaserJet Plus is not perfect. Pages 118 and 119 of the LaserWriter IINT/NTX Owner's Guide (Apple Part #030-3215-A) explain the differences.

Because we do not emulate PCL perfectly, you may encounter some problems with certain applications -- for instance, if you send the Hewlett Packard PCL command to reset LaserJet Plus to LaserWriter IINTX while in LaserJet emulation mode, the system may crash.

We strongly suggest that you test a LaserWriter IINTX in a PCL environment before making a decision to go with this type of setup.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3276



Tech Info Library

LaserPrep And PostScript: Solution To Interpreter Problem

Revised: 9/29/88
Security: Everyone

LaserPrep And PostScript: Solution To Interpreter Problem

=====

This article last reviewed: 9 September 1988

There is a problem with Apple LaserPrep that surfaces on later versions of PostScript interpreters (version 5.0 and newer). The symptoms are generally that no error messages are generated and that no output is produced.

The newer versions of the LaserPrep implements a number of smoothing functions that are present in some versions of Postscript interpreters. The LaserPrep header checks for the existence of these functions in the interpreter. If it finds that such funtions exist, it disposes of the code for these functions (the code is the hexadecimal at the end of the file).

Unfortunately, when hooked up serially, the LaserPrep disposes of code until it reaches a Control-D, which ends up being the end-of-job marker at the end of the users PostScript file. Hence, the body of the job gets thrown away along with the rest of the header.

On a laser printer where these functions don't exist, the code is used, and the LaserPrep should function correctly.

A quick way of determining whether the Macintosh PS file needs this version of the LaserPrep file is to check the first line, which should read:

```
!PS-Adobe-2.0
```

Other versions have different headers and use different LaserPrep file version numbers.

The solution to this LaserPrep problem is two-fold.

- (1) If you are not using the code (that is, if you have something like a QMS printer), then you can delete the code entirely. This has the advantage of making the LaserPrep file smaller and thus quicker. The disadvantage is that if you add devices that don't have the built-in functions, you will have to either use two different version of the LaserPrep file, or revert

to the second method.

- (2) The second method consists of a very small change in the LaserPrep code so that the laser printer will always use the smoothing code. This may not be very efficient, but it guarantees that the code should work for most Postscript devices.

The solutions that follow concern Apple LaserPrep file version 68, generated by LaserWriter driver version 5.2. Which modification you use depends on which solution you prefer.

Solution #1:

Delete everything from the line shown below, to the end of the header file. This line is the last line of text immediately preceding the first section of hexadecimal code (if you are using MacWrite to view the PostScript file, it's about 12 pages in). The end of the header file can be located by finding the line that says "%EndProcSet". Do not delete the "%EndProcSet" line. It must remain to indicate the end of the header.

```
currentfile ok userdict/stretch known not and{eexec}{flushfile}ifelse
```

Solution #2:

Change the line located just above the first set of hexadecimal codes from:

```
currentfile ok userdict/stretch known not and{eexec}{flushfile}ifelse
                                to
currentfile ok userdict/stretch known not and pop
true{eexec}{flushfile}ifelse
```

Locate a second line of text after the long series of zeros, which follows the first section of hexadecimal codes, and immediately before another section of hexadecimal code.

Change the line located just above the second set of hexadecimal codes from:

```
currentfile ok userdict/smooth4 known not and{eexec}{flushfile}ifelse
                                to
currentfile ok userdict/smooth4 known not and pop
true{eexec}{flushfile}ifelse
```

LaserWriter Driver 5.1 will generate header files with a version number of 65. Earlier driver versions will have smaller numbers. This information should remain good as long as the second line of the actual PostScript file reads %! PS-Adobe-2.0., as described above. If this version number changes, the location of the lines to be changed may also differ, and there may be other lines that need to be changed as well.

If UNIX, or A/UX, is used to look at these Command-K generated PostScript files, the facility exists to number the lines of the file. The two lines that need to be changed are 487 and 534.

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Tech Info Library Article Number:3277



Tech Info Library

MacTerminal 2.3: Is Not Compatible With Macintosh 128K

Revised: 9/29/88
Security: Everyone

MacTerminal 2.3: Is Not Compatible With Macintosh 128K

=====

This article last reviewed: 22 September 1988

MacTerminal 2.3 does not support the Macintosh 128K. This version of MacTerminal requires 512K or more of memory and System 3.2 and Finder 5.3, but the Macintosh 128K needs System 2.0 and Finder 4.1.

However, MacTerminal 2.2 DOES work properly on the Macintosh 128K.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3278



Tech Info Library

Macintosh II: System Error 25 When Using Three Or More Monitors

Revised: 7/2/92
Security: Everyone

Macintosh II: System Error 25 When Using Three Or More Monitors

=====

Article Created: 20 September 1988
Article Last Reviewed: 30 June 1992
Article Last Updated:

TOPIC -----

If you are using three monitors with your Macintosh II (for instance, a LaserView, an Apple RGB, and a SuperMac monitor), you may receive a System Error 25.

DISCUSSION -----

This is an out-of-memory error. When using three or more monitors, you need to ensure that the applications have enough memory to support three screens worth of data and word processing cut, copy, and paste functions.

If you use MultiFinder or System 7, you need to increase the amount of memory for each application. If you run on a 1MB system, you need to remove anything that uses extra memory. You should also switch to the lowest bits/pixel possible (two).

(NOTE: The LaserView in particular uses a lot of system memory when it is running in "high" mode. This, coupled with using two additional monitors, may be the root of the problem.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3282



Tech Info Library

Suggestions On Connecting More Than 254 Macintoshes to Ethernet

Revised: 9/29/88
Security: Everyone

Suggestions On Connecting More Than 254 Macintoshes to Ethernet

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This article last reviewed: 20 September 1988

If you want to connect Macintoshes together in a large network -- BEYOND the AppleTalk 254 node limit on Ethernet, for instance -- here a couple of suggestions:

1. Do not connect all of the Macintoshes directly. Use a LocalTalk network and FastPaths to bridge the LocalTalk Macintoshes onto the Ethernet.
(This is a low-end solution.)
2. Use two FastPaths linked together with LocalTalk cabling to slow the packets to LocalTalk speed, 234K baud. This method creates two separately addressable zones with 254 AppleTalk nodes per zone.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3284



Tech Info Library

Macintosh-to-Xerox 6085 Connectivity

Revised: 9/29/90
Security: Everyone

Macintosh-to-Xerox 6085 Connectivity

=====

This article last reviewed: 16 August 1990

Theoretically, there are several ways for Macintoshes to communicate with a Xerox 6085, including over AppleTalk. This article examines three communications methods:

- Xerox 6085 Ethernet connection
- "Kid" from Interpreter, Inc.
- The Xerox 6085 serial-port direct connection

Xerox 6085 Ethernet Connection

The best solutions take advantage of the Xerox 6085 Ethernet communications ability. The Xerox 6085 with Ethernet installed can use ViewPoint NetCom Xerox software to provide Ethernet access. This package contains user authentication, and access to functions such as electronic printing, filing, and mailing. The communication protocol may be either TCP/IP or XNS.

With TCP/IP, files are transferred using a FastPath from Kinetics, which connects the Macintosh and LocalTalk to Ethernet. FastPath, in conjunction with NCSA (National Center for Supercomputer Applications) Telnet software, provides direct log on, directory listing, and file downloading capabilities within the FTP support. NCSA Telnet is available on Internet through subscription to Bitnet, ARPANET, CSNET, and also directly from the University of Illinois.

If TCP/IP is not available, XNS support is available through a 3COM3 server. This requires that the Macintosh can talk to the server over AppleTalk and that the Xerox 6085 can talk to the server over XNS. Each, then, may be able to access one another's files once they have been uploaded to the server. Although often asked for, XNS is not directly supported by the Macintosh.

"Kid" from Interpreter, Inc.

Kid uses a conversion utility that writes Xerox 6085 files to 5.25-inch DOS disks. The files can be written to and read from PC software packages, like Microsoft Word, WordStar, and MultiMate. These PC disks are placed in an Apple 5.25-inch drive. Using AFE (Apple File Exchange) software, you can mount PC disks. Once mounted, you can read and convert PC-formulated files to Macintosh formats.

The Xerox 6085 Serial-port Direct Connection

The Xerox 6085 system can communicate through its serial port. One option is to send serial information from the Xerox 6085 through this port to the Macintosh, or vice versa. This method represents a low-end connectivity.

For more information, search under: "National Center for Supercomputer Applications" and "Interpreter, Inc."

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Tech Info Library Article Number:3285



Tech Info Library

AppleFax: How to Save Microsoft Word 3.0 (.01,.02) Files to Disk

Revised: 8/3/89
Security: Everyone

AppleFax: How to Save Microsoft Word 3.0 (.01,.02) Files to Disk

=====

This article last reviewed: 21 September 1988

If you get the proper AppleFax modem print dialog box from within Microsoft Word 3.0 (by holding down the shift key), but cannot save the Microsoft Word file to send with the AppleFax application, you may need to select "Print" a second time.

Microsoft Word 3.0 may require selecting the "Print" menu item a second time to have the AppleFax file written to disk.

When "Print" is shift-selected the first time, a dialog box labeled "AppleFax Resource" appears, with "Save As" as an option in the dialog box. However, pressing the "Save As" button does NOT save the AppleFax file.

When "Print" is shift-selected a second time, a dialog box labeled "Printer: AppleFax Modem" appears. Clicking "OK" in this dialog box DOES write the file to disk.

(NOTE: Normally, after changing printing resources the "Page Setup" menu item should be selected and clicked "OK". With Microsoft Word 3.0, shift-select the "Page Setup" item.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3286



Tech Info Library

HyperCard: How To Restrict User To Browse While Modifying Stack

Revised: 6/24/90
Security: Everyone

HyperCard: How To Restrict User To Browse While Modifying Stack

=====

This article last reviewed: 21 September 1988

If you want to restrict the user of your HyperCard stack to the browse level while the script is allowed to modify the stack, take note of the following scripts:

1. This script stores the Home card userLevel in the global variable "Store_userLevel" and sets the userLevel to 1 (Browsing). When quitting the stack, you may restore the userLevel to the value in "Store_userLevel".

```
on openStack
  global Store_userLevel
  put the userLevel into Store_userLevel
  set the userLevel to 1
end openStack
```

2. This script shows how to change the userLevel, so modifications can be made to the stack via HyperTalk commands.

```
on mouseDown
  set the userLevel to 5
  -- (Do stack modifying commands here)
  set the userLevel to 1
end mouseDown
```

3. This script shows how to use the "cantmodify" property to prevent a user from modifying a stack while still allowing the script to do so.

```
on openStack -- (Put this in the stack script)
  set cantModify to true
end openStack
```

```
on mouseDown
  set cantModify to false
```

```
-- (Do stack modifying commands here)
set cantModify to true
end mouseDown
```

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3287



Tech Info Library

HyperCard: Workaround For cantModify Stack To Free Disk Space

Revised: 11/2/88
Security: Everyone

HyperCard: Workaround For "cantModify" Stack To Free Disk Space

=====

This article last reviewed: 21 September 1988

If you have a HyperCard stack that is over 700K, you may have experienced this problem: when the stack is opened, it creates 100K or more of free space, thus exceeding the disk memory capacity.

Normally, a HyperCard stack does not take additional disk space on opening. You may find, however, that there is an "on openXXXXX" (XXXXX = Card, Field, etc.) script in the stack that causes additional disk space to be used when the stack is opened. Also, any change to the stack causes it to take up more room unless it is locked via the Finder.

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Tech Info Library Article Number:3288



Tech Info Library

Northlake Software

Revised: 7/14/93
Security: Everyone

Northlake Software

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Article Created: 18 October 1988
Article Reviewed/Updated: 14 July 1993

Northlake Software

812 Southwest Washington St.
Suite 1100
Portland, OR 97205

800-845-9111

503-228-3383

503-228-5662 Fax

Company Profile:
Technical typesetting software and print symbionts under DEC VMS.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3291



Tech Info Library

ArborText

Revised: 7/1/93
Security: Everyone

ArborText

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Article Created: 10/18/88
Article Reviewed: 07/01/93
Article Updated: 11/30/92

ArborText

1000 Victors Way
Suite 400
Ann Arbor, MI 48108

313-996-3566

313-996-3573 Fax

Company Profile:
Software, specializing in mini and mainframe publishing systems.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3292



Tech Info Library

Paragon Publishing Systems

Revised: 7/15/93
Security: Everyone

Paragon Publishing Systems

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Article Created: 18 February 1991
Article Reviewed/Updated: 15 July 1993

Paragon Publishing Systems

10 Corporate Drive
Bedford, NH 03110

800-431-1403

603-471-0077

603-471-0501 Fax

AppleLink: V0324

Company Profile:
Software, specializing in applications for the professional publishing industry.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3293



Tech Info Library

InterCAP Graphics Systems

Revised: 7/12/93
Security: Everyone

InterCAP Graphics Systems

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Article Created: 10/18/88
Article Reviewed: 07/09/93
Article Updated:

InterCAP Graphics Systems

116 Defense Hwy.
Annapolis, MD 21401

410-224-2926

301-261-8530 (Washington, D.C. line)

Fax: 301-261-8358

Company Profile:
Software, specializing in graphic programs with PostScript output for
workstations.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3294



Tech Info Library

Penta Software, Inc.

Revised: 7/16/93
Security: Everyone

Penta Software, Inc.

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Article Created: 18 October 1988
Article Reviewed/Updated: 15 July 1993

Penta Software, Inc.

107 Lakefront Dr.
Hunt Valley, MD 21030-2259

410-771-8973

410-771-4020 Fax

Company Profile:
Formerly Penta Systems, Inc., software, specializing in publishing systems.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3295



Tech Info Library

Blue Sky Research

Revised: 4/4/97
Security: Everyone

Blue Sky Research

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Article Created: 10/18/88
Article Reviewed: 07/06/93
Article Updated: 04/04/97

Blue Sky Research (USA)

534 SW Third Avenue
Portland, OR 97204

800-622-8398

503-222-9571

503-222-1643 Fax

E-Mail: salesbluesky.com

Company Profile:

Specializing in professional typesetting and document-formatting applications with an emphasis on scientific and mathematical publishing needs.

Article Change History: 07/06/93 Phone number added/removed

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3296



Tech Info Library

ImageWriter LQ: Use Geneva or Helvetica for Faster Quality Print

Revised: 10/18/88
Security: Everyone

ImageWriter LQ: Use Geneva or Helvetica for Faster Quality Print

=====

This article last reviewed: 7 October 1988

A problem has appeared with the ImageWriter LQ when set for Faster Quality. For example, when printing a half-page document from WriteNow in Best Quality, either bidirectionally or unidirectionally, the print looks good. However, when printing in Faster Quality, either bidirectionally or unidirectionally, the print quality is poor, jagged, and hard to read. Except for the spacing, Draft Quality is more readable than Faster Quality. These results are quite different than when using the ImageWriter II driver.

The problem arises from the fact that Faster Quality was designed to be the quickest way to print both graphics and text in the WYSIWYG format. In the Faster Quality mode of the ImageWriter LQ, the typeface used is essentially the screen font in bold face. Test results show that 12-point Times in Faster Quality is not the most readable font. Using other fonts in 12-point and Faster Quality, like Geneva or Helvetica, improves readability.

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Tech Info Library Article Number:3299



Tech Info Library

A/UX: Compatible Third-Party Office Productivity Tools (9/94)

Revised: 9/13/94
Security: Everyone

A/UX: Compatible Third-Party Office Productivity Tools (9/94)

=====

Article Created: 18 October 1988
Article Reviewed/Updated: 12 September 1994

TOPIC -----

This article describes several third-party office productivity tools that are compatible with A/UX.

DISCUSSION -----

SoftQuad

SoftQuad Publishing Software is an automated, batch text and graphics formatter. it includes tools for the creation of complex tabular material, mathematics, graphs, and charts. Its major strength is the creation of long documents on laser printers and typesetting machines. SoftQuad Publishing Software provides all the capabilities required for high-end production publishing: automatic kerning, hyphenation using a special dictionary, capacity for multiple columns, English-language names for macros and commands, simple tools to create new macro-formatting packages and support for spot color separation.

Arrc (formerly STARx)

STARx Pharmacy package assists pharmacists faced with expanding administrative, legal, and patient care demands. STARx automatically maintains patient records as required by state and federal governments. STARx also handles automatic generation of prescription labels, maintains drug inventories, and performs all accounting functions necessary for billing insurance companies and state welfare systems. A customized STARx network, layered on top of A/UX, creates a specialized communications group consisting of STARx, its retail pharmacies, drug wholesalers, insurance companies, and state agencies, and in-house departments.

Abacus Concepts

Statview II, now running under A/UX, features interactive data analysis and presentation quality graphics. Statview II brings the graphics Macintosh interface to the UNIX users, providing them with Macintosh ease of use. Statview II includes a complete statistical analysis package and a comprehensive drawing environment. With these, users can build high-quality charts and graphics directly from their data and analyses.

Uniplex Integration Systems Inc. (formerly Uniplex Distribution Inc.)

Uniplex offers two packages: Uniplex II Plus and the Uniplex Advanced Office System. Uniplex II Plus is the center of Uniplex Business software for Macintosh II and A/UX. It includes a fully-integrated word processor, spreadsheet, and relational database manager plus screen- and menu-building features.

The Uniplex Advanced Office System handles inter- and intra-office data communications. It includes a time manager, personal organizer, card index, report writer, and electronic mail.

Other products known to exist at one time or another are: Goldmedal by Decathlon; MacNix/A by LIST/spA; R Systems suite of software; WingZ by Innovative Software.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History

12 Sept 1994 - Reviewed and updated.

23 July 1993 - Company title changed from Starx to Arrc and Uniplex
Integration Systems Inc. to Uniplex Distribution Inc.

31 August 1992 - Reviewed for technical accuracy

Support Information Services

Copyright 1988-94, Apple Computer, Inc.

Tech Info Library Article Number:3302



Tech Info Library

A/UX: Compatible Third-Party Tools/Languages

Revised: 9/16/92
Security: Everyone

A/UX: Compatible Third-Party Tools/Languages

=====

Article Created: 6 October 1988

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

Compatible Third-Party Tools/Languages

DISCUSSION -----

Alsys

The Alsys ADA Compiler for A/UX is a complete production-quality implementation of ADA, suitable for demanding ADA developments. Features of the Alsys ADA compiler include: suitability for large applications, accuracy and reliability, multi-library environment, tool support, and much more.

Franz Inc.

Franz Incorporated's Allegro CL, an extended, common LISP, broadens the scope of problems that minicomputers can address. Allegro CL and A/UX transform the Macintosh II into an ideal delivery vehicle for artificial intelligence applications and standard applications with embedded AI technology. For example, using Allegro CL, A/UX programmers can add sophisticated advisory and analysis components to applications already running under A/UX.

Unisoft

Unisoft offers three compilers: Optimizing C, Optimizing FORTRAN, and

Optimizing Pascal. Unisoft has implemented these compilers specifically for A/UX and the Motorola 68000 series architecture. The compilers can maximize the power offered by the Macintosh II computer by increasing the program execution speed by as much as four times, performing global optimizations previously available only on super-minicomputers or mainframe computers. The Unisoft compilers have been optimized for the Motorola 68020 and 68881 floating point chips and feature one-pass compilation for maximum extensions.

Absoft

RAT FORTRAN is a mainframe-caliber compiler for program development on the Macintosh II. It conforms completely to ANSI X3.9-1978, IEEE P754, and MIL-STD 1753 specifications. It also includes several extensions from the proposed FORTRAN 8X standard and several features to facilitate porting programs from the VAX environment. The A/UX version provides full support for the Macintosh Toolbox and is completely compatible with the A/UX environment and all of its support tools. RAT FORTRAN also handles inter-language calling with C.

For more information, search on the above company names.

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Tech Info Library Article Number:3303



Tech Info Library

Innovative Systems

Revised: 4/4/97
Security: Everyone

Innovative Systems

=====

Article Created: 22 July 1993
Article Reviewed/Updated: 4 April 1997

Innovative Systems

P.O. Box 444
Severn, MD 21144-0444

301-987-8688

Company Profile:
Hardware, specializing in an arithmetic co-processor card for the Apple II.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3308



Tech Info Library

Golden Triangle Computers, Inc.

Revised: 4/4/97
Security: Everyone

Golden Triangle Computers, Inc.

=====

Article Created: 18 October 1988
Article Reviewed/Updated: 4 April 1997

****Note:** It has been reported that this company is no longer in business.**

Golden Triangle Computers, Inc.

11175 Flintkote Ave.
San Diego, CA 92121

619-587-0110
619-279-0169
619-279-2100

619-587-0303 Fax

Company Profile:
Hardware, specializing in high-performance data storage enhancement products
for Macintosh.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3309



Tech Info Library

Ask Group, Inc., Ingres Products

Revised: 4/4/97
Security: Everyone

Ask Group, Inc., Ingres Products

=====

Article Created: 10/18/88
Article Reviewed: 07/09/93
Article Updated: 04/04/97

Ask Group, Inc.

Ingres Products
1080 Marina Village Parkway
Alameda, CA 94501-1095

510-769-1400

800-446-4737

Fax: 510-748-2545 (Sales)

Company Profile:
Specializing in a relational database for distributed data management.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3310



Tech Info Library

Arrc Technology (formerly STARx Tech.)

Revised: 4/4/97
Security: Everyone

Arrc Technology (formerly STARx Tech.)

=====

Article Created: 18 October 1988
Article Reviewed/Updated: 4 April 1997

Arrc Technology

3801 Pierce Rd.
Suite 115
Bakersfield, CA 93308

805-631-0668

Fax: 805-326-8315

Company Profile:
Hardware and software, specializing in A/UX applications.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3311



Tech Info Library

Macintosh: Do Not Draw Power Directly From The Power Supply

Revised: 9/15/92
Security: Everyone

Macintosh: Do Not Draw Power Directly From The Power Supply

=====

Article Created: 28 September 1988

Article Change History

9/15/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Can I draw power directly from the Macintosh power supply?

DISCUSSION -----

Due to design constraints, you should not draw power directly from the Macintosh power supply.

Use an additional power supply to generate the necessary DC voltages for any peripherals or accessories, such as non-standard hard drives or fans. Thermal considerations are important as well.

(NOTE: As with all non-Apple hardware modifications or upgrades, such adjustments will void the computer system's warranty.)

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Tech Info Library Article Number:3313



Tech Info Library

Weather Forecast Display System: BBC Uses Macintosh & PaintBox

Revised: 8/4/89
Security: Everyone

Weather Forecast Display System: BBC Uses Macintosh & PaintBox

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This article last reviewed: 22 September 1988

In Britain, the BBC (British Broadcasting Corporation) uses a Macintosh II to control a Quantel PaintBox for national weather forecasts. (The development started on the Lisa and was converted to the Macintosh.) They also use Macintoshes to gather weather data from various places around the country.

The software shows a detailed map of the UK and Europe. They drag standard icons onto the maps, including storm clouds, snow clouds, and (on some rare days) the sun. They also can enter temperatures on the map.

The PaintBox is used to add color, and the forecaster pushes a button to advance from one frame to the next.

For more information, contact the BBC directly in London at Broadcasting House.

Jolly good show, BBC!

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3317



Tech Info Library

LaserWriter: Clear Manually-Downloaded Fonts At End Of Print Job

Revised: 10/27/88
Security: Everyone

LaserWriter: Clear Manually-Downloaded Fonts At End Of Print Job

=====

This article last reviewed: 28 September 1988

Under normal operation, the LaserWriter automatically purges downloaded fonts at the end of each print job. Fonts are retained in memory only when they have been manually downloaded.

(The number of downloadable fonts varies with the size of the font files, type of laser printer, and amount of available memory. When using the LaserWriter, four to six fonts may be downloaded per print job.)

If the fonts are not automatically purged at the end of the print job, they must be cleared from memory manually -- either by turning the printer off and on, or by resetting the printer, which forces a test page to be printed.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3318



Tech Info Library

LaserWriter: How To Calculate The Cost Per Printed Page

Revised: 10/27/88
Security: Everyone

LaserWriter: How To Calculate The Cost Per Printed Page

=====

This article last reviewed: 28 September 1988

If you want to calculate the true cost-per-page for your LaserPrinter, or other printer, you should consider the following factors: cost of paper, cost of toner cartridges, electrical power consumption, depreciation, and labor costs.

However, for the simplest cost-per-page analysis, divide toner cartridge cost by the number of copies.

Example

$\$100.00 \text{ (toner cartridge)} / 4,000 \text{ (copies)} = \0.025 per copy

If the cost of paper is included in the calculation, the equation is: Cost of toner cartridge plus the cost of paper divided by the number of copies.

Example

$\$100.00 \text{ (toner cartridge)} + \$20.00 \text{ (paper)} / 4,000 \text{ (copies)} = \0.03 per copy

(NOTE: The number of copies printed per toner cartridge listed here (4,000) is an estimate and varies depending on the print density of the documents.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3319



Tech Info Library

System Software File Versions

Revised: 10/27/88
Security: Everyone

System Software File Versions

=====

This article last reviewed: 28 September 1988

Here is a list of the file versions for System, Finder, and Print Drivers for System Software v5.0 and v6.0

	Version 5.0	Version 6.0

System	4.2	6.0
Finder	6.0	6.1
ImageWriter	2.6	2.7
ImageWriter LQ	1.0	1.0
LaserWriter	5.0	5.2

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3320



Tech Info Library

AppleShare: Devices Not Users, Only 25 Users Can Log On

Revised: 11/2/88
Security: Everyone

AppleShare: Devices Not "Users", Only 25 "Users" Can Log On

=====

This article last reviewed: 28 September 1988

AppleShare does not consider a device as a "user", because devices do not log on, and are transparent to the server. AppleShare also allows only 25 true users to log on to a 1 megabyte file server.

If a 26th user logs on to an AppleShare file server, the user receives this message:

"This File server will not allow any additional users to log on. Try again later."

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number: 3321



Tech Info Library

Apple IIGS: Version 1.0 Is The 2nd ROM Version

Revised: 10/27/88
Security: Everyone

Apple IIGS: Version 1.0 Is The 2nd ROM Version

=====

This article last reviewed: 28 September 1988

There have been TWO sets of ROM for the Apple IIGS.

The first Apple IIGS ROM was not given a revision number. The current upgrade, or second set of ROM for the Apple IIGS is ROM version 1.0.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3322



Tech Info Library

AppleCD SC: Saving Song And Disk Titles With The CD Remote DA

Revised: 10/27/88
Security: Everyone

AppleCD SC: Saving Song And Disk Titles With The CD Remote DA

=====

This article last reviewed: 29 September 1988

The CD Remote DA saves song and disk titles in the "CD Remote Programs" file in the System Folder.

The entry in the "CD Remote Programs" file is cross referenced against a CD ID number imbedded in the audio CD.

There are three resources in the "Programs" file: "IndX", "ProG", and "STR#":

- The "IndX" resource is the cross reference between the CD and the file.
- The "ProG" resource contains the sequence, if programmed, for playback of the tracks.
- The "STR#" resource contains the song and disk titles.

This cross-reference scheme allows you to type variations of the disk and song titles. The CD ID (IndX) is used to access the correct titles (STR#) and programmed sequence (ProG).

NOTE: You cannot save your entries while the audio CD is in play mode. If the audio CD is being played, the AppleCD SC does not have access to the CD ID imbedded in the disc. If a "Save" is performed during play mode, the titles are saved in the "Programs" file but not the CD ID.

Without the CD ID, the song and disk titles cannot be accessed. The CD ID is read after the Save button is clicked and before writing to the "CD Remote Programs" file.

For the proper associations to be saved, click the Save button during a period of no CD activity.



Tech Info Library

Macintosh-to-PICK OS: Connectivity Solutions

Revised: 11/4/92
Security: Everyone

Macintosh-to-PICK OS: Connectivity Solutions

=====

Article Created: 29 September 1988

Article Change History

11/03/92 - CORRECTED
• The vendor search string information
07/20/92 - REVIEWED
• For technical accuracy

TOPIC -----

Do you know of any Macintosh-to-PICK OS connectivity solutions?

DISCUSSION -----

- OPAL (runtime) by OPAL Software Ventures Pty. Ltd. of Australia
- MacToPic by Carnation Software

For information about which PICK platforms are supported, contact the vendor directly.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988, 1992 Apple Computer, Inc.

Tech Info Library Article Number:3324



Tech Info Library

HyperCard: Error -199 May Be Map Resource Problem

Revised: 10/27/88
Security: Everyone

HyperCard: Error "-199" May Be Map Resource Problem

=====

This article last reviewed: 5 October 1988

If you are receiving a "-199" error, when using HyperCard "snd" sound resources, it is probably not due to an excess of resources. A file can contain a maximum number of 2727 resources.

The "-199" error is probably caused by a problem with the file resource map. Try removing and then replacing the "snd" resources.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3327



Tech Info Library

HyperCard 1.2.1: Multilaunch Limitations Under AppleShare

Revised: 11/2/88
Security: Everyone

HyperCard 1.2.1: Multilaunch Limitations Under AppleShare

=====

This article last reviewed: 5 October 1988

HyperCard 1.2.1 on an AppleShare File server is a multilaunch application ONLY if HyperCard and its Home stack are in a folder with read-only access.

If HyperCard is launched by a user with read/write access, HyperCard cannot be run by anyone else. This has not changed with the new versions of AppleShare.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3328



Tech Info Library

A/UX: Software Feature With /usr/ucb/style Shell

Revised: 9/18/92
Security: Everyone

A/UX: Software "Feature" With "/usr/ucb/style" Shell

=====

Article Created: 10 October 1988

Article Change History

08/31/92 - REVIEWED
• For technical accuracy.
08/31/92 - Updated
• To include applicable A/UX versions.

TOPIC -----

The A/UX "/usr/ucb/style" shell script does not run properly when invoked from "ksh" because "ksh" does not use the "^" symbol as a pipe symbol as "sh" does.

DISCUSSION -----

Changing the "^" characters in "|" corrects the problem. This needs to be done to A/UX 1.0 through A/UX 3.0.

Copyright 1988, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3330



Tech Info Library

Apple Scanner: Four Must-Know Workarounds For Common Problems

Revised: 5/24/89
Security: Everyone

Apple Scanner: Four Must-Know Workarounds For Common Problems

=====

This article last reviewed: 5 October 1988

Here are four useful workarounds for common Apple Scanner problems:

17-Character File Name Limitation

This file name limitation applies to half-tone pattern names, as well as setting names (for example, Untitled Pattern 2). To work around, delete any setting names or half-tone pattern names that exceed the limit. Also, the system error occurs only when saving the file in PICT format.

Background Printing

Background printing of scanned images under MultiFinder may produce "streaks". This applies not only to AppleScan, but also to other applications that print scanned images. It is recommended that background printing be turned off whenever printing a document that contains scanned images.

Printing Scanned Half-Tones

In general, printed output of scanned half-tones looks best when the Graphics Smoothing, Faster Bitmap, and Precision Bitmap print options are turned off. Again, this applies to most applications. Use LaserWriter Driver 5.2, which is included on the AppleScan disk and the System 6.0 Printing Tools disk.

HyperScan

When starting HyperScan, a "Can't load Global variables" dialog may appear, preventing use of the stack. This occurs in extremely low memory situations on 1MB machines. Try turning off the RAM cache. If the problem persists, it may be caused by an INIT (or several INITs) using memory.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3331



Tech Info Library

Using Apple Scanner With AppleFax Modem

Revised: 8/3/89
Security: Everyone

Using Apple Scanner With AppleFax Modem

=====

This article last reviewed: 5 October 1988

There are two ways to use the Apple Scanner and AppleFax Modem.

The first method scans into memory and sends the AppleFax from memory:

1. Place the document in the Apple Scanner.
2. Launch the AppleScan application.
3. In the AppleScan Resolution pop-up menu, select 200 dpi (Fax).
4. Press the Scan button.
5. Select the Chooser.
6. Select the AppleFax Resource icon from the Chooser.
7. Choose the AppleScan Page Setup command to set the page specifications. Click OK to confirm the command.
8. Choose the AppleScan Print command to set the Quality and Page Range options.
9. (optional) To change the station's phone number (the message that prints on the top of each page), the type of dialing, or the number of times the station redials a busy number, click the Setup button. When the changes are made, click OK to return to the Print dialog box.
10. Enter a phone number.
11. Click Send to send the file.

..TIL03332-Using_Apple_Scanner_With_AppleFax_Modem_(TA39151).pdf

The second method scans an image, saves it to disk, and sends the AppleFax from the disk:

1. Follow steps 1 through 8 of the first method.
2. Click the Save File button.
3. When the Save File dialog appears, click the Save button to save the file.
4. Quit the AppleScan application.
5. Launch the AppleFax application.
6. Drag an envelope from the New Envelope Stack to the Envelope View.
7. Drag an address-book entry to the envelope.
8. Double-click the envelope.
9. (optional) To look at an AppleFax file before adding it to the Envelope Contents directory, select the AppleFax file, and click Open.
10. Select the files that you want to add to the Envelope Contents directory.
11. Click the Add button to add the selected files.
12. Tell the station when to send the envelope.
13. Click OK to save changes.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3332



Tech Info Library

AppleTalk: Network Number 65535 Is Reserved

Revised: 11/2/88
Security: Everyone

AppleTalk: Network Number 65535 Is Reserved

=====

This article last reviewed: 12 October 1988

The AppleTalk network number 65535 (all bits set to 1) is reserved for future use.

Although this number is not currently being used, Apple recommends that you select another AppleTalk network number for reasons of future compatibility problems.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3333



Tech Info Library

LaserWriter IINTX: HD Fonts Are Accessible To IBM AT Compatibles

Revised: 3/4/90
Security: Everyone

LaserWriter IINTX: HD Fonts Are Accessible To IBM AT Compatibles

=====

This article last reviewed: 6 October 1988

If you have been using a LaserWriter Plus, your IBM PC/AT or clone can also access the fonts resident in the LaserWriter IINTX hard drive through the RS-232 interface.

The fonts installed on the LaserWriter IINTX hard disk will appear as if they were in the LaserWriter IINTX ROM. All fonts, whether in ROM or installed on the hard disk, should be fully accessible to any PC/AT or AT clone that can already access the fonts in a LaserWriter Plus.

Adobe and Apple designed the hard disk option so that LaserWriter IINTX operates transparently, and the user can thus access additional fonts without having to download them with utilities.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3335



Tech Info Library

Apple IIC Plus: Don't Use Apple IIC Memory Expansion Card

Revised: 10/27/88
Security: Everyone

Apple IIC Plus: Don't Use Apple IIC Memory Expansion Card

=====

This article last reviewed: 6 October 1988

The Apple Memory Expansion Card is NOT designed to be used with the Apple IIC Plus. That card can ONLY be used in the Apple IIC computer.

Cards can be obtained from third-party vendors that will work in the Apple IIC Plus.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3336



Tech Info Library

Interferon 1.0, 2.0: Problem Mistaking The LaserWriter For Virus

Revised: 11/2/88
Security: Everyone

Interferon 1.0, 2.0: Problem Mistaking The LaserWriter For Virus

=====

This article last reviewed: 6 October 1988

Interferon 1.0 and 2.0, virus detection programs, report both LaserPrep 5.2 and LaserWriter 5.2 (from the 6.0 distribution) as "type 004 infections" -- that is:

"(004) 04/07/88 "SNEAK" Virus: Common System Folder files turned into INITs"

Interferon 1.0 and Interferon 2.0, like any other virus-detection tools, are not foolproof. They may suggest a virus where one does not exist, or not detect a virus that is present.

Interferon 3.0 does NOT report LaserWriter files as possible virus spreaders.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3341



Tech Info Library

HyperCard 1.2.1: Supports Multilaunch Over AppleShare

Revised: 11/2/88
Security: Everyone

HyperCard 1.2.1: Supports Multilaunch Over AppleShare

=====

This article last reviewed: 11 October 1988

HyperCard 1.2.1 on an AppleShare File server is a multilaunch application -- provided HyperCard and its Home stack are in a folder with read-only access.

If HyperCard is launched by a user with read/write access, HyperCard cannot be run by another user. This has not changed with the new versions of AppleShare.

As long as a stack is locked, the stack can be accessed from a file server by more than one user. Neither HyperCard or the stacks are multiuser, and stacks cannot be written to by more than one user at a time.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3343



Tech Info Library

LaserWriter: How To Eliminate Image Ghosts (7/95)

Revised: 7/31/95
Security: Everyone

LaserWriter: How To Eliminate Image "Ghosts" (7/95)

Article Created: 20 October 1988
Article Reviewed/Updated: 28 July 1995

TOPIC -----

When printing an image followed by a large black area on a LaserWriter, a "ghost" of the image sometime appears in the black area. This article describes a way to correct this ghosting effect on the Apple LaserWriter, LaserWriter Plus, or Laserwriter II printers.

DISCUSSION -----

The ghosting image anomaly is not unique to the Apple LaserWriter, LaserWriter Plus, or LaserWriter II printers; it is common to most laser printers and represents a problem with current laser-imaging technology. The ghosting may appear more pronounced with Apple equipment because many Apple applications use graphics AND text, rather than text only.

To work around the problem, print two or three copies of the document. When multiple copies of a page are printed, the organic coating on the imaging drum becomes more sensitive and is not as susceptible to the residual charges that cause ghosting.

Article Change History:
28 Jul 1995 - Reformatted.

Support Information Services

Copyright 1988-95, Apple Computer, Inc.

Tech Info Library Article Number:3344



Tech Info Library

LaserWriter IINTX: Cached Fonts Are Available To Host Computer

Revised: 11/2/88
Security: Everyone

LaserWriter IINTX: Cached Fonts Are Available To Host Computer

=====

This article last reviewed: 11 October 1988

Fonts cached on a hard disk connected to a LaserWriter IINTX are a local resource to the printer, and not the system creating the document.

When a specific font is requested, the LaserWriter checks its local resources for the desired font and loads the font information.

This process is contained within the architecture of the LaserWriter interrupter, and is transparent to the user. No additional software or commands from the sending system are required.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3345



Tech Info Library

Apple IIC Plus: Brief Description Of The Self-Test

Revised: 11/2/88
Security: Everyone

Apple IIC Plus: Brief Description Of The Self-Test

=====

This article last reviewed: 12 October 1988

The Apple IIC Plus self-test turns on the low-resolution color screen.

During the self-test, the colors change, indicating the progress of the test. At the end of the testing cycle, the color screen clears, and a "SYSTEM OK" message displays in the midst of random text. This is the normal end-of-test display to indicate that there is nothing wrong with the system. No other prompt appears.

To return the Apple IIC Plus to Applesoft BASIC, press CONTROL-RESET.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3346



Tech Info Library

AppleWorks 2.1: Apple IIf Plus Disk Drive Labelling Correction

Revised: 11/2/88
Security: Everyone

AppleWorks 2.1: Apple IIf Plus Disk Drive Labelling Correction

=====

This article last reviewed: 12 October 1988

The Apple IIf Plus has an internal 3.5" disk drive, which the older Apple IIf system didn't have. AppleWorks has a menu item under "Add Files" for changing current disk. When chosen, this menu item displays a list of available disks.

On an Apple IIf Plus with the internal 3.5" drive, AppleWorks 2.0 displays the following list of drives:

1. Built-in disk
2. Ext. disk IIf
3. Disk 3.5 #1
4. ProDOS directory

NOTE: AppleWorks 2.0 uses the following associations between slot/drive and the labels as displayed above:

- | | |
|---------------------|--|
| 1. Built-in disk | Slot 6, Drive 1 |
| 2. Ext. disk IIf | Slot 6, Drive 2 |
| 3. Disk 3.5 #1 | Slot 5, Drive 1 |
| 4. ProDOS directory | (the pathname typed in response to this selection) |

When running on a Apple IIf Plus:

1. The built-in disk is actually the first external 5.25" drive.
2. The "Ext. disk IIf" is the second external 5.25" drive.
3. The "Disk 3.5 #1" label is the internal 3.5" drive mounted in the Apple IIf Plus.

These labels are correct for the older Apple IIf systems, but the labels do not correctly identify the internal disk drive for the Apple IIf Plus. Claris has revised AppleWorks 2.0 to correct the associations. Contact Claris for information about the AppleWorks 2.1 update.

For more information, search under: Claris

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3347



Tech Info Library

LaserWriter II P/C: Image Shifted On Page

Revised: 1/17/89
Security: Everyone

LaserWriter II P/C: Image Shifted On Page

=====

This article last reviewed: 31 October 1988

BEFORE YOU START: Familiarize yourself with the LaserWriter II Technical Procedures. Be sure to follow proper ESD procedures.

Problem Description:

The image printed on the Laserwriter II is shifted or not placed properly on the page.

Background Information:

There are three switches (SW201, SW202, SW203) which detect which size paper cassette has been installed in the printer. If these switches become bent, or are triggered incorrectly the image will shift on the page depending on the cassette size the printer thinks is inserted. The image will be shifted down and to the right on the paper. The amount of shift depends upon which cassette the printer detects. For example, if the printer thinks it detects an A5 cassette then the image will be shifted down about 1/2" and to the right about 1/4". The built in print engine test is aligned perfectly on the page.

Cure:

- #1: Straighten the microswitch arms or replace the entire microswitch assembly.
- #2: Check the paper cassette for damage.

If this does not solve the problem refer to the LaserWriter II Technical Procedures for further information.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3348



Tech Info Library

Nisus Software Inc. (formerly Paragon Concepts)

Revised: 4/2/97
Security: Everyone

Nisus Software Inc. (formerly Paragon Concepts)

=====

Article Created: 3 December 1988
Article Reviewed/Updated: 02 April 1997

Nisus Software Inc.

107 S. Cedros Avenue
Solana Beach, CA 92075-1900

800-922-2993

619-481-1477

619-481-6154 Fax

Company Profile:
Formerly Paragon Concepts, software, specializing in word processing.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3350



Tech Info Library

Temporal Acuity Products, Inc.

Revised: 11/30/92
Security: Everyone

Temporal Acuity Products, Inc.

=====

Article Created: 3 December 1988

Article Change History

11/30/92 - UPDATED

- To reflect changes in company information.

Temporal Acuity Products, Inc., software, music education: harmonic, melodic, rhythmic dictation, and ear-training software for the Apple II product line.

Temporal Acuity Products, Inc.

Building 1

Suite 200

300 120th Ave. N.E.

Bellevue, WA 98005

206-462-1007

800-426-2673

Fax: 206-462-1057

AppleLink: D1089

Copyright 1988, 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3351



Tech Info Library

Scantron

Revised: 7/19/93
Security: Everyone

Scantron

=====

Article Created: 3 December 1988
Article Reviewed/Updated: 19 July 1993

Scantron

1361 Valencia Ave.
Tustin, CA 92680-6463

714-259-8887

800-421-5066
800-826-7196 (Customer Service)

Fax: 714-259-8423

Company Profile:
Hardware and software, specializing in optical mark readers and accessories.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3352



Tech Info Library

Information Builders, Inc.

Revised: 7/19/93
Security: Everyone

Information Builders, Inc.

=====

Article Created: 3 October 1988
Article Reviewed/Updated: 19 July 1993

Information Builders, Inc.

1250 Broadway
New York, NY 10001

212-736-4433

Fax: 212-967-6406

Company Profile:
Software, specializing in a database management system.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3353



Tech Info Library

Applied Engineering (6/95)

Revised: 6/6/95
Security: Everyone

Applied Engineering (6/95)

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Article Created: 3 December 1988
Article Reviewed/Updated: 6 June 1995

Applied Engineering

3210 Beltline Rd.
Dallas, TX 75234

Company Profile:

Applied Engineering went out of business in May 1994. They made hardware, specializing in Apple II & Macintosh peripheral boards. Tech support for some of their products is now being handled by a few separate companies.

Accelerators

Brainstorm Products

Provides support for Applied Engineering accelerators and related software only.

Apple II Related Products

ABC Direct

** FOR SCHOOLS OR BUSINESSES ONLY. NO INDIVIDUALS PLEASE **

Provides support for the Applied Engineering products for the Apple II series (including the DOS compatibility card). Also has a repair service available for any Applied Engineering product based on an hourly fee.

Parallel Printer Interface Cards

Orange Micro, Inc.

Offer solutions to many problems with Applied Engineering parallel printer interface cards (similar to their own Grappler boards).

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

Article Change History:

06 Jun 1995 - Added information about Orange Micro, Inc.

10 Feb 1995 - Added reference to Locating Vendor Info article.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:3354



Tech Info Library

Pro Lab Imaging & Graphics (formerly Stradeware Corp.)

Revised: 7/15/93
Security: Everyone

Pro Lab Imaging & Graphics (formerly Stradeware Corp.)

=====

Article Created: 3 December 1988
Article Reviewed/Updated: 15 July 1993

Pro Lab Imaging & Graphics

1285 West Byers Place
Denver, CO 80223

303-733-2200

303-733-0688 Fax

Company Profile:
Software, specializing in desktop presentation and slide production, color
separation

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3355



Tech Info Library

DICOMED, Inc.

Revised: 7/7/93
Security: Everyone

DICOMED, Inc.

=====

Article Created: 12/03/88
Article Reviewed: 07/07/93
Article Updated: 07/07/93

DICOMED, Inc.

11401 Rupp Dr.
Burnsville, MN 55337-1276

800-888-7979

612-895-3000

612-895-3258 Fax

Company Profile:

Dicomed, Inc., hardware and software, specializing in production, design, and printing of high-quality graphics.

Article Change History: 07/07/93 Address Information Corrected

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3356



Tech Info Library

MASS Microsystems

Revised: 4/4/97
Security: Everyone

MASS Microsystems

=====

Article Created: 02/18/91
Article Reviewed: 07/13/93
Article Updated: 04/04/97

MASS Microsystems

810 W. Maude Ave.
Sunnyvale, CA 94086

800-442-7979
800-522-7979

408-522-1200

408-733-5499 Fax

Company Profile:

Hardware, specializing in removable media mass storage devices for the Macintosh, high performance fault tolerant disk arrays, removable and fixed and optical disk drives.

Article Change History: 07/13/93 New product information added, phone number added

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3358



Tech Info Library

A/UX: An Example Setup Of UNIX Mail For The Macintosh (9/94)

Revised: 9/13/94
Security: Everyone

A/UX: An Example Setup Of UNIX Mail For The Macintosh (9/94)

=====

Article Created: 21 October 1988
Article Reviewed/Updated: 13 September 1994

TOPIC -----

This article describes a shareware electronic mail development project for UNIX at the University of Minnesota. The idea was to create a simple system that would insulate users from having to learn UNIX or VMS. (Most campus administrators and secretaries at the university fall into this category.)

DISCUSSION -----

Because they were already running the CAP AppleShare file server software on a Sun workstation, they decided to take mail from the UNIX mailer and deposit it in an AppleShare volume. This means the user's mail is put onto an AppleShare disk and is readable by their favorite word processing application. Electronic mail appears as a normal Macintosh document. One configuration has the system set up so that incoming mail appears as Microsoft Word documents.

Conversely, they set up a folder on the AppleShare volume where any file dragged into the folder is submitted to the UNIX mailer. To be treated as mail, the file needs to obey two conventions:

- The first line of the file is the name and address of the receiver.
- The second line of the file is the subject.

A 20-line, C-shell program puts incoming mail into the appropriate AppleShare volume and mails outgoing mail from the outgoing mail folder. This process gave them two-thirds of a standard electronic mail system: sending and receiving mail.

The other third of the system is notification when mail arrives. To cover this requirement, they wrote a tiny (40K) application called "Nag." Nag runs under MultiFinder and periodically looks into a folder to see if any new files arrived. If new files appear in the folder, Nag uses the Macintosh notification manager to alert the user. If you want to know when mail arrives you can run

Nag. (Nag is small enough to run it and a word processing application under MultiFinder -- even on a 1MB Macintosh.)

The whole project is called "piece mail," because it is a mail system built from small pieces:

- AppleShare Server software
- A UNIX machine
- A shell script to move mail into the AppleShare Server volume
- The Nag program to notify users when new mail has arrived
- A word processing application to read and edit mail messages.

Although the school is using CAP AppleShare software on a Sun workstation, running UNIX, this same technique also should work for VMS VAXes with Alisa or Pacer AppleShare Server software. All this substitutes for SMTP mail services on the Macintosh.

Article Change History:

13 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1988, 1994 Apple Computer, Inc.

Tech Info Library Article Number:3362



Tech Info Library

GS/OS: Polling Drives For Disks Is Necessary

Revised: 9/22/89
Security: Everyone

GS/OS: Polling Drives For Disks Is Necessary

=====

This article last reviewed: 21 October 1988

Some users have expressed concern that the Apple IIGS GS/OS polls disk drives for the presence of a disk. The polling of drives under GS/OS is normal. Unlike the Macintosh, which has built-in hardware and firmware to detect a disk, the Apple IIGS does not. The Apple IIGS, via GS/OS, needs to poll the drives to determine whether a disk has been inserted. There is no way to disable the drive polling.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3363



Tech Info Library

Macintosh II: Where To Find Info On The Monitor Shimmer Problem

Revised: 12/3/88
Security: Everyone

Macintosh II: Where To Find Info On The Monitor Shimmer Problem

=====

This article last reviewed: 1 November 1988

Information regarding the Macintosh II monitor shimmer problem is in the "Apple Service Programs" binder in the "Product Notices: Monitors" section on pages 8.5.2 and 8.5.3. The actual adjustment procedure is in the "Apple Technical Procedures" binder (currently volume IV) in the "AppleColor RGB Monitor" section on page 3.7.

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Tech Info Library Article Number:3367



Tech Info Library

EtherTalk: Thin-Wire Cabling Strategy

Revised: 12/3/88
Security: Everyone

EtherTalk: Thin-Wire Cabling Strategy

=====

This article last reviewed: 1 November 1988

This article discusses a wiring strategy for thin-wire Ethernet cabling (RG58U cable) and the Macintosh II EtherTalk card.

Basically, RG58U cable must always loop through the wall plate (via a BNC connector). If no computer is present, pass the cable out through one hole in the plate and then back in through the other hole (the pass-through loop strategy).

If a computer is present, run the cable out to a T-connector mounted directly on the back of the computer and connect it to the T-connector. (Important: Xerox says that the T-connector MUST be within 1/2 inch of the card.) Run the continuing cable from the other side of the T-connector back through the second hole in the wall plate.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3368



Tech Info Library

Macintosh: Third-Party Serial-to-Parallel Solution

Revised: 6/17/92
Security: Everyone

Macintosh: Third-Party Serial-to-Parallel Solution

=====
Article Created: 1 November 1988
Article Last Reviewed: 9 June 1992
Article Last Updated: 9 June 1992

TOPIC -----

Is there any way to connect a parallel printer to the serial port of my Macintosh?

DISCUSSION -----

There are two solutions, both from Orange Micro:

The Grappler 9-pin (formerly called Grappler C/Macintosh/IIGS) provides a parallel interface system. The Grappler device plugs into the serial port on the Macintosh. It does a serial-to-parallel conversion using the ImageWriter II driver. It works with Epson, Okidata, Panasonic, and other Epson-compatible printers. (A special adapter cable from Orange Micro is required for both versions of the Macintosh 512K.)

The Grappler LX (formerly called Grappler LQ) is similar and does the serial-to-parallel conversation for third-party printers with 24-pin printheads. The device lets Hewlett-Packard-compatible laser printers, the HP DeskJet, and Epson or Toshiba 24-pin dot matrix printers, to work like the ImageWriter LQ printer. It does not work with the Macintosh 512K and Macintosh 512Ke.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3369



Tech Info Library

Macintosh: How To Use AFE To Import ProDOS PFS File Data

Revised: 12/5/88
Security: Everyone

Macintosh: How To Use AFE To Import ProDOS PFS File Data

=====

This article last reviewed: 21 October 1988

A good way to move data from the ProDOS version of PFS File to a Macintosh is to follow three steps:

- 1) Issue the PFS File "Copy Forms" command (explained in Chapter 9 of the PFS File manual) to print the file to disk as a ProDOS "delimited text" file.
- 2) Read this ProDOS text file into AppleWorks.
- 3) Print the file to disk to create a text file that he can import into the Macintosh. The resulting file is a true "TXT"-type file.

Some people want to use the PFS File "Copy Forms" command (explained in Chapter 9 of the PFS File manual) in a one-step operation. The problem with this is that Copy Forms does not create TXT-type file, but rather a "delimited text" file. Apple File Exchange does not see such a file as a text file and translates it as "default" mode. The additional step (moving the file into and out of AppleWorks) changes the file to a true TXT-type file that AFE can accomodate.

Apple File Exchange accomplishes file translation using scripts. You can write a script that accommodates the file type that has been assigned to the PFS File. To implement the translator, programming in the AFE environment is required (see "Apple File Exchange Technical Reference Package v1.1", available from APDA).

Software Publishing Corporation, publishers of the PFS series, recommends that the customer print the document to a disk. This assigns a TXT type to the printed document. However, this method writes the file in the screen layout format or a mailing label layout format. It does not automatically separate the fields or the records as the method described here does. For more information, search on "Software Publishing Corporation".

You can also change the file type with a file editor. However, this method is

more technical and riskier than using the AppleWorks method.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3370



Tech Info Library

ImageWriter LQ: Available OCR Fonts

Revised: 12/5/88
Security: Everyone

ImageWriter LQ: Available OCR Fonts

=====

This article last reviewed: 1 November 1988

As of this article writing, no OCR-A or OCR-B fonts designed as 3x fonts for the ImageWriter LQ are available. However, you can generate 3x fonts from an existing screen font using a font editor like Altsys FONTastic Plus.

For example, a 12-point font printed on the ImageWriter LQ needs a 36-point font installed in the System. OCR-A is available in 12-point, but not in 36-point. To create a 36-point font, open the 12-point font in FONTastic Plus and have FONTastic Plus generate it. Save that 36-point font, and install the generated font into the System file. Some cleanup of the generated font may be required within FONTastic Plus on a Fat Bits style screen.

Also, NeoScribe International creates custom fonts. They also sell a PostScript OCR-A font with the screen font.

For more information, search on the above company names.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3371



Tech Info Library

A/UX: Bourne Shell Metacharacters (6/93)

Revised: 8/12/93
Security: Everyone

A/UX: Bourne Shell Metacharacters (6/93)

Article Created: 21 October 1988
Article Reviewed/Updated: 24 June 1993

TOPIC -----

This article discusses Bourne shell metacharacters.

DISCUSSION -----

A metacharacter is a character that performs a special function in the shell, like expanding a file name or redirecting output. In fact, the metacharacters in this article fall into two categories: wildcard characters for file name expansion and redirection of input/output and process.

File name expansion characters include

- Asterisk *
- Brackets []
- Brackets-Hyphen [-]
- Question mark ?

Input/output and process redirection characters include

- Ampersand &
- Back quote `
- Backslash \
- Braces { }
- Double greater than > >
- Greater than >
- Less than <
- Parentheses ()
- Semicolon ;
- Slash /
- Vertical bar |

The article is divided into two sections (one for each type of character). All metacharacters are listed alphabetically within their sections.

FILE NAME EXPANSION METACHARACTERS

The Asterisk

The asterisk (*) substitutes in a file or directory name for zero or more characters, except a leading period (like ".ash").

Example: The command

```
ls *ash
```

returns file names ending with the letters "ash" like "ash", "bash", "cash", "mash", and "splash". However, it won't return strings that have characters after the "ash" like "bash.tmp" or "bashful".

Brackets

Brackets ([]) cause the shell to look for a match for each character between the brackets, one at a time. It does not match the period character.

Example: `ls [bm]ash` returns file names "bash" and "mash", but not "cash" or "bash.tmp".

A variation is brackets with a hyphen separating two characters. It causes the shell to match any character within the range of these characters in a file or directory name.

Example: `ls [a-c]ash` returns file names that have letters in the range from "a" through "c" as the first character of their name and that are followed by the letters "ash". Thus, "ash", "bash", and "cash" match, but not "dash" or "mash".

You can place a bracket metasequence anywhere in a string.

Question Mark

The question mark (?) substitutes for any ONE character in the same position in a file or directory name. The question mark does not expand file names, nor does not match a leading period.

Example: `ls ?ash` returns only file names that have one character followed by the characters "ash". Thus, "bash", and "cash" match, but not "ash" or "splash".

REDIRECTION METACHARACTERS

Ampersand

The ampersand (&), placed at the end of a line, causes the task it follows to run in the background. When using the ampersand, the shell returns the task's PID (Process ID Number). Note: In the Bourne shell, you cannot retrieve a task from the background.

Example: `cat /etc/passwd &`

Back Quotes

The back quotes (` `) contain any UNIX command. When the shell executes the line containing the back-quoted command, it replaces the command and with the command's output in the string. Without the back quotes, the shell would treat a command like an ordinary string.

For example,

```
echo today is date
```

returns "echo today is date", whereas

```
echo today is `date`
```

returns "today is " followed by the system date.

Backslash

The backslash (\), preceding a metacharacter, causes the shell to interpret the character as a regular character rather than as a metacharacter. Typically, this can stop a variable from returning its value.

For example, type in the following three lines of code. And notice that the third line does not return the variable's value.

```
x=hi
echo $x
echo \$x
```

Dollar Sign

The dollar sign (\$) causes the shell to evaluate or display the value of the variable the dollar sign precedes. The following three lines output "hi", the contents of variable x.

```
x=hi
echo $x
```

Double Quotes

The double quotes (" ") serve three purposes. First, it lets you put tabs and spaces in a string as you assign the string to a variable. Second, when you display the contents of a variable, surrounding the variable name in double quotes preserves tabs and multiple contiguous spaces and tabs.

Try this example:

```
y=me and you
```

The shell refuses the command when it hits the first space. Try this (including multiple spaces after "and"):

```
y="me and    you"
echo $y
echo "$y"
```

The third purpose for double quotes is that they can "seal in" command characters, so that these characters appear as literals. For example, typing

```
echo today's
```

causes the system to display a greater than sign. It's waiting for further input, input that must conclude with a single quote. The command

```
echo "today's"
```

just prints the word.

Greater Than and Double-Greater-Than

Both these commands take data from a source command and send that data to the target file as if it were standard output. If the file doesn't exist the command creates one. The difference is that greater-than always *writes* to the target file, thus erasing any data already in the file. The double-greater-than character always *appends* the data to the file.

To see these characters at work, try this command-line sequence:

First, check to see if you have a file named "doc." If you do, use a different file name.

```
ls doc
date > doc
cat doc
who am i >> doc
cat doc
cal 11 1993 > doc
cat doc
```

Less Than

The less than (<) causes a file to be treated as a standard input for the command. The example writes the file names in the current directory into doc, It then hands the contents of doc to the sort command for a reverse sort to the screen

```
ls < doc
```

```
sort -r < doc
```

Parentheses

The parentheses -- () -- group several commands for execution in a subshell with command output passed as standard input to the next command on a pipeline. Notice the difference when you use parentheses and when you don't in this example:

```
date; who am i > doc
cat doc
(date; who am i) > doc
cat doc
```

Without parentheses, the shell executes the date command without sending its output to doc. The shell pipes the who am i output, because it is immediately adjacent to the greater than.

Semicolon

The semicolon (;) causes commands on the current line to be executed sequentially. Note the example for parentheses and the example below:

```
date ; ls
```

Single Quotes

Put single quotes (') around special characters when you do not want the shell to interpret them.

Note: if a back quote occurs within the command, it must be escaped with a "\" (backslash). Otherwise, the usual quoting conventions apply within the command.

Vertical Bar

The vertical bar (|) causes the standard output for the first command and to be treated as the standard input for the second command. That is, the vertical bar combines commands into a pipeline, passing data from one command to another without an intervening file. The example passes the listing for the current directory directly to the sort command for a reverse sort printed to the screen:

```
ls | sort -r
```

Article Change History:

24 Jun 1993 - Revised for technical accuracy.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3373



Tech Info Library

Wall Data, Inc. (4/97)

Revised: 4/4/97
Security: Everyone

Wall Data, Inc. (4/97)

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Wall Data, Inc.

17769 N.E. 78th Place
Redmond, WA 98052

206-814-9255

800-433-3388

206-885-9250 FAX

FOR SNA•ps PRODUCT INFORMATION

1999 South Bascom Ave.
Suite 350
Campbell, CA 95008

408-369-6900

408-369-6909 FAX

800-487-8622 (800-48-RUMBA) Inside Sales Group

Company Profile:
Hardware and software, specializing in software publishing and protocol converter boxes, PC to host connectivity. In February, 1994, Wall Data took over future marketing, development (upgrades) and technical support (for those who purchase SNA•ps or SNA•ps upgrades from Wall Data) of Apple SNA•ps family of products, which offer 3270 terminal services for Macintosh computers.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3374



Tech Info Library

MacWorkStation-to-AS400 ASCII Protocol

Revised: 12/5/88
Security: Everyone

MacWorkStation-to-AS400 ASCII Protocol

=====

This article last reviewed: 1 November 1988

There are two hardware devices that provide IBM ASCII protocol for the AS400 Async Controller.

- Protocol Convertor Model 5208
- ASCII Workstation Controller 9404

Apple has tested both in VT100 mode. Generally, VT100 is an Xon/Xoff handshaking device, although it can use hardware handshaking.

Using the asynchronous protocol provided with MacWorkStation, MacWorkStation codes travel from Macintosh across either IBM's 5208 or 9404 to the AS400. The host application on the AS400 needs to accept and transmit the appropriate MacWorkStation codes to complete the environment.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3375



Tech Info Library

Macintosh: Tektronix Terminal Emulation

Revised: 5/10/89
Security: Everyone

Macintosh: Tektronix Terminal Emulation

=====

This article last reviewed: 10 November 1988

For a Macintosh package that supports Tektronix Graphic terminal emulation, check VersaTerm-PRO from Peripherals, Computers and Supplies. It emulates a Tektronix 4105 terminal. Also note that many of the applications that provide a Tektronix 4107 terminal driver also provide Tektronix 4105 terminal driver.

For more information, search on "Tektronix" and "Peripherals, Computers, and Supplies."

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3376



Tech Info Library

Aries Systems Corporation

Revised: 4/4/97
Security: Everyone

Aries Systems Corporation

=====

Article Created: 12/05/88
Article Reviewed: 07/01/93
Article Updated: 04/04/97

Aries Systems Corporation

200 Sutton St.
North Andover, MA 01845

508-975-7570

508-975-3811 Fax

MCI Mail:L-Holmes
Compuserve: 72117,1302

Company Profile:
Software, specializing in medical and healthcare CDs.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3377



Tech Info Library

Reed Reference Publishing

Revised: 4/4/97
Security: Everyone

Reed Reference Publishing

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Reed Reference Publishing

121 Chanlon Rd.
New Providence, NJ 07974

908-464-6800

Fax: 908-464-3553

Company Profile:
Hardware, specializing in reference Books in Print databases (some available on CD).

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3378



Tech Info Library

Comstock, Inc.

Revised: 4/4/97
Security: Everyone

Comstock, Inc.

=====

Article Created: 12/05/88
Article Reviewed: 07/06/93
Article Updated: 04/04/97

Comstock, Inc.

The Comstock Bldg.
30 Irving Place
New York, NY 10003

800-225-2727

212-353-8600

212-353-3383 Fax

Company Profile:
Software, specializing in stock photographs available on CDs.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3380



Tech Info Library

Facts On File

Revised: 7/8/93
Security: Everyone

Facts On File

=====

Article Created: 12/05/88
Article Reviewed: 07/08/93
Article Updated:

Facts On File

460 Park Avenue South
New York, NY 10016

800-322-8755

212-683-2244

212-213-4578 Fax

Company Profile:
Specializing in the publication of books and paper subscriptions. Currently
one CD published on news digests.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3381



Tech Info Library

Highlighted Data, Inc.

Revised: 4/4/97
Security: Everyone

Highlighted Data, Inc.

=====

Article Created: 12/05/88
Article Reviewed: 07/09/93
Article Updated: 04/04/97

Highlighted Data, Inc.

6628 Midhill Pl.
Falls Church, VA 22043-1833

703-533-1939

703-533-2939 Fax

Company Profile:
Specializing in reference works on CD-ROM.

Article Change History: 07/09/93 Address changed, phone number changed

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3382



Tech Info Library

Image Club Graphics (formerly Image Club)

Revised: 4/4/97
Security: Everyone

Image Club Graphics (formerly Image Club)

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Image Club Graphics

729 24th Ave. SE
Calgary, Alberta T2G 1P5
CANADA

800-661-9410 (USA and Canada)

403-262-8008

403-261-7013 Fax

Company Profile:
Software, specializing in art and photo libraries, softfonts and clipart for
desktop publishers

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3383



Tech Info Library

LaserScan Systems, Inc.

Revised: 4/4/97
Security: Everyone

LaserScan Systems, Inc.

=====
Article Created: 12/05/88
Article Reviewed: 07/12/93
Article Updated: 04/04/97

LaserScan Systems, Inc.

5310 N.W. 33rd Ave.
Suite 115
Ft. Lauderdale, FL 33309

305-777-1300

305-739-7845 Fax

Company Profile:
Software, specializing in real estate data CDs.

Article Change History: 07/12/93 Phone number changed

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3384



Tech Info Library

Personal Bibliographic Software, Inc. (PBS)

Revised: 4/4/97
Security: Everyone

Personal Bibliographic Software, Inc. (PBS)

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Personal Bibliographic Software, Inc. (PBS)

525 Avis Dr.
Suite 10
Ann Arbor MI 48108

313-996-1580

Fax: 313-996-4672

Compuserve: 72037,2747

Company Profile:
Software, specializing in software to convert downloaded database records to
Pro-Cite database format.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number: 3385



Tech Info Library

On-Line Computer Library Center, Inc. (OCLC)

Revised: 7/16/93
Security: Everyone

On-Line Computer Library Center, Inc. (OCLC)

=====

Article Created: 18 February 1991
Article Reviewed/Updated: 15 July 1993

On-Line Computer Library Center, Inc. (OCLC)

6565 Frantz Road
Dublin, OH 43017

800-848-5878

614-764-6474

614-764-6096 Fax

Company Profile:
Information provider, distributed on-line and on CD, specializing in the
academic market.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3386



Tech Info Library

Xiphias

Revised: 4/4/97
Security: Everyone

Xiphias

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Xiphias

8758 Venise Blvd.
Los Angeles, CA 90034

310-841-2790

Fax: 310-841-2559

Company Profile:
Hardware, specializing in CD publishing and search engine retrieval technology.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3387



Tech Info Library

Decathalon Data Systems, Inc.

Revised: 7/7/93
Security: Everyone

Decathalon Data Systems, Inc.

=====

Article Created: 12/05/88
Article Reviewed: 11/30/92
Article Updated: 04/01/92

Decathalon Data Systems, Inc.

P.O. Box: 17940
Boulder, CO 80308

303-440-9000

303-440-9099 Fax

Company Profile:

Decathalon, software, specializing in a seamlessly integrated software package that runs under A/UX.

Article Change History: 07/07/93 Name Information Added

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3388



Tech Info Library

GS/OS: How To Install Drivers And Other Devices

Revised: 9/22/89
Security: Everyone

GS/OS: How To Install Drivers And Other Devices

=====

This article last reviewed: 1 November 1988

The SYSTEM.DISK (included with Apple IIGS System Disk 4.0 -- GS/OS), does not contain the drivers for a 5.25-inch or SCSI drive. Without these drivers installed, the system cannot access the 5.25-inch or SCSI drive.

To install these (and other) drivers:

1. Create a start-up disk and make a back-up copy.

IMPORTANT: Do not run the Installer program on your original start-up disk.
Also, do not install GS/OS on a third-party application disk.
The application may work only with the original System files.

2. Run the Installer program (on the SYSTEM.TOOLS disk) so that it installs drivers on the back-up copy of the start-up disk.
3. Select "Apple Disk 5.25" for the 5.25-inch drive.
4. Select "SCSI Hard Disk" for the SCSI drive.

Contact the developer before upgrading to GS/OS, if you have any compatibility questions.

The following can be added with the Installer program:

Additional Fonts
Advanced Disk Utility
Apple Disk 5.25
Apple MIDI
AppleTalk ImageWriter
AppleTalk ImageWriter LQ
Card 6850 MIDI
CD-ROM
Direct Connect ImageWriter

Direct Connect ImageWriter II
Epson Printer
System Files
LaserWriter
Network Printer Chooser
Network Printer Namer
SCSI Hard Disk
UniDisk 3.5

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3390



Tech Info Library

Apple IIGS: GS/OS Support For Epson Printers

Revised: 9/22/89
Security: Everyone

Apple IIGS: GS/OS Support For Epson Printers

=====

This article last reviewed: 23 November 1988

Apple IIGS System Disk 4.0 and GS/OS support printing to these Epson printers through the Practical Peripherals Graphic Card:

FX-100
FX-850
FX-1050
LQ-850
LQ-1050
LX-800
RX-80

To use these Epson printers, you must have installed the Practical Peripherals Graphic Card; it is the only interface card supported. Also, all eight switches on the printer must be in the UP position. Use either the printer default setting or see the Practical Peripherals Graphic Card manual for individual printer settings.

For more information, search in the Tech Info Library under "Practical Peripherals" and "Epson."

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3392



Tech Info Library

Macintosh II: Automatix Offers Industrial-Grade Model

Revised: 7/2/92
Security: Everyone

Macintosh II: Automatix Offers Industrial-Grade Model

=====

Article Created: 23 November 1988
Article Last Reviewed: 29 June 1992
Article Last Updated:

TOPIC -----

I need to use a Macintosh II in a very harsh environment, ie. factory.
How can I protect my Macintosh?

DISCUSSION -----

If you need an industrial-grade Macintosh II, look into Automatix's modified Macintosh II. The AI-90 computer integrates Macintosh II innards with a steel case (rated NEMA 2), a shock-mounted hard disk, and temperature- and power-monitoring circuits.

A second computer, the AV-90, extends the AI-90 for video digitization. It includes a frame-grabber card and an interpreted language for imaging and I/O work -- MacRail.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3394



Tech Info Library

Apple II Plus: How To Generate Lowercase & Uppercase Characters

Revised: 12/5/88
Security: Everyone

Apple II Plus: How To Generate Lowercase & Uppercase Characters

=====

This article last reviewed: 23 November 1988

To make an Apple II Plus generate both lowercase and uppercase characters for word processing applications you need a Videx (or other manufacturer) 80-column card for the Apple II Plus. The Videx VideoTerm card handles both the reading of keystrokes and their proper display.

Note: You must make the Apple II Plus shift key modification for this to work. Search on "shift key mod" in the Tech Info Library for the modification requirements.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3395



Tech Info Library

Multi-Ad Services, Inc.

Revised: 4/4/97
Security: Everyone

Multi-Ad Services, Inc.

=====

Article Created: 05/12/88
Article Reviewed: 07/13/93
Article Updated: 04/04/97

Multi-Ad Services, Inc.

1720 West Detweiller Dr.
Peoria, IL 61615

800-447-1950

309-692-1530

309-692-6566 Fax

Company Profile:
Software, specializing in graphics software CDs.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3396



Tech Info Library

Optical Media International

Revised: 4/4/97
Security: Everyone

Optical Media International

=====

Article Created: 30 November 1992
Article Reviewed/Updated: 4 April 1997

Optical Media International

180 Knowles Dr.
Los Gatos, CA 95030

800-347-2664

408-376-3511

408-376-3519 Fax

Company Profile:
Hardware, specializing in CDs. A pre-mastering facility for CD-ROMs.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3398



Tech Info Library

Apple IIe: Input Devices For Disabled Individuals

Revised: 12/5/88
Security: Everyone

Apple IIe: Input Devices For Disabled Individuals

=====

This article last reviewed: 23 November 1988

This article lists companies who make software and hardware that enable the disabled to use Apple computers.

Contact the Trace Research & Development Center at the University of Wisconsin concerning their software registry and listing of literature and programs.

Both Zygo Industries and Prentke Romich, have switches and devices to aid input to the computer. Zygo also makes various software packages that can do abbreviation expansion, and math figures. A demo disk product shows input and output techniques for the disabled.

Using one of these products with the Adaptive Firmware Card from Don Johnston Development Company allows users to enter information into most computer programs. The card allows 16 different input methods, including single-switch scan, Morse Code for two switch users, expanded keyboard, and so on. This card can be installed by a nontechnical person and does not disrupt use of the computer by able-bodied individuals.

For more information, search in the Tech Info Library on the above company names.

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Tech Info Library Article Number:3399



Tech Info Library

LaserWriter: Metering Device Available From XCP Corporation

Revised: 12/5/88
Security: Everyone

LaserWriter: Metering Device Available From XCP Corporation

=====

This article last reviewed: 23 November 1988

XCP Corporation makes a device -- "Vend-a-Card" -- that meters LaserWriter use. It is a card-reading device that attaches to the LaserWriter. Several universities, including Cornell University, use it.

For more information, search on "XCP".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3403



Tech Info Library

Keyword Office Technologies, Ltd.

Revised: 4/4/97
Security: Everyone

Keyword Office Technologies, Ltd.

=====

Article Created: 12/05/88
Article Reviewed: 07/12/93
Article Updated: 04/04/97

Keyword Office Technologies, Ltd.

2816 11th St. N.E.
Calgary, Alberta T2E 7S7
CANADA

800-661-8161 (Customer Service)
800-866-6539 (Sales)

403-250-1770

403-250-1964 Fax

Company Profile:
Software, specializing in file translation.

Article Change History: 07/12/93 Phone number information added

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3404



Tech Info Library

AppleCD SC: How To Use The High Sierra Format With AppleShare

Revised: 12/4/89
Security: Everyone

AppleCD SC: How To Use The High Sierra Format With AppleShare

=====

This article last reviewed: 11 November 1988

You can install software on an AppleCD SC drive, so that High Sierra CDs can be shared from an AppleShare file server. To do this, you need a CD Setup disk (with version v2.0.1 or greater of AppleCD SC). This disk contains drivers that support the High Sierra CD-ROM format. To install, follow these steps:

1. Run the Installer program on the CD Setup v2.0.1 disk.
2. Choose the "AppleCD SC (v2.0.1)" script.
3. Select the AppleShare server start-up volume.
4. Click "Install."

After the High Sierra drivers have been installed, follow the directions in the AppleShare File Server Administrator's Guide (Copyright 1987,1988 by Apple Computer, Inc; part number 030-1343 or 030-1023 with Tell Apple card) for using CD-ROM drives.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3405



Tech Info Library

LANStar/EtherTalk: Macintosh II Bridge Not Available

Revised: 6/1/89
Security: Everyone

LANStar/EtherTalk: Macintosh II Bridge Not Available

=====

This article last reviewed: 11 November 1988

A LANStar card and an EtherTalk card can be placed into a Macintosh II. However, this does not bridge the two networks through the Macintosh II. It merely lets the two networks have branches to the same machine, but there is no communication between the networks or between machines on the different networks.

Software written specifically to recognize both cards (and networks) also is required. This software needs to implement functions similar to those provided by a Kinetics FastPath for LocalTalk and Ethernet. Currently, there is no software that we know of that can do this. Northern Telecom software provides bridging functions between LocalTalk and LANStar, but it does not do the same with the EtherTalk card.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3406



Tech Info Library

Macintosh-to-Wang Connectivity

Revised: 5/18/89
Security: Everyone

Macintosh-to-Wang Connectivity

=====

This article last reviewed: 11 November 1988

This article describes two Macintosh-to-Wang connectivity solutions.

Data Viz has three versions of MacLink Plus: VS, OIS, and WP. The VS and OIS are operating systems for midrange systems, and the WP is for a Wang PC. To use MacLink Plus VS, AllegroServer must be used on the host.

The M/H Group product, VSCOM, is essentially the same as MacLink Plus VS.

For more information, search on the above company names.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3407



Tech Info Library

System 6.0.2: Incompatible With SoftPC v1.2

Revised: 5/31/89
Security: Everyone

System 6.0.2: Incompatible With SoftPC v1.2

=====

This article last reviewed: 11 November 1988

SoftPC v1.2 is incompatible with System 6.0.2. When launching SoftPC under MultiFinder, the application unexpectedly quits. When the application is relaunched, an "illegal instruction encountered" error message is received. If you click the Reset button at this point, SoftPC starts up and runs without any problems.

The current version of SoftPC, v1.2.1, corrects the problem. To upgrade your copy of SoftPC, provide Insignia Solutions with the serial number of your SoftPC software, your name, and mailing address.

For more information, search on "Insignia Solutions".

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3409



Tech Info Library

Automatix, Inc.

Revised: 4/4/97
Security: Everyone

Automatix, Inc.

=====

Article Created: 12/05/88
Article Reviewed: 07/02/93
Article Updated: 04/04/97

Automatix, Inc.

755 Middlefex Turnpike
Billerica, MA 01821

508-667-7900

508-663-5482 Fax

Company Profile:

Hardware and software, specializing in modifying Macintosh II systems for industrial use including driver software for machines.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3410



Tech Info Library

Grolier Electronic Publishing

Revised: 4/4/97
Security: Everyone

Grolier Electronic Publishing

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Article Created: 12/05/88
Article Reviewed: 02/26/96
Article Updated: 04/04/97

Grolier Electronic Publishing

Sherman Turnpike
Danbury, CT 06816

800-356-5590 (CD-ROM Inquiries Only)

203-797-3500 (Main)
800-356-5590 (Customer Service)

203-797-3197 Fax (Main)
203-797-3835 Fax

Company Profile:
Software, specializing in an electronic encyclopedia on CD-ROM.

Article Change History: 07/08/93 Phone Number Information Added

Copyright 1988-97 , Apple Computer, Inc.

Tech Info Library Article Number:3411



Tech Info Library

Videx, Inc.

Revised: 4/4/97
Security: Everyone

Videx, Inc.

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Videx, Inc.

1105 N.E. Circle Blvd.
Corvallis, OR 97330-4285

503-758-0521

Fax: 503-752-5285

Company Profile:
Hardware, specializing in video cards and optical bar code devices.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3413



Tech Info Library

Zygo Industries

Revised: 7/21/93
Security: Everyone

Zygo Industries

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Article Created: 5 December 1988
Article Reviewed/Updated: 21 July 1993

Zygo Industries

P.O. Box 1008
Portland, OR 97207

503-684-6006

800-234-6006

Fax: 503-684-6011

Company Profile:
Hardware and software, specializing in input devices and software for the disabled.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3414



Tech Info Library

Caere Corporation

Revised: 4/4/97
Security: Everyone

Caere Corporation

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Caere Corporation

100 Cooper Court
Los Gatos, CA 95030

800-535-SCAN (7226) (Product Info.)
800-GOCAERE (462-2373) (Tech. Support)
800-643-3915 (Newest Products)

408-395-7000

408-354-2743 Fax

Company Profile:
Software, specializing in Optical Character Recognition (OCR).

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3415



Tech Info Library

Practical Peripherals

Revised: 7/15/93
Security: Everyone

Practical Peripherals

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 15 July 1993

Practical Peripherals

375 Conejo Ridge Ave.
Thousand Oaks, CA 91361

800-442-4774 (Sales)

805-497-4774

805-374-7200 Fax

COMPUSERVE: GO PPI FORUM

Company Profile:
Hardware, specializing in modems, fax modems, buffers, and interface cards.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3416



Tech Info Library

Software Publishing Corporation

Revised: 7/19/93
Security: Everyone

Software Publishing Corporation

=====

Article Created: 18 February 1991
Article Reviewed/Updated: 19 July 1993

Software Publishing Corporation

3165 Kifer Rd.
Santa Clara, CA 95056-0983

Mailing Address
3165 Kifer Rd.
P.O. Box 54983
Santa Clara, CA 95056-0983

408-986-8000

Fax: 408-980-0279 (Customer Service)

Company Profile:
Software, specializing in applications for the home and office.

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3417



Tech Info Library

CTA, Inc.

Revised: 7/7/93
Security: Everyone

CTA, Inc.

=====
Article Created: 12/05/88
Article Reviewed: 07/07/93
Article Updated: 04/01/92

CTA, Inc.

25 Science Park
New Haven, CT 06511

800-252-1442

203-786-5828

203-786-5833 Fax

Company Profile:
Software, specializing in optical character recognition (OCR).

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3418



Tech Info Library

Don Johnston Developmental Equipment

Revised: 4/4/97
Security: Everyone

Don Johnston Developmental Equipment

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Article Created: 12/05/88
Article Reviewed: 07/07/93
Article Updated: 04/04/97

Don Johnston Developmental Equipment

1000 N. Rand Rd., Building 115
P.O. Box 639
Wauconda, IL 60084

800-999-4660

708-526-2682

708-526-4177 Fax

Company Profile:

Don Johnston Developmental Equipment, hardware and software,
specializing in interface cards to help disabled persons.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3419



Tech Info Library

Prentke Romich Company

Revised: 7/15/93
Security: Everyone

Prentke Romich Company

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Article Created: 5 December 1988
Article Reviewed/Updated: 15 July 1993

Prentke Romich Company

1022 Heyl Road
Wooster, OH 44691

800-262-1990 (24-hour service)
800-262-1984 (General Info)

216-263-4829 Fax

Company Profile:
Hardware, specializing in input devices and other adaptive products for the disabled.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:3421



Tech Info Library

Trace Research & Development Center

Revised: 4/4/97
Security: Everyone

Trace Research & Development Center

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Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Trace Research & Development Center

University of Wisconsin
1500 Highland Avenue
S151 Waisman Center
Madison, WI 53705

608-262-6966

Fax: 608-262-8848

Company Profile:

Specializing in listings for documents, software, and adaptive devices relevant to the disabled and to special education. Also computer and communication access specialties.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3422



Tech Info Library

XCP Corporation

Revised: 7/21/93
Security: Everyone

XCP Corporation

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Article Created: 5 December 1988
Article Reviewed/Updated: 21 July 1993

XCP Corporation

40 Elm Street
Dryden, NY 13053

607-844-9143

800-647-7020

Fax: 607-844-8031

Company Profile:

Hardware, specializing in a metering device for LaserWriters (DataTron and CoinOp access control).

Copyright 1988-93, Apple Computer, Inc.

Tech Info Library Article Number:3423



Tech Info Library

Epson America, Inc.

Revised: 4/4/97
Security: Everyone

Epson America, Inc.

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 4 April 1997

Epson America, Inc.

20770 Madrona Ave.
P.O. Box 2842
Torrance, CA 90509-2842

800-BUY-EPSON (800-289-3776)

800-GO-EPSON (for Canadian customers)

310-782-2600 (Customer Resource Center)
310-782-0770

310-782-5220 Fax

Company Profile:
Hardware, specializing in printers and scanners for Macintosh and Windows computers.

Article Change History:
3 March 1994 - Added phone numbers and revised company profile.

Support Information Services

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3424



Tech Info Library

Access II: Does Not Support VT100 Line Graphics

Revised: 5/25/89
Security: Everyone

Access II: Does Not Support VT100 Line Graphics

=====

This article last reviewed: 21 September 1988

Apple's Access II does NOT support the VT100 line graphics character set. If you need this character set, there may be third-party terminal emulators for the Apple II family that provide VT100 character graphics.

Apple is not currently aware of manufacturers of such emulators. If you have information on third party suppliers, please contact the Apple Technical Information Library (at AppleLink address TECH.DB).

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3426



Tech Info Library

High-Density Disks: Don't Format them in 400K/800K Drives

Revised: 8/23/91
Security: Everyone

High-Density Disks: Don't Format them in 400K/800K Drives

=====

Article Created: 5 December 1988
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article explains why a high-density disk should not be formatted in 400K or 800K drives.

DISCUSSION -----

If a high-density disk is formatted in a normal 800K or 400K drive, it functions as an 800K or 400K disk; however, when such a disk is used in the Apple SuperDrive (formerly Apple FDHD), a dialog box appears stating that the disk was improperly formatted.

SuperDrive disks have a special notch which allows the SuperDrive to recognize the media as high density (1.4MB). Standard 800K and 400K drives CANNOT detect the notch, and will format a high-density disk as a regular 800K or 400K disk.

High-density media should NOT be formatted in a 800K or 400K drive.

High-density disks are physically different from double-density disks and are tested to a different specification. The coating on high-density disks is thinner and has finer particles. These disks require a less intense magnetic field from the read/write head to properly align the magnetic particles within the data cell during a write cycle.

The magnetic field generated by Apple 800K and 400K drives is too strong and may cause data loss.

Thus, the SuperDrive, in conjunction with the system software, recognizes that the high-density disk was formatted improperly and gives the user the option to re-format it or eject it.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:3427



Tech Info Library

AppleTalk: Updated Name-Binding Protocol (NBP) List

Revised: 5/3/89
Security: Everyone

AppleTalk: Updated Name-Binding Protocol (NBP) List

=====

This article last reviewed: 06 October 1989

Here is a list AppleTalk NBP Types. (NBP means "name-binding protocol" -- an AppleTalk protocol that allows users to assign familiar character string names to network devices.)

NBP Type	Description
-----	-----
AFPServer	Apple Filing Protocol compliant file server
Apple IIe Boot	AppleShare, with Apple IIe boot support
Apple IIGS	AppleShare, with Apple IIGS boot support
Apple IIe	Apple AppleTalk Card
Apple IIGS	Apple AppleTalk GS
APS Spooler	Alisa Systems VAX-spooled LaserWriter
ASManager	AlisaShare Network Manager
ATK/VMS Bridge	AppleTalk for VMS bridge
C-Server	Solana, 3 serial ports
ChooserName	Farallon RegisterName node
DECNet Gateway	Alisa Systems DECNet gateway
GatorBox	Cayman GatorBox, AppleTalk-Ethernet
I-Server	Solana, AppleTalk-AppleTalk
ImageWriter II	AppleTalk ImageWriter II
InBox Mailserver	InBox Mail server node
InterBridge	Hayes, AppleTalk-AppleTalk (NOTE: Space is last character of the NBP type.)
IPADDRESS	NCSA Telnet (MacIP) terminal
LaserShared	Apple LaserShare-spooled LaserWriter
LaserWriter	LaserWriter or Spooler process
Liaison	Infosphere Liaison Software Bridge
LQ	AppleTalk ImageWriter LQ
Macintosh II	Apple Responder node
Macintosh Plus	Apple Responder node
Macintosh SE	Apple Responder node
MS-DOS 3.3	Apple LocalTalk Card

Multitalk	Abaton, 3 serial ports(Discontinued Product)
MWSHost	MacWorkStation Host
NetBridge	Shiva, AppleTalk-Async
NetModem	Shiva, AppleTalk modem
NetSerial	Shiva, 1 serial port
NMClient	Shiva NetModem client
no NBP	Northern Telecom, LANSTAR-AppleTalk
no NBP	Northern Telecom, PrintWay
no NBP	Northern Telecom virtual LANSTAR bridge
no NBP	Kinetics FastPath, AppleTalk-Ethernet
Node	LaCie SilverServer node
NSClient	Shiva NetSerial client
Odesta Double Helix	Helix Data Base Server
Odesta MultiUser Helix	Helix Data Base Server
OmnisAT	Omnis Multiuser database user
pcLINK	Pacer, virtual AppleTalk bridge
ProDOS 16 Image	AppleShare, with Apple IIGS boot support
QMServer	CE Software QuickMail server
QMSNtest	CE Quick Mail B5 node
QuickMail	CE Quick Mail B5 client node
R-Server	Solana, AppleTalk-Async
ResourceServer	Microsoft Mail server
ResourceTester	Pacer Microsoft Mail server
S-Server	Solana, 1 serial port
SerialX	LaCie SilverServer node
Spooler	AppleShare Print Services Spooler
TFTPServer	Cayman TFTP Server
Timbuktu Host	WOS Timbuktu host node
Timbuktu Serial	WOS Timbuktu node
Top2Serial	TOPS node
Top2Server	TOPS server node
Top2Station	TOPS client node
UnixMailListener	Star Nine UNIX Mail server

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3428



Tech Info Library

Macintosh: SCSI Bus Does Not Use True DMA Mode

Revised: 6/8/89
Security: Everyone

Macintosh: SCSI Bus Does Not Use True DMA Mode

=====

This article last reviewed: 25 October 1988

The Macintosh family of computers does not support true DMA transfers via the SCSI chip.

The SCSI chip can operate in two modes: normal mode and pseudo-DMA mode.

- In normal mode, the SCSI driver software manages the handshaking to communicate with a peripheral SCSI device.
- In pseudo-DMA mode, the SCSI chip's internal logic handles all the SCSI bus handshake signals automatically.

(NOTE: For more information on the SCSI chip and DMA, see pages 5-24, 12-25, and 20-21 of the "Macintosh Family Hardware Reference" manual from Addison Wesley, (ISBN# 0-201-19255-1).

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3429



Tech Info Library

Macintosh: No COBOL Compiler Currently Available

Revised: 12/5/88
Security: Everyone

Macintosh: No COBOL Compiler Currently Available

=====

This article last reviewed: 1 November 1988

Apple currently does not know of any way to port COBOL programs to the Macintosh without COBOL running on the system.

Apple would welcome any information about such a COBOL compiler. Please AppleLink such information to TECH.DB.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3431



Tech Info Library

LaserWriter: Maximum Paper Length Is 14 Inches

Revised: 12/5/88
Security: Everyone

LaserWriter: Maximum Paper Length Is 14 Inches

=====

This article last reviewed: 1 November 1988

The LaserWriter is limited to a maximum paper length of 14 inches, due to timing requirements for proper paper feed and document imaging. Using longer paper causes jams.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3432



Tech Info Library

Ethernet, LocalTalk: Number Assignments Don't Affect Performance

Revised: 12/5/88
Security: Everyone

Ethernet, LocalTalk: Number Assignments Don't Affect Performance

=====

This article last reviewed: 1 November 1988

When creating an Ethernet and LocalTalk network, performance is not effected if the assigned network numbers are both high and low (for instance: 1,2 or 820,821)

It makes no difference what number is assigned since the field size remains constant. If a small number is used and the field is not "filled", zeros are transmitted as place holders.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3433



Tech Info Library

Apple IIe: How To Connect To An AppleShare Network

Revised: 5/11/89
Security: Everyone

Apple IIe: How To Connect To An AppleShare Network

=====

This article last reviewed: 1 November 1988

An unenhanced Apple IIe requires the Apple IIe Enhancement kit (consisting of new ROMs and CPU), the Apple Workstation card, and 128K RAM to be connected to an AppleShare network.

An enhanced Apple IIe requires only the Apple Workstation card and 128K RAM.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3434



Tech Info Library

Apple IIC Plus: External Drive Configurations

Revised: 12/5/88
Security: Everyone

Apple IIC Plus: External Drive Configurations

=====

This article last reviewed: 8 November 1988

The following table shows all possible drive configurations for the Apple IIC Plus computer:

Drive 1	Drive 2	Drive 3	Count (internal included)
-----	-----	-----	-----
Apple 3.5"	Apple 3.5"	UniDisk 3.5"	(4-3.5")
Apple 3.5"	UniDisk 3.5"	UniDisk 3.5"	(4-3.5")
UniDisk 3.5"	UniDisk 3.5"	UniDisk 3.5"	(4-3.5")
Apple 3.5"	Apple 3.5"	Apple 5.25"	(3-3.5" 1-5.25")
Apple 3.5"	UniDisk 3.5"	Apple 5.25"	(3-3.5" 1-5.25")
UniDisk 3.5"	UniDisk 3.5"	Apple 5.25"	(3-3.5" 1-5.25")
Apple 3.5"	Apple 5.25"	Apple 5.25"	(2-3.5" 2-5.25")
UniDisk 3.5"	Apple 5.25"	Apple 5.25"	(2-3.5" 2-5.25")
Apple 3.5"	Apple 3.5"	none	(3-3.5")
Apple 3.5"	UniDisk 3.5"	none	(3-3.5")
UniDisk 3.5"	UniDisk 3.5"	none	(3-3.5")
Apple 3.5"	Apple 5.25"	none	(2-3.5" 1-5.25")
UniDisk 3.5"	Apple 5.25"	none	(2-3.5" 1-5.25")

Apple 5.25"	Apple 5.25"	none	(1-3.5" 2-5.25")
Apple 3.5"	none	none	(2-3.5")
UniDisk 3.5"	none	none	(2-3.5")
Apple 5.25"	none	none	(1-3.5" 1-5.25")

Slot and Drive Configurations

Internal 3.5" slot 5 drive 1 (PR#5 boots this drive)

First external 3.5" slot 5 drive 2 *

Second external 3.5" slot 2 drive 1

Third external 3.5" slot 2 drive 2

First external 5.25" slot 6 drive 1 (PR#6 boots this drive)

Second external 5.25" slot 6 drive 2

* The first external 3.5" boots at power on or reset if no disk is inserted in the internal drive. This disk does not boot when a PR#5 is entered.

- The Apple 3.5" is an 800K platinum drive.

- The UniDisk 3.5" is an 800K white drive.

- The Apple 5.25" is a 140K platinum drive (formerly called UniDisk in the beige color).

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3435



Tech Info Library

Macintosh: Logic Boards And VDE Approval

Revised: 12/5/88
Security: Everyone

Macintosh: Logic Boards And VDE Approval

=====

This article last reviewed: 8 November 1988

There are no differences between the domestic and international Macintosh logic boards that would limit VDE approval (VDE, or VDE 0871, is a German code governing electronic components and performance).

However, the logic boards produced for domestic Macintosh systems are tested to meet DOMESTIC certification requirements only. Even though the logic boards are the same, the components used will be sourced from different vendors, depending on where the boards are produced.

This picture may be further complicated because some countries require vendor source information for certification. If the vendor source is changed, a new certification is required.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3436



Tech Info Library

Macintosh: Capture 1.3 Allows Screen Shots With Menu Pulled Down

Revised: 5/17/89
Security: Everyone

Macintosh: Capture 1.3 Allows Screen Shots With Menu Pulled Down

=====

This article last reviewed: 9 November 1988

You can produce a screen shot that includes a pulled-down menu.

Capture 1.3, from Mainstay, replaces the Command-Shift-3 FKey and allows simultaneous saving of the selected area to the clipboard and to a PICT file. It is compatible with Macintosh II, MultiFinder, and color and big screens.

For more information, search under: "Mainstay"

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3437



Tech Info Library

Apple IIGS: GS/OS 4.0 Incompatible With AppleShare (3/93)

Revised: 3/25/93
Security: Everyone

Apple IIGS: GS/OS 4.0 Incompatible With AppleShare (3/93)

=====

Article Created: 5 December 1988

Article Change History

03/25/93 - REVISED

- To add version number 4.0 because later versions of GS/OS are compatible with AppleShare.

TOPIC -----

Apple IIGS system software, GS/OS 4.0, part of Apple IIGS System Software 4.0, is designed for the stand-alone user.

DISCUSSION -----

GS/OS 4.0 DOESN'T support the AppleShare File Server; however, GS/OS 4.0 CAN use an AppleTalk printer.

The AppleShare IIGS Workstation Software provides ProDOS 16 from System Disk 3.2, which allows Apple IIGS access to the AppleShare File Server.

Later versions of GS/OS ARE compatible with AppleShare. Apple highly recommends upgrading to GS/OS 5.0.4 or later.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:3438



Tech Info Library

Apple IIGS: How To Print Low-Res/High-Res Graphics Files

Revised: 1/19/93
Security: Everyone

Apple IIGS: How To Print Low-Res/High-Res Graphics Files

=====

Article Created: 5 December 1988

Article Change History

1/19/93 - UPDATED
• Beagle Brothers now WordPerfect Corporation.
11/9/88 - REVIEWED
• For accuracy.

A low-resolution graphics file on the Apple IIGS can be printed from BASIC without using any special interface cards (for instance, an Apple IIGS with an ImageWriter II connected to the serial port) using Triple-Dump from Beagle Brothers (now WordPerfect Corporation).

This application lets any Apple II prints not only low-resolution, but high-resolution, double-high-resolution, and double-low-resolution files, as well as 40-column and 80-column text. Triple-Dump routines can also be used as part of BASIC programs.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1988, 1993, Apple Computer, Inc.

Tech Info Library Article Number:3440



Tech Info Library

AppleShare PC 1.1: Problems With 3rd-Party PC LocalTalk Cards

Revised: 8/28/90
Security: Everyone

AppleShare PC 1.1: Problems With 3rd-Party PC LocalTalk Cards

=====

This article last reviewed: 9 November 1988

AppleShare PC 1.1, released in May 1988, is not designed to work with third-party PC LocalTalk cards (such as the Daystar Digital's MicroChannel LocalTalk card, Hercules Video/AppleTalk card, TOPs, Flash LocalTalk) because the current protocol stack writes directly to Apple's LocalTalk PC Card.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3441



Tech Info Library

Macintosh: Interferon and Sneak Virus

Revised: 12/5/88
Security: Everyone

Macintosh: Interferon and "Sneak" Virus

=====

This article last reviewed: 9 November 1988

Some users have asked about a "Sneak" virus, which supposedly turns commonly used System Folder files into "INIT" files and places an "INIT" resource into these files.

There is also some confusion about the misidentifications frequently made by the anti-virus program "Interferon".

Interferon 2.0 is likely to report that the files "LaserWriter" and "Laser Prep" are infected. Interferon 3.0 frequently reports that the "Finder" and "DAHandler" files are infected -- even when they are not.

Apple is not aware of a particular virus called "Sneak". (The word "Sneak" is generally used to describe a TYPE of virus, not a specific virus.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3442



Tech Info Library

Macintosh IIX: System 6.0.2 And Excel 1.5 Bug Fix

Revised: 5/31/89
Security: Everyone

Macintosh IIX: System 6.0.2 And Excel 1.5 Bug Fix

=====

This article last reviewed: 9 December 1988

Excel 1.5 on a Macintosh IIX running System v6.0.2 currently does not recognize the 68882 coprocessor.

The information returned by the SysEnvirons call has been changed slightly in System 6.0.2, and that is what is causing the problem. (This situation does not occur when using System Software 6.0.)

Microsoft is aware of the problem. Contact them for further information.

(NOTE: The 68882 FPU is a superset of the 68881 FPU, and code written for the 68881 works properly with 68882.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3443



Tech Info Library

Apple Products: Use in Low-Level Acid Fumes Environment (2/97)

Revised: 2/18/97
Security: Everyone

Apple Products: Use in Low-Level Acid Fumes Environment (2/97)

=====

Article Created: 5 December 1988
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article discusses the use of Apple computers in an environment with small amounts of low-level acid fumes?

DISCUSSION -----

Apple does not recommend the use of our computers in ANY environment with potential to put the computers in contact with corrosive chemical fumes, such as hydrochloric acid.

Even small amounts of hydrochloric acid can cause major problems with electronic equipment.

Article Change History:
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-97, Apple Computer, Inc.

Tech Info Library Article Number:3444



Tech Info Library

Macintosh PrintMonitor: Error -1096 Is An AppleTalk ATP Error

Revised: 11/6/91
Security: Everyone

Macintosh PrintMonitor: Error -1096 Is An AppleTalk ATP Error

=====

Article Created: 5 December 1988
Article Last Reviewed: 6 November 1991
Article Last Updated: 5 December 1988

TOPIC -----

This article describes the -1096 error that may come up when using PrintMonitor.

DISCUSSION -----

If you have been getting the -1096 error when printing under the PrintMonitor, it probably has something to do with your AppleTalk network setup.

Error -1096 is an AppleTalk ATP error that indicates the ATP sendRequest has failed because the retry count has been exceeded. This means that the workstation doing the printing is having a difficult time communicating with the LaserWriter or Print Server.

This suggests some type of AppleTalk network problem, which may be either physical or logical. Check the network for loose connections and proper topology. Also, AppleTalk traffic may be preventing the proper communication between the two devices.

Copyright 1988, 1991 Apple Computer, Inc.

Tech Info Library Article Number:3445



Tech Info Library

AppleShare: Use Same Version On Server And Workstations

Revised: 10/4/89
Security: Everyone

AppleShare: Use Same Version On Server And Workstations

=====

This article last reviewed: 10 November 1988

If you are running AppleShare 1.1 under System 4.2 and Finder 6.0 on Macintosh Pluses and Macintosh SEs, and experiencing a problem with file creation dates, it is probably a versions-compatibility problem.

One example would be: looking at a directory on the server from any node, all the file creation dates show the year as 2028. The same files, when viewed from the server, are marked 1988. When a file is modified from a node and viewed on the server, the date modified is 1948.

Such an anomaly is usually noticed when the server is using a different version of AppleShare software than the workstations.

If the server is using v1.1, make sure that the workstations are using v1.1, or both the server and workstations can be upgraded to v2.0.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3446



Tech Info Library

ImageWriter LQ: How Rated Speed Is Determined

Revised: 12/5/88
Security: Everyone

ImageWriter LQ: How Rated Speed Is Determined

=====

This article last reviewed: 10 November 1988

Here are the exact conditions under which the printer speed specifications of the ImageWriter LQ were measured, including hardware, software, and fonts used.

Hardware: Macintosh
Software: BASIC
Font: 10 cpi, in Draft fixed-pitch mode for the "draft" rating
Text: Shannon text consisting of characters and spaces

The "rated speed" refers to the printer speed at full carriage speed, excluding ramp time to accelerate and decelerate the carriage.

A program was written in BASIC and run on the Macintosh to print standard Shannon text (a combination of letters and spaces that approximates English), which all printer companies use to measure speed. This was done to minimize the Macintosh's processing time and the data transmission time.

The data sheet has additional speed ratings for the NLQ and LQ modes.

NOTE: Throughput ratings for the ImageWriter LQ are lower than speed ratings. Throughput ratings include ramp time, line feed time, etc. (For example, the throughput rating for the ImageWriter LQ in Draft mode is 155 cpi.)

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3447



Tech Info Library

Macintosh II: DIP- And Surface-Mounted SIMMs Are Equivalent

Revised: 7/21/92
Security: Everyone

Macintosh II: DIP- And Surface-Mounted SIMMs Are Equivalent

=====

Article Created: 10 November 1988
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

Can both DIP-mounted and surface-mounted SIMMs be used together in a Macintosh II with HD40 SC and 4MB RAM? Are all Macintosh II computers with HD40 SC and 4MB RAM supplied with DIP-mounted SIMMs?

DISCUSSION -----

There is no problem mixing DIP-mounted and regular surface-mounted SIMMs in the same computer. To the computer, they are the same. Macintosh II computers with HD40 SC and 4MB RAM may be supplied with either DIP-mounted SIMMs or surface-mount SIMMs.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3448



Tech Info Library

Apple HD-20: How To Convert It Into A SCSI Device

Revised: 12/5/88
Security: Everyone

Apple HD-20: How To Convert It Into A SCSI Device

=====

This article last reviewed: 10 November 1988

There is a product that converts an Apple HD-20 into an SCSI device. Available from Personal Computer Peripherals Corporation, it is called HD-20 WSI.

The HD-20 WSI is an upgrade for the original Macintosh HD-20 that allows it to interface with the Macintosh Plus, Macintosh SE, and Macintosh II via the SCSI port. The HD-20 WSI modification provides users with significantly faster access to the data stored on the hard disk.

The modification consists of a plug-in circuit board, interface cable, and utility software. The circuit board uses the existing HD-20 connectors and requires no soldering. The utility software includes HFS Backup, Eureka (a file finding application), a floppy disk copy program, and ImageWriter/LaserWriter spoolers.

For more information, search under: "Personal Computer Peripherals"

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Tech Info Library Article Number:3449



Tech Info Library

Apple IIGS: How To Avoid Lock-up When Using Mixed Drives

Revised: 12/5/88
Security: Everyone

Apple IIGS: How To Avoid Lock-up When Using Mixed Drives

=====

This article last reviewed: 16 November 1988

If you have an Apple IIGS systems with mixed-drive configurations (3.5" and 5.25"), you may find that when saving data under AppleWorks on the 3.5" drive, both drive lights come on and the system locks up.

The Daisy Chain controller board in your 3.5" drive probably needs to be replaced by an Apple dealer.

(NOTE: The 3.5" drive must be connected to the SmartPort, and the 5.25" drive must be plugged into the 3.5" drive.)

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Tech Info Library Article Number:3451



Tech Info Library

Macintosh II: Using Full SuperMac Screen With AppleScan Software

Revised: 7/2/92
Security: Everyone

Macintosh II: Using Full SuperMac Screen With AppleScan Software

=====

Article Created: 10 November 1988
Article Last Reviewed: 1 July 1992
Article Last Updated:

TOPIC -----

I have a Macintosh II with two monitors, the AppleColor High Resolution RGB Monitor (13") and a SuperMac 19" monitor with a SuperMac video card. I notice that when I use the Apple Scanner, the AppleScan software seems to limit the size of the window to the size of the Apple 13" monitor. In other words, the document window cannot be resized to the full size of the SuperMac display.

DISCUSSION -----

When the AppleScan software is launched, it calculates the dimensions of the main screen (the screen with the menu bar) in pixels. The AppleScan software assumes that no screen is larger than the main screen, and so does not allow a window to be resized larger than the main screen as would be normal.

However, by holding down the COMMAND key while resizing the window, the window can be resized to fill the SuperMac display.

(NOTE: This technique may work with other applications; however, it may cause problems if the window is resized larger than the software can support.)

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Tech Info Library Article Number:3452



Tech Info Library

LaserWriter IINTX: Pinouts For SIMM Connectors

Revised: 9/22/89
Security: Everyone

LaserWriter IINTX: Pinouts For SIMM Connectors

=====

This article last reviewed: 16 November 1988

Here are the pin-out signals for the SIMM connectors in a LaserWriter IINTX:

1 - GND	17 - A3	33 - Q4	49 - S6
2 - NC	18 - GND	34 - W4	50 - D7
3 - VDD	19 - GND	35 - A8	51 - Q7
4 - VDD	20 - D2	36 - S4	52 - W7
5 - CASN	21 - Q2	37 - A9	53 - S7
6 - D0	22 - W2	38 - A10	54 - Q8
7 - Q0	23 - A4	39 - A11	55 - RASN
8 - W0	24 - S2	40 - D5	56 - NC
9 - A0	25 - A5	41 - Q5	57 - CAS8
10 - S0	26 - D3	42 - W5	58 - NC
11 - A1	27 - Q3	43 - WRN	59 - D8
12 - D1	28 - W3	44 - S5	60 - NC
13 - Q1	29 - A6	45 - GND	61 - VDD
14 - W1	30 - S3	46 - D6	62 - VDD
15 - A2	31 - A7	47 - Q6	63 - NC
16 - S1	32 - D4	48 - W6	64 - GND

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Tech Info Library Article Number:3453



Tech Info Library

Macintosh IIX: ROM SIMM Size And Position

Revised: 7/20/92
Security: Everyone

Macintosh IIX: ROM SIMM Size And Position

=====

Article Created: 16 November 1988
Article Last Reviewed: 20 July 1992
Article Last Updated:

TOPIC -----

Where is the ROM SIMM in the Macintosh IIX located? And how large is it?

DISCUSSION -----

The new ROM SIMM in the Macintosh IIX is located 1/2 inch to the left of the RAM SIMMs when looking at the machine from the front. The ROM SIMM is about 3/8" taller than DIP-mounted SIMMs.

Because of its height, the new ROM SIMM may cause problems with the installation of third-party, large capacity, full-height disk drives.

If DIP-mounted SIMMs currently cause installation problems with the drives in question, then the ROM SIMM will make this problem more pronounced.

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Tech Info Library Article Number:3454



Tech Info Library

System 6.0: Duplicating Easy Access Causes Mac II, SE To Hang

Revised: 12/5/88
Security: Everyone

System 6.0: Duplicating "Easy Access" Causes Mac II, SE To Hang

=====

This article last reviewed: 16 November 1988

Duplicating the "Easy Access" file in the System folder on a Macintosh SE or Macintosh II causes it to hang when the first keystroke is entered after a restart.

With System Software 6.0 or later, the INITs in invisible files are not loaded or run by the System.

There is currently no solution for this problem.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3455



Tech Info Library

LaserWriter II: Scanner Cable Problem/Cure

Revised: 1/17/89
Security: Everyone

LaserWriter II: Scanner Cable Problem/Cure

=====

This article last reviewed: 1 December 1988

Symptom:

When the I/O PCB is connected, the Scanner spins extremely fast when power is turned on.

Background Information:

Occasionally the Scanner will spin very fast, even if the I/O board is not connected. Usually when this happens the DC Controller board or the Scanner assembly is defective. In this particular case, when the I/O board is installed and the shield connects to ground, the Scanner spins very fast.

Cure:

To confirm this problem, pull out the I/O PCB and Power On. If it runs normally, turn the printer off, install a plug on J209 of the DC Controller board or use a clip and connect the 2 pins of J209 together (J209 connects signal ground to frame ground); then turn the printer on. If the Scanner spins very fast then replace Scanner harness cable.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3457



Tech Info Library

Macintosh SE and Radius Full Page Display

Revised: 7/20/92
Security: Everyone

Macintosh SE and Radius Full Page Display

=====

Article Created: 5 December 1988
Article Last Reviewed: 17 July 1992
Article Last Updated:

Problem:

A Macintosh SE with a Radius FPD Monitor and Radius FPD Board installed with display problems. The Macintosh SE screen has thick vertical black and white lines on boot up. The Radius FPD Monitor has small vertical dashed lines on screen.

Cure:

This caused by a faulty expansion slot on Macintosh SE Motherboard. The Macintosh SE Motherboard should be replaced.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:3458



Tech Info Library

LaserWriter II: Black Printout Problem Cure

Revised: 1/17/89
Security: Everyone

LaserWriter II: Black Printout Problem Cure

=====

This article last reviewed: 5 January 1989

Problem: The printout from the LaserWriter II is black except for the top which may consist of 5 thin white lines 1 to 1.5 inches apart. There is also excess toner spilled around the corona wire assembly. This may occur after the corona assembly or the transfer guide assembly has been removed and replaced.

Cure: There is a brass colored grounding tab on one side of the transfer guide assembly, (if you are facing the printer from the paper tray end it's on the left side of the corona assembly) that should be in contact with the grounding spring on that side of the corona assembly. The tab pivots and can be in the wrong position when the corona assembly or transfer guide is removed and reinstalled.

Copyright 1988 Apple Computer, Inc.

Tech Info Library Article Number:3460



Tech Info Library

Macintosh II and Control Panel Documents

Revised: 7/17/92
Security: Everyone

Macintosh II and Control Panel Documents

=====

Article Created: 23 January 1989
Article Last Reviewed: 17 July 1992
Article Last Updated:

Problem: At the top of the Macintosh II screen there are 4 distorted squares or a row of horizontal dots in the menu bar. These squares show up in any video mode, but are easier to see on a color monitor if the system is set to show 16 or 256 colors.

Cause: JClock in the system folder.

Cure: Either remove JClock or replace it with a newer version. The system files will have to be replaced after JClock is removed or replaced. Use the Installer program and scripts so the system fonts, Desk Accessories, CDevs and system inits are not lost.

Problem: Using System software 6.0.2 the Macintosh II freezes when starting system up.

Cause: Control Panel document - Soundmaster verison 1.0

Cure: Remove the Soundmaster file from System folder or replace it with a newer version of Soundmaster.

NOTE: Soundmaster and JClock are NOT products of Apple Computer.

Copyright 1988, Apple Computer, Inc.

Tech Info Library Article Number:3461



Tech Info Library

AT&T Mail: Compatible Macintosh Software

Revised: 8/4/89
Security: Everyone

AT&T Mail: Compatible Macintosh Software

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This article last reviewed: 22 December 1988

AT&T publishes a Macintosh program named "Access Plus III" for use with their electronic mail system. The program uses the standard Macintosh human interface for connection to AT&T's mail service.

To obtain an account and/or software, call AT&T at (800) 367-7225.

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Tech Info Library Article Number:3462



Tech Info Library

Networked AppleFax Modem Feasible, But Not Available

Revised: 8/3/89
Security: Everyone

Networked AppleFax Modem Feasible, But Not Available

=====

This article last reviewed: 22 December 1988

Although making the AppleFax Modem a networked device is feasible, none of the current serial servers has worked in tests. In the future, we may see a third-party solution.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3463



Tech Info Library

Authorized Apple Dealers: How To Locate

Revised: 2/9/89
Security: Everyone

Authorized Apple Dealers: How To Locate

=====

This article last reviewed: 22 December 1988

To locate an authorized Apple dealer, customers in the United States can call Apple at (800) 538-9696 and give the operator the ZIP code for the area in question. In turn, the operator will give the caller the name, address, and phone number of the nearest Authorized Apple dealer.

Customers outside the United States who want this information before coming to the United States should call Apple at (408) 996-1010 and ask for Customer Relations.

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Tech Info Library Article Number:3464



Tech Info Library

GS/OS: How To Use It With A ProFile

Revised: 9/22/89
Security: Everyone

GS/OS: How To Use It With A ProFile

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This article last reviewed: 22 December 1988

This article shows you how to use GS/OS with a ProFile hard disk drive.
Before beginning, make sure that:

- The ProFile Interface Card has the 341-0299 ROM. (See Tech Info Library article "GS/OS: Needs Latest ROM Revision To Work With ProFile" for further information.)
- The ProFile Interface Card has been modified for use with the Apple IIGS. (See Tech Info Library article "Apple II ProFile Interface Card Modification for the Apple IIGS" for further information.)

NOTE: The Partition and Zero option of the Advance Disk Utility does not work with the ProFile; it works with SCSI drives only.

Procedure for Using GS/OS With a ProFile

Follow these steps:

1. Select a slot for the ProFile Interface Card (this procedure uses slot 7).
2. Install the ProFile Interface Card and turn on the Apple IIGS.
3. Press Apple-Control-Esc to enter the Control Panel. In the Control Panel, under the SLOTS item:
 - a. Set SLOT 7 to "Your Card".
 - b. Set STARTUP SLOT to "5".
 - c. Press Return, Esc, Return to exit from the Control Panel.
4. Turn the computer off.

5. Insert the Apple IIGS System Disk in the first 3.5-inch drive and the System Tools disk in the second 3.5-inch drive (if available).
6. Turn the computer on.
7. After the system starts up, the SYSTEM.DISK, SYSTEM.TOOLS, and ProFile appear on the desktop.

NOTE: If the ProFile was not formatted for ProDOS, GS/OS asks if the volume should be initialized.

To initialize:

- a. Select "Initialize".
- b. Name the volume.

This should take only a few seconds.

8. Open the System Tools disk and run the Installer program.

NOTE for single-drive systems: Eject the System Disk and insert the System Tools disk. The Installer program prompts you with Eject/Insert dialog boxes.

- a. A list of items to install appears.
- b. Select "Install System Files".
- c. Use the "Volume" button to bring the ProFile disk name to the top right of the screen.
- d. Select "Install".

The Installer program copies the System files from SYSTEM.DISK and SYSTEM.TOOLS disks to the ProFile. Old System files are replaced, but Desk Accessories, Fonts, and other files in "SYSTEM FOLDER" are not deleted.

9. To add other items, such as the SCSI card or 5.25-inch drive:
 - a. Select the item.
 - b. Click Install.

10. Install a printer driver:

- a. Select the item.
- b. Click Install.

11. Set the Control Panel to start up from slot 7.

12. Restart the system using the ProFile.

The ProFile is now set up for use with GS/OS.

NOTE: If you copy applications to the ProFile, copy only the program and data files. Do NOT copy the System Folder from the application

disks.

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Tech Info Library Article Number:3465



Tech Info Library

Apple SuperDrive and CD Support: Mac286 and SoftPC

Revised: 8/22/91
Security: Everyone

Apple SuperDrive and CD Support: Mac286 and SoftPC

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Article Created: 9 February 1989
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

Neither the Mac286 nor SoftPC supports the Apple SuperDrive (formerly Apple FDHD).

DISCUSSION -----

Although AST and Insignia Solutions plan to support the SuperDrive in the future, neither has set any dates.

The Mac286 and SoftPC have access to a High Sierra CD-ROM disk once you install High Sierra drivers. The High Sierra disk appears as a standard Macintosh volume on the desktop.

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Tech Info Library Article Number:3466



Tech Info Library

Compugraphic-to-Macintosh Solutions

Revised: 8/4/89
Security: Everyone

Compugraphic-to-Macintosh Solutions

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This article last reviewed: 22 December 1988

There is a relatively easy way to put Macintosh documents through a Compugraphic typesetting machine. TeleTypesetting Company has a product called "MicroSetter II" that works with the Compugraphic MCS 8000, 8400, and 8600 typesetters. Basically, it is a Chooser-selectable printer driver. The Compugraphic typesetter and the Macintosh connect via serial ports.

Most Macintosh applications (including PageMaker, XPress, MacDraw, MacWrite, Microsoft Word, and many more) work with MicroSetter II.

Another solution is a Compugraphic product -- "CG Script" -- a hardware/software package that accepts PostScript files from any Macintosh for direct output on a Compugraphic MCS 8000, 8400, CG 9600 or 9700 typesetting unit.

For more details, search the Tech Info Library for "TeleTypesetting Company" and/or "Compugraphic".

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Tech Info Library Article Number:3467



Tech Info Library

Aristotle: Cannot Create Apple IIGS Start-Up Screen

Revised: 5/31/89
Security: Everyone

Aristotle: Cannot Create Apple IIGS Start-Up Screen

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This article last reviewed: 22 December 1988

Tech Comm has received inquiries about creating start-up screens for the Apple IIGS when using the Aristotle Menu Display program (similar to those that can be created on the Macintosh). Unfortunately, no methods are currently available for doing this. Keep in mind that Aristotle does not display graphics. When running under Apple II network software, the Apple IIGS remains in text-only mode.

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Tech Info Library Article Number:3468



Tech Info Library

Tektronix Graphics Terminal Emulation for Macintosh II

Revised: 5/10/89
Security: Everyone

Tektronix Graphics Terminal Emulation for Macintosh II

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This article last reviewed: 22 December 1988

Grafpoint markets TGRAF-07 and TGRAF-15LR graphics terminal emulation software for the Macintosh II. These two emulators provide the graphics features available on a Tektronix 4107 or 4115 Graphics Terminal.

Grafpoint TGRAF provides the ability to run hundreds of mainframe applications that previously required a dedicated graphics terminal. For example: CAD/CAM, data analysis and representation, mapping, and molecular design.

TGRAF for the Macintosh II has minimum requirements of one disk drive, Macintosh II Video Card with Video Card Expansion Kit (256 colors required), monitor, communications port, and minimum memory of 2Mb (additional memory increases the amount of segment storage available).

Terminals emulated by TGRAF-07 and TGRAF-15LR include:

- DEC VT52
- DEC VT100
- DEC VT102
- Tektronix 4010
- Tektronix 4014
- Tektronix 4106
- Tektronix 4107
- Tektronix 4109

In addition, TGRAF-15LR emulates:

- Tektronix 4115

For more information, search the Tech Info Library using "Grafpoint".

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Tech Info Library Article Number:3469



Tech Info Library

Grafpoint

Revised: 4/4/97
Security: Everyone

Grafpoint

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Article Created: 02/09/89
Article Reviewed: 07/08/93
Article Updated: 04/04/97

Grafpoint

1485 Saratoga Ave.
San Jose, CA 95129-4934

800-426-2230

408-446-1919

408-446-0666 Fax

Company Profile:
Software, specializing in terminal emulation for the Macintosh II family of computers.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3470



Tech Info Library

Static Column DRAM: CAS and RAS

Revised: 2/9/89
Security: Everyone

Static Column DRAM: CAS and RAS

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This article last reviewed: 22 December 1988

CAS (Column Address Strobe) before RAS (Row Address Strobe) or vice versa determines whether the column or the row gets referenced first, when the computer is addressing a location in memory. Static column DRAMs have faster memory access (if the architecture supports it). They let the CPU specify only the row address of multiple memory locations in the same column. The first address is addressed by specifying both the row and the column. After this, the column location can be omitted because it is retained. This is why it is called static column DRAM.

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Tech Info Library Article Number:3472



Tech Info Library

Zedcor, Inc.

Revised: 4/4/97
Security: Everyone

Zedcor, Inc.

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Article Created: 9 February 1989
Article Reviewed/Updated: 4 April 1997

Zedcor, Inc.

4500 E. Speedway
Suite 22
Tucson, AZ 85712-5305

602-881-8101

800-482-4567

Fax: 602-881-1841

Company Profile:
Software, specializing in graphics applications and desk accessories for the
Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:3473



Tech Info Library

AppleShare 2.0.1 and System Software 6.0.2

Revised: 2/9/89
Security: Everyone

AppleShare 2.0.1 and System Software 6.0.2

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This article last reviewed: 10 January 1989

Those wishing to update their AppleShare networks with the latest system software (version 6.0.2) may already have updated to the latest AppleShare (version 2.0.1), or may be using a previous version of AppleShare. The following instructions will help with both situations.

To update a server already running AppleShare 2.0.1:

1. Shut down the server.
2. Restart with the System Tools 6.0.2 disk.
3. Launch the Installer.
4. Select the type of computer.
5. Click the Install button.
6. Once installation is complete, click the Quit button.
7. In the Finder, select Restart.

To update the server with both AppleShare Server 2.0.1 AND System Software 6.0.2:

1. Shut down the server.
2. Restart with the AppleShare File Server Installer disk.
3. Launch the Installer.
4. Select AppleShare Server (2.0.1).
5. Click the Install button.
6. Once installation is complete, click the Quit button.
7. In the Finder, select Shutdown.
8. Restart with the System Tools 6.0.2 disk.
9. Launch the Installer.
10. Select the type of computer.
11. Click the install button.
12. Once installation is complete, click the Quit button.
13. In the Finder, select Restart.

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Tech Info Library

GS/OS: SCSI and ProFile Card Compatibility

Revised: 9/22/89
Security: Everyone

GS/OS: SCSI and ProFile Card Compatibility

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This article last reviewed: 24 April 1989

If you are using GS/OS version 4.0, you must have the latest versions of the ProFile and SCSI Interface Cards as well. Recent testing results show that GS/OS version 4.0 is compatible with revision C of the SCSI and ProFile cards.

You can determine if you have the required version of these cards by the ROM part number that is installed in the card.

SCSI Interface Card

ROM part number 341-0437 rev. A is the latest ROM for the SCSI Interface Card. When this ROM is installed, it brings the revision of the card up to rev. C. This configuration is compatible with version 4.0 of GS/OS.

ProFile Interface Card

ROM part number 341-0299 rev. B is the latest ROM for the ProFile Interface Card. When this ROM is installed, it brings the revision of the card up to rev. C. This configuration is compatible with version 4.0 of GS/OS.

As of the date of this article, all service ROM inventory is the latest version, and all ProFile and SCSI Interface Cards shipped by service are the rev. C configuration, which is compatible with all Apple II computers.

Apple IIGS

The Apple IIGS requires ROM version 01 to run GS/OS 4.0. To determine if you have the correct version boot the Apple IIGS, at the bottom of the screen should be displayed a copyright line and "ROM Version 01". Contact your dealer for the free upgrade.

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Tech Info Library Article Number:3475



Tech Info Library

Macintosh Plus and SE Require Dynamic RAM

Revised: 6/24/92
Security: Everyone

Macintosh Plus and SE Require Dynamic RAM

=====

Article Created: 23 February 1989
Article Last Reviewed: 23 June 1992
Article Last Updated:

TOPIC -----

I upgraded the RAM (Random Access Memory) in my Macintosh SE and now I'm having all sorts of video problems.

DISCUSSION -----

Some users have had problems with the Macintosh SE and Macintosh Plus when they install static column RAM rather than dynamic RAM. These two computers can only use dynamic RAM. This explains why:

- The video display is affected, and the operation of the machine is not.
- The SIMMs passed QA at the manufacturer and the SIMM tester at Xerox.
- The same modules worked in the Macintosh II and did not in the Macintosh SE; the Macintosh II can use static column RAM.

Note: the CAT and MacTest SE diagnostic tests on memory do not detect a problem.

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Tech Info Library Article Number:3476



Tech Info Library

AppleShare Print Server Allows Multiuser Access

Revised: 2/6/90
Security: Everyone

AppleShare Print Server Allows Multiuser Access

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This article last reviewed: 10 January 1989

The main reason for using the AppleShare Print Server is to allow many users to print documents at the same time. A print server reduces the waiting time by allowing several users to send documents simultaneously to be printed. When used with a LaserWriter printer, PostScript code is sent to the print server and then to the printer. The printer then processes this PostScript code to produce the bit-map graphics at 300 dpi.

When printing to an AppleTalk ImageWriter printer, the computer creates and sends the bit-map image to the printer. Creating this bitmap takes processing time from the computer. Because the computer is having to spend time creating the bitmap, you will not see a major difference in the amount of time it takes to send the data to the printer or the spooler.

When printing directly to a printer, the print driver runs at an even speed with the printer due to data transmission speeds. When connected over AppleTalk, the network runs faster than 19,000 or 9600 baud, but the driver has not been optimized for speed. It keeps up with the speed of the printer. At times, the computer is waiting for the printer to finish printing the line; other times, the printer is waiting for the computer to send and process the line. This is why the 32K option card is not recommended for Macintosh users.

The following table shows the amount of data that is being sent to the ImageWriter LQ printer in all three modes. The following started as a 5.5-page AppleLink document (file size 12,648 or 13K).

Amount of data transferred to the print server or the printer:

Best Mode	Faster	Draft
-----	-----	-----
578K	127K	43K

The increased size of the Draft is due to AppleTalk overhead (establish

session, packet overhead). The Faster file sends out a 72-dpi bitmap in GRAPHICS mode of the ImageWriter LQ. The Best mode sends out a 216-dpi bitmap. This takes up more space and requires more time to send the data to the printer or spooler. If the driver could create the 578K faster, the print server would be able to store the data faster. However, most of the time, the print server is waiting for the computer to send out the data.

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Tech Info Library Article Number:3477



Tech Info Library

Macintosh System 6.0: How Desk Accessories Function

Revised: 6/16/92
Security: Everyone

Macintosh System 6.0: How Desk Accessories Function

=====

Article Created: 10 January 1989
Article Last Reviewed: 28 May 1992
Article Last Updated: 28 May 1992

The following information is relevant only for system software version 6.0.X.

TOPIC -----

I heard that many existing desk accessories (DAs) from previous versions of the system software will not function correctly under System 6.0.X, especially when running MultiFinder.

DISCUSSION -----

Desk accessories function as they always have under previous system versions. A correctly-written DA will function normally under system software 6.0.X. The one exception is when desk accessories are called under MultiFinder.

Desk accessories are DRVR resources and do not have, nor are they, CODE resources. They can exist in open files in the System Folder and be picked up when the drivers are called by an application or the Finder for display in an Apple menu. The Apple menu resides in the System ROMs, and the DA list is created by an application or by the Finder.

A change that may affect a DA is the loading of desk accessories into the System heap. Desk accessories expecting to load into a specific application heap will not function under the new system software. In the cases of these application-specific and application-dependent desk accessories, the DA will not know which application heap called it (since there could be multiple application heaps).

The System has been patched to allow desk accessories to function within an application-like environment belonging to the System. The environment is called DA Handler. The DA Handler is a level of the System that executes desk accessories when called. This is to allow all desk accessories to come to the

foreground when a DA is selected, rather than having to select the application the DA belongs to. This also allows the System to control the Apple menu, allowing selection of applications as well as desk accessories.

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Tech Info Library Article Number:3478



Tech Info Library

Macintosh SE 2/40: How To Configure for 2.5MB RAM

Revised: 9/15/92
Security: Everyone

Macintosh SE 2/40: How To Configure for 2.5MB RAM

=====

Article Created: 29 November 1988

Article Change History

9/15/92 - REVIEWED
• For technical accuracy.

TOPIC -----

How do I configure a Macintosh SE for 2.5MB of RAM? I've heard there's a jumper on the logic board that needs to be removed.

DISCUSSION -----

To properly configure the Macintosh SE 2/40 (or any Macintosh SE with a RAM configuration jumper labeled "2/4MB to 1MB") for 2.5MB, the jumper must be completely removed.

Apple suggests leaving the jumper connected to one pin so that it is available for future upgrades.

NOTE: The RAM configuration for the Macintosh SE 2/40 is the OPPOSITE of previous Macintosh SE and Macintosh Plus systems. The highest capacity SIMMs occupy sockets 3 and 4 on the newer boards with the jumper RAM configuration. Older boards with the solder configuration require the highest capacity SIMMs to occupy sockets 1 and 2.

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Tech Info Library Article Number:3479



Tech Info Library

Apple IIe: AppleTalk Workstation Card and Printing

Revised: 5/25/89
Security: Everyone

Apple IIe: AppleTalk Workstation Card and Printing

=====

This article last reviewed: 29 November 1988

To print to a serially-connected ImageWriter through the AppleTalk Workstation Card on an Apple IIe:

1. Place the AppleTalk Workstation Card in any Apple IIe slot.
2. Start up the system with the Workstation disk. (If there are no disks in the drives, the system starts up over the network with a slight delay.)
3. Select Chooser.
4. Using the Chooser, select the locally-connected serial printer. (Local printers and AppleTalk printers are shown on separate lists.)
5. Ensure that the printer is connected to the printer port on the AppleTalk Workstation Card.
6. Set the application to print to the slot that the Workstation Card is in.

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Tech Info Library Article Number:3480



Tech Info Library

Apple II Workstation Card: Printing Via a Serial Port

Revised: 5/25/89
Security: Everyone

Apple II Workstation Card: Printing Via a Serial Port

=====

This article last reviewed: 7 December 1988

If you want to run Apple II Workstation Cards on a network, and also want to have some workstations' printers directly connected to the serial port on the Workstation card, try the following solution:

Install the card in slot 7 on the Apple II.

Run the new Chooser II (ver. 1.2.1) software. When the Apple II WorkStation Card is installed, a new option window appears in the lower righthand corner that allows the output to be directed to either the serial port or the AppleTalk port on the card. Once the serial port is selected, everything should work perfectly.

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Tech Info Library Article Number:3481



Tech Info Library

Apple Scanner and EPS Files

Revised: 5/24/89
Security: Everyone

Apple Scanner and EPS Files

=====

This article last reviewed: 29 November 1988

To use AppleScan images outside the TIFF and PICT file formats, copy the AppleScan image and paste it into the application you are using.

To save AppleScan images in EPS (Encapsulated PostScript) requires an additional program that supports either the TIFF or PICT file format and the EPS file format. Open the AppleScan file (TIFF or PICT) and save it as EPS.

TIFF and PICT are recognized as the standard for scanned images. Currently, Freehand 1.0 from Aldus Corporation is the only major program using scanned images that does not accept TIFF or PICT. (Freehand 2.0, which was recently announced, does support both PICT and TIFF.)

(NOTE: A disadvantage of scanned images in EPS file format is that they tend to be larger than the same scanned images in TIFF or PICT.)

For more information, search under: "Aldus".

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Tech Info Library Article Number:3482



Tech Info Library

GS/OS and High ASCII Character Codes

Revised: 9/22/89
Security: Everyone

GS/OS and High ASCII Character Codes

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The GS/OS (version 4.0) operating system does not interpret keystrokes; the extended character sets are handled by the firmware of the Apple IIGS itself. The firmware directly understands only the lower 128 ASCII codes. To access symbols assigned above the lower 128 codes requires examination of the ADB information. No extended characters are recognized automatically.

The Command key (Open-Apple) or Option key (Closed-Apple) can be detected via PEEKs of the game port buttons or via the keyboard modifier returned by GetNextEvent. By checking for these keys, then checking the character key, the programmer is able to assign one of the extended characters to the Command-X or Option-X keystroke.

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Tech Info Library Article Number:3483



Tech Info Library

Apple IIGS: Remote Access To AppleShare via InterBridge

Revised: 2/23/89
Security: Everyone

Apple IIGS: Remote Access To AppleShare via InterBridge

=====

This article last reviewed: 7 December 1988

If you have more than one Apple IIGS on a Macintosh server using AppleShare, and you want dial-in service from a remote Apple IIGS, one solution is to use an InterBridge, manufactured by Hayes Microcomputer.

The InterBridge allows two networks, each equipped with an InterBridge and a Hayes Smartmodem, to access each other through either dial-up or leased telephone lines.

Initially, a Macintosh needs to be connected to the remote network to configure the remote InterBridge with the Hayes set-up/admin software, but the Macintosh can be removed when the configuration is complete.

For more information, search under: "Hayes"

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Tech Info Library Article Number:3484



Tech Info Library

AppleShare Error: System Error ID=29

Revised: 2/23/89
Security: Everyone

AppleShare Error: System Error ID=29

=====

This article last reviewed: 7 December 1988

The ID=29 error is a system error under AppleShare. AppleShare traps ALL system errors and returns them as ID=29.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3486



Tech Info Library

System Software 6.0 and 6.0.2 Version Lists

Revised: 2/23/89
Security: Everyone

System Software 6.0 and 6.0.2 Version Lists

=====

This article last reviewed: 8 December 1988

Here is a list of the System Tools programs for System Software 6.0 and 6.0.2, including version numbers and creation dates:

System Software 6.0

File Name	Version	Size	Created
System	6.0	361K	April '88
Finder	6.1	103K	April '88
ImageWriter	2.7	39K	April '88
Clipboard	4.2	0K	April '88
Scrapbook	2.3	1K	April '88
LaserWriter	5.2	61K	April '88
Laser Prep	5.2	26K	April '88
AppleTalk ImageWriter	2.7	44K	April '88
General	3.3	14K	April '88
Key Layout	2.2	4K	Sept. '87
Keyboard	3.3	4K	April '88
Mouse	3.3	3K	April '88
Monitors	3.3	16K	April '88
Sound	3.3	4K	April '88
Startup Device	3.3	2K	April '88
Easy Access	1.0	3.5K	April '87
Color	3.3	2K	April '88
DA Handler	1.1	6K	April '88
MultiFinder	6.0	16K	April '88
Backgrounder	1.1	5K	April '88
PrintMonitor	1.2	34K	April '88
LQ ImageWriter	1.0	46K	April '88
LQ AppleTalk ImageWriter	1.0	55K	April '88
LaserWriter IISC	1.0	74K	April '88

System Software 6.0.2

File Name	Version	Size	Created

System	6.0.2	358K	Sept. '88
Finder	6.1	105K	April '88
ImageWriter	2.7	38K	April '88
Clipboard	6.0.1	1K	Aug. '88
Scrapbook	6.0.1	12K	Aug. '88
LaserWriter	5.2	64K	April '88
Laser Prep	5.2	28K	April '88
AppleTalk ImageWriter	2.7	43K	April '88
General	3.3.1	14K	Aug. '88
Key Layout	2.3	5K	April '88
Keyboard	3.3.1	5K	Aug. '88
Mouse	3.3.1	4K	Aug. '88
Monitors	3.3.1	17K	Aug. '88
Sound	3.3.1	4K	Aug. '88
Startup Device	3.3.1	3K	Aug. '88
Easy Access	1.0	4K	April '87
Color	3.3.1	2K	Aug. '88
DA Handler	6.0.1	6K	Aug. '88
MultiFinder	6.0.1	49K	Aug. '88
Backgrounder	1.2	5K	April '88
PrintMonitor	1.2	37K	April '88
LQ ImageWriter	2.0	54K	July '88
LQ AppleTalk ImageWriter	2.0	62K	July '88
LaserWriter IISC	1.1	59K	April '88

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Tech Info Library Article Number:3487



Tech Info Library

Macintosh: How To Unlock Locked Volumes

Revised: 5/17/89
Security: Everyone

Macintosh: How To Unlock Locked Volumes

=====

Article Created: 8 December 1988
Article Last Reviewed: 14 July 1992
Article Last Updated: 14 July 1992

TOPIC -----

My hard drive says that it is locked (and I haven't locked it myself). It won't allow me to make any changes to the disk.

DISCUSSION -----

There is a specific bit in the volume information header that causes a volume to be locked (a result similar to what happens to a floppy with the locking tab open). You can change this bit's value by using a low-level disk editor, such as FEdit Plus, Norton Utilities, or Symantec Utilities from Symantec Corp.

IMPORTANT: Don't do this on a disk that isn't backed up. Also, if you don't find the 8000 located at the tenth byte in that specific sector, get higher-level help.

Once you have started up your disk editor:

1. Open the hex representation of the volume that has the problem.
2. Go to sector number 2. (This should be the third sector on the disk with each sector having a length of 512 bytes.)
3. The sector should look something like this:

```
4244 9FAE F13C 9FAF 228B 8000 0010 0003
0000 063A 0000 0200 0000 0800 0004 0000
0020 0488 0855 6E74 6974 6C65 6400 0000
```

...and so on, where the 4244 begins at the zero byte of the sector.

4. The key location is where you see the word containing 8000. It should be

located at the tenth byte.

5. If the 8000 is at the tenth byte, change it to 0000 and write the sector to disk.
6. You will have to restart the system to have the change take effect, since this information is usually stored in memory and won't be updated until you restart.

On a related note, if you are running System 7 and you are simply not able to rename your hard disk (though writing to it does work fine), check to make sure file sharing is turned off. Even if you do not set the sharing permissions for a particular volume, file sharing still makes all volumes available to the owner for remote access. To change the name of a mounted volume, turn file sharing off with the Sharing Setup control panel, rename the disk, then turning file sharing back on again.

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Tech Info Library Article Number:3488



Tech Info Library

4th Dimension: Supports Foreign-Language & Script Manager 3/93

Revised: 3/15/93
Security: Everyone

4th Dimension: Supports Foreign-Language & Script Manager 3/93

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Article Created: 11 April 1991

Article Change History

03/15/93 - UPDATED

- Acius is now ACI US, Inc.

If you are looking for a database program for the Macintosh in foreign languages, or about database programs that fully support the Script Manager, consider 4th Dimension, by ACI US, Inc.

The only database that Apple is certain fully supports the Script Manager for localization is the international 4th Dimension (version 1.06). Therefore, 4th Dimension supports localization to foreign languages.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3489



Tech Info Library

LocalTalk PC Can Print Directly To LaserWriter IINT

Revised: 5/24/89
Security: Everyone

LocalTalk PC Can Print Directly To LaserWriter IINT

=====

This article last reviewed: 8 December 1988

If you wish to print from IBM PC applications such as Windows, it is best to have AppleShare PC installed on your system.

If AppleShare PC is not installed, the LocalTalk Card prints only with the LaserWriter Print program. If you use AppleShare PC, then the connected LaserWriter outputs whatever is printed to the selected printer port.

The printer port is attached to the LaserWriter in the DA application. Almost any application that prints with an Apple LaserWriter PostScript driver can print to the LaserWriter connected with a LocalTalk PC card and AppleShare PC.

An application, DOS, or Windows has to be set for the same printer port as the DA application in its printer configuration parameters. If an application does not have an Apple LaserWriter PostScript driver, the DA can convert Epson printer driver output to PostScript and send that out to the LaserWriter.

Apple has tested Microsoft Word and Windows, and has found them to work when configured properly with the AppleShare PC software and LocalTalk PC card on an IBM AT.

Printing is dependent on the driver used and the port being printed to. This is usually handled by an application.

Printing can be facilitated by Windows. Windows-compatible applications can use the Windows printer drivers. This requires the printer setup for printer port and driver to be designated in Windows instead of the application or from DOS.

Most IBM PC applications should work with the LocalTalk PC Card and AppleShare PC, assuming Epson or Apple LaserWriter PostScript printing is available to the application.

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Tech Info Library Article Number:3490



Tech Info Library

LaserWriter IINTX: Serial to LocalTalk Using PostScript (2/95)

Revised: 2/21/95
Security: Everyone

LaserWriter IINTX: Serial to LocalTalk Using PostScript (2/95)

Article Created: 4 March 1990
Article Reviewed/Updated: 21 February 1995

TOPIC -----

This article describes how to switch from LocalTalk to serial using PostScript.

DISCUSSION -----

After you have switched the LaserWriter IINTX from LocalTalk to serial connection with a PostScript program, you can switch back to LocalTalk again with the following procedure.

Caution:

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

To select AppleTalk PostScript:

%=====

```
% Begin      PostScript Code
%
serverdict begin 0 exitserver %Exits the printer server loop.
statusdict begin           %Starts modifying settings.
2 sethardwareiomode        %Sets communications mode to AppleTalk.
end                         %End of the mode switch routine.
systemdict/quit get exec   %System start test page.
(Control-Z)                %(Keyboard Control key and Z key together)
%                           Ends text editing and saves the file.
%
% End PostScript Code
%=====
```

To select RS-232 PostScript:

```
%=====
% Begin      PostScript Code
%
serverdict begin 0 exitserver %Exits the printer server loop.
statusdict begin              %Starts modifying settings.
0 sethardwareiomode           %Sets communications mode to serial.
9 0 3 setsccbatch             %Turns off the RS-422, 9600-baud port.
25 9600 68 setsccbatch        %Sets the 25-pin, RS-232, 9600-baud port
                                %to 8 data bits.

end                            %End of the mode switch routine.
systemdict/quit get exec      %System start test page.
(Control-Z)                   %(Keyboard Control key and Z key together)
%                               Ends text editing and saves the file.
%
% End PostScript Code
%=====
```

Article Change History:

21 Feb 1995 - Reviewed for accuracy and reformatted article.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:3491



Tech Info Library

Macintosh: Internal HD Does Periodic Thermal Recalibration 2/96

Revised: 2/8/96
Security: Everyone

Macintosh: Internal HD Does Periodic Thermal Recalibration 2/96

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Article Created: 23 February 1989
Article Last Reviewed/Updated: 8 February 1996

TOPIC -----

My hard drive makes a whirring noise every now and then, even when I'm not doing anything.

DISCUSSION -----

Macintosh internal hard drives perform a thermal recalibration approximately every few minutes whether the computer is being used or not. Thermal recalibration is a process that all hard drives use to properly position the read/write heads with the tracks of data on the disk.

Your computer is operating normally.

Article Change History:
08 Feb 1996 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3492



Tech Info Library

Apple IIGS: Making Disk II Work in Slot 1, 2, or 3

Revised: 2/23/89
Security: Everyone

Apple IIGS: Making Disk II Work in Slot 1, 2, or 3

=====

This article last reviewed: 14 December 1988

Some Apple IIGS users have discovered that Disk II drives do not work properly when the controller card is installed in slot 1, 2, or 3. On startup in this configuration you will get an "UNABLE TO LOAD ProDOS" error message.

The reason is that there is some special hardware that was designed into the Apple IIGS just to take care of handling Disk II access. The hardware recognizes Disk IIs, and when an access is attempted, the system switches into slow mode on recognition of the Motor Start signal.

This causes the "UNABLE TO LOAD ProDOS" error, since the system cannot switch speeds quickly enough to begin reading the beginning of the boot blocks on the disk. This is one of the time-critical functions of ProDOS, and it does not function correctly. The problem occurs only when using Disk IIs and only when in the lower numbered slot 1, 2, or 3. This follows the Pascal convention of no bootable devices lower than slot 4.

Here is a workaround:

If the system is running in Slow mode when the access to the Disk II is performed, the boot blocks are read correctly, and the system starts up. The same is true for cataloging the disks.

If you can run your program in slow mode, then you can use the Disk IIs in slot 1, 2, or 3. If not, then you must install the Disk II in slot 4, 5, 6, or 7.

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Tech Info Library Article Number:3493



Tech Info Library

LaserWriter IINT & IINTX Store HandShake Options Differently

Revised: 3/4/90
Security: Everyone

LaserWriter IINT & IINTX Store HandShake Options Differently

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This article last reviewed: 14 December 1988

The LaserWriter IINT component that registers the handshake options can wear out with excessive use. This is not true with the LaserWriter IINTX, since the two printers store handshake options differently.

The component in the LaserWriter IINT that can wear out is an EEROM. This EEROM may be written approximately 10,000 times before breakdown.

The LaserWriter IINTX employs a 2K battery-backed-up ZPRAM (Zero Power RAM) equivalent to the EEROM of the LaserWriter IINT. This ZPRAM may be written to an indefinite number of times.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3494



Tech Info Library

AppleShare Print Server (v2.0): Purpose Is Not Faster Printing

Revised: 2/6/90
Security: Everyone

AppleShare Print Server (v2.0): Purpose Is Not Faster Printing

=====

This article last reviewed: 15 December 1988

Here are some questions about AppleShare Print Server (v2.0):

1. The spooler is only slightly faster than printing directly. Isn't spooling supposed to release the workstation sooner than printing directly would?
2. If multiple users are spooling to the ImageWriter LQ at the same time, will performance decrease significantly?
3. Should we expect performance to decrease if the LaserWriter spoolers are used concurrently?

Specific answers to these questions are at the end of the article.

The main reason for using the AppleShare Print Server is to allow many users to print documents at the same time. A print server reduces the waiting time by allowing several users to simultaneously send documents to be printed. When used with a LaserWriter, PostScript code is sent to the print server and then to the printer. The printer then processes this PostScript code to produce the bit-map graphics at 300 dpi.

When printing to an AppleTalk ImageWriter, the computer creates and sends the bit-map image to the printer. Creating this bitmap takes processing time from the computer. Because the computer is having to spend time creating the bitmap, you do not see a major difference in the amount of time it takes to send the data to the printer or the spooler.

When printing directly to a printer, the print driver runs at an even speed with the printer due to data transmission speeds. When connected over AppleTalk, the network runs faster than 19,000 or 9600 baud, but the driver has not been optimized for speed: instead, it keeps up with the speed of the printer. Some times, the computer is waiting for the printer to finish printing the line; other times, the printer is waiting for the computer to

send and process the line. This is why the 32K option card is not recommended for Macintosh users.

The following table shows the amount of data that is being sent to the ImageWriter LQ in all three modes. The following started out as a 5.5-page AppleLink document (file size 12,648 or 13K):

Amount of data transferred to the Print Server or the printer:

Best Mode	Faster	Draft
-----	-----	-----
578K	127K	43K

The increased size of Draft is due to AppleTalk overhead (establish session, packet overhead). The Faster file sends out a 72-dpi bitmap in GRAPHICS mode of the ImageWriter LQ. The Best mode sends out a 216-dpi bitmap. This takes up more space and requires more time to send the data to the printer or spooler. If the driver could create the 578K faster, the print server would be able to store the data faster; but, most of the time, the print server is waiting for the computer to send out the data.

Answers to questions:

1. The spooler is not slow; it is the Macintosh that cannot send the bitmap to the printer fast enough. The AppleShare Print Server allows multiple users to print at the same time without waiting for the printing resource to become available. The print server does not release the workstation faster when the computer has to process the bitmap.
2. If multiple users are sending documents to the spooler, you do not see any significant decrease, depending on the LocalTalk traffic.
3. Performance does not decrease significantly when you add additional devices to be spooled.

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Tech Info Library Article Number:3496



Tech Info Library

Macintosh OS and A/UX Virtual Memory

Revised: 9/3/92
Security: Everyone

Macintosh OS and A/UX Virtual Memory

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Article Created: 23 February 1989
Article Last Reviewed: 31 August 1992
Article Last Updated : 31 August 1992

TOPIC -----

Macintosh OS and A/UX Virtual Memory

DISCUSSION -----

A Macintosh application that requires a large amount of memory under the Macintosh OS can, in some circumstances, run in a smaller memory size under A/UX by taking advantage of virtual memory.

A/UX is a multitasking, 32-bit, virtual memory operating system. Theoretically, you can have applications make memory allocation requests greater than the existing physical memory size as long as the disk space reserved for paged-out memory (the swap space) is not full.

In the Macintosh OS environment, the Macintosh memory management tools are designed for control of a known amount of physical memory; some of the Macintosh memory manager functions don't make sense under virtual memory.

In a virtual memory environment, such as A/UX, it's not clear what value the call to determine the amount of free memory available should return. In the current implementation of A/UX Toolbox in A/UX 1.0, memory query routines such as FreeMem respond as if the application had a 1MB chunk of free memory.

If the Macintosh OS application program in question was rewritten so that memory allocation routines, like NewPtr and NewHandle, did not request more than 1MB at a time, then it should run OK under A/UX.

An application can continue to allocate 1MB chunks as needed, and A/UX will respond by using virtual memory. For example, the Macintosh OS application could allocate 1MB chunks of memory 10 times (10MB in total exceeds Macintosh II's 8MB maximum memory size), which should run without any problem under A/UX.

In A/UX 3.0, virtual memory is configurable in the memory control panel.

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Tech Info Library Article Number:3497



Tech Info Library

AppleShare 2.01: Maximum Number Of Files

Revised: 2/6/90
Security: Everyone

AppleShare 2.01: Maximum Number Of Files

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This article last reviewed: 15 December 1988

With AppleShare 1.1, volumes should contain no more than 8,000 files due to the PDS problems.

The PDS problem was fixed in version 2.01 of AppleShare and, thereby, removed the recommended 8,000-file limitation. AppleShare 2.01 is now limited by the number of files allowed under HFS.

It is sometimes noted that HFS is limited to 64,000 files per volume. This is not strictly correct, though it may be true in practice.

A count of the total number of files and directories on the volume is maintained, as a LongInt, in the MDB (block 2). Directory IDs are also LongInts. This limits the number of files and folders on the volume to $2^{32}-1$ (roughly 4.3 billion). That many folders could be created as long as there's room on the volume to hold the expanding catalog B*-Tree.

Because each file occupies at least one allocation block, all of the--at most--65,536 allocation blocks (also numbered by Integers) will be allocated just before that many files are written on the volume, so the limit of 64,000 files is close to the practical limit.

There is another limitation imposed: a directory's valence is an Integer and, furthermore, on GetCatInfo requests, any negative number in the ioFlIndex field is interpreted as a request for information on the directory itself. So, while HFS allows the creation of up to 65,536 files in each directory, all of which can be accessed by name, only 32,767 can be enumerated -- a real limitation on folder contents. In practice, the user's patience will run out well before this many items can be enumerated.

Finally, all computations on file sizes are performed using LongInts, so there's no practical limit on the size of an individual file -- though the actual limit is about two gigabytes.

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Tech Info Library Article Number:3498



Tech Info Library

Apple Scanner: Tips and Hints

Revised: 5/24/89
Security: Everyone

Apple Scanner: Tips and Hints

=====

This article last reviewed: 15 December 1988

Here are some tips on working with the Apple Scanner:

The most common problem users may have is a system error when saving a file that has been scanned. This occurs when the current brightness and contrast settings or half-tone pattern name exceeds 17 characters, usually because the default setting name "Untitled Settings" is saved. The next time changes are made to the brightness or contrast, the settings' name changes to "Untitled Settings 2", which violates the rule. Delete all setting names that are too long, and the problem is fixed.

Here are some hints about cutting and pasting. AppleScan fully supports cut-and-paste to the Clipboard and other AppleScan documents. Grayscale data, however, cannot be intermixed with line art or halftones in the same document. It's okay to have line art and halftones in the same document, though.

A neat feature is to copy a region of a document, then use the selector tool to select a differently sized region, and paste into the region. This works best with Grayscale data. Also, try pasting with the Tab key held down. This invokes a transparent paste.

AppleScan, however, is not intended to be an "integrator" of data from other sources. Data from other programs (text, Paint, or PICT), when pasted into AppleScan, do not behave like a MacDraw-type environment, and using AppleScan in this way is not recommended. Instead, AppleScan should be used as a source of scanned data, which are then moved to other applications that are better suited for those tasks.

(NOTE: Pasting data from MacDraw II creates a strange effect on the Macintosh screen, but does not appear to cause a fatal error.)

AppleScan can save data in the PICT, TIFF, and Paint file formats. However, if a document is saved in the TIFF format and changes are made

to the file, a "Do you want to save changes?" prompt appears when the document is closed. If changes are saved, the file type changes to PICT format. This is a known problem.

Finally, if the user quits AppleScan with the Remote Scan option selected and then goes to HyperScan and clicks on the Preview or Scan button, the scanning will not start until the remote button on the Apple Scanner is pressed. Remote scanning is not reset when quitting AppleScan. This, too, is a known problem.

(NOTE: "Remote" is reset when AppleScan is started.)

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Tech Info Library Article Number:3499



Tech Info Library

AppleShare File Server 2.0.1 and Macintosh SE/30

Revised: 2/6/90
Security: Everyone

AppleShare File Server 2.0.1 and Macintosh SE/30

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This article last reviewed: 22 June 1989

When using the Macintosh SE/30 as an AppleShare 2.0.1 File Server be aware of the following:

1) Do not use the System Files on the AppleShare Server Installer Disk. First install 6.0.3 and then install the AppleShare File Server from the Server Installer Disk. Don't select both System Files and AppleShare File Server from the Server Installer Disk. This is contrary to the AppleShare manual (page 35).

2) After you quit from the Server Installer Disk and select RESET or RESTART from the Finder, the system hangs. This is a problem in the Installer and 030 machines that appears when you are not using System 6.0.3. The Server Installer Disk does not use System 6.0.3 and should not be updated.

3) If running a Macintosh IIX or Macintosh SE/30 as a server, you should use 6.0.3 to avoid file server crashes.

4) If your server is crashing, make sure you are running System 6.0.3 or later.

5) Do not use Appleshare 1.0 or 1.1 on a Macintosh SE/30 or Macintosh IIX.

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Tech Info Library Article Number:3500



Tech Info Library

Macintosh SE/30: Doesn't Work With An Apple Hard Disk 20

Revised: 9/15/92
Security: Everyone

Macintosh SE/30: Doesn't Work With An Apple Hard Disk 20

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Article Created: 18 January 1989

Article Change History

9/15/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Can I use the Hard Disk 20, which is a non-SCSI hard drive, with the Macintosh SE/30?

DISCUSSION -----

The Hard Disk 20 (Non-SCSI) does NOT work with the Macintosh SE/30. The code to support the drive is not included in the ROM of the Macintosh SE/30. To transfer data from a Hard Disk 20 to the Internal drive you need the following items:

- Macintosh Plus or Macintosh SE
- Formatted, blank Hard Disk 20,40,80 SC and cables
- System 6.0.3 Tools Disk (included with the Macintosh SE/30)

- 1) Hook up the Hard Disk 20 and the Hard Disk 20, 40, 80 SC to the Macintosh Plus or SE.
- 2) Insert the System Tools disk in the internal drive.
- 3) Turn on both drives, wait 10 seconds, and then turn on the computer.
- 4) Use the Find File DA and look for a file called SYSTEM on the Hard Disk 20.

- 5) There should be one file called SYSTEM, and it should be located in the SYSTEM FOLDER. If you have more than one SYSTEM file, return to the desktop and trash the other system files from the Hard Disk 20.
- 6) Select all the files and folders on the Hard Disk 20 and any files that may be on the desktop and drag them to the Hard Disk 20, 40, 80 SC.
- 7) After the copy is finished you can hook up the Hard Disk 20, 40, 80 SC to the Macintosh SE/30.
- 8) Select the files from the Hard Disk 20, 40, 80 SC and drag them to the internal hard drive. If there is no internal hard drive, drag them to the drive you will be using.
- 9) Update the System Files to System 6.0.3 using the Installer Script (located on the System Tools Disk) for the Macintosh SE/30.

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Tech Info Library Article Number:3501



Tech Info Library

Macintosh SE/30: General Description (Discontinued)

Revised: 6/1/94
Security: Everyone

Macintosh SE/30: General Description (Discontinued)

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Article Created: 18 January 1989

Article Change History

9/15/92 - REVIEWED

- For technical accuracy.

TOPIC -----

This article describes the Macintosh SE/30.

DISCUSSION -----

The Macintosh SE/30 follows the same user-friendly philosophy as the original Macintosh, while providing more memory, faster performance, and greater expandability. The Macintosh SE/30 provides all the power of the Macintosh IIX, except NuBus, within a smaller footprint.

The Macintosh SE/30 was designed for users who demand both peak performance and transportability. It extends the family by improving performance and maintaining compact design. The Macintosh SE/30 offers three to four times the computational power of the Macintosh SE and demonstrates Apple's commitment to refining the original Macintosh design.

The Macintosh SE/30 contains the following:

- MC68030 processor running at 15.6672 MHz
- MC68882 floating point co-processor
- Apple SuperDrive (formerly Apple FDHD) 1.4MB, only one internal floppy drive supported
- Internal 50-pin SCSI connector for a 3.5-inch hard disk
- Apple Sound Chip stereo output support through the rear audio port
- 030 Direct Slot for third-party expansion products

..TIL03502-Macintosh_SE-30-General_Description_Discontinued.pdf

- ROMM SIMM using the same ROMs as the Macintosh IIX
- Same power supply, video board, and CRT as the Macintosh SE

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Tech Info Library Article Number:3502



Tech Info Library

Macintosh SE/30: Using DIP (tall) SIMMs

Revised: 9/15/92
Security: Everyone

Macintosh SE/30: Using DIP (tall) SIMMs

=====

Article Created: 18 January 1989

Article Change History

9/15/92 - RETITLED

- To reflect emphasis on compatibility with DIP SIMMs.

9/15/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Can I use DIP (tall) SIMM strips inside the Macintosh SE/30?

DISCUSSION -----

Like the Macintosh IIX, the Macintosh SE/30 contains two banks of SIMM sockets, Bank A and Bank B. Each bank holds four SIMM strips. Due to space restrictions inside the case, Bank B can only use the PLCC/SOJ (low-profile) SIMM strips.

WARNING

If you use DIP (tall) SIMM strips you will have problems with the logic board touching the lower case. This may cause the logic board to short out. DO NOT USE TALL SIMM STRIPS IN BANK B.

The following are valid memory configurations:

1MB - Bank A 4 256K SIMMs
Bank B Empty

2MB - Bank A 4 256K SIMMs
Bank B 4 256K SIMMs low-profile

4MB - Bank A 4 1MB SIMMs

Bank B Empty

5MB - Bank A 4 1MB SIMMs

Bank B 4 256K SIMMs low-profile

8MB - Bank A 4 1MB SIMMs

Bank B 4 1MB SIMMs low-profile

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Tech Info Library Article Number:3503



Tech Info Library

Macintosh SE/30: Specifications (Discontinued 10/90)

Revised: 9/27/93
Security: Everyone

Macintosh SE/30: Specifications (Discontinued 10/90)

Article Created: 18 January 1989

TOPIC -----

This article gives the specifications for the Macintosh SE/30.

DISCUSSION -----

CENTRAL PROCESSING UNIT (CPU)

- Microprocessor : 15.6672 MHz MC68030 CPU
- Address Bus : 32-bit
- Registers (32-bit) : 16 general-purpose data and address, two 32-bit Supervisor stack pointers, ten special-purpose control registers
- Addressing Modes : 18
- 256-byte instruction cache and 256-byte data cache
- Built-in Paged Memory Management Unit (PMMU)

COPROCESSOR

- MC68882 floating-point unit (follows IEEE standards)

MEMORY

- 1, 2, 4, 5, 8MB RAM (Random Access Memory)
- 256Kbytes of ROM (Read-Only Memory)
- 256 bytes of settable parameter memory with built-in battery backup

DISPLAY

- Built-in, 9-inch diagonal, 512 by 342 pixel, black and white monochrome monitor (no gray scale)

KEYBOARD (not included)

- Apple Keyboard or Apple Extended Keyboard can be connected through the Apple Desktop Bus port

MOUSE

- Apple Desktop Bus Mouse (ADB) mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch (3.94 +/- 0.39 pulse per mm)

of travel

DISK DRIVE

- One Apple SuperDrive (formerly Apple FDHD) 1.4MB high-density internal drive. Only one internal floppy drive is supported; the unit ships with the Apple SuperDrive, but the logic board also supports an 800K drive.
- External connector for 800K

HARD DISK DRIVE

- A 3.5" 40MB or 80MB hard drive is standard.

INTERFACES

- Two Apple Desktop Bus (ADB) connectors for keyboard, mouse, and low-speed input devices
- 030 Direct Slot supporting full 32-bit address and data lines through a 120-pin Euro-DIN connector
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second, if clocked externally)
- SCSI interface
- Stereo sound port for external audio amplifier

SOUND GENERATION

- Apple Sound Chip (ASC) including 4-voice, wave-table synthesis and stereo sampling generator, capable of driving stereo mini-phono jack headphones or stereo equipment
- Mixed stereo monophonic sound output through internal speaker

ELECTRICAL REQUIRMENTS

- Line voltage: 85 to 270 volts AC
- Line frequency: 47 to 63 hertz
- Maximum power consumption: 76 watts continuous, 99 watts maximum for 15 seconds 10% duty cycle

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 TO 95 degrees F (10 TO 35 degrees C)
- Storage temperature: -40 TO 116.6 degrees F
- Relative humidity: 5% to 95% (noncondensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)
- Fan: 10 CFM radial

SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 11 Office Appliances and Business Equipment

SIZE AND WEIGHT

Main Unit

- Height: 13.6 inches (345.4 mm)
- Width: 9.6 inches (243.8 mm)
- Depth: 10.9 inches (276.2 mm)
- Weight: 19.5 lb. (9.75 kg)

Apple Keyboard (not included)

- Height: 1.8 inches (44.5 mm)
- Width: 16.5 inches (418.3 mm)
- Depth: 5.6 inches (142.0 mm)
- Weight: 2 lb. 2oz. (1 kg)

Apple Extended Keyboard (not included)

- Height: 2.3 inches (56.4 mm)
- Width: 19.1 inches (486 mm)
- Depth: 7.4 inches (188 mm)
- Weight: 3lb. 10 oz. (1.6 kg)

Apple Mouse (ADB)

- Height: 1.1 inches (27.9 mm)
- Width: 2.1 inches (53.3 mm)
- Depth: 3.8 inches (96.5 mm)
- Weight: 6 oz. (.175 kg)

Article Change History

08/22/91 -Corrected, changed FDHD to SuperDrive

09/16/92 - Reviewed, for technical accuracy.

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Tech Info Library Article Number:3504



Tech Info Library

Macintosh System Software Version 6.0.3: Who Needs It

Revised: 8/22/91
Security: Everyone

Macintosh System Software Version 6.0.3: Who Needs It

=====

Article Created: 18 January 1989
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article explains the changes made in system software version 6.0.3, and how it improves support for certain software and hardware.

DISCUSSION -----

Macintosh SE/30 requires System 6.0.3. The following are the only changes in 6.0.3:

- 1) Patched the .SONY driver to fix a tolerance problem when initializing MS-DOS disks. This problem would show up when you formatted a MS-DOS disk on an Apple SuperDrive (formerly Apple FDHD) and then used the disk on a PC. If you formatted this disk on the PC you did not see any problem.
- 2) Placed a hook in the System File that lets a file called "32-Bit QuickDraw" attach itself to the System file. We are not supplying the "32-Bit QuickDraw" file, only the ability to add the file at a later date.
- 3) Time Manager upgraded to work with the Macintosh SE/30.
- 4) Removed the NewYork 18 and 24 from the disk for space reasons.
- 5) Changed the Responder INIT to return the names "Macintosh SE/30" and "Macintosh IIX" when used with Inter-Poll.
- 6) Apple File Exchange had some bugs fixed.

Network users do NOT need to upgrade any other machines on the network. You can use System 6.0.3 on other machines but you do not HAVE to upgrade other network users unless you want to. There were NO changes to the AppleTalk

protocols or Printer Drivers. Had they changed, other network users would need to be upgraded.

The following are the only users who should upgrade to System 6.0.3:

- Owners of Macintosh SE/30 computers
- People who use Apple File Exchange (on any Macintosh CPU)
- Users of 24-bit color boards, when the 32-bit QuickDraw file becomes available

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Tech Info Library Article Number:3505



Tech Info Library

MacWorkStation 3.1: Introductory Information

Revised: 8/25/89
Security: Everyone

MacWorkStation 3.1: Introductory Information

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This article last reviewed: 23 August 1989

MacWorkStation 3.1 is an upgrade to version MacWorkStation 3.0. The goal of the new version is to increase ease of use, make the software more powerful and robust, and add support for new hardware capabilities of the Macintosh, such as color and multiple monitors. MacWorkStation 3.1 also supports system software such as MultiFinder, hierarchical and pop-up menus, mixed font sizes and styles in text, and AppleShare permission values.

Apple has two utilities that can be used with MacWorkStation: Event Handler and Dialog Builder. These are described in the last section of this document.

MacWorkStation 3.1 is compatible with MacWorkStation 3.0. Developers will not need to change their programs, unless they want to take advantage of the new features of the 3.1 version. Current licensees of MacWorkStation 3.0 will receive free upgrades to 3.1.

Positioning

Apple is positioning MacWorkStation as an "application server," which provides Macintosh application services to client software running on a remote computer. When discussing MacWorkStation, Apple will now use the terms server and client in the same way that X Windows developers use these terms. The application server software is the MacWorkStation software that runs locally on the Macintosh, providing services to remote client software that will be written by customers and third party developers on a variety of host computers. Services offered by MacWorkStation include local printing, filing, and editing, and access to Macintosh user interface objects such as windows, pull-down menus, and dialog boxes.

Apple is re-positioning MacWorkStation as a developer tool, rather than a communications tool. MacWorkStation supports a variety of communications protocols, including RS-232, AppleTalk, Ethernet, 3270, etc. However, the communications abilities of MacWorkStation are not what make MacWorkStation

such an important product. More significant is the fact that it provides a standard Macintosh user interface to client applications running on remote host computers. MacWorkStation is appropriate for customers who wish to develop Macintosh user interfaces to host programs, without doing any Macintosh programming. To use MacWorkStation, a host programmer must add software to the host program to send commands to the MacWorkStation software running on a Macintosh. The MacWorkStation server software running on the local Macintosh presents menus, windows, lists, and other objects to the user based on the content of the commands sent by the client host software. The MacWorkStation software running on the Macintosh will also handle all local editing, printing, and filing.

MacWorkStation can run transparently over a variety of communication protocols because the low-level communications services are provided by Macintosh code segments (called communications modules) that are added to MacWorkStation at run time. Communications modules already exist for RS-232 and AppleTalk. Apple is working on additional modules for the AppleLine and 7171 protocol converters, LU 6.2, and TCP/IP. Third party developers are also working on communications modules. For example, both Avatar and DCA are working on 3270 communications modules.

Availability

MacWorkStation 3.1, Event Handler, and Dialog Builder are available from APDA. The communications modules is packaged as a separate APDA product.

Enhancements included in MacWorkStation 3.1

- Graphics support - RGB Color is supported in alerts, cursors, dialog boxes, dialog items, patterns, pictures, text, and windows. The MacWorkStation 3.1 graphics director provides faster redrawing and scrolling of complex pictures.

- HFS and AppleShare support - MacWorkStation 3.1 fully supports the hierarchical file system calls. In order to support AppleShare directories and files, permission values can be set and retrieved, and byte ranges in a file can be locked.

- Improved list management - The list director has been extended to provide field level editing in addition to the record level editing provided in older versions of MacWorkStation. A new command has been included to allow the remote application to read only those records that have been modified. The host can now specify that records be sorted in either ascending or descending order based on any field or combination of fields. The sort can also be done by a local menu command.

- Improved error detection at the presentation level - Earlier versions of MacWorkStation ignored invalid commands or parameters, making it difficult for developers to debug problems. MacWorkStation 3.1 provides optional command and parameter syntax checking. The host program can specify what action should be taken if any errors are encountered in the command data stream.

- Event locking and unlocking - Because MacWorkStation applications communicate with a remote host, sometimes the user will think that a mouse selection didn't work, when really the reaction from the host is just taking a long time to get to the Macintosh. In this case, users will often re-select or re-type a field, causing the host to have to do even more work. With MacWorkStation 3.1, the host can specify that MacWorkStation should make the cursor a watch to indicate that the data is being processed. MacWorkStation will go into an "event lock" state until the host sends more data. This new feature of MacWorkStation 3.1 was added in response to problems reported by early users of MacWorkStation 3.0.

New Utilities

Event Handler is a new MacWorkStation Exec module which provides local nonprocedural scripting for responding to MacWorkStation events. Event Handler is an excellent utility for prototyping MacWorkStation programs. During the prototyping phase, a developer can use Event Handler to emulate what a host will do in the final version, without really having a host connected. It will also be very useful for final programs because it can respond to events generated by the user without sending a transaction to the remote host computer. This would be appropriate for standard and consistent events such as cancel buttons or help buttons, where host interaction isn't required. (Event Handler is an enhanced version of the beta Script Writer software that some early users of MacWorkStation may have already used. Event Handler may not be the final name that is chosen for this Exec module.)

Dialog Builder is a utility program that provides a powerful and easy method for quickly building dialog boxes for MacWorkStation 3.1. Users familiar with MacPaint or MacDraw will appreciate the object palette, which can be used to draw dialog boxes. The dialog box that is drawn can be stored in a MacWorkStation document for later recall by the remote client application. MacWorkStation dialog director commands can also be created and transferred to the remote host to be used when a MacWorkStation application is running. Dialog Builder is an enhanced version of the beta RezPaint software that some early users of MacWorkStation may already have used.

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Tech Info Library Article Number:3506



Tech Info Library

Macintosh IICx: General Description (Discontinued)

Revised: 6/1/94
Security: Everyone

Macintosh IICx: General Description (Discontinued)

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Article Created: 7 March 1989
Article Last Reviewed: 10 July 1992
Article Last Updated: 22 August 1991

TOPIC -----

This article describes the Macintosh IICx.

DISCUSSION -----

The Macintosh IICx computer is a modification of the Macintosh IIX design that uses a Motorola MC68030 microprocessor and a MC68882 numerics coprocessor. The Macintosh IICx uses the Apple SuperDrive (formerly Apple FDHD) 1440K floppy drive.

Because the Macintosh IICx is the first computer that Apple has produced with this physical form factor, there will not be an upgrade kit for any of the current members of the Macintosh family to the IICx.

MC68030

The Macintosh IICx uses the Motorola MC68030 at 15.6672 MHz, the same speed as the existing Macintosh II/IIX. The MC68030 is Motorola's second-generation 32-bit microprocessor, and combines a central processing unit, a data cache, an instruction cache, an enhanced bus controller (NOT the NuBus controller), and a memory management unit into a single VLSI device. Internal function blocks of the microprocessor are designed to operate in parallel, allowing instruction execution to overlap.

The MC68030 integrates the functionality of the MC68020 32-bit microprocessor with a subset of the MC68851 Paged Memory Management Unit (PMMU). Commonly called the 030 (pronounced "oh-three-oh"), the MC68030 is compatible with Macintosh IIX timing and software.

MC68882

The MC68882 numerics coprocessor (also called the Floating Point Unit, or FPU) provides high speed, extremely accurate, floating-point computation to IEEE standards.

The processor operates in parallel with the MC68030 and is clocked at 15.6672 MHz, using the same clock signal as the MC68030. Calls to the Apple SANE routines will use the MC68882. The MC68882, also called the 882 (pronounced "eight-eighty two"), is pin- and electrically-compatible with the MC68881 coprocessor in the Macintosh II.

Both processors use the same base instruction set--the major advantage of the MC68882 is increased speed. With the MC68882, you can perform both memory moves and chip operations in parallel--as long as they don't conflict--thus boosting floating point performance by about 15%.

Memory Management

Macintosh IICx can support the A/UX operating system without adding the PMMU, thanks to on-chip memory management by the MC68030. The MC68030 allows true 32-bit address translation with hardware page replacement. The built-in memory unit is also capable of ignoring the high 8-bits of the address to allow Macintosh software to run in 24-bit mode.

(NOTE: The MC68030 PMMU is a subset of the MC68851 PMMU, rather than an exact replacement.)

Wait States

- The Macintosh IIX/IICx uses one wait state to access the RAM.
- The Macintosh II has two wait states, one for RAM, and one for the HMMU or PMMU.

Given the CPU clock speed, you need one wait state to make sure you read from RAM at 120ns. The 15.6672 clock frequency has an active period of 63.8276ns. If the CPU reads without wait states, you would need 60ns RAM. Given the limited availability of these 60ns chips, Apple has chosen one wait state and 120ns RAM chips.

Apple SuperDrive (formerly Apple FDHD)

The Apple SuperDrive can read from and write to any of the major 3.5-inch disk formats, including Macintosh (GCR 400K, 800K, and MFM 1.44MB), Apple II (800K), MS-DOS and OS/2 (MFM 720 and 1.44MB).

GCR stands for Group Code Recording; MFM stands for Modified Frequency Modulation. MFM and GCR only effect how the bits are placed on the disk, not the directory structure. The drive is supported by the SWIM (Sander, Woz Integrated Machine) chip.

(NOTE: There is special 1.44MB media that should NOT be used in the older 400K or 800K drives.)

SWIM Chip

The SWIM chip is a single-chip combination MFM/GCR controller for internal and external floppy drives. It was designed for the SuperDrive, but is compatible with the current 400K and 800K drives. The SWIM chip replaces the IWM chip, and is pin- and function-compatible with that device.

Logic Board ROM and ROM SIMM

The Macintosh IICx comes with 256K of ROM, which is soldered to the logic board. The code in those four ROM chips is the same as the code in the IIX ROM SIMM chips. For update and upgrade purposes, the IICx logic board has a ROM SIMM slot. When the ROMs in a IICx unit are updated or upgraded, a ROM SIMM card with the new ROM chips is placed in the SIMM slot, and the jumper block on jumper W1 is removed. Removing this block disables the logic board ROM and enables the ROM SIMM.

Programmer's Switches

The programmer's switches (Reset and NMI) are located in the front of the Macintosh IICx. This allows the IICx to be placed on its side without restrictions regarding user access to the switch. This also makes it easier to move the computer off the desk to a more convenient location. As long as the user has access to the front of the computer, which is necessary to gain access to the drive port and to view the power-on and HD-activity lamps, the user can reach the programmer's switches.

Internal Hard Disk

As with the Macintosh II and IIX, the Macintosh IICx supports an internal hard disk drive. However, because the IICx has less internal space, the IICx only supports 3.5-inch mechanisms.

Functional Differences Between IICx and IIX

- NuBus Slots: Unlike the Macintosh IIX, the Macintosh IICx has three NuBus slots instead of six. The IICx NuBus slots use the exact same technology as the NuBus slots in the Macintosh II and IIX computers. As a result, the IICx NuBus slots are compatible with most of the NuBus cards that have been developed for the II and IIX. The IICx NuBus slots map to the first three NuBus slots in the II and IIX. Their slot numbers are 9, A, and B.
- Locking Power-On Switch: The power-on switch on the back of the Macintosh IICx can be locked in the on position. This feature is for IICx units that will function as routers, file servers, mail servers, etc. After power resumes after a black-out, IICx units with their power switch locked in the on position will re-boot and resume their functions.
- Power-On Signal: The power-on signal comes from the power supply on the Macintosh IICx. With the Macintosh II and IIX computers, this signal came from the logic board battery. The advantages of this feature are that the

IICx can power-up when the battery is dead, and there is less of a power drain on the battery.

- Resetting Fuses: On the Macintosh IICx logic board, there are three fuses. These fuses protect the ADB, serial, and SCSI circuitry. To reset one of these fuses after it has blown, power-down the IICx and power-up. When the unit is turned off, the blown fuse will reset. The advantage of this feature is that the logic board does not have to be replaced if a fuse is blown.

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Tech Info Library Article Number:3511



Tech Info Library

Macintosh IIcx: Specifications (Discontinued)

Revised: 9/27/93
Security: Everyone

Macintosh IIcx: Specifications (Discontinued)

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Article Created: 7 March 1989
Article Last Reviewed: 10 July 1992
Article Last Updated: 22 August 1991

TOPIC -----

Following are the technical specifications for the Macintosh IIcx.

DISCUSSION -----

CENTRAL PROCESSING UNIT (CPU)

- Microprocessor : 15.6672 MHz MC68030 CPU
- Address Bus : 32-bit
- Registers (32-bit) : 16 general-purpose data and address, two 32-bit Supervisor stack pointers, ten special-purpose control registers
- Addressing Modes : 18
- 256-byte instruction cache and 256-byte data cache
- Built-in Paged Memory Management Unit (PMMU)

COPROCESSOR

- MC68882 floating-point unit (follows IEEE standards)

MEMORY

- 1, 2, 4, 5, 8 MB RAM (Random Access Memory)
- 256Kbytes of ROM (Read-Only Memory)
- 256 bytes of settable parameter memory with built-in battery backup

KEYBOARD (not included)

- Apple Keyboard or Apple Extended Keyboard can be connected through the Apple Desktop Bus port

MOUSE

- Apple Desktop Bus Mouse (ADB) mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch (3.94 +/- 0.39 pulse per mm) of travel.

DISK DRIVE

- One 1.4 MB high-density internal Apple SuperDrive(formerly Apple FDHD).
Only one internal, floppy drive is supported. The unit ships with the Apple SuperDrive, but the logic board also supports an 800K drive.
- External connector for 800K or 1.4MB external floppy

HARD DISK DRIVE

- A 3.5" 40MB or 80MB hard drive is standard.

INTERFACES

- Two Apple Desktop Bus (ADB) connectors for keyboard, mouse, and low-speed input devices.
- Three NuBus Slots supporting full 32-bit address and data lines through a 96-pin Euro-DIN connector.
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally).
- SCSI interface
- Stereo sound port for external audio amplifier

SOUND GENERATION

- Apple Sound Chip (ASC) including 4-voice wave-table synthesis and stereo sampling generator capable of driving stereo mini-phono jack headphones or stereo equipment
- Mixed stereo monophonic sound output through internal speaker

ELECTRICAL REQUIREMENTS

- Line voltage: 100 to 240 volts AC, RMS automatically configured
- Line frequency: 50 to 60 hertz single phase
- Maximum power consumption: 130 watts maximum, 90 watts maximum continuous

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 degrees TO 104 degrees F
(10 degrees TO 40 degrees C)
- Storage temperature: -40 degrees TO 116.6 degrees F
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)
- Fan: 17 CFM radial

SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 478 Electronic Data Processing Equipment
- CSA (Canadian Standards Assn.) 220 Information Processing and Business Equipment

SIZE AND WEIGHT

- Main Unit
 - Height: 5.5 inches (140 mm)
 - Width: 11.9 inches (302 mm)
 - Depth: 14.4 inches (365 mm)
 - Weight: 13 lbs. 10 oz. (6.2 kg)
- Apple Keyboard (not included)
 - Height: 1.8 inches (44.5 mm)

Width: 16.5 inches (418.3 mm)

Depth: 5.6 inches (142.0 mm)

Weight: 2 lbs. 2 oz. (1 kg)

- Apple Extended Keyboard (not included)

Height: 2.3 inches (56.4 mm)

Width: 19.1 inches (486 mm)

Depth: 7.4 inches (188 mm)

Weight: 3 lbs. 10 oz. (1.6 kg)

- Apple Mouse (ADB)

Height: 1.1 inches (27.9 mm)

Width: 2.1 inches (53.3 mm)

Depth: 3.8 inches (96.5 mm)

Weight: 6 oz. (.175 kg)

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Tech Info Library Article Number:3512



Tech Info Library

5.25-Inch 160MB SCSI Hard Disk Drive

Revised: 4/11/91
Security: Everyone

5.25-Inch 160MB SCSI Hard Disk Drive

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Apple has announced a 5.25-inch 160MB SCSI hard disk drive. The internal configuration is optional in the Macintosh II and Macintosh IIX. In addition, upgrade kits will be available for these systems.

This 160MB SCSI hard disk drive has been tested to support the Macintosh OS and A/UX. However, this drive can not be used with the Apple II family.

Like other 5.25-inch drives, this drive does not fit in the Macintosh IICx or the compact Macintosh systems. However, as an external drive, it works with any Macintosh that has a SCSI port.

Technical specifications:

Capacity

Formatted data capacity:	160MB
Data surfaces:	5
Heads per surface:	1
Block size:	512 bytes
Total disk blocks:	327,780

Characteristics

Average seek time:	18 milliseconds
Transfer rate:	up to 1.25MB/sec
Rotation speed:	3,600 RPM
Startup:	20 seconds
Spindown:	20 seconds

Physical

Form Factor:	5.25-inch, half height
Weight:	2.09 kg (4.6 lbs) - internal configuration

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Tech Info Library Article Number:3514



Tech Info Library

Macintosh II: Monochrome Video Card

Revised: 3/9/89
Security: Everyone

Macintosh II: Monochrome Video Card

=====

Apple has announced the Macintosh II Monochrome Video card. It is a one bit per pixel (two gray levels) NuBus video card. It is positioned as a low-cost monochrome video card.

This card was designed to be used with the High-Resolution Monochrome Monitor. It also works with the AppleColor High-Resolution RGB Monitor, but this use is not being promoted. This card is not compatible with the Macintosh II Two-Page Monochrome or Portrait Display monitor.

The pixel display RAM capacity cannot be upgraded on this card.

Technical specifications:

Display Resolution:	640 pixel horizontally by 480 pixel vertically
Connector:	15 pin D-style
Display Mode:	1 bit per pixel only
Output Signal:	RS-343 standard with composite synchronization on the negative going TTL
Raster Rates:	Vertical - 66.7 hertz Horizontal - 35.0 kilohertz Dot Clock - 30.24 megahertz
Power Consumption:	5 watts

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Tech Info Library Article Number:3515



Tech Info Library

LaserWriter: 1000-Sheet Paper Bin

Revised: 3/9/89
Security: Everyone

LaserWriter: 1000-Sheet Paper Bin

=====

This article last reviewed: 8 March 1989

Laser Connection offers a motorized paper tray that can hold up to 1000 sheets of paper stock. This product, named the Big Bin, eliminates the need to continually reload the standard LaserWriter paper cassette, which holds only about 100 sheets of paper. For more details, search the Tech Info Library under "Laser Connection".

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Tech Info Library Article Number:3516



Tech Info Library

Macintosh II: Portrait Display Monitor: Its ADB Ports

Revised: 3/9/89
Security: Everyone

Macintosh II: Portrait Display Monitor: Its ADB Ports

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This article last reviewed: 8 March 1989

The Macintosh II Portrait Display Monitor has three Apple Desktop Bus (ADB) ports built into the monitor.

The Macintosh II Portrait Display Monitor has three ADB ports built into the back panel of the monitor. This makes it easier for the user to configure the Macintosh in a way that fits a user's workspace.

Why three ports when the Macintosh II has only two? Only two of the ports are usable, because the third must be used to connect the monitor to an ADB port on the Macintosh. Thus, one ADB cable runs from the Macintosh to the monitor, activating the other two monitor ADB ports.

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Tech Info Library Article Number:3518



Tech Info Library

Multiple Monitor Incompatibilities With Software

Revised: 3/9/89
Security: Everyone

Multiple Monitor Incompatibilities With Software

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This article last reviewed: 8 March 1989

This article describes applications that exhibit poor behavior on multiple monitors.

4th Dimension 1.0.6

Windows does not move to other monitors, when the in user or custom mode.

Illustrator 88 v1.6

Illustrator crashes on launch with any video card. This has been corrected in v1.7.

Cricket Draw 1.1.1

If a document is opened, moved onto another monitor, saved, and then the Monitor's CDEV is reconfigured, the document may become inaccessible. Original configuration must be restored to access document.

Cricket Presents 1.0

The program mistakenly identifies the Macintosh IIcx and Macintosh IIX as Macintosh Plus, and thus limits the user to only the eight, basic QuickDraw colors.

FullWrite 1.0

If more than one video card is installed, FullWrite places the spell check dialog on the second monitor. If no monitor is attached to the card, this prevents the dialog from appearing at ll.

Graphist Paint II 1.0

This application does not open on 030 Macs. Unlikely to be updated, as Aba

Software has filed for bankruptcy.

Pixel Paint 1.1

Pixel Paint only works with a color monitor, and does not work on multiple monitors. Tools do not work anywhere, but on the primary monitor.

SuperPaint 1.1

SuperPaint does not support more than 1-bit (black and white) or multiple monitors.

Swivel 3D 1.0

Swivel effect will not occur on secondary monitors. The change will not occur until after the mouse button is released.

Conclusion

It should also be noted that Apple, by providing a multi-monitor environment, has expanded the types of configurations applications must recognize.

Also, some applications exhibit different "Zoom Box" behaviors than is usual in a multi-monitor set up. This does not cause any functionality problems, but some behaviors appropriate on a single monitor may not be appropriate on multiple monitors (for example, which monitor the zoom out window appears on).

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Tech Info Library Article Number:3519



Tech Info Library

Apple Two-page Monochrome Monitor: Images Vibrate

Revised: 3/9/89
Security: Everyone

Apple Two-page Monochrome Monitor: Images Vibrate

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This article last reviewed: 8 March 1989

Interference between two monitors placed side-by-side can cause images on the monitors to vibrate. The reason is that, when placed side-by-side, monitors can magnetically interfere with each other, causing the image on one or both monitors to appear to vibrate slightly. This interference problem is most often seen when an RGB color monitor is placed next to a large-screen monochrome monitor. The amount of interference can also vary depending on the user's environment.

Moving the monitors further apart, especially the rear ends, usually reduces the vibration effect.

Technical Reason For Picture Vibrating

The cause of this shimmering effect lies in the vertical refresh rate, the number of times a monitor repaints the screen each second. When this rate differs significantly between monitors, the interference described above can occur. There is often a large difference between RGB and monochrome monitors. Thus, the vibration effect most often occurs with this combination. Because other factors are involved, it is possible for two monitors with the same refresh rate to exhibit this effect, although this is less frequent.

Shielding monitors so as to prevent this type of interference would add a great deal to the cost of each monitor. Further, by shielding a monitor you can prevent the monitor from interfering with other monitors, but other monitors could still interfere with it. Apple is investigating a number of technologies to prevent this interference in the future and plans to incorporate them as they become feasible.

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Tech Info Library Article Number:3520



Tech Info Library

Apple Two-Page Monochrome Monitor: Image Tilt

Revised: 3/9/89
Security: Everyone

Apple Two-Page Monochrome Monitor: Image "Tilt"

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This article last reviewed: 8 March 1989

Magnetic fields can cause the image to "tilt" on the Apple Two-Page Monochrome Monitor.

Occasionally, the monitors exhibit a tilt in the screen image, either to the right or left. The tilt is only noticeable, if you look at the edges of the screen and notice the amount of black space around the image. Sometimes the amount of black space is greater or less than the amount on the opposite end of the screen. Image quality is not affected. Larger monitors, like the Apple Two-Page Monochrome Monitor, are more likely to show the effect than small monitors.

If a monitor exhibits this effect, say a tilt down to the right, rotating the monitor around on its swivel base by 180 degrees will cause the image to tilt up to the right. What this means is that by rotating the monitor about 90 degrees in either direction, causes the effect to disappear with no tilt present. It also occurs in varying degrees, depending on location. This does not occur with every monitor.

Technical Reason For The Tilt

This effect is caused by differences in the magnetic fields in different places, usually where there is a strong magnetic field being caused by power generators or wiring. A monitor, when set up in one place, may exhibit no tilt, but, when placed somewhere else, may show the above effect. To remove all possible outside influence, Apple tests for true image distortion within large magnetic coils that are designed to simulate normal magnetic fields (when such fields are present). Thus, when shipped, monitors are perfectly aligned, and any distortion is related to the environment into which the monitor is placed.

Why does this occur on the Two-Page display and not on other monitors or on televisions? There are two reasons for this. First, to improve image

quality and lessen eye strain, Apple attempts to make its displays as flat as possible. Thus the picture tube is physically flatter than most every tube on the market today. This presents less image distortion (like bowing of straight lines) and makes the screen image look more like a single sheet of paper. However, the tilt effect tends to be more noticeable on large flat tubes. Competitive, large-screen monitors also show this effect.

The reason televisions do not exhibit this characteristic is that they "overscan" the screen, using all of the picture tube, thus no black space is visible on the edges of the screen. Thus, any tilt to the image is hidden from view. The tilt is there, it just cannot be seen. Macintosh computer displays cannot use this technique, because all information on the screen is critical and cannot flow off the screen (like the menu bar).

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Tech Info Library Article Number:3521



Tech Info Library

Apple Two-Page Monochrome Monitor: Specs (Discontinued)

Revised: 9/13/93
Security: Everyone

Apple Two-Page Monochrome Monitor: Specs (Discontinued)

Article Created: 9 March 1989
This article last reviewed: 8 March 1989

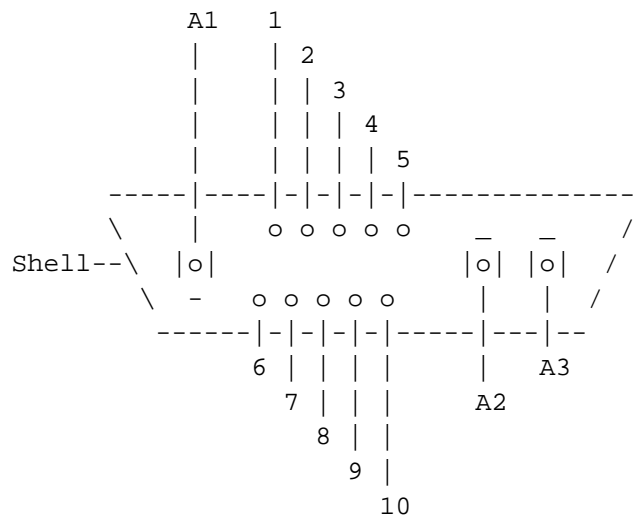
This article gives the specifications for the Apple Two-Page Monochrome Monitor along with Pin assignments for input signal jack.

Picture Tube	21-inch diagonal Phosphor EIA Type P4 (White) High-contrast antiglare
Input Signal	Video: RS-343 standard Sync: Separate sync, negative going, TTL
User Controls	Power Switch (back panel) Brightness, with detent reference (right side) Contrast (right side)
Scanning Frequencies	Horizontal 68.7 kHz Vertical 75.0 Hz
Resolution	1152 (H) dots by 870 (V) lines
Active Video Display Area	Adjusted at the factory to produce an active video area of 15-inch horizontal by 11.33-inch vertical. The remainder of the screen is used for the dark border around the display.
Weight	60 lbs, approximately
Power Requirements	100 watts maximum, all line conditions
Input Voltage	Operating range 90-270 Vrms, self-configuring Frequency 47-63 Hz

Operating Ambient Temperature	10 degrees C to 35 degrees C (50 degrees F to 95 degrees F)
Operating Humidity	90% maximum, non-condensing
Operating Altitude	10,000 feet maximum
Fuse Protection	The monitor contains internal power line fuse protection. This fuse should be replaced with the same type be a qualified service technician.
Warm-up Time	20 minutes to meet all specifications

Pin Assignments For Input Signal Jack (D-25 Shell Style)

Pin	Function
A1	Monochrome video
A2	75 Ohms #1
A3	75 Ohms #2
1	Hsync return
2	Vsync
3	Sense #3
4	Sense return
5	Csync
6	Hsync
7	Vsync return
8	Sense #2
9	Sense #1
10	Csync return
Shell	Shell ground





Tech Info Library

AppleShare: Problem Launching Applications (10/93)

Revised: 10/26/93
Security: Everyone

AppleShare: Problem Launching Applications (10/93)

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Article Created: 20 January 1989
Article Reviewed/Updated: 25 October 1993

TOPIC -----

Using AppleShare, if you double click on the local documents of applications that are known to be on a mounted AppleShare volume, you may get a message that the application is missing or busy. How do I fix it so that double clicking will open the document?

DISCUSSION -----

Under AppleShare 3.0.x

Most likely, the desktop files on the file server need to be rebuilt. The most effective way of rebuilding the server desktop is to restart the server with the shift key depressed until the "Extensions Disabled" message appears in the Welcome to Macintosh window. Then depress the COMMAND and OPTION simultaneously until the "Are you sure you want to rebuild the desktop..." message appears. (This message will appear for each volume.) Click OK to start the rebuild. This process will ensure a complete desktop rebuild.

Under AppleShare 2.0.x

Most likely, the problem is not with the Desktop file for the hard drive but with the Server Desktop files (Desktop DB and Desktop DF), which are invisible and located in the Server Folder.

Rebuilding the desktop files of an AppleShare Server volume is a little tricky. You need to restart the AppleShare Server from a floppy (or a non AppleShare Server volume). If you restart the AppleShare Server from a floppy and rebuild the desktop as described above, you are only rebuilding the standard desktop file on that volume, not the AppleShare Server "desktop files" (Desktop DB and Desktop DF). If, however, you restart the server with the Server Administration disk or any other floppy disk with

the Desktop Manager in its System Folder, the Desktop Manager becomes active, and the AppleShare "desktop file" can be rebuilt.

The standard desktop file is different from the AppleShare "desktop file". The AppleShare "desktop file" consists of two files, Desktop DB and Desktop DF, that serve the same purpose for multiple users under AppleShare as the standard desktop file does for a single-user Macintosh. The Desktop DB and Desktop DF files are used only if the Desktop Manager is active, as in the case of an AppleShare server. Then the standard desktop file is not used.

Article Change History:

16 Jul 1991 - Reviewed for technical accuracy.

25 Oct 1993 - Updated to include AppleShare 3.0.x information.

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Tech Info Library Article Number:3528



Tech Info Library

Apple HD SC Setup 2.0 Update Not Backward Compatible

Revised: 4/11/91
Security: Everyone

Apple HD SC Setup 2.0 Update Not Backward Compatible

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This article last reviewed: 20 January 1989

Apple HD SC Setup 2.0 is able to update the drivers only on hard drives formatted with HD SC Setup 2.0.

For example, if a hard disk was formatted with HD SC Setup 1.5 or earlier, HD SC Setup 2.0 will NOT be able to update the drivers on that drive. Apple HD SC Setup 2.0 is completely compatible with System Software 6.0.2.

It's okay to use versions of HD SC Setup older than version 2.0 with System Software 6.0.2, but we recommend using the latest version of HD SC Setup whenever possible.

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Tech Info Library Article Number:3529



Tech Info Library

Inter•Poll: Requires System 6.0.2 For The Macintosh IIx

Revised: 3/1/93
Security: Everyone

Inter•Poll: Requires System 6.0.2 For The Macintosh IIx

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This article last reviewed: 20 January 1989

When using Inter•Poll with the Macintosh IIx, you may find the system displaying this dialog error condition: "Inter•Poll requires 128K ROMs".

This error message is displayed only when using System Software 6.0 on a Macintosh IIx. The problem does not appear when using System Software 6.0.2, which is the recommended System Software version for the Macintosh IIx.

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Tech Info Library Article Number:3530



Tech Info Library

Inter•Poll: Type ApTk Explained

Revised: 3/1/93
Security: Everyone

Inter•Poll: Type "ApTk" Explained

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This article last reviewed: 21 January 1989

Inter•Poll type "ApTk" is an AppleTalk Name Binding Protocol device type, the types listed by Inter•Poll.

The AppleTalk name/type "ApTk" is generated by Font/DA Juggler Plus as part of its copy protection scheme. It looks on the network for other "ApTk"s and checks to see if they have the same serial number. If one of them does, it won't run.

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Tech Info Library Article Number:3532



Tech Info Library

Macintosh SE Memory Upgrade: Questions And Answers (11/95)

Revised: 11/29/95
Security: Everyone

Macintosh SE Memory Upgrade: Questions And Answers (11/95)

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Article Created: 21 January 1989
Article Reviewed/Updated: 29 November 1995

TOPIC -----

Some questions and answers about Macintosh SE memory upgrades. Note that some of these memory kits are no longer available.

DISCUSSION -----

Question: Will the M0707 memory kit work in a Macintosh SE?

Answer: No. There is not enough room in the Macintosh SE's chassis to accommodate the larger chips.

Question: What kit does Apple recommend for upgrading those machines?

Answer: The standard 2MB memory upgrade was the only Apple solution available for the Macintosh SE. Third-party memory solutions are also available.

Question: Has the Macintosh SE frame been changed to support the larger DIP SIMMs (M0707)?

Answer: No, the Macintosh SE frame has not been changed to accommodate the larger DIP SIMMs.

Question: Is Apple still using the 150ns 256K SIMM chips in the M0218?

Answer: The 1MB upgrade with the 256 kilobit chips used 120ns chips. This was necessary for the chips to be able to work in the Macintosh II. This upgrade was also used to expand a 1MB Macintosh II to 2MB, and the Macintosh II requires 120ns chips.

NOTE:

The 150ns 256 kilobit chips were only an issue when they were removed from a Macintosh SE that is upgraded using the 2MB upgrade. If these chips were then used in a Macintosh II, memory errors occurred.

Article Change History:

29 Nov 1995 - Updated format.

16 Sep 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3533



Tech Info Library

AppleShare Memory Problem: Solved For System 4.2 And MultiFinder

Revised: 4/11/91
Security: Everyone

AppleShare Memory Problem: Solved For System 4.2 And MultiFinder

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This article last reviewed: 21 January 1989

Using System 4.2 and Finder 6.0, you may find that when using the AppleShare workstation software you get the error message "There isn't enough memory to work with CS Server 20" at startup.

You probably need to increase the MultiFinder partition for the Finder.

To do this, select the Finder icon and choose "Get Info" from the File menu in the Finder. Set the Finder's partition to something other than the default value of 160K (somewhere around 320K should do it).

The partition generally needs to be increased to deal with many open windows, large DeskTop files, and large directories.

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Tech Info Library Article Number:3534



Tech Info Library

Star Micronics Delta 15 Printer: Printing From Apple IIe

Revised: 4/11/91
Security: Everyone

Star Micronics Delta 15 Printer: Printing From Apple IIe

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This article last reviewed: 26 January 1989

To print from an Apple IIe to a Star Micronics Delta 15 printer at 2400 baud, XON-XOFF handshake, 8-bit data, and 1 stop bit, the switches should be set as follows:

Super Serial Card	
(configuration block set to printer)	
Sw-1	Sw-2
1 OPEN	CLOSED
2 CLOSED	CLOSED
3 OPEN	CLOSED for 80 col., OPEN for 132 col.
4 CLOSED	OPEN
5 OPEN	CLOSED for auto LF, OPEN for no LF
6 CLOSED	OPEN
7 CLOSED	OPEN

Delta 15 Printer	
Sw-2	Sw-3
1 na	OPEN
2 CLOSED	OPEN
3 na	CLOSED
4 na	CLOSED
5 na	na
6 na	CLOSED
7 na	OPEN
8 na	CLOSED

The cable connecting the SSC and printer should be wired as follows:

SSC	Printer
1	1
2	3
3	2
4	-| tie directly to pin 5

5	-|	no connection on printer end
7		7
8		not used
19		not used
6	-|	tie directly to pin 20
20	-	no connection on printer end

For more information, search under: "Star Micronics"

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Tech Info Library Article Number:3535



Tech Info Library

Macintosh System Software: Configuring For Different Models

Revised: 4/11/91
Security: Everyone

Macintosh System Software: Configuring For Different Models

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This article last reviewed: 21 January 1989

When supporting very large numbers of Macintosh users using different Macintosh models, it may be important to keep the number of variations in system loads to a minimum. Therefore, it may be advantageous to use common system software for all the different Macintoshes.

If you are going to choose common system software for Macintosh Plus, Macintosh SE, and Macintosh II/Macintosh IIX systems, it is best to install the current system for Macintosh II/Macintosh IIX. This ensures that all CDEVs usable by the Macintosh Plus, Macintosh SE, and Macintosh II/Macintosh IIX systems are available.

The patches for the Macintosh Plus, Macintosh SE, and Macintosh II/Macintosh IIX systems are present regardless of the Macintosh model in which the system software was installed, and are loaded only as needed.

For example, the Macintosh SE patches are loaded by the system when a Macintosh SE is used; the Macintosh Plus and Macintosh II/Macintosh IIX patches are not loaded.

The only penalty for use of the Macintosh II/IIX system will be a slight increase in the amount of disk space used. Performance will not be affected.

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Tech Info Library Article Number:3536



Tech Info Library

ImageWriter II: Line Feed Peculiarity

Revised: 4/11/91
Security: Everyone

ImageWriter II: Line Feed Peculiarity

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This article last reviewed: 18 January 1989

Using the ImageWriter II, you may experience the following problem:

- The ImageWriter II appears to treat a single line-feed character (\$0A) in the middle of a character string as a line feed/carriage return combination.
- A line feed at the beginning of a line (that is, immediately following a carriage return) seems to behave normally, but if the line feed is in the middle of a line, the printer starts any text that occurs after that character on the next printed line at column 1.

The ImageWriter II Technical Reference Manual (ISBN #0-201-17739-0), Chapter 5: Page Formatting, page 75, says:

"When you turn on the ImageWriter II, it's set to print out the data in the print buffer and to insert a carriage return (CR) before every line feed (LF) or form feed (FF) character it receives."

The user can control whether a CR is inserted before each LF or FF by sending specific codes to disable this function. To disable the CR insertion, send an Esc l (lower case L) 1 (one). To enable CR insertion before LF and FF, send Esc l (lower case L) 0 (zero).

Sending the Esc l 1 will suppress the CR after LF and permit the type of printing you wish. (See the example of on page 76 in the same manual.)

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Tech Info Library Article Number:3537



Tech Info Library

SIMMs: Some Are For 68030-Based Systems Only

Revised: 5/27/92
Security: Everyone

SIMMs: Some Are For 68030-Based Systems Only

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Article created: 2 March 1989
Article last reviewed: 20 May 1992
Article last updated:

Some of the SIMMs that are used in the Macintosh IIX will not work in other systems (Macintosh II, Macintosh SE, etc). They have "030 ONLY" stamped on the back.

They don't work in other Macintosh systems because the CAS/RAS signals are reversed (timing-related) from previous SIMMs.

This difference is handled in the Macintosh IIX with additional ROM code. Those SIMMs that are marked for "030 ONLY" will work only in the Macintosh IIX (and any future machines that use the 68030 processor).

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Tech Info Library Article Number:3538



Tech Info Library

LaserWriter IINTX: Can't Prevent Change Of Settings On Network

Revised: 4/11/91
Security: Everyone

LaserWriter IINTX: Can't Prevent Change Of Settings On Network

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This article last reviewed: 20 January 1989

If you are using a LaserWriter IINTX on a local area network, there is currently no way to protect the hardware settings from being overridden by a PostScript program downloaded from one of the workstations.

Anyone who has access to the LaserWriter IINTX over the network can change the settings via a PostScript program.

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Tech Info Library Article Number:3539



Tech Info Library

Macintosh: Sharing A LaserWriter II With A VAX

Revised: 4/11/91
Security: Everyone

Macintosh: Sharing A LaserWriter II With A VAX

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This article last reviewed: 20 January 1989

If you need printer-sharing between VAX terminals (MicroVAX, for instance) and one Macintosh Plus using a LaserWriter IINT or IINTX, the simplest solution would be to use the one Macintosh Plus system as a terminal.

This can be accomplished through the use of one of the many terminal emulators available. This also prevents you from having to install a network for just one machine's needs.

Another possibility is to upload PostScript output files from the Macintosh to the MicroVAX and have the VAX print them. These files can be generated by holding down the Command and 'k' keys when printing using the LaserWriter drivers. A disk file is then generated instead of actually printing to a LaserWriter.

A third possibility is installing an Ethernet between the MicroVAX and a FastPath and connecting the FastPath and the Macintosh Plus together through an AppleTalk network. The MicroVAX would need to be running LaserWriter spooling software that would allow it to accept files over the network from the Macintosh Plus.

The drawback with such a setup is that users of WordPerfect on the MicroVAX might not be able to use the printer if the software on the MicroVAX is unable to accept print jobs from multiple (different) sources.

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Tech Info Library Article Number:3540



Tech Info Library

NuBus, MicroChannel, And EISA: Questions And Answers

Revised: 7/21/92
Security: Everyone

NuBus, MicroChannel, And EISA: Questions And Answers

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Article Created: 26 January 1989
Article Last Reviewed: 21 July 1992
Article Last Updated:

TOPIC -----

Here are some questions and answers about Apple's NuBus versus IBM's MicroChannel Architecture and the proposed Extended Industry Standard Architecture (EISA):

DISCUSSION -----

MULTIMASTERING

Q) How many coprocessor cards can NuBus support?

A) Any single NuBus card can be the Master (a card that initiates the addressing of another card) at any time. This action can be passed from card to card. Because of Apple's implementation of six slots, only six NuBus master cards can be supported in the Macintosh II.

NuBus itself can utilize an arbitrary number of slots, based on the designated size of each slot. The upper one-sixteenth of the total address space is available for slot space. This provides 256MB of addressing. Apple provides six slots of 1MB each in 24-bit mode. In the 32-bit mode, there are 16 possible slots on the Macintosh II, with an address space of 16MB each.

PERFORMANCE

Q) Can NuBus support processor speeds up to 25 MHz? 33 MHz? 45 MHz?

A) Cards can maintain their internal clock up to any possible speed. There are no set limitations for a card's internal clocks. Limitation are

imposed by NuBus transactions. NuBus is clocked at 10 MHz.

ADDRESS SPACE

Q) Is NuBus hardwired at 24 address lines?

A) NuBus is not hardwired at 24 address lines. It is a full 32-bit bus. The 24-bit addressing mode is a software-controlled mode imposed for compatibility with the 24-bit addressing System 6.

MEMORY

Q) What's the maximum amount of memory addressable through today's NuBus?

A) The maximum amount of memory addressable on the NuBus is 4 gigabytes. This is the total addressable range at 32 bits. On the Macintosh II, ROM space is reserved for 1MB of space. RAM is reserved for 1 gigabyte. Additionally, the NuBus slot address space includes a super slot space of 1.536 gigabytes allocated to the six slots for 256MB per slot and a slot space of 256MB allocated for 16 slots at 16MB each.

The breakdown is:

Memory: ROM, RAM, and slot space

ROM:	1MB
RAM:	1000MB
Super Slot:	1536MB
Slot:	256MB

Total:	2793MB

Q) How much memory can be added on a card or the motherboard?

A) The NuBus will access up to 16MB of RAM on a card in slot space and 256MB of RAM in Super Slot space. The maximum direct addressable range through the Macintosh OS is currently 1MB per card.

The full address range (up to 256MB) can be addressed by NuBus or by page flipping the memory on the card. The Macintosh II motherboard physically can connect 8MB. The maximum possible when looking at the NuBus and reserved memory addresses is 1 gigabyte.

DMA

Q) What are the DMA capabilities of NuBus?

A) DMA is not supported across NuBus.

NuBus-to-Macintosh II Address Mapping

24-bit Addresses from MC68020	32-bit Addresses from MC68020	NuBus Addresses	Used To Access Macintosh II Sys
\$xx00 0000 to \$xx7F FFFF	\$0000 0000 to \$007F FFFF	\$0000 0000 to \$007F FFFF	Present RAM
	\$0080 0000 to \$3FFF FFFF	\$0080 0000 to \$3FFF FFFF	Future RAM
\$xx80 0000 to \$xx8F FFFF	\$4000 0000 to \$4FFF FFFF	\$F080 0000 to \$F0FF FFFF	ROM (aliased)
\$xxF0 0000 to \$xxFF FFFF to	\$5000 0000 to \$5FFF FFFF	\$F000 0000 to \$F070 FFFF	I/O (aliased); do not access from a slot card
	\$6000 0000 to \$8FFF FFFF	\$60000 0000 to \$8FFF FFFF	Presently unused
	\$9000 0000 to \$EFFF FFFF	\$9000 0000 to \$EFFF FFFF	Super slot space, slots \$9 to \$E
\$xxF0 0000 to \$xxFF FFFF	\$F000 0000 to \$F0FF FFFF	\$F000 0000 to \$F0FF FFFF	Slot \$0 (Macintosh system)
	\$F100 0000 to \$F8FF FFFF	\$F100 0000 to \$F8FF FFFF	Presently unused
\$xxs0 0000 to \$xxsF FFFF	\$Fs00 0000 to \$FsFF FFFF or \$Fs10 0000 to \$FsFF FFFF	\$Fs00 0000 to \$FsFF FFFF or \$Fs10 0000 to \$FsFF FFFF	Slot space, slot s (s in range \$9-\$E)
	\$FF00 0000 to \$FFFF FFFF to	\$FF00 0000 to \$FFFF FFFF	Presently unused

FOR MORE INFORMATION

Check "Designing Cards and Drivers for Macintosh II and Macintosh SE" (ISBN #0-201-19256-X) from Addison-Wesley; mechanical drawing of cards and connectors available from APDA; and NuBus patent licenses from Texas Instruments, Inc.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3541



Tech Info Library

Apple II System Disk 3.0: Requires MouseText, 128K Memory

Revised: 4/11/91
Security: Everyone

Apple II System Disk 3.0: Requires MouseText, 128K Memory

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This article last reviewed: 20 January 1989

Here are some questions and answers about Apple II System Disk 3.0 for the Apple IIe and Apple IIc:

- Q) Will this disk operate on an unenhanced Apple IIe?
- A) System Disk v3.0 uses an AppleWorks-style interface, and this requires the availability of MouseText characters, which do NOT exist in an unenhanced Apple IIe. The program may also use some of the additional 27 instructions available only in the 65C02 CPU.

- Q) What is the latest version of System software that will operate with an unenhanced Apple IIe?

- A) System Utilities Version v2.1.1 will work on an unenhanced Apple IIe, but even that requires some MouseText characters, and will show an abnormal display -- for example, Upper Case Inverse Capital S characters instead of straight horizontal lines.

However, the program runs properly in spite of this display anomaly. System Utilities v2.1 does not use MouseText characters and should function normally on an unenhanced Apple IIe.

- Q) How much memory does the System Disk v3.0 require to operate?

- A) When booted on a 64K enhanced Apple IIe, the program gives an error message stating it requires 80-column text, and this indicates it requires 128K of memory.

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Tech Info Library Article Number:3542



Tech Info Library

Fax Machines: CCITT Group 2 and Group 3 Explained (9/94)

Revised: 9/7/94
Security: Everyone

Fax Machines: CCITT Group 2 and Group 3 Explained (9/94)

Article Created: 20 January 1989
Article Reviewed/Updated: 7 September 1994

TOPIC -----

This article describes CCITT Group 2 and Group 3.

DISCUSSION -----

International Telephone and Telegraph Consultative Committee (CCITT) uses "Group" to designate the protocols used for facsimile transmission and reception. The "Group" protocol involves speed of transmission, height of a scan line, modulation/demodulation technique, encoding/decoding technique (if any), and various other parameters concerning communication between two Fax machines.

The primary difference between Group 2 and Group 3 concerns encoding/decoding.

Group 2 machines exploit bandwidth compression techniques to achieve reduced transmission times, when compared to Group 1 machines (Group 1 machines have long since disappeared). Bandwidth compression in this context includes encoding and/or vestigial sideband working but excludes processing of the document signal to reduce redundancy.

The encoding/decoding involved in transmission uses the positive/negative cycles of the square wave carrier to denote white/black pixels.

Group 3 machines incorporate a means for reducing the redundant information in the document signal prior to the modulation process. This allows for reduced transmission times compared to Group 2 machines. The Fax machine may incorporate bandwidth compression of the line signal.

The encoding/decoding technique used with Group 3 machines sends an encoded message when encountering lengths of white/black pixels (redundant information). This encoded message indicates the number of white or black pixels.

Article Change History:

07 Sep 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3543



Tech Info Library

Apple II Language Card Changes

Revised: 9/18/89
Security: Everyone

Apple II Language Card Changes

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This article last reviewed: 17 March 1989

Effective immediately, Apple is substituting a different Apple II Language Card for the original one. The new card is smaller and no longer includes the connector that plugs into the RAM socket. It also does not contain the Autostart ROM. Now, when Apple II Language Cards are exchanged, Apple will include a 16K RAM chip with the replacement module.

- When you install a new Language Card into an Apple II or Apple II+ system, you need to install the 16K RAM chip into the vacant RAM socket on the main logic board.
- In the unlikely event that customers do not already have the Autostart ROM in their Apple II systems, they will need to purchase one for you to install in location F8 on the main logic board. The Autostart ROM (p/n 342-0020) can be ordered from the price pages.
- Refer to the Apple II Family Technical Procedures for instructions on installing Autostart ROMs and the 16K RAM.

The new Apple II Language Card is available from the price pages under the same part number as the old card. The new card is available as an Exchange Module only. When you return a language card to Apple for exchange, a new language card will be returned to you.

INSTALLATION

WARNING: Be sure the power is off before installing or removing any modules or components, or before connecting or disconnecting any peripheral devices. Failure to do so may result in damage to the computer, module, components, and/or peripheral.

Remember to follow basic ESD precautions when installing, removing, or troubleshooting modules.

- 1) Insert the Language Card into slot 0, component side facing away from power supply.
- 2) Insert a 16K RAM chip (p/n 334-0002) at location E3 on the motherboard. (Location E3 is in the left rear corner of the outlined memory area and was used for the cable header on the old Language Card.

Apple II Standard Computers without Autostart ROM on Motherboard:

- 1) Replace the Monitor ROM (p/n 342-0004) with an Autostart ROM (p/n 342-0020) at location F8-ROM on the motherboard.

TESTING

The new language card can be tested with your existing Apple II Product Diagnostics Disk.

- 1) Install the new Language Card in slot 0. Ensure that you've inserted a RAM at location E3 and that the motherboard F8 ROM is p/n 342-0020.
- 2) Start up the Apple II Product Diagnostics Disk.
- 3) Press the <ESC> key to move the cursor to the CARD TESTS line on the main menu, then press <RETURN>.
- 4) Press the <ESC> key to move the cursor to the LANGUAGE CARD line on the CARD test menu, then press <RETURN>.

If any RAM is highlighted in inverse video, replace the Language Card. If any of the status states are bad, then replace the Language Card. If the message "NO ERRORS ENCOUNTERED" appears, then the ROM at Location F8 is good. If the message "CAN NOT MATCH CODE" appears, then the ROM at F8 is bad and must be replaced.

Motherboard RAM Test

Perform the Motherboard RAM test to ensure that the RAM at location E3 is good.

- 5) Use the <ESC> key to move the cursor to the MOTHERBOARD RAM TEST line on the main test menu, then press <RETURN>.
- 6) Press <RETURN> to start the test.
- 7) The test will end and the display will show any bad RAM in inverse video. If the display shows that the LANG CARD RAM is bad then replace the RAM at E3.

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Tech Info Library Article Number:3546



Tech Info Library

Apple 40SC Backs Up Files To 38.5MB

Revised: 9/29/90
Security: Everyone

Apple 40SC Backs Up Files To 38.5MB

=====

This article last reviewed: 20 January 1989

When doing a file backup, 38.5MB is the largest file that can be backed up using the Apple 40SC tape backup unit and Apple software.

An oversize (larger than 38.5 megabytes) file may not be backed up across multiple tapes. It is possible to back up an oversize file using a third-party utility, such as DiskFit from SuperMac Technologies.

For more information, search under: "SuperMac"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3547



Tech Info Library

HyperCard 2.3: Data Handling Limits (1/96)

Revised: 1/4/96
Security: Everyone

HyperCard 2.3: Data Handling Limits (1/96)

Article Created: 10 April 1989
Article Last Reviewed/Updated: 4 January 1996

TOPIC -----

What are some of the limits of HyperCard and its various components?

DISCUSSION -----

HyperCard's maximum limits are theoretical. In a practical situation, the actual limits may be less than, or sometimes greater than, the limits stated here and in the HyperCard documentation. This is due to the different levels of complexity possible in a stack. For example, HyperCard currently brings an entire card into memory at once, so the maximum size of a card is limited by available memory. It's possible that a card with a lot of extra text and long scripts, created while running HyperCard on a Macintosh with 2 megabytes of RAM, could not be opened on a Macintosh with 1 megabyte. The current useful size of a card (or background) is therefore between 50 and 100 kilobytes. The value represented by LONGINT is 2,147,483,647; the value represented by INTEGER is 32,767.

STACK LIMITS

Stack size: 512 megabytes
Minimum stack size: 4896 bytes
Maximum total number of bitmaps, cards, and backgrounds per stack: 16,777,216
Maximum stack name size: 31 characters
Maximum stack script size: 30,000 characters

BACKGROUND LIMITS

Background Size (bytes): LONGINT (limited by HC stack size; less than 100 kilobytes for practical use)
Minimum background size: 64 bytes
Maximum parts per background: Integer
Maximum total part size per background (bytes): LongInt

Maximum background name size: 31 characters
Maximum background script size: 30,000 characters

CARD LIMITS

Card size (bytes): LONGINT (limited by HC stack size; less than 100 kilobytes for practical use)
Maximum card size: 64 bytes
Maximum parts per card: INTEGER
Maximum total part size per card (bytes): LONGINT
Maximum total text size per card (bytes): LONGINT
Maximum card name size: 31 characters
Maximum card script size: 30,000 characters

PART (BUTTON OR FIELD) LIMITS

Part size (bytes): INTEGER (The sum of the other elements in the button or field must be less than the part size.)
Minimum overhead per part: 30 bytes
Maximum part name size: 31 characters
Maximum part text size: 30,000 characters
Maximum part script size: 30,000 characters

HYPERTALK LIMITS

Maximum nested REPEAT structures: 30
Maximum nested REPEAT structures: 32
Maximum active variables (all pending handlers): 512
Maximum size card name with GO command: 31 characters
Maximum variable name size: 31 characters
Maximum number format size: 31 characters
Maximum size of command with arguments: 254 characters
Maximum handler name size: 254 characters
Maximum script size: 30,000 characters
Maximum variable value size: Limited by available memory

Article Change History:
04 Jan 1996 - Added new limit information.

Support Information Services

Copyright 1989-95, Apple Computer, Inc

Tech Info Library Article Number:3548



Tech Info Library

Apple IIGS: Headphone Impedance

Revised: 3/22/89
Security: Everyone

Apple IIGS: Headphone Impedance

=====

This article last reviewed: 24 January 1989

The impedance of the headphone jack on the Apple IIGS is approximately 43 ohms.

This figure was arrived at because the port was designed to work with portable, Walkman-type headphones and their impedance is also 43 ohms.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3549



Tech Info Library

Apple Monitors Meet VDT Emissions and SWEDAC 2 Standards (8/94)

Revised: 9/8/94
Security: Everyone

Apple Monitors Meet VDT Emissions and SWEDAC 2 Standards (8/94)

=====

Article Created: 26 January 1989
Article Reviewed/Updated: 8 September 1994

Apple meets all VDT emissions specifications required by the FDA.

The FDA has published a specification for ionizing radiation, CFR-21, and all VDTs (CRTs) sold by Apple meet this specification. Apple monitors do not exceed the radiation requirement called out by this specification.

The FDA specifications call for a maximum radiation of 0.5 mr/hr. Apple's monitor emissions are 0.05 mr/hr, or one-tenth of allowable standard.

In addition to the FDA's specification, all of Apple's current displays (including the Mac Classic) meet or exceed the strict internationally recognized standard for monitor ELF/VLF emissions--SWEDAC 2 (also known as MPR2).

Article Change History:
8 Sep 1994 - Added SWEDAC 2 information.

Support Information Services

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:3550



Tech Info Library

AppleShare Support: AppleCD SC And WORM Drives

Revised: 3/22/89
Security: Everyone

AppleShare Support: AppleCD SC And WORM Drives

=====

This article last reviewed: 26 January 1989

Currently, an AppleShare File Server requires that all drives (volumes) attached to the server support read AND write access. The one exception to this rule is the AppleCD SC, which is supported.

Since a WORM (Write Once, Read Many) drive does not allow true read and write access, it is not supported by AppleShare.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3551



Tech Info Library

Macintosh: 3101 Terminal Emulation For IBM Series 1

Revised: 10/4/89
Security: Everyone

Macintosh: 3101 Terminal Emulation For IBM Series 1

=====

This article last reviewed: 23 August 1989

IBM 3101-to-Macintosh connectivity solutions are available. InTalk from Palantir Software and Telescape from Mainstay both offer IBM 3101 terminal emulation. Note: Palantir Software no longer publishes InTalk. A similar package is FutureSoft's DynamComm.

Search the Tech Info Library for "FutureSoft" and "Mainstay".

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3552



Tech Info Library

MPW Version 3.0: General Information

Revised: 3/23/89
Security: Everyone

MPW Version 3.0: General Information

=====

This article last reviewed: 31 January 1989

Macintosh Programmer's Workshop (MPW) 3.0 is available through the Apple Programmer's and Developer's Association (APDA).

MPW 3.0 features a new debugging tool, Symbolic Application Debugging Environment (SADE), and a project management system called "Projector".

SADE is an interactive debugger that works either at the processor or symbolic program source level. Projector is a collection of built-in MPW commands and windows that manages changes to all files (source, documentation, etc.) associated with a software project.

An Installer disk is included for installing MPW 3.0 from a set of diskettes.

(NOTE: The file configuration on these diskettes is different from previous releases. There are now duplicate folder names across the set of diskettes. Thus, dragging folders on to the hard disk from the diskettes may result in name conflicts.)

MPW 3.0 requires, at minimum, a Macintosh Plus, hard disk, and 2MB of RAM. The minimum System files required are found on System file version 6.0.2 or later. SADE requires MultiFinder and at least 2.5MB of RAM. (The recommended system configuration is a Macintosh II with 4MB or more of memory and an 80MB SCSI hard disk drive.)

MPW v3.0 contains current releases of the language products (MPW Assembler 3.0, MPW C 3.0, and MPW Pascal 3.0) have also been introduced. MPW C 3.0 is a completely new C compiler. It is largely compatible with MPW version 2.0, but there are some changes to the language, compiler options, new files, and Standard C Library and Macintosh Interface, which require modification of MPW 2.0 source code.

A script utility called CCvt is also provided to help convert MPW 2.0 source code headers and standards for functions using strings or points to the

MPW 3.0 convention.

For more information, search under: "APDA"

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Tech Info Library Article Number:3554



Tech Info Library

Macintosh SE, II, IIX: Launching Guided Tours from Hard Disk

Revised: 4/3/92
Security: Everyone

Macintosh SE, II, IIX: Launching Guided Tours from Hard Disk

=====
Article Created: 22 March 1989
Article Last Reviewed: 8 July 1992
Article Last Updated: 8 July 1992

TOPIC -----

How does one use the Guided Tour from a hard disk?

DISCUSSION -----

You can use the Guided Tour from a hard disk on the Macintosh II, IIX or Macintosh SE as long as there is a minimum of 2MB of memory in the computer.

The Guided Tour disk has a modified System/Finder because the tour requires a minimum of 960K of memory to run. With a standard System/Finder installed on a 1MB system, there is not enough memory available. The modified system files -- which are smaller than the standard files -- allow a 1MB system to have the required 960K of memory available for the Guided Tour.

With a standard System and Finder installation and 2MB of memory, just copy the Tour Engine and all the tour files to a folder on the hard disk. If you want the Guided Tour to come up automatically on startup, then set the Set Startup option under the Special menu to the Tour Engine (if running System 6) or place an alias of the Tour Engine in the Startup Items folder inside the System Folder (if running System 7). Upon finishing the Guided Tour, the user is returned to the standard Finder Desktop.

Copyright 1989, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3555



Tech Info Library

Macintosh II: Using It As A Server Without A Monitor

Revised: 7/2/92
Security: Everyone

Macintosh II: Using It As A Server Without A Monitor

=====

Article Created: 31 January 1989
Article Last Reviewed: 29 June 1992
Article Last Updated:

TOPIC -----

Can I use a Macintosh II without a monitor if I'm using it as an AppleShare file server?

DISCUSSION -----

You can use a Macintosh II without a monitor as an AppleShare file server only under AppleShare v2.0 or later. Earlier versions of AppleShare do not support such a configuration.

You could also install Farallon's Timbuktu on the file server and operate it remotely from another Macintosh.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3556



Tech Info Library

Print Servers Provide Multiple Users, Not Necessarily Speed

Revised: 5/31/89
Security: Everyone

Print Servers Provide Multiple Users, Not Necessarily Speed

=====

This article last reviewed: 31 January 1989

The main reason for using the AppleShare Print Server is to allow many users to print documents at the same time. A print server reduces the waiting time by allowing several users to send documents to be printed simultaneously. When used with a LaserWriter, Postscript code is sent to the print server and then to the printer. The printer then processes this Postscript code to produce bit-map graphics at 300 dpi.

When printing to an AppleTalk ImageWriter, the computer creates and sends the bit-map image to the printer. Creating this bit map takes processing time from the computer. Because the computer must spend time creating the bit map, you will not see a major difference in the amount of time it takes to send the data to the printer or the spooler. When printing directly to a printer, the print driver runs at an even speed with the printer, due to data transmission speeds.

When connected over AppleTalk, the network runs faster than 19,000 or 9600 baud, but the driver has not been optimized for speed. It keeps up with the speed of the printer. Some times, the computer is waiting for the printer to finish printing a line; other times, the printer is waiting for the computer to send and process the line. This is why the 32K option card is not recommended for Macintosh users.

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Tech Info Library Article Number:3557



Tech Info Library

Macintosh Scrapbook And 24-Bit Images

Revised: 6/16/92
Security: Everyone

Macintosh Scrapbook And 24-Bit Images

=====
Article Created: 9 February 1989
Article Last Reviewed: 28 May 1992
Article Last Updated:

TOPIC -----

Can I paste a 24-bit graphic into the Scrapbook from an application without losing any of the detail or color depth?

DISCUSSION -----

The Macintosh Scrapbook can handle 24-bit images. The application from which the image is being copied must support copy and paste commands for the scrapbook. The application must place the image in a PICT2 file format, which includes parameters for describing the image (8-bit, 24-bit, chunky, planar, and so on).

A problem occurs, however, when displaying a 24-bit image on an 8-bit video card and/or in an 8-bit graphics program. The image colors will be incorrect, because they are set for 24 bits, but the image will continue to be stored as a 24-bit image. For example, one possible outcome of a 24-bit RasterOps image paste to 8-bit Pixel Paint is a blue image. This is because three 8-bit red, green, and blue transfers are sent to the video card. The last image transfer is blue, so a Macintosh II video card will only show the blue portion of the image.

The image also may not display correctly when pasting to different 24-bit displays, because the implementation of 24-bit color differs from video card to video card.

Copyright 1989, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3558



Tech Info Library

25-Pin SCSI Terminator: How To Build

Revised: 4/11/91
Security: Everyone

25-Pin SCSI Terminator: How To Build

=====

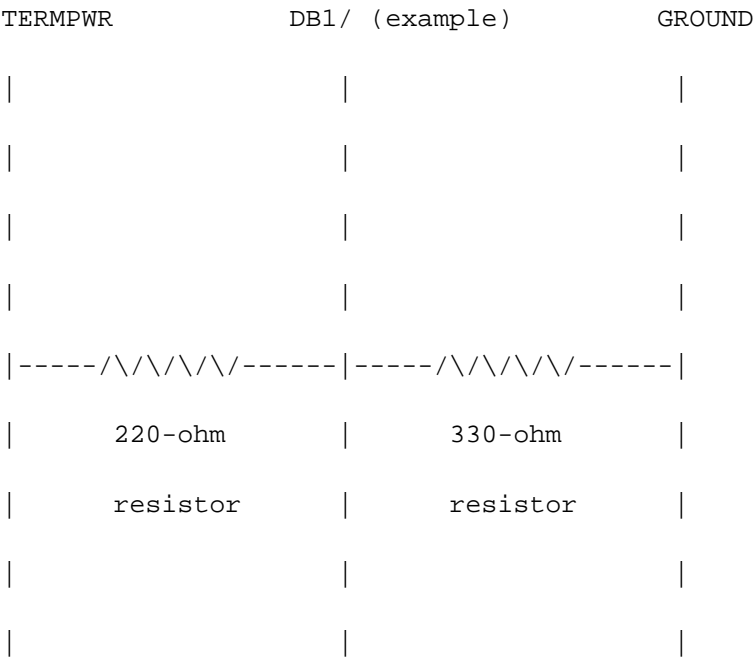
This article last reviewed: 31 January 1989

Here is how you can make a 25-pin terminator (a rarely-needed commodity).
Pinouts for the SCSI port are as follows:

Pin No. -----	Signal Name -----	Description -----
1	REQ/	Request
2	MSG/	Message
3	I/O/	Input/Output
4	RESET/	Reset
5	ACK/	Acknowledge
6	BSY/	Busy
7	GROUND	Signal Ground
8	DB0/	Data Bit 0
9	GROUND	Signal Ground
10	DB3/	Data Bit 3
11	DB5/	Data Bit 5
12	DB6/	Data Bit 6
13	DB7/	Data Bit 7

14	GROUND	Signal Ground
15	C/D/	Control/Data
16	GROUND	Signal Ground
17	ATN/	Attention
18	GROUND	Signal Ground
19	SEL/	Select
20	DBP/	Data Parity
21	DB1/	Data Bit 1
22	DB2/	Data Bit 2
23	DB4/	Data Bit 4
24	GROUND	Signal Ground
25	TERMPWR	+5 volts

Inside the Apple SCSI Terminator each signal line (ends with "/") is connected to TERMPWR through a 220-ohm resistor and is also connected to GROUND through a 330-ohm resistor.



The obvious tradeoff here is cost versus time to build this terminator. It would seem that size is also an issue; this is a lot of resistors and solder

joints to deal with.

However, if someone needs it, and where appearance is not an issue and energy is in abundance, this is a solution.

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Tech Info Library Article Number:3559



Tech Info Library

Q And A: File Server Applications And Local Applications

Revised: 10/4/89
Security: Everyone

Q And A: File Server Applications And Local Applications

=====

This article last reviewed: 1 February 1989

Here are some questions and answers about using applications (MacWrite is the example here) over a LocalTalk network with an AppleShare file server, versus having individual copies of the application on the users' hard disks.

Q) If a user double-clicks on one of the MacWrite documents on the server, which application will be opened: the MacWrite on the server or the MacWrite on the user's hard disk?

A) The Macintosh OS always chooses an application residing on a local disk over a server-based application. Given the choice between an application on a local hard disk and one on a floppy drive, it will choose the hard disk.

Q) What happens if more than one user double clicks on the same MacWrite document at the same time?

A) Only one user will be able to access the file. The first one to try to open the file -- even if that primacy is only a matter of nanoseconds -- will be victorious. All successive attempts will result in a "file locked or in use" error message.

Q) Should you launch the application on your hard disk, then open the document on the server, or should you use the program on the server when you work with a document on the server?

A) Apple recommends that unless the application is designed for multilaunch use, have local copies of the application for each user and keep documents on the server.

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Tech Info Library Article Number:3560



Tech Info Library

Apple IIGS: Use FakeMouse To Move Cursor

Revised: 3/23/89
Security: Everyone

Apple IIGS: Use FakeMouse To Move Cursor

=====

This article last reviewed: 1 February 1989

If you are programming for the Apple IIGS, and want to write a demo program that moves the mouse automatically across the screen, you have probably discovered that when you can use the POSMOUSE command to move the cursor position, but that when it moves to the new position it disappears. The only way to get the cursor to reappear is to move the mouse.

Rather than using PosMouse, you should use FakeMouse as described on pages 7-34 of the Apple IIGS ToolBox Reference Manual, Volume 1 (ISBN #0-201-17746-3).

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3561



Tech Info Library

AppleShare PC: PostScript Print Speed

Revised: 5/24/89
Security: Everyone

AppleShare PC: PostScript Print Speed

=====

This article last reviewed: 15 December 1988

If you are using AppleShare PC and find that your LaserWriter takes about three to four minutes to print a single page from WordPerfect, your problem may be that WordPerfect and the DOS "Copy" command are not immediately sending an "end-of-document" code to the LaserWriter.

Without this "end-of-document" code, the LaserWriter has no way of knowing it has received all of the output from the computer. This causes the LaserWriter to wait until it times out. When it times out, it assumes the file has been completely received and prints it. This timeout is generally two to three minutes, but can be changed with a PostScript program.

AppleShare PC has an option in the Chooser that allows you to set the number of seconds the LPT port must be inactive after a print job before an "end-of-document" code is automatically sent.

You also can send an "end-of-document" code to the LaserWriter immediately after printing by typing Ctrl-Alt-F10.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3562



Tech Info Library

Ported MS-DOS Files: How To Set TYPE And CREATOR

Revised: 3/23/89
Security: Everyone

Ported MS-DOS Files: How To Set TYPE And CREATOR

=====

This article last reviewed: 15 December 1988

Some users have had trouble with Apple File Exchange when using AppleShare PC and a PC drive to translate a file. During an ordinary text translation from the PC drive, they can translate a file across and generate a Macintosh file with a type of TEXT and a creator of MDOS, which can be seen by an ordinary (non-shift-Option) open file dialog by Microsoft Word (or a similar application).

However, if a PC on an AppleShare network puts the file on a server, and they pull it down with a Macintosh and try the translation, they get a file of type crlf and a creator of MDOS, which remains unseen to an ordinary open file dialog in Microsoft Word. This makes it impossible to translate it to type TEXT.

In the Special menu of the AppleShare PC DA, there is an option called Extension Mapping. (Early documentation of AppleShare PC had this option incorrectly listed in the Assignments menu.) This option automatically sets the Macintosh desktop attributes, TYPE and CREATOR of an MS-DOS file, based on its three-letter name suffix. For example, files created with a .DOC suffix from Microsoft Word on a DOS system can automatically appear as a Macintosh Microsoft Word icon on AppleShare; or .WKS files from Lotus 1-2-3 can appear as Excel icons. These files, though created directly from an MS-DOS application, can be opened directly from Macintosh applications.

If you are porting ASCII text between the two environments, be sure that DOS-Text is not selected in the Extension Mapping for .TXT files. This appends a Carriage Return and Line Feed (crlf) on the end of each line and gives it a type of crlf and a creator of MDOS (sound familiar?). Macintosh word processing applications expect to see a type of TEXT for ASCII files.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3563



Tech Info Library

AppleShare PC DA Cannot Be Loaded Into Expanded Memory

Revised: 5/24/89
Security: Everyone

AppleShare PC DA Cannot Be Loaded Into Expanded Memory

=====

This article last reviewed: 10 January 1989

The AppleShare PC Desk Accessory cannot be installed into expanded memory. However, if you have expanded memory, and if the Desk Accessory is memory-resident, the window buffers make use of expanded memory.

If you are operating in text mode, then the approximately 2K large window buffer might be placed into that expanded memory space. If you are in graphics mode, it might be as large as 16K.

If memory is at a premium, you may not want to make the program memory-resident. You can then use the Desk Accessory by running the program at the DOS prompt.

NOTE: AppleShare PC 1.2 will not run under DOS 4.0 or 4.0.1; however, the driver WILL work, enabling you to continue to use the printer services.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3564



Tech Info Library

LaserWriter: How To Check For Laser Prep Dictionary

Revised: 7/26/89
Security: Everyone

LaserWriter: How To Check For Laser Prep Dictionary

=====

This article last reviewed: 12 July 1989

If you want to query the LaserWriter to see if the "Laser Prep" information exists (if, for instance, you are using the LaserPrep dictionary) before sending a PostScript file, use the following procedure.

The Laser Prep dictionary, when in the LaserWriter, is called "md". The following PostScript command pushes the Boolean "false" onto the stack if the dictionary is not found. If the dictionary is found, the dictionary object and the Boolean "true" is pushed onto the stack:

```
/md where
```

The following command immediately returns a "1" if the Laser Prep dictionary is present and a "0" if it is not:

```
/md where{/md get /av get cvi 68 eq{(1)}{(2)}ifelse}{(0)}ifelse = flush
```

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3565



Tech Info Library

Star Micronics, Inc.

Revised: 4/4/97
Security: Everyone

Star Micronics, Inc.

=====

Article Created: 23 March 1989
Article Reviewed/Updated: 4 April 1997

Star Micronics, Inc.

420 Lexington
New York, NY 10170

212-986-6770 (East Coast Office)

Fax: 212-661-5838

Company Profile:
Hardware, specializing in printers and printer accessories.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3570



Tech Info Library

Summagraphic, Inc.

Revised: 4/4/97
Security: Everyone

Summagraphic, Inc.

=====

Article Created: 23 March 1989
Article Reviewed/Updated: 4 April 1997

Summagraphic Inc.

60 Silvermine Rd.
Seymour, CT 06483

203-881-5400

800-729-7866

Fax: 203-881-5367

Company Profile:
Hardware, specializing in ADB digitizing tablets.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3571



Tech Info Library

Fifth Generation Systems, Inc.

Revised: 4/4/97
Security: Everyone

Fifth Generation Systems, Inc.

=====

Article Created: 03/23/89
Article Reviewed: 07/08/93
Article Updated: 04/04/97

Fifth Generation Systems, Inc.

10049 N. Reiger Rd.
Baton Rouge, LA 70809

800-873-4384 (Sales) (Ivan Packer)
800-766-7283 (Tech. Support)

504-291-7221 (Main)
504-291-7283 (Tech. Support)

504-295-3268 (General) Fax
504-291-5453 (Sales) Fax

Company Profile:
Hardware and software, specializing in Macintosh utilities, desk accessories,
and sharing devices.

Article Change History: 07/08/93 Address Information Corrected

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3572



Tech Info Library

X-10 (USA) Inc.

Revised: 7/21/93
Security: Everyone

X-10 (USA) Inc.

=====

Article Created: 23 March 1989
Article Reviewed/Updated: 21 July 1993

X-10 (USA) Inc.

91 Rockman Rd.
P.O. Box 420
Closter, NJ 07624-0420

201-784-9700

Fax: 201-784-9464

Company Profile:
Hardware, specializing in interface boxes.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3573



Tech Info Library

TouchStone Software Corp.

Revised: 7/20/93
Security: Everyone

TouchStone Software Corp.

=====

Article Created: 23 March 1989
Article Reviewed/Updated: 20 July 1993

TouchStone Software Corp.

2130 Main St.
Suite 250
Huntington Beach, CA 92648

714-969-7746

800-531-0450 (Outside CA)

Fax: 714-960-1886

Company Profile:
Software, specializing in diagnostic software.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3574



Tech Info Library

The Voyager Company (2/96)

Revised: 2/22/96
Security: Everyone

The Voyager Company (2/96)

=====

Article Created: 23 March 1989
Article Reviewed/Updated: 22 February 1996

The Voyager Company

578 Broadway, Suite 406 (Sales)
New York, NY 10012

Sales: (212) 431-5199

Tech Support: (212) 219-2522

Customer Service: (800) 446-2001

212-431-5799 (fax)

Internet Information

=====

WorldWide Web -- <http://www.voyagerco.com>
Technical Support e-mail -- techsupport@voyagerco.com

Company Profile:

Develops, markets and sells development toolkits and titles of interactive CD-ROM, VideoDisc and interactive books. Products include combinations of HyperCard stacks and original software, Audio CDs, CD-ROMs, and VideoDiscs.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:3575



Tech Info Library

Control Unit For Multimedia Presentations

Revised: 3/23/89
Security: Everyone

Control Unit For Multimedia Presentations

=====

This article last reviewed: 5 January 1989

X-10 (USA) Inc. sells control unit for multimedia presentations. The X-10 Powerhouse controls lighting, audio equipment, VCRs, laser discs, slide projectors, and other equipment. The X-10 Powerhouse is a power line carrier and needs the CP290A Home Control unit to interface to the Macintosh.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3580



Tech Info Library

AppleScan PICT Format

Revised: 5/24/89
Security: Everyone

AppleScan PICT Format

=====

This article last reviewed: 5 January 1989

This article describes PICT file format as saved by AppleScan. AppleScan uses the standard PICT file format, in which the first 512 bytes carry application-specific header information. Depending on the application and how it treats this header information, some applications may have problems reading or interpreting the file information. The rest of this article contains a Pascal Type declaration and descriptions of each parameter.

Pascal Type Declaration

The following Pascal TYPE declarations define the format of the first block (block #0) of AppleScan PICT files (creator "APSC" and file type "PICT"). Subsequent blocks contain the actual version 2 PICT, as specified in "Inside Macintosh Volume V, Color QuickDraw."

```
str17 = string[17];
```

```
cnbs = RECORD
```

```
contrast: signedByte
```

```
brightness: signedByte
```

```
hpat = array [1..16] of signedByte;
```

```
SaveScanInfo = RECORD
```

```
Version: INTEGER
```

```
Reduction: INTEGER
```

```
Composition: INTEGER
```

```
Threshold: INTEGER
```

```
ContBriteName: str17
```

```
ContBrite: cnbs
```

```
AutoAdjust: BOOLEAN
```

```
HalftoneName: str17
```

```
HalftonePattern: hPat
```

```
Graymap: INTEGER
```

```
PictHeader = RECORD
StdHeader: PACKED ARRAY [1..230] OF SignedByte;
SaveScanInfo: SaveScanInfo; (* 66 bytes *)
Filler: PACKED ARRAY [1..216] OF SignedByte;
```

Parameter Descriptions

The StdHeader and fFiller fields are all zeroes.

The Version field is the AppleScan version number (for example, 102 = 1.0.2).

The Reduction field is the reduction percentage.

The Composition field is the composition encoded as follows:

```
0 = Line Art
1 = Halftone
2 = Grayscale
```

The Threshold field is the threshold value.

The ContBriteName field is the name of the Contrast & Brightness setting.

The ContBrite field contains the values of the Contrast and Brightness settings.

The AutoAdjust field is the Automatic Adjustment setting.

The HalftoneName field is the name of the Halftone setting.

The HalftonePattern field contains the values of the halftone pattern matrix, stored in row-and-column order (for example):

```
0  1  2  3
4  5  6  7      is stored as 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15).
8  9 10 11
12 13 14 15
```

The Graymap field is the Graymap setting encoded as follows:

```
0 = Light Detail
1 = Normal Detail
2 = Dark Detail
```

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Tech Info Library Article Number:3581



Tech Info Library

HyperCard: Laser Disk XCMD Drivers Available From APDA

Revised: 6/24/90
Security: Everyone

HyperCard: Laser Disk XCMD Drivers Available From APDA

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This article last reviewed: 30 June 1989

The Video disk drivers found on the "Goodies #3" disk are part of the "HyperCard Developer's Toolkit v.1.0", available through APDA, and are not in the public domain.

The HyperCard VideoDisc Toolkit from APDA contains XCMDs that support the following laser disc players and players compatible with them:

Pioneer 4200	Sony 1500	Hitachi 9550
Pioneer 6000A	Sony 2000	
Pioneer 6010A		

Further, the Voyager Company has a product called Voyager VideoStack that may be helpful. For more details, search the Tech Info Library for "Voyager".

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Tech Info Library Article Number:3582



Tech Info Library

Apple IIC Plus: Changing Clock Speed

Revised: 3/23/89
Security: Everyone

Apple IIC Plus: Changing Clock Speed

=====

This article last reviewed: 6 January 1989

Early versions of Apple IIC Plus Owner's Guide (page 19) explain the sequence for changing the Apple IIC Plus from 4 MHz to 1 MHz. In the following examples, the COMMAND key is the same as the OPEN-APPLE key. The keystroke sequence is:

```
(press and hold) ESCAPE-COMMAND-CONTROL
(press and release) RESET
(when 'Normal' appears, release) ESCAPE
(release) COMMAND-CONTROL
```

However, the early manuals do not document the method of returning to 4 MHz. The keystroke sequence is:

```
(press and hold) COMMAND-CONTROL
(press and release) RESET
(release) COMMAND-CONTROL
```

Both of the above sequences do a warm boot of the computer. The difference is that the ESCAPE key in the first sequence tells the Apple IIC Plus to use the 1 MHz (Normal) speed.

Here are additional techniques for changing the speed when you start the computer:

Entering the 1 MHz mode at Startup

Powering on with the Escape key held down places the Apple IIC Plus in Normal mode (1 MHz). The word "Normal" appears in the middle of the second line of a screen full of reverse "@" and checkerboard cursors. Pay close attention to the screen: it clears quickly and the "Apple IIC +" screen appears.

To enter the 4 MHz mode at Startup

Powering on with no keys pressed places the Apple IIc Plus in the faster mode.

One anomaly can occur during the keystroke process. In Applesoft, the Escape key toggles between cursor movement mode and text entry mode. The use of the Escape key in the above key sequences can have the side effect of toggling the cursor movement/text entry modes. If the cursor has the "+" sign in the center, you are in cursor movement mode. To return to text entry mode, press the Escape key (actually, any key) once.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3589



Tech Info Library

Apple Macintosh Portrait Display: Specifications (Discontinued)

Revised: 6/6/94
Security: Everyone

Apple Macintosh Portrait Display: Specifications (Discontinued)

=====

PICTURE TUBE

- 15-inch diagonal, square, flat screen
- Phosphor EIA Type P4 (white)
- High-contrast antiglare surface

SCREEN RESOLUTION

- 640 pixels horizontal by 870 pixels vertical
- 80 dots-per-inch

USER CONTROLS

- Power switch
- Brightness
- Contrast

ACTIVE VIDEO DISPLAY AREA

- 8 inches horizontal by 10.87 inches vertical
(20.32 cm horizontal by 27.6 cm vertical)

INPUT SIGNAL

- Video: analog, RS-343 standard
- Sync: separate sync, negative-going, TTL

RASTER RATES

- Vertical: 75 kilohertz
- Horizontal: 68.85 kilohertz

ELECTRICAL REQUIREMENTS

- Operating range: 90 to 270 volts AC, self-configuring
- Power frequency: 47 to 63 Hertz
- 75 watts maximum

SIZE AND WEIGHT

- Weight: 35 lbs. (16 kg)
- Height: 13.1 inches (33.2 cm)
- Width : 11.5 inches (29.2 cm)

- Depth : 14.9 inches (37.9 cm)

ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 degrees F to 95 degrees F (10 degrees C to 35 degrees C)
- Operating humidity: 90% maximum, noncondensing
- Operating altitude: 10,000 ft. (3,048 m) maximum

Copyright 1989, Apple Computer, Inc.

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Tech Info Library Article Number:3593



Tech Info Library

Apple Macintosh Portrait Display:Description (Discontinued)

Revised: 6/6/94
Security: Everyone

Apple Macintosh Portrait Display:Description (Discontinued)

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The Apple Macintosh Portrait Display is a high-resolution, 15-inch, monochrome monitor for the Apple Macintosh II personal computer family. It's ideal for work with desktop publishing, word processing, and general productivity applications because it can display one full page of text and graphics. The Portrait Display shows a complete page of information as it will appear in print. This makes it easy to preview, edit, and add text or graphics and minimizes scrolling.

Users of the Portrait Display will find that word processing and page layout will be more accurate and much more efficient.

The Apple Macintosh Portrait Display uses a flatter screen and higher refresh rate than many other displays, which minimize eyestrain and ensure that the image on the screen is sharp and focused.

The Portrait Display may be configured with the Macintosh II, Macintosh IIX, and Macintosh IICx computers. The Portrait Display uses the Macintosh II Portrait Display Video Card. This card is specific to the Portrait Display.

The Macintosh Portrait Display introduces Apple Desktop Bus connectors in the monitor. These three ADB connections allow a cable to be attached to a remote Macintosh main unit and to the back of the Portrait Display while providing connection points for the mouse and keyboard ADB cables.

Copyright 1989, Apple Computer, Inc.

Copyright 1993-1994 Apple Computer, Inc.

Tech Info Library Article Number:3594



Tech Info Library

Apple II Video Overlay Card: Connectors (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Connectors (11/96)

Article Created: 03 June 1988
Article Reviewed/Updated: 15 November 1996

TOPIC -----

The Apple II Video Overlay card can receive video signals from any number of sources: VCR, Video camera, Video disc player, even cable television. Because there are numerous connectors associated with these video sources, it is necessary to clarify the connection schemes as they relate to the Apple II Video Overlay Card.

DISCUSSION -----

Connection Schemes
=====

RGB Connections

Any RGB monitor must connected to the DB-15 connector on the card. The AppleColor RGB Monitor connects directly with the DB-15 cable that ships with the monitor.

If you are using another RGB monitor, you must build the correct cable. The Apple II Video Overlay Card DB-15 connector has the same pinout as the AppleColor RGB Monitor. For more information on this reference Tech Info Library article "AppleColor RGB Monitor input connector: Pinouts". It is a simple matter to construct the rest of the cable, using the pinout supplied with the third-party monitor.

External Video Source Connections

To connect external video sources to the Apple II Video Overlay Card, at least one end of the cable must have an RCA phono plug. This end will connect to the overlay card. Normally, consumer electronics video sources will have an RCA connector for direct video output. To ensure top quality video reproduction, use

gold-plated RCA connectors.

BNC-Style Connections

It is normal for some high-end professional video equipment to have BNC-style connectors for the video output. If this is the case, an adapter must be used to convert the BNC connector to RCA phono type for connection to the card. These are readily available at most electronics stores.

RF Connections (also known as an "F" connector)

If your video equipment uses an RF cable (also known as an "F" connector), it cannot be directly connected to the Apple II Video Overlay Card. You must connect this cable to a VCR first, then connect the VCR to the overlay card, using an RCA phono type cable.

S-VHS Information

It is not possible to feed an S-VHS (Super VHS) signal into the overlay card. If your S-VHS equipment has RCA phono jacks, cables can be connected from these jacks to the card, but the overlays resulting from this connection will have the resolution of standard VHS, not S-VHS.

Article Change History:

15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-96, Apple Computer, Inc.

Tech Info Library Article Number:3595



Tech Info Library

Apple II Video Overlay Card: Product Description (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Product Description (11/96)

Article Created: 03 April 1989
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Below is a product description of the Apple II Video Overlay Card composite video output.

DISCUSSION -----

The input must meet RS-170A and external sync must be selected.

Parameter	Minimum	Typical	Maximum	Unit
-----	-----	-----	-----	-----
Sync Amplitude	245	285	324	mV
	34	40	46	IRE
Horiz. Sync Width	4.5	4.7	4.9	uSec
Vertical Sync Pulses		6/6/6		
Equalizer Width	2.3	2.5	2.7	uSec
Vertical Pulse Width	26.9	27.1	27.3	uSec
Front Porch Width	1.3	1.6	1.9	uSec
Horiz Blanking Width	10.7	10.9	11.1	uSec
Vertical Blanking	19	20	21	Lines
Burst Amplitude	245	285	324	mV
	34	40	46	IRE
Number of Burst Cycles	8	9	10	cycles

Breezway	.4	.6	.8	uSec
SC/H Phase	-40	0	40	degrees
SC Frequency Error	-5	0	5	Hz

Environment

Operating Temperature	10C to 40C (50F to 104F)
Storage Temperature	-40C to 47C (-40F to 116.6F)
Relative Humidity	20% to 95% (noncondensing)
Altitude	0 to 10,000 ft. (0 to 3048 meters)

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:3596



Tech Info Library

Apple II Video Overlay Card: Using Key Colors (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Using Key Colors (11/96)

=====

Article Created: 03 April 89
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article discusses how to use the Key Color selection of the Video Overlay Card.

DISCUSSION -----

Creating an overlay with the Apple II Video Overlay Card requires selection of a control color, called Key Color.

The VideoMix software treats the Key Color differently from the other colors. All colors not designated as the Key Color are treated as a group and are called non-Key colors.

For example, if the Key Color is Black, the video input signal will show through only where black is displayed on the screen. Where any other color is shown, the video will not show through and those areas will be showing the computer generated graphic. This would be the display, assuming VideoMix is set for 100% Key and 0% non-Key. By moving the sliders within VideoMix, these proportions can be changed to suit the user.

There are two methods for selecting the Key Color, select from Screen, and select from the color palette.

Selecting from the color palette allows selection of the Key Color from a palette of sixteen different colors. Use the mouse (Apple IIGS), or the arrow keys (Apple IIe), to select a color rectangle from the palette.

The other method is to use the option Select From Screen. An "X" appears in the box, and a hand with a pointing finger replaces the arrow cursor on the screen. With the hand cursor in the computer graphics area of the screen, click on the color of your choice. This becomes the Key Color.

Apple IIGS Note

The Apple IIGS can display graphics in one of two modes: 320 mode or 640 mode. In 320 mode, the computer can display sixteen pure colors. In 640 mode, it can display only two true colors: black and white. All other colors are blended colors formed by a process known as dithering. Dithered colors are formed by displaying two colors in adjacent pixels. Because the pixels are so small and close together, your eye perceives them as a single color. Light blue, for example, is formed by adjacent blue and white pixels.

When a dithered color is picked, the Key Color is the color of the pixel you happened to click on. If you picked the light blue color, the key color could be either blue or white.

Using dithered colors for your Key Color can produce some interesting, and sometimes unexpected, translucence effects in your overlay. These effects, while attractive, may not be completely reproducible. To avoid this, it would better to have your computer in 320 mode when making overlays. If you wish to use 640 mode, it is best to use black or white as your Key Color.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3598



Tech Info Library

Apple II Video Overlay Card: Configurations (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Configurations (11/96)

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Article Created: 03 April 89
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Listed below are several possible configurations using the Video Overlay Card.

DISCUSSION -----

Depending on how sophisticated a user wishes to be, and what the user wishes to accomplish, there are numerous possibilities for connecting monitors and other video equipment, to the Apple II Video Overlay Card. A setup could be as simple as a VCR, an Apple IIGS, and a single monitor; or as complicated as a videodisc player with a composite monitor, an Apple IIGS with RGB and a composite monitor, and a VCR with a composite monitor.

Typical Configuration

A typical configuration might be a VCR or video camera, for a video source, an Apple IIe (or Apple IIGS) with the Overlay card and VideoMix software installed, and a RGB monitor. This configuration would allow creation of overlays for direct viewing only. The addition of a second VCR would permit recording of the overlays created. If a composite monitor were connected to the output of the Overlay Card, the picture displayed there would be representative of what is being recorded on the VCR.

High-end Configuration

A high-end configuration might include the connection of an interactive video source, which would then display selected video sequences, as directed by the computer, while the program would automatically provide the proper window for the resulting video input. This setup would require the connection of the device control cable from the external device to the serial port on the computer.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3599



Tech Info Library

Apple II Video Overlay Card: Features (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Features (11/96)

=====

Article Created: 04 March 1996
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article discusses the features of the Apple II Video Overlay Card.

DISCUSSION -----

Genlock circuitry

-
- Synchronizes the Apple II timing to external video timing.
 - Allows a user to superimpose Apple II graphics on top of an external video signal for titling or annotating video material.

RGB and Composite Outputs

Allows a user to simultaneously view overlays on an AppleColor Composite or RGB monitor while recording the overlay to a VCR.

Apple IIGS Graphics Chip Set

-
- Allows the video overlay card to display standard graphics when not producing overlays.
 - Improves composite video output by re-generating the video output signal from the computer.
 - Broadcast-quality video output.
 - Allows a user to use the overlay card in a professional broadcast environment (no degradation of video quality when passed through the overlay card).

VideoMix Software

Allows

- software control of the overlay card's functions.
- choice of key color (color which is transparent to the video signal), set the video/graphic mix, and adjust the color/tint of the RGB video.
- Apple IIe and Apple IIGS compatibility
- use of the overlay card with existing hardware and the extensive library of Apple II software.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3600



Tech Info Library

Apple II Video Overlay Card: Tips (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Tips (11/96)

Article Created: 03 April 89
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Here are some helpful tips and hints for using the Apple II Video Overlay card.

DISCUSSION -----

As you plan your video presentation, think about how the overlay will enhance your presentation. Do you want to include:

- Opening title and closing credits?
- Highlight information presented in the video?
- Dazzle the audience with special effects?

Planning For Computer Graphics

Try to determine where the computer graphics would be useful only where appropriate. You may find yourself overusing computer graphics. Consider whether you should highlight your video with computer graphics, narration, or a combination. Your overlays will be more effective if you use them judiciously.

Decide on a workable design for your graphics, and use it consistently throughout your presentation. For example, always use the same font for the text, the same colors for the graphic elements, such as line and boxes, and the same kind of special effects. Consistent use of computer graphics will make your presentation seem more unified and easier to follow.

Use high-quality video equipment and software that allows high resolution graphics. Clean the heads on your VCR if you haven't cleaned them lately. The better the video equipment and computer images, the better your overlays will look.

When shooting a video for an overlay, try to anticipate where your graphics will

fit into the shot and leave enough space for them. For example, if you plan to superimpose someone's name below a close-up of their face, leave enough room in the lower third of the screen. Treat the graphics as an integral part of the composition, not as an afterthought.

Designing For The Screen

Keep it simple, don't try to cram too much into a single overlay. If your video has lots of motion, use simple graphics. If your graphics are complex, consider using a still scene for the video portion.

Limit the information in each overlay to one or two points. Presenting too many facts in one overlay will not help the viewers remember them. Television viewers may not be able to flip back to review something they missed.

Use readable fonts for text. Bold, simple fonts seem crisp and are easily read on the screen. The color of your text should contrast with the video colors. If you plan to record the overlay, make the text at least 16 point.

Special Considerations for Composite Video

Avoid using computer graphics that are extremely bright. If the colors in your graphics are too intense, especially if they are hot colors such as bright red, the graphics may appear to vibrate along the edges. You can correct the problem by using a less intense color, like off-white instead of white. You can also reduce the intensity of a color by allowing some of the video image to blend in, using VideoMix.

If you are recording your overlays, view them on a composite monitor or a television.

Colors displayed on an RGB monitor are more stable than colors displayed on a composite monitor as they are less likely to shimmer or bleed into another color. If you are recording your overlays on tape, a composite monitor or a television will show you a better representation of the overlay's appearance during playback. By viewing your overlays this way, without an RGB monitor, you will be better able to see, and correct, problems before they are recorded on the videotape.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3601



Tech Info Library

Apple II Video Overlay Card: Product Description (11/96)

Revised: 11/21/96
Security: Everyone

Apple II Video Overlay Card: Product Description (11/96)

Article Created: 03 April 89
Article Reviewed/Updated: 18 November 1996

TOPIC -----

Below is a description of the Apple II Video Overlay Card. This product has been discontinued and is no longer available from Apple.

DISCUSSION -----

The Apple II Video Overlay Card product, for the Apple IIe and Apple IIGS, includes an interface card and VideoMix software.

When in operation, the overlay appears as a computer image on top of a video image. The video image can be from any external video source: video tape, video disc, cable television, or video camera and the image can be shown on either a composite or RGB monitor. The NTSC signal output from the overlay card is of broadcast quality and can be recorded on a VCR.

The Apple II Video Overlay Card brings previously expensive genlock capabilities to the Apple II family of computers, and creates new possibilities for learning and creativity.

The overlay card has a complete, though modified, Apple IIGS graphics subsystem (Mega II, VGC, and supporting circuitry), which provides genlock and overlay capabilities, as well as improved composite video output. With a proper NTSC signal presented to the card, an FCC-legal output is supplied from the card, therefore the card is usable in professional broadcast environments.

After genlocking to the incoming signal, the overlay card determines which pixels will be video and which will be graphics, or if there will be combinations. These combinations are selected by way of the VideoMix software, which sets up the card for the desired mix of graphics and video. The user chooses a key color (the color that is transparent to the incoming video and is treated separately from the other colors), and what the video/graphic mix will be. VideoMix also allows the user to adjust the tint and color of the RGB video,

as on a color television. The user can also choose a color from the screen to be the key color.

Because the overlay card is a completely independent subsystem, it functions with any existing Apple II painting, drawing, and animation software -- these being the more relevant products conducive to creating overlays. The overlay card works with virtually all Apple II software.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1988-96, Apple Computer, Inc.

Tech Info Library Article Number:3602



Tech Info Library

32-Bit QuickDraw Information (12/95)

Revised: 12/6/95
Security: Everyone

32-Bit QuickDraw Information (12/95)

Article Created: 18 April 1989
Article Reviewed/Updated: 6 December 1995

TOPIC -----

This article defines 32-Bit QuickDraw, its components, and hardware requirements.

DISCUSSION -----

32-Bit QuickDraw is a collection of extensions to Color QuickDraw. It is also called "Full Color QuickDraw (FCQD)," but not "24-Bit QuickDraw." 32-Bit QuickDraw supports three modes.

- The first is the standard Color LookUp Table (CLUT) mode -- the method used by standard Color QuickDraw. This mode supports 1, 2, 4 and 8 bit colors.

The second and third modes use direct RGB values instead of CLUTs.

- The first of these two modes supports 16-bit direct color values (only the first 15 bits are significant).
- The second supports 32-bit direct color values (only the first 24 bits are significant).

The key features of 32-Bit QuickDraw include:

- Support for very large frame buffers
32-bit addressing of graphics devices
- Support for "Direct" Devices
Pixel values directly specify a color for "Direct" devices, so CLUTs are not used.
- Up to 16 million colors per pixel.

Color values contain up to 8 bits for each of the three RGB direct components, with 8 bits of padding, resulting in a maximum of 24 significant bits out of 32. The two direct RGB value frames supported by 32-Bit QuickDraw are these:

32-BIT DIRECT RGB VALUE FRAME: 00000000 RRRRRRRR GGGGGGGG BBBBBBBB

16-BIT DIRECT RGB VALUE FRAME: 0 RRRRRR GGGGG BBBB

- Extensions to the PICT file format
Support for up to 32 bits per pixel (up to 24 of which are significant)

Components for System 7 or later

32-Bit QuickDraw is integrated in System 7, and the 32-Bit QuickDraw INIT is no longer needed to get the benefits of 32-Bit QuickDraw. The System 7 Installer will delete the old 32-Bit QuickDraw INIT from your System Folder during installation.

Components for System 6.0.x

32-Bit QuickDraw files consist of the following and are found in the System Folder:

- General control panel, a version that fixes a desktop pattern editor bug.
- Monitors control panel, a version that recognizes direct devices and lets the user control them.
- 32-Bit QuickDraw INIT, a file containing the patches to Color QuickDraw and a version of the Slot and Palette Manager. This file is not an INIT. However, this file uses a startup-file mechanism included in Macintosh System Software, starting with version 6.0.3. This mechanism was created specifically for 32-Bit QuickDraw.
- LaserWriter 6.0 includes three files: LaserWriter, LaserPrep, and PrintMonitor. They support color PostScript, printing in gray scale, full 32-bit addressing, and double-byte PostScript (such as Kanji).
- LaserWriter 7.0 only has 2 files: LaserWriter and PrintMonitor.

Once you have put all these files into the System Folder, the computer must be restarted. Once 32-Bit QuickDraw is installed, the Finder presents a multi-colored icon for the 32-Bit QuickDraw file. The presence of this icon shows that 32-Bit QuickDraw is running.

NOTE: Those who want to print to a LaserWriter initialized with the LaserPrep file must update their systems to at least System Software v 6.0.3 and to the LaserWriter 6.0 resources. If your hardware does not support 32-Bit QuickDraw, you need not install the new Monitors, General, or 32-Bit QuickDraw files.

Hardware Requirements

To get the full benefits of 32-Bit QuickDraw, you must have a direct device video card. In other words, the video card must be able to accept direct color values, instead of receiving a color value that is an index number into a CLUT. Monitors that support 32-Bit QuickDraw are dictated by the available 32-Bit video cards.

However, for those who are not using a direct-device display, 32-bit QuickDraw lets software create 32-bit images off screen. This means that programs using 32-Bit QuickDraw to its full potential can actually save 32-bit images, regardless of what the actual hardware can display.

Software Compatibility

32-Bit QuickDraw does not add or eliminate any QuickDraw procedure or function calls. Applications that make standard Color QuickDraw calls should have no problems. However, applications that do any of the following things may have problems with 32-Bit QuickDraw:

- Draw directly to the screen
- Fail to put values in all of the necessary fields in the pixmap and newGDevice records
- Manually clone gDevice pixmaps
- Assume that a pixmap has a CLUT

Article Change History:

06 Dec 1995 - Updated with System 7 or later information.

24 Sep 1992 - Revised to expand on Kanji example, reviewed for accuracy.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:3605



Tech Info Library

AppleFAX Modem ROM Upgrade

Revised: 4/26/89
Security: Everyone

AppleFAX Modem ROM Upgrade

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This article last reviewed: 1 December 1988

Apple has revised the ROM on the AppleFAX Modem main logic board to correct two problems. First, the AppleFAX modem timeout (error -401) when sending a FAX to Pitney Bowes facsimile machine models 8210 and 9200. Second, the AppleFAX modem, when connected to certain phone environments, does not answer a ringing line. Effective immediately, Finished Goods and Service is shipping AppleFAX Modem main logic boards with the upgraded Revision 1.1 ROM. You can identify a card with the new ROM by looking at the revision letter (B) following the part number on the board.

UPGRADE PROGRAM

An upgrade program is available for one year to customers whose AppleFax Modems have serial numbers with the first four characters below F833. The serial number is located on the bottom of the AppleFax Modem.

Upgrade Reimbursement

To obtain Labor, Parts Credit, and Parts Margin reimbursement for the ROM upgrade, return the old ROM to Apple and record the ROM part number on the SRO form. In addition, record the repair extension authorization code 8G0001 in the Warranty Information section of the SRO.

All main logic boards returned to Apple for repair are automatically being upgraded with the new-revision ROM. When you receive a repaired AppleFAX Modem main logic board from Apple, you can be assured it has the latest revision ROM.

To upgrade your existing AppleFax Modem main logic board Service Stock inventory, order the replacement ROM through the Advanced Exchange Program and return the old ROM to Apple.

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Tech Info Library

Macintosh II Internal Disk Drive Appears Write Protected

Revised: 7/17/92
Security: Everyone

Macintosh II Internal Disk Drive Appears Write Protected

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Article Created: 26 April 1989
Article Last Reviewed: 17 July 1992
Article Last Updated:

Problem: The Macintosh II internal floppy drive appears to be write protected. If the drive is replaced and the top cover reinstalled, the same symptom reappears.

Cure: Test the system without the top cover installed. If the drive tests properly, check the the grounding tabs on the RFI shield near the drive. One of them may be bent inward, which pushes the write-protect switch on the mechanical assembly downward, causing the failure. Bend the tab back to its proper position and reinstall the top cover. Test the system to make sure the drive is functional.

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Tech Info Library Article Number:3610



Tech Info Library

Apple IIGS: Resetting The Control Panel And Logic Board Problems

Revised: 10/27/92
Security: Everyone

Apple IIGS: Resetting The Control Panel And Logic Board Problems

=====

Article Created: 1 May 1989

Article Change History

10/27/92 - REVISED

- To clarify the differences between the ROM 01 and ROM 03 CPUs.

TOPIC -----

Some Apple IIGS problems can appear to be caused by a faulty, main logic board. For example, if a user was to set both the foreground and text colours to black, no video would be apparant. Here's how to reset the video standards to verify the problem lies in software:

DISCUSSION -----

For a ROM 01 GS:

Power down for 10 seconds. Power up and hold control-open apple-esc for a few seconds and a menu with three choices will appear on the screen. Press the down arrow key once, then return (accesses the control panel). Next, press the down arrow key again and hit return (selects the "Display" control panel). Finally, hit the up arrow key and press the right arrow. This will reset the display standards.

For a ROM 03 GS:

Power down for 10 seconds. Power up and hold control-open apple-esc for a few seconds, and a menu with three choices will appear on the screen. Press the Return key (accesses the control panel). Next, press the down arrow key and hit return (selects the "Display" control panel). Finally, hit the up arrow key and press the right arrow. This resets a ROM 03 GS' display standards.

If, after resetting the Control Panel as indicated, the symptoms still

occur, contact your Apple reseller who can refer to the Apple IIGS Technical Procedures for further troubleshooting information.

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Tech Info Library Article Number:3612



Tech Info Library

AppleCAT: Macintosh IIX, Macintosh IICx, and Macintosh SE/30

Revised: 4/26/89
Security: Everyone

AppleCAT: Macintosh IIX, Macintosh IICx, and Macintosh SE/30

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This article last reviewed: 3 April 1989

NOTE: This article applies to SOME of but not ALL Macintosh 68030 systems.

On some 68030 systems, AppleCAT II/IIX version 2.3, AppleCAT IICx version 1.0, and AppleCAT SE/30 version 1.0 are indicating failure of all four DRAM SIMMs in bank B despite there being NO DRAM installed in bank B. This problem can occur on all Macintosh IICx units, and on Macintosh IIX or Macintosh SE/30 units that contain certain ROM (not DRAM) SIMMs. The ROM SIMM in question has the part number 630-4339 printed on the board itself.

If the AppleCAT diagnostic is used to test units with these ROM SIMMs, it will first indicate that all bank B DRAM should be replaced. If the diagnostic is continued, it will indicate that the logic board should be replaced. However, the logic board should NOT be replaced; the diagnostic has incorrectly assumed that bank B contains DRAM.

Proper operation of the Macintosh IIX, IICx and SE/30 can still be tested by using the appropriate MacTest diagnostic. It can also be tested by installing DRAM in bank B before using AppleCAT.

For complete information please contact your regional Technical Support center.

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Tech Info Library Article Number:3613



Tech Info Library

LaserWriter: Printer Ready But No Paper Pickup

Revised: 4/26/89
Security: Everyone

LaserWriter: Printer Ready But No Paper Pickup

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This article last reviewed: 7 April 1989

Problem: A LaserWriter powers on normally, the fuser comes on, main motor rotation occurs, and the green LED begins blinking. As soon as the printer is ready to generate a test print, the main motor turns on for approximately two seconds, all of the LEDs turn off, and no paper is picked up from the tray.

Cure: Replace the main motor and/or inspect the two pink wires going from the main motor to the DC Controller. These wires can be easily damaged or pinched against the chassis when the DC Power Supply and Main Motor Drive PCB is mounted. If no damage is found, then disconnect connector J503 and check for a resistance of approximately 265. If the resistance varies a great deal, then motor replacement will be necessary.

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Tech Info Library Article Number:3614



Tech Info Library

Modifying Apple File Exchange

Revised: 5/24/89
Security: Everyone

Modifying Apple File Exchange

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This article last reviewed: 13 March 1989

Occasionally, Apple receives requests from developers who want to modify Apple File Exchange code. Usually, these people want to support serial connections to non-standard devices. Unfortunately, it would not be practical to try modifying AFE.

However, if you're interested in writing translators for AFE, see APDA's "Apple File Exchange Technical Reference Package v.1.1". This package includes one 800K Macintosh disk and 184 pages of documentation. For details, search the Tech Info Library under "APDA".

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Tech Info Library Article Number:3618



Tech Info Library

Survivor Software, Ltd.

Revised: 4/4/97
Security: Everyone

Survivor Software, Ltd.

=====

Article Created: 18 February 1991
Article Reviewed/Updated: 4 April 1997

Survivor Software, Ltd.

11222 La Cienega Blvd.
Suite 450
Inglewood, CA 90304

310-410-9527
310-338-0155 (Tech. Support)

Fax: 310-338-1406

Company Profile:
Software, specializing in Macintosh applications.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3619



Tech Info Library

Walker, Richer, and Quinn, Inc. (12/95)

Revised: 12/13/95
Security: Everyone

Walker, Richer, and Quinn, Inc. (12/95)

=====

Article Created: 2 May 1989
Article Reviewed/Updated: 13 December 1995

Walker, Richer, and Quinn, Inc.

2815 Eastlake Ave. East
Seattle, WA 98102

206-324-0350

Fax: 206-726-1937

WWW: <http://www.wrq.com>

Company Profile:
Software, specializing in communication and file translation software.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:3621



Tech Info Library

LaserWriter Plus: No Print or Print Takes Long Period of Time

Revised: 5/2/89
Security: Everyone

LaserWriter Plus: No Print or Print Takes Long Period of Time

=====

This article last reviewed: 24 April 1989

Problem: LaserWriter Plus takes a long time to print out or does not print at all.

BEFORE YOU START: Familiarize yourself with the LaserWriter Technical Procedures. Be sure to follow proper ESD procedures.

Cure: Check to see if the upper half rear latch is broken. If it is, replace the upper half rear latch.

Discussion: If the upper unit rear latch is broken off, the gears do not mesh correctly, causing the LaserWriter Plus not to print.

If the problem still occurs, refer to the LaserWriter Technical Procedures troubleshooting section for more information.

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Tech Info Library Article Number:3622



Tech Info Library

Macintosh SE: Miscellaneous Problem/Cures

Revised: 5/2/89
Security: Everyone

Macintosh SE: Miscellaneous Problem/Cures

=====

This article last reviewed: 24 April 1989

BEFORE YOU START: Familiarize yourself with the Macintosh SE Technical Procedures. Be sure to follow proper ESD procedures.

Problem #1: Macintosh SE resets itself and gives ID=10 error. Also video and sound are distorted.

Cure #1: The Macintosh SE contained a 3rd party add-on card in the expansion slot. The card was removed and the Macintosh SE passed Macintosh SE diagnostics. The expansion slot on the Macintosh SE logic board was not working properly. Replace Macintosh SE main logic board and retest the system.

Problem #2: The Macintosh SE reboots by itself, this happens even when no applications are running and only the Finder is active. The rebooting occurs intermittently.

Cure #2: The Hard Disk may contain an old version of system software (4.0 or older). There may also be soft errors found when the hard drive is tested using HD Diagnostics. Remove system and finder from the drive. Back up the data of the hard drive. Then use HD diagnostics destructive test to destroy the formatting of the HDA and remove all of the soft errors. Reinitialize the HDA using the HD Setup program, install system software, and restore the data.

If the problems still occur, refer to the Macintosh SE Technical Procedures for more troubleshooting information.

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Tech Info Library Article Number:3624



Tech Info Library

AppleShare and Bad Master Directory Block Message

Revised: 5/4/89
Security: Everyone

AppleShare and "Bad Master Directory Block" Message

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This article last reviewed: 14 February 1989

If you are working on a server, and find that when you "trash" (dismount) the INTERNAL volume, you get a message that says "Volume is trashed Master Directory Block Bad". Although there may be no other immediate ill effect, ignoring a message of this nature is not a good idea. BACK UP the volume in question before proceeding.

After you have made a backup, shut the server down and run AppleShare Admin. The purpose here is to use AppleShare Admin to verify the volume. It is likely that it will also report some form of error. Also, try testing the drive at a lower level using HD SC Setup. If the drive passes the test, and you have run AppleShare Admin, try bringing the server back up.

If the message continues to appear, try some disk utilities on the drive -- beginning with Disk First Aid as another test, and then on to a package such as Symantec Utilities. If none of this works, we would suggest reformatting the drive and restoring it from the backup.

Although this is potentially a lot of work, the integrity of master directory blocks is critical and well worth the effort -- if only for peace of mind.

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Tech Info Library Article Number:3629



Tech Info Library

AppleTalk Bridges: RTMP Broadcasts

Revised: 5/4/89
Security: Everyone

AppleTalk Bridges: RTMP Broadcasts

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This article last reviewed: 14 February 1989

AppleTalk protocol, under certain conditions, sends packets out onto the Ethernet network in which the Ethernet source address contains all 1s (Fs).

The packets with the "all Fs" as addresses are broadcast packets that are sent out periodically by AppleTalk bridges. The Routing Table Maintenance Protocol (RTMP) is used by AppleTalk bridges to maintain their routing information to enable them to send packets to the appropriate bridges and networks connected to those bridges.

It is part of the RTMP specification that, every 10 seconds, each AppleTalk bridge sends a broadcast RTMP packet in order to keep the routing information for the network current.

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Tech Info Library Article Number:3630



Tech Info Library

AppleShare PC 1.1: New Features

Revised: 5/4/89
Security: Everyone

AppleShare PC 1.1: New Features

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This article last reviewed: 17 March 1989

The primary fix delivered in version 1.1 of AppleShare PC concerns interrupt handling:

- In version 1.0, network devices had a tendency to randomly "disappear" from the network. The resolution of this issue was the main reason for creating version 1.1.

The other change to version 1.1 concerns international character sets:

- This change provides a method of mapping the MS-DOS international characters to the Macintosh OS international characters.

(NOTE: The current software, AppleShare PC 1.2, includes these improvements.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3631



Tech Info Library

AppleShare PC: Intermittent Connection Anomaly Eliminated

Revised: 5/4/89
Security: Everyone

AppleShare PC: "Intermittent Connection Anomaly" Eliminated

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This article last reviewed: 17 March 1989

AppleShare PC version 1.0 displayed an "intermittent connection anomaly". That is, it occasionally dropped connection to the printer, was randomly unable to see the printer or the servers, and so on.

The primary change in later versions concerned this intermittent network connection. The first step in resolving the connection issue is to update all AppleShare PC workstations to the current software (currently, v1.2 is the latest). There is no point considering other possible causes of disappearing network resources until the PC workstations are updated.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3632



Tech Info Library

LocalTalk PC Troubleshooting

Revised: 11/16/93
Security: Everyone

LocalTalk PC Troubleshooting

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Article Created: 14 March 1989
Article Reviewed/Updated: 16 November 1993

TOPIC -----

This article describes troubleshooting for the Apple LocalTalk PC card and AppleShare PC software.

DISCUSSION -----

The LocalTalk PC Card and the AppleShare PC software were sold to Farallon and are marketed under the name PhoneNet PC. Please refer to Farallon for support on the PhoneNet PC product line.

In its most basic configuration, the PC LocalTalk Card can only print to a LaserWriter over an AppleTalk network with the software included with the card.

To make the PC become a client on AppleShare, print to a LaserWriter as a native MS-DOS-type printer (directly address LPT1: / LPT2: and so on), and have access to other AppleTalk services, you must have AppleShare PC software on the PC, too.

When printing to the LaserWriter just from the utility software that comes with the card, and not from AppleShare PC, the file to be printed must be stored to a disk first (either floppy or hard disk). Most of the more powerful MS-DOS word processors provide PostScript output, but -- because of the limitations of the software provided with the LocalTalk PC Card -- not directly to the LaserWriter.

Again, the PostScript information generated by the word-processing program must be stored on disk as an intermediate step. Before the PostScript file can be sent to the printer, a PostScript initialization file must be sent to the printer first. It is possible that each PC application that outputs PostScript may need a different initialization file.

The PostScript initialization file that comes with Microsoft Word 4.0 is called POSTSCR.P. The tool that you send the file to the printer with is called LWPRINT.EXE and comes with the basic PC LocalTalk option card. As per the instructions in the LocalTalk PC card manual (pages 74, 75), to send the PostScript initialization file to the LaserWriter, type in the following at the DOS prompt: LWPRINT -A POSTSCR.P and press <Enter>.

At this time, if all is well, you will be returned to the DOS prompt with no error messages. You can then call up the LaserWriter.EXE program and follow the instructions in the PC LocalTalk manual to print out your PostScript output. The initialization file needs to be sent to the printer only when the printer is first being used by the PC, if the printer has been reinitialized by another machine (like a Macintosh), or if the power to the printer has been interrupted.

However, due to operational environments of MS-DOS, you may run into problems. For example, if all PC LocalTalk utilities are in one subdirectory on the user's hard disk and that subdirectory is in the PATH command's search path, you can access LWPRINT and LaserWriter from anywhere in the DOS directory structure.

If the <file name> specified as an argument for the LocalTalk Utilities -- that is, - LWPRINT -A <filename> -- is not in the current directory, you will get a message saying "CAN'T OPEN PRINT FILE <filename>". If this happens, no printer initialization will take place and any subsequent tries to send PostScript files to the printer via the LaserWriter.EXE program will result in printer error messages. Just make sure that the files concerned (utility programs, printer initialization files, and data files) are really where you specify them to be.

Article Change History:

16 Nov 1993 - Included information on Farallon and PhoneNet PC.

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Tech Info Library Article Number:3633



Tech Info Library

LocalTalk PC Card: Compatibility of Third-party Devices

Revised: 5/4/89
Security: Everyone

LocalTalk PC Card: Compatibility of Third-party Devices

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This article last reviewed: 23 March 1989

There is no firm rule as to which third-party devices will work with the LocalTalk PC card.

Apple tests the LocalTalk PC card in a variety of MS-DOS machines, from the original IBM PC through the newest compatibles based on the 286 or 386, clocked at 16 MHz, 20 MHz and 25 MHz.

One element that is known to cause incompatibility is a card bus running at 8 MHz. Machines with bus speeds of 8 MHz have caused difficulties for many cards, Apple's LocalTalk PC card among them.

If a problem occurs for a different reason -- that is, the machine has a standard bus speed -- it involves other areas of the network, and becomes a more complicated problem to solve, requiring a detailed examination of the equipment used and the anomalies being experienced.

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Tech Info Library Article Number:3634



Tech Info Library

ADSP Development Kit Available From APDA

Revised: 5/10/89
Security: Everyone

ADSP Development Kit Available From APDA

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This article last reviewed: 6 April 1989

ADSP is the AppleTalk Data Stream Protocol. The ADSP Development Kit, v1.0, is now available from APDA. It is for programmers who

- want to open, read from, write to, or close ADSP data streams, or
- need to know about ADSPOpen, ADSPRead, ADSPWrite, and ADSPClose calls available to Macintosh programmers

This product is described in the Winter 1989 APDAllog on page C-44. It was also listed in the previous APDAllog, but was difficult to find and was not necessarily available then.

For more information, search under: "APDA"

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Tech Info Library Article Number:3635



Tech Info Library

AppleTalk and EtherTalk Packets: How They Work Together

Revised: 5/4/89
Security: Everyone

AppleTalk and EtherTalk Packets: How They Work Together

=====

This article last reviewed: 23 March 1989

The AppleTalk packet is encapsulated within an Ethernet packet. The Ethernet packet contains the Ethernet address of the receiving device, so only that device will accept and inspect the packet. Any AppleTalk device connected directly to an Ethernet uses Address Resolution Protocol (ARP) to determine the Ethernet address of the AppleTalk device it wants to send a packet to.

This means that all address resolution and Ethernet packet addressing occur within the sending AppleTalk node. For example, a Macintosh II, using an EtherTalk card and the EtherTalk drivers and sending to another Macintosh II on the same Ethernet, inspects its ARP address tables and sends an AppleTalk packet encapsulated within an Ethernet packet addressed specifically for the receiving Macintosh II. The receiving Macintosh II strips the Ethernet information from the packet and processes the AppleTalk packet. No other Ethernet device does anything with that packet, unless it is a device like a protocol analyzer peeking at packets.

In the case of an AppleTalk device on a LocalTalk on the other side of a bridge (like a Kinetics FastPath), the Ethernet packet is addressed to the FastPath. The FastPath takes the packet, strips off the Ethernet information, and sends the packet out onto the LocalTalk network.

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Tech Info Library Article Number:3638



Tech Info Library

AppleTalk over T1 Lines

Revised: 7/23/93
Security: Everyone

AppleTalk over T1 Lines

Article Created: 4 May 1989
Article Reviewed/Updated: 22 July 1993

Some users have a Hayes InterBridge connected to AT&T System 75 PBXs to communicate to other, out-of-state sites' LocalTalk networks. The configuration:

LocalTalk to Hayes InterBridge -> AT&T over T1 to AT&T <- Hayes InterBridge to LocalTalk

This solution has worked reliably, but these users are interested in speeds greater than 19,200 baud. They want to know if they can get full LocalTalk 230.4K baud speed over their T1 connection, and what equipment will allow the higher bandwidth.

Ethernet is possible, of course, but might be too expensive.

Another possible solution -- not inexpensive, but perhaps less costly than switching over entirely to Ethernet -- is Network Systems' (formerly VitaLink Communications Corporation) products for T1 lines. A useful configuration might be:

LocalTalk <-> FastPath <-> VitaLink box <-T1-> VitaLink box <-> FastPath <-> LocalTalk

This uses Ethernet as the transport medium through the T1 connection, but the basic network remains LocalTalk.

There is more than one solution available, giving speed ranges from 64 kbps up to the full speed of the T1 circuit. The two determining factors are the cost of the hardware (faster being more expensive), and what else the T1 circuit is being used for. It is possible to use the entire bandwidth of the T1 circuit for the network connection.

In the configuration above, the T1 circuit resembles an Ethernet backbone to the LocalTalk-based networks. The FastPaths are necessary to bridge the

..TIL03639-AppleTalk_over_T1_Lines.pdf

Ethernet provided by the VitaLinks to the LocalTalk networks.

To locate a vendor's address and phone numbers, use the vendor name as a search string..

Article Change History:

14 July 1993 - Updated company names.

6 April 1989 - Reviewed for technical accuracy.

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Tech Info Library Article Number:3639



Tech Info Library

Apple SuperDrive and Double-Density Disks

Revised: 8/22/91
Security: Everyone

Apple SuperDrive and Double-Density Disks

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Article Created: 4 May 1989
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article discusses the disks required by the Apple SuperDrive (formerly Apple FDHD).

DISCUSSION -----

In the DOS environment, you can format a 720K double-density disk so that it will appear to be a high-density 1.44MB disk.

However, you must use a genuine high-density disk to translate data from MS-DOS to Macintosh OS using the Apple SuperDrive Apple File Exchange.

The SuperDrive looks for the additional "bonus hole" in the upper left-hand corner of the disk. If the hole is not there, the drive will not recognize the MS-DOS disk as a high-density disk.

A high-density disk can be recognized by the additional hole as well as the letters HD on the disk.

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Tech Info Library Article Number:3642



Tech Info Library

High-Density and Double-Density Formats Not Interchangeable

Revised: 8/22/91
Security: Everyone

High-Density and Double-Density Formats Not Interchangeable

=====

Article Created: 4 May 1989
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article discusses the protection feature of the Apple SuperDrive (formerly Apple FDHD) that restricts the media type to high-density disks.

DISCUSSION -----

When using Apple File Exchange (AFE) and the SuperDrive, AFE does not recognize high-density disks formatted as 720K disks in the SuperDrive.

The SuperDrive does NOT recognize a disk as a high-density (1.44MB.) disk unless the disk has the "bonus" hole, which all high-density disks have. This is a hardware feature of the drive--not a limitation.

High-density media are physically different from the standard double-density media, and they are not compatible with each other. The hole prevents the incorrect use of high-density or double-density disks with the SuperDrive.

IBM systems and most compatibles will allow you to format a double-density disk as a high-density disk and vice versa. This is not the case here. There is no way to bypass this protection feature.

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Tech Info Library Article Number:3643



Tech Info Library

HyperCard Serial Port Toolkit: Port B Data Loss Problem

Revised: 7/23/92
Security: Everyone

HyperCard Serial Port Toolkit: Port "B" Data Loss Problem

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Article Created: 9 May 1989
Article Last reviewed: 15 February 1989
Article Last Updated: 22 June 1992

If you are using the HyperCard Serial Port Toolkit to read data coming into your Macintosh on both serial ports, you may experience problems with Port B (the printer port) losing data. For example, this can happen when inserting a floppy disk.

This problem is not due to either the serial driver or the interrupt priority. The suggested limitation to the printer port of 300 baud communications or less and output-only connections is caused by the Disk Driver. The Disk Driver, which must turn off interrupts during disk accesses, will buffer the modem port only: it does NOT buffer the printer port.

While you can tell the sender to stop sending before writing to a floppy disk, there is no safe and supported way to get around a disk insertion. You should not be using the two ports in this way, since communications of both ports cannot be guaranteed. If the program is to work on a Macintosh II, CommCard from SuperMac Technologies will allow additional serial ports on NuBus which will be free of the system interrupts.

If the stack is to run on a Macintosh Plus or Macintosh SE, use a NetSerial from Shiva or a C-Server from Solana Electronics. HyperCard will continue to think it is talking to the printer port as a serial device. The NetSerial or C-Server software will convert the serial information into AppleTalk packets, which will be converted by the C-Server or NetSerial back into serial communications. These devices contain buffers that will resend any AppleTalk packets lost when interrupts are turned off by the receiving Macintosh, as in the case of an inserted disk. This is the same as occurs during any AppleTalk transaction from the printer port.

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

For more information, search under: "SuperMac", and "Shiva".

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Tech Info Library Article Number:3644



Tech Info Library

HyperCard: Requires XCMD To Dial An All-Digital Phone

Revised: 6/24/90
Security: Everyone

HyperCard: Requires XCMD To Dial An All-Digital Phone

=====

This article last reviewed: 23 February 1989

There is no current way for HyperCard to dial a voice call over an all-digital system, such as IBX, without the use of XCMDs.

The problem is that an IBX is a digital phone switch: it communicates with the handsets digitally, instead of using an analog method such as tones. HyperCard (or any program) cannot use these lines to generate a voice call, because the handsets communicate with the switch using a proprietary (and undocumented) protocol specific to that switch. The only way to originate a voice call from HyperCard is to use a hardware interface that understands analog communications specific to the switch.

If you want to generate a data call, one instrument that can be used on IBX is an ADI (Asynchronous Data Interface), and there are similar instruments available for other switches. The ADI communicates with the Macintosh using ASCII, much as a modem communicates. HyperCard, using XCMDs to perform the serial I/O, can originate a data call and communicate with the answering end. A package of serial XCMDs is available through APDA.

For more information, search under: "APDA".

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Tech Info Library Article Number:3645



Tech Info Library

HyperCard: A Front End to an HP3000

Revised: 9/10/92
Security: Everyone

HyperCard: A Front End to an HP3000

=====

Article Created: 2 March 1989
Article Last Reviewed: 4 June 1992
Article Last Updated:

TOPIC -----

What methods are available to communicate with an HP3000 through HyperCard?

DISCUSSION -----

HyperCard can act as a front end to an HP3000 using either of two possible solutions currently available. One is a lower-level solution requiring more work, while the other does much of the work for you.

The lower-level solution is the set of serial XCMDs for HyperCard available from the Apple Programmers and Developers Association (APDA). These implement serial communication at a level that allows you to design the front end any way you want. Choosing this requires that you deal with all of the communication, terminal emulation, and formatting information sent from the HP3000.

The second option is a set of external commands and code resources called "FITOS" from MITEM Corporation. These include a number of different terminal emulators, including at least one HP terminal type. The advantage of this package is that it handles everything except the actual information that would normally be presented to the user. You don't have to worry about the communications protocols used or the terminal formatting characters sent by the host. One possible disadvantage is that if it does not support the type of terminal that you need them to support, you would have to deal with the terminal emulation yourself.

For more information, search under: "MITEM" and "APDA".

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Tech Info Library Article Number:3646



Tech Info Library

HyperCard: Global Variables Change at New Application Launch

Revised: 6/24/90
Security: Everyone

HyperCard: Global Variables Change at New Application Launch

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This article last reviewed: 6 April 1989

If you launch an application after creating a global variable in HyperCard, when you return to HyperCard from the application, the global variable is no longer defined. You will be running under the Finder.

If you want the value of a HyperCard global variable to be saved across a launch, you will need to use the "suspend" and "resume" messages, save the value of the variable somewhere, and then restore it.

(NOTE: If you are running HyperCard under MultiFinder, you will not have this problem since HyperCard stays active when you open another application.)

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Tech Info Library Article Number:3647



Tech Info Library

HyperCard: Memory Requirements

Revised: 5/9/89
Security: Everyone

HyperCard: Memory Requirements

=====

Article Created: 6 April 1989
Article Last Reviewed: 10 July 1992
Article Last Updated: 10 July 1992

HyperCard is designed to run on a 1 MB Macintosh system (2 MB under System 7), but this does not ensure that you will have access to all of the tools all of the time. For example, it is possible to create a card on a 2 MB machine that cannot even be opened on a 1 MB machine. Also, HyperCard keeps track of new stacks and/or cards as they are opened. In time, this could use up enough memory to prevent the use of the painting tools. Setting the memory requirements down to 800K will make the problem worse, not better, if MultiFinder or System 7 is running; it will do nothing if running only the Finder under System 6.

Using the "Minimum System" and restricting INITs will reduce the total memory used by the system and may also prevent, or slow down, the above problem. It is hard to make recommendations, because there are many possible variations as to the contents or complexity of the stacks being used.

Some suggestions: - Load a single stack and don't switch to other stacks unnecessarily - Compact stacks on a regular basis - Don't use complex graphics on a 1 MB system unless absolutely necessary.

It may also be necessary to quit to the Finder on a regular basis and then relaunch HyperCard, as this will free the memory used by HyperCard to track the cards opened during the session.

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Tech Info Library Article Number:3648



Tech Info Library

HyperScan: Works With Only Apple Scanners (5/95)

Revised: 5/2/95
Security: Everyone

HyperScan: Works With Only Apple Scanners (5/95)

=====

Article Created: 22 February 1989
Article Reviewed/Updated: 2 May 1995

TOPIC -----

Can I use the HyperScan 2.0.1 HyperCard stack to control non-Apple scanners?

DISCUSSION -----

HyperScan designed specifically to work with Apple scanners, it does not support any non-Apple scanners. The Tech Info Library article "Apple Scanners: Scanner Software Compatibility" contains a complete compatibility list of Apple Scanners and software.

Article Change History:
02 May 1995 - Updated with current version and added article reference.

Support Information Services

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Tech Info Library Article Number:3649



Tech Info Library

HyperCard 1.2.1: Problem Controlling Cursor Shape

Revised: 5/9/89
Security: Everyone

HyperCard 1.2.1: Problem Controlling Cursor Shape

=====

Article Created: 21 February 1989
Article Last Reviewed: 14 July 1992
Article Last Updated:

Some users have reported what seems to be a problem with HyperCard: that you lose the cursor shape you have set.

The problem may be that you are setting the cursor within a script and expecting it to stay set until you change the setting at a later time.

The HyperCard system sets the cursor to the current tool at "idle". An idle state is one in which no events have occurred, and you are not operating inside a handler. For example, when you choose the browse tool, the cursor is a hand, except when it is over unlocked fields, where it appears as an insertion bar.

It may be that once you exit all scripts, Hypercard resets the cursor to the hand.

If you wish to globally change the HyperCard "hand" cursor, such specific editing functions as "set cursor" will not do the job, since "set cursor" works only inside its called handler, creating the above situation.

Instead, using ResEdit, open the "FONT" and the "BAD FONT" resources. Find the character with ASCII value 152. Modify this to change the hand cursor in HyperCard.

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Tech Info Library Article Number:3650



Tech Info Library

A/UX: Support for Programs Written Under MacAPP

Revised: 9/16/92
Security: Everyone

A/UX: Support for Programs Written Under MacAPP

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Article Created: 14 February 1988

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

Programs written under MacAPP in the Macintosh OS can run under A/UX, if they follow the guidelines for A/UX and Macintosh programming specified by

Developer Technical Support's Tech Notes and
"Inside Macintosh", Volumes I through V
(available from Addison-Wesley).

DISCUSSION -----

These applications will not have access to UNIX services or be able to communicate directly with UNIX processes. This is because there are no libraries for the UNIX calls available under the Macintosh OS in MPW or any other development system that we are aware of.

Under A/UX, libraries do exist, as do the necessary Macintosh libraries for writing Macintosh-style programs that perform UNIX functions and system calls. However, there is no support for object-oriented programming similar to MacAPP. The C compiler available with the system is a standard C compiler without any object-oriented extensions.

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Tech Info Library Article Number:3651



Tech Info Library

A/UX: File Transfer to and from VAX (9/94)

Revised: 9/7/94
Security: Everyone

A/UX: File Transfer to and from VAX (9/94)

Article Created: 9 May 1989
Article Last Reviewed: 6 September 1994

TOPIC -----

File Transfer to and from a DEC VAX.

DISCUSSION -----

There are several ways to transfer files between A/UX and a VAX, depending on how the communication line is connected physically--that is, whether it is connected via modem (telephone line), direct hard-wired, or on an Ethernet network.

In A/UX, there are two serial TTY ports (modem and printer). You can use either one or both of these two ports to connect to the other end of a VAX machine.

(NOTE: The A/UX distribution is configured with tty0 or dial-in modem port [getty enabled] and tty1 for printer port [getty disabled]. In A/UX 3.0 both ports are disabled by default)

- If the VAX machine is running any flavor of UNIX systems, such as Berkeley 4.2 or 4.3 or AT&T System V, and the serial line connections (modem or hard-wired) are used, you can use the 'cu' or 'tip' commands in A/UX for terminal connection and file transfer interactively. You can use the 'uucp' (UNIX-to-UNIX copy) command for automatic batch file transfer.
- If the VAX machine is running DEC VMS, one possible solution is to use public domain Kermit software on both A/UX and VMS for connection and file transfer.
- If the A/UX and VAX UNIX are connected via Ethernet, then 'telnet', 'rlogin', 'ftp', and 'rcp' commands in A/UX can be used for terminal connection and file transfer. If the VAX supports NFS (Network File System), then file transfer becomes transparent as long as the remote file system is mounted.

Article Change History:

06 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3652



Tech Info Library

A/UX: Using a PC as a Terminal (9/94)

Revised: 9/23/94
Security: Everyone

A/UX: Using a PC as a Terminal (9/94)

=====
Article Created: 22 February 1989
Article Reviewed/Updated: 23 September 1994

TOPIC -----

It is possible to connect an IBM or IBM-compatible PC as a terminal to a Macintosh A/UX system if the PC has any terminal emulation program, such as CROSSTALK, PCTALK, PROCOMM, MSKERMIT, etc.

DISCUSSION -----

You need to have the following two cables connected together:

1) An Apple cable -- part #590-0550-A -- at the Macintosh A/UX end.

The pinouts of this cable are:

Mini DIN-8	DB-25 Female
-----	-----
1	6
2	20
3	3
4 & 8	7
5	2
7	4 & 5
Shield	Shield

2) A regular DB-25 male-to-DB-25 female straight cable at the PC end

1 - 1
2 - 2
3 - 3
4 - 4
.
.
.
24 - 24

Article Change History:

23 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3653



Tech Info Library

AppleCD SC Audio: Entering Song and Disk Titles

Revised: 5/9/89
Security: Everyone

AppleCD SC Audio: Entering Song and Disk Titles

=====

This article last reviewed: 21 February 1989

Some of you have experienced a problem with AppleCD SC using the v2.0.1 Installer Disk:

You enter the CD Name and Tracks and then save them (this loads the data into CD Remote Programs file). Then, when you insert the CD back again, the Track names do not show up (as they did with Installer v1.0). Also, Audio CD is named Audio 1, Audio 2, etc., each time the same CD is removed and inserted.

The song and disk titles are saved in the "CD Remote Programs" file in the System Folder. The entry in the CD Remote Programs file is cross-referenced against total time of audio, number of tracks, length of tracks, and various other unique characteristics of individual audio CDs. There are three resources in the "Programs" file: "IndX", "Program", and "STR#":

- "IndX" is the cross reference between the CD and the file.
- "Program" contains the sequence, if programmed, for playback of the tracks.
- "STR#" contains the song and disk titles.

This cross-reference scheme lets you type variations of the disk and song titles. The CD ID (IndX) is used to access the correct titles (STR#) and programmed sequence (Program).

The naming of the desktop's audio CD icon is based on an evaluation of total time, individual track lengths, and various other unique aspects of an individual audio CD. If you eject an audio CD (as opposed to dragging it to the trash), the system software may recognize an audio CD that played earlier. Otherwise, a counter is incremented and the name becomes "Audio _" (the "_" portion of the name being the incremented number). Thus, the sequence of Audio 1, Audio 2, Audio 3, and so on is to be expected.

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Tech Info Library Article Number:3654



Tech Info Library

CD-ROM Drivers: Microsoft AutoMac III Conflict

Revised: 5/9/89
Security: Everyone

CD-ROM Drivers: Microsoft AutoMac III Conflict

=====

This article last reviewed: 21 February 1989

AutoMac III (a macro package that Microsoft sent out to registered Microsoft Word owners) currently conflicts with the Apple CD-ROM drivers, causing a system crash on startup. Removing AutoMac III solves the problem.

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Tech Info Library Article Number:3655



Tech Info Library

HyperCard: Laser Video Control? (12/95)

Revised: 12/22/95
Security: Everyone

HyperCard: Laser Video Control? (12/95)

Article Created: 9 May 1989
Article Reviewed/Updated: 22 December 1995

TOPIC -----

This article describes Laser Video Disc players and availability of XCMDs for controlling LaserDisc Players from HyperCard.

DISCUSSION -----

Most laser video is provided on 12-inch LaserDiscs. Many of the industrial-grade LaserDisc players provide serial connections. Control of the 12-inch LaserDisc players is provided via XCMDs for HyperCard. We are unaware of any industrial-grade LaserDisc player that supports the 5-inch CD-V format.

Depending on the source, CD-V may mean only the 5-inch format, or CD-V may mean 5-inch, 8-inch, and 12-inch formats. To support all three video formats, use Voyager Company's The Box to control a Pioneer 1030 or Pioneer 3030. The 1030 and 3030, which are called "combination players", support CD audio, 5-inch CD-V, 8-inch LaserDisc/CD-V, and 12-inch LaserDisc/CD-V. The Box comes with HyperCard XCMDs for controlling these two disc players, among others.

Of the disc players on the Voyager list that we have, the Pioneer 1030 and 3030 are the only LaserDisc players that support multiple disc sizes. Voyager has been adding to the list of supported disc players. Check with them to see if a particular combination player is currently supported.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a Voyager's address and phone number.

Article Change History:
22 Dec 1995 - Reviewed for technical accuracy, updated format.

Support Information Services

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Tech Info Library Article Number:3656



Tech Info Library

Apple Dot Matrix Printer: How to Connect to a Macintosh SE

Revised: 5/9/89
Security: Everyone

Apple Dot Matrix Printer: How to Connect to a Macintosh SE

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This article last reviewed: 21 February 1989

You can connect an Apple Dot Matrix printer to a Macintosh SE with a parallel-to-serial/serial-to-parallel converter.

Orange Micro makes a cable specifically for connecting parallel devices into serial ports, whether those ports are on an Apple IIGS, Apple IIc, or a Macintosh. It's called "Grappler C/MAC/GS", and it has a converter built into the cable; it emulates an ImageWriter II and only requires using the ImageWriter driver from a Macintosh.

Problems should be minimal in this connection as long as ImageWriter II-specific features are avoided. Using an early version of the ImageWriter driver (2.3 or before) may even be a workaround for that, since those versions of the driver do not have any ImageWriter II-specific functionality.

For more information, search under "Orange Micro".

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Tech Info Library Article Number:3657



Tech Info Library

AppleScanner: Tips For Printing Scanned Images

Revised: 5/24/89
Security: Everyone

AppleScanner: Tips For Printing Scanned Images

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This article last reviewed: 6 April 1989

If your AppleScanner presents white lines in the printouts of the scanned half-tone images, it is possible that you are not using the most recent version of the LaserWriter Print Driver (5.2), which is included on the AppleScan disk.

White streaks (otherwise known as Moire patterns) appear in printouts of half-tone images when the Faster Bitmap and/or Bitmap Smoothing print options are selected. This is the default in many applications, so these options must be deselected in the Page Setup dialog within each application.

The AppleScan application automatically deselects these options when used with LaserWriter driver 5.2.

In general, the way to get the best quality of laser-printed halftones from any application is to follow these tips:

- Use the latest print drivers.
- Turn off Faster Bitmap and Bitmap Smoothing print options.
- Turn off background printing in MultiFinder.
- Do not resize a half-tone image within the application. Instead, use the scaling feature within the AppleScan application.

If the application imports TIFF files, you may want try saving the image in that format within AppleScan.

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Tech Info Library Article Number:3658



Tech Info Library

LaserWriter II: Advantages of Using Downloaded Fonts

Revised: 5/9/89
Security: Everyone

LaserWriter II: Advantages of Using Downloaded Fonts

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This article last reviewed: 30 March 1989

The best method for printing from a LaserWriter is by using either fonts downloaded into RAM from a hard disk attached to the printer, or using fonts downloaded into RAM over the network. Both of these methods are better than printing directly from fonts stored on a hard disk.

Here are two more advantages to this method:

- The hard disk attached to the printer can hold hundreds of fonts, compared to the limited font-storage capability of the printer's RAM.
- All users have access to all fonts stored on the printer, freeing valuable disk space at each computer. Users need only to have the screen fonts installed, not the downloadable printer fonts.

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Tech Info Library Article Number:3659



Tech Info Library

ImageWriter LQ Sheetfeeder: Software Compatibility

Revised: 5/9/89
Security: Everyone

ImageWriter LQ Sheetfeeder: Software Compatibility

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This article last reviewed: 6 April 1989

Here is a current list of software that supports multiple bin printing with the ImageWriter LQ:

Applications That Work With the Sheetfeeder:

Cricket Presents	1.0
dBASE Mac	1.0
FullWrite	1.0
MacDraft	
MacDraw II	1.0
MacInTax	
MacProject II	1.0
Mac3D	
Microsoft Word	3.02
MORE	1.1c
PageMaker	3.0
PowerPoint	2.0
Rags to Riches	
Ragtime	
ReadySetGo!	4.0a
Reflex	
Silicon Press	
StatWorks	1.2
WordPerfect	1.0

Applications That Don't Work With the Sheetfeeder:

Excel	1.5
MacWrite	5.0
Microsoft Works	1.1
WriteNow	1.7

The following applications were tested last year and, at that point, did

not support printing from multiple bins. More current versions may support this feature.

Applications That Probably Don't Work With the Sheetfeeder:

Accountant Inc.
Business Filevision
Cricket Draw
Cricket Graph
Dollars & Sense 1.4
Easy 3D
FileMaker Plus
4th Dimension
FullPaint
General Accounting
Graphic Works
HyperCard
LightSpeed Pascal
MacPaint
MacPublisher III
McCAD 3.1-8 (PCB Design)
Micro Planner Plus
MPW
PrintShop 1.2

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Tech Info Library Article Number:3660



Tech Info Library

AppleShare Security: How Secure Against Viruses Is It?

Revised: 5/9/89
Security: Everyone

AppleShare Security: How Secure Against Viruses Is It?

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This article last reviewed: 23 March 1989

Q: How secure is AppleShare from viruses? Users recognize the threat to folders where others have write access and the ability to affect others using applications contained in those folders, but what about the Server Folder itself? Is the running of VACCINE on an AppleShare server indicated? Is there something better? Is it possible to issue low-level I/O calls (PBWrite and lower?) to server volumes (bypassing any AppleShare built-in security) from other Macintosh systems on the network?

A: The AppleShare server folder itself is quite secure when the server is running. Is it not accessible by any system call, whether high-level or low-level. A virus would only be able to attack folders and files that it has access to. It is not necessary or recommended to install Vaccine in the Server folder on the AppleShare server. If the server is running at the Finder level, it is just as susceptible to viruses as any system.

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Tech Info Library Article Number:3662



Tech Info Library

Viruses: Safety of Boot Blocks (4/94)

Revised: 4/1/94
Security: Everyone

Viruses: Safety of Boot Blocks (4/94)

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Article Created: 9 May 1989
Article Reviewed/Updated: 1 April 1994

TOPIC -----

Are a floppy disk's boot blocks potentially vulnerable? If a user is operating a lab where diskettes are handed out and returned, should those diskettes be reinitialized, or will a volume copy suffice? What about hard disks?

DISCUSSION -----

It is highly unlikely that a virus would be able to use the boot blocks as a mechanism for spreading itself on either a floppy disk or hard disk.

However, a virus can change the information contained in the boot blocks and thereby cause problems. For floppy disks, a volume copy, using an application such as Apple's DiskCopy, from a "known good, virus-free" original replaces all sectors on the disk and eliminates the possibility of virus being on that disk.

Further, for either floppy disks or hard disks, any Macintosh virus detection application can scan and remove known viruses.

Article Change History:
1 April 1994 - Added references to Disk Copy, hard disks and virus detection software references.

Support Information Services

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Tech Info Library Article Number:3663



Tech Info Library

CODE Resource ID=0: Jump Table Implementation

Revised: 5/9/89
Security: Everyone

CODE Resource ID=0: Jump Table Implementation

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This article last reviewed: 30 March 1989

CODE resource ID=0 in an application is used to implement a jump table for routines that are called from one code segment but reside in another code segment of the application. The first 8 bytes of CODE 0 include such information as the jump table length, the offset from register A5, and so on.

Beginning at the ninth word (usually referred to as "word 8", because numbering starts at 0) are the actual jump table entries for each of the routines that are called from outside their segments. Each entry is four words long. The first word is the offset in hex of the routine being called. This offset is from the beginning of the segment to which the routine belongs.

The next three words are the instructions that will be executed; they have the format:

```
MOVE.W    #$0001,-(A7)
_LoadSeg
```

The #\$0001 word identifies the segment that is to be loaded and contains the routine. In the example above, code segment 1 contains the routine. In hex, a sample jump table entry is:

```
WORD      1      2      3      4
          298C 3F3C 0001 A9F0
```

- 1) The offset
- 2) MOVE.W
- 3) The code segment
- 4) _LoadSeg

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Tech Info Library Article Number:3664



Tech Info Library

ImageWriter: Printing Superscripts and Subscripts

Revised: 5/17/89
Security: Everyone

ImageWriter: Printing Superscripts and Subscripts

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This article last reviewed: 23 March 1989

There are two ways of creating super/subscript printouts on the ImageWriter (this applies only to ImageWriters with a serial number above 216001; those with lower serial numbers do not super/subscripting):

Method #1) The diskette called "ImageWriter Tool Kit (v1.5)" contains a half-high character set designed for super/subscripting use. To use it, download the character set to the printer prior to using Bank Street Writer. (This download function is a function on the tool kit disk.)

Method #2) If full-size characters shifted half a line up or down are satisfactory, then issue the following codes. The codes to do super/subscripting are not stated as such. Super- and subscripting require the printer to shift forward or reverse, print some characters, then shift back. The reference card in the manual is also not clear what the proper code is for this function.

To subscript:

- 1) Print some text.
- 2) Set a new line feed pitch.
- 3) Issue a forward line feed (for subscripting).
- 4) Print the character(s) to be subscripted.
- 5) Set reverse line feeding.
- 6) Issue a line feed.
- 7) Reset to original line feed pitch.
- 8) Continue printing.

To superscript:

- 1) Print some text.
- 2) Set a new line feed pitch.
- 3) Set reverse line feeding.
- 4) Issue a line feed (for superscripting).

- 5) Print the character.
- 6) Set forward line feeding.
- 7) Issue line feed.
- 8) Reset to original line feed pitch.

The ImageWriter's "optional line feed function" suppresses the Carriage Return when issuing a Line Feed. (As you can see, none of this is very simple).

A possible scenario for sending codes to do superscripting from BASIC (running under ProDOS):

```
10 D$=CHR$(4):REM CONTROL D
20 A$=CHR$(27)+CHR$(108)+CHR$(49):REM ENABLE OPTIONAL LINE FEED FUNCTION
   CODE
30 B$=CHR$(27)+CHR$(84)+"10":REM SET LINE PITCH TO LESS THAN HALF LINE
40 C$=CHR$(27)+CHR$(102):REM FORWARD LINE FEED CODE
50 E$=CHR$(27)+CHR$(114):REM REVERSE LINE FEED
55 F$=CHR$(27)+CHR$(84)+"24":REM SET LINE PITCH BACK TO FULL SIZE
60 PRINT D$;"PR#1":REM IF THIS SLOT IS WHERE THE PRINTER CARD IS LOCATED
70 PRINT "This text is normal";:REM NORMAL TEXT
80 PRINT A$;:REM ENABLE OPTIONAL LINE FEED FUNCTION
85 PRINT B$;REM SET LINE PITCH
90 PRINT CHR$(31)+"1";:REM FEED ONE BLANK LINE OF PAPER
95 PRINT CHR$(27)+CHR$(39);:REM SWITCH TO CUSTOM FONT
100 PRINT "THIS TEXT IS SUBSCRIPTED";:REM SUBSCRIPTED TEXT
110 PRINT E$;:REM SET REVERSE LINE FEED
120 PRINT CHR$(31)+"1";:REM FEED ONE BLANK LINE OF PAPER
125 PRINT F$;:REM SET REVERSE LINE FEED
135 PRINT CHR$(27)+CHR$(36);:REM SWITCH BACK TO NORMAL FONT
140 PRINT "This text should be normal again"
145 PRINT C$;REM RESET TO FORWARD LINE FEED
150 PRINT D$;"PR#0"
160 END
```

Here is an example of how to enter the codes into Bank Street Writer:

To Begin Subscripting

Characters:	ESC	1	1	ESC	T	1	2	(CONTROL)_	1
ASCII Codes:	27	108	49	27	84	49	50	31	49

To End Subscripting

Characters:	ESC	r	(CONTROL)_	1	ESC	f	ESC	A	ESC	1	0
ASCII Codes:	27	114	31	49	27	102	27	65	27	108	48

To Begin Superscripting

Characters:	ESC	1	1	ESC	T	1	2	ESC	r	(CONTROL)_	1
ASCII Codes:	27	108	49	27	84	49	50	27	114	31	49

To End Superscripting

Characters:	ESC	f	(CONTROL)_	1	ESC	A	ESC	1	0
ASCII Codes:	27	102	31	49	27	65	27	108	48

(NOTE: The second character in the command sequence that begins sub- or superscripting, and the next-to-last character in the sequences that ends sub- or superscripting, is a lowercase "L".

The last character in the sequences that ends sub- or superscripting is a zero.

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Tech Info Library Article Number:3665



Tech Info Library

HyperCard: Printing a Scrolling Text Field

Revised: 4/11/91
Security: Everyone

HyperCard: Printing a Scrolling Text Field

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This article last reviewed: 30 March 1989

Printing the complete text residing in HyperCard scrolling fields can be done by printing a report of the HyperCard stack.

Unfortunately, one drawback to printing a report is that all the cards in the stack with the selected field name will be printed: there is no easy way to select only one card for printing without cutting and pasting.

Another way to print the entire contents of a scrolling field with only selected information and cards would be to use a report utility like Activision's "Reports".

For more information, search under: "Activision".

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Tech Info Library Article Number:3667



Tech Info Library

Apple IIGS System Disk 5.0: Overview

Revised: 10/4/89
Security: Everyone

Apple IIGS System Disk 5.0: Overview

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This article last reviewed: 25 September 1989

Apple IIGS System Disk 5.0 is the new release of system software for the Apple IIGS computer. The main features include:

- Support for AppleShare File Server
- Speed, speed, and more speed
- A Control Panel and Control Panel devices (CDEVs)
- Multiple simultaneous installations with the Installer
- 5.25-inch Disk Driver is installed
- Increased ToolBox support

Packaging

The AppleTalk Network User's Guide and AppleShare Apple II Setup Disk are included only in the System Software 5.0 update box. It will not ship with the Apple IIGS hardware system.

The Apple IIGS manual is being rewritten to include the information in the AppleTalk Network User's Guide.

System Requirements

Apple IIGS System Disk 5.0 requires an Apple IIGS with a least 768K of memory when operating on a network. As a stand-alone system the 5.0 System Disk requires only 512K.

AppleShare and Network Support

One of the main new features of Apple IIGS System Software 5.0 is GS/OS support for AppleShare File Server volumes. To use the Apple IIGS with an AppleShare File Server, you need to use version 2.0 or later of the AppleShare File Server

software.

There are a number of additions to GS/OS to support AppleShare. These include:

- Booting GS/OS over the network
- Creation of a 3.5-inch Server Startup Disk
- An AppleShare FST (File System Translator) for GS/OS
- A Control Panel File Server Chooser
- Ability to auto-logon to a server
- Server Logoff
- Finder support of AppleShare

Network Booting

To use the Apple IIGS with an AppleShare File Server, you need to use version 2.0 or later of the AppleShare File Server software. If you have an existing AppleShare File Server you need to order:

Apple IIGS System Software version 5.0

This package includes a new "Apple II Setup Disk". This disk is a Macintosh disk that uses the Macintosh Installer to update the AppleShare File Server 2.0.1 server boot blocks to GS/OS. The boot blocks are sent to the workstation when the user requests network booting from the Apple IIGS. The disk is found in the back of the AppleTalk Network User's Guide that ships inside the stand-alone package. After the Macintosh has been updated, you can use the Apple IIGS Installer (located on the SYSTEM.TOOLS disk) to update the SYSTEM folder on the server hard drive.

All servers on the network should be updated to the new boot blocks at the same time. You should not have boot blocks from Apple IIGS Workstation Software and System Disk 5.0 on the same network. AppleShare File Server will start shipping with the new Apple II Setup Disk mid-summer 1989.

Local Booting

Using a 3.5-inch disk can speed up server boot times. There are two methods of gaining access to an AppleShare File Server from a 3.5-inch disk:

- Local Network Startup
- AppleShare on 3.5-inch Disk

The first method performs the same function as network booting, and the second boots into the Finder.

Local Network Startup saves time and network traffic when booting an entire class of computers at the same time. The Installer update to allow faster network booting is called "Local Network Startup".

The Installer update that lets you boot into the Finder is called "AppleShare on 3.5 Disk". This type of disk is called a "workstation startup disk".

ExpressLoad

ExpressLoad is new with Apple IIGS System Software 5.0 and causes GS/OS to load the system and applications faster. ExpressLoad enhances the standard Apple IIGS System Loader and lets large applications load in a shorter time.

Developers can turn applications into ExpressLoad format using the APW tool called Express or the MPW IIGS tool called ExpressIIGS. A load file must contain resources and code segments in a specific order to be compatible with ExpressLoad. ExpressLoad checks files first to see if they are in the proper format. If the file is not in ExpressLoad format, the application is launched by the normal Apple IIGS system loader.

To save memory, ExpressLoad is loaded only on systems with more than 512K of memory. Before loading ExpressLoad, the system checks to see if there is more than 512K of memory. It will not ExpressLoad into a 512K system.

ToolBox

A number of the toolbox routines have been modified to increase speed. They include "special case" code that causes QuickDraw and other routines to operate faster, based on the parameters that were passed to QuickDraw. Programmers do not have to modify their code to support any of these "special case" routines.

Control Panel and CDEVs

The Apple IIGS System Disk 5.0 includes the Graphics Control Panel, which is similar to the Macintosh Control Panel and Chooser. The Graphics Control Panel is implemented as an NDA (New Desk Accessory). This type of DA is available only to Apple IIGS desktop applications.

The Graphics Control Panel is an expanded facility for controlling any number of system parameters. This functionality lets Apple and third-party developers add Control Panel "devices" (CDEVs). The Graphics Control Panel sets the same information as the existing Apple IIGS Control Panel (now called the Text Control Panel) which is accessed by using the Command-Control-Escape keys. Icons for all CDEVs look the same, letting you identify a CDEV quickly and easily.

CDEVs are located inside the SYSTEM folder, just as fonts and desk accessories:

/disk/SYSTEM/CDEV

Desk Accessories

Like the current Apple IIGS System Disk, Apple IIGS System Software 5.0 supports New Desk Accessories (NDAs). The system can now support 128 NDAs, thanks to scrolling menus. Desk Accessories are in the following folder:

/disk/SYSTEM/DESK.ACCS

SCSI Manager

The SCSI manager has been modified to provide a four-fold speed increase and provide additional SCSI support. The new driver is faster because it is loaded into memory and does not use the firmware on the card. When the driver was written, a number of new features were added:

- Full SCSI Device Support
- 7 Physical Devices
- 32 Volumes per Drive
- Full SCSI Command Support
- Access to Non-ProDOS Partitions
- Support for Magneto-Optic Drives (with a driver)

Related Articles

-
- Apple IIGS System Disk 5.0: ToolBox Changes
 - Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM
 - Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver
 - Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Manager

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Tech Info Library Article Number:3668



Tech Info Library

Apple IIGS System Disk 5.0: ToolBox Changes

Revised: 4/16/91
Security: Everyone

Apple IIGS System Disk 5.0: ToolBox Changes

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This article last reviewed: 05 May 1989

This article summarizes changes and additions to the Apple IIGS ToolBox that result from Apple IIGS System Disk 5.0.

The Toolbox on the Apple IIGS has been modified to support a number of new features that are available to developers. (If these new features are used in a program, the user must have Apple IIGS System Software 5.0 for the software to function correctly.)

The Resource Manager and Text Edit are new for System Disk 5.0.

Additional documentation is available from APDA.

Control Manager

The Control Manager has been modified to provide support for more standard control types, including:

- StatText Control -- Display text messages in a rectangle.
- PictureControl -- Display a picture in a rectangle.
- IconButtonControl -- Icon drawn in a rectangle.
- LineEditControl -- Line Edit item used in List Manager.
- TextEditControl -- Works with new TextEdit Tool.
- PopUpControl -- Provide multiple selection buttons within scrolling lists.
- ListControl -- You can now use the control manager to manipulate items in the List Manager.

Desk Manager

The classic desk accessory (CDA) menu now supports scrolling when more than thirteen CDAs are installed. CDAs are accessed by pressing COMMAND-CONTROL-ESC on the keyboard. Because of this change, selections no longer wrap around the screen. The number of CDAs is limited by disk space and boot time to install

the files. You may have problems if you install more than 128 CDAs.

Event Manager

The Journaling feature is changed, to better support the ReadMouse function.

Font Manager

A problem was fixed in ChooseFont, which caused the system to hang if any update events were pending when the call was made.

Line Edit

Line Edit now supports a password field, in which the characters typed by the user appear on the screen as asterisks (*).

List Manager

The List Manager has been changed to make it easier for programmers to use, and to support new controls in the Control Manager.

Memory Manager

The Memory Manager has been modified to improve system performance.

Menu Manager

The Menu Manager now supports a number of new features, including:

- Outline and Shadow text styles in a menu
- scrolling menus
- pop-up menus

Note Sequencer

The Note Sequencer has been modified to make it easier for developers to create and use sequences in programs.

Print Manager

The PrChoosePrinter call has been removed. Users should use the Control Panel to select printers. If an application makes this call, a dialog appears on the screen telling the user to use the Control Panel to select a printer. When printing in draft mode to a text printer, the driver translates QuickDraw II commands into command sequences for the printer.

QuickDraw II

QuickDraw II has been modified to function faster.

Resource Manager

The Resource Manager is an INIT file that is loaded when the Apple IIGS is started, and stays loaded when the system is running. The Resource Manager maintains the resource fork of a file. This is similar to the resource fork in the Macintosh. This is the first time the a resource fork has existed in the Apple II world. The format of the data is defined by the application. Resources are referred to by a resource type and resource ID number.

Sound Tools

Four new calls have been added to the sound tools, allowing greater flexibility when playing sounds.

Standard File

Standard File has been modified to fully support GS/OS path names. The following are GS/OS values, not the ProDOS FST values. These include:

- 13,107 files in a folder
- 254 characters in a file name (using new calls)
- 508 characters in a path name
- The List Manager is being used
- Scan of AppleShare File Server volume every 8 seconds
- Checks for write-protected volumes and folders
- Displays the lock icon next to current path name
- Calls to support multi-selection calls
- Hook so applications can draw custom list items

Text Edit

This is a new feature of Apple IIGS System Software 5.0. It provides standard text editing for any application. It can be used as a complete text editor or as the core of a simple word processor. It is similar to Text Edit calls on the Macintosh. The following features are included in GS TextEdit:

- Edit any amount of text that fits in memory (not 32K as in the Macintosh)
- Mouse activity for text selection (single, double, triple clicking for text, words, lines)
- Auto word wrap
- Cut, Copy, and Paste
- Some support of control keys for text manipulation
- Stylistic variations in the text (fonts, sizes, style, color).
- Text can contain a "ruler" to format the text
- Four types of justification
- Three kinds of Tab support

- Programmer can limit the amount of information that can be entered
- Vertical scrolling in a window
- Automatic drag selection
- It is FAST

Window Manager

Numerous changes speed things up and support the Resource Manager.

Related Articles

- Apple IIGS System Disk 5.0: Overview
- Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM
- Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver
- Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Manager

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Tech Info Library Article Number:3669



Tech Info Library

Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM

Revised: 4/11/91
Security: Everyone

Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM

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This article last reviewed: 05 May 1989

Two problems were fixed in BASIC.SYSTEM 1.3, and one new feature was added.

MTR Command

The new feature is the MTR command, which lets the user enter the system monitor without having to remember "CALL -151". The user stays in the monitor until issuing Q or Control-C.

Problem Fixes

When two or more Applesoft programs were chained together and the length of the variable table was a multiple of 256, the chain command functioned incorrectly and the program crashed into the monitor or was sent to the ONERR command address. This is fixed in BASIC.SYSTEM 1.3.

BASIC.SYSTEM 1.3 also fixes a problem in BSAVE that caused the old length and load address to be retained when you BSAVED over an existing file.

Related Articles

- Apple IIGS System Disk 5.0: Overview
- Apple IIGS System Disk 5.0: ToolBox Changes
- Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver
- Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Manager

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Tech Info Library Article Number:3670



Tech Info Library

Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Mgr.

Revised: 7/20/95
Security: Everyone

Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Mgr.

Article created 05 May 1989

With System Disk 5.0, the Advanced Disk Utility permits a larger number of partitions on a single SCSI drive. The maximum size of each partition is still limited to 32MB. The following table shows the number of possible partitions on a drive, given the drive size.

Drive Size	Max. No. of Partitions
-----	-----
20MB	8
40MB	8
80MB	8
160MB	8
256MB	8
320MB	10
512MB	16
640MB	20
800MB	25
1GB and up	32

SCSI Manager

The SCSI manager has been modified to provide a four-fold speed increase and additional SCSI support. The new driver is faster because it is loaded into memory and does not use the firmware on the card. When the driver was written, a number of new features were added:

- Full SCSI device support
 - 7 physical devices
 - 32 volumes per drive
 - full SCSI command support
- access to non-ProDOS partitions
- support for magneto-optical drives (with a driver)

The firmware must run at normal speed (1MHz) and not at fast speed. The new

drive talks directly to the hardware on the card and may not be compatible with any other existing SCSI interface cards. The SCSI manager was designed to work only with the Apple SCSI interface card.

The SCSI manager can support seven external boxes (a "box" being something that has a SCSI address). Each box can have up to eight devices, and block devices like hard drives can have up to 32 partitions.

The SCSI Manager works by having a device driver for each different type of SCSI device you want to hook up. This allows different types of devices to be added without modifying the external device or the SCSI card. You just need to add the driver to the system. This is how Apple supports SCSI hard disks and the AppleCD SC. The device drivers are located in the following folder:

/disk/SYSTEM/DRIVERS.

Related Articles

- Apple IIGS System Disk 5.0: Overview
- Apple IIGS System Disk 5.0: ToolBox Changes
- Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM
- Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver

Support Information Serives

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Tech Info Library Article Number:3671



Tech Info Library

Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver

Revised: 4/11/91
Security: Everyone

Apple IIGS System Disk 5.0: Disk II/Apple 5.25-inch Driver

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This article last reviewed: 05 May 1989

The 5.25-inch Disk driver is now installed on SYSTEM.DISK that ships with GS/OS. You do not need to run the Installer to support the 5.25-inch drive, but you still need to use the Installer to support a SCSI drive.

The 5.25-inch disk driver included with Apple IIGS System Software 5.0 can support up to fourteen 5.25-inch disk drives. The Apple IIGS limits 5.25-inch drives to slots 4, 5, 6, and 7 when the computer is in fast mode. When using the Apple IIGS System Software 5.0 and the 5.25-inch driver, you can now operate 5.25-inch drives in slots 1 through 7, in slow or fast mode.

The 5.25-inch drive does not use a cache, because the 5.25-inch drive does not provide a method of determining a disk switch. The light on the drive flashes when the Finder issues the status call to the 5.25-inch driver. The driver must check the drive to see if a disk is inserted or has changed since the last status call.

Related Articles

- Apple IIGS System Disk 5.0: Overview
- Apple IIGS System Disk 5.0: ToolBox Changes
- Apple IIGS System Disk 5.0: Changes to BASIC.SYSTEM
- Apple IIGS System Disk 5.0: Advanced Disk Utility and SCSI Manager

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Tech Info Library Article Number:3672



Tech Info Library

Apple II: No Diskless Startup Across Zones

Revised: 5/11/89
Security: Everyone

Apple II: No Diskless Startup Across Zones

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This article last reviewed: 23 February 1989

If you are having problems starting a diskless Apple II on LocalTalk over a Kinetics FastPath, from a server residing on Ethernet, it may be because the diskless start-up capability of Apple II workstations is designed to work over a FastPath or other AppleTalk bridges -- but not across zones. If your FastPath has been set up with the Ethernet as a separate zone from the LocalTalk side, this is your problem.

You should also look at the configuration of the FastPath itself. If a Macintosh can access the server normally from the LocalTalk side of the network, then the Apple II should be able to start, because the same network layers are being used for the information transfer. If a Macintosh cannot access the server properly, then you should suspect the configuration of the FastPath itself.

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Tech Info Library Article Number:3674



Tech Info Library

Fonts: How To Register Font Families

Revised: 5/17/89
Security: Everyone

Fonts: How To Register Font Families

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This article last reviewed: 27 February 1989

For information on font families and how to register them, use the AppleLink address "FONT.REG".

Only the FONDS for the font family may be registered. The fonts must be of type "NFNT". These may be registered in blocks of 50 at a time.

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Tech Info Library Article Number:3677



Tech Info Library

Macintosh System Software: Sharing a Hard Disk

Revised: 5/11/89
Security: Everyone

Macintosh System Software: Sharing a Hard Disk

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This article last reviewed: 29 February 1989

If you are installing System software on a hard disk that will be shared by different Macintosh models (for instance, both a Macintosh II and a Macintosh Plus), we suggest installing the System software as if the drive is going to be used on a Macintosh II.

A Macintosh Plus ignores the information for a Macintosh II, while providing all the files and resources a Macintosh II will need.

(NOTE: Do not use the minimum Installer scripts for this purpose.)

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Tech Info Library Article Number:3678



Tech Info Library

ProDOS 8: Finding Volume Size using Assembly Language

Revised: 5/10/89
Security: Everyone

ProDOS 8: Finding Volume Size using Assembly Language

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This article last reviewed: 8 March 1989

You can determine the number of blocks on a ProDOS-compatible device from assembly language.

On a ProDOS volume, the total number of blocks available is stored on block 2, bytes \$29 and \$2A. The number is in low byte/high byte format: for example, an 800K floppy will have \$40 at byte \$29 and \$06 at byte \$2A.

Byte \$2A contains the first two digits and byte \$29 contains the last two digits. \$0640 is equal to 1600 decimal, which is the total number of blocks on an 800K ProDOS disk.

If you need to determine the number of blocks on a device from the hardware, that information can be obtained regardless of whether or not block 2 is intact.

Check memory locations \$Cs01, \$Cs03, \$Cs05 (s = slot number) for \$20, \$00, and \$03, respectively. If these values are found, then the card in the slot is a disk controller.

Check memory location \$CsFF. If the value is \$00 or \$FF, assume that an Apple Disk II disk controller card is installed (\$00 is 16-sector, \$FF is 13-sector).

Otherwise, check memory location \$Cs07. If the value does not equal \$00, the device is not a SmartPort device, and the total number of blocks for the drive are stored at memory locations \$CsFC and \$CsFD in low-byte/high-byte order.

If the total number of blocks is 0, contact the card manufacturer for details on how to determine the number of blocks.

(NOTE: We do not know of any disk controller that does not store the total number of blocks at memory locations \$CsFC and \$CsFD.)

If the value at memory location \$Cs07 is \$00, the drive is a SmartPort device. To find the number of blocks on the drive, you must make SmartPort status call \$03 (get DIB). This call is documented in the "Apple IIGS Firmware Reference Manual" (Apple # 030-3121-A) on pages 114 through 125, with the most specific information starting on page 121.

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Tech Info Library Article Number:3679



Tech Info Library

HD SC Setup v2.0: How to Set Interleave Factor On a Hard Disk

Revised: 5/11/89
Security: Everyone

HD SC Setup v2.0: How to Set Interleave Factor On a Hard Disk

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This article last reviewed: 2 March 1989

With HD SC Setup v2.0, you can a set disk's interleave factor. That is, you can reformat a standard hard disk with a different interleave factor than the one installed.

Make sure the disk you wish to reformat does not contain any valuable data, then follow these steps:

- 1) Run HD SC Setup.
- 2) At the first dialog box, choose the drive you want to initialize.
- 3) Press Command-I.
- 4) This presents a dialog box asking for the interleave factor.
Choose 1 for a 1:1 interleave, 2 for a 2:1 interleave, and so on.
- 5) Now choose Initialize.

Your drive is now reformatted to the specified interleave factor.

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Tech Info Library Article Number:3681



Tech Info Library

MultiFinder: How to Set File-Protect Bit

Revised: 10/16/91
Security: Everyone

MultiFinder: How to Set File-Protect Bit

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Article Created: 2 March 1989
Article Last Reviewed: 16 October 1991
Article Last Updated: 16 October 1991

TOPIC -----

I have a problem with the file-protect bit under System 6.0.2 and MultiFinder. After setting the file-protect bit with ResEdit, I can still copy or delete the protected file.

DISCUSSION -----

If you have a folder's window open under MultiFinder and change the file-protect bit for a file in that folder, you can still copy the file even though the file-protect bit is clearly set.

However, if you set the file-protect bit for that file and then close and reopen the folder, you will not be able to copy the file.

This is because the directory information for the folder resides in memory, while the folder is open. Thus, the changes written to the disk at the time of the file-protect update are not updated in the copy in memory. Closing and opening the folder causes the directory information to be copied into RAM with the appropriate values.

This applies to an HFS disk, too. To solve this problem you must unmount the HFS disk by dragging it to the trash, then reinsert it.

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Tech Info Library Article Number:3682



Tech Info Library

Synchronous Terminal Emulation on the Macintosh

Revised: 5/10/89
Security: Everyone

Synchronous Terminal Emulation on the Macintosh

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This article last reviewed: 2 March 1989

There are many ways that synchronous communications can be performed on a Macintosh. The type of hardware and software needed is usually linked to the type of host computer that you want to connect to. Also, the hardware performs the synchronous interface, rather than the terminal emulator itself. The software must be able to communicate with the specific hardware: most of the time, each particular type of synchronous communications hardware has software written specifically for it.

For instance, MacTerminal can be used for synchronous communications with an IBM host through the use of an AppleLine protocol converter, but other standard Macintosh terminal emulators can NOT be used in the same fashion. It is the AppleLine that actually performs the synchronous communications, while MacTerminal is communicating asynchronously with the AppleLine.

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Tech Info Library Article Number:3683



Tech Info Library

Macintosh: Troubleshooting Frequent System Crashes (4/94)

Revised: 4/5/94
Security: Everyone

Macintosh: Troubleshooting Frequent System Crashes (4/94)

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Article Created: 2 March 1989
Article Reviewed/Updated: 5 April 1994

TOPIC -----

This article documents some troubleshooting steps if your Macintosh is suffering unusual and periodic crashes.

DISCUSSION -----

1) These types of problems are caused most commonly by conflicting extensions (INITs) or control panels in the System Folder, a corrupted System file, or software that is incompatible with your System and its combination of extensions and control panels. Check for a pattern in the crashes and the exact configuration of the system (extensions and control panels being used, for example). Noting the times at which the crashes actually occur, and the specific series of steps needed to reproduce them, are vital to pinpointing a possible software problem.

2) If you have a large amount of hardware (large monitors, printers, scanners, etc.), it is possible that you are overloading the circuit on which you are running your equipment. For instance, the LaserWriter II itself draws more than 7 amps. Most circuits are only 15-amp circuits, so this doesn't leave much for the Macintosh, large display monitor, scanner, and external hard drive. Thus, it is possible that you are getting low voltage situations. Such situations can cause unusual or periodic crashes. If you have specific hardware problems, like failing hard drives, investigate the electrical circuit as the source of the problem.

For more information, search under "Troubleshooting".

Article Change History:
5 April 1994 - Revised formatting, clarified topic.

Support Information Services

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Tech Info Library Article Number:3685



Tech Info Library

LaserWriter: Maximizing Accurate Print Registration

Revised: 5/11/89
Security: Everyone

LaserWriter: Maximizing Accurate Print Registration

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This article last reviewed: 2 March 1989

When printing to a LaserWriter, the accuracy of the print location (the consistency of location of lines and letters from one printed sheet to the next) is based partly upon these variables:

- 1) The weight of the paper being used (16 to 24 lbs. recommended, 20 lbs. preferred). If the paper weight is less than 16 lbs., paper pickup and registration through the paper feed mechanism will probably suffer. If the paper weight is more than 24 lbs., there will probably be paper jams due to poor paper pickup.
- 2) Paper finish (photocopy or typewriter bond preferred). If the finish of the paper stock is smooth, then the paper may slip or be skewed due to poor or uneven feed roller adhesion.
- 3) Age and use of the LaserWriter. The older a LaserWriter is, and the more heavily it has been used, then the higher the chances are for poorer print registration. This is due to the wearing of the paper feed roller and accumulation of paper dust. These factors cause the paper to slip slightly during paper pickup and feed. Regular cleaning of the paper pickup and feed rollers should eliminate some of the registration problems.

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Tech Info Library Article Number:3686



Tech Info Library

Macintosh II and Macintosh SE: Sound Level Differences

Revised: 9/16/93
Security: Everyone

Macintosh II and Macintosh SE: Sound Level Differences

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Article Created: 11 May 1989
Article Reviewed/Updated: 8 June 1992

TOPIC -----

What are the differences in sound level between the Macintosh SE and Macintosh II?

DISCUSSION -----

There is a significant difference in the sound output of the Macintosh SE and the Macintosh II -- as much as a difference of 14dB in output level for the same digitized sine wave -- because of differences in output strength at the sound jack.

The explanatory information is in the "Macintosh Family Hardware Reference Manual" (Addison-Wesley, ISBN# 0-201-19255-1).

Macintosh SE Sound Circuit:

The external sound line provides a low-impedance, high-level (8VAC peak-to-peak) signal that can drive any load of 32 or more ohms.

(WARNING: The signal available at the external sound jack on the Macintosh SE computer is capable of damaging some power amplifiers and can generate dangerous sound levels in headphones. You should use extreme caution when using this signal with amplifiers or headphones.)

Macintosh II Sound Circuit:

The external sound jack is at standard line level (approximately 1.5VAC peak-to-peak), and its source impedance is approximately 47 ohms. The jack is capable of driving a headphone load of 8 to 600 ohms, or the input to almost any audio amplifier or amplified speakers. It will NOT adequately drive a directly connected external speaker.

Based on this information, with the same volume setting on each machine, regardless of the input impedance of the audiometer, there will be a large difference in the sound level output.

One possible method of equalizing these signals would be to construct a box with a switch. When using a Macintosh SE, you could switch in either a fixed resistor or a potentiometer to drop the audio input level to the audiometer. The other switch position would be straight through from the Macintosh II. This level-matcher would be completely passive in nature, and could be built relatively inexpensively.

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Tech Info Library Article Number:3687



Tech Info Library

LocalTalk Has Effective Electrical Isolation

Revised: 5/11/89
Security: Everyone

LocalTalk Has Effective Electrical Isolation

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This article last reviewed: 8 March 1989

The LocalTalk system is much less sensitive to power problems than many networks.

To start with, LocalTalk uses differential signaling, which has a higher noise immunity than normal, directly-connected TTL logic networks (like Corvus, for instance). Also, LocalTalk uses transformer coupling from the network to the node. This provides additional isolation from noise on the network. The transformer specification requires that there be no significant leakage current with 1000VDC applied between the secondary winding and the core.

Because the LocalTalk network is passively coupled, any severe noise spikes would have to come through the system itself. This means any protection provided for the system itself would also be protecting the network.

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Tech Info Library Article Number:3688



Tech Info Library

Graphical Data Display Manager (GDDM): File Format Specification

Revised: 5/11/89
Security: Everyone

Graphical Data Display Manager (GDDM): File Format Specification

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This article last reviewed: 8 March 1989

GDDM, Graphical Data Display Manager, is a graphical, character-encoding scheme used for displaying graphics. Two other graphic display schemes are Vector and All Points Addressable (also known as "APA" or "Raster").

Using GDDM to display a box on a display screen might consist of sending four character codes. You might expect the four codes to consist of two parallel-horizontal lines and two vertical-parallel lines, all with end points touching. But instead, one of the character codes might look something like the letter "L". The second would be an "L", but flipped upside down. The third would look like an "L" flipped horizontally, and the fourth character would display like an "L" flipped vertically and horizontally.

Therefore, these "L"s could be used to construct a rectangle on the display. GDDM uses a variety of graphical characters, some looking like "L"s, to construct graphical displays.

Vector graphics, of course, define lines bound by two points. APA (Raster) graphics provide control of every point.

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Tech Info Library Article Number:3689



Tech Info Library

Inter•Poll: How to Identify Active Apple II Systems

Revised: 3/1/93
Security: Everyone

Inter•Poll: How to Identify Active Apple II Systems

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This article last reviewed: 17 March 1989

Certain requirements must be met before Inter•Poll can identify an Apple II on a network:

Apple IIGS

For an Apple IIGS to appear in the "Device List" window of Inter•Poll, you must:

1. Select "Built-in AppleTalk" from the Control Panel. At the same time, set the port that the network is connected to, generally the Printer port, to "Your Card".
2. Shut down and restart the system.
3. Run Inter•Poll on the Macintosh, or have it running and checking the network. The Apple IIGS should show up in the Device List window.

Apple IIe

1. Install Apple II WorkStation card in slot 7 of Apple IIe and connect LocalTalk port to network.
2. Start up system and log into a ProDOS server on the network. Once the system gets past the Password screen, the device shows up in the Device List window of Inter-Poll.

The important requirements are:

- Having Built-in AppleTalk selected in the Control Panel of the Apple IIGS
- Having the proper port set to "Your Card" on the Apple IIGS

- Being past the Password screen on an Apple IIe with WorkStation Card.

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Tech Info Library Article Number:3690



Tech Info Library

LaserWriter IINT: Not Recognized by Radius Accelerator

Revised: 3/4/90
Security: Everyone

LaserWriter IINT: Not Recognized by Radius Accelerator

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This article last reviewed: 17 March 1989

When using a Macintosh with the Radius accelerator card, the system fails to recognize the printer on the network, a LaserWriter IINT. This is a problem with the ROMs on the Radius accelerator card. There is no current solution.

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Tech Info Library Article Number:3691



Tech Info Library

AppleShare Print Server and Multiple Printers

Revised: 2/6/90
Security: Everyone

AppleShare Print Server and Multiple Printers

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This article last reviewed: 23 March 1989

If you have multiple printers captured under AppleShare, and the selected printer fails during the printing, the current version of AppleShare Print Server does not allow you to automatically redirect the queued documents to a different captured printer. Apple is not aware of any third-party product that provides this.

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Tech Info Library Article Number:3692



Tech Info Library

AppleShare Network Server 2.0.1: Installation & Error Message

Revised: 10/5/93
Security: Everyone

AppleShare Network Server 2.0.1: Installation & Error Message

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Article Created: 23 March 1989
Article Reviewed/Updated: 5 October 1993

TOPIC -----

Here are a few tips on troubleshooting AppleShare Network Server installation problems:

DISCUSSION -----

Installing System 6.0.2

Under 6.0.2, the Server Installer disk appears to install normally, but when you launch Admin on the Server Administration disk you get a message: "FINDER IS OLDER VERSION".

The easiest solution is to copy Admin into the Server Folder on the hard drive and start it from there.

No "Apple II" Menu in Server Administration

APPLE II does not appear as a menu choice, until the "Apple II" box is checked in SERVER INFO under the SERVER menu. When that box is checked, Apple II users' folders and a folder called SYSTEM for the Apple IIs are created. You must restart the server before the Apple IIs will start up from the server.

No Boot Server - Apple IIGS

Check the Control Panel on the Apple IIGS. Under the Slots section, SLOT 1 should be YOUR CARD, SLOT 7 should be AppleTalk, and START-UP SLOT should be set to SCAN.

Access Not Allowed

This message can take several forms, but the basic content is always that a

user does not have access to a particular file or folder.

In fact, users should see this whenever they try to get to something they shouldn't. If access should be allowed, check the access privileges of all the folders involved, either under SERVER ADMINISTRATION, or using a Macintosh SE logged on as "Administrator".

Access Privileges Are Not the Same as You Set Them

To save time, a person setting access privileges may choose an option on the ACCESS PRIVILEGES box called CHANGE ALL ENCLOSED FOLDERS. If you do this, you change the owner of the enclosed folders, the group designation, and the access privileges. Once this is done, you must go back in and change each of the folders back to the correct owner, group, and access privileges.

No ProDOS Memory Card Found

On the Apple IIe, this means exactly what it says -- you need a ProDOS memory card. Typically, an Apple IIe requires 128K to be a workstation and 512K to be a teacher station.

On the Apple IIGS, this means either not enough memory or, more commonly, that you need to set up a RAM disk using the Control Panel. If you have the current ROMs, a 256K RAM disk will suffice, but 512K is probably better.

No Users in Aristotle

When Aristotle menu management starts, it creates a user list. If no user list is found, it is normally because the groups "STUDENT" and "TEACHER" are not found. Remember, the group names must be exactly "STUDENT" and "TEACHER". Names like STUDENTS and TEACHERS, or STUDENT GROUP and TEACHER GROUP will not work. Many times, groups still appear correctly in Admin, but recopying the primary group into the User Information folder will correct the situation. CHANGE ALL ENCLOSED FOLDERS is often the culprit here.

(Important Note: STUDENT and TEACHER must be the Primary group.)

A User Still Doesn't Appear After Re-doing Group

If a student or teacher doesn't appear in Aristotle after restoring their group designation, delete the user and then recreate it.

You Must Be a Teacher To Use This Program

Aristotle menu management can be used only by users whose primary group is TEACHER. Check the user's primary group.

How Can I Keep Users From Copying Files to Floppies?

Under the FILES AND FOLDERS menu, choose GET INFO on the program file in question. In the upper-right corner there is a box named COPY-PROTECT. When

this box is checked, users cannot make copies of the file.

How Can I Keep Users From Hiding Other Users' Folders, Trashing Them, Etc.?

Again, under the FILES AND FOLDERS menu, open the GET INFO on the folder. In the upper-right corner there is a box named LOCKED. With this box checked, no one except the owner can move a folder, throw it away, or rename it.

Volume Name Must Be a Legal ProDOS Name

For Apple IIs to be able to use a server as a volume, the volume must have a legal ProDOS name. Unfortunately, this message usually appears when you check the APPLE II ADMIN box under the SERVER INFO menu, and there is no handy way to change it. Go back to the Finder and change the name of the disk.

Remember, a name has a maximum of 15 characters, no spaces, starts with a letter, and contains only letters, numbers, and periods.

Illegal ProDOS Name That Appears To Conform to Rules

Check for blanks preceding and/or following the volume name.

AppleTalk Must Be Installed

This usually occurs on a workstation and not the server. In either case, go to the Chooser and select the radio button that makes AppleTalk ACTIVE.

Administration Is an Unavailable Option

If Administration is an option that cannot be selected, then it does not reside in the server folder. This means someone probably copied the ADMIN program onto the hard drive, but not into the Server Folder. Go back to the Finder and drag it into the Server Folder.

Administrator Cannot Use All Folders

This normally occurs when using a Macintosh SE as a workstation logged on as Administrator.

If the Administrator is unable to see any folders or to change names, privileges, and so on, then Administrator was not given all privileges. Go to the SERVER ADMIN program, open the ADMINISTRATOR's user information, and check the ALL PRIVILEGES box.

Error/Unable To Load Application

On an Apple II running Aristotle, these messages appear when pathnames are incorrectly stated when creating an application for the application list. Aristotle WILL NOT catch this in menu management, but only when a user selects the menu option and tries to load the application. Correct the pathname. It should appear as follows:

/volumename/directory1/directory2...../application

Aristotle... Not Saved Properly

This message occurs when a student logs on, but the teacher has not saved and quit Aristotle menu management. Have the teacher save any unsaved work and quit Aristotle.

Startup Configuration Not Properly Setup

This message occurs when access privileges to start-up files and folders have been corrupted. Check access privileges for the folders Aristotle, MENU.D, and DISPLAY, if the student is using Aristotle.

Garbage When Printing to the LaserWriter

To use the LaserWriter, an ImageWriter emulation program must be downloaded to it. You can do this by printing to the spooler or selecting the printer again in the Chooser.

Article Change History:

5 Oct 1993 - Changed title to reflect version.

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Tech Info Library Article Number:3694



Tech Info Library

System 6.0.2: How To Protect Files

Revised: 5/31/89
Security: Everyone

System 6.0.2: How To Protect Files

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This article last reviewed: 23 March 1989

Users of System version 5.0 may have found changes in file privileges under System 6.0.2 -- namely, that any files locked using System 5.0 can now be trashed, removed, or moved to another folder.

Under System version 5.0, setting the protect bit on a file causes the following under the Finder:

- The file cannot be moved from its current folder/window.
- The file cannot be thrown in the trash.
- The file cannot be copied.

When any of these were tried, the Finder gave the message: "That may not be duplicated or moved."

Under System version 6.0.2, setting the protect bit on a file only prevents the Finder from copying the file. The file can be moved or thrown in the trash. The message returned by the Finder when you try to copy the file is: "That may not be duplicated or copied."

The change in the wording of the dialog box indicates to us that this was an intentional change and that we can expect this to be the new function of the protect bit.

You can keep a file from being thrown in the trash by setting the locked bit, but the file can still be moved. Also, the locked bit is much more easily changed than the protect bit. We know of no way under System 6.0.2 to prevent a file from being moved under the Finder.

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Tech Info Library Article Number:3695



Tech Info Library

Macintosh II 800K Drive: Compatible With Macintosh IIX

Revised: 7/20/92
Security: Everyone

Macintosh II 800K Drive: Compatible With Macintosh IIX

=====

Article Created: 23 March 1989
Article Last Reviewed: 20 July 1992
Article Last Updated:

TOPIC -----

Are the 800K floppy drives from a Macintosh II computer compatible with a Macintosh IIX computer?

DISCUSSION -----

Macintosh II floppy drives are completely compatible with the Macintosh IIX. The Macintosh IIX ROMs and SWIM chip were in fact designed with this capability.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3696



Tech Info Library

TV950 Emulation For Macintosh

Revised: 8/3/89
Security: Everyone

TV950 Emulation For Macintosh

=====

This article last reviewed: 30 March 1989

An ADDS Viewpoint 60, TV950 emulator is available from Pacer Software. The product is called pcLINK. It performs key sequences, sends ASCII text between Prime and VAX, and has a Prime 50-series and DEC VAX interconnect package. It also serves as a true gateway to minis and mainframes and has command file capabilities. For more information, search under: "Pacer".

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3698



Tech Info Library

Apple IIGS: Sound Modification On Rev C Boards Only

Revised: 5/11/89
Security: Everyone

Apple IIGS: Sound Modification On Rev "C" Boards Only

=====

This article last reviewed: 30 March 1989

The modification to the Apple IIGS sound circuit to reduce the unwanted background noises from the port was on the Revision "C" logic boards. Unfortunately, due to some parts-availability problems, there were only 34,000 Rev. "C" logic boards produced.

Production has subsequently reverted back to Rev. "B" boards. However, service stock logic boards are modified to Rev. "C" when repaired by the Apple service repair centers.

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Tech Info Library Article Number:3699



Tech Info Library

SCSI Troubleshooting: Hardware and Software Conflicts

Revised: 5/17/89
Security: Everyone

SCSI Troubleshooting: Hardware and Software Conflicts

=====

This article last reviewed: 30 March 1989

Connecting SCSI devices to the bus and installing their associated drivers and INITs sometimes raise interesting issues. Improper termination is typically the root of hardware conflicts. A less likely reason is forgetting to set the SCSI priority number to a unique number, or using a device that improperly "provides" built-in termination, or improperly powers the terminators. Do not overlook damaged cables, terminators, or the terminator power source.

The system could also be running out of memory. Configuring a start-up disk with minimal drivers and INITs or adding more RAM may help test that theory.

Software conflicts typically result from INITs clobbering one another at startup, possibly due to poor memory management. Often, you can isolate a troublesome INIT by removing all extraneous INITs, then systematically adding each one back into the System Folder, one at a time, until you can no longer start up or use a device.

Also, you can often eliminate the conflict by renaming the INIT (or files that contain INITs in their Resource Fork) so that they install in a different order. (INITs and drivers are installed alphabetically.) For example, you could rename the Apple Scanner INIT to "aScanner" to get it to load sooner.

Note that there are some INITs (like Dyna File) that won't work if renamed. If this is the case, and the INIT conflicts with the Apple Scanner, you may have to remove the INIT from the System Folder when you're going to use the Apple Scanner.

Tech Info Library Article Number:3700



Tech Info Library

Video Disc Cables for Macintosh

Revised: 5/17/89
Security: Everyone

Video Disc Cables for Macintosh

=====

This article last reviewed: 30 March 1989

Here are the pinouts for a Macintosh-to-video disc player cable.

Macintosh Plus		Video Disk Player	
-----		-----	
Mini-Circular 8 (Male)		RS-232 DB-25 (Male)	
Frame Ground	1	1	Frame Ground
CTS	2	6	
DSR			
TXD	3	3	RXD
Signal Ground	4	7	Signal Ground
RXD	5	2	TXD

On the DB-25 side, connect pins 4 (RTS), 6 (DSR), and 20 (DTR) together.

This cable has been tried and tested with the following video disc players:

- Sony 1000A
- Sony 1500
- Sony 2000
- Philips VP406
- Pioneer LDV6000

Tech Info Library Article Number:3702



Tech Info Library

LaserWriter: How to Turn Off the Test Page on Startup (10/94)

Revised: 6/5/96
Security: Everyone

LaserWriter: How to Turn Off the Test Page on Startup (10/94)

=====

Article Created: 6 April 1989
Article Reviewed/Updated: 12 October 1994

TOPIC -----

Normally, your LaserWriter prints a test page every time you turn on its power. This is the page with a large ampersand and other printer configuration facts on it. This article describes how you can disable this test page.

DISCUSSION -----

You can inhibit the LaserWriter from printing a test page every time it's powered up.

With a Macintosh
=====

Use the LaserWriter Utility (System 7.0 or higher) and select "Set Startup Page..." from the Utilities menu. You are presented with an option to turn the Startup Page On or Off.

With an MS DOS Based System
=====

A boolean value called dostartpage is stored in the persistent parameters of all LaserWriters. You change this value with these PostScript programs:

Disable Startup Page PostScript Program

This program disables the printing of a start-up page:

```
serverdict begin 0 exitserver
statusdict begin false setdostartpage
```

Enable Startup Page PostScript Program

This program enables the printing of a start-up page:

```
serverdict begin 0 exitserver
statusdict begin true setdostartpage
```

These programs can be sent via a PostScript downloading program, a word processor that supports straight ASCII output (no imbedded control codes), or entered while in PostScript Interactive mode.

Article Change History:

12 Oct 1994 - Added keyword, reformatted, and made minor updates.
25 Oct 1993 - Updated to include MSDOS information
04 Mar 1993 - Revised to provide additional keywords and clarify the title

Support Information Services

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Tech Info Library Article Number:3704



Tech Info Library

HyperCard: How to Select Environments

Revised: 6/17/92
Security: Everyone

HyperCard: How to Select Environments

=====

Article Created: 6 April 1989
Article Last Reviewed: 4 June 1992
Article Last Updated:

TOPIC -----

Under System 6, is it possible to start the Finder, MultiFinder, and A/UX from a HyperCard stack - IF HyperCard is the start-up application, and that stack is the start-up stack?

DISCUSSION -----

Here are some things you have to do to make this work:

- Change the file type of MultiFinder to APPL. HyperCard only runs applications (or documents belonging to applications) when you use HyperTalk's Open command. Changing MultiFinder's file type to APPL makes it an 'application'.
- Make sure that no INITs are loaded if you want A/UX to be run. The sash application that launches A/UX 1.0 or 1.0.1 does not coexist with most INITs.
- Make sure that the launch command in the sash application is configured to launch from the proper drive if you are using more than one hard disk on this machine.
- Within HyperCard, you need to decide whether you will include a card on the Home Stack that does the launch, or if you will use the start-up script in the Home stack to open another stack that does the launching.

Copyright 1989, Apple Computer, Inc.

Tech Info Library Article Number:3705



Tech Info Library

Apple HD Backup Error: Tried To Open Too Many Files

Revised: 6/15/92
Security: Everyone

Apple HD Backup Error: "Tried To Open Too Many Files"

=====

Article Created: 25 January 1989
Article Last Reviewed: 20 May 1992
Article Last Updated: 20 May 1992

Note: HD Backup is not compatible with System 7; this article is relevant only for those running System 6.0.x or earlier.

When using Apple's HD Backup, you may get a "Tried to open too many files" error with "Cancel" or "Continue" options. When you click on continue, it goes on to the next file, and then produces the same error.

Such an error message suggests files being backed up are "busy". This may be due to:

- Finder file information flags set incorrectly.
- Damaged system software.
- Maximum number of files allowed set unreasonably low in boot blocks.
- A problem with HD Backup, which Apple's testing could not duplicate.

Resetting the file information flags can be done by "repairing" the hard disk (hold down Command-Option as the volume is mounted).

To fix a system software problem, or ensure the number of files allowed is reasonably set, reinstall the system from known good System Tools disks, preferably by dragging the old System Folder to the trash, and then using the Installer to install new software.

There is no specific limit to the size or type of a hard disk you're able to back up with Apple HD Backup, only a practical one. To back up an 80MB hard disk, you need more than 100 diskettes, and a lot of time and patience for inserting and removing that many diskettes. Theoretically, you could back up much larger drives, 1.5 gigabyte drives for instance, but we haven't tested

that capability or know of anyone who is likely to need or want that feature.

Numerous third-party alternatives to HD Backup exist.

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Tech Info Library Article Number:3711



Tech Info Library

Personal Computer Peripherals Corp. (PCPC)

Revised: 4/4/97
Security: Everyone

Personal Computer Peripherals Corp. (PCPC)

=====

Article created: 17 May 1989
Article Reviewed/Updated: 4 April 1997

Personal Computer Peripherals Corp. (PCPC)

1956 Whitney Wy. N.
Clearwater, FL 34620
Contact: Robert Leeds

813-530-0123

800-622-2888

Fax: 813-530-0123

Company Profile:

Software, specializing in SCSI devices and peripherals, patented back-up software for networks and single user and 8mm DAT 1/4 in. tape and optical storage media

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Tech Info Library Article Number:3713



Tech Info Library

A/UX: Ethernet TDR Test Results, Shorts (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Ethernet TDR Test Results, "Shorts" (8/94)

=====

Article Created: 8 December 1988
Article Reviewed/Updated: 23 August 1994

TOPIC -----

If you run a Time Domain Reflectometry (TDR) test on a thin Ethernet network, all the A/UX systems (and only the A/UX systems) may appear as what seem to be shorts -- whether the systems are powered on or off.

Since the systems appear to be shorts even when powered off, the problem is almost definitely not A/UX-specific.

DISCUSSION -----

When a thin Ethernet was tested with Macintosh II or IIX (with the systems both powered on and powered off) the Macintoshes did not appear as shorts during any of Apple's TDR tests -- however, the TDR did show minor disturbances for each of the EtherTalk cards on the network.

Although these disturbances are within specifications when compared to other types of Ethernet connections, they might be interpreted as shorts. Since the network is otherwise operational, the problem described above may be due to the interpretation of the TDR results or to the TDR itself having been improperly configured.

If the TDR sees disturbances other than what appear to be shorts, it is not reporting shorts. Try deliberately shorting one of the connections (temporarily) to see exactly what a short looks like, and how it affects the TDR display.

Article Change History:
23 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:3714



Tech Info Library

A/UX: Tape Driver and 8K Buffer Limitation (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Tape Driver and 8K Buffer Limitation (8/94)

=====

Article Created: 12 March 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

People writing their own A/UX device drivers for a tape backup should be aware of a limitation on the physical I/O buffering between the kernel and the tape cartridge driver.

As an example: a fixed, 8K, physical, I/O buffer was built into the kernel. As a result of this limitation, any calls to "physio" split 64K blocks of data into 8K chunks. Any attempt to pass 64K to "physio" will result in 8 passes of 8K instead of one pass of 64K.

Article Change History:
23 Aug 1994 - Reviewed and updated.
27 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3716



Tech Info Library

Macintosh: Connecting With the Unisys A4FX Mainframe

Revised: 5/24/89
Security: Everyone

Macintosh: Connecting With the Unisys A4FX Mainframe

=====

This article last reviewed: 12 March 1989

If you need to upload and download files between a Macintosh and an Unisys A4FX mainframe, consider Avenue Software's Contact product. If the connection is asynchronous, you only need the software. If not, you will need their TDI/RS-232 converter, too. Multiple station connectors are available at a lower cost per workstation price. (Avenue Software specializes in terminal emulator and data transfer software for transferring files to/from Unisys mainframes.) For more details, search the Tech Info Library under "Avenue Software".

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Tech Info Library Article Number:3719



Tech Info Library

AFE-Compatible Translators: Information on How to Write Them

Revised: 5/24/89
Security: Everyone

AFE-Compatible Translators: Information on How to Write Them

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This article last reviewed: 12 March 1989

Technical information on how to write translators for AFE (Apple File Exchange) is available from APDA in the "Apple File Exchange Technical Reference Package v.1.1". This package includes one 800K Macintosh disk and 184 pages of documentation.

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Tech Info Library Article Number:3720



Tech Info Library

A/UX 3.0: Maximum File Name Length and POSIX (8/94)

Revised: 8/23/94
Security: Everyone

A/UX 3.0: Maximum File Name Length and POSIX (8/94)

=====

Article Created: 12 March 1989
Article Reviewed/Updated: 19 August 1994

TOPIC -----

This article discusses the maximum file name lengths for A/UX 3.0, POSIX, and BSD 4.3.

DISCUSSION -----

A/UX 3.0 is based on System V Release 2, Version 2 version of UNIX. File names can be up to 255 characters in length.

POSIX, on the other hand, defines file name length in the constant MAXNAMLEN in the "/usr/include/dirent.h" header file. A/UX is certified by the National Institute of Standards and Technology as compliant with FIPS #151 (IEEE POSIX 1003.1-1990, and ISO 9945-1)

The BSD 4.3 maximum file name length is 255 characters. However, the implementation of file system between the BSD UNIX and the System V UNIX is completely different.

The BSD fast file system for A/UX was been requested and has been implemented in A/UX.

Article Change History:
19 Aug 1994 - Updated for A/UX 3.0
27 Aug 1992 - REVIEWED For technical accuracy.

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Tech Info Library Article Number:3721



Tech Info Library

AppleScan: Workarounds For Common Problems

Revised: 5/24/89
Security: Everyone

AppleScan: Workarounds For Common Problems

=====

This article last reviewed: 27 February 1989

Here are four useful workarounds for common Apple Scanner problems:

17-Character File Name Limitation

This file name limitation applies to half-tone pattern names and setting names (for example, Untitled Pattern 2). To work around, delete any setting names or half-tone pattern names that exceed the limit. Note: You only get the system error when saving the file in PICT format.

Background Printing

Background printing of scanned images under MultiFinder can produce "streaks". This applies to AppleScan and to other applications that print scanned images. The cure: Turn off background when printing a document that contains scanned images.

Printing Scanned Half-Tones

In general, printed output of scanned half-tones looks best when the Graphics Smoothing, Faster Bitmap, and Precision Bitmap print options are turned off. This applies to most applications. Use LaserWriter Driver 5.2 (included on the AppleScan disk) and the System 6.0 Printing Tools disk.

HyperScan

When starting HyperScan, a "Can't load Global variables" dialog may appear, preventing use of the stack. This occurs in low-memory situations on 1MB systems. Try turning off the RAM cache. If the problem persists, an INIT (or several INITs) may be using too much memory.

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Tech Info Library Article Number:3724



Tech Info Library

Filming a Macintosh Screen Without Flicker (11/94)

Revised: 11/7/94
Security: Everyone

Filming a Macintosh Screen Without Flicker (11/94)

=====

Article Created: 14 March 1989
Article Reviewed/Updated: 07 November 1994

TOPIC -----

This article describes how to film a Macintosh screen without flicker, using a film (movie) camera, rather than with a video camera. A separate article describes filming a Macintosh screen with a video camera. In all cases, you must use a multisync monitor for the Macintosh II to view the screen after these modifications.

Read the entire article, including warnings, before beginning any procedures described here.

DISCUSSION -----

The techniques given here set up a camera to record the manually genlocked screen. The clock slows the screen updates exactly to the camera frame rate. This makes it possible for all of the horizontal scans to be present during each frame of the camera. The key issue is to slow the video card's video signal. You can do this either by replacing the 30.24MHz clock or by connecting an external signal generator.

WARNING: Any hardware modifications to the video card void the warranty of the video card. Apple Computer does not support any modification to the video card.

CLOCK REPLACEMENT METHOD

To slow the video signal, remove the oscillator from the card and substitute a 5-volt, square-wave, pixel-clock signal at the desired level of 21.77580 MHz. This synchronizes the camera to the screen. However, a visible horizontal/vertical retrace line might appear from the small offset of the two timings.

The clock controls the time period of each pel (displayed picture element) and all display control signals, like the sync (synchronization) signals. For a 48Hz

noninterlaced screen (progressive scan), the Macintosh II video needs an oscillator (pixel clock) of 21.77580 MHz.

Notice that a clock is not the same as the sync. The vertical sync and the horizontal sync are normally 66.67Hz and 35KHz, respectively, on a Macintosh II video card.

THE EXTERNAL PROGRAMMABLE SIGNAL SYNTHESIZER METHOD

The best method is to use an external programmable signal synthesizer (generator) that can be set to the adjusted setting and stored in memory. These units can be found at electronic test-equipment rental houses.

If you do not want to remove the clock, you can ground pin 14 of the J3 connector on the card (pins 1, 2, 3, 5, 7, 9, and 11 of J3 are grounds) and connect the external clock from the signal synthesizer to pin 4 of the J3 connector. This causes the external clock to be selected over the Macintosh II Video Card's 30.24-MHz oscillator. The generator must be on for the video card to function. This method also voids your warranty and is not supported by Apple Computer. The pinouts and signal description of the Macintosh II Video Card can be found under "Macintosh II Video Signals".

Note: The J3 connector is not the external port, but a connector on the video card. Usually, it is located under the serial number sticker.

You must set the synthesized clock signal to 22MHz and wait for the scrolling scan bar (as viewed through a camera) to move off the screen. When you see this, set the signal synthesizer to the proper clock timing of 21.77580 MHz.

Appropriate signal synthesizers include the Wavetek 178 Frequency Synthesizer and the Hewlett Packard 3336C or 8340A. The Wavetek 178 has a resolution of 8 significant digits. This allows for the 21.772800MHz square-wave, 5-volt, pixel clock. To sync the vertical retrace line, the operator sets a 22MHz time in memory. The 22MHz causes a slow scroll of the vertical retrace line. When the line is off the screen in the blanked portion of the screen, the operator executes the 21.772800MHz clock from memory.

Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3725



Tech Info Library

A/UX: Three-Button Mouse Key Equivalents

Revised: 9/24/92
Security: Everyone

A/UX: Three-Button Mouse Key Equivalents

=====

Article Created: 16 March 1989

Article Change History

03/16/89 - REVIEWED
o For technical accuracy.

TOPIC -----

Currently, the Macintosh II one-button mouse is the only mouse device available under the A/UX X Window System. Although many X client applications are designed for a three-button mouse, the A/UX X Window System uses the keyboard cursor arrow keys to act as the middle and the right mouse buttons. Following are their equivalents:

Three-button mouse device	Macintosh II equivalents
=====	=====
"Mouse Left" or "Button 1"	Actual Mouse Button
"Mouse Middle" or "Button 2"	Option Key
"Mouse Right" or "Button 3"	Enter Key
"Meta Key"	Command (Open Apple or Cloverleaf) Key

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Tech Info Library Article Number:3726



Tech Info Library

Macintosh: RS-422 and RS-449 Communications at 56K Baud

Revised: 8/25/89
Security: Everyone

Macintosh: RS-422 and RS-449 Communications at 56K Baud

=====

This article last reviewed: 23 August 1989

RS-422 is a subset of RS-449 signalling. Therefore, the two can be directly connected with no external interface needed.

RS-449 is a combination of RS-232, RS-422, and RS-423 and, as such, contains all the characteristics of these existing standard communications methods. RS-449 has additional connections for greater control over the interchange of data than previously existed with the current standards. Because RS-449 can use differential signalling (as used in the RS-422 interface), the data rate is higher than that imposed by RS-232 and single-ended signalling.

To communicate at high Baud rates (like 56K) through the serial port, take a look at the following software packages:

- MicroPhone II(from Software Ventures)
- VersaTerm-Pro (Peripherals, Computers, and Supplies Inc.)
- DynamComm (FutureSoft)

Note: V.35 is a 48 Kbit, baseband system, operating in the 60 to 104 KHz group band, over a modem. It is not directly compatible with the serial data output from a Macintosh.

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Tech Info Library Article Number:3728



Tech Info Library

A/UX Response To Callback

Revised: 9/24/92
Security: Everyone

A/UX Response To Callback

=====

Article Created: 6 April 1989

Article Change History

08/31/92 - REVIEWED
o For technical accuracy.

TOPIC -----

If you need to dial into your A/UX computer and want it to dial you back before proceeding, try these steps and the example script that follows:

DISCUSSION -----

- 1) Using "cu", "kermit", or other means, login into the remote UNIX machine.
- 2) Exec a program or a shell script saying "callback"; the "callback" should perform the following tasks:
 - Logout your current terminal session, hang up the phone line, put the originating modem in the listen mode, and set the proper TTY bits mode to be used as a dial-out port.
 - Wait a couple seconds, clear the phone line, and dial the phone number the user provided.
 - Do an "exec /bin/login" to respawn a login session.

Here is a short example of "callback" in a C Shell script. You may need to fool with the "stty -hupcl" command; do not hang up the modem on the last close. This example assumes that the remote modem is a Hayes or Hayes-compatible modem.

```
#!/bin/csh
if ($#argv != 1) then
    echo "Usage: callback YourHomePhoneNumber"
    exit
endif
set user=`whoami`
set number=$argv[1]
grep "$number" /usr/adm/callback.phones > /dev/null
if ($status == 1) then
    if ($user != root) then
        echo 'You are not allowed to use dialback because your phone'
        echo 'number can not be found in the dialout-phone list.'
        echo 'Please check the number and try it again.'
        exit
    endif
endif
# verify if it is a login shell
set pid=`ps -u$user |grep -c csh`
if ($pid[1] != 2) then
    echo "not login shell, pid=$pid"
    exit
endif
onintr we-are-back
set nohup
stty -hupcl -echo intr ^C
echo "Please hang up the phone. Or just turn the modem OFF and ON"
echo "I'll call you back in about 20 second."
sleep 15
echo -n x | tr "x" "\015"
sleep 2
echo -n x | tr "x" "\015"
sleep 2
echo -n x | tr "x" "\015"
sleep 4
echo -n "ATDT $number"
sleep 4
echo $*
# While you're waiting, log the usage of this script.
set dt=`date`
echo $dt[2-4] $user ' ' $* >> /usr/adm/callback.log
sleep 20
unset nohup
we-are-back:
stty hupcl echo
echo "HIT <Control-C>"
```

The above script has been tested and worked between a Macintosh SE (running MacTerminal) and an A/UX 1.0 system. You can modify it if it doesn't work on your system.

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Tech Info Library Article Number:3729



Tech Info Library

InterMail 1.36 Patch Available

Revised: 5/24/89
Security: Everyone

InterMail 1.36 Patch Available

=====

This article last reviewed: 16 March 1989

InterMail version 1.36 performs unpredictably with System software 6.0 and later versions. Until Microsoft releases 2.0, the best you can do is to get a patch to correct the problem. The patch is available directly from Microsoft or from CompuServe. Note: the patch upgrades version 1.36 to version 1.37.

Call Microsoft Technical Support at (206) 454-2030

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Tech Info Library Article Number:3731



Tech Info Library

A/UX: ed and Filenames

Revised: 9/18/92
Security: Everyone

A/UX: "ed" and Filenames

=====

Article Created: 16 March 1989

Article Change History

08/31/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Some A/UX users have misunderstood how the "ed" program works in terms of remembering file names.

DISCUSSION -----

In the following illustration the user tries to edit a file named "testfile", insert the contents of the password file, and update the original file.

\$ ed - testfile	
P	Get a prompt
* 3	The original script inserted a file at line 3
-r /etc/passwd	Include the password file
w	Try and update the original
?	'ed' has a problem!
h	Explain it.
cannot open file	It can't write to the /etc/passwd file
f	Show the "current" file
/etc/passwd	It's set to /etc/passwd not to "testfile"!
q	
\$	

The user assumed that the file name at the end should be "testfile" and not "/etc/passwd".

The manual entry for ed(1) gives an explanation for this problem. The currently remembered filename can be set when you use certain commands within ed--"r FILE", for example. There are some restrictions; the currently remembered filename is only changed when FILE is the very first filename mentioned since ed was invoked. So when you add a command like

```
f testfile
```

directly after invoking ed, the currently remembered filename will be "testfile" until you specify otherwise. This way the "r" command will not set the filename.

The ed(1) manual pages do mention some restriction on the currently remembered filename. Paragraph of (\$) r file command, states

"The currently remembered filename is NOT changed unless the file is the very first filename mentioned since ed was invoked."

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Tech Info Library Article Number:3732



Tech Info Library

AST Mac286 Version 2.0 Software Features

Revised: 5/24/89
Security: Everyone

AST Mac286 Version 2.0 Software Features

=====

This article last reviewed: 14 March 1989

The new version 2.0 of the AST Mac286 Software (downloadable from the AST BBS) has some new features:

- MultiFinder Support. Run DOS and Macintosh Programs at the same time. Mac286 has an option to maximize DOS performance or let your other applications and AST more equally share the 68020.
- Better support for color and graphics modes. CGA mode is faster and both modes (CGA and Mono/Hercules) now support character highlighting. (This should make 1-2-3 easier to use.)
- The D: Drive software has been enhanced to support subdirectory access. Accessing files in directories other than the selected directory in v1.01 did not work and caused some operational problems when using networks to run DOS applications.

Other new functions included in the update are:

- Copying and pasting graphics from the PC to a Macintosh application
- Postscript Printing to LaserWriters over the AppleTalk network system
- Improved Mouse Support for PC applications

AST will update all registered users.

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Tech Info Library Article Number:3733



Tech Info Library

LaserWriter: Problem Printing on Second Side

Revised: 12/6/89
Security: Everyone

LaserWriter: Problem Printing on Second Side

=====

This article last reviewed: 14 March 1989

Some people have had a problem printing two-sided pages on a LaserWriter. The pages print fine on the first side, but when printing on the second side, the ink smears at the top and the bottom of the page. There is no problem when the paper is manually fed into the printer. This can happen even when you're not using special paper.

The probable cause of the smearing or smudging is the fact that LaserWriters fuser rollers have a small amount of lubricant on them. The second pass may pick up some of this lubricant, causing the problem.

Your best bet is to experiment with other paper stock until you find one that is less sensitive to the minute amount of lubricant. Consider using paper that is specifically designed for use with photocopiers or laser printers. Definitely avoid the Xerographic paper that is designed to have the image placed strictly on one side. For more details on papers, search the Tech Info Library under "James River", "Scotch", and "Avery".

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Tech Info Library Article Number:3734



Tech Info Library

Network Performance and Statistics

Revised: 5/24/89
Security: Everyone

Network Performance and Statistics

=====

This article last reviewed: 7 April 1989

A user, curious about network performance, put TrafficWatch on a PhoneNET network consisting of 18 Macintoshes, several LaserWriters, a Kinetics FastPath 4, and a MicroVAX running AlisaShare. Some typical statistics (with a sampling period of 15 minutes) are as follows:

Total Packets:16451
Timeouts:39
Overruns:12
CRC Errors:0
Length Errors:39

Total Packets:13030
Timeouts:35
Overruns:8
CRC Errors:0
Length Errors:33

Total Packets:16017
Timeouts:28
Overruns:14
CRC Errors:0
Length Errors:29

Total Packets:40672
Timeouts:103
Overruns:43
CRC Errors:1
Length Errors:98

Total Packets:50355
Timeouts:304
Overruns:37
CRC Errors:0

Length Errors:310

Total Packets:33312

Timeouts:78

Overruns:24

CRC Errors:1

Length Errors:77

To date, no rule-of-thumb indications for good or bad network performance have emerged. In general, network engineers consider ratios to be less important than individual categories.

In fact, their recent tests yielded results comparable to those given here. Typically, CRC errors were low or zero. Other types of errors seemed to vary in proportion, depending on the type of network traffic and the specific network.

The worst case in the sample above is a little more than a 1 percent error rate. In most of the samples, you were closer to 0.5 percent. This is certainly acceptable for a network with the number of machines in this example--18 Macintoshes, several LaserWriters, and a FastPath on a single network and zone. This is close to the size that calls for breaking up the network by adding bridges. As you add devices or see increased network use (in its current configuration), the error rate would likely increase.

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Tech Info Library Article Number:3736



Tech Info Library

LocalTalk PC Card and PC-Compatibles: Compatibility Issues

Revised: 8/28/90
Security: Everyone

LocalTalk PC Card and PC-Compatibles: Compatibility Issues

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This article last reviewed: 27 March 1989

With the number of PC-compatible workstations growing, questions have arisen concerning the compatibility of these workstations with the LocalTalk PC card and AppleShare PC. This article describes the issues surrounding the card.

Bus Speed

Most PCs or compatibles have an 8 MHz bus. Some compatibles run their buses at a faster rate and have a mode to slow the bus speed. Those that do not have this slower mode find a great many cards are not compatible, because most cards are designed for compatibility with the IBM-PC 8MHz bus. The LocalTalk PC card has been tested successfully for 8-MHz compatibility. However, faster bus speeds produce reports of incompatibilities.

DMA

The LocalTalk card works with either DMA channel 1 or 3. One of these DMA channels must be present and available on the PC or compatible.

Control Signal Address Ranges

The LocalTalk card uses the address ranges \$240-\$247 or \$220-\$227. One of these ranges must be available.

Software Compatibility

AppleShare PC is compatible with most software. Some packages, while running, don't allow the DA pop application to appear. These packages are capturing either the keyboard command or holding the operating system in a state where the DA cannot appear. In these cases, the DA usually sounds a beep. The only method of using the DA is to set up connections or make configuration changes in the DA prior to running these applications.

Also, some printer utilities reroute the printer ports for spooling, buffering, or emulation. These may not work with AppleShare PC, may cause problems, or may even cause the PC to hang.

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Tech Info Library Article Number:3741



Tech Info Library

GS/OS: Bard's Tale II Format Incompatibility

Revised: 5/25/89
Security: Everyone

GS/OS: "Bard's Tale II" Format Incompatibility

=====

This article last reviewed: 27 March 1989

The Electronic Arts' program "Bard's Tale II" does not recognize a disk formatted under GS/OS. The game requires the user to format a disk that will store the character player information and statistics. When formatted under GS/OS, the disk is not recognized as a ProDOS disk. Electronic Arts has verified that the problem exists regardless of what format options are chosen.

The only workaround is to format using an earlier version of System Software, like 3.1. Here's why...

The ProDOS format has not changed. The information stored in the directory blocks has changed. The change consists of including additional information in the directory structure than in previous versions of ProDOS. The additional information is fully documented in the description of ProDOS/16 directories and is correctly handled by ProDOS/16 directory access routines.

"Bard's Tale II" reads these directories without calling the ProDOS routines. Their program only understands the information previously stored in the directory, despite the documentation for future expansion to the directories. Programs that use the ProDOS calls to access the directory continue to work.

Using earlier versions of ProDOS (v3.2 or earlier) will not write the additional information to the directory and make it possible for "Bard's Tale II" to read the disks. The problem is purely a compatibility issue due to the implementation of accessing files in "Bard's Tale II".

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Tech Info Library Article Number:3742



Tech Info Library

AppleShare PC 1.1: Not Enough Memory For Installation

Revised: 5/24/89
Security: Everyone

AppleShare PC 1.1: Not Enough Memory For Installation

=====

This article last reviewed: 27 March 1989

Some users have had problems installing AppleShare PC 1.1. Here is a typical example:

The user has a Compaq 386/25 running DOS 3.3. The Compaq is configured with 640K base memory and 1280K extended memory and the following expansion boards: LocalTalk PC, Paradise EGA, Targa 16, and Compaq Multifunction controller board.

The user planned to have the Compaq and another PC share a LaserWriter IINT. After installing AppleShare PC, there is not enough memory to run applications. The memory problem is so severe that there was not enough memory to attach the LaserWriter through the DA.

In solving this type of problem, first consider how AppleShare PC uses memory. There is an AppleLink article titled "AppleShare PC Memory Use" in the Tech Info Library that describes the following:

The amount of memory used by AppleShare PC is:

- No resident DA or other options:	127,344 bytes
- DA resident with expanded memory option:	90,176 bytes
- DA resident (no graphics or memory options):	200,416 bytes
- DA resident and high-resolution graphics support:	215,776 bytes

DOS takes up approximately 40K. AppleShare PC with high-resolution graphics support for the EGA card and DOS will take up approximately 250K. This leaves 330K for applications. Major applications (word processors, spreadsheets, and so on) usually require 384K or 512K. No wonder the user runs out of memory.

In this kind of situation, do NOT install the DA into memory. Rather, activate the by running it as a program from DOS prior to executing the applications. The user can then make the connections to the printer before

executing applications.

The user does not have to execute the DA program each time the PC is turned on, if the ANET program is used and AppleShare PC is directed to connect to the LaserWriter or LaserWriters on startup. The ANET program is distributed with AppleShare PC.

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Tech Info Library Article Number:3744



Tech Info Library

IBM-to-LaserWriter IINT With MS Word: Slow Printing Problem

Revised: 3/4/90
Security: Everyone

IBM-to-LaserWriter IINT With MS Word: Slow Printing Problem

=====

This article last reviewed: 27 March 1989

Some users with DOS computers on an AppleTalk network using the AppleTalk card and running AppleShare PC have complained of slow printing to a LaserWriter IINT. If you print to a LaserWriter set for Diablo emulation across LocalTalk, keep the following facts in mind about Diablo emulation:

- 1) It is slow because the interpreter for Diablo code is written in PostScript and must be translated to PostScript within the LaserWriter before printing.
- 2) The printer may not be receiving an end-of-file or Control-D from Microsoft Word and is waiting for a time out before printing the page.

If the LaserWriter is set for Diablo emulation, try printing a multiple-page document to the LaserWriter. If the last page takes as much as three minutes to print, the LaserWriter is probably not receiving an end-of-page command.

If the LaserWriter is set for PostScript, use the Microsoft Word APPLASER driver (from the Microsoft Word printer driver disk).

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Tech Info Library Article Number:3745



Tech Info Library

A/UX: Development Tools (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Development Tools (8/94)

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Article Created: 18 May 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

This article lists tools Apple recommends for development for UNIX systems (not necessarily A/UX). This list was originally published for A/UX 1.0 but is still relevant for subsequent releases.

DISCUSSION -----

Under A/UX, the development tools can be summarized in the following categories:

1. Programming languages (compilers and interpreters)
 - cc (1) - The C compiler.
 - f77 (1) - The FORTRAN 77 compiler.
 - efl (1) - The Extended FORTRAN language.
 - cpp (1) - The C language preprocessor.
 - bs (1) - A compiler/interpreter for modest-sized programs.
 - sno (1) - The SNOBOL interpreter.
2. The Software Generation System (SGS) is a group of programs that recognizes a standard binary executable format known as Common Object File Format (COFF).
 - as (1) - Assembler.
 - dis (1) - Disassembler.
 - ADB (1) - Debugger.
 - sdb (1) - Symbolic debugger.
 - ar (1) - Library archiver.
 - ld (1) - Linkage Editor.
 - prof (1) - Profiler.
 - nm (1) - Display symbol table of common object file.
 - strip (1) - Strip symbol and line number from object files.

- ctrace (1) - C tracing utility.
- 3. The Source Code Control System, sccs(1), helps software developers control changes to source code and other text files.
- 4. A program maintenance utility, make (1), is a utility through which system developers define the dependencies among the components of a software system and specify the processing that should take place when one or more components change.
- 5. Terminal-independent I/O, curses (3X), lets programmers write programs that read from and write to terminals without concern for the specific type or brand of terminal. The curses routines can use either a database called "terminfo" or a database called "termcap" that contains a description of control sequences for various types of terminals.
- 6. Other program development tools include:
 - awk (1) - A pattern scanning and processing language.
 - yacc (1) - Yet another compiler-compiler, is a compiler-writing tool that uses a BNF-like specification to generate a language parser.
 - lex (1) - A program that uses a set of user-defined regular expression to generate a lexical analyzer that will analyze the tokens in the input stream.
 - lint (1) - A C program syntax checker.
 - cb (1) - A C program formatter.
- 7. Text processing tools
 - Text editors
 - ed (1) - A simple, interactive line editor.
 - ex (1) and vi (1) - a text-editing family composed of a line editor and full-screen editor.
 - sed (1) - A stream editor that transforms text based upon a command script usually stored in a file.
 - Documentaries Workbench (DWB)
 - nroff (1) - Format text for output to terminals and line printers.
 - troff (1) - Device-independent text formatter for phototypesetter.
 - psdit (1) - Convert troff intermediate format to PostScript format.
 - tbl (1) - Format text into tables.
 - pic (1) - Format simple line drawings.
 - eqn (1), neqn (1), checkeq (1) - Format and check command syntax of mathematical equations.
 - man (1) - Format text into UNIX-style manual entries.

- Other text-processing utilities.
- spell (1) - A spelling checker.
- grep (1) - A program that searches for strings or regular expressions within files.
- diff (1) - A program that reports the differences between two files.

These are all included free with the A/UX software package. Other companies may charge extra.

For a complete list of A/UX commands and detailed information, please refer to "A/UX Command References (A - L)", "A/UX Command Reference (M - Z)", and "A/UX Programmer's Reference".

Aside from the list above, third parties below have some development products available for A/UX. For more details, search the Tech Info Library under the company named.

Product name	Company name
=====	=====
ADA Compiler for A/UX	Alsys
Allegro CL, an extended common LISP	Franz Inc.
Data Access Language (DAL), formerly known as "CL/1.", a connectivity language	ITI
Designer C++	Oasys, Inc.
NEXPERT OBJECT, an expert system	Neuron Data
NKR FORTRAN	PenWare, Inc.
Optimizing C	Unisoft Corp.
Optimizing FORTRAN	Unisoft Corp.
Optimizing Pascal	Unisoft Corp.
RAT FORTRAN	Absoft
RM/COBOL-85 for A/UX	Unisoft Corp.
S-Plus	Statistical Science

Article Change History:

23 Aug 1994 - Reviewed and updated. Changed DAL contact to ITI.
20 Jan 1993 - Updated vendor info.
27 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3746



Tech Info Library

A/UX: Ethernet NIC Overflow Problems (8/94)

Revised: 8/25/94
Security: Everyone

A/UX: Ethernet NIC Overflow Problems (8/94)

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Article Created: 29 March 1989
Article Reviewed/Updated: 24 August 1994

TOPIC -----

This article describes a known A/UX 1.0 networking problem that was reported to A/UX engineering. The problem is resolved in A/UX 3.0. This article is still useful in that it provides a good troubleshooting tip in the Analysis and Solution section.

DISCUSSION -----

Typical Network Configuration

The network that experienced this problem is configured as follows:
Ethernet network with A/UX systems, AT&T PCs, VAXs, and DEC terminals.

All Apple systems have Apple Ethernet cards with the new ROMs. The cable is a mixture of thick and thin. The network has connections to the outside world through gateways. Most of the time, the network is fine.

The Problem

On occasion, the user receives these error messages in the following order:

```
Transmitter frozen and resetting
ae_0 overflow
NIC reset failed
ae6_intr:receive overflow warning
```

After the error happens, the network has problems with RPC and NFS. "Show mount" says that the RPC Program did not register. If the user kills "initd" and restarts, everything works until the next time the error occurs.

On occasion, the user receives screens full of "mexpand returning 0" error

messages. Then, the transmitter resets, and the user discovers that "initd" isn't running anymore.

As a test, you can output from "netstat 1", "netstat -s", "netstat -m", and a login on an A/UX system on the network. Although the network doesn't appear to be too busy, there is a very high error rate.

There is also an IBM PC on another part of the network has been sending out broadcast storms (broadcasting all zeros) that cripple her network (A/UX systems and DEC terminals included). This is a recently detected problem that may have been going on earlier and may be contributing to the ae_0 overflow errors.

Analysis and Solution

The problem seems to involve the broadcast traffic that A/UX made and that was responded to by other machines.

At this point, the best thing to do is eliminate the broadcast traffic from and/or to the Macintosh A/UX machines by shutting down some of broadcasting daemons (like "rwhod") and/or to isolate the A/UX machines by subnetting them in a separate subnetwork.

For a temporary recovery from the situation, type the following commands to bring the network up again:

```
ifconfig ae0 down  
ifconfig ae0 up
```

Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:3748



Tech Info Library

LaserWriter and VAX: How To Fix An EEROM Problem (3/94)

Revised: 3/18/94
Security: Everyone

LaserWriter and VAX: How To Fix An EEROM Problem (3/94)

Article Created: 29 March 1989
Article Updated/Reviewed: 18 March 1994

TOPIC -----

Some users, especially those with networks, have experienced peculiar situations wherein a LaserWriter (connected via AppleTalk to a Macintosh) works, while another LaserWriter (connected on a serial line to a VAX that spools its print jobs) won't. Quite often, an EEROM problem is involved. (The EEROM is where persistent parameters are stored.)

DISCUSSION -----

When a failure to print across the serial line occurs, the problem can be that the EEROM was left in a state that the VAX is unable to deal with. This can happen if the LaserWriter was serially connected to a non-Macintosh machine before being connected to the VAX. For example, there are a number of MS-DOS programs that leave a LaserWriter EEROM in a non-standard state.

Two common problem areas are improper setting of the "setdefaulttimeouts" persistent parameter in EEROM and the corruption of the EESCRATCH section of the EEROM. The EESCRATCH is the area of EEROM used to extend PostScript. It is also the area most likely to have been set up in a non-standard way.

Initializing (by running a print job) over AppleTalk is a good, simple way to correct the problem. When the LaserWriter is initialized over AppleTalk, the EEROM is set in a state that the VAX can work with. Thereafter, the VAX should be able to print the file.

The AppleTalk LaserWriter drivers can deal with this situation, because they communicate with the LaserWriter as it is printing. When the LaserWriter has an EEROM problem, the driver can set the EEROM up properly. Because the VAX is spooling the document, it cannot maintain this type of back and forth dialog with the LaserWriter.

Article Change History:

18 Mar 1994 - Corrected title which contained errant characters.

Support Information Services

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Tech Info Library Article Number:3750



Tech Info Library

Macintosh II ADB Port: Fuse Specifications

Revised: 7/2/92
Security: Everyone

Macintosh II ADB Port: Fuse Specifications

=====

Article Created: 21 February 1989
Article Last Reviewed: 29 June 1992
Article Last Updated:

TOPIC -----

I think I've blown a fuse on my Macintosh II computer's Apple Desktop Bus (ADB) port. Is this something I can fix?

DISCUSSION -----

The +5-volt line on the Macintosh II ADB port is protected by a subminiature 1-amp, 125VAC, normal-blow fuse. This fuse is soldered to the logic board and is not a user-replaceable part.

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Tech Info Library Article Number:3751



Tech Info Library

Macintosh: Sperry Emulation

Revised: 5/24/89
Security: Everyone

Macintosh: Sperry Emulation

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This article last reviewed: 5 April 1989

Approximately 80 percent of communications with Sperry systems is accomplished via 3270 protocols. Available third-party solutions are Avatar's MacMainFrame and DCA's MacIrma product. The other 20 percent uses Sperry's UniScope, a modified 3270 protocol. To access these systems, connect through a protocol converter using a VT100 terminal emulator.

For more details, search the Tech Info Library under "Avatar", "DCA", and "Sperry".

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Tech Info Library Article Number:3752



Tech Info Library

LaserWriter: Three Books from Addison-Wesley

Revised: 12/6/89
Security: Everyone

LaserWriter: Three Books from Addison-Wesley

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This article last reviewed: 29 March 1989

The "Inside LaserWriter" manual is no longer available. It has been replaced by a manual called:

- "Apple LaserWriter Reference" (available from Addison-Wesley)

Two other pertinent titles from Addison-Wesley:

- "PostScript Language Reference Manual"
- "PostScript Language Tutorial and Cookbook"

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Tech Info Library Article Number:3753



Tech Info Library

ProDOS 8: How To Find Disk, Controller, and Block Information

Revised: 5/18/89
Security: Everyone

ProDOS 8: How To Find Disk, Controller, and Block Information

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This article last reviewed: 29 March 1989

This article describes how to find disk information, by making calls to significant memory locations.

Is the Card a Disk Controller?

Check memory locations \$Cs01, \$Cs03, \$Cs05 (s = slot number) for \$20, \$00, and \$03, respectively. If these values are found, then the card in the slot is a disk controller.

Apple Disk II Disk Controller and Disk Capacity?

Check memory location \$CsFF. If the value is \$00 or \$FF, assume that an Apple Disk II disk controller card is installed (\$00 is 16-sector, \$FF is 13-sector).

SmartPort Device and Number of Blocks?

If the device is not an Apple Disk II disk controller card, check memory location \$Cs07. If the value does not equal \$00, the device is not a SmartPort device, and the total number of blocks for the drive are stored at memory locations \$CsFC and \$CsFD in low-byte/high-byte order.

If the total number of blocks is 0, contact the card manufacturer for details on how to determine the number of blocks. (Note: We do not know of any disk controller that does not store the total number of blocks at memory locations \$CsFC and \$CsFD.)

If the value at memory location \$Cs07 is \$00, the drive is a SmartPort device. To find the number of blocks on the drive, you must make SmartPort status call \$03 (get DIB). This call is documented in the "Apple IIGS Firmware Reference Manual" on pages 114 through 125 with the most specific information starting on page 121.

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Tech Info Library Article Number:3754



Tech Info Library

A/UX: How To Link Macintosh OS Object Code (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: How To Link Macintosh OS Object Code (8/94)

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Article Created: 19 March 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

A/UX: How To Link Macintosh OS Object Code

DISCUSSION -----

You cannot link the Macintosh OS object code directly from A/UX, because A/UX and Macintosh OS have different object formats. You need to recompile and link them under A/UX.

Article Change History:
23 Aug 1994 - Reviewed and updated.
27 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3756



Tech Info Library

A/UX: Calculating Packets per Second through Ethernet (8/94)

Revised: 8/23/94
Security: Everyone

A/UX: Calculating Packets per Second through Ethernet (8/94)

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Article Created: 29 March 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

This article shows you how to calculate packets-per-second throughput across Ethernet.

DISCUSSION -----

To find the number of packets per second you can move through your Ethernet, do a quick and dirty test. Try "cp"ing or "cat"ing some files to and/or from an NFS file server. A rough test of "cp" (a 554181-byte file) with a 1K packet size took about 10 seconds (about 55K/sec).

roughly,	550,000 bytes		
	-----	=	550K in 10 seconds = 55K/sec
	1,000 bytes per K		

Some factors that might affect this number are network traffic, packet size, the load of the system, NMBUFS (buffers for networking), and so on.

Article Change History:
23 Aug 1994 - Reviewed and updated.
25 Jun 1993 - Revised for clarity.
29 Mar 1989 - Reviewed for technical accuracy.

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Tech Info Library Article Number:3757



Tech Info Library

A/UX: STREAMS (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: STREAMS (8/94)

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Article Created: 29 March 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

The STREAMS currently used by A/UX comes from AT&T System V Release 2.1. It includes all features of STREAMS, except it doesn't support the following System V Release 3 features:

- input/output polling
- asynchronous input/output
- multiplexed streams
- putmsg and getmsg routines
- services interfaces and messages
- bufcall, enableok, datamsg, insq, noenable, pullupmsg, rmvq, and testb utility routines
- NSTREVENT, MAXSEPGCNT, NSTRPUSH, STRMSGSZ, STRCTLSZ, STRLOFRAC, and STRMEDFRAC system parameters

Article Change History:
23 Aug 1994 - Reviewed and updated.
31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3759



Tech Info Library

Block-Mode Terminal Capability With VAX/VMS

Revised: 5/18/89
Security: Everyone

Block-Mode Terminal Capability With VAX/VMS

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This article last reviewed: 10 April 1989

This article describes why trying to do block-mode terminal emulation on a VAX running VMS is not a good idea. Essentially, it is a very complex, time-consuming process to convert software.

Having block-mode terminal capabilities on a VAX running VMS requires more than writing a terminal emulator. It also requires rewriting all of the programs that run on the VAX so that they support block-mode terminals. At the lowest level, VMS does support block-mode terminals. However, the lowest level only lets these features be implemented by an application. This requires the VMS application, itself, to implement all of the block-mode input and output routines that are usually accessible from the standard I/O routines on machines that run block-mode terminals.

Block-mode transfer is available from a specific model of DEC terminal in the VT100 family, the VT131. Currently, no terminal emulation package is available for the Macintosh that implements the block-mode features of the VT131. The alternative, then, is to write a terminal emulator with the necessary features.

Unfortunately, writing a terminal emulator that has block-mode features does not solve the problem on a VMS machine. The following quote from Digital's "Terminal and Printers Handbook" explains this:

"Digital currently supports the VT131 block mode under VAX/VMS version 3.0 and later versions. Support is at the operating system level, and this requires the use of third-party application programs to take full advantage of the VT131 features. This allows Digital software OEMs that use block mode terminals to use their software on Digital hardware with minimal modification. Digital has no plans to provide application software for the VT131 in other than VT102 (conversational) mode."

What this means is that although you could write a terminal emulator that has block-mode features, none of the standard VMS application software

would take advantage of those features. They would read the terminal in character-by-character (conversational) mode, anyway. Thus, to implement block mode, you would have to write the terminal emulator and rewrite every application on the system to support block mode. For example, the VMS editor would need to be completely rewritten.

The use of AppleTalk VMS does not solve this problem for the same reason that writing the terminal emulator will not. Standard VMS applications are still written for conversational mode. It is possible that performance might degrade in a situation where each character is transmitted in its own AppleTalk packet with the echoed character also returned in its own packet.

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Tech Info Library Article Number:3763



Tech Info Library

Sony MultiScan: Troubleshooting Ghosts

Revised: 7/8/92
Security: Everyone

Sony MultiScan: Troubleshooting Ghosts

=====
Article Created: 10 April 1989
Article Last Reviewed: 6 July 1992
Article Last Updated:

TOPIC -----

This article describes troubleshooting techniques for clearing video "ghosts" from a Sony Video Graphic MultiScan Projector Model # VPH-1030Q1 attached to a Macintosh II, RGB 8-bit AppleColor Monitor.

DISCUSSION -----

Usually a ghosting image appears because of transmission problems. Such problems are usually because of the cables. Causes include:

- The cable not having enough grounds connected
- A poor ground connection
- Poor shielding on the cable
- Cable length extended too far (depending on the cable and signal). In this case, the cable should be no longer than 50 feet, if at all possible.

First, check the cables. If that doesn't solve the problem, consider these three possibilities:

- All of the video grounds from the Macintosh II video card should be connected to the grounds on the projector.
- The best type of cable is RG-59 75-ohm cabling.
- The Sony 1031Q supports a multiscan ability of up to 36 KHz for horizontal. This is more than enough for our 34 KHz horizontal signal.

The bandwidth will cause a blurring if it is much less than 20 MHz, and would be best at 30 MHz.

There are ten open ground pins for connection on the RGB2 connector. Four of these should be used for pins 1, 4, 6, and 11 of the Macintosh II card. Leave pin 9 of 1031 RGB2 connector open for analog video input.

The pin connection should be as follows:

Macintosh II video card	1031Q RGB2 connector
-----	-----
1 (ground) -----	15
2 (red) -----	6
4 (ground) -----	16
5 (green & composite sync) -----	5
6 (ground) -----	17
9 (blue) -----	4
11 (ground) -----	18

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Tech Info Library Article Number:3765



Tech Info Library

Apple II: Starting Over Bridges

Revised: 5/18/89
Security: Everyone

Apple II: Starting Over Bridges

=====

This article last reviewed: 10 April 1989

When an internet has each side of the InterBridge assigned a different zone name (common practice when using the InterBridge) In this type of internet, the Apple IIe and the Apple IIGS cannot boot across an InterBridge.

However, when both sides of the InterBridge have the same zone name on a one-zone internet, the Apple II systems can start across the InterBridge. This difference occurs, because AppleTalk uses the Name Binding Protocol to understand the network design. (AppleTalk is more concerned with names than it is with numbers.) With both sides of the InterBridge having the same zone name, AppleTalk believes it is dealing with one network (one zone).

This method of name assignment has one disadvantage. All network traffic is passed across the InterBridge, thus defeating the usual reason for installing the bridge--the logical separation of network traffic.

Note: Routers and bridges are different devices. They do perform similar functions, but the router is a higher-level device than the bridge.

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Tech Info Library Article Number:3766



Tech Info Library

GS/OS 4.0 and Checkmate MemorySaver

Revised: 5/18/89
Security: Everyone

GS/OS 4.0 and Checkmate MemorySaver

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This article last reviewed: 10 April 1989

Some users have reported problems installing GS/OS on the Checkmate MemorySaver using the Installer and the Control Panel to set the start-up slot. In fact, using the Installer to put GS/OS on the MemorySaver may be the cause of the difficulties. Rather, follow these two steps:

- 1) Use the Installer to create a boot disk configured the same as the desired MemorySaver configuration.
- 2) Copy the contents of the configured boot disk to the MemorySaver.

Checkmate Technologies provided the following suggestions:

- Do not create a RAM disk in the Control Panel.
- Check MemorySaver partitions; you need one large enough to accommodate your configuration of GS/OS.
- Use a copy program like "System Utilities", instead of the Installer or the Finder "drag" copy technique.

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Tech Info Library Article Number:3767



Tech Info Library

Sharing CD-ROMs With PCs, VMS, and UNIX

Revised: 6/28/89
Security: Everyone

Sharing CD-ROMs With PCs, VMS, and UNIX

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This article last reviewed: 26 June 1989

This article discusses CD-ROM compatibility with different operating systems. The issue is very similar to the use of data files in differing operating systems. That is, to work properly, the operating system needs to understand the structure provided.

Operating Systems

The High Sierra disk format was worked out by a diverse group of computer industry companies. The format was designed to have the least impact on largest number of operating environments. However, simply because the standard exists, does not mean all environments can mount High Sierra CD-ROMs.

Each operating system publisher needs to adapt its environment so that its OS understands the High Sierra structure. Apple did this with a Startup Document which is placed in the System Folder.

The two companies, Online Computer Library and SilverPlatter currently have MS-DOS versions of their search engines in production.

File Structure

Once the operating system understands the disk structure, the next issue is understanding the file structure. If an ASCII text file is written to a High Sierra format CD-ROM, any operating system that understands High Sierra can read the text file directly.

However, when dealing with a large collection of information, an ASCII text file is not the most efficient file structure for quickly retrieving specific information. Most companies providing information on CD-ROM format, prefer their own file format, one with an indexing method for subject matter. The software for reading a particular file format-indexing method has become known as the "search engine".

CD-ROMs in UNIX and VMS

There are two issues involved with reading these particular CD-ROMs in UNIX and VMS. The first issue concerns the adoption of the operating system to allow the mounting of a High Sierra volume. To our knowledge, DEC has not implemented High Sierra drivers within VMS. There are too many versions of UNIX in the world for blanket statements to be valid.

The next issue concerns individual companies creating the retrieval software. Because access to the information provided by certain companies requires the company to write the retrieval software, deciding if it is reasonable to provide the software for VMS and UNIX is a decision left to the companies themselves.

One source that Apple is aware of concerning the latest information in CD-ROM industry follow is: Meckler Corp's "CD-ROM Librarian".

For more details, search the Tech Info Library under "Meckler", "Online Computer Library", and "SilverPlatter".

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Tech Info Library Article Number:3769



Tech Info Library

Macintosh: Fortune 8025 Connectivity

Revised: 12/17/91
Security: Everyone

Macintosh: Fortune 8025 Connectivity

=====

Article Created: 10 April 1989
Article Last Reviewed: 10 August 1992
Article Last Updated: 10 August 1992

TOPIC -----

Do you know how I can connect a Macintosh to Fortune 8025? And do you have any information about Fortune terminal emulation?

DISCUSSION -----

We assume you mean the Fortune computer that was marketed 5 to 7 years ago, a UNIX computer that used UNIX System 7. Any terminal emulation that can be defined in "termcap" can be used with this system. The VT100 emulation provided in many Macintosh telecommunications applications would work.

Here are three Macintosh-to-Fortune 8025 Communication solutions.

- NCSA Telnet is probably the best solution. Telnet is a solid, feature-rich, public-domain, VT100 emulator. It requires an Ethernet connection and a Kinetics FastPath, if you are connecting via PhoneNET or LocalTalk. Telnet supports UNIX FTP.
- Kermit is a file-transfer protocol. The public-domain Kermit package for Macintosh also provides terminal emulation.
- MacTerminal or equivalent creates an asynchronous connection with ASCII text transfer only.

For more information, search for NCSA Telnet, Kermit, or MacTerminal.

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Tech Info Library Article Number:3770



Tech Info Library

AppleShare PC and LaserWriter Printer Emulations

Revised: 12/6/89
Security: Everyone

AppleShare PC and LaserWriter Printer Emulations

=====

This article last reviewed: 10 April 1989

AppleShare PC allows the capture and redirection of printer output from a PC application to the attached and selected LocalTalk printer (LaserWriters and so on).

If you have a LaserWriter and want to output to a "normal" PC printer, select the printer at "LPT2:" (or other valid LPTx: address) to be a networked LaserWriter that emulates an Epson LQ2500 or preferred device. If you have a LaserWriter and want to send output to a PostScript printer, select the printer at "LPT3:" (or other valid LPTx: address) to be a networked LaserWriter that emulates a PostScript printer.

You can select the SAME networked LaserWriter to be both the Epson LQ2500 and the PostScript printer via two different line printer (LPTx:) logical addresses. Using the LPTx ports in this manner is a standard part of testing. There are no special techniques for accomplishing the described procedure. The most difficult part of the process is remembering which LPTx belongs with which emulator.

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Tech Info Library Article Number:3773



Tech Info Library

A/UX: Advantages of dump.bsd (8/94)

Revised: 8/23/94
Security: Everyone

A/UX: Advantages of "dump.bsd" (8/94)

Article Created: 3 April 1989
Article Reviewed/Updated: 22 August 1994

TOPIC -----

What are the advantages of using dump.bsd?

DISCUSSION -----

As described in the Local System Administration guide section on Backing Up Your System, the programs "dump.bsd" and "restore" can be used for backup.

The dump.bsd command is used for partial or full file system backups. The restore program is the companion utility of dump.bsd. It retrieves files and directories from a backup medium created with dump.bsd.

The ADVANTAGES of using dump.bsd and restore include the following:

- dump.bsd is generally faster than tar or cpio.
- They allow you to back up only those files modified or created after a certain date.
- The restore command can extract files by their inode numbers.
- A variation of the dump.bsd command, rdump, allows you to back up files over a network.
- You cannot inadvertently backup a file system located on a remote computer.

The DISADVANTAGES of using dump.bsd and restore are as follows:

- They operate only on file systems. As distributed, A/UX has only one file system, so this is not initially a drawback. However, if you add one or more file system, your use of these backup utilities becomes more complicated because you have to backup the file systems individually.

- You must be sure the system's date and time are always correct, or you are likely to lose files when restoring from an incremental backup.
- Backups made with dump.bsd cannot usually be transferred to other systems.

Article Change History:

22 Aug 1994 - Reviewed and updated.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3775



Tech Info Library

A/UX: termcap Vs. terminfo

Revised: 9/28/92
Security: Everyone

A/UX: "termcap" Vs. "terminfo"

=====

Article Created: 3 April 1989

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

Questions have arisen as to when to use "termcap" and when to use "terminfo".

DISCUSSION -----

"termcap" is the Berkeley-based mechanism;
"terminfo" is the preferred and newer System V-based mechanism.

A/UX includes "termcap" to ease porting to the many utilities that still use it.

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Tech Info Library Article Number:3776



Tech Info Library

A/UX: Some Error Messages Explained (8/94)

Revised: 8/23/94
Security: Everyone

A/UX: Some Error Messages Explained (8/94)

Article Created: 3 April 1989
Article Reviewed/Updated: 22 August 1994

TOPIC -----

This article describes the meanings of four A/UX error messages:

- "procdup - can't get 2 pages for udot"
- "SCSI timeout"
- "SCSI reset"
- "ku_fastsend: if_output failed:"

DISCUSSION -----

"procdup - can't get 2 pages for udot"

This message indicates that a kernel memory allocation request failed. It seems that there is not enough memory, and/or there are too many processes running on the particular A/UX system. A suggestion is to add more memory or run fewer processes. With such a message, you should also do the following:

- 1) Run the "kconfig -av", "pstat -m", and "netstat -m" commands.
- 2) Examine the output of these commands.
- 3) Adjust the system parameters from the "kconfig", if necessary.

"SCSI timeout"

This indicates that the SCSI was running into a situation (like doing a huge file transfer) that caused the device driver to issue a SCSI I/O request to a device. The device, has in turn, timed out before it can process the request from the driver.

"SCSI reset"

This was sent from the SCSI manager to the driver simply to clear out any timeout errors. This symptom had been reported in the A/UX Bug Report Database. There is a lot of improvement and many fixes to the SCSI driver since A/UX 1.1.

"ku_fastsend: if_output failed:"

This indicates a failure occurred on an interface output routine when the driver or the controller tried to send data to Ethernet. The "error=70" indicates "Network is down". This might be caused by the previous error messages.

Article Change History:

22 Aug 1994 - Reviewed and updated.

27 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3780



Tech Info Library

A/UX: Shell Argument Limit

Revised: 9/16/92
Security: Everyone

A/UX: Shell Argument Limit

Article Created: 3 April 1989

Article Change History

08/27/92 - REVIEWED
o For technical accuracy.

TOPIC -----

Some users have tried unsuccessfully to pass large command-line arguments.

DISCUSSION -----

The problem with the large command line is a shell problem; the shell can't work with the large command line parameters. Passing a large command line to "awk" or to other utilities creates problems. For example, If you try to "echo" a lot of characters (as shown below), it won't work.

```
1  echo '  
2  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
3  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
4  :::  
5  ' a lot more X's '  
6  :::  
24 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
25 XXXXXXXXXXXXXXXXXXXXXXXX  
26 '
```

The Korn shell has the same problem, only it allows a much larger number of characters. The Korn shell doesn't dump a core, while "csh" and "sh" do. It seems that the A/UX shells (Bourne, Csh, or Korn) have limitations on the size of their arguments.

The same echo command is successful on a BSD UNIX system.

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Tech Info Library Article Number:3782



Tech Info Library

Apple IIfc Memory Expansion Card: Using with Apple IIfc+ (2/97)

Revised: 2/12/97
Security: Everyone

Apple IIfc Memory Expansion Card: Using with Apple IIfc+ (2/97)

=====

Apple IIfc Plus Memory Card: Using with Apple IIfc Plus (2/97)

Article Created: 18 May 1989
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article discusses using the Apple IIfc Memory card in the Apple IIfc Plus.

DISCUSSION -----

The Apple IIfc Plus manual, page 110, states, (The Apple IIfc Memory Expansion Card is not designed to be used with the Apple IIfc Plus. Ask your authorized Apple dealer to recommend a compatible card.)

The design of the Apple IIfc Plus is such as to render the Apple Memory Expansion Card unstable, because of timing problems associated with the gate array.

Use of the expansion card in an Apple IIfc+ supported by Apple.

Article Change History:
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3783



Tech Info Library

Macintosh-To-Sun Connectivity (10/95)

Revised: 10/12/95
Security: Everyone

Macintosh-To-Sun Connectivity (10/95)

=====

Article Created: 11 April 1989
Article Reviewed/Updated: 12 October 1995

TOPIC -----

This article describes a number of different solutions for connecting Macintosh systems to Sun workstations. Many of them are applicable to other UNIX systems, as well.

DISCUSSION -----

In terms of connections to UNIX services, like Telnet, NFS, and FTP; look at products like NCSA Telnet, and the products from Cayman, the makers of the Gator Box.

NCSA Telnet is a Macintosh telecommunications program written by the National Center for Supercomputing Applications at the University of Illinois, Champaign-Urbana. It provides a VT100 connection to UNIX systems that have Telnet services. NCSA Telnet also provides FTP (File Transfer Protocol) uploading and downloading and Tektronix 4010 terminal emulation. The most recent version of NCSA Telnet (version 2.2) supports direct connections to an Ethernet via an EtherTalk card (or the EtherPort cards from Kinetics) and connections over LocalTalk/PhoneNET through an AppleTalk-to-TCP/IP gateway, like the FastPath from Kinetics.

Cayman Corporation has products that let you bring an NFS server's volume up as volumes on your Macintosh desktop as if they were standard Macintosh volumes. This is achieved through the use of their Gator Box and their software. The Gator Box is similar to the Kinetics FastPath, in that it provides an AppleTalk-to-TCP/IP gateway from a LocalTalk physical media to an Ethernet.

The GatorBox is a LocalTalk-to-Ethernet router with the additional functionality of converting AppleShare requests and responses to NFS requests and responses. This lets a network of Macintoshes view Suns as if they were AppleShare file servers with no special software required for either the Macintoshes or the Suns.

CAP (Columbia AppleTalk Package) is a public domain product from Columbia University that turns UNIX systems into AppleShare servers that can be accessed through the Chooser. It also provides various print services for those UNIX systems.

MacKermit is a public domain, serial-based telecommunications program providing VT100 emulation and uploading and downloading via the Kermit file transfer protocols. Most UNIX systems also have Kermit support, and this program provides good asynchronous access and file transfer capabilities to these systems.

Ungerman-Bass Corporation has announced Telnet and FTP programs for the Macintosh, based upon our announced, but not yet released, MacTCP driver.

uShare is a product from Information Presentation Technologies. uShare is comparable to PacerShare or AlisaShare, but for UNIX -- it is software that runs as a process under UNIX and permits the Sun systems that run it to act as AppleShare file servers. A Kinetics FastPath would still be needed to bridge LocalTalk and Ethernet.

Our UNIX product, A/UX, provides full access to Sun workstations on the same network. This access includes NFS, Telnet, FTP, Yellow Pages, and other network programs, like "rlogin" and "rcp".

Currently, there are no products that translate data files other than raw text files between Suns and Macintoshes. Many of the terminal and file transfer programs listed above do this properly.

Article Change History:

12 Oct 1995 - Removed reference to TOPS.

Support Information Services

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Tech Info Library Article Number:3788



Tech Info Library

Macintosh II: Can't Use 16 Colors Setting Desktop Pattern

Revised: 5/25/89
Security: Everyone

Macintosh II: Can't Use 16 Colors Setting Desktop Pattern

=====

This article last reviewed: 11 April 1989

Some Macintosh II users with 8-bit or 4-bit video cards and color monitor, running System software 6.0.2 or 6.0.3 have run into a minor problem when using the Control panel. Results are different depending on whether you set video for 256 colors or 16.

For example, select the Control Panel, and then set the card for 256 colors. Now select General and use the arrows above the sample patterns to move through the predefined options. Create a colored desktop pattern and change your desktop pattern to the new colored pattern. Now select any one of the other Control Panel icons (like Mouse, Keyboard, Monitors, Color, or other), and watch the desktop pattern. If you followed every step, then you should see no unexpected changes while doing the above steps.

Now, set up your video for 16 colors and do the same steps. You should notice that the desktop colors change as you step through the various, predefined, desktop patterns. In addition, they change when you select other Control Panel devices.

The reason 256-color mode works properly and 16-color does not is unusual but not an anomaly. The General CDEV uses the standard system "CLUT" (color look-up table) to define the variety of colors and patterns it stores as default options. The system color-look-up table contains 256 separate entries or colors. When the system is set to the 16-color mode, only 16 of the 256 colors are accessible at a given time, and the system defines 16 colors as the 16-displayable or default colors.

The General CDEV adjusts the 16 default colors to the colors used by its patterns or the patterns created by the end user, as they are selected. This adjustment of the 16 default colors remains in affect only as long as the General CDEV is active. As soon as another CDEV is chosen or the Control Panel is closed, the 16 default colors revert back to those set as default by the system, which causes the desktop colors to change.

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Tech Info Library Article Number:3789



Tech Info Library

Macintosh: How To Transfer CP/M Text Files

Revised: 6/17/92
Security: Everyone

Macintosh: How To Transfer CP/M Text Files

=====
Article Created: 18 May 1989
Article Last Reviewed: 26 May 1992
Article Last Updated: 26 May 1992

TOPIC -----

There are two ways to move documents from a CP/M machine to a Macintosh. The first is to put the documents in text-only format and send them through the serial port. The second is to use a "disk translator" program.

DISCUSSION -----

- Serial Port Transfer

To send documents from a CP/M system to a Macintosh, first save the files from the application that originated them as text-only documents on the CP/M system. Next, transfer the files through the serial port to a Macintosh using a terminal emulator. The computers can be connected via modem or direct cables. Transferred text files are easily opened by most Macintosh applications.

- Disk Translator Programs

There are several products on the market for the IBM and for CP/M machines that read and write different disk formats. One such program is Media Master for the IBM. This program lets you insert a non-IBM-format disk, like Kaypro, SuperBrain, Osborne, or other, into the IBM and save it to IBM format. Once the information is in IBM format, you can use Apple File Exchange, Apple PC Exchange or any other DOS-to-Mac transfer utility to read the information on the Macintosh. The Apple FDHD SuperDrive allows direct transfer of the data from an IBM 3.5-inch disk.

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Tech Info Library Article Number:3791



Tech Info Library

A/UX: Bourne Shell: ulimit Security Problem

Revised: 9/24/92
Security: Everyone

A/UX: Bourne Shell: "ulimit" Security Problem

=====

Article Created: 6 April 1989

Article Change History

08/27/92 - REVIEWED
 o For technical accuracy.
08/27/92 - UPDATED
 o To include A/UX 3.0 Information.

TOPIC -----

Here's a security problem in A/UX 1.0 and 1.1. It does not apply to A/UX 3.0.

```
$ulimit 0
$passwd          # this command means do the normal passwd routines
```

DISCUSSION -----

After this, the "/etc/passwd" file is truncated to 0 length. This works both as "su" and as a normal user. This problem has been verified in the Bourne Shell "ulimit" built-in function.

If anyone wants to verify it, login as "root". Otherwise, you can't get back your root access.

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Tech Info Library Article Number:3792



Tech Info Library

A/UX: Avatar's MDPIC Puts Graphics In troff Documents

Revised: 7/27/93
Security: Everyone

A/UX: Avatar's "MDPIC" Puts Graphics In "troff" Documents

=====

Article Created: 18 May 1989
Article Reviewed/Updated: 26 July 1993

TOPIC -----

DCA's (formerly Avatar) "MDPIC" Puts Graphics In "troff" Documents

DISCUSSION -----

A program called "MDPIC" from DCA (formerly Avatar) interprets Macintosh text and graphics formats and converts them into "pic" and "troff" format. The "pic" is the generalized graphical front end to "troff" through which users can include graphics in "troff" documents. "pic" works in much the same way as "tbl" and "eqn".

MDPIC is application-independent; with it, you create "pic" and "troff" graphics using MacDraw, Excel, MacProject, MacDraft, Cricket Draw, MacWrite, and, in fact, almost any Macintosh application (according to their advertisement). To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:

26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates), and added "To locate a vendor's address and phone numbers, use vendor name as a search string."
31 August 1992 - Reviewed for technical accuracy

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Tech Info Library Article Number:3794



Tech Info Library

LocalTalk Custom Wiring Kit Is Teflon-Shielded

Revised: 5/24/89
Security: Everyone

LocalTalk Custom Wiring Kit Is Teflon-Shielded

=====

This article last reviewed: 11 April 1989

The LocalTalk Custom Wiring Kit, which is sold in 100-meter lengths, is Teflon-shielded, and is rated for plenum use. Teflon shielding does not give off toxic fumes when burned and is, therefore, safe in public building installations.

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Tech Info Library Article Number:3796



Tech Info Library

Macintosh SE: How To Drive Macintosh II Monitors

Revised: 9/22/92
Security: Everyone

Macintosh SE: How To Drive Macintosh II Monitors

=====

Article Created: 11 April 1989

Article Change History

- 09/16/92 - RETITLED
- To reflect emphasis on compatibility with Macintosh II monitors.
- 09/16/92 - REVISED
- To include information on how to located third party vendor.

TOPIC -----

Can I use the Apple 13" RGB monitor with a Macintosh SE? How about other Apple monitors?

DISCUSSION -----

Orchid Technologies sells a board called ColorSE that drives the Apple 13" High Resolution RGB monitor and also displays color. This video card offers 16 colors or grayscales from a palette of 256,000. It supports any monitor that works with Apple's Macintosh II video card.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3797



Tech Info Library

Apple IIC Plus: External Pinouts (6/94)

Revised: 6/24/94
Security: Everyone

Apple IIC Plus: External Pinouts (6/94)

Article Created: 24 May 1989
Article Reviewed/Updated: 24 June 1994

TOPIC -----

This article gives the pinouts for the following ports for Apple IIC Plus:

- DB-9 Mouse or Joystick Port
- DB-19 Disk Drive Port
- DB-15 Video Expansion Connector
- MiniDin-8 Modem Port (with startup characteristics)
- MiniDin-8 Printer Port (with startup characteristics)

DISCUSSION -----

DB-9 Mouse or Joystick Port

-
- 1- MOUSEID* Mouse identifier: when active, disables NE556 hand controller timer.
 - 2- +5V total current drain from this pin must not exceed 100 mA.
 - 3- GND System Ground.
 - 4- XDIR Mouse X-direction indicator.
 - 5- XMOVE Mouse x-movement interrupt.
 - 6- N.C. Not connected.
 - 7- MSW* Mouse button.
 - 8- YDIR Mouse Y-direction indicator.
 - 9- YMOVE Mouse Y-movement interrupt.
-
- 1- GAMESW1 Switch input 1 (sometimes called paddle button 1).
 - 2- +5V total current drain from this pin must not exceed 100mA.
 - 3- GND System ground.
 - 4- Not Used for hand controller.
 - 5- PDL0 hand controller input. Must be connected to a 150K ohm variable

- resistor connected to +5V.
- 6- N.C. Not connected.
- 7- GAMESW0 Switch input 0 (sometimes called paddle button 0).
- 8- PDL1 hand controller input; must be connected to a 150K ohm variable resistor connected to +5V.
- 9- Not used with hand controller.

DB-19 Disk Drive Port

-
- 1,2,3- Ground.
 - 4- 3.5DISK 3.5 or 5.25-inch drive select.
 - 5- -12V -12 volt supply.
 - 6- +5V +5 volt supply.
 - 7- +12V +12 volt supply.
 - 8- +12V +12 volt supply.
 - 9- DR2 Drive 2 Select.
 - 10- WRPTOTECT Write protect input.
 - 11- PHASE0 Motor Phase 0 output.
 - 12- PHASE1 Motor Phase 1 output.
 - 13- PHASE2 Motor Phase 2 output.
 - 14- PHASE3 Motor Phase 3 output.
 - 15- WREQ Write request.
 - 16- HDSEL Head Select.
 - 17- DR1 Drive 1 select.
 - 18- RDDATA Read data input.
 - 19- WDATA Write data output.

Note: Power connectors on this port are for use by the disk drive only.

DB-15 Video Expansion Connector

-
- 1- TEXT Video text signal from TMG; set to inverse of GR, except in double high-resolution mode.
 - 2- 14M 14M master timing signal from the system oscillator.
 - 3- SYNC* Displays horizontal and vertical synchronization signal from IOU pin 39.
 - 4- SEGB Displays vertical counter bit from IOU pin 4; in text mode, indicates second low-order vertical counter; in graphics mode, indicates low-resolution.
 - 5- 1VSOUND One-volt sound signal from pin 5 of the audio hybrid circuit (AUD).
 - 6- LDPS* Video shift-register load enable from pin 12 of TMG.
 - 7- WNDW* Active area display blanking; includes both horizontal and vertical blanking.
 - 8- +12V Regulated +12 volts DC; can drive 300mA.
 - 9- PRAS* RAM row-address strobe from TMG pin 19.
 - 10- GR Graphics mode enable from IOU pin 2.
 - 11- SEROUT* Serialized character generator output from pin 1 of the 74LS166 shift register.
 - 12- NTSC Composite NTSC video signal from VID hybrid chip.
 - 13- GND Ground reference and supply.
 - 14- VIDD7 From 74LS374 video latch; causes half-dot shift high.
 - 15- CREF Color reference signal from TMG pin 3; 3.58 MHz.

Note: The signals at the DB-15 on the Apple IIC are not the same as those at the DB-15 end of the Apple III, Apple II GS, and Macintosh II. Do not attempt to plug a cable intended for one into the other.

Several of these signals, such as the 14 MHz, must be buffered within about 4 inches of the back panel connector--preferably inside a container directly connected to the back panel.

MiniDin-8 Modem Port

- 1- DTR Data Terminal Ready (output).
- 2- DSR Data Set Ready (input).
- 3- TD Transmit Data (output).
- 4,6,8- Ground.
- 5- RD Read Data (input).
- 7- N.C. Not connected.

Start-up Characteristics

300 baud
8 data bits
No parity
1 stop bit
No screen echo
No Line Feed after Carriage Return (no LF after CR)
No Carriage Returns in output stream
Command Char= Control-A

MiniDin-8 Printer Port

- 1- DTR Data Terminal Ready (output).
- 2- DSR Data Set Ready (input).
- 3- TD Transmit Data (output).
- 4,6,8- Ground.
- 5- RD Read Data (input).
- 7- N.C. Not connected.

Start-up Characteristics

9600 baud
8 data bits
No parity
2 stop bits
80-column line
No screen echo
Line Feed after Carriage Return
Command Char= Control-I

The MiniDin-8 pin configuration is this: As you look at the back of the machine, pin 1 being lower-right, pin 3 middle-right, pin 6 upper-right.

5 4 3
2 1

Article Change History:

24 Jun 1994 - Revised formatting, title.

Support Information Services

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Tech Info Library Article Number:3798



Tech Info Library

Macintosh SE/30: SCSI Access Time and Transfer Rate

Revised: 9/17/92
Security: Everyone

Macintosh SE/30: SCSI Access Time and Transfer Rate

=====

Article Created: 11 April 1989

Article Change History

09/16/92 - REVIEWED

- For technical accuracy.

TOPIC -----

What is the SCSI access time and transfer rate for the Macintosh SE/30?

DISCUSSION -----

The access time for the drives in the Macintosh SE/30 averages less than 30 ms. The data transfer rate is the same as the Macintosh II and is very close to 935K bps.

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Tech Info Library Article Number:3799



Tech Info Library

AppleShare File Server 2.0 Does Not Support LaserShare

Revised: 5/24/89
Security: Everyone

AppleShare File Server 2.0 Does Not Support LaserShare

=====

This article last reviewed: 11 April 1989

The AppleShare File Server software is designed to support the AppleShare Print Server 2.0 and does not support LaserShare (that is, versions of AppleShare Print Server software prior to 2.0).

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Tech Info Library Article Number:3800



Tech Info Library

Farallon PhoneNET: Troubleshooting Information

Revised: 6/1/89
Security: Everyone

Farallon PhoneNET: Troubleshooting Information

=====

This article last reviewed: 11 April 1989

The typical reason for strange behavior in PhoneNET networks is having drops from a backbone that contain resistors at their ends. A PhoneNET network should have only two terminating resistors: one at each end of the network. If a StarController is being used, there should be one resistor at the end of each drop from the StarController.

Each added resistor pulls down the voltage level across the whole network. This will cause uneven performance as the signal is degraded to below the response level of the nodes and/or the serial ports. The signal may be acceptable near the source but, depending on the configuration of the network, the signal will probably be pulled lower than can be registered by a destination node or serial port as it moves away from the source.

The nodes may be receiving signals at the lower limit of their sensitivity (something under 5 volts). For example: The voltage level is normally 5 volts when high. If added resistors increase the impedance of the network without any added current to draw from, the voltage level may be around 4 volts, depending on how many extra resistors are added, and how far from the source the receiving node is.

Now, assume that the nodes are specified to work with 4.5 to 5.5 volts, but are actually sensitive to signals as low as 4 volts. (Most will be, but some may be sensitive to only 4.5 volts.) These are perfectly good nodes on a properly configured network. Because your network might have signals at 4.2 volts in some places and 4.6 volts in others, some nodes, sensitive to 4.5-volt levels, would not receive the signals in some spots and will in others.

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Tech Info Library Article Number:3801



Tech Info Library

Double-Density Versus High-Density Disks

Revised: 8/22/91
Security: Everyone

Double-Density Versus High-Density Disks

Article Created: 25 May 89
Article Last Reviewed: 22 August 1991
Article Last Updated: 22 August 1991

TOPIC -----

This article gives the specifications for the 800K floppy disks and the 1.4MB floppy disks. It also describes why you should not drill a hole in a double-density disk and format it as a high-density disk.

DISCUSSION -----

The table below compares the formatted capacity of the different media:

	800K Disk	1.4MB Disk
	1600 sectors	2880 sectors
	-----	-----
Bytes/Sector	512	512
Sectors/Track	8-12	18
Tracks/Side	80	80
Bytes/Side	409,600	737,280
Bytes/Disk	819,200	1,474,560

The Apple SuperDrive (formerly Apple FDHD) can read and write to any of the major 3.5-inch disk formats, including Macintosh (GCR 400K, 800K, and MFM 1.44MB), Apple II (800K), and MS-DOS and OS/2 (MFM 720 and 1.44MB). GCR stands for "Group Code Recording" and MFM stands for "Modified Frequency Modulation".

When the SuperDrive writes 400K/800K disks in GCR mode, the motor speed is variable, and the disk surface is divided into five zones to allow a constant recording density as the head moves from the outer edge to the center. When using high-density media, data is written in MFM mode, and the drive speed is constant for each track.

The table that follows compares the speed of the different disk structures:

Tracks	800K Disk	1.4MB Disk
-----	-----	-----
00-15	394/12	300/18
16-31	429/11	300/18
32-47	472/10	300/18
48-63	525/9	300/18
64-79	590/8	300/18

Revolutions Per Minute/Sectors Per Track

GCR and MFM only affect how the data is written to the disk. GCR and MFM do not care how the tracks and sectors are laid out on the disk. They also have no effect on the directory structure. GCR and MFM deal with how the bits are recorded on the surface of the media.

The MFM Method

MFM was originally recommended by Shugart Associates for double-density, floppy drives and was used in a small number of systems. IBM was the first major vendor to use MFM, and now Apple also provides MFM support for the Apple SuperDrive. MFM uses a transition pulse to write data to drive media. There are two locations for the transition pulse: the data boundary or the cell boundary. A transition occurs at a cell boundary only when two zero bits occur next to each other. This encoding method guarantees that no more than two-bit cells can occur without a transition and is, thus, self-clocking.

The GCR Method

GCR is a method that Apple has used to record information since the Apple II Disk Controller. Each group of four bits is translated into a 5-bit code (the Run-Length code). A translation table is used to find this 5-bit code. This 5-bit code seems to increase data bits by 20%. However, the 5-bit codes never contain more than two consecutive zeros, and GCR writes the data in NRZI format. When a 1 occurs in the data stream, a transition occurs on the data boundary. Thus, GCR is guaranteed to be self-clocking. You also save the cell boundary transitions required for MFM. Thus, GCR is more efficient than MFM and is widely used in high-density disks and tape recordings. The disadvantage of GCR is the relatively high complexity of the encoding and decoding logic.

High-Density vs Double-Density Disks

High-density disks are physically different and tested to a different specification than double-density disks. In this case, high-density disks are of higher quality than double-density disks. The high-density disks have a special, thin, recording surface that allows the higher data rates used in MFM. The 800K or 400K disk may not be sensitive enough to properly pick up and align the magnetic particles when the SuperDrive writes in MFM. This could cause corruption of the stored data and may result in errors. Thus, it is unreliable, unsupported, and not suggested.

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Tech Info Library Article Number:3802



Tech Info Library

System Software:Installation On a One-Floppy-Drive System (2/95)

Revised: 2/22/95
Security: Everyone

System Software:Installation On a One-Floppy-Drive System (2/95)

Article Created: 25 May 1989
Article Reviewed/Updated: 22 February 1995

TOPIC -----

This article explains a workaround for system software installation on a one-floppy-drive system.

DISCUSSION -----

If your Macintosh has only one floppy disk drive and no hard disk drive (for example: a Macintosh II, Macintosh IIfx, or Macintosh SE/30 with no hard disk), you can still install system software 6.0.3 onto a bootable floppy disk.

Such a System Software upgrade, even on a Macintosh IIfx with an Apple SuperDrive (formerly Apple FDHD), takes 402 disk insertions (or disk swaps).

Rather than numerous disk insertions/swaps, a simpler procedure may be to use a RAM-disk program. On a system with 2 or more megabytes (MB) of RAM, you can create a RAM disk of 800K to 1500K, and then copy the Installer and associated files to it. The Finder on the RAM-disk could be Option-clicked to make it become the start-up disk. After restarting with the RAM disk as your startup disk, you can run the installation as though a two-floppy system were being used.

Article Change History:

22 Feb 1995 - Reviewed for technical accuracy and added the commonly used term "disk swap" to enhance searching capabilities.
22 Aug 1991 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3803



Tech Info Library

A/UX: How to Start from an External Disk (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: How to Start from an External Disk (8/94)

Article Created: 4 April 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

This article discusses the following error message:

```
Disk c0d0s0
Error: Cannot select SCSI device generic disk c0d0s0
Fatal Error: Logical block 0, physical block 1768387954
chroot failed
```

```
startup#
```

DISCUSSION -----

This error appears when the startup shell looks to see which disk you want it to automatically launch and encounters a problem. It is most likely because the A/UX startup device is different than the device on which the A/UX Startup application is installed.

As shipped, A/UX Startup is configured to start the A/UX kernel from the same disk that contains A/UX Startup. You can change this to have A/UX Startup start the A/UX kernel from another device, which must be identified as a SCSI device with an ID from SCSI ID 0 through 6. The A/UX kernel must be in the root file system of the disk you select as the boot device.

To change the A/UX startup device to be different than the device on which the application A/UX Startup resides, follow these steps:

- 1) Start the A/UX Startup application.
- 2) Cancel the A/UX Startup application: press CMD-period.
- 3) Choose the General menu item from Preferences in the menu bar.

4) Identify the SCSI ID of the hard disk that contains the root file system and kernel.

Initially, the Root Directory box contains the (default)/ parameter, which is the disk on which A/UX Startup resides. Change this parameter only when the root file system is on a different disk than A/UX Startup.

5) Change the (default)/ parameter in the Root Directory Box.

Enter the SCSI ID number of the device you want to use as the A/UX startup device; use the following format where ID is the SCSI ID number:

(ID,0,0)/

6) Click the OK box.

7) Start A/UX by choosing Boot from the Execute menu.

Article Change History:

23 Aug 1994 - Reviewed and updated to describe startup shell.

Support Information Services

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Tech Info Library Article Number:3804



Tech Info Library

A/UX: The Macintosh Toolbox, rlogin, and Xindows (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: The Macintosh Toolbox, "rlogin", and Xindows (8/94)

Article Created: 25 May 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

This article discusses the relationship of the A/UX Toolbox to "rlogin", and XWindows.

DISCUSSION -----

The basis for the statements in this article is that the current implementation of A/UX Toolbox does not let any device other than the local console device ("/dev/console") access the Macintosh Toolbox ROM functions.

- 1) You cannot launch a Toolbox application after an "rlogin" to the other Macintosh A/UX. If you launch it, you will get an error message similar to the one below:

```
Can't open video device
/dev/console: Permission denied
Fatal error in Toolbox
```

This happens only if you rlogin as somebody different than whoever is logged into the console.

- 2) From your local A/UX Macintosh, you can run the Toolbox "term" program, then "rlogin" to another A/UX Macintosh. After you are in the remote Macintosh A/UX system, no more Toolbox applications can be executed. It will give you the same error message as above, if you execute it.
- 3) You cannot run a Macintosh Toolbox application under an X11 window. The reason is that they are two different window systems, and both use the same console device. They don't know each other and don't know how to share the resource. If you run a Toolbox application under X11 windows, you will get an unpredictable result, like getting the console mixed up and/or the system hanging.

Article Change History:

23 Aug 1994 - Reviewed and updated.

31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1989-94 Apple Computer, Inc.

Tech Info Library Article Number:3806



Tech Info Library

A/UX: Why You Can't Set I/O Buffer Size (8/94)

Revised: 8/24/94
Security: Everyone

A/UX: Why You Can't Set I/O Buffer Size (8/94)

=====

Article Created: 4 April 1989
Article Reviewed/Updated: 23 August 1994

TOPIC -----

Some users have wanted to increase the serial input/output buffer size to improve system performance.

DISCUSSION -----

You probably won't be able to do this in a direct fashion. The reason is that a linked list of data structures in the kernel controls A/UX serial input and output. These structures include:

- "clist" (the head of a linked-list queue of characters)
- "cblock" (a character-block structure)
- "ccblock" (a character-control block for interrupt-level control).

Some of the data structure sizes were constant when the A/UX kernel was built. These include "CLSIZE" (26, size of "clist" block) defined in the "clist" structure and the "TTYHOG" (256, maximum number of input characters buffer). As a result, you cannot change these numbers, unless you have source to recompile the kernel. Likewise, it is doubtful that the programming can change these constants.

However, there is a kernel-tunable parameter called "NCLIST" (number of system "clists"). You can raise this number with the "kconfig" command. This might speed up the input/output processing.

Article Change History:
23 Aug 1994 - Reviewed and updated.
31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:3809



Tech Info Library

Orchid Technologies

Revised: 4/4/97
Security: Everyone

Orchid Technologies

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Article Created: 3 June 1988
Article Reviewed/Updated: 4 April 1997

Orchid Technologies

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Fremont, CA 94538

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Company Profile:

Hardware, specializing in IBM PC motherboards, a full line of VGA and accelerated VGA cards.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3813



Tech Info Library

Telexmax Inc.

Revised: 4/7/94
Security: Everyone

Telexmax Inc.

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Article Created: 27 April 1989
Article Reviewed/Updated: 7 April 1994

Telexmax Inc.

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Fax: 215-343-4050

Company Profile:
Hardware, specializing in video interface products for the Macintosh and IBM PC.

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:3814



Tech Info Library

MacWorkStation: The X003 and X004 Exec Modules

Revised: 5/25/89
Security: Everyone

MacWorkStation: The X003 and X004 Exec Modules

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This article last reviewed: 12 April 1989

This article describes the difference between the X003 Invoke Exec Module and the X004 Call Exec Module.

The X003 Invoke Exec Module command actually runs the external procedure. You call this module after you have loaded the procedure and want it to execute for the first time to initialize its structures and perform its function.

The X004 Call Exec Module command passes data to an external procedure that has already been run by the X003 command. The data is passed in the "msgData" field of the TRMsg record that is sent to your external field.

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Tech Info Library Article Number:3816



Tech Info Library

MacWorkStation: MARK Parity Workaround

Revised: 5/25/89
Security: Everyone

MacWorkStation: MARK Parity Workaround

=====

This article last reviewed: 12 April 1989

A developer of a TCP/IP network contributed the following tip.
MacWorkStation does support MARK parity, even though it is used on some
mainframes. To work around this, try defining settings as follows:

Mark parity, 7 data bits, 1 stop bit

as:

No parity, 7 data bits, 2 stop bits

This kludge seems to be working, but MacWorkStation should support all
parity settings, including EVEN, ODD, NONE, SPACE, and MARK. Note that NONE
can mean no parity bit (NONE) or a zero bit (SPACE), depending on the
vendor.

Tech Info Library Article Number:3817



Tech Info Library

LocalTalk: 32-Device Limit Is a Recommendation (8/95)

Revised: 8/15/95
Security: Everyone

LocalTalk: 32-Device Limit Is a Recommendation (8/95)

=====

Article Created: 12 April 1989
Article Reviewed/Updated: 14 August 1995

TOPIC -----

This article describes the 32-device limit recommended for LocalTalk cabled networks.

DISCUSSION -----

The 32-node limit for LocalTalk is a recommendation. It is specific to AppleTalk networks using LocalTalk cabling scheme. The considerations for this limit is the average traffic generated by these nodes and the physical transmission limitations of LocalTalk, so the 32-node limit is more of a performance limit.

Having more than 32 nodes can have an impact on network performance. Since there are 254 possible node addresses on a LocalTalk network, using all possible node IDs will reduce network performance due to increased traffic.

The node addresses are divided up this way:

1 - 127 are user node IDs
128 - 254 are server node IDs
0 and 255 these two node IDs are reserved

From a traffic standpoint, only active nodes have an effect on performance. In addition, both active and non-active workstations affect the electrical characteristics of the network, because the LocalTalk connector box (transformer isolation) puts a load on the network, regardless of whether the workstation is on.

The document, "Inside AppleTalk", gives detailed technical information about AppleTalk. It is available to members of the Apple Programmers and Developers Association (APDA). To get an APDA membership application and to order this publication, write or call APDA. To find APDA's address,

search the Tech Info Library under "APDA".

Article Change History:

14 Aug 1995 - Provided additional information on node limits.

Support Information Services

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Tech Info Library Article Number:3819



Tech Info Library

Apple IIGS: Tabbing In Applesoft BASIC

Revised: 5/25/89
Security: Everyone

Apple IIGS: Tabbing In Applesoft BASIC

=====

This article last reviewed: 21 April 1989

An Applesoft "PRINT TAB" statement, such as:

```
PRINT TAB(10);"A"; TAB(20);"B"; TAB(30);"C"
```

works on the Apple IIe and ImageWriter II, provided that you precede it with a Tab Enable statement. For example

```
PRINT CHR$(9);"T E"
```

However, the PRINT TAB statement (shown above) on an Apple IIGS and an ImageWriter II results in spacing 10 or 20 spaces rather than tabbing to those columns. When using PRINT TAB for screen formatting, there is no such problem.

The reason for this is that, when printing hardcopy, PRINT TAB appears to be tabbing the specified spaces from last character. For example:

```
50 PRINT TAB (20);"Column 20";TAB (40);"Column 40"
```

causes the first tab to be placed at column 20, but the second tab is placed at column 68. Here's why. The first tab statement puts the cursor at column 20. Because the Tab Enable statement defines each tab as 9-characters wide, the tab extends from column 20 to column 28 (one character at column 20 with the remaining 8 characters pushing the last character out to column 28). When the TAB 40 statement executes, 40 spaces are added to the last cursor location (column 28), placing the cursor at column 68.

There are two ways to handle this problem on the Apple IIGS. The first way is use the HTAB statement to format columns correctly:

```
40 HTAB 40:PRINT "Column 40":HTAB 60: PRINT "Column 60"
```

Old Apple II manuals state that this is not possible, but HTAB works correctly on the Apple IIGS, both on the screen and on the printer.

Overall, TAB and HTAB work as expected on the screen. When TAB and HTAB are used for printing, three factors must be considered:

- The type of Apple II.
- The interface card through which printing takes place.
- The active printer.

Each of these variables affect the TAB and HTAB commands when used in printing.

The second way to handle this is with the "A" command. Page 92 of the "Apple IIGS Firmware Reference Manual" states that the "A" command ('A'pplesoft Tabbing) duplicates the function of the "T" command of the Super Serial Card. Issuing this command makes the TAB command work as you would expect when using a printer.

Note: The command name ("A") was changed to avoid a conflict between "T"erminal mode and "T"abbing.

Tech Info Library Article Number:3821



Tech Info Library

Apple IIe: NEC SpinWriter Model 360 Connectivity

Revised: 5/31/89
Security: Everyone

Apple IIe: NEC SpinWriter Model 360 Connectivity

=====

This article last reviewed: 13 April 1989

If you are printing from Apple IIe to a NEC SpinWriter Model 360 Daisy Wheel Printer through the Apple Super Serial Card, use the following DIP Switch Settings on the Apple Super Serial Card:

Bank 1:
1:OFF / 2,3,4:ON / 5,6:OFF / 7:ON

Bank 2:
1:ON / 2-7:OFF

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Tech Info Library Article Number:3822



Tech Info Library

GS/OS Disk Drive Anomaly

Revised: 5/25/89
Security: Everyone

GS/OS Disk Drive Anomaly

=====

This article last reviewed: 13 April 1989

This article describes a configuration in which GS/OS thinks disks are locked when they aren't or unlocked when they aren't. To see the problem "live", try the following on an Apple IIGS with one or two 3.5-inch disk drives and one 5.25-inch disk drive all daisy-chained from the SmartPort.

- 1) Start GS/OS on the 3.5-inch drives.
- 2) Insert a locked 5.25-inch disk into its drive and put it on the desktop.
- 3) Remove the 5.25-inch disk.
- 4) Insert a write-enabled, 5.25-inch disk and mount it on the desktop.
- 5) Copy the locked 5.25-inch disk onto the unlocked 5.25-inch disk. When the copy process ends, try to rename the unlocked 5.25-inch disk.

The Finder thinks the disk is locked. The problem appears to be with the driver for the 5.25-inch drives and seems to be related to how GS/OS sees 3.5-inch disks. If a 3.5-inch disk is unlocked, then the "Get Info" for all 5.25-inch disks displays "Unlocked", whether the 5.25-inch disk is physically locked or unlocked. Conversely, the same is true for a locked 3.5-inch disk. If a 3.5-inch disk is locked, then the "Get Info" for all 5.25-inch disks displays "Locked". Again, it does not matter if the 5.25-inch disk is physically locked or unlocked.

The workaround for this problem is to make sure that your 3.5-inch disks are not write-protected. This lets the user make copies and rename new 5.25-inch disks without having to restart the system.

Tech Info Library Article Number:3823



Tech Info Library

LaserWriter IINT: MS-DOS PC Printing Problem

Revised: 3/4/90
Security: Everyone

LaserWriter IINT: MS-DOS PC Printing Problem

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This article last reviewed: 13 April 1989

Some people have had problems printing to a LaserWriter IINT from an MS-DOS PC using Apple's LocalTalk PC card, along with the printing software included with AppleShare PC. A typical configuration includes Microsoft Word (PC) 4.0, under DOS 3.1. Printing originates at the PC and is sent to a LaserShare print server, which, in turn, prints to the LaserWriter. All connections are standard PhoneNET.

About six out of 10 print jobs from Microsoft Word fail and are flushed by the LaserShare during despooling due to an "unknown error". Note: Microsoft Technical Support (on the PC side) says that AppleTalk printing is "an unsupported network".

Interestingly enough, users don't have printing problems with other MS-DOS applications, printing directories, and so on or from any Macintoshes on the network.

This causes the suspicion that the PostScript driver in Microsoft Word may have problems with some of its commands. A number of drivers send their own libraries and even reconfigure the persistent parameters in a LaserWriter. Assuming the LocalTalk cabling and node have been tested along with the LocalTalk PC card for any problems, the source of the problem is the PostScript driver from Microsoft Word.

If you study some of the driver output from various PC packages, you will find that they define huge libraries of commands and even change the parameter-RAM settings. Part of the problem is that the PC software drivers expect to have the LaserWriter connected serially and set the LaserWriter or expect the LaserWriter in a configuration all to themselves. This means that the memory taken up by Macintosh Prep libraries may not let all of the libraries of PostScript code from the PC driver load. This may be what is happening here. To beat the problem, try the following:

- 1) Try a LaserWriter IINTX with memory expanded to at least 4MB.

- 2) Try printing to the LaserWriter just after a powerup and when no other Macintoshes or PCs are printing. This should show if the problem is with the different drivers from the PCs and Macintoshes.
- 3) Print the documents to an Epson printer from the application and configure the AppleShare PC printer connection for Epson emulation. This produce PostScript code from the AppleShare PC drivers. These are known to be compatible with Apple's Macintosh drivers.

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Tech Info Library Article Number:3824



Tech Info Library

LaserWriter: Problem Printing from WordPerfect (PC) Over TOPS

Revised: 3/4/90
Security: Everyone

LaserWriter: Problem Printing from WordPerfect (PC) Over TOPS

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This article last reviewed: 13 April 1989

Some users have had a problem using WordPerfect on a TOPS network. When they try to print from WordPerfect to a LaserWriter from an IBM PC, the LaserWriter prints a bitmap, instead of PostScript.

The problem is not with TOPS, LocalTalk, or the printer. Rather, this situation calls for a software reconfiguration. Here's why:

- 1) The printer is printing the document.
- 2) The TOPS card is making the connection.
- 3) The LaserWriter in PostScript mode only prints PostScript commands.
- 4) Because the document is printing, the PostScript driver from WordPerfect is working.
- 5) Because the printer is printing, the TOPS card is connecting to the network.
- 6) What does "bitmap" mean? A PostScript printer only prints the PostScript commands sent to the printer. If a bit-mapped image is sent using PostScript commands, then this is due to the PostScript driver. It may be that the customer's document is using a font that is not available or is creating a new font for itself that is a bit-mapped font.

The Macintosh prints correctly when printing to the LaserWriter because of our font support, both in the driver and the LaserWriter. A different set of fonts is usually used in the PC world. Another possibility is that the LaserWriter prints a bitmap of graphics when set in the Hewlett-Packard LaserJet Plus mode. To print, a Hewlett-Packard driver must be selected from the application.

As you can see, the problem is more than likely a configuration of the application and, possibly, the WordPerfect driver itself. Connect to the LaserWriter with a serial connection, and see if the problem remains. If it does, contact WordPerfect's technical support.

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Tech Info Library Article Number:3825



Tech Info Library

Apple IIe: Two Ways to Make it into AppleTalk Workstations

Revised: 5/25/89
Security: Everyone

Apple IIe: Two Ways to Make it into AppleTalk Workstations

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This article last reviewed: 13 April 1989

There are two ways to make an Apple IIe with a 5.25-inch drive into an AppleTalk workstation. The first is to start the Apple IIe systems over the network. The second method is to use a 3.5-inch disk drive temporarily to build a startup disk. (Workstation Card software is shipped only on a 3.5-inch disk.)

Option 1: Startup Across the Network

With this option, there is no need for the 5.25-inch drives or the Workstation software. Just prepare the AppleShare file server for use with Apple II computers. With that done, users with Apple IIe/Workstation Card systems need only power on with no disks in the drives. The computers start across the network. Having the 5.25-inch drives lets users copy files to their own disks to take home.

Option 2: Building a Local Startup Disk

This second option uses the 5.25-inch drive for local starting. The Workstation Card software ships on a 3.5-inch disk, because of software space requirements. However, you can build a workable 5.25-inch disk. This requires use of a 3.5-inch drive while building the 5.25-inch disk. Once the 5.25-inch disk is built, the 3.5-inch drive is not necessary for running the labs. The following files are the absolute minimum for a network start-up disk:

- PRODOS
- ATINIT
- SELECTOR.SYSTEM
- System.APPS
 - LOGOFF
 - LOGON
- BASIC

In this configuration, SELECTOR.SYSTEM displays several applications from which to choose. However, only the "File Server Log On", "File Server Log Off", and "ProDOS BASIC" items actually run programs. All other choices display an error message. When acknowledged, the error message returns to the SELECTOR. Unfortunately, the applications list in the SELECTOR window cannot be changed.

With the above files on the 5.25-inch disk, the student may log on, log off, and enter Applesoft BASIC. If leaving the student in BASIC is satisfactory, this is all that is needed.

If Aristotle is used for a menu system, you will need a 3.5-inch drive to transfer the Aristotle programs to the server. Once the Aristotle programs have been moved to the server, saving a one-line Applesoft BASIC program to the 5.25-inch will let the student access the Aristotle program. The program should look something like:

```
10 PRINT CHR$(4);"-/PRODOS.SERVER/ARISTOTLE/MENU.D/DISPLAY"
```

Save this one-line program as "MENU". To use it, select "ProDOS BASIC" in the SELECTOR window, and the Applesoft prompt appears. Then type "-MENU" to get the Aristotle menu. Here is the structure of the Applesoft program:

```
PRINT CHR$(4);      -- to let an immediate command be executed
"-                  -- run the program at the end of this pathname
/PRODOS.SERVER      -- name of the AppleShare file server volume
/ARISTOLE           -- name of the subdirectory containing Aristotle programs
/MENU.D             -- name of the subdirectory containing Display
/DISPLAY"           -- name of the Aristotle menu program to run
```

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Tech Info Library Article Number:3827



Tech Info Library

Apple II Workstation Card: Workstations and Zones (2/97)

Revised: 2/12/97
Security: Everyone

Apple II Workstation Card: Workstations and Zones (2/97)

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Apple II Workstation Card: Workstations and Zones (2/97)

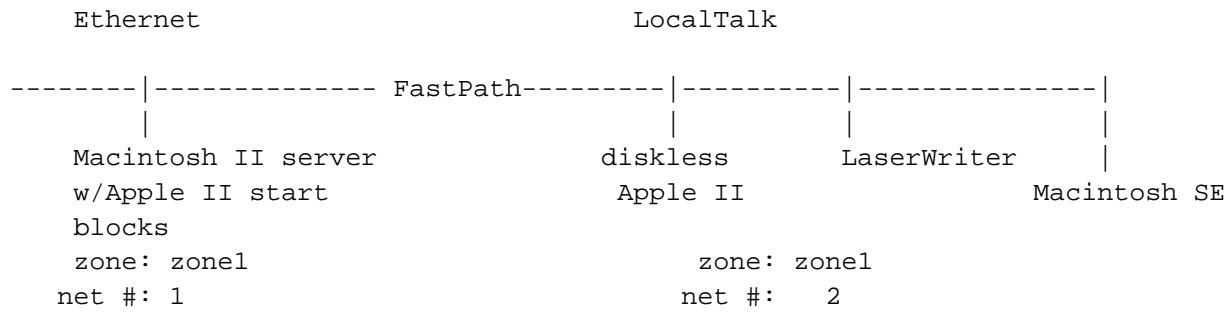
Article Created: 25 May 1989
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article discusses the ways in which the Apple II Workstation Card understands zones and network IDs. Some of the discussion refers to the following setup diagram:

DISCUSSION -----

Setup:



The only zone-related limitation concerns starting an Apple II diskless workstation. The ProDOS-prepared AppleShare server must be within the same zone as the diskless workstation. Once the Apple II has started over the network, the Workstation Card and the Apple IIGS are fully aware of zones and network IDs. This means that, once started, the Apple II can log on any ProDOS-prepared, AppleShare file server in any zone available on the Internet. The number of bridges or zones does not affect the access to another server.

When the Apple II broadcasts an AppleTalk Transaction Protocol (ATP) request,

this ATP request is sent across the entire zone in search of a file server with boot blocks. In the given example, both 'net#1' and 'net#2' are in the same zone, "zone1". The FastPath passes zone broadcasts from either "net#1" or "net#2" to the other.

Once startup is completed, the AppleShare II Workstation software is executed. From this application, the user can choose the appropriate zone and log on to the desired ProDOS-prepared server. At this time, Name Binding Protocol (NBP) translates the names into the associated Internet socket addresses of the corresponding network entities. In this case, the Apple II workstation name is translated to an address, and the server name is translated to an address. These addresses notate network IDs, zone IDs, bridge IDs, and network entity IDs.

When a workstation is instructed to print, it looks for the chosen printer with the address provided by NBP. The address specifies the location of the printer. Because the printer is on "net#2" (the same network as the Macintosh SE), the FastPath determines that the address belongs on "net#2". The FastPath does not accept the traffic, because the address is local to "net#2". However, when the Apple II requests service from the server, the FastPath recognizes the address as one that belongs to "net#1". In this condition, the FastPath lets the request travel over the bridge to the server.

Typically, routing is handled at the fourth OSI layer, the transport layer of AppleTalk. Manufacturers working with AppleTalk use the transport layer to handle routing. Manufacturers working with other protocols may handle routing at a higher layer in the OSI model.

Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:3828



Tech Info Library

HyperCard: Problems Sending Sounds On AppleTalk

Revised: 5/25/89
Security: Everyone

HyperCard: Problems Sending Sounds On AppleTalk

=====

This article last reviewed: 14 April 1989

Reports have appeared of problems with HyperCard sending sounds over a network. The sounds break up badly when they arrive at a workstation. This includes sounds accessed from CD-ROM. Also, network performance slows noticeably when sounds are being transmitted.

Some people have guessed that the breakup of the sound is due to clipping of packets, but this is not the case. If packets were being clipped, there would be no sound played at all. When AppleTalk receives an incomplete packet, it throws the packet away and requests a retry. If the packet is thrown away, HyperCard would never know the packet had been sent.

The breakup is due to the sounds being shipped in packets. In tests, the sound starting and stopping correlates to the beginning and the ending of packets. This is especially true with longer sounds, such as musical passages.

Applications used across the network need to take into account the limits of the network. Other performance difficulties have appeared in other applications not designed for network access. Ethernet speed may solve this particular issue. However, to achieve the best performance, an application needs to be designed for the network environment. Long, digitized sounds being transmitted over the network are less than ideal for network-application design.

One approach to using long music passages in HyperCard is to keep the music passages on local storage. HyperCard looks first for the requested resource in the stack, next it looks in the Home card, then in HyperCard itself, and finally in the system. If the required sounds are installed in a local Home stack, the breaking up of the sound does not happen. If these sounds are stored locally, you must remove them from the stack residing on the server. Because HyperCard looks at the current stack first, the sounds in the server stack are used, unless removed.

If the applications have not been optimized for multiuser network access, a drop in network performance would not be unusual. Additionally, the AppleCD SC has a slower access time than the typical hard drive that is used as an AppleShare server.

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Tech Info Library Article Number:3830



Tech Info Library

HD80 SC: Format With Either A/UX or Macintosh OS

Revised: 9/29/90
Security: Everyone

HD80 SC: Format With Either A/UX or Macintosh OS

=====

This article last reviewed: 14 April 1989

All the HD80 SCs used by Apple have the same level of firmware (Quantum ROM rev. B). The quantity of bad blocks may vary from one disk to another, but this is transparent to the user.

More specifically, any Apple HD80 SC can be formatted for use with either A/UX or the Macintosh OS. It is possible that drives displaying larger numbers of bad blocks are older drives and, therefore, have more bad blocks due to time. However, all of the drives should format to the same volume size under either operating system.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3833



Revised: 5/25/89
Security: Everyone

=====

A desk accessory can own (and open) multiple windows. The following methods for doing this are taken from information in "Inside Macintosh Volume I" on page I-109. (This article assumes you are familiar with the basics of resources.)

Range	
-32768 to -16385	reserved
-16384 to -1	used for owned resources
0 to 127	used for other system resources
128 to 32767	Not owned

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	1	type bits			owning resource id			you set these bits							

bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0
	1	1	type bits			owning resource id						you set these bits				

This WIND resource is owned by a DRVR resource with ID 12. If the WIND resource ID is -15599, then you have:

```

bit      15  14  13  12  11  10  9   8   7   6   5   4   3   2   1   0
         1   1   0   0   0   0   1   1   0   0   0   1   0   0   0   1
         1   1   type bits   owning resource id       you set these bits
                        |-----|
                        |
                        24

```

You can access these WIND resources through the standard window manager calls.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3834



Tech Info Library

Editing troff Files In the Macintosh OS

Revised: 9/24/92
Security: Everyone

Editing "troff" Files In the Macintosh OS

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Article Created: 18 April 1989

Article Change History

08/31/92 - REVIEWED
 o For technical accuracy.

08/31/92 - UPDATED
 o To include A/UX 3.0 Information.

TOPIC -----

Currently, you cannot do the following process:

- 1) Use "troff" on a UNIX 4.3 system to generate "troff" files.
- 2) Transfer these files to a Macintosh for editing with MacWrite or similar application under the Macintosh OS (on a non-A/UX system).
- 3) Ship these files, once edited and modified, back to the UNIX system as "troff" files.

DISCUSSION -----

The problem is in the way that "troff" and Macintosh word-processing applications specify document format within a file. They are quite different and not understood by one another.

Although transferring a "troff" file, which has been converted to PostScript, is possible, once the document is opened by a Macintosh application that understands PostScript, its format cannot be changed.

If know of a way to do this, please forward the information to TECH.COMM for evaluation and review.

..TIL03838-Editing_troff_Files_In_the_Macintosh_OS_(TA39929).pdf

In A/UX 3.0, you may now print postscript files from the Macintosh to a postscript printer using the lasarwriter font utility.

Copyright 1989, 1992, Apple Computer, Inc.

Tech Info Library Article Number:3838



Tech Info Library

MousePaint On 3.5-Inch Disk: Must Be Named /MOUSEPAINT

Revised: 5/25/89
Security: Everyone

MousePaint On 3.5-Inch Disk: Must Be Named /MOUSEPAINT

=====

This article last reviewed: 18 April 1989

When copying the MousePaint program onto a 3.5-inch disk, for use with the Apple IIc Plus for example, be sure the new disk is named /MOUSEPAINT.

If the disk has any other name, it will not start up: the program gets to the "Welcome to MousePaint" screen and then scans down to the Disk IIs that are connected. When it comes back to the 3.5-inch drive, it gives an error message "Path Not Found". The next line says "Break in 10" and displays the bracket prompt.

Another solution is to set the pathname in the startup program MP.START on the MousePaint disk. Either of these solutions works; the first is easier.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3839



Tech Info Library

LaserWriter Landscape through AUTOEXEC.BAT

Revised: 12/6/89
Security: Everyone

LaserWriter Landscape through AUTOEXEC.BAT

=====

This article last reviewed: 18 April 1989

This article describes how to use the AUTOEXEC.BAT file make it possible for you to choose whether to print landscape or portrait. It assumes you are using a LocalTalk PC card, LaserWriter software, and AppleShare PC (1.1) print drivers, so you can access the printer directly from Lotus 123 and Microsoft Word.

Here is a typical AUTOEXEC.BAT prepared for use with AppleShare:

```
atalk /mem=7K
\ashare
\aprint
\minses
\redir
\anet auto
\MOUSE1\mouse
\MOUSE\cpanel
@echo off
path=c:\;c:\dos;c:\lwdir;c:\ashare;c:\3270
prompt $P$G
lwprint -a postscrp.ini
PATH C:\WINDOWS;c:\;c:\dos;c:\lwdir;c:\ashare;c:\3270
```

The confusing part about printing Landscape is that it is not a mode. Drivers take the information going to the LaserWriter and massage everything necessary to rotate it on the printed page. The printer never gets set to a Landscape "mode".

To be able to flip between Portrait and Landscape, remove the line that begins with "lwprint" from the .BAT file. Then, use the DA pop-up application that is provided with AppleShare PC to set up the printer.

Using this method, you must print the desired file to a text file. At this point, you have two choices:

- If you choose to print to the LaserWriter through the Epson emulator (in the DA application), you need Sideways or an equivalent program to rotate the output.
- If you have chosen not to use the emulator, you must use the LWASC-R <filename> command in a batch file. This command is described on page 102 of the "AppleTalk PC Card Manual".

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Tech Info Library Article Number:3840



Tech Info Library

LaserWriter IINTX: Compatible SCSI Drives

Revised: 3/4/90
Security: Everyone

LaserWriter IINTX: Compatible SCSI Drives

=====

This article last reviewed: 18 April 1989

Adobe submitted the following list of drives tested by them and known to work with the LaserWriter IINTX:

Seagate ST225N
Rodime 650 series (R0651, R0652, R0751, R0752)
Quantum Q200 series (Q250, Q280)
MiniScribe 8425-SCSI
MiniScribe 80515

Other drives using embedded SCSI controllers have been reported compatible but have not been tested by Adobe. For more information on this topic, see the November 15, 1988 issue of "MacWeek".

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Tech Info Library Article Number:3842



Tech Info Library

Parallel Printer On AppleTalk

Revised: 7/23/92
Security: Everyone

Parallel Printer On AppleTalk

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Article Created: 31 May 1989
Article Last Reviewed: 18 April 1989
Article Last Updated: 22 June 1992

If you need Centronics parallel-compatibility on a network, consider products offered by Solana Electronics. Solana Electronics markets devices that are designed to connect, for example, a Printronix printer (with a Centronics interface) to an AppleTalk network.

However, purchasing an R-Server to connect a relatively inexpensive dot-matrix printer to the network costs more than replacing that printer outright with a new ImageWriter. Furthermore, after connecting an Epson to the network via an R-Server, you have no "network" driver support providing even minimal graphic support. All you have are the printer's built-in fonts with minimal or no formatting of text.

Solana has several options. If the printers are serial, consider the Solana R-Server X810.1 or X810.2. If the printer is parallel, use the X810.2. The X8120 devices can be set up with up to 2MB of memory for use as a data buffer to store and forward messages and so on.

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

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Tech Info Library Article Number:3845



Tech Info Library

Apple Scanner: No Apple II Scanner Software

Revised: 5/31/89
Security: Everyone

Apple Scanner: No Apple II Scanner Software

=====

This article last reviewed: 18 April 1989

Although a great deal of interest has been expressed in having the Apple Scanner work with the Apple IIGS, there is at this writing no Apple II Scanner software.

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Tech Info Library Article Number:3846



Tech Info Library

System 6.0.2: Microsoft InterMail Incompatibility

Revised: 3/23/92
Security: Everyone

System 6.0.2: Microsoft InterMail Incompatibility

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This article last reviewed: 18 April 1989

There is an incompatibility between Microsoft InterMail and System Software 6.0.2 or later. Version 1.36 of InterMail gives unpredictable performance with System software 6.0 or 6.0.2. Symptoms include unexpected and unpredictable lockups and/or system bombs (including those that happen while saving).

Microsoft has released a patch to fix InterMail versions 1.35 and 1.36, so they would work with System 6.0 and System 6.0.2. Reports from the field indicate the patch works correctly.

Here is a description of this problem:

After upgrading to System 6.0.2, intermittent problems occur as system bombs (mostly ID=03 and a few ID=02) when using Microsoft Word or Microsoft Excel and executing a "Save" or "Save As" menu option (75% of reports). Occasionally, a Print command (25% of reports) also causes a system error.

This is occurring on about seven to 10 machines that use Microsoft Word or Excel very heavily. All users are using Microsoft Word 3.01, Microsoft Word 3.02, or Excel 1.5 and operating under Finder, rather than MultiFinder. The errors occur uniformly across the population and are not isolated to one vendor's hard drive.

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Tech Info Library Article Number:3848



Tech Info Library

Videodisc Driver Information

Revised: 5/31/89
Security: Everyone

Videodisc Driver Information

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This article last reviewed: 18 April 1989

Whitney Systems has a Macintosh HyperCard Videodisc driver package called Videodisc Writer. It is an easy way for customers to incorporate videodiscs into their HyperCard stacks without having to learn HyperTalk or how to write XCMDs or XFCNs. It presently supports the Pioneer 4200, 6000, and 6010 Videodisc players. Whitney Systems is willing to write an interface for other players, too, should there be sufficient demand.

For more details, search the Tech Info Library under "Whitney Systems".

Note: "Videodisc" is spelled with a "c" at the end and is all one word. This was established with the original Phillips/Sony patent on Videodisc and Compact Disc. If you are referring to magnetic media, then spell "disk" with a "k", as in "floppy disk". If you are referring to read-only media, spell "disc" with a "c", as in "compact disc".

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Tech Info Library Article Number:3849



Tech Info Library

Excel 1.5 and TOPS 2.0: Compatibility

Revised: 5/31/89
Security: Everyone

Excel 1.5 and TOPS 2.0: Compatibility

=====

This article last reviewed: 18 April 1989

Macintosh hangs if TOPS 2.0 is selected from the Apple Menu, while in Excel 1.5. TOPS technical support does not know of any compatibility problems between TOPS 2.0 and Excel 1.5. They recommend upgrading to version 2.1 of TOPS, which is now available and has been fully tested with Excel 1.5. For more information, call TOPS at (800) 627-5858 for upgrade information.

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Tech Info Library Article Number:3850



Tech Info Library

Lex Compiler for Macintosh OS

Revised: 6/17/92
Security: Everyone

Lex Compiler for Macintosh OS

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Article Created: 18 April 1989
Article Last Reviewed: 22 May 1992
Article Last Updated: 22 May 1992

TOPIC -----

I am working on projects like decision-support systems and I need a lexical compiler or other tool for lexical analysis for the Macintosh operating system.

DISCUSSION -----

Abraxas sells an MPW tool called MacYACC which is a complete language development environment and contains a lexical analyzer. For more information about the latest version of this package contact the company. Search on "Abraxas" for vendor information.

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Tech Info Library Article Number:3851



Tech Info Library

Macintosh: Tandy 100 and 102 Connectivity

Revised: 6/17/92
Security: Everyone

Macintosh: Tandy 100 and 102 Connectivity

Article Created: 18 April 1989
Article Last Reviewed: 9 June 1992
Article Last Updated: 9 June 1992

TOPIC -----

I need to connect a Macintosh to a Tandy Model 100 and to a Tandy Model 102 portable computer for our work group.

DISCUSSION -----

Connecting a Macintosh computer to a Tandy Model 100 or Tandy Model 102 portable computer requires a cable and communications software. Here are the pinouts for the cable:

- Macintosh 128K, Macintosh 512K, and Macintosh 512Ke to Tandy Model 100 and Tandy Model 102 cable:

Macintosh (DB-9 male)	Tandy (DB-25 male)
-----	-----
3	7
5	3
7	6, 8, and 20 (tied together)
9	2
	4, 5 (tied together)

- All other Macintosh models (from Macintosh Plus onward) to Tandy Model 100 and Tandy Model 102 cable:

Macintosh (Mini-Circular 8 male)	Tandy (DB-25 male)
-----	-----
2	6, 8, and 20 (tied together)
3	3
4	7
5	2

4, 5 (tied together)

Note: A Macintosh (DB-9)-to-ImageWriter I cable (Service Part #590-0169) properly connects a Macintosh 128K, Macintosh 512K, and Macintosh 512Ke to the Tandy Model 100 and Tandy Model 102 computers. The same cable connects the Macintosh Plus, Macintosh SE, and Macintosh II to the Tandy Model 100 and Tandy Model 102 computers, if used in conjunction with the Macintosh Plus Peripheral Adapter Cable (Service Part #590-0341 or #590-0553).

Using this custom cable and a terminal program for the Macintosh, you should be able to transfer files between the Tandy computers and the Macintosh with no difficulty. The Macintosh will think it's talking to an external modem; the terminal program will let you "talk" to the Tandy computers, or upload or download from the Tandy computer as if it were a mainframe. The Tandy, of course, uses its built-in TELCOM program in the TERM mode and can upload and download files, as if it were talking to a mainframe.

The communication parameters must be the same at each end: baud rate, stop bits, XON/XOFF, and so on. A commonly used parameter for the Model 100 is 7711E for 4800 baud, 7-bit, Ignore parity, 1 stop bit, and XON/XOFF enabled (although you could choose other baud rates or other parameters).

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Tech Info Library Article Number:3852



Tech Info Library

LaserWriter: How To Use Preprinted Letterhead

Revised: 12/6/89
Security: Everyone

LaserWriter: How To Use Preprinted Letterhead

=====

This article last reviewed: 18 April 1989

Apple has no documented specifications for paper or ink requirements when working with preprinted letterhead and logos, beyond the information in the "LaserWriter II Owner's Guide". Below is a copy of this specification.

"16-lb. to 20-lb. photocopy or typewriter bond (60 to 80 g/m2) in normal mode; up to 36-lb. (135 g/m2) stock in manual mode with face-up tray open. Accepts most letterhead and colored stock. Accepts medium-weight photocopy transparencies. Envelopes can be printed with manual feed or from the envelope cassette. Labels can be printed using manual feed."

However, any paper or ink used with the LaserWriter must be able to withstand the temperature of the fuser roller. This temperature varies between 165 and 180 degrees centigrade. It takes an 8.5-inch by 11-inch piece of paper approximately 5.8 seconds to travel over the fuser roller or approximately 1.5 inches per second.

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Tech Info Library Article Number:3853



Tech Info Library

Aristotle: Improper Updating Of User List

Revised: 5/31/89
Security: Everyone

Aristotle: Improper Updating Of User List

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This article last reviewed: 18 April 1989

This article discusses why Aristotle users continue to appear in Menu Management and how to fix this problem. They are present, because the Access Privileges are not set properly on the Any User folder that is in the Users folder.

Within the Users folder is a folder called Any User. Within the Any User folder is a folder called ESP. Within that folder is a file called "userlist". "userlist" contains the current Aristotle Menu Management user list. If the privileges are set improperly on the Any User folder and the enclosed ESP folder, the "userlist" file cannot get updated. The userlist in ESP gets updated from the "userlist" in the server folder. AppleShare checks the dates of the two files and updates whichever file has the older date. If the userlist is not updated, the old users remain, and the new users don't show up.

To clear up this problem, change the Any User Access Privileges to See Folders, See Files, and Make Changes to everyone. Then change the ESP Access Privileges to See Folders, See Files to everyone. Make sure that the Teacher owns the Any User and the enclosed ESP folder. Then launch Aristotle Menu Management.

For more details, this entire case is documented in the "Aristotle Administrator's Guide", starting on page 66.

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Tech Info Library Article Number:3855



Tech Info Library

Macintosh: Wang VS Connectivity Issues

Revised: 5/31/89
Security: Everyone

Macintosh: Wang VS Connectivity Issues

=====

This article last reviewed: 23 April 1989

This article discusses problems with connecting Macintoshes to Wang VS processors. The client is currently doing terminal emulation and file transfer on local and remote Wang VS processors. After some experimentation, they have attached a NetSerial modem to their AppleTalk network (using LocalTalk) with a customized version of VS Term. They are connected to the Wang VS through a WACS controller and use the RS-232 cable (19.2 bps) to attach to the NetSerial.

This solution is too slow for them, particularly when doing file transfers. The slowness in the network is due not to LocalTalk (LocalTalk transmissions are 230.4K bits-per-second), but to the RS-232 connection running at 19.2K bits-per-second. This means the RS-232 segment of your connection to the Wang is running 12 times slower than the LocalTalk.

There might be a way to connect Macintoshes to the Wang via Ethernet, but there are some prerequisites. NCSA Telnet from the University of Illinois' National Center for Supercomputer Applications, or NetOne from Ungermann-Bass, must be used on the Macintosh to make a VT100-emulation connection through TCP/IP and FTP communications. These packages are compatible with LocalTalk or EtherTalk for the Macintosh.

Connecting the Macintoshes to the Wang Ethernet is fairly straightforward using Kinetics FastPaths, Cayman GatorBoxes, Apple EtherTalk cards, or any of the various Macintosh Ethernet connectivity units from Kinetics.

The difficulties are with the Wang system, itself. The following questions must be resolved before the above solution can be implemented:

- 1) Does the Wang VS system use TCP/IP and FTP? If it uses WangNet, then these communication protocols will not work.
- 2) Can terminals be connected through the Ethernet? Some office systems may implement Ethernet for file transfers only and have no facilities

for handling remote terminal connections across the Ethernet.

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Tech Info Library Article Number:3856



Tech Info Library

HyperCard: Freeing Up Memory

Revised: 6/17/92
Security: Everyone

HyperCard: Freeing Up Memory

=====

Article Created: 23 April 1989
Article Last Reviewed: 4 June 1992
Article Last Updated: 4 June 1992

TOPIC -----

I find myself frequently running low on memory when in HyperCard. Sometimes it won't launch all.

DISCUSSION -----

There are various things you can do to free up memory for HyperCard. When running under System 6, consider running HyperCard without MultiFinder turned on. In System 7 turning off MultiFinder is not an option; for this case, consider purchasing more RAM for your Macintosh, especially if you currently have only 2 MB. Also, adjust the current memory setting for HyperCard to at least 1000K, depending on the size and complexity of the stacks you will be using. Some other suggestions for freeing up memory are given below.

- Minimize use of INITs, extensions, and control panels, moving them out of the System Folder if necessary. Specifically, watch for memory-hungry items such as macro programs (QuicKeys, MacroMaker, and so on), and those that create a desktop picture (like ColorDesk).
- Don't run HyperCard simultaneously with AppleShare, InBox, or other memory-intensive applications.
- Turn the RAM cache as low as possible - in System 6, you can even turn it off.
- Run in two-color mode.
- Don't use huge beep sounds.

..TIL03857-HyperCard-Freeing_Up_Memory_(TA39945).pdf

- Don't call lots of XFCNs/XCMDs within HyperCard.
- Empty global variables when no longer needed.

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Tech Info Library Article Number:3857



Tech Info Library

Macintosh: HP150 Connectivity

Revised: 5/31/89
Security: Everyone

Macintosh: HP150 Connectivity

=====

This article last reviewed: 23 April 1989

You can pass ASCII files between a Macintosh computer and a Hewlett-Packard HP150. To do this, you need a software package named "Reflection" from Walker, Richer, and Quinn, Inc. Although Reflection can do binary file transfer, the HP150 binary files are not usable on the Macintosh without a translator.

There are two physical methods for connecting Macintosh and HP150. First, a null modem cable can be used for a direct connect between the two computers. Reflection supports both Kermit and Xmodem. Reflection, running on both the Macintosh and the HP150, can transfer files in either direction.

The second method requires an Hewlett-Packard minicomputer, like an HP3000. Both Macintosh and HP150 then connect through Reflection to the HP minicomputer. The Macintosh and HP150 use the HP minicomputer as a central location for holding the files being transferred.

Note: The HP150 is not quite an MS-DOS machine. The operating system is a Hewlett-Packard design. The 3.5-inch disk drive is not formatted like MS-DOS, OS/2, or Macintosh.

For more details, search the Tech Info Library under "Walker, Richer, and Quinn, Inc."

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Tech Info Library Article Number:3858



Tech Info Library

AppleCD SC: Audio Questions (3/95)

Revised: 3/2/95
Security: Everyone

AppleCD SC: Audio Questions (3/95)

=====
Article Created: 23 April 1989
Article Reviewed/Updated: 2 March 1995

TOPIC -----

This article provides questions and answers about AppleCD SC audio.

DISCUSSION -----

Question: Is the player oversampling; if so, what is the rate?

Answer: The AppleCD SC samples at the normal 44.1 KHz rate.

Question: Does it have an analog, digital, or combination output filter?

Answer: The AppleCD SC does have digital and analog filters; the analog filter is a "Brickwall" or steep analog filter.

Question: What is the output of the CD player in volts?

Answer: The mini-stereo jack outputs 0.6 +/- 0.1 volts RMS, at 32 ohms. The RCA plugs in the back output 0.5 +/- 0.1 volts RMS, at 47K ohms.

Question: Are the audio output sections of the player discrete?

Answer: The audio sections of the AppleCD SC are not discrete.

Article Change History:
02 Mar 1995 - Corrected voltages in question three.

Support Information Services

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Tech Info Library Article Number:3860



Tech Info Library

AppleShare: Responding to System Crashes and ID=29

Revised: 2/6/90
Security: Everyone

AppleShare: Responding to System Crashes and ID=29

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This article last reviewed: 23 April 1989

This article describes what to do about AppleShare system crashes that give an error ID=29 and restart as the only option.

When an error occurs on the file server, AppleShare tries to react to the error. If successful, it does some general housecleaning before reporting the error to the user as error 29. This housecleaning includes writing buffers to disk and closing open files, like the PDS file.

Because the server is reporting errors, use the AppleShare Admin program to verify the volumes for consistency. It is also possible that there is a problem with the file server hardware. It may be prudent to verify the integrity of the hardware. If the errors continue, it may be necessary to rebuild the server from scratch.

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Tech Info Library Article Number:3861



Tech Info Library

Macintosh SE/30 Direct Slot: Where to Get Information

Revised: 9/17/92
Security: Everyone

Macintosh SE/30 Direct Slot: Where to Get Information

=====

Article Created: 23 April 1989

Article Change History

09/16/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Where can I get information on developing cards for the Macintosh SE/30
PDS (Processor Direct Slot)?

DISCUSSION -----

A 35-page document is available from APDA titled "Macintosh SE/30
Developer Notes". This document focuses on the electrical and mechanical
specifications of the Macintosh SE/30's 030 direct slot. Anyone
developing a card for the Macintosh SE/30 needs this document.

For more information, search under "APDA".

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Tech Info Library Article Number:3862



Tech Info Library

Macintosh: Proper Way to Shutdown and Restart

Revised: 9/28/92
Security: Everyone

Macintosh: Proper Way to Shutdown and Restart

=====

Article Created: 23 April 1989

Article Change History

09/28/92 - REVIEWED
• For technical accuracy.

TOPIC -----

Is it okay to shut down my Macintosh by turning off the power?

DISCUSSION -----

The only correct way to restart or shut down a Macintosh system is to use the "Restart" or "Shut Down" commands from the "Special" menu in the Finder. On startup, when a volume is mounted successfully, a flag is set on that volume telling the system that the volume was mounted properly.

When the volume is unmounted properly by using the "Restart" or "Shut Down" commands in the Finder, this flag is cleared. If the computer is turned off by the power switch or reset using the reset button, the volume has been unmounted improperly, and this flag is not cleared.

During startup, this flag is tested. If the flag is clear, the volume was unmounted properly, and the system starts up as normal. If the flag is set, the system knows that the volume was unmounted incorrectly. The system then proceeds to rebuild the volume bitmap. On a large volume with many files, this operation may take several minutes.

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Tech Info Library Article Number:3864



Tech Info Library

A/UX 1.0 and 1.1: f77 Compiler Problem (8/94)

Revised: 8/23/94
Security: Everyone

A/UX 1.0 and 1.1: f77 Compiler Problem (8/94)

=====

Article Created: 24 April 1989
Article Reviewed/Updated: 19 August 1994

TOPIC -----

This article describes a major problem in the A/UX f77 compiler as it exists in A/UX 1.0 through A/UX 1.1 (including A/UX1.1Beta1). NOTE: This problem is fixed in A/UX 2.0 and 3.0.

DISCUSSION -----

The compiler incorrectly allocates common on the stack when it should allocate it in the data segment. You can force it to allocate the common block in the data segment by using a data statement, but this also causes problems.

As an example, try this program, first as a single file and then split into two files.

```
program test1
common /fred/ array
integer array(2)
save
array(1)=55
array(2)=66
print *, 'Array in main is ', array
call sub1
print *, 'Array after call to sub1 is ', array
stop
end
*
subroutine sub1
common /fred/ array
integer array(2)
save
print *, 'Array in sub1 is ', array
return
```

end

The problem keeps S from running under A/UX. Here are tests with A/UX 1.0.1 and A/UX 1.1Beta1:

A/UX 1.0.1

a) Source in same file (f77 foo.f):

Array in main is 55 66
Array in sub1 is 55 66
Array after call to sub1 is 55 66

b) Source in two files (f77 foo.f bar.f):

Array in main is 55 66
Array in sub1 is 55 66
Array after call to sub1 is 55 66

A/UX1.1Beta1

a) Source in same file (f77 foo.f):

Array in main is 55 66
Array in sub1 is 55 66
Array after call to sub1 is 55 66

b) Source in two files (f77 foo.f bar.f):

Array in main is 55 66
Array in sub1 is 0 0
~~~~~  
Array after call to sub1 is 55 66

Article Change History:

19 Aug 1994 - Reviewed.

31 Aug 1992 - REVIEWED For technical accuracy

Support Information Services

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Tech Info Library Article Number:3865



# Tech Info Library

## Grayscale Information

Revised: 7/8/92  
Security: Everyone

Grayscale Information

=====

Article Created: 23 April 1989  
Article Last Reviewed: 6 July 1992  
Article Last Updated:

TOPIC -----

A user has found (using very sophisticated photometric devices) that when he generates a monochrome palette from a color palette, some of the tones are identical. This article discusses this phenomenon.

DISCUSSION -----

In regard to using the color palette, the Palette Manager does not place new colors into the display device's color look-up table (CLUT). It maps the requested colors in a palette to available colors within the current color table. The correct method for using specific color values is to use the Color Manager calls to create and load a programmed color table.

There are some other points that must taken into account after setting your colors with the Color Manager.

- It is possible to produce grays by setting the monitor to monochrome output and not setting grays, as the user in question probably does. When selecting monochrome from the monitor's Control Panel CDEV, luminance mapping of the colors in the color table is done to calculate and replace the RGB values for a monochrome pixel. The luminance mapping follows this equation:

$$\text{Luminance} = .3 * \text{red} + .59 * \text{green} + .11 * \text{blue}$$

The resulting value is placed into the display device's table for R, G, and B. The values are altered according to the above equation. This needs to be taken into account if the monochrome option is chosen for the Apple High-Resolution Color Monitor.



- If you place your own RGB "gray" values into a color table, you must also take into account gamma correction. Gamma correction is done by the display device's driver to correct the disproportionate light output of the CRT phosphors by comparison with the proportional input voltages of the video signal. To set a linear relationship between colors and output, the values set for the Macintosh II Video Card are changed to new values, which then produce the corrected color output on the monitor. Test equipment detects a gamma-filtered set of values from the monitor.

The gamma correction is automatically handled for all values written to the device's color table. This is based on an empirically-derived gamma look-up table. If the selected values fall within the same look-up table reference, they can be mapped to the same gamma value. This would explain why some values are the same. The gamma table ID is located in the SCRN resource of the System file for the Macintosh II Video Card. A new GAMA Resource table can be defined and installed in the System file for use by the Macintosh II Video Card. To use the new gamma table, the GAMA resource ID must be changed in the SCRN resource to that of the new table.

The safest values for any testing will probably be a linear table that does no gamma correction. A quick and easy way to do this is to pass -1 to the SetGamma Control parameter block as the new table address. This causes a linear table to be used, guaranteeing that all of the possible gray levels of the card are available. At that point, the actual color output on the monitor depends on the phosphors themselves, which have a variance from monitor to monitor of +/- .02 for the red and green phosphors and +/- .015 for the blue. The CIE coordinates of the phosphors are:

Red: x=.625 y=.34 Green: x=.28 y=.595 Blue: x=.155 y=.070

To properly set the gamma table, see the information below about how the driver uses this table. You should also investigate how to control device drivers. This is described in "Inside Macintosh Volume II." Another source of information is the "Designing Cards and Drivers Manual for the Macintosh."

#### Gamma Information

-----  
In the current implementation of the video drivers, gamma correction is applied to requested, absolute colors, immediately before they are set in the color look-up table by the SetEntries control call. More specifically, some number of high-order bits are extracted from the red, green, and blue channels and used as an index into tables of corrected values. These values are then placed into the hardware, yielding corrected output. On the Macintosh II Video Card (the TFB card), the high eight bits of each channel are used to reference the gamma table.

There are a number of minor shortcomings in this implementation. First, there is not absolute symmetry between the SetEntries control call, which sets the CLUT, and the GetEntries status call, which reads the CLUT hardware, because the gamma correction took place as part of the SetEntries call. Also, the uncorrected values are generally unrecoverable (although a copy of the absolute colors are always available in the

GDevice structure).

Finally, it is most desirable to extract more bits as an index to the gamma table than the number of bits of color information that will be set in the CLUT. This way, you avoid a loss of color resolution after correction. For example, the TFB card has an eight-bit-per-channel CLUT, but only uses the most-significant eight bits of the (16-bit) channel information for gamma lookup. At lower intensities, the gamma correction increases the distance between adjacent values. As a result, on the TFB card, some dynamic range is lost at lower intensities. This could be corrected by extracting nine or ten bits of channel information rather than eight and using a larger, gamma-correction table, but this option was declined to reduce gamma table size.

#### The GammaTbl Data Structure

-----  
The structure itself has been a bit of a mystery, as it is not defined in either "Inside Macintosh Volume V" or the Designing Cards and Drivers Manual. This is the structure:

```
record GammaTable of
  gVersion: integer; {gtab version, currently 0}
  gType: integer; {drHwId value}
  gFormulaSize: integer; {size of formula data, below}
  gChanCnt: integer; {# of component channels}
  gDataCnt: integer; {# of values per channel}
  gDataWidth: integer; {size of data in tables}
  {gamma correction look-up tables}
  gFormulaData: array [0.. gFormulaSize] of byte;
  {data for gamma calculation formula}
  gData: array [0.. gDataCnt] of byte;
end;
```

In this structure, gVersion represents the gamma table format version, which is 0 for all current cards. The gType field holds the drHwId value for this board to identify the board that this table was measured for. Note that this means that a single gamma table can't directly be shared between two different cards, even if they both have the same CLUT response curve (which is usually linear). This lets the data in the gamma table be in an appropriate form for varying hardware (that is, a card could have four-bit/channel DACs and might prefer gamma data in the range \$0..\$F rather than \$0..\$FF).

gFormulaSize defines the number of bytes occupied by the gFormulaData field. On Apple's current video cards, gamma correction is done by modifying the values loaded into the CLUT by the SetEntries control call to approximate linear response on the display. On these systems, the gamma correction table acts as a final, look-up, data table, which translates the requested color into closest available linearized level. These gamma table values are determined empirically by measuring the output of a calibrated display.

More sophisticated systems may choose an alternative to this simple

look-up mechanism. For instance, you can calculate gamma correction factors based on a mathematical response function. By default, the TFB card uses a single correction table for all three channels. No calculations are performed on the incoming color table other than simple lookup. Cards can remember the specific monitor configuration at the beginning of the gFormulaData field, allowing it to identify and use only gamma tables developed for the currently connected monitor.

gChanCnt is the number of look-up tables in gData, below. If there is more than one channel of gamma correction data, then the R, G, and B tables follow each other, respectively, at the end of the structure.

gDataCnt is the number of discrete look-up values included in each of the channel's correction table. It is always equal to 2gDataWidth, but refers to number of bytes that this channel's data occupies.

gDataWidth describes the number of significant bits of information available in each entry in a channel's correction table. The data always appears as gDataWidth bits, right-justified in a field that is the next larger number of bytes than gDataWidth. Because it is rare to have devices with more than eight bits of CLUT resolution, virtually all devices pack their correction data into bytes.

gData is actual correction table data. If there is more than one channel's information, each table follows the next in R, G, B order. The standard tables included in Apple's driver have only one table, which is applied to all three output channels. Because Pascal cannot express variable size fields in record structures, the independent channels are not individually named.

#### "gama" Resource Format

-----  
In addition to the RAM data structure for gamma tables covered above, there is a standard resource format for gamma table resources. Like many other resource templates, the gamma structure is an image of the RAM form stored in resource format. There are no changes.

#### Using Gamma Correction

-----  
Gamma correction is always applied by the TFB video driver. At driver open time, the driver is usually initialized with a linear (noncorrecting) gamma table. When \_InitGraf is called, the "scrn" screen configuration resource is read from the System file. This resource (described in "Inside Macintosh Volume V") includes information about the size and orientation of the different monitors configured into the system, including their last video mode (pixelsize), color table, and gamma table.

If there is no "gama" resource ID specified, or the specified ID is not present, then a default gamma table, "gama" =0 is loaded from the System file and used (this is the table calculated for the TFB card). If the specified resource is found, then the appropriate resource is loaded, and a control call is issued to the driver to make this the current gamma table. Unfortunately, there is currently no tool to set the "gama" ID,

short of modifying the "scrn" resource directly.

To facilitate the use of the gamma table, there are two calls in the standard, video-driver routines that set the gamma table (control call 4, SetGamma) and retrieve the pointer to the current gamma table (status call 6 on TFB rev 2 drivers and up). These calls simply take and return a pointer to a GammaTbl structure.

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Tech Info Library Article Number:3867



# Tech Info Library

## HyperCard: Global Paths & Avoiding Lost Pathnames

Revised: 6/24/90  
Security: Everyone

HyperCard: Global Paths & Avoiding Lost Pathnames

=====

Article Created: 24 April 1989  
Article Last Reviewed: 14 July 1992  
Article Last Updated: 14 July 1992

TOPIC -----

Whenever I move various applications, stacks, and folders comprising my HyperCard projects to another hard disk, I am inundated with "Where is..." dialog boxes as my scripts try to re-find the correct paths to jump between stacks.

DISCUSSION -----

Some HyperCard developers have asked if there is any way to provide a global path command or to assign physical or logical names that initiate at startup. This becomes important when a program is moved to another machine (with different names). This kind of porting can make all the pathnames incorrect with the result, as above, that the program constantly asks for help in finding files.

Many users try to avoid this problem by beginning the path names with the actual volume name. This is not necessary.

An easier solution is to load the folders in question into the same folder that contains the HyperCard application itself, then place a colon at the beginning of the path name, like this:

:HyperCard Ideas:Idea Stacks:

The first colon in this statement tells HyperCard to look for the "HyperCard Ideas" folder within the same folder that contains HyperCard itself. HyperCard will then continue on to the "Idea Stack" folder for the chosen stack.

The problem can also be handled by getting the Long Name of the currently executing stack. This name returns the path to the stack. As long as the

other stacks or accessed files are kept in the same folder, the pathname can be manipulated to open those files. You can even place the stacks or files in subfolders, as long as the folder names are placed in the path.

An example:

Function PathWay

```
put the long name of this stack into NewName
delete char 1 to 7 of NewName
repeat
  if offset(":",NewName) is 0 then
    exit repeat
  else
    put char 1 to offset(":",NewName) of NewName after NewPath
    delete char 1 to offset(":",NewName) of NewName
  end if
end repeat
return NewPath
end PathWay
```

put PathWay () into the message

This piece of code returns the current path to the stack. By appending the name of a stack or file onto the end of the returned path, your stacks can open any stacks or files in the same folder. By placing a folder name and the name of the stack after the returned path, you can open the stacks within a subfolder.

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Tech Info Library Article Number:3868



# Tech Info Library

## HyperCard: Error Code 19374

Revised: 6/1/89  
Security: Everyone

HyperCard: Error Code 19374

=====

This article last reviewed: 24 April 1989

Error 19374 means that HyperCard was not able to dispose of all of the objects in memory. This probably means that your stack is corrupted.

To solve this problem, create a new stack and transfer all of the scripts, data, and so on from the old stack to the new stack. If the stack is large, you may want to create a script to automate this process.

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Tech Info Library Article Number:3869



# Tech Info Library

## Apple Hardware: Importance of Proper Grounding (2/97)

Revised: 2/18/97  
Security: Everyone

Apple Hardware: Importance of Proper Grounding (2/97)

=====

Article Created: 1 June 1989  
Article Reviewed/Updated: 17 February 1997

TOPIC -----

This article discusses the importance of proper grounding for all Apple equipment.

DISCUSSION -----

- From the standpoint of user safety, when using the equipment, it is important to have the accessible portions of the system at a voltage potential that do not endanger the user. Without a ground, the high voltages used to drive the monitor might build up a large enough potential to cause serious shock to a user.

- When systems are not grounded, there is the possibility that a system may build up a charge, either from environmental conditions or from the voltages inside. Without a ground path for this charge to dissipate, the system could self-destruct from a serious over-voltage condition.

- If a system is not properly grounded, any peripherals connected may or may not be grounded. This could cause excessive ground currents that might cause erratic operation. Excessive ground currents could also endanger the equipment. This is the primary reason for installing Ground Fault Interruption circuits at locations where excessive ground currents would be hazardous (places like bathrooms and kitchens where water and electricity are in close proximity).

If all systems in use at any particular location are properly grounded, there is minimal possibility of user shock, system overload, and/or erratic operation. Also, many governments require certain types of equipment to be grounded for all the above reasons, although the language in those regulations is much more specific.

Article Change History:  
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.



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Tech Info Library Article Number:3870



# Tech Info Library

## HyperCard 1.2.2: Print Reports Produces Only One Copy

Revised: 6/1/89  
Security: Everyone

HyperCard 1.2.2: "Print Reports" Produces Only One Copy

=====

This article last reviewed: 24 April 1989

This article describes a problem with HyperCard 1.2.2. No matter how many copies you specify in the "Print report" dialog, you still get only one copy. This was tested with System 6.0.2 and was reproducible.

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Tech Info Library Article Number:3872



# Tech Info Library

## Macintosh: Order Of Devices Checked During Startup

Revised: 9/28/92  
Security: Everyone

Macintosh: Order Of Devices Checked During Startup

=====

Article Created: 24 April 1989

### Article Change History

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09/28/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What is the order of devices checked by the Macintosh during startup?

### DISCUSSION -----

Here is the correct order of devices the Macintosh checks during the startup sequence:

- 1) Floppy drive 0
  - On a Macintosh II, IIX, & IIfx this is the right-side internal drive.
  - On a Macintosh SE with two floppy drives, this is the lower drive.
  - On other systems, this is the internal drive.
- 2) Floppy drive 1
  - On a Macintosh II, IIX, & IIfx this is the left-side internal drive.
  - On a Macintosh SE with two floppy drives, this is the upper drive.
  - On other systems, this is the external drive.
- 3) Floppy drive 2
  - This applies only to a Macintosh SE with a third floppy drive.
- 4) Startup device selected via the Startup Disk CDEV
  - This may include SCSI or NuBus startup devices.
- 5) SCSI devices, beginning with ID 6 and ending with ID 0.

6) NuBus startup devices.

- This applies only to a Macintosh II.

Both the "Inside Macintosh V" and the "Macintosh Family Hardware Reference" manuals state that the internal SCSI device is checked before any other SCSI device, regardless of SCSI ID. This is NOT True. Unless the internal SCSI device is selected as the startup device via the Startup Device CDEV, it has no special priority during the startup process.

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Tech Info Library Article Number:3873



# Tech Info Library

## LaserWriter: Power Consumption For All Models (4/94)

Revised: 4/1/94  
Security: Everyone

LaserWriter: Power Consumption For All Models (4/94)

=====

Article Created: 1 June 1989  
Article Reviewed/Updated: 1 April 1994

TOPIC -----

This article describes the power consumption of Apple LaserWriter printers.

DISCUSSION -----

LaserWriter and LaserWriter Plus

-----

stand-by power consumption: 120 watts  
operating power consumption: 800 watts at 115v

LaserWriter IISC, NT, NTX, IIIf, IIg

-----

stand-by power consumption: 170 watts  
operating power consumption: 900 watts at 115v

LaserWriter Pro 600, 630

-----

stand-by power consumption: 95 watts  
operating power consumption: 560 watts at 115v

LaserWriter Pro 810

-----

stand-by power consumption: 95 watts per hour average  
operating power consumption: 560 watts maximum at 100-115v

Personal LaserWriter LS, SC, NT, NTR

-----

stand-by power consumption: 90 watts  
operating power consumption: 600 watts at 115v

LaserWriter Select 300, 310, 360

-----

stand-by power consumption: n/a  
operating power consumption: 450 watts at 115v

Personal LaserWriter 300, 320

-----

stand-by power consumption: 5 watts  
operating power consumption: 120 watts at 115v

#### Article Change History

1 April 1994 - Added LaserWriter Pro 810, LaserWriter Select 360, Personal LaserWriter 320.  
24 August 1993 - Added information on LaserWriter IIx/IIg, LaserWriter Pro 600/630, Personal LaserWriter NT/SC/LS/NTR/300 and LaserWriter Select 300/310.

Support Information Services

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Tech Info Library Article Number:3875



# Tech Info Library

## A/UX: NFS and Hard Disk Space (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: NFS and Hard Disk Space (9/94)

=====  
Article Created: 24 April 1989  
Article Reviewed/Updated: 1 September 1994

### TOPIC -----

This article describes three things you might do to free up some space on a workstation's hard disk to increase the size of the Macintosh OS partition. These include:

- 1) Changing the SWAP partition.
- 2) Moving selected files onto an NFS server.
- 3) Reclaiming disk space for the Macintosh OS, as files are transferred to the server.

### DISCUSSION -----

- 1) Under A/UX, by default, 18 MB is allocated for SWAP partition. You can change this size if you wish. Normally, if you do a large number of huge compilations or use any specific application that requires a lot of swap space to be used by the memory management, you probably need to increase the SWAP size. Typically, the swap space should be between two and three times the size of physical RAM installed in the machine.
- 2) Depending on what files you want to be shared by the users, you can move them to the NFS server. For example, you could have an NFS server contain:
  - The on-line documentation (/usr/catman).
  - The public domain software sources and binaries.
  - The common toolbox applications, such as MacWrite, MacDraw, and so on.
  - The X Window server and/or client applications.
  - The Domain Name server and/or Yellow Pages Server Database.

- 3) After you move files to the server and before you "reclaim" some space for the Macintosh OS, you need to:
  - a) Use a method like "tar" or "cpio" to back up files that will remain on that hard disk.
  - b) Use HD SC Setup software to repartition A/UX file systems. You may "customize" the entire hard disk partitions or choose the "MINIMUM A/UX" configuration option to get the minimum A/UX file system partition.
  - c) Boot A/UX from another A/UX hard disk (usually an external hard disk).
  - d) Do "mkfs" on the hard disk that was repartitioned in step b, and restore the files that were backed up in step a.
  - e) Finally, it is a good practice to do "fsck" on the newly created filesystem(s).

Article Change History:  
1 Sept 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3877





# Tech Info Library

## DA Handler: Memory Constraints

Revised: 6/16/92  
Security: Everyone

DA Handler: Memory Constraints

=====

Article Created: 24 April 1989  
Article Last Reviewed: 29 May 1992  
Article Last Updated: 29 May 1992

Note: The following information is applicable only to System 6.0.X running under MultiFinder.

TOPIC -----

What causes the DA Handler to cease functioning occasionally? I am working on a color Macintosh II (with an Apple monitor) with 4 MB RAM, a 40 MB hard drive, and an AppleCD SC and running system software version 6.0.3 and MultiFinder. (I'm also running numerous INITs.) I see the problem when I try to select any DA.

The DA Handler icon flashes in the menu bar, but the system simply returns to the current application. If I try selecting a different application or returning to the Finder, the same thing happens. It also happens under system software versions 6.0.2 and 6.0. The only solution appears to be to restart.

DISCUSSION -----

This situation can occur when you run low on the available MultiFinder memory. If you have enough memory to load the DA Handler, but not enough to run the desk accessory, the desk accessory quits. DA Handler then exits, because there are no desk accessories currently running. Unless the desk accessory reports an error, all you see is the DA Handler launching and then exiting, because there are no loaded desk accessories.

The reason this happens under MultiFinder, and not under Finder, is that DA Handler is an application that is run when a desk accessory is selected from the Apple menu. There is not necessarily enough memory left for it to run, after you have loaded other applications.

In the Finder, desk accessories are loaded into the memory taken by the

currently running application. You can force the same thing in MultiFinder by holding down the Option key when you select the desk accessory.

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Tech Info Library Article Number:3878



# Tech Info Library

## La Cie, Ltd. (a Quantum Company)

Revised: 5/11/94  
Security: Everyone

La Cie, Ltd. (a Quantum Company)

=====

Article Created: 1 June 1989  
Article Reviewed/Updated: 10 June 1994

La Cie, Ltd. (a Quantum Company)

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Company Profile:  
Hardware and software, specializing in disk drives and disk utility software.

Support Information Services

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Tech Info Library Article Number:3881



# Tech Info Library

## Apple IIC Plus: Third-Party Add-On Products

Revised: 6/1/89  
Security: Everyone

Apple IIC Plus: Third-Party Add-On Products

=====

This article last reviewed: 4 April 1989

This article lists four third-party products for the Apple IIC Plus.

### RGB Video Adapter

-----

An RGB video adapter called the "PEACOCK", Model CM2C (RGB Module for the Apple IIC) from Telemac can support both analog and digital RGB. Therefore, let Telemac know what monitor you plan to use when you order the Peacock video adapter.

### Internal 2400 Baud Modem

-----

An internal 2400 baud modem, available from MDIdeas, is called CommLink IIC Plus. The modem uses an internal connector.

### Hard Disk (20MB)

-----

Chinook Technology has a 20Mb hard drive (the CT-20c) that works with the Apple IIC and Apple IIC Plus computers. The drive connects to the disk port on the Apple IIC or Apple IIC Plus.

### Memory Expansion Card

-----

A memory expansion card is available from Applied Engineering. The card uses the memory expansion port inside of the computer. The card can add 1MB of memory to the Apple IIC or Apple IIC Plus.

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Tech Info Library Article Number:3882



# Tech Info Library

## A/UX: Name Server Slow BNET Response (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Name Server Slow BNET Response (8/94)

Article Created: 6 April 1989  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

This article describes three solutions to slow response of BNET utilities.

DISCUSSION -----

Some users have noticed a slow startup of the BNET utilities "remsh", "rlogin", and even "ping." Suspicions were that this was related to the utilities' failure to make contact with the "named" daemon, thereby causing a timeout before continuing. When this daemon was turned on in "/etc/inittab", it did not appear when the system reached the appropriate run state.

Note that a line in the "inittab" references "/etc/named.boot", a file that does not exist in A/UX as shipped. If you create "/etc/named.boot" as a zero-sized file and restart the system, the "named" daemon runs and networking is much faster. For example, the "ping" program responds almost immediately instead of after five to six seconds. The same applies to "remsh", "rlogin", "rcp", and others.

There are three workarounds for this problem:

### Method 1

-----

1. Choose one system on the network to act as the "name" server.
2. Create a zero-sized file called "/etc/named.boot" on that system.
3. Enable the "named" daemon from within "/etc/inittab".
4. On all other systems on the network, edit the "/etc/resolv.conf" file to include:

```
nameserver <Ethernet address of above machine in dot notation>
```

5. Restart all network utilities that are running.

#### Method 2

-----

1. Turn on the "named" daemon on all systems on the network.
2. Create a zero-sized file called "/etc/named.boot" on each system as previously described.

The second method is slightly less efficient, but may be the better choice because every system on the network has a "name" server and does not have to rely on one system to be present.

#### Method 3

-----

Methods 1 and 2 sound good, but neither includes any "name" server database. You would do well to build a "name" server with real name database into your network.

The reason network activities like "rlogin", "ftp", "remsh" ran slower was because the "name" server was either down or not running, and the libraries (resolver software) that query the domain name server already are built in to A/UX. Because of this, hostname or address queries from a user process are:

- a. First sent to the name server.
- b. If the information is not found, the query is sent to the Yellow Pages.
- c. If the information is not found, the query is sent to the local "/etc/hosts" file.
- d. If the information is not found, the query fails.

For additional information about Name Servers, refer to the A/UX Network System Administration manual section on "Setting Up the Name Server".

#### Article Change History:

24 Aug 1994 - Reviewed and updated.

#### Support Information Services

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Tech Info Library Article Number:3883



# Tech Info Library

## A/UX: How to Use the daiw Command

Revised: 9/28/92  
Security: Everyone

A/UX: How to Use the "daiw" Command

=====

Article Created: 6 April 1989

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

If you have had problems piping to and from "daiw", consider the following command string.

### DISCUSSION -----

It sends the file "args.1" to the ImageWriter II (directly connected to A/UX tty1) without any problem:

```
troff -man -Tiw args.1 | daiw | lp
```

The key point is that you must specify the "-Tiw" option in the "troff" command, so that the output of "troff" can be recognized by the "daiw" command. This assumes that ImageWriter II is the default system printer.

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Tech Info Library Article Number:3887



# Tech Info Library

## AppleCD SC: High Sierra CDs Are Accessed like any other Volume

Revised: 6/1/89  
Security: Everyone

AppleCD SC: High Sierra CDs Are Accessed like any other Volume

=====

This article last reviewed: 6 April 1989

Accessing the information on a CD-ROM volume isn't much different than accessing the information on most magnetic disks, whether the CD-ROM discs use HFS (Hierarchical File System) for Macintosh files, ProDOS (Professional Disk Operating System) for Apple II files, or the High Sierra format for either system. Generally, if you know how to work with files and folders (subdirectories) on a hard disk, 3.5-inch disk, or 5.25-inch disk, you know how to work with the files on a CD-ROM under these formats.

High Sierra is a standard way of organizing the information on a CD-ROM. CD-ROM discs that conform to the High Sierra standard can be accessed from a variety of computers. The discs need not be customized for each different computer's operating system. You don't need to know anything about the High Sierra format to use High Sierra CD-ROM discs. You communicate with application programs as you always have.

Likewise, your application sees the CD-ROM disc as any other disk connected to the system. All file I/O calls are standard Macintosh calls. Nothing special needs to be done. For example, if, in your program, you want to read a file from a High Sierra, issue a Read command.

Nevertheless, a custom search engine may be required if the file format is unique and cannot be accessed via another application (like Microsoft Word opening a MacWrite file). If a custom, search engine must be written, using HyperCard might be the most elegant and expedient tool.

Note that there are two specifications of the High Sierra format, High Sierra and ISO 9660. Both are standards that specify a hierarchical volume and file structure for CD-ROM discs.

The High Sierra standard came about when a group of industry representatives met at Del Webb's High Sierra Hotel and Casino in Stateline, Nevada, in late 1985 to cooperatively develop a common logical



format for CD-ROM discs. The result of this series of meetings was a standard known as the "High Sierra" standard. This standard is fully specified in the May 28, 1986, "Working Paper for Information Processing-- Volume File Structure of Compact Read Only Optical Discs for Information Interchange." For obvious reasons, this is known as the "High Sierra paper."

As is the case with all good standards, the world at large wanted to adopt an equivalent standard. The International Standards Organization (ISO) has modified the High Sierra standard by running it through the ISO standardization process. The result is a new international standard, "ISO 9660-- Volume and File Structure of CD-ROM for Information Interchange." This is known as the "ISO 9660 Standard."

Although most existing CD-ROM discs are High Sierra, ISO is the wave of the future, and most future discs will be ISO. Regardless, Apple's driver will enable you to read CD-ROM discs pressed in either format, and wherever we use the term High Sierra in this article, we're referring to both the ISO 9660 and High Sierra, except where explicitly stated differently.

Finally, and as with installing the System software, ALWAYS use the Installer to install the CD-ROM driver. Using the Installer on a Macintosh installs five drivers, including the Apple CD-ROM, ISO 9660, and High Sierra drivers. Copying the Apple CD-ROM icon installs only that file. If you did a "proper" install and cannot access a "High Sierra" disc, that disk might have been created early in the development of optical storage CD-ROM technology and probably didn't follow the standards as they now read.

#### References:

- Tech Note #209
- AppleCD SC Developer's Guide, both available from APDA.

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Tech Info Library Article Number:3889



# Tech Info Library

## LaserWriter II: Duplex Printing and Smudging

Revised: 6/8/89  
Security: Everyone

LaserWriter II: Duplex Printing and Smudging

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This article last reviewed: 28 April 1989

When doing duplex printing on a LaserWriter II, many users find a smudge on the top of the second page. It is important to understand why the smudge appears. Most people do duplex printing the following way:

They fill up the paper tray and print out a number of sheets (for example, 50 pages). They then take those 50 sheets from the output tray and put them back into the paper tray with the blank side up. Then, they print the second side on the pages they just put back in the tray. Presto! Duplex two-sided pages.

The problem with printing this way is the pressure that the paper-pickup roller puts on the paper, as it is pulled out of the tray. When printing side two, side one is face down in the paper tray. As each piece of paper is pulled out of the tray, the pickup roller applies pressure to help separate the pieces of paper. As the piece of paper is pulled out of the tray, toner from side one of the page is smeared onto the top of the next piece of paper. The smear is caused by the pressure of the paper-pickup roller as it pushes down on the pieces of paper.

There is no way to prevent this from happening. That is why Apple states in the LaserWriter II owner's manual that duplex printing should be done manually, one sheet at a time.

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Tech Info Library Article Number:3891



# Tech Info Library

## MacDraw 1.9.5 and LaserWriter 5.2 Conflict

Revised: 12/6/89  
Security: Everyone

MacDraw 1.9.5 and LaserWriter 5.2 Conflict

=====

This article last reviewed: 28 April 1989

This problem is caused by the combination of MacDraw 1.9.5 (or 1.9.6 from CLARIS) and the LaserWriter 5.2 print drivers. When you rotate a block of text and print to the LaserWriter, you get an ID=2 system error.

This happens with the Macintosh SE, Macintosh Plus, or Macintosh 512Ke, when using the LaserWriter 5.2 drivers. The workaround is to use an older version of the LaserWriter drivers. For the Macintosh 512Ke, this means the LaserWriter 4.0 drivers (versions between 4.0 and 5.2 do not work on a Macintosh 512Ke). For the other machines, choose one of the previous 5.0 levels of the LaserWriter drivers.

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Tech Info Library Article Number:3892



# Tech Info Library

## Responder 1.0.1: How to Cure an Unwanted Dialog Box

Revised: 3/1/93  
Security: Everyone

Responder 1.0.1: How to Cure an Unwanted Dialog Box

=====

Article Created: 28 April 1989  
Article Last Reviewed: 10 August 1992  
Article Last Updated: 10 August 1992

TOPIC -----

My copy of Responder 1.0.1 issues a dialog box with the following message:

No Workstation Name Registered. Be sure to install Responder INIT  
in the System Folder.

If you click OK, Inter•Poll continues, and the workstation appears with the  
correct names.

DISCUSSION -----

Responder was updated to version 1.0.1 to fix a problem Inter•Poll had  
identifying the Macintosh IIX. (The Installer for System Software 6.0.3  
automatically installs Responder 1.0.1.) When you use this version with  
the older Inter•Poll 1.0, the problem appears. The fix is to use  
Inter•Poll 1.0.1 with Responder 1.0.1. Also note that this is not the  
current version of Responder. Version 2.0.x is available as of this review.

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Tech Info Library Article Number:3893



# Tech Info Library

## LaserWriter IINTX: How to Print from an IBM PC/AT

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: How to Print from an IBM PC/AT

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This article last reviewed: 28 April 1989

The LaserWriter IINTX manual states that the printer can be set for higher speeds (beyond 9600 bps), but the IBM PC/AT serial port can be set only to 9600 baud on some versions of DOS. Only versions 4.00 and greater of DOS have an option for 19,200 baud (the current upper limit). Although ATs and 386 systems can be programmed to handle faster rates, any application accessing the serial ports through DOS is restricted to DOS Mode Command options.

There are two ways to handle the speed restriction. First, you could buy a LocalTalk PC Card. With it, you can communicate with the printer at 230K bps, instead of 9600.

Second, you could try this method for changing speeds:

- 1) Check the version of DOS being used and the upper limit of its serial port communications.
- 2) Set the PC communications port to 96, N, 8, 1, P to talk to the LaserWriter IINTX.
- 3) Set the LaserWriter DIP switches for serial communications at 9600 baud.
- 4) Send the PostScript Command to the LaserWriter to set the new faster communications speed.
- 5) Reset the PC communications port to the desired speed and parameters using the DOS MODE Command.

The LaserWriter should now be set for the new speed.

Note: It is important to set the handshaking in the LaserWriter to DTR/DSR for DOS if you are not using XON/XOFF. The LaserWriter's default is XON/XOFF, and DOS defaults to DTR/DSR.

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Tech Info Library Article Number:3894



# Tech Info Library

## Excel PC Files: How to Prepare Them for the Macintosh

Revised: 7/30/90  
Security: Everyone

Excel PC Files: How to Prepare Them for the Macintosh

=====

This article last reviewed: 20 March 1990

Excel 1.5 for the Macintosh can read only those Excel PC files that are saved in SYLK format. The default format for Excel PC is XLS. The Excel PC user must save a document using the SYLK format before Macintosh Excel can read it. Using AppleShare PC or AFE does not affect the data formats, nor should they in this case. The use of different data formats was a decision made by Microsoft.

However, this is not necessary for Excel 2.2. All versions of Excel now use the same native ("BIFF") file format, and SYLK is not necessary. Users can specify a date system to use 1900 or 1904 via the Calculations, Options dialog box.

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Tech Info Library Article Number:3895



# Tech Info Library

## LocalTalk PC Cards and AppleShare PC: Compatible Systems

Revised: 8/28/90  
Security: Everyone

LocalTalk PC Cards and AppleShare PC: Compatible Systems

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This article last reviewed: 28 April 1989

The following IBM PC and PC-compatible systems have been tested and found to work with the LocalTalk PC Card and AppleShare PC. The actual working configuration depends on what other cards are in the machine.

- Wyse 286
- Compaq 386, and portable PC
- IBM PC, XT, AT
- PS/2 Model 30
- AT&T 5300

Units that have problems are:

- The Compaq 286 running in 25-MHz mode. This can be changed to run at 8 MHz to work with the LocalTalk PC Card.
- The IBM PC 3270 is not an IBM PC and is not compatible with the LocalTalk PC Card. It is essentially a 3270 workstation whose expanded capabilities include PC operations. This system uses all of the DMA lines and is not compatible with the LocalTalk PC Card.
- Any system that has a bus speed higher than 8 MHz. (Most do not provide a speed-mode to switch to a slower speed, compatible with the standard PC bus timing of 8 MHz.)
- Any system that uses all of the DMA lines.
- All pre-2.0 versions of ATALK.EXE do not support noninterrupt operation. (Anyone running AppleShare PC or anyone who has purchased the LocalTalk PC Card since mid-1988 will have version 2.0 or later, which DOES support



noninterrupt operation and will work in this situation.)

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Tech Info Library Article Number:3896



# Tech Info Library

## Apple II Systems: How to Identify them With Inter-Poll

Revised: 3/1/93  
Security: Everyone

Apple II Systems: How to Identify them With Inter-Poll

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This article last reviewed: 28 April 1989

This article describes what to do, so that Inter•Poll can identify an Apple IIe or Apple IIGS connected to a network. There are some very specific criteria that must be met:

- The Apple IIGS must have Built-in AppleTalk selected in the Control Panel.
- The Apple IIGS must have the proper port set to "Your Card".
- An Apple IIe with the Workstation Card must be past the Password screen.

The steps for each computer are given below.

### Apple IIGS

-----

For an Apple IIGS to appear in the "Device List" window of Inter•Poll, these steps must be followed:

- 1) Select "Built-in AppleTalk" from the Control Panel. At the same time, set the port that the network is connected to, generally the Printer port, to "Your Card".
- 2) Shut down and restart the system.
- 3) Run Inter•Poll on the Macintosh, or have it running and checking the network.

The Apple IIGS should show up in the Device List window.

Note: Responder is built into the AppleTalk portion of the software for the Apple IIGS.

Apple IIe

-----

- 1) Install the Apple II Workstation Card in slot 7 of the Apple IIe and connect the LocalTalk port to the network.
- 2) Start up the system and log on to a ProDOS server on the network.

Once the system goes past the Password screen, the device shows up in the Device List window of Inter•Poll.

To see if there was something unique about this setup procedure, we considered the Macintosh in a similar environment. If the system is powered up, but no software is loaded (that is, the Macintosh screen shows the disk with a flashing question mark in the middle of the disk), the system is not identifiable from Inter•Poll. At this point, there is no AppleTalk software to respond to the Inter•Poll request. The same is true for an Apple II.

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Tech Info Library Article Number:3897



# Tech Info Library

## Macintosh II: Power Supply Pinouts and Power Fail Circuitry

Revised: 7/2/92  
Security: Everyone

Macintosh II: Power Supply Pinouts and Power Fail Circuitry

Article Created: 1 May 1989  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

This article discusses the pinouts for the Macintosh II's 15-pin, power connector from the power supply to the motherboard. It also includes information about the Power Fail circuitry, in case you must use an alternative power supply.

DISCUSSION -----

Pinouts

-----

| Pin # | Function |
|-------|----------|
| ----- | -----    |
| 1     | +12V     |
| 2     | +5V      |
| 3     | +5V      |
| 4     | +5V      |
| 5     | +5V      |
| 6     | +5V      |
| 7     | Ground   |
| 8     | Ground   |
| 9     | Ground   |
| 10    | Ground   |
| 11    | Ground   |
| 12    | Ground   |
| 13    | N/C      |
| 14    | -12V     |
| 15    | /PFW     |

The Power Fail circuitry in the Macintosh II power supply senses a level transition from the logic board, initiated by pressing either the button on the back of the machine or the reset key on the ADB keyboard. If this transition does not occur, the power-up sequence does not start. If a steady voltage is applied to the Power Fail signal line into the power supply, the sequence will not start. The power supply must see the transition to begin the power-up cycle. A modified power supply that would power up with a voltage applied steadily, instead of level-shifted, would work in this case.

When the Reset key is pressed, pin 4 (Ground) of the ADB port is connected to pin 2 (PwrOn\*) of the ADB port through a 1N914 diode. This applies a ground to the input of a CMOS chip on the logic board, which turns on a transistor and applies approximately +6VDC to the /PFW signal line (Power Fail Warning\*), pin 15. This level shift on the PFW\* signal line initiates the power-up sequence in the power supply. Once the power supply comes up, +5VDC is applied through another diode to the same line to keep the power supply up.

A power-fail-type circuit is necessary in the current power supply, because there is a thermal sensor on the Macintosh II logic board, which shuts down the system in the event of too-high temperatures. The same circuit shuts off the power supply in response to the Shut Down menu command.

There is also logic in the power supply that generates a Power Fail Warning signal to the system in the event of an AC input voltage failure. Additionally, if AC power is removed from the system, the power fail circuit pulls /PFW low at least 2 ms before the DC outputs fail. There is further information on the operational restrictions of the power fail circuitry in "Designing Cards and Drivers for the Macintosh II and Macintosh SE" from Addison Wesley.

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Tech Info Library Article Number:3898



# Tech Info Library

## SCSI Bus: Maximum Length Is 18 Feet

Revised: 6/8/89  
Security: Everyone

SCSI Bus: Maximum Length Is 18 Feet

=====

This article last reviewed: 1 May 1989

If there is only one SCSI device, segment length and maximum length are the same, 18 feet. If there are multiple SCSI devices on the bus, the maximum segment length recommended is no longer than 9 feet, assuming the maximum bus length is not exceeded.

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Tech Info Library Article Number:3899



# Tech Info Library

## AppleWorks on 5.25-Inch Disks: Printing to LaserWriter

Revised: 6/8/89  
Security: Everyone

AppleWorks on 5.25-Inch Disks: Printing to LaserWriter

=====

This article last reviewed: 1 May 1989

This article describes how to put together three 5.25-inch disks for printing to a LaserWriter from an Apple II with AppleWorks (releases 2.0 and later). This makes the AppleWorks-LaserWriter connection available when only one or two 5.25-inch disk drives reside on the Apple II system.

### Overview

-----

The process requires these three disks:

- The IWEM.BOOT Disk
- The APPLEWORKS Startup Disk
- The APPLEWORKS Program Disk

Have these disks handy to go through the process described below. The rest of the article describes what to do with each disk, beginning with the IWEM.BOOT disk. The article concludes with listings of the catalogs of the three disks.

### The IWEM.BOOT Disk

-----

For AppleWorks to print to a LaserWriter, you need to download the ImageWriter Emulator (IWEM) to the LaserWriter. To do this, you need the disk labeled: IWEM.BOOT. Follow these steps:

1) Start up the Apple II with the IWEM.BOOT disk. This leaves the user at the Applesoft BASIC prompt.

2) At the prompt, type:

-CHOOSER.II

- 3) Select "LaserWriter" in the top left scroll box.
- 4) In the lower left scroll box, select the zone of the desired LaserWriter.
- 5) In the top right scroll box, select the name of the desired LaserWriter.  
Once you select the LaserWriter in the third box, CHOOSER.II checks for the presence of IWEM. If not already downloaded, it will be downloaded.
- 6) Quit from CHOOSER.II.

This procedure needs to be used each time the LaserWriter is powered off and back on. The power cycle causes IWEM to be purged. Occasionally, the IWEM may be corrupted by other printing sessions, like a Macintosh printing session. If an Apple II workstation attempts to print to the IWEM with no results, try downloading the IWEM again.

#### The APPLEWORKS Startup Disk

-----  
With the IWEM downloaded, the next step is to start up with the APPLEWORKS startup disk and set the desired printer as the default printer for the user. With the disk configured as below, on startup, the Applesoft prompt appears. Follow these steps:

- 1) At the prompt, type:

-CHOOSER.II

This time, CHOOSER.II is used only to select the printer for use by AppleWorks. The APPLEWORKS startup disk assumes the IWEM is downloaded.

- 2) Select the same choices that were selected in the IWEM.BOOT section.  
The selection is written to the APPLEWORKS startup disk. Unless the printer is moved, renamed, or an alternate printer is desired, you do not need to run CHOOSER.II again during future AppleWorks sessions.
- 3) Quit CHOOSER.II.

This presents the following request:

ENTER PREFIX (PRESS "RETURN" TO ACCEPT)

- 4) In response, type:

/APPLEWORKS/

and press RETURN. This displays the request:

ENTER PATHNAME OF NEXT APPLICATION

- 5) In response, type:



## APLWORKS

and press RETURN. This runs the AppleWorks application. AppleWorks requests the APPLEWORKS program disk.

### The APPLEWORKS Program Disk

-----  
Continue the process by following these instructions:

1) Insert the APPLEWORKS program disk. Then press the space bar and RETURN.

2) Once in AppleWorks, select:

#5: Other Activities.

3) Then select:

#7: Specify information about your printer(s)

4) Then select:

#2: Add a printer (maximum of 3)

5) Next select:

#2: Apple ImageWriter

6) Give this ImageWriter driver a name to represent it as the LaserWriter on the network (like "Network LaserWriter").

7) Designate the correct slot -- the slot the Workstation Card is in on an Apple IIe or slot 7 on an Apple IIGS.

8) The default settings on the next screen are correct, therefore, ESCAPE back to the Main Menu. From this point, everything (including control codes for underlining, bold-facing, and so on) functions as though AppleWorks is printing to an ImageWriter.

### Changes To Be Made

-----  
Beyond configuring the disks with the following files, one filename needs to be changed. On the APPLEWORKS startup disk, APLWORKS.SYSTEM needs to be changed to APLWORKS. Leaving the .SYSTEM off allows BASIC.SYSTEM to be the startup application, thus, allowing CHOOSER.II to be run, following startup with the APPLEWORKS startup disk and before running APLWORKS.

There are 21 blocks available on the APPLEWORKS startup disk. It may be possible to create a small menu program to "front end" the APPLEWORKS disk. The menu program is not covered in this document.

The three disk configurations follow:

IWEM.BOOT

-----

PRODOS

CHOOSEER.II

CHOOSEER5.OVR

IWEM

CHOOSEER4.OVR

CHOOSEER3.OVR

MTXABS.0

CHOOSEER2.OVR

CHOOSEER1.OVR

CHOOSEER.0

ATINIT

BASIC.SYSTEM

12 Files Listed, 262 Blocks Used, 18 Available

APPLEWORKS (startup disk)

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PRODOS

APLWORKS

SEG.00

SEG.RM

SEG.XM

SEG.EL

CHOOSEER.II

CHOOSEER5.OVR

CHOOSEER4.OVR

CHOOSEER3.OVR

CHOOSEER2.OVR

CHOOSEER1.OVR

CHOOSEER.0

MTXABS.0

ATINIT

BASIC.SYSTEM

16 Files Listed, 259 Blocks Used, 21 Available

APPLEWORKS (program disk)

-----

SEG.M0

SEG.M1

SEG.PR

3 Files Listed, 279 Blocks Used, 1 Available

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Tech Info Library Article Number:3910



# Tech Info Library

## INIT 31 Mechanism and INIT 29 Virus

Revised: 6/8/89  
Security: Everyone

INIT 31 Mechanism and INIT 29 Virus

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This article last reviewed: 1 May 1989

Only files in the System Folder of the type "INIT", "CDEV", or "RDEV" are searched for INITs at startup. In fact, with System 6.0.2 and later, only visible files in the System Folder are searched for INITs.

The INIT 29 virus installs an INIT in every resource file that is opened, in which a code resource is installed, excluding applications. Because the Desktop file is a resource file and not an application, an INIT is installed. This INIT is never activated.

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Tech Info Library Article Number:3911



# Tech Info Library

## MPW 3.0 Installer Program: Conflict with TOPS

Revised: 12/13/89  
Security: Everyone

MPW 3.0 Installer Program: Conflict with TOPS

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This article last reviewed: 1 May 1989

The MPW 3.0 Installer program crashes, if TOPS is installed. Note that TOPS does not need to be active, just installed.

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Tech Info Library Article Number:3912



# Tech Info Library

## Async LaserWriter Driver 4.0: Use with LaserPrep 4.0

Revised: 12/6/89  
Security: Everyone

Async LaserWriter Driver 4.0: Use with LaserPrep 4.0

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This article last reviewed: 1 May 1989

If you have had a problem using the Asynchronous LaserWriter Driver, the problem may be the version of your LaserPrep file. The Asynchronous LaserWriter Driver version 4.0 works fine with LaserPrep version 4.0. Other versions of the LaserPrep file, like 5.2, may not print--even though the connection to the LaserWriter is sound.

A successful configuration is:

LaserWriter IINT  
SL Laser 4.0 (Asynchronous LaserWriter Driver)  
LaserPrep 4.0  
Macintosh IIX

Set the baud rate to 9600 in the Chooser. The DIP-switch settings on the LaserWriter IINT had switch 1 up and switch 2 down. Connect the printer to the Macintosh using an 8-to-25-pin cable.

To ensure that the LaserWriter has the proper settings, power on the LaserWriter and look at the test page it prints. The RS-232 9600-baud and RS-422 baud options should be listed on the test page.

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Tech Info Library Article Number:3913



# Tech Info Library

## Kodak KEEPS to Macintosh: How To Transfer Files

Revised: 9/10/92  
Security: Everyone

Kodak KEEPS to Macintosh: How To Transfer Files

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Article Created: 8 June 1989

Article Change History

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08/31/92 - REVIEWED  
•For technical accuracy

TOPIC -----

How do I transfer files from a Kodak KEEPS system to the Macintosh?

DISCUSSION -----

One way to transfer files from a Kodak KEEPS system to the Macintosh is to use a serial connection and Kermit from Columbia University. The Kodak KEEPS system is based on Interleaf running on a Sun platform. Interleaf is also available for the Macintosh and supports the importing of RFT, ASCII, EPS, TIFF, and PICT files.

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Tech Info Library Article Number:3914



# Tech Info Library

## AppleScan 1.0.2 Files: How to Import into Quark XPress

Revised: 6/8/89  
Security: Everyone

AppleScan 1.0.2 Files: How to Import into Quark XPress

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This article last reviewed: 1 May 1989

Some users have reported blurry images--both on the screen and on the LaserWriter output--after importing an image created in AppleScan 1.0.2, saved in TIFF format, and imported into Quark XPress 2.0A. The problem appears to be with the way XPress 2.0 interprets TIFF files. You can improve image quality in XPress 2.0 by using grayscale scans and setting the print option, under Page Setup Options, to "Precision Bitmap Alignment".

It appears that Quark XPress does not interpret TIFF images the same way as some other applications, like PageMaker 3.0 and ImageStudio. As with many other types of file format, it's not only the information the format contains, but what the application does with the actual data.

Experimentation revealed that neither PageMaker 3.0 nor ImageStudio displayed the "fuzzy" image problem. Because the problem is with the way the Quark XPress interprets TIFF files, the fix needs to come from Quark.

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Tech Info Library Article Number:3915



# Tech Info Library

## AppleShare: Alphanumeric Characters Only for User Names

Revised: 2/6/90  
Security: Everyone

AppleShare: Alphanumeric Characters Only for User Names

=====

This article last reviewed: 1 May 1989

Users have complained that they cannot change the access privileges on folders created in AppleShare 2.0.1. The response received when trying to change privileges is, "User ID not known". This seems strange, because all characters are accepted when an account name is defined.

The fix is to ensure that only alphanumeric characters appear in registered user names. That is, "Albert Cohoe 3933440" works properly, but "Albert Cohoe: 393-3440" does not.

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Tech Info Library Article Number:3919





# Tech Info Library

## Macintosh 512K: How to Localize to Spanish

Revised: 6/8/89  
Security: Everyone

Macintosh 512K: How to Localize to Spanish

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This article last reviewed: 1 May 1989

When trying to localize a Macintosh 512K, some people have reported that the process resulted in the keyboard becoming completely unmapped. That is, keys were interchanged throughout. This can happen when to the standard U.S. Macintosh 512K keyboard (no numeric pad).

The problem results from the U.S. standard keyboard having a different number of keys than the international keyboard. The number of keys affects the mapping. If you are using a Spanish keyboard, select "international keyboard" from the Keyboard CDEV in the Control Panel. Using any Macintosh Plus keyboard also eliminates difficulties.

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Tech Info Library Article Number:3920



# Tech Info Library

## AppleShare Server: One Log on per Workstation

Revised: 2/6/90  
Security: Everyone

AppleShare Server: One Log on per Workstation

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This article last reviewed: 16 May 1989

Some AppleShare administrators have inquired if there is anyway to partition a server volume into application and work file sections, so that users could mount applications more quickly. In effect, they want users to log on to multiple volumes on a single AppleShare server.

Although this approach could speed up user access time, the problem is that when connecting to an AppleShare File Server, the user logs on to the server itself; not the individual volume. The current implementation of AppleShare File Services does not allow multiple logging on to a server from a single workstation. Allowing multiple connections could create situations that would severely confuse the Finder. To eliminate this as a possibility, each workstation is allowed only one connection to any server.

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Tech Info Library Article Number:3921



# Tech Info Library

## System 6.0.2 & 6.0.3: Printing Changes Last Modified Date

Revised: 6/8/89  
Security: Everyone

System 6.0.2 & 6.0.3: Printing Changes "Last Modified Date"

=====

This article last reviewed: 16 May 1989

A user noticed that after printing to an ImageWriter or LaserWriter, the "last modified" date of the Finder and the printer driver changed to the current date. Also, changing a setting in the Control Panel changes the "last modified" date of the System changes to the current date. This occurs with System 6.0.2 and System 6.0.3.

Tech Comm engineers were unable to create a situation that changes the "last modified" date of the Finder. However, the change in the "last modified" date of the printer driver and the System file is normal.

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Tech Info Library Article Number:3922



# Tech Info Library

## Aristotle: Add Memory to Apple IIGS when Adding Users

Revised: 6/8/89  
Security: Everyone

Aristotle: Add Memory to Apple IIGS when Adding Users

=====

This article last reviewed: 16 May 1989

To avoid running out of memory in Aristotle while working with more than 500 users, you need to increase the Control Panel setting for the RAM disk from 256K to 512K on the administrator's Apple IIGS. This allows up to 1,000 users in Aristotle. For 1,001 to 1,500 Aristotle users, increase RAM disk size another 256K for a total of 768K in the RAM disk. The Aristotle manual discusses this on page xii:

"By setting 256K minimum RAM (on the RAM disk in an Apple IIGS or with 256K RAM on the expansion card in an Apple IIe), you can manage up to 150 applications on the server and use them to create up to 50 menus for up to 500 users. (Aristotle calls the menus 'classes'.)"

"You can raise these limits by increasing the amount of RAM. With each 256K increment--to a maximum of 1MB--you can manage 150 more applications, 50 more menus, and 500 more students. If you're using an Apple IIGS, however, remember that 256K of the RAM on the expansion card is needed for the workstation to access the network. In fact, more memory may be needed if the user has desk accessories or other memory-resident programs."

Aristotle does not recognize the Apple II Memory Expansion Card (Part number A2B2086) as usable RAM when it is installed in the Apple IIGS. However, Aristotle does recognize this memory card automatically when installed in an Apple IIe.

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Tech Info Library Article Number:3923



# Tech Info Library

## Step-Up, Step-Down Transformers: Where to Buy Them (3/94)

Revised: 3/17/94  
Security: Everyone

Step-Up, Step-Down Transformers: Where to Buy Them (3/94)

Article Created: 16 May 1989  
Article Reviewed/Updated: 17 March 1994

TOPIC -----

Where can I purchase a step-up or step-down transformer?

DISCUSSION -----

Generally, the best source for step-up or step-down transformers is the country of destination. Once in the country, a hardware store (as they are known in the U.S.) is the most likely vendor of step-down transformers.

If you prefer to buy in the U.S., stores handling travel goods (luggage and travel accessories) are a possible source, as are ordinary hardware stores and electronic supply stores.

Article Change History:  
17 March 1994 - Updated formatting, wording.

Support Information Services

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Tech Info Library Article Number:3925



# Tech Info Library

## Text Files: The Lost Tabs Problem

Revised: 6/29/90  
Security: Everyone

Text Files: The "Lost" Tabs Problem

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This article last reviewed: 16 May 1989

If, when saving files as text only (for transfer to MS-DOS applications, for example), you lose tabs, consider the following. Most Macintosh word processing applications save the tabs in the files. Most MS-DOS word processing applications replace tabs with space runs. This is why the MS-DOS files appear to keep their formatting.

Apple File Exchange replaces tabs n spaces if that option is selected in the Macintosh-to-MS-DOS section of the standard text file translator.

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Tech Info Library Article Number:3926



# Tech Info Library

## A/UX: Supports HyperCard (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: Supports HyperCard (9/94)

=====

Article Created: 16 May 1989  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

Many Macintosh applications, including HyperCard, now can run under A/UX.  
As a result, you can develop programs that run under A/UX, such that  
HyperCard can communicate with a user's application programs.

DISCUSSION -----

In general, HyperCard front-end interface XCMDs (external commands) and/or  
XFCNs (external functions) can be written in C or Pascal to communicate  
with a user's application via generic A/UX system calls or A/UX toolbox  
calls. This means that you can port an application from a different UNIX  
platform to A/UX and give it a HyperCard interface.

Oracle Relational DBMS has developed such a HyperCard interface for their  
applications running under A/UX. For more details, search under "Oracle".

Article Change History:  
21 Sep 1994 - Reviewed.  
04 Jun 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:3929



# Tech Info Library

## A/UX: How to Specify Nonstandard Macintosh Partition Sizes

Revised: 6/8/89  
Security: Everyone

A/UX: How to Specify Nonstandard Macintosh Partition Sizes

=====

This article last reviewed: 16 May 1989

When running Apple HD SC Setup to partition an A/UX drive, you can specify nonstandard Macintosh partition sizes. However, be aware that the method this article describes should not be used on drives already containing the Root and Usr partition of a standard A/UX drive. Rather, this method is best suited for partitioning secondary volumes for use as additional disk space on an A/UX system.

- 1) In the HD SC Setup 2.0 initial window, select the drive to be partitioned.
- 2) Click on the partition button.

You should see a window with several standard setups, such as 50% Macintosh and 50% A/UX. If one of these configurations fits the your needs, choose that setup.

- 3) If you want something else, click the Custom button.

This presents you with a third window that graphically depicts the partitioning on the hard disk drive.

By clicking and dragging in the gray, nonallocated region, you can create partitions and specify their sizes. You can double-click on a created partition to declare its type (like Macintosh partition).

Your first partition should be a 16K partition of the type "Macintosh Driver".

With the one exception that you can have only one Macintosh partition per hard drive, subsequent partitions can be of any type you desire.

DO NOT PARTITION A HARD DRIVE THAT HAS VALUABLE INFORMATION ON IT. Doing this is the equivalent of initializing the hard disk. You also should not



do this on your boot A/UX volume. If you want to change the partition sizes on your boot A/UX volume that was shipped from Apple, first read the articles in the Tech Info Library on that topic.

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Tech Info Library Article Number:3932



# Tech Info Library

## Mixed Environment Network Issues

Revised: 7/30/90  
Security: Everyone

Mixed Environment Network Issues

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This article last reviewed: 16 May 1989

This article describes IBM PCs connected via LocalTalk PC Cards via FastPaths to a mixed environment network. Pacer software on the VAX does have the capability to support MS-DOS machines. Although connections are provided for both AppleTalk and Ethernet, the services on an Ethernet direct-connect are a subset of the services for a machine using the LocalTalk PC Card.

Using the LocalTalk PC Card and routing through a Kinetics FastPath, you have complete access to file, terminal, and printing services. Currently, using the supported Ethernet cards for the MS-DOS machine, you have the terminal and printing services, but not the file services.

Ethernet cards currently supported by Pacer on the MS-DOS machines are:

- 3COM Corporation's 501,503,505
- Micom's NI5010,NI5210
- Western Digital's AD03

In the Macintosh world, you have access to the full range of services whether you use Ethernet or LocalTalk.

Alisa Systems supports AppleShare PC using the LocalTalk PC Card connected to a Kinetics FastPath through an AppleTalk network.

With regard to PCSA (Personal Computing Systems Architecture), because this product was specifically designed by DEC to provide file and print services for MS-DOS machines from VAX systems, it should work. Because it is not AppleTalk-based, its presence on the network should have no effect.

Note: This is a theoretical statement, because no reports of problems with both architectures residing on the same network have appeared. The area for potential problems is having AppleTalk and PCSA reside on the same MS-DOS machine and somehow conflicting. The usual concerns of interrupt, DMA, and

driver conflicts would apply in this case.

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Tech Info Library Article Number:3933



# Tech Info Library

## LaserWriter: To Avoid Paper Curl, Keep the Paper Dry

Revised: 12/6/89  
Security: Everyone

LaserWriter: To Avoid Paper Curl, Keep the Paper Dry

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This article last reviewed: 16 May 1989

Paper coming out of LaserWriters sometimes has curved (almost wrinkled) edges, due to the fusing process acting on damp paper. The problem is usually room humidity, rather than the kind of paper being used. Each type of paper stock has its own blend of fiber or rag content, which affects the curl characteristics, but there are no specific papers that minimize the amount of curl.

The curved or wrinkled edge on almost all paper is normally caused by humidity. The higher the humidity, the more likely a paper stock is to curl. This is due to a rapid, but uneven, drying of the paper stock as it is passed through the heated fuser assembly. This condition can be lessened by storing the paper stock and printing in a dry, humidity-controlled environment. Using a dehumidifier to lower the relative humidity in the room where the printer is located also may lessen the amount of curl.

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Tech Info Library Article Number:3934



# Tech Info Library

## SCSI Disk Controller Card with Two Drives Attached

Revised: 6/8/89  
Security: Everyone

SCSI Disk Controller Card with Two Drives Attached

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This article last reviewed: 16 May 1989

This article describes the relationship of a SCSI disk controller card, the two hard disks connected to it, and the Macintosh system software. When two hard drives are connected to a controller card, which is connected to the SCSI bus; then accessing, mounting, and arbitration of the hard disks volumes is handled by the disk controller card and not the SCSI bus.

The SCSI address is assigned to the SCSI controller card and sets the priority for the controller card, not the disk drives. So, the system software (Macintosh Operating System) is not addressing the hard drives as SCSI drives but as devices through the SCSI-attached drive controller (the disk drives are talking to the disk controller, not the SCSI bus).

SCSI is a transport medium and does not care what is connected to the SCSI controller, provided the SCSI controller follows the rules for placing information on the SCSI bus. In this case, an INIT is required to tell the SCSI controller how to talk to the two separate hard disks.

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Tech Info Library Article Number:3935



# Tech Info Library

## LaserWriter and Word 3.02: Driver 5.1 Versus 5.2

Revised: 12/6/89  
Security: Everyone

LaserWriter and Word 3.02: Driver 5.1 Versus 5.2

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This article last reviewed: 16 May 1989

While running Microsoft Word 3.02 and LaserWriter Driver 5.1, some users find that the London and Venice fonts print fine -- but that after they upgrade to LaserWriter Driver 5.2, the fonts print jaggedly.

LaserWriter Driver 5.2 added a feature to allow smoothing on text, graphics, or both. This was different from previous versions where smoothing was a global option. Driver 5.2 provides greater control over the document by letting the user choose among three options.

Venice and London are bitmapped screen fonts and require smoothing when printing. Because Microsoft Word uses its own Page Setup and Print dialogs, it does not properly select the two different smoothing options. It selects smoothing for graphics only.

You can test this by cutting and pasting a PICT of Venice text from MacPaint into Microsoft Word. The picture of the text will be smoothed, but some Venice text in the same Microsoft Word document will not be.

The problem could have been worked around by letting the user select and print with the system's Print dialog. Microsoft Word lets the user display the system dialogs by holding the Shift key when selecting Page Setup or when selecting Print. However, with Microsoft Word, the system's Print dialog command is ignored, and the Microsoft Word dialog must be used.

Products like MacWrite, that use the standard system Print dialogs, smooth correctly with the new driver.

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Tech Info Library Article Number:3936



# Tech Info Library

## LaserWriter Plus: How to Print with DOS WordPerfect

Revised: 6/8/89  
Security: Everyone

LaserWriter Plus: How to Print with DOS WordPerfect

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This article last reviewed: 16 May 1989

Some people have had problems printing from WordPerfect 5.0 to a LaserWriter Plus. The software is running on a DOS computer with a LocalTalk PC Card installed. The LaserWriter Plus is also on the network.

AppleShare PC or Trading Post from LaserTools is required to print to a LaserWriter directly from a PC application, like WordPerfect 5.0. The application must have its own drivers for either PostScript or Epson printers. If an Epson driver is not available, a text printer driver will work.

The software that comes with the LocalTalk PC Card is a set of tools and utilities. These are not meant to provide the print services, like printing from an application, provided in AppleShare PC.

The configuration steps for printing with these products are well-documented in their respective manuals and should present no problems. The actual printing is up to the word processor. The steps necessary to print, once the LocalTalk software is installed, are based solely on the application that created the document. If there are problems after the LaserWriter has been correctly connected from the AppleShare PC DA, and the application has been set to use its PostScript driver, usually the problem is due to the implementation of the particular driver belonging to the application.

Consider the following example. If AppleShare PC has been configured to use the LPT1 port and is set for PostScript, the application only needs to be configured to use its PostScript driver and to print to the LPT1 port. All printing commands, options, and steps are the application's at that point. In fact, the LocalTalk PC Card and AppleShare PC are only passing along the information to the LaserWriter. They are not interfering with the print commands at all.

If AppleShare PC has been configured to use the LPT1 port and is set for

Epson emulation, the application only needs to be configured to use its Epson driver and, once again, to print to the LPT1 port. In this case, the PC will probably print slowly, because AppleShare PC is intercepting the Epson printer commands generated by the application's Epson driver and converting them to PostScript before passing it to the LaserWriter.

Make sure you know how to connect the LaserWriter to an LPT printer port with AppleShare PC and how to select the appropriate PostScript driver for a LaserWriter and an LPT port. The process is the same from the application side whether directly connected or not. The only difference is that the usual DOS configuration of a PC communications port is replaced with the AppleShare PC configuration. The AppleShare PC only needs to be configured once, because AppleShare PC can be set to connect to the printer on each startup.

WordPerfect 5.0 has been successfully tested with an IBM PC and AppleShare PC. The only exception is with pre-REV 47 LaserWriter boards. This is because the WordPerfect PostScript driver takes advantage of some optimized PostScript routines found in the LaserWriter Plus and later PostScript LaserWriters (REV 47 ROMs) and is not compatible with the earlier ROMs.

The steps for printing from WordPerfect 5.0 are as follows:

- 1) Install the LocalTalk PC Card and connect to the desired LaserWriter.
- 2) Install AppleShare PC.
- 3) Execute the DA application or use the hot key.
- 4) Connect the LaserWriter.
- 5) Choose PostScript for the printing mode.
- 6) Exit from the DA.

This is where the WordPerfect application takes over:

- 1) Execute WordPerfect.
- 2) When ready to print, press Shift F7.
- 3) Select S for select printer.
- 4) Type 3 for Edit printer connection.
- 5) Type 2 for Additional Printers.
- 6) Move the highlighted cursor to the Apple LaserWriter Plus driver.
- 7) Press Return.

The Fonts should be loaded into the driver.

- 8) Press Return after selecting the Font options when they appear.
- 9) Press Return again after selecting the printer name and PORT connection.
- 10) Press Return after selecting the name of the printer connection from above.
- 11) Type 1 for full document print.

There are several intermediary steps depending on what options are chosen, but these are the basics. The WordPerfect setup has nothing to do with the connection, except choosing THEIR LaserWriter Plus Driver and selecting the same port as configured in the AppleShare PC DA. The same steps are true



when selecting another type of printer driver.

The default port for WordPerfect is LPT1. The default Port in AppleShare PC is LPT3. It does not matter which one is changed as long as both are the same.

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Tech Info Library Article Number:3937



# Tech Info Library

## LaserWriter IISC: Uses QuickDraw, Not PostScript

Revised: 6/8/89  
Security: Everyone

LaserWriter IISC: Uses QuickDraw, Not PostScript

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This article last reviewed: 16 May 1989

Printing to a LaserWriter IISC sometimes seems to takes a long time (for example, one customer reported that from Excel the average is about 4 minutes per page). This relative slowness is a result of the printing process used by the LaserWriter IISC. Rather than interpreting PostScript commands (as is done by the LaserWriter IINT and LaserWriter IINTX), the LaserWriter IISC creates QuickDraw to a Raster image. This is essentially a bitmap of the screen image. QuickDraw printing is much slower than PostScript, and no speed increases are available.

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Tech Info Library Article Number:3938



# Tech Info Library

## Anchor Pad International, Inc.

Revised: 7/22/93  
Security: Everyone

Anchor Pad International, Inc.

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Article Created: 22 May 1989  
Article Reviewed/Updated: 22 July 1993

Anchor Pad International

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35 Hammond Rd.  
Irvine, CA 92718

800-6ANCHOR (626-2467) (CA)  
800-4ANCHOR (426-2467) (National)

714-580-2555 (General Info.)

714-580-2650 Fax

### Company Profile:

Hardware, specializing in security devices (anti-theft systems) for personal computers, including the Macintosh and Apple IIe.

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Tech Info Library Article Number:3939



# Tech Info Library

## MIT Software Center

Revised: 7/13/93  
Security: Everyone

MIT Software Center

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Article Created: 06/12/89  
Article Reviewed: 07/13/93  
Article Updated: 08/21/91

MIT Software Center

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Technology Licensing Office  
77 Massachusetts Ave.  
Room E32-300  
Cambridge, MA 02139

617-253-6966 (MIT Software Center)  
617-258-8330 (X Ordering Hotline)

617-258-6790 Fax

Company Profile:  
Software, specializing in X products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3943



# Tech Info Library

## Apple Data Modem 2400: Q & A from LAN Minds Training

Revised: 7/26/93  
Security: Everyone

Apple Data Modem 2400: Q & A from LAN Minds Training

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Article Created: 8 June 1989  
Article Reviewed/Updated: 22 July 1993

This article is a question and answer session concerning the Apple Data Modem 2400. It takes care of questions the Technical Resources LAN Minds training left unanswered.

1) What is the maximum speed through the pass-through port?

The maximum speed is 57.6kbps. This is gated by the Serial Communications Controller (SCC) chip.

2) Are there any compatibility problems with Shiva's NetSerial?

There shouldn't be, if the NetSerial package supports standard modems. However, we are checking with the test

3) Can Apple post a list of other MNP modems, and state whether they are compatible with these modems?

This modem is compatible with all MNP level 1-9 modems. It will only negotiate a 4 or lower link, no matter what is calling. MNP is a standard that clearly defines handshakes and data transmission. It is compatible with Relay Technology (formerly MicroCom), Telebit, and Codex, the major MNP vendors. In this case, the product should be compatible with anyone who correctly implements the standard.

4) Can the modem be used with Hypercard?

Yes, serial XCMDs and the modem commands in HyperCard work.

5) Direction: In the LAN Minds' writeup on the Apple Data Modem 2400

(Volume 2, Section 18), there is reference to the Microcom Network Protocol (MNP) classes. In Class 1, states that this protocol defines half-duplex transmission. There is also a statement to the effect that because the modem lacks the Clear to Send (CTS) and Request to Send (RTS) lines, the modem does not support Class 1. This reason was incorrect.

The MNP specifies a half and full-duplex protocol, but not hardware half and full duplex. These are two different uses of the same words. The hardware half and full duplex defines the modulation mechanism for communication between modems. MNP half and full-duplex defines the communication protocol on a modem-to-modem basis (not on computer-to-modem basis as implied in the writeup).

In class 1, this protocol specifies that an 8-byte block is sent out and that the modem waits for a response before sending the next block. Class 2 permits four successive 8-byte blocks to be sent out. On the receiving end, an acknowledgement is sent as each block is received. When the originating modem gets an acknowledgement it adds the next block to the list to be sent. Thus, there are always be four blocks in a queue waiting or being transmitted. With class 2, if a block is not full, it will wait until it is full.

Class 1 alone is not supported in the Apple Data Modem 2400. Although the design does not support this level only, it is the basis for the other classes.

Also note that half and full duplex is also interchangeably used with the echo function set in the terminal software. This usage of the word refers to the echoing of character from the modem back to the host computer.

#### Article Change History:

22 July 1993 - Company title changed from MicroCom to Relay Technology.

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Tech Info Library Article Number:3944



# Tech Info Library

## MacX: High Level X Display Server Description (1/95)

Revised: 1/30/95  
Security: Everyone

MacX: High Level X Display Server Description (1/95)

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Article Created: 8 June 1989  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

This article provides a high level X display server description.

DISCUSSION -----

MacX is an X display server for the Macintosh Operating System. MacX 1.2 complies with the X Window System, Version 11, Release 4. It also supports failure of individual client requests (as opposed to the whole server) and the inclusion of DECW\$CURSOR and DECW\$SESSION fonts.

MacX lets multiple X11-compliant clients share the Macintosh display. Unlike other X display servers, MacX has many built-in functionality with the X display server. These function include:

- X window manager with Macintosh Finder-like appearance
- Font manager
- Color namer
- Remote command

The font manager handles the cataloging of X (Adobe's Bitmap Distribution Format - BDF), DECwindows and Macintosh fonts. BDF fonts, the format used by the X Consortium to distribute fonts, needs to be compiled before they can be used by MacX. The font manager has a built-in font complier.

Also, the font manager lets you assign alias names to fonts. This particularly useful with the X fonts, because the X font naming convention is quite lengthy. This allows for a convenient means for referencing fonts.

The color namer lets you assign a name to a color selected via the standard color wheel dialog box (the same one from Control Panel). This alleviates the need for a user to define a color with RGB values. It also uses an easy-to-remember name to reference a particular color.

From MacX, remote commands can be sent to hosts on the network. Remote commands issued from MacX can be saved to a document and used again at a later time. A host informational status window is provided to find out status about commands requested via MacX.

In addition, MacX has two operating modes, rooted or rootless. Each mode has a color and monochrome support. While in the rooted mode, another X window manager can be requested to manage client windows attached to these rooted windows. These rooted windows can be defined to be up to 2048 by 2048 pixels in size. In the rootless mode, the client windows have a Macintosh Finder "look and feel" like a Macintosh title bar with a close (kill client) box. The client windows appear to be like any other window on the desktop.

Because the Macintosh has only a single button mouse, the three-button mouse, which is very popular in the X world, is mapped to the arrow keys on the keyboard. Arrow keys perform the arrow function and option-arrow perform a three-button mouse operation or visa versa.

MacX connects to the network via the Macintosh Communications Toolbox. MacX supports TCP/IP, ADSP and TSSNet (DECnet) tools.

#### Article Change History:

30 Jan 1995 - Reviewed for technical accuracy and changed title.

Support Information Services

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Tech Info Library Article Number:3945





# Tech Info Library

## MacX: Q & A From LAN Minds Training (4/93)

Revised: 4/23/93  
Security: Everyone

MacX: Q & A From LAN Minds Training (4/93)

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Article Created: 8 June 1989

### Article Change History

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04/20/93 - UPDATED

- To include MacX 1.2 information.

### TOPIC -----

This article is a question and answer session concerning MacX. It takes care of questions the Technical Resources LAN Minds training left unanswered.

### DISCUSSION -----

- 1) What is the difference between the MacX X display server versus other X display servers? In particular, what are the feature difference?

Although it is a display server, MacX has X window-manager capabilities that provided Macintosh-like user interface. It has many user-friendly interfaces like font and color managers to make it easier to work with X.

MacX has two modes, rooted and rootless windows. Effectively, these two modes can provide four displays. With rooted windows, other X window managers can be launched to handle the client windows within the rooted window. The rootless windows provide Macintosh-like windows that appear on the desktop.

Because MacX runs on the Macintosh hardware platform, all the other Macintosh applications are also available for use. MacX is MultiFinder-compatible.

The key factors in comparing X display servers are the following: screen size and resolution, type and speed of the processor, the availability of a graphics coprocessor, RAM configuration and expandability, color support, and price.

- 2) It seems like the MacX is more than just an X display server. What client functions are built in?

As far as client-like function, Finder-like X window manager, and a utility to show samples of a font type are built into MacX. Cut and Paste on the Macintosh side is already implemented as part of the Macintosh. MacX also has a color namer and the remote command startup facility. The "rootless" style and the ability to support display area larger than that present on the physical screen are also extensions to the normal functionality.

- 3) Are there any third parties developing the three-button mouse for the Macintosh?

To locate a vendor's address and phone number, use the vendor name as a search string. These companies manufacture compatible three-button input devices:

- Logitech, Inc.
  - MouseMan (mouse)
  - TrackMan (trackball)Both are compatible with Macintosh OS, A/UX, and MacX
- Mouse Systems Corp.
  - A3 Mouse
  - A3 TrackballBoth are compatible with Macintosh OS, A/UX, and MacX
- Advanced Gravis Computer Technology Ltd.
  - Gravis SuperMouseCompatible with Macintosh OS, A/UX, MacX, X11, and SoftPC

- 4) Is there any capability to cut and paste graphic information?

Cut and paste of graphic information is available. It probably will be a simple cut and paste of pixmaps -- not object-oriented graphics (like MacDraw) -- only bits that are rendered already (like MacPaint). Refer to the MacX 1.2 Manual.

- 5) An engineer indicated some X window managers are hardware dependent. Are there X window managers that will not work with MacX?

We are not aware of any X window managers that are hardware dependent. We don't know of any window managers that will not work with MacX. MacX

has been used with uwm (Universal Window Manager), twm (Tom's window manager), mwm (Motif Window Manager), and olwm (Open Look Window Manager).

- 6) What is the relationship between DECWindows and MacX? How do they work together? What do you need to make them work together?

MacX is an X11 display server, just like any other X display server. DECWindows is a name for a broad range of X software. It includes a display server for DEC's Ultrix (UNIX), VAX/VMS and MS-DOS machines, client applications, and programming tools.

If DECWindows can interoperate with X11-conformant servers, it can interoperate with MacX. MacX is shipped as a part of the VAX/VMS Services for Macintosh product and includes the completely DECWindows font set, but this is not required to run DECWindows clients. If the DECWindows fonts are not present, either font name aliases or changes on the VAX side can be easily made to permit MacX to work with DECWindows anyway.

You don't need anything special to make them work together, other than the possible requirement for font aliases listed above.

There is one known compatibility problem. It appears the most significant bit is reversed in the client used to display the Digital logo. When shown on MacX, eight-bit bands of information is reversed. The exact problem has not been identified in either the MacX or DEC client.

- 7) Will the ability of extending the X Window standard display server and clients create compatibility problems in the field?

The X11 protocol permits clients to ask whether the server supports particular extensions by name. Properly written clients might fall back on a different strategy if extensions they normally use don't exist. But yes, there can be "compatibility" problems, if this is not the case.

- 8) Does the toolkit that MacX uses conform to a standard toolkit like Xtk?

This question is based on a misunderstanding. The Xtk code runs on the CLIENT side. It specifies a way of programming user interfaces in the CLIENT program. MacX (or any other X11 server) simply draws what the client asks for. There is no "toolkit" in MacX.

- 9) Is there any graphic model being used in MacX (like Display Postscript)?

The name is "The X Window System" according to "X protocol version 11". MacX conforms completely to these specifications, except as outlined in the appendixes of the manual. (In some very small ways, MacX diverges

slightly.)

10) Is it possible to change the window types available in the Set Window Type menu?

No. Only the five show can be selected. "Client Specified" means the client specifies one of the ones shown (1 through 5).

11) What are the official names of the X Window System?

The official names of the software from MIT is:

- X
- X Window System
- X Version 11
- X Window System Version 11
- X11

Note: Phrases like "X.11", "X-11", and "X-Windows" are explicitly excluded and should NOT be used to describe the X Window System.

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Tech Info Library Article Number:3946



# Tech Info Library

## X Window System: A Description

Revised: 6/12/89  
Security: Everyone

X Window System: A Description

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This article last reviewed: 8 June 1989

### BACKGROUND

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The X Window System (or X) evolved out of a project (Athena) at the Massachusetts Institute of Technology (MIT). The goal of this project was to use the networked graphic workstation as a teaching aid. With the support of some corporate sponsors, notably Digital Equipment Corporation (DEC), the X has become the de-facto graphics and windowing standard.

X is being developed by a consortium of industry and academic members under the auspices of MIT. Apple is a member of the X Consortium.

X's principal benefit is that it allows workstation interoperability between different vendors, regardless of hardware platform and operating system.

### X WINDOW SYSTEM ARCHITECTURE

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The X Window System is based on the server-client model. The server is a shared display. This display comprises a keyboard, pointing device like a mouse, and multiple screens (monitors). The display server can support simultaneously multiple number of clients from different hosts.

Unlike other server-client models like AppleShare, the location of the server is reversed (from the user's perspective). In AppleShare, the server is accessed by the user's workstation over the network. In X, the user works at the server (where the information is being shown on the shared display).

Also, the server only provides the mechanism for information to be draw in window. "Policy" is how a user interacts with the windows like moving, resizing, and iconifying them. The policy ("look and feel") is handled by a client application called the X window manager. This separation of the

policy functionality lets X avoid standardizing on any particular user interface.

X clients are applications. X clients are designed, so they can run locally with the server (if the computer supports preemptive multitasking) or remotely over a network.

These clients are designed in a layered fashion. Clients access an X toolkit. The toolkit is a collection of graphical procedures which generate object like scroll bars and buttons. There are a variety of toolkits available. In turn, the procedures in the X toolkit call a standard set of primitive graphics functions stored in a library called Xlib. These Xlib functions provide operations such as drawing a rectangle or filling a box. Xlib functions generate X protocol streams.

X protocol is a low-level protocol used to connect servers and clients together. This protocol which makes it possible for different vendors to communicate with a standard language. X protocol also permits network transparency. Like the AppleTalk protocols stack, by changing the transport layers, X can be run over a variety of physical networking standards.

Portability was a major design criteria for X. X Window System was originally developed in the UNIX and C environment. With it's layered design, it was very easy to transport X to other systems. With Xlib now available in FORTRAN, MODULA-2, PASCAL and Ada, many other environments develop X applications.

## REFERENCE

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There is a growing number of books on the X Window System. In addition, documentation can be obtained directly from the X Consortium at the MIT Software Center. Search the Tech Info Library under "MIT Software Center" for more information:

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Tech Info Library Article Number:3947



# Tech Info Library

## The SMB File Transfer Utility: General Information

Revised: 10/4/89  
Security: Everyone

The SMB File Transfer Utility: General Information

=====

This article last reviewed: 12 June 1989

The SMB File Transfer Utility allows a Macintosh II to transfer files between an SMB server (named for the SMB (Server Message Blocks) protocol) and a Macintosh II over a Token Ring network. Apple File Exchange (AFE), translators (MS-DOS to/from Macintosh), and the Apple TokenTalk NB card are used to do this.

Before installing the SMB File Transfer Utility, you must install the TokenTalk NB card and its associated software. Refer to the TokenTalk NB User's Guide for information on installation.

The Installer is used to set up the SMB File Transfer Utility. System resource version 6.0.3 is required and is included. Follow normal procedures to install the software. AFE is also needed to run the SMB File Transfer Utility. If AFE is not already present, install it, along with any translators that you may want, all in the same folder (the proper version of AFE is also included).

The SMB File Transfer Utility runs under AFE, supplying a desk accessory, called SMB Servers, to connect to an SMB server. To use the SMB File Transfer Utility, open AFE. This makes the SMB Servers DA available. The next step is to open the DA, which supplies a dialog box. This dialog box features four buttons:

- Connect--connects to an SMB volume that has already been added.
- Add--adds an SMB volume name to the volume list.
- Remove--removes an SMB volume name from the volume list.
- Disconnect--disconnects from an SMB volume that is already connected.

The dialog box also contains three windows:

- Workstation Name displays the name of your workstation.
- Select an SMB Volume displays a listing of the SMB volumes you have already added.
- Connected SMB Volumes displays a listing of the volumes already connected.

You must first choose a Workstation Name, which identifies your Macintosh II to the network administrator. The Workstation Name does not have to be set up on the server side. It is an optional security feature. Using the Add and Remove buttons, you can maintain a list of volumes available on the network. Unlike AppleShare, the SMB File Transfer Utility requires you to know the names of any servers that are going to be accessed. To access a volume, you must first mount it using the Connect button (Disconnect will sever a volume connection, as will leaving AFE). Once a volume is connected, you can use AFE to transfer files between a local volume and the connected server, or between two different connected server volumes. Up to six volumes on any combination of servers can be open at one time.

The SMB File Transfer Utility and the following documentation are bundled with the TokenTalk NB card.

- Apple SMB File Transfer Utility User's Guide. This guide includes an AFE usage section and the Appendix contains a list of translators available for AFE. (AFE is documented in the Macintosh Utilities User's Guide.)
- TokenTalk NB User's Guide.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3948





# Tech Info Library

## Apple Serial NB Card: General Information (6/95)

Revised: 6/6/95  
Security: Everyone

Apple Serial NB Card: General Information (6/95)

Article Created: 12 June 1989  
Article Reviewed/Updated: 6 June 1995

TOPIC -----

This article provides general information on the Apple Serial NB card.

DISCUSSION -----

The Apple Serial NB card is an intelligent NuBus card that uses Apple's Macintosh Coprocessor Platform (MCP) architecture. It provides additional communications and processing capabilities to a Macintosh computer.

The card includes a Motorola 68000 processor operating at 10 megahertz and 512 kilobytes of random access memory (RAM), which is expandable to 1MB. Software for the MCP consists of MCP/OS, Apple IPC, and support software. MCP/OS and Apple IPC supports a multitasking distributed operating environment for communications and other real-time services on the same card.

The card uses two Zilog SCC chips to support a total of four serial ports. A 62-pin connector on the back of the card breaks the electrical signalling into the respective ports. These ports can be configured to operate as four RS-232-C ports, or as two higher speed ports (such as V.35) and two RS-232-C ports. The RS-232-C ports can operate at speeds up to 19.2 kilobits per second (Kbps). The higher speed ports are DMA-backed and can operate at speeds up to 64 Kbps. Cabling for this card comes in two flavors: the Hydra cable, which provides four RS-232-C connectors (M0128LL/A), and the V.35 cable (M0127LL/A), which provides one V.35 port and one RS-232-C port.

The Apple Serial NB card can support more than one networking protocol because of its multitasking operating system and multiple independent ports. The card can be installed in a Macintosh II serving as a gateway to other networks, such as SNA with the SDLC protocol and X.25 with the HDLC protocol. This card is designed to be a platform for various serial communications applications (initially, MacAPPC and MacX25). The features and capabilities of the card correspond to the AST serial communications card, which has been available for

some time and which also can run the MacAPPC and MacX25 software. The memory expansion option was implemented to allow MacAPPC to serve a large number of users and to provide enough memory for a customer to run multiple applications.

The two cabling options were designed with MacAPPC and MacX25 in mind. The cables are available for purchase separately. Future software developed for the card may require new cables to be built.

The following documents contain details about the Apple Serial NB card or its technology:

- Apple Serial NB Card Installation Guide (included with the card)
- Apple Macintosh Coprocessor Platform Developer's Guide (available through APDA)

Article Change History:

06 Jun 1995 - Corrected V.35 cable part number.

17 Feb 1995 - Corrected typo.

13 Feb 1995 - Added cable part numbers.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:3949



# Tech Info Library

## Apple Scanner and Macintosh Start-Up Problems

Revised: 7/28/89  
Security: Everyone

Apple Scanner and Macintosh Start-Up Problems

=====

This article last reviewed: 14 June 1989

PROBLEM: The Apple Scanner and sometimes other SCSI devices when used with Macintosh IIcx, Macintosh IIx or Macintosh SE/30 sometimes do not allow the Macintosh to start up or system bombs may occur during SCSI data transfer from the scanner.

CURE: There are several ways to solve this problem: rearrange the SCSI chain, add a second terminator, add or remove a SCSI extension cable or remove the terminator from the chain. If there are other SCSI devices in the chain, change their positions within the chain. For example if the SCSI chain looks like this:

Macintosh -----Scanner-----HD40SC-----  
Terminator

Rearrange the chain like this:

Macintosh -----HD40SC-----Scanner-----  
Terminator

If there are more devices changing the scanner location with another SCSI device should take care of the problem.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3956



# Tech Info Library

## Macintosh: Serial Port Configurations for Nonstandard Baud Rates

Revised: 7/28/89  
Security: Everyone

Macintosh: Serial Port Configurations for Nonstandard Baud Rates

=====

This article last reviewed: 9 June 1989

Inside Macintosh, Volume II (pages 250-251) tells how to configure for eleven baud rates: 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 19200, and 57600.

Here's how to configure for other values.

For example, to obtain 38,400 baud rate on your serial port, the correct value to pass to SerReset is "1" for the baud rate constant.

Note that you can specify a given baud rate by making the serial driver control call with a control (csCode) of 13. The driver will return the closest baud rate that the serial driver will generate. This is documented in Inside Macintosh, Vol. II-254.

Some trivia:

The formula for figuring out the SerConfig baud rate constants is:

$$\text{Baud Rate Constant} = \frac{114709}{\text{Baud Rate}} - 2.0$$

For example, the baud rate constant for 9600 baud is:

$$\text{Baud Rate Constant} = \frac{114709}{9600} - 2.0 = 11.949 - 2.0 = 9.949 = 10$$

The 114709 figure comes from the SCC clock (3.670702 MHz) which comes from the system clock (15.6672 MHz), but doesn't divide down evenly because of the timing PALs (in fact  $3.670702 = 15667200 / 4 * 15/16$ , where the 15/16 is due to PAL timing). For the MacXL (Lisa), use 115200 instead of 114709.

Similarly, you can do a reverse calculation and find the baud rate, given a constant. Reversing the formula, you get:

$$\text{Baud Rate} = \frac{114709}{\text{Baud Rate Constant} + 2.0}$$

So, using the constant 10 (for 9600 baud), the formula gives

$$\text{Baud Rate} = \frac{114709}{10 + 2.0} = 9559.083$$

This isn't exactly 9600 baud. In fact the error percentage is:

$$1.0 - \frac{9559.083}{9600} = 1.0 - 0.996 = 0.426\%$$

If you try this with 38400, you get:

$$\text{Baud Rate Constant} = \frac{114709}{38400} - 2.0 = 2.987 - 2.0 = 0.987 = 1,$$

a baud rate of:

$$\text{Baud Rate} = \frac{114709}{\text{Baud Rate Constant} + 2.0} = 38236.333,$$

and an error percentage of:

$$1.0 - \frac{38236.333}{38400} = 1.0 - 0.996 = 0.426\%$$

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3957



# Tech Info Library

## AppleShare PC 2.0 (Discontinued)

Revised: 3/25/94  
Security: Everyone

AppleShare PC 2.0 (Discontinued)

=====

Article Created: 28 July 1989  
Article Reviewed/Updated: 25 March 1994

NOTE: AppleShare PC was discontinued by Apple in 1990.

### Overview

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AppleShare PC 2.0 is a revision of the existing AppleShare PC 1.2. This software allows MS-DOS machines to act as clients to an AppleShare File Server and to access print services provided on an AppleTalk network.

### New features

-----

AppleShare PC 2.0 provides the same functionality as earlier versions with the addition of support for AppleTalk Phase 2 protocols and the Open Datalink Interface (ODI), which was designed by Novell in conjunction with Apple. ODI is a set of specifications that allow a separation between the network protocol stacks and the device drivers. These drivers are specific to a particular network medium such as LocalTalk, Ethernet, or Token Ring. In the past, with versions of AppleShare PC 1.1 and earlier, the network protocol stacks and Link Access Protocol drivers were integral. They could not be separated to provide support for third-party network cards and consequently, only the Apple LocalTalk card worked with AppleShare PC. Version 2.0 includes drivers for:

- 3COM's EtherLink II and EtherLink/MC (Microchannel)
- Three IBM 802.2 Token Ring cards
- Daystar's Microchannel LocalTalk Card
- Apple's LocalTalk card

Only those cards listed above have drivers included with AppleShare PC 2.0. Because Novell has published the ODI specifications, drivers for other network cards, such as Microchannel LocalTalk cards, will be provided by third-party vendors.

The AppleShare PC 2.0 installation program also has the ability to load

only AppleShare File Services, only AppleShare Print Services, or both. This is useful when memory use is restricted. AppleShare PC 2.0 now includes additional batch files, which allow dynamic loading and removal of AppleShare File Services and Print Services.

#### Open Datalink Interface

Novell's Open Datalink Interface (previously called MLI/MPI) provides support for any number of network protocols (such as AppleTalk, AppleTalk Address Resolution, IPX, Netware, TCP/IP) working with any type of network media interface. This gives the user the ability to add or change network protocols without having to change network interface cards.

ODI also provides major benefits to third party developers by allowing them to write only one device driver for their card. The driver will then work with any set of network protocols. Because the AppleTalk Phase 2 protocol stack is being written to the ODI specification, AppleTalk services, such as the AppleTalk Filing Protocols and AppleTalk Print Access Protocols, can be used over any network card that has a device driver written to the ODI specification.

Communications between the protocol stack drivers (currently referred to as the MPI interface) and the network card drivers (currently referred to as the MLI interface) are handled by the Link Support Layer (LSL). Under the ODI specification, data packets need only be directed to the LSL instead of a specified device driver. The LSL then acts as a "postal service," which correctly directs inbound and outbound packets to the specified stacks and drivers. This means the system is responsible only for directing data packets to the LSL instead of the full distance to the protocol stack or some specified driver.

#### Installation

The AppleShare PC installation software has been improved. In version 2.0, each step of the installation has on-screen instructions and is much more flexible in its options. For example, you can now select which services are to be loaded into memory. You can choose file services only, print services only, or both. You can also choose to load only the MLI drivers for certain network cards or to load the MLI drivers and the AppleTalk protocol stack.

When loading the selected modules into AppleShare PC 2.0, you can now calculate the amount of memory that will be used based on the options installed. Below is a table describing the memory requirements:

|                                        |            |
|----------------------------------------|------------|
| File and Print Services                | 117 - 126K |
| File Services only                     | 91 - 100K  |
| Print Services only                    | 62 - 71K   |
| AppleTalk and MLI driver(s) only       | 49 - 58K   |
| MLI driver(s) only                     | 13 - 22K   |
| Add 57K to make the DA memory resident |            |
| Add 6 - 15K per additional MLI driver  |            |

The AppleShare PC 2.0 installation program presents a list of cards that

have MLI drivers resident in the AppleShare PC installation directory. You can choose one or more MLI drivers corresponding to the cards installed. For some cards, such as third party Ethernet and Token Ring cards, additional questions will be presented in the installation, such as the settings of the card's DIP switches, DMA interrupt addresses, and IRQ settings. Refer to the card's user guide for the proper setting of these switches and addresses.

If multiple network cards are installed in a machine, the installer will ask which MLI driver to use as the default. To change MLI drivers after the default has been loaded, use the USE option of ANET.

#### New ANET Features

-----  
The ANET command interpreter, which performs functions similar to the DA through the command line and batch files, has several new subcommands. These new subcommands now support AppleTalk Phase 2 and ODI features. Below is the syntax of the four new ANET subcommands.

CONFIGURATION allows you to view configuration information about MPI stacks and MLI drivers.

CONFIGURATION [[ALL [STACKS | MLIDS]] | MPIstackname | MLIDname ]

DEFAULT sets a new MLID as the default when AppleShare PC is started. DEFAULT with no parameters displays the current default MLID.

DEFAULT [MLIDname]

LIST displays all Apple TSRs, MPI stacks, and MLI drivers.

LIST [TSRS | STACKS | MLIDS | ALL]

REMOVE removes most Apple TSRs, MPI stacks, and MLI drivers from memory.

REMOVE ALL | modulename [modulename]...

STATISTICS allows you to view statistics from the Link Support Layer, MPI stacks, and MLI drivers.

STATISTICS [LSL | MPIstackname | MLIDname ]

STATISTICS ALL [STACKS | MLIDS]

USE allows you to change the currently loaded MLID, card number (if an MLID supports more than one card in a machine), zone name, and/or suggested network number.

USE MLIDname [#cardnumber] [Z(zonename)] [H(netnumber)]

#### AppleTalk Phase 2

-----  
AppleTalk Phase 2 is required for AppleShare PC 2.0 environments using Ethernet or Token Ring networks. For AppleTalk networks using only LocalTalk cabling, AppleTalk Phase 1 protocols are used.

One consideration to be taken into account when using AppleShare PC 2.0 in an AppleTalk Phase 2 environment: if an MS-DOS client is on a network with no routers and a router then comes up on the network, the AppleShare PC 2.0 client may be required to restart their machine. This is because on a



Phase 2 network the zone and network number can be defined by the node if no routers are present. When the router appears on the network, it will define the zone and network numbers, which may conflict with those defined by the node (i.e. the AppleShare PC 2.0 client).

#### Compatibility

-----  
AppleShare PC 2.0 is compatible with MS-DOS 4.0, and all MS-DOS programs which were compatible with AppleShare PC 1.x.

Copyright 1989-94 Apple Computer, Inc.

Tech Info Library Article Number:3960



# Tech Info Library

## A/UX 1.1: Does Not Support 32-Bit QuickDraw

Revised: 6/20/94  
Security: Everyone

A/UX 1.1: Does Not Support 32-Bit QuickDraw

=====

Article Created: 30 May 1989

TOPIC -----

A/UX release 1.1 does not support 32-bit QuickDraw. There is no information about the contents of future versions of A/UX.

32-bit QuickDraw is supported in A/UX 3.0.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3962



# Tech Info Library

## A/UX X11: How To Cut and Paste (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX X11: How To Cut and Paste (6/93)

Article Created: 30 May 1989  
Article Reviewed/Updated: 25 June 1993

TOPIC -----

In A/UX X11 window System Release 4 under the "xterm" client application, you can click the mouse button to save text into the cut buffer.

DISCUSSION -----

Here's how to cut and paste:

- 1) To cut text, use a click and drag technique as you do in the Macintosh OS. That is, you move the pointer to the beginning of text to be selected, press and hold the button, drag the mouse through the text to be included, and release the button. The selected text is highlighted and saved in the global cut buffer.
- 2) Once you have cut the desired text, move the mouse pointer to where the cut buffer is to be pasted.
- 3) Press the "left arrow" key to insert (paste) the text from the cut buffer as keyboard input in the xterm's window.

For more information, refer to the xterm(1) manual page, "pointer usage" paragraph. Release 3 users can also read appropriate sections of the "X11 User's Guide for A/UX."

Article Change History:  
25 Jun 1993 - Revised to show new version, clearer title.  
30 May 1989 - Reviewed for technical accuracy.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3964



# Tech Info Library

## A/UX 1.1: Limited Support for the Apple SuperDrive (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX 1.1: Limited Support for the Apple SuperDrive (9/94)

=====

Article Created: 28 July 1989  
Article Last Reviewed: 21 September 1994

TOPIC -----

Does A/UX 1.1 support the Apple SuperDrive (formerly Apple FDHD)?

DISCUSSION -----

No. Under A/UX 1.1, the SuperDrive functions as an 800K floppy disk drive; it cannot take advantage of the 1.4MB floppy disk drive supported under Macintosh OS at this time.

A/UX version 3.0 does indeed support the SuperDrive. This is the only solution.

Article Change History:  
21 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:3967



# Tech Info Library

## Berkeley Macintosh User's Group (BMUG)

Revised: 7/7/93  
Security: Everyone

Berkeley Macintosh User's Group (BMUG)

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Article Created: 07/28/89  
Article Reviewed: 07/06/93  
Article Updated:

Berkeley Macintosh User's Group (BMUG)

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1442 A Walnut St.  
#62  
Berkeley, CA 94709-1496

510-849-9114 (Information)  
510-549-2684 (Business Office)

Company Profile:  
User group, non-profit organization supporting graphical-user-interface (GUI)  
computers

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3971



# Tech Info Library

## Borland International

Revised: 3/1/94  
Security: Everyone

Borland International

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Article Created: 28 July 89  
Article Reviewed/Updated: 1 March 94

Borland International

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100 Borland Wy.  
Scotts Valley, CA 95067

800-331-0877 (Orders only)

408-431-1000

408-439-9119 Fax

### Company Profile:

Software, specializing in compilers, applications, and utilities for  
Macintoshes and PCs, develops and markets international software and upgrades.  
Acquired Ashton Tate and all their products.

### Article Change History:

1 March 94 - Phone number changed  
6 July 93 - Address changed

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:3972



# Tech Info Library

## Database Technologies

Revised: 4/4/97  
Security: Everyone

Database Technologies

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Article Created: 18 February 1991  
Article Last Reviewed/Updated: 4 April 1997

Database Technologies

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213 Reservoir Road  
Brookline, MA 02167

617-277-0894

617-731-2563 Fax

Company Profile:  
Database Technologies, software, specializing in database products.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3973



# Tech Info Library

## Faircom

Revised: 4/4/97  
Security: Everyone

Faircom

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Article Created: 07/28/89  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Faircom  
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4006 W. Broadway  
Columbia, MO 65203

314-445-6833

314-445-9698 Fax

Company Profile:  
Software, specializing in database products.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3974





# Tech Info Library

## Macintosh SE: Hyphens and Asterisks Overwrite Icon Names

Revised: 8/7/92  
Security: Everyone

Macintosh SE: Hyphens and Asterisks Overwrite Icon Names

=====

Article Created: 5 April 1989  
Article Last Reviewed: 6 August 1992  
Article Last Updated:

TOPIC -----

When I select a Finder icon, the name under the icon is selected and automatically written over with hyphens (-) or asterisks (\*). The name field continues to fill until it reaches the maximum number of characters for the name field. A blinking cursor sits at the rightmost character.

DISCUSSION -----

The problem can exist in any of these areas:

- Badly-formed asterisk and hyphen keycaps on the numeric keypad
- Keyboard or ADB hardware
- A faulty logic board

To diagnosis the problem, follow the above order.

First, check the hyphen or asterick keys on the numeric keypad. You may find them partially depressed. This occurs because of a tiny plastic protrusion left on some keycaps after manufacturing. Some troubleshooters have found this protrusion catching on the case just enough to produce characters, but not enough to be noticed at a glance. The fix is easy; remove the keycap(s) and shave off the plastic protrusion.

Second, if nothing is wrong with the keycaps, try changing the keyboard and cable.

Third, if the problem remains, change the logic board.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:3975



# Tech Info Library

## **Raima Corp.**

Revised: 7/19/93  
Security: Everyone

Raima Corp.

=====

Article Created: 28 July 1989  
Article Reviewed/Updated: 14 July 1993

Raima Corp.  
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1605 NW Sammamish Rd.  
Suite 200  
Issaquah, WA 98027

800-327-2462

206-557-0200

206-557-5200 Fax

Company Profile:  
Software, specializing in database products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:3976



# Tech Info Library

## MITEM Corporation

Revised: 4/4/97  
Security: Everyone

MITEM Corporation

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Article Created: 07/28/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

MITEM Corporation

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2105 Hamilton Ave.  
Suite 350  
San Jose, CA 95125

408-559-8801

408-559-7201 Fax

Company Profile:  
Software, specializing in data communication interfaces.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3978



# Tech Info Library

## Network General

Revised: 4/4/97  
Security: Everyone

Network General

=====

Article Created: 28 July 1989  
Article Reviewed/Updated: 4 April 1997

Network General

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4200 Bohannon Dr.  
Menlo Park, CA 94025

415-473-2000

Fax: 415-321-0855

Company Profile:  
Software, specializing in network analysis.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3979



# Tech Info Library

## Pygraphics

Revised: 4/4/97  
Security: Everyone

Pygraphics

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Article created: 28 July 1989  
Article Reviewed/Updated: 4 April 1997

Pygraphics

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125 East Worth St.  
P.O. Box 639  
Grapevine, TX 76051

817-481-7536

800-222-7536

Fax: 817-488-9658

Company Profile:  
Software, specializing in music writing and education.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3980



# Tech Info Library

## ISM, Inc.

Revised: 4/4/97  
Security: Everyone

ISM, Inc.

=====

Article Created: 02/18/91  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

ISM, Inc.

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2103 Harmony Woods Rd.  
Owings Mills, MD 21117

410-560-0973

Fax: 410-560-1306

Company Profile:  
Software, specializing in education and video games.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3981



# Tech Info Library

## Exabite (Formerly Tallgrass Technologies Corporation)

Revised: 4/4/97  
Security: Everyone

Exabite (Formerly Tallgrass Technologies Corporation)

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Article Created: 20 June 1989  
Article Reviewed/Updated: 4 April 1997

Exabite (Formerly Tallgrass Technologies Corporation)

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11100 W. 82nd St.  
Lenexa, KS 66214

800-825-4727

913-492-6002

Fax: 913-492-2465

Company Profile:  
Formerly Tallgrass Technologies Corporation, hardware, specializing in storage devices.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3982





# Tech Info Library

## Compatible Systems Corp.

Revised: 4/4/97  
Security: Everyone

Compatible Systems Corp.

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Article Created: 06/23/89  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Compatible Systems Corp.  
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4730 Walnut St.  
Suite 102  
Boulder, CO 80301

800-356-0283

303-444-9532

303-444-9595 Fax

Company Profile:  
Hardware, specializing in network products for the Macintosh (Adapters, hubs,  
etc.).

Mailing address:  
P.O. Box 17220  
Boulder, CO 80308

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3983



# Tech Info Library

## Miramar Systems (10/96)

Revised: 4/4/97  
Security: Everyone

Miramar Systems (10/96)

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Article Created: 06/23/89  
Article Reviewed/Updated: 4 April 1997

Miramar Systems

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121 Gray Ave.  
Suite 200B  
Santa Barbara, CA 93101

800-862-2526

805-966-2432 Main  
805-965-5161 Technical Support

805-965-1824 Fax

Internet:  
WWW address: <http://miramarsys.com/>  
Email: [sales@miramarsys.com](mailto:sales@miramarsys.com)

Company Profile:  
Software, specializing in server software and cross-platform networking software including peer to peer file and printer sharing between Macintosh and Windows PCs using Maclan Connect Gold or Personal Maclan Connect products.

Article Change History:  
02 Oct 1996 - Updated information.  
31 May 1996 - Updated information.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3984



# Tech Info Library

## PSI Integration, Inc.

Revised: 4/4/97  
Security: Everyone

PSI Integration, Inc.

=====

Article Created: 27 June 1989  
Article Reviewed/Updated: 4 April 1997

PSI Integration, Inc.

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851 E. Hamilton Ave.  
Suite 200  
Cambell, CA 95008

800-622-1722 (Sales)  
800-758-8324 (Tech. Support)

408-559-8544  
408-369-5700 (Technical Support)

408-559-8548 Fax

Company Profile:  
Formerly Pinnacle Sales International, hardware, specializing in modems, fax modems, and other peripherals for the Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3987



# Tech Info Library

## New Era Video, Inc.

Revised: 4/4/97  
Security: Everyone

New Era Video, Inc.

=====

Article Created: 18 February 1991  
Article Reviewed/Updated: 4 April 1997

New Era Video, Inc.

-----  
5894 S.W. 42nd St.  
Miami, FL 33155

305-663-9461

Company Profile:  
Software, specializing in hypermedia content.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:3990



# Tech Info Library

## Network Termination Issues: The Terminator (Part 1 of 2)

Revised: 8/3/89  
Security: Everyone

Network Termination Issues: "The Terminator" (Part 1 of 2)

=====

Termination is the process of "ending" an electronic signal on a network after it has been broadcast to all the devices on that network. Without termination, signals bounce back and can interfere with new signals. On short networks, or networks with little traffic, these reflections usually present no problem. But as networks grow, correct termination becomes a critical factor. If your customers' networks are expanding, or your business is large network installations, then your understanding of network termination could mean the difference between reliable networks your customers can trust, or technical support headaches for them and you both.

### When Termination Becomes an Issue

-----

There are several predictable occasions when termination becomes an issue in AppleTalk network management.

A network manager's first encounter with termination issues often occurs when switching from Apple's LocalTalk cabling to the PhoneNET System. Farallon's PhoneNET System is based on telephone wiring as opposed to shielded cable. The advantage in switching to PhoneNET Connectors and existing telephone wiring is both economy and flexibility. Because PhoneNET Connectors are not self-terminated, the network manager can set up the network in a variety of ways, and run cable over longer distances. But he will need to manually terminate the network using the terminating resistors supplied with PhoneNET Connectors.

Second, the Macintosh network administrator very frequently receives requests to add more devices, and thereby add to the network's length. Whereas networks constructed with LocalTalk shielded cable are limited to 1,000 feet, a network running over the standard, 24 gauge phone cable found in most homes and offices can extend up to 3,000 feet. Short runs may work well without termination, but with additional network length and devices, termination becomes more important. Proper termination of network segments will cleanly absorb signals, and allow greater distances without the risk of signal reflection.

Third, just as in a freeway system for automobiles, light traffic usually moves well no matter what the technical shortcomings of a given stretch of road. But with added traffic, any minor engineering flaw will cause traffic jams. The same is true in AppleTalk networks. Most early Macintosh networks were created for light traffic: to share printers, or to transfer small files around a workgroup. Over the last two years the number and complexity of workgroup services that depend on workstation connectivity has increased dramatically. Large AppleShare file servers, PC-Novell network services, DEC/VMS connectivity, heavy traffic generated by electronic mail, as well as newer network applications like Farallon's Timbuktu screen-sharing software, have placed significant burdens on the network.

More traffic on longer networks makes more of these services susceptible to disruption by reflected signals. One common symptom of heavy traffic and poorly terminated wiring is that devices disappear intermittently in the Mac Chooser. This phenomenon is known as "ghosting" or "drop-out."

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Tech Info Library Article Number:3992



# Tech Info Library

## Network Termination Issues: The Terminator (Part 2 of 2)

Revised: 8/4/93  
Security: Everyone

Network Termination Issues: "The Terminator" (Part 2 of 2)

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Article Created: 3 August 1989  
Article Reviewed/Updated: 27 July 1993

Proper Termination, "Self-Termination," and LEDs

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All LocalTalk network connectors use mini-transformers to couple devices to the network and provide electrical isolation from noise and potentially harmful surges. All currently available network connectors--LocalTalk, PhoneNET, TurboNET, and so on -- offer these features. However, each one of these connectors is also very different:

- The Apple LocalTalk Connector Box. Apple added a unique feature to their LocalTalk connector box, a terminating resistor, which is mechanically disengaged when the shielded cable connecting one connector to another is inserted in an open port. All connectors in a daisy chain have cable plugged into both ports, except, of course, the connectors at each end of the chain, precisely where termination is necessary. Thus the simple genius of Apple's approach. LocalTalk connector boxes, which are limited to shielded cable, daisy chain topologies, and distances no longer than 1,000 feet, are the ONLY true self-terminating connectors for AppleTalk networks.

- The PhoneNET Connector. The PhoneNET Connector is unterminated by design, allowing the network manager to properly terminate the network by installing the recommended 120 ohm terminating resistors where needed. It is important to emphasize that only 120 ohm terminating resistors provide the correct value of termination. Placed at the ends of network segments, the 120 ohm terminating resistors packaged with PhoneNET Connectors will effectively prevent signal reflections, while allowing for a variety of network topologies.

PhoneNET Connectors disperse voltage spikes by use of "MOVs" (metal oxide varistors). MOVs are circuits that respond much faster to transient voltage spikes than neon bulbs, which disperse spikes as light. This means that during a surge, PhoneNET Connectors disperse spikes as heat and allow much less energy to bypass the protection circuit and enter the isolation transformer.

- LED-Based Connectors. Neon bulbs, such as those found in the Nuvotech ST Connector and others, glow when they encounter network spikes. However, the technology of neon bulbs is both slower than MOVs and also doesn't offer any quantitative information about network voltage status.

LEDs form part of the "self-termination" circuit. The value of termination is not constant, however, but varies depending on signal strength. Unfortunately, in no case is the termination of the correct value, and therefore reflections can occur, causing the predictable problems in longer network segments, or when traffic is heavy.

Finally, LEDs tell the network manager very little about how the network is working. LEDs measure all electrical signals passing through the connector, without differentiating between new signals and bad packets reflected back onto the network. For detailed assessment of network activity, inexpensive management software like Farallon's CheckNet or TrafficWatch are far better tools than blinking LEDs. These management tools offer reliable, quantifiable information which can be charted and tracked over time.

Now Stay Tuned

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Self-terminating connectors are attractive in that they make manual termination of the network unnecessary. But the fact is that manually terminating the network allows network managers to construct networks that perform reliably even while expanding and changing in unexpected ways. With terminating resistors in the connectors, the network manager faces the risk that someone will interfere with the correct termination of the network simply by removing his machine (and its attached connector). The network could malfunction because someone took his Mac home for the night, or away on a trip. LocalTalk networks typically undergo lots of spot changes, steadily increasing usage, and unplanned expansions (like an extra device temporarily added to the network). PhoneNET Connectors were designed with these changes in mind.

Besides very short, lightly trafficked networks, there is one other case when the convenience of self-terminating connectors poses no threat to the proper functioning of the network. If your customer's network is built around one or more PhoneNET StarControllers, with one user (branch) per port, reflections on any one branch effect only the user on that port. Overall network performance won't suffer if that user mistakenly removes his connector, because each StarController port supports a separate physical network. The one user/port active star network offers significant advantages for the network manager, who gains greater control over the growth of the network, and thereby its reliability. Stay tuned for more news from Farallon on connectors for active star topologies.

Article Change History:

- 27 July 1993 - Company title updated from Focus Enhancements to Focus Enhancements, Inc.
- 19 June 1992 - Focus Enhancement acquired the Nuvotech connectivity products.



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Tech Info Library Article Number:3993



# Tech Info Library

## AppleTalk Internet Router: Setup Considerations

Revised: 9/22/89  
Security: Everyone

AppleTalk Internet Router: Setup Considerations

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This article last reviewed: 20 July 1989

These are some items to keep in mind when setting up the AppleTalk Internet Router:

### Memory Considerations

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- In general 1MB of RAM is sufficient for running the router. However, you should consider the following exceptions:
- You must use 2MB of RAM when running the router concurrently with the AppleShare File Server. You can add memory beyond 2MB, but that only increases performance of the file server and not of the router. The reason is that the file server uses all additional memory for its RAM cache.
- It is recommended that you use 2MB of RAM to run the router and the AppleShare Print Server or the router and a mail server package concurrently. As long as you have 2MB of RAM, you can also run the router, the AppleShare File Server, and any single foreground application, like a print server.
- To avoid memory problems, do not use MacroMaker on a 1MB router machine.
- Be aware that having MacsBug (or any other debugger) active reduces the amount of memory available to the router. Do not run MacsBug on a 1MB router machine or on a router that is also running the AppleShare File Server.
- To avoid memory problems, do not use 32-bit QuickDraw on a 1MB router machine.
- Best use of memory can be obtained by minimizing the INITs and desk accessories that run concurrently with the router.
- Because of the way MultiFinder runs desk accessories, we recommend that

you run the router in single Finder. MultiFinder runs desk accessories in the system heap. This means that when you use the router desk accessory under MultiFinder, you are more likely to run out of memory, because the router driver and any other concurrently running process take memory from the system heap.

## Printing

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Note that the following considerations refer to printing from the router machine. These considerations do not refer to a workstation printing, even if it reaches a printer through a router.

- Avoid background printing on a router machine. When Print Monitor opens a printer driver, it uses up memory; the router desk accessory may then run out of memory.
- Do not attempt 32-bit color printing from a router machine.
- Be aware that the 6.0 LaserWriter driver takes up much more memory than the 5.2 driver. Avoid using the 6.0 LaserWriter driver on a 1MB router machine. Also avoid using the 6.0 LaserWriter driver, when running the router and the AppleShare File Server concurrently.

## INITs and Desk Accessories

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- INITs and desk accessories are not always well-written. They sometimes use up memory behind the operating system's back. Try to live with as few of them as possible.
- Close unneeded desk accessories. This includes the Chooser, which would otherwise continually broadcast look-up requests on the network.
- Responder is OK when installed with the Router.

## Upgrade Utility

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- If a Phase 1 router is introduced to the internet after the routers have been running in Phase 2 mode with network ranges for at least 15 minutes, the Phase 2 routers issue an alert and do no conversion. You must restart the router Macintoshes with the Upgrade Utility installed to restart the conversion.

## System Software

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- The Router has been tested with System 6.0.3 and will be tested with future releases. Older systems are not recommended.

## Hard Disks

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- The Router is RAM based. A faster hard disk will not cause faster routing of packets. (Improvements can be seen when using a faster hard disk with the AppleShare File Server).

#### EtherTalk Card

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- You should use a revision J or later EtherTalk card with the router.

- An improperly terminated EtherTalk card or a break in the EtherTalk cable causes the router to take a very long time to load. An EtherTalk card not connected to a cable must have a BNC "T" connector attached and terminators attached to the "T".

- Make sure your EtherTalk card is properly set for thick or thin Ethernet. If it is improperly set, no workstations or other routers on the network can communicate with the router.

#### Removal of AppleShare File Server

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- The removal of AppleShare File Server software after installation of the Router/EtherTalk/TokenTalk software will remove the AppleTalk file from the System Folder. You must re-install either the router, EtherTalk 2.0, or TokenTalk 2.0 software.

#### Installation

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- When using the router with TokenTalk, be aware that some customers were seeded with an AppleTalk Phase 1 (1.0) version of TokenTalk. You should remove TokenTalk 1.0, using the 1.0 Installer diskette, and then install TokenTalk 2.0.

- Be aware that some customers were seeded with an AppleTalk Phase 1 (1.0) version of the AppleTalk Internet Router. You should remove the 1.0 version, using the 1.0 installer diskette, and then install the 2.0 version. The ADEV files for the LocalTalk ports were renamed with the 2.0 version of the AppleTalk Internet Router. If you do not remove the 1.0 version of the router, the router setup window will show the old and new ADEVs, causing you to have 4 LocalTalk ports.

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Tech Info Library Article Number:3994



# Tech Info Library

## ImageWriter II: Color Ribbon Problem Solved

Revised: 8/3/89  
Security: Everyone

ImageWriter II: Color Ribbon Problem Solved

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This article last reviewed: 6 June 1989

Here's the problem:

When turning on the ImageWriter II, the carriage assembly moves to the left and then back to center. At this point, the color ribbon assembly rotates counter-clockwise, causing the ribbon frame assembly to drop. As the color ribbon assembly rotates counter-clockwise, it hits a small copper tab called the ribbon shift spring tab.

When this tab is hit, it causes the color ribbon assembly to reverse rotation and lift the ribbon frame assembly back up to its normal position. Using the carrier shaft as a reference axis, the tab is about 45 degrees from the axis.

If the tab gets pushed away from the carrier shaft more than 45 degrees, it is not in its proper position to reverse the rotation on the color ribbon assembly. Thus, the ribbon frame assembly remains down and will not come up to its proper position.

To cure this, push tab back towards the carrier shaft, until it causes the normal change of rotation and let the ribbon frame assembly come back up to its normal position.

Tech Info Library Article Number:3995



# Tech Info Library

## LaserWriter II: Specs for Paper and Transparencies

Revised: 2/12/93  
Security: Everyone

LaserWriter II: Specs for Paper and Transparencies

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Article Created: 3 August 1989

Article Change History

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02/12//93 - UPDATED

- Vendor information:

This article contains information about papers, envelopes, labels, and transparencies for use with the LaserWriter II.

The "LaserWriter II Owner's Guide" specifies the paper at:

"16-lb. to 20-lb. photocopy or typewriter bond (60 to 80 g/m2) in normal mode; up to 36-lb. (135 g/m2) stock in manual mode with face-up tray open. Accepts most letterhead and colored stock. Accepts medium-weight photocopy transparencies. Envelopes can be printed with manual feed or from the envelope cassette. Labels can be printed using manual feed."

Beyond this information, Apple has no documented specifications for paper requirements. However, the following information is also available in the Tech Info Library on AppleLink:

When choosing an acetate transparency for use in a LaserWriter II, it is important to consider the temperature of the printer's fuser roller, and the amount of time the acetate sheet is in contact with the roller.

The temperature of the LaserWriter II fuser roller varies from:

329 to 356 degrees Fahrenheit (165 to 180 degrees Centigrade)

An 8.5 by 11-inch sheet of paper or acetate takes approximately 5.8 seconds to travel over the fuser roller. This works out to be about 1.5 inches per second.

The LaserWriter II accepts medium weight photocopier transparencies like

Scotch #503, catalog # 15921-3.

For sources, check the following:

James River Corporation, Pro-Tech Paper Division, specializing in papers, film, and adhesive labels for the LaserWriter

Products:

Pro-Tech Laser labels (white and clear)

Pro-Tech Laser envelopes (white)

Pro-Tech Laser bond paper (white and assorted colors)

Pro-Tech Laser transparency film

Avery, Avery and Dennison Divisions, paper products, specializing in transparencies and labels for the LaserWriter.

Products: Laser adhesive labels - 5260, 5261, 5262

Laser Transparencies - 5182 and 5282

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:3997



# Tech Info Library

## AppleFax Software Version 1.2: Improvements and Functionality

Revised: 9/2/93  
Security: Everyone

AppleFax Software Version 1.2: Improvements and Functionality

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Article Created: 3 August 1989  
Article Reviewed/Updated: 2 September 1993

TOPIC -----

Apple no longer provides AppleFax software, and it isn't compatible with System 7. If you're looking for fax software to use with System 7 and the AppleFax Modem, contact Delrina Technologies for software called "Fax Pro for Macintosh."

To locate a vendor's address and phone numbers, use the vendor name as a search string.

This article presents information about AppleFax 1.2 that was required for system software version 6.0.3.

DISCUSSION -----

Here's a list of improvements made to AppleFax version 1.2:

- Version 1.2 of AppleFax firmware fixes incompatibility with some Group 3 facsimile machines and certain PBX phone systems.
- Software version 1.2 eliminates overlapping characters, which sometimes occurred with version 1.1. Also, the new version correctly transmits envelopes containing documents of differing page sizes.
- Version 1.2 greatly improves the performance of the "In care of" feature.
- AppleFax software version 1.2 is required for use with System 6.0.3 and is, therefore, required for operation on the Macintosh SE/30. Version 1.1 doesn't work with System 6.0.3 or future versions of system software.



## Compatibility Testing

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The AppleFax Modem conforms to the published CCITT Group 3 facsimile standard. All facsimile devices should conform to this standard to ensure complete compatibility with other facsimile devices. Apple has tested AppleFax with over 40 Group 3 facsimile machines from the major manufacturers. While no significant problems remained during testing, Apple doesn't guarantee that AppleFax always works with every Fax machine due to phone line and equipment variations.

## AppleFax Functionality

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The product must interact with the Macintosh system, applications software, and the public phone system, each of which can affect its performance and reliability. Some things to keep in mind regarding the AppleFax:

- AppleFax isn't intended to replace freestanding facsimile machines. If your work demands numerous Fax messages continually received, or if you must send a large number of handwritten documents, a Fax machine will work best. However, for Macintosh owners, AppleFax can be a terrific complement to their Fax machine.
- The AppleFax product is at its best when used as a Fax creation and transmission station. The image quality of an AppleFax document is much better than most other forms of Fax transmission.
- AppleFax provides convenience in automatically sending a document to multiple destinations or automatically sending documents while unattended (for example, at night, when phone rates are least expensive). Most Fax machines are incapable of unattended document transmission.
- Macintosh data and program files can be transmitted between AppleFax stations even faster than using 2400-baud data modems.
- Just as with bit-mapped printing devices (the Apple ImageWriter II, for example), the performance of AppleFax improves when running on a faster Macintosh.
- AppleFax is tested and approved for sale and use only in the U.S. and Canada. The product is not designed for use with, nor approved by, any other countries' public telephone and telegraph agencies.

AppleFax software provides basic facsimile functionality for the majority of AppleFax users. It doesn't provide background operation (the ability to send and receive files while using another Macintosh application) or the Cut/Copy/Paste functions on received Fax images. If you require these features, look into a third-party software package.

## Article Change History:

2 September 1993 - Updated with System 7 information.

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Tech Info Library Article Number:3999



# Tech Info Library

## Apple II Workstation Card: No Apple IIGS Support (2/97)

Revised: 2/12/97  
Security: Everyone

Apple II Workstation Card: No Apple IIGS Support (2/97)

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Apple II Workstation Card: Apple IIGS Support (2/97)

Article Created: 03 August 1989  
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article discusses the Apple II Workstation card and Apple IIGS support.

DISCUSSION -----

The Apple II Workstation Cards is not supported in the Apple IIGS because of the following reasons.

\* When the Apple II Workstation Card is installed, only ProDOS 8 applications can run. The Workstation Card tells the server that it is an Apple IIe. Therefore, it will not work in a ProDOS 16 network environment. Typically, this means only the first 64K of memory will be used.

\* The Workstation Card is not fully tested in this configuration and it is not supported by Apple.

Article Change History:  
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:4000



# Tech Info Library

## LaserWriter: How to Use with Colored Paper

Revised: 12/6/89  
Security: Everyone

LaserWriter: How to Use with Colored Paper

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This article last reviewed: 6 June 1989

Some people have that some colored papers fade when used in a LaserWriter. Before committing to any type of paper, consider the manual's advice. Page 129 of the LaserWriter IINTX manual carries the following specifications for printing paper-based materials:

"16-lb. to 20-lb. photocopy or typewriter bond (60 to 80 g/m<sup>2</sup>) in normal mode; up to 36-lb. (135 g/m<sup>2</sup>) stock in manual mode with face-up tray open. Accepts most letterhead and colored stock."

Any paper that meets the above specifications and is designed for photocopier use should work properly and show no discoloration. The best method for determining if colored paper will discolor is to test it.

Note: The fuser generates temperatures between 165 and 180 degrees centigrade.

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Tech Info Library Article Number:4001



# Tech Info Library

## MacWorkStation: Protocol-Based Communications Problem

Revised: 8/3/89  
Security: Everyone

MacWorkStation: Protocol-Based Communications Problem

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This article last reviewed: 12 April 1989

A developer of a TCP/IP network reports the following problem. Uploads of window or file contents are causing serious problems resulting in line drops. This occurs during EZ read Text (T008), Read Text (T009), Select Existing File (F017), and probably during EZ Read File Fork (F007) and Read File Fork (F008).

The developer is currently using the Simple ASCII transport layer (ID = 2) with 7 data bits. Unfortunately, data in the ranges <00>-<1F> and <80>-<FF> may be contained within windows or files. In particular, if there is a carriage return <0D> within the data, then the IBM mainframe front-end processor (FEP) takes this as an end-of-line character, sends the packet to CP, which sends the packet to the application, which processes it.

Meanwhile, MacWorkStation continues to send the remainder of the packet up until the final carriage return, which it uses to signal end-of-line. Unfortunately, the characters following the first carriage return cause CP interrupts, leaving the virtual machine in CP mode. After some number of interrupts, CP determines that the line is too noisy to continue and signals the FEP to drop it.

The problem here is that they are using a protocol in an unsupported fashion. The serial protocol driver (ID=2) that uses start and stop characters is not designed to support the transfer of binary data, or any data that might contain nonstandard characters. The best choice would be to use the serial driver (ID=1) that supports binary data and should be able to handle the transfer of carriage returns. If this is unacceptable, request a copy of the source for serial driver version 2.

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Tech Info Library Article Number:4002



# Tech Info Library

## GS/OS: Corrupt File Changes Icons

Revised: 9/22/89  
Security: Everyone

GS/OS: Corrupt File Changes Icons

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This article last reviewed: 14 April 1989

A number of reports have appeared, concerning changing icons under GS/OS. For example, in the case of MultiScribe GS, instead of the pens and paper icon, the user sees the generic, diamond-shaped, system-defined application icon. The problem may be quite simple: one or more corrupted icon files.

GS/OS (System Disk version 4.0) stores Finder icons in a file called FINDER.ICONs. Application/document icons are stored in files that typically end with .ICONs.

The Finder can match files to icons by any combination of three file identification fields. The icon can match by file type, AUX type, and filename. The Finder keeps a list of icon files. The first list the Finder reads is FINDER.ICONs from the start-up disk's ICON folder. Next, the Finder adds any other icon files it finds in the ICONs directory of inserted disks. Additional files are added to the front of the list so that FINDER.ICONs is always the last in the list.

When the Finder needs to match a file to an icon, it starts with the first icon in the list. A match can be made by an exact match or by use of a wild card. If all three fields in the icon match the file, the file is given that icon. If even one field does not match, the Finder tries again with the next icon in the list. The Finder continues to try to match icons with files until it reaches the last icon in the FINDER.ICONs file. This is the generic document icon. It will always match all three fields.

The loss of icons is probably due to a missing or corrupted .ICONs file. For MultiScribe, locate the .ICONs on the original MultiScribe disk. Copy the MultiScribe .ICONs file to the ICONs folder on the hard disk. On restart, the application should take on its proper icon. Once the icons are reattached to the application and the document, you should be able to double-click the document.

Locating and transferring the .ICON file for other applications, documents,

and NDAs should also reattach the missing icons.

The icon representing the application ProDOS should appear as the generic application (paper and hand) icon. The icon of a 3.5-inch disk is assigned to represent disks inserted in 3.5-inch drives. Apple-distributed New Desk Accessories (NDAs) have the generic document (paper with folded corner) icon.

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Tech Info Library Article Number:4003



# Tech Info Library

## GS/OS 4.0: Control Panel Date Problem

Revised: 9/22/89  
Security: Everyone

GS/OS 4.0: Control Panel Date Problem

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This article last reviewed: 18 April 1989

This problem describes a problem with GS/OS 4.0.

When the Control Panel date is set to the 31st of any month, GS/OS 4.0 sets the date created/modified on files to "<No date>" or "\$0000". There is currently no workaround.

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Tech Info Library Article Number:4004





# Tech Info Library

## AppleSoft BASIC: Network Problems And Solutions

Revised: 8/3/89  
Security: Everyone

AppleSoft BASIC: Network Problems And Solutions

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This article last reviewed: 23 April 1989

This article discusses four problem areas concerning AppleSoft BASIC and networks:

- Problems due to an incorrect file name.
- Problems caused by interrupts
- Problems with printer timeouts
- Problems with "LIST" and similar commands.

### Incorrect File Names

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Occasionally, there are reports of difficulties printing or saving files using "BASIC.System" from within Aristotle. Problems can appear because of an incorrect file name. Note that the distribution disks do not contain a file with the name "BASIC.System". Rather, they show a file with the name "BASIC.SYSTEM". If "BASIC.System" is being called, and only "BASIC.SYSTEM" is available, a message stating that the file cannot be found is the response. If both the Aristotle designation and the filename are the same, there is no conflict.

### Interrupt Problems

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The only known problem when using Applesoft BASIC over the network concerns turning off interrupts from BASIC. If the BASIC program turns off the computer's interrupts, network difficulties occur. Interrupts are used by the network to prioritize communication with workstations. Should these interrupts be disabled, the network could "hang", because communication with the workstation is not possible.

### Printer Timeout

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If you issue the "PR#7" command, printed within 30 seconds, and issued "PR#0", then everything works fine. However, if you type "PR#7" and do not close after printing with a "PR#0", there's a problem. After about 2 minutes, when you try to print again, nothing happens. The printer times out. You must close the printer connection for everything to function correctly.

#### "LIST" And Other Printer Commands

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Another printer issue has to do with the "LIST" command. For example, if, while trying to print a BASIC listing, you type "PR#7" and immediately type "LIST", you won't get a printout of the listing. The reason for this failure relates to how quickly you type "LIST". After you type "PR#7", it takes 3 to 5 seconds for the workstation and the networked printer to establish communication. If you type "LIST" before this communication link is completed, the command will not be recognized as input. As a result, the printout shows only two Applesoft prompts (the right bracket, "]").

To be assured that the computer accepts the "LIST" command (or any immediate command that causes printing), wait until the cursor returns to the screen after typing "PR#7", before entering the next command. This way, you know the network has "digested" the command. After finishing the print job, remember to close the printing session by typing "PR#0".

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Tech Info Library Article Number:4006



# Tech Info Library

## AppleWorks to LocalTalk ImageWriter: Printing Problems

Revised: 8/3/89  
Security: Everyone

AppleWorks to LocalTalk ImageWriter: Printing Problems

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This article last reviewed: 6 June 1989

Some users have complained of an inability to print either from an Apple IIe or from an Apple IIGS across an LocalTalk network to an ImageWriter II when using AppleWorks. All reported being able to print from BASIC using PR#7. Although the networks could have rather different configurations and software, these facts were the same.

The difficulty in printing concerns the version of AppleWorks being run from the server. The ability to print from Applesoft indicates that the hardware is properly configured. AppleWorks 2.0 is not licensed for, nor designed for, running from an AppleShare server. For a version of AppleWorks licensed and designed for running from a server, use AppleWorks version 2.1N. Be sure, in AppleShare Admin under the Apple II menu, to set the user's account to the desired printer. The alternative would be to run AppleWorks 2.0 from a local disk.

The printing procedure is the same whether you start across the network or you startup locally. However, the network version of AppleWorks is required, if it is to be run from the server. Here is some background information, relative to this inquiry.

- Aristotle has no effect on the ability to print from AppleWorks.
- The location of ATINIT differs when on a server (as compared to a local disk). On the server, ATINIT should be in the folder assigned to the user. For example: ProDOS.SERVER/USERS/(\_user's name\_)/SETUP/ATINIT.
- The name of the System.APPS subdirectory is not critical, as long as a consistent name is used throughout the network.
- The WWSS file is not necessary for the operation of AppleWorks.

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Tech Info Library Article Number:4007



# Tech Info Library

## Televideo Terminal Emulators for the Macintosh

Revised: 8/3/89  
Security: Everyone

Televideo Terminal Emulators for the Macintosh

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This article last reviewed: 23 May 1989

As of May 1989, the only Televideo terminal emulation packages for the Macintosh are for the Televideo 950 and the Televideo 925. The Televideo 924 was not in evidence. Palantir's "InTalk" package for 925 emulation did not work.

However, if you need to log onto a Honeywell host that requires the Televideo 924, you can use the Telescope programmable terminal emulation package, you can program in the escape sequences for the 924. The emulation works fine except for one thing: Telescope has no facilities for video attributes, such as half-bright, colors, blinking, underlines, and so on.

Telescope uses the standard Macintosh two-bit video display. This setup makes programming intensity and color impossible. Supposedly, the package supports underlines, but not flashing characters. Intensity and color are available on the Macintosh II display, but new software will have to be written specifically for the system.

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Tech Info Library Article Number:4008



# Tech Info Library

## MacTCP: Recommended DDP-IP Gateways (1/95)

Revised: 1/27/95  
Security: Everyone

MacTCP: Recommended DDP-IP Gateways (1/95)

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Article Created: 16 May 1989  
Article Reviewed/Updated: 27 January 1995

TOPIC -----

This article is about DDP-IP (Datagram Delivery Protocol/Internet Protocol) gateways. It presents an overview of TCP/IP and MacTCP and discusses DDP-IP gateways recommended for use with MacTCP.

DISCUSSION -----

MacTCP

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TCP/IP networks are widespread, especially in university, scientific, and engineering environments. UNIX systems have distributed TCP/IP as a standard.

MacTCP provides TCP/IP protocols to the Macintosh OS. It offers TCP/IP services (UDP, TCP, Domain name mapping) to applications. For example, a Telnet application for remote terminal service over a TCP/IP network would call MacTCP.

MacTCP is software only and runs over Ethernet. MacTCP also runs over LocalTalk, in which case a DDP-IP gateway is required.

DDP-IP Gateways

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If you have an AppleTalk network and want to communicate with a TCP/IP network, you require a "DDP-IP" gateway. This gateway encapsulates TCP/IP packets into AppleTalk (DDP) packets for sending over the AppleTalk zone to the target Macintosh. In turn, the gateway receives encapsulated packets from the Macintosh and strips out the TCP/IP packet for forwarding to the TCP/IP target.

MacTCP supports the encapsulation process, so that a Macintosh on LocalTalk can access TCP/IP networks and services on a TCP/IP Ethernet. Three commercial sources for gateways are Apple Computer, Shiva, and Cayman. There is also Stanford University's KIP software, a noncommercial alternative. To locate a

vendor's address and phone number, use the vendor name as a search string.

The Apple IP Gateway is Macintosh software which allows Macintosh computers using AppleTalk (Apple Remote Access, LocalTalk, or EtherTalk) to access IP services on an IP internet. MacTCP is required on both the client Macintosh and the gateway Macintosh.

The Shiva FastPath 5 is the latest version of their LocalTalk-EtherTalk bridge. KSTAR is the configuration and management software for the box; KSTAR offers DDP-IP gateway services.

The Cayman GatorBox is a LocalTalk-EtherTalk bridge, an NFS-AFP gateway, and a DDP-IP gateway.

Stanford University's KIP software provides DDP-IP gateway services among other things. It runs on the FastPath 2 from Shiva. It is NOT a commercial product and, therefore, is not supported. It currently requires UNIX daemons to configure the software. The only people who should try KIP are capable network engineers with UNIX knowledge, who require no support.

Apple recommends that users choose commercially-supported software to ensure that their needs are met. The vast majority of users requiring a DDP-IP gateway should consider the Apple IP Gateway, Cayman GatorBox, or Shiva FastPath 4 (not 2 or 3) with KSTAR software.

#### References

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##### MacTCP Administrator's Guide

The MacTCP Administrator's Guide is available through APDA.

MacTCP data sheets are available.

MacTCP first shipped in March 1989 and is available through APDA and Software Licensing. The current version of MacTCP is 2.0.6.

For more details, search the Tech Info Library under "APDA".

#### Article Change History:

27 Jan 1995 - Made corrections for technical accuracy.

21 Nov 1994 - Added the Apple IP Gateway, updated information, and updated format.

#### Support Information Services

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Tech Info Library Article Number:4009



# Tech Info Library

## MacPeak SCSI Drive: How to Use with an Apple IIGS

Revised: 8/3/89  
Security: Everyone

MacPeak SCSI Drive: How to Use with an Apple IIGS

=====

This article last reviewed: 23 May 1989

Some people have had problems formatting a MacPeak external SCSI drive (normally for the Macintosh) from an Apple IIGS. One user, who had this problem, was working with an Apple IIGS with 1MB RAM, 3.5-inch and 5.25-inch floppy disk drives, and an Apple II SCSI card in slot 5.

The Apple IIGS recognizes the drive, but the format routine quits after running for about the same time it takes to format a ProDOS floppy and then crashes. A conflict between the SCSI card and the 3.5-inch drive causes this problem.

The 3.5-inch drive plugs into the SmartPort. The SmartPort is slot 5. To use the SCSI card in slot 5, you need to set slot 5 in the Control Panel to "Your Card". When the Control Panel is set in this way, the SmartPort is disabled, and the 3.5-inch drive is also disabled.

To use both the 3.5-inch drive and the SCSI drive on the Apple IIGS, place the SCSI card in a slot other than slot 3 (the 80-column display), slot 4 (the mouse connection), slot 5 (the SmartPort), or slot 6 (the 5.25-inch drive location). This leaves slots 1, 2, and 7 available. Slot 1 is often used for a printer, slot 2 is often used for a modem, and slot 7 is used for AppleTalk. Choose slot 1 if no printer is attached, slot 2 if no modem is attached, or slot 7 if AppleTalk is not in use. No matter which slot you choose, you must set the Control Panel to "Your Card" for that slot.

If, after reassigning slots, there is still difficulty formatting the MacPeak drive, there would appear to be an incompatibility between the SCSI card and the MacPeak drive. (MacPeak indicated that they do not support the use of their drives on the Apple II SCSI card.)

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Tech Info Library Article Number:4010



# Tech Info Library

## LaserWriter Family: Paper Specifications

Revised: 12/6/89  
Security: Everyone

LaserWriter Family: Paper Specifications

=====

This article last reviewed: 23 May 1989

Any number of things can have an impact on how well a LaserWriter prints, including moisture content (the room must have a 70% to 90% moisture level, the paper must be moisture-wrapped, and the paper must be fresh) and smoothness. A too smooth paper (for example, measuring only 50 sheffields) can cause smudging as easily as paper that is too dry.

For reference, Apple recommends the following paper specifications for use with its LaserWriters:

|                   |                                                    |
|-------------------|----------------------------------------------------|
| Basic Weight:     | 60 to 135 grams-per-square-meter (16- to 35-pound) |
| Caliper:          | 3.7 to 7.5 mils                                    |
| Moisture Content: | 4% to 6% by weight                                 |
| Smoothness:       | 100- to 300-sheffield                              |
| Grain:            | long grain                                         |

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Tech Info Library Article Number:4011





# Tech Info Library

## HyperCard: Auto Hilite Problem

Revised: 7/17/92  
Security: Everyone

HyperCard: Auto Hilite Problem

=====

Article Created: 23 May 1989  
Article Last Reviewed: 4 June 1992  
Article Last Updated:

A user has reported a problem in HyperTalk, up to and including version 1.2.2.

A button script cannot manipulate text that is selected in a field, if the button is set to Auto Hilite. When Auto Hilite is on, the text is deselected to flash the Auto Hilite attribute. Subsequently, the text is not reselected. Thus, the script has nothing to select.

For example, a user selects some text in card field. The button script takes the selection and displays it in another field.

```
on mouseUp
    put selection into it
    put it into card field show_me
end mouseUp
```

If you assign the button the Auto Hilite attribute, this technique will not work, because the button is highlighted before the text can be deselected and passed to the variable.

The following script uses a global variable and three handlers. It requires the Auto Hilite attribute of the button to be turned on. Because a "mouseWithin" message is generated before the button is highlighted, you can save the selected text before it is deselected. As a bonus, you can also save the selection and restore it when done.

```
on mouseWithin
    global temp
    put selection into item 1 of temp
    put the selectedChunk into item 2 of temp
end mouseWithin
```

```
on mouseUp
  global temp
  put item 1 of temp into card field show_me
  select item 2 of temp
end mouseUp
```

```
on mouseLeave
  global temp
  select item 2 of temp
end mouseLeave
```

This script provides the same result as the previous script. It uses no global variables and requires only one handler. As with the previous script, you must have the button's Auto Hilite attribute turned off. If you are running out of global variables, this routine is better than the previous script, because it has no global variables. However, the script is much slower.

```
on mouseDown
  put the selection into temp1
  put the selectedChunk into temp2
  set hilite of me to true
  repeat while the mouse is down
    if PointInRect(the mouseLoc, the Rect of me) = true then
      set the hilite of me to true
      select temp2
    else
      set the hilite of me to false
      select temp2
    end if
  end repeat
  if PointInRect(the mouseLoc, the Rect of me) = true then
    put temp1 into card field show_me
  end if
  set the hilite of me to false
  select temp2
end mouseDown
```

```
Function PointInRect thePoint, theRect
  if (item 1 of thePoint > item 1 of theRect) and *
    (item 1 of thePoint < item 3 of theRect) and *
    (item 2 of thePoint > item 2 of theRect) and *
    (item 2 of thePoint < item 4 of theRect) then
    return true
  else
    return false
  end if
end PointInRect
```

\*You must insert a "soft" return (Option-Return) at these locations. (Do not type these asterisks as part of the script.)





# Tech Info Library

## MCP Card, MCP, and A/ROSE: Where to Get Information (4/97)

Revised: 4/2/97  
Security: Everyone

MCP Card, MCP, and A/ROSE: Where to Get Information (4/97)

Article Created: 23 May 1989  
Article Reviewed/Updated: 02 April 1997

TOPIC -----

Where can I get information on MCP and A/ROSE?

DISCUSSION -----

MCP and AROSE (formerly MR-DOS) pricing, documentation, and availability information is available from Software Licensing. To get a card, your account needs to provide a written request. For more information on what to do, contact:

Software Licensing  
Apple Computer Inc.  
MS 28-B  
20525 Mariani Ave.  
Cupertino CA 95014

(408) 974-4667  
eMail: SW.LICENSE@apple.com

Note: MCP stands for Macintosh Co-processor Platform and A/ROSE for Apple Real-Time Operating System Environment. A/ROSE was called MR-DOS.

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Tech Info Library Article Number:4013



# Tech Info Library

## LaserWriter IINTX: Printing in HP Emulation Mode (1 of 3) (2/95)

Revised: 2/23/95  
Security: Everyone

LaserWriter IINTX: Printing in HP Emulation Mode (1 of 3) (2/95)

=====

Article Created: 23 May 1989  
Article Reviewed/Updated: 23 February 1995

TOPIC -----

This article describes how to make a LaserWriter IINTX print the Pound Sterling character in Hewlett-Packard LaserJet Plus emulation mode. In doing so, it describes the difference between PostScript codes and ASCII character codes. It also gives step-by-step instructions for how to print from a LaserWriter IINTX in HP LaserJet Plus Emulation mode from an MS-DOS computer either via a serial connection or via AppleTalk. Part 2 covers troubleshooting, while part 3 is a table of the upper 128 ASCII characters for HP LaserJet Plus emulation.

DISCUSSION -----

The LaserJet Plus emulation mode uses the ROMAN-8 symbol set used by the HP LaserJet. This is different from the standard LaserWriter character set. The LaserWriter PostScript characters are not really ASCII values, because they are mapped, character definitions and belong to a character set.

These values can be remapped, at will, to an output character. The standard LaserWriter set defines the Pound Sterling as character code 243. The ASCII value for the character is 187. Once again, the character code is not an ASCII value; it is a mapping reference used by PostScript. PostScript character codes are not available in the LaserWriter HP LaserJet emulation mode.

To print the sterling character, the following steps and information must be taken into account.

There is a problem trying to print characters, like the Pound Sterling, in HP LaserJet emulation on the LaserWriter IINTX. If you are using a serial connection, the following instructions must be used.

The problem appears when printing the upper 127 ASCII characters and graphics (ASCII values 128 through 255). This is due to the serial port DIP setting of 7 data bits. To attain full emulation, configure the serial port as described in

the steps below.

NOTE:

Currently, there is no available method of software switching back to PostScript or any other emulation mode once you leave the PostScript mode. The correct method is to change the DIP switch settings and wait 30 seconds. If you want PostScript, set switch 1 to the DOWN position. Wait 30 seconds and place the switch back to the UP position.

Printing in HP LaserJet Plus Emulation Mode from an MS-DOS Computer  
=====

Step 1 - Connection  
-----

Connect a 25-Pin Serial Cable to the 25-pin serial port on the LaserWriter IINTX. Connect the other end to a serial port on the PC.

NOTE:

Most serial ports for PCs use a male DB-25 connector and the LaserWriter IINTX uses a female DB-25 connector. You need to use a straight pin-to-pin female-to-male DB-25 cable.

Step 2 - Switch Settings  
-----

While the LaserWriter IINTX is off, set the printer DIP switch settings to:

- 1 UP
- 2 DOWN
- 3 UP
- 4 UP
- 5 UP
- 6 DOWN

These switch settings place the LaserWriter IINTX in:

PostScript Batch Mode,  
RS-232 9600 baud,  
RS-422 9600 baud,  
7 data bits, no parity check, 1 stop bit, with DTR/DSR handshake.

Step 3 - Power On  
-----

Turn on the LaserWriter IINTX and the PC. After a few seconds, the LaserWriter II will print a test page containing its current settings (listed above).

Step 4 - PostScript Code  
-----

The PostScript code that follows switches the LaserWriter II into LaserJet+ emulation mode.

Caution:

-----  
If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

NOTE:

The "%" characters and following comments are not necessary. Remove them when typing the program.)

- For DTR/DSR, from the DOS prompt, type:

```
COPY CON POST.TXT
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver %Exits the printer server loop.
statusdict begin           %Starts modifying settings.
9 0 3 setsccbatch           %Turns off the RS-422 9600-baud port.
25 9600 68 setsccbatch      %Sets the 25-pin RS-232 9600-baud port to 8 data
%                             bits.
5 setsoftwareiomode         %Sets printer to HP LaserJet+ mode.
0 sethardwareiomode         %Sets communications mode to serial.
end                         %This is the end of the mode switch routine.
systemdict/quit get exec    %Forces an error to cause a system start test
%                             page.
(Control-Z)                 %The keyboard Control key and the Z key together.
%                             This ends text editing and saves the file.
%
% end PostScript Code
%=====
```

- For XON/XOFF, from the DOS prompt, type:

```
COPY CON POST.TXT
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver %Exits the printer server loop.
statusdict begin           %Starts modifying settings.
9 0 3 setsccbatch           %Turns off the RS-422 9600-baud port.
25 9600 64 setsccbatch      %Sets the 25-pin RS-232 9600-baud port to 8 data
%                             bits.
5 setsoftwareiomode         %Sets printer to HP LaserJet+ mode.
0 sethardwareiomode         %Sets communications mode to serial.
end                         %This is the end of the mode switch routine.
systemdict/quit get exec    %Forces an error to cause a system start test
%                             page.
(Control-Z)                 %The keyboard Control key and the Z key together.
%                             This ends text editing and saves the file.
%
% end PostScript Code
```

%=====

#### Step 5 - Batch File

-----

A batch file must be created to set up the PC communications port and to send the PostScript code to the printer.

From the DOS prompt, type:

```
COPY CON HPMODE.BAT
MODE COM1:96,N,8,1,P
MODE LPT1:=COM1
TYPE POST.TXT > LPT1
(Control-Z)
```

#### Step 6 - Change LaserWriter II to LaserJet+ emulation mode

-----

Type HPMODE from the DOS prompt to set the LaserWriter IINTX to LaserJet+ emulation. The printer will internally switch from the PostScript Batch mode to LaserJet+ emulation, and, after a few seconds, it will print a test page displaying the new settings.

Your printer will now print graphics and text properly with the emulation provided by the Adobe PostScript ROMs. This fixes the problem of losing the eighth data bit for special text and graphics. This also fixes the problem of the "print screen" keyboard command not functioning.

#### Article Change History:

23 Feb 1995 - Added PostScript caution and reformatted.

Support Information Services

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Tech Info Library Article Number:4016





# Tech Info Library

## LaserWriter IINTX: Printing in HP Emulation Mode (Part 2 of 3)

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: Printing in HP Emulation Mode (Part 2 of 3)

=====

This article last reviewed: 23 May 1989

Part 2 covers troubleshooting your setup for printing in HP emulation mode. (Part 3 covers the upper 128 ASCII characters for HP LaserJet Plus emulation.)

### Troubleshooting

-----

LaserWriter II will not print test page to indicate HP emulation mode:

Check cable connections to and the paper supply for the LaserWriter II. Turn off any spooler commands that may be running on the PC.

Check the PostScript file (POST.TXT) and the batch file (HPMODE.BAT) for any typing errors. If none is apparent, try retyping the PostScript code from scratch. If the LaserWriter II does not receive the PostScript code character-for-character, the mode change will not work.

Once the code has been retyped, send it to the LaserWriter II. If the LaserWriter II prints a test page, then all is well. If the LaserWriter II prints a page containing the PostScript code, it is in LaserJet+ emulation mode, but a test page will not be printed (there is an error in the PostScript code that instructs the LaserWriter II to print a test page, but the mode switch was successful). If the LaserWriter II does nothing, then start over from step 1.

LaserWriter II will not print from within an application:

Check the application's print settings to ensure that it is sending output to LPT1 or COM1. The application also must be set up to print to a LaserJet+ using Times, Helvetica, or Courier.

NOTE: When printing from DOS, always follow the print command with a "Control-D". A "Control-D" tells the LaserWriter II that the data transmission is complete and that printing can now begin. The best method

is to create another text file with a "Control-D" inside.

Enter the following from the DOS prompt:

```
COPY CON D.TXT
(Control-D)
(Control-Z) or (F6)
```

Now, make a batch file to send the end-of-page marker to the printer. From the DOS prompt, enter:

```
COPY CON END.BAT
TYPE D.TXT > LPT1
(Control-Z) or (F6)
```

After doing a TYPE or Print Screen or DIR to the printer, just type END, and the printer will print any remaining data in the buffer.

If your print job does not have a Control-D (end-of-page) character, you must wait for your print job until a timeout, or until another job is printed that is larger than a page.

Printing to a LaserWriter IINTX in HP LaserJet Plus Emulation Mode Via AppleTalk from an MS-DOS Computer

---

#### 1) Connection:

Connect a LocalTalk connector box to the appropriate port on the PC (an AppleTalk interface card must be installed inside the PC). Connect another LocalTalk connector box to the LaserWriter II. Using a LocalTalk cable, connect the two connector boxes together.

Note: If more devices are to be added to the AppleTalk network, consult the manual that came with the LocalTalk cables and connectors.

#### 2) Switch Settings:

While the LaserWriter IINTX is off, set the printer DIP switch settings to:

- 1) UP
- 2) UP
- 3) DOWN
- 4) DOWN
- 5) UP
- 6) UP

These switch settings place the LaserWriter IINTX in:

HP LaserJet Plus mode  
LocalTalk

3) Power On:

Turn on the LaserWriter IINTX and the PC. After a few seconds, the LaserWriter II will print a test page containing its current settings (listed above).

4) Using AppleShare PC, connect to the LaserWriter IINTX on the AppleTalk network. Set the LaserWriter for PostScript mode. This lets the ASCII characters from the PC be passed to the LaserWriter IINTX across LocalTalk.

5) Print to the LaserWriter IINTX as if it were directly connected to the LPT port selected in AppleShare PC.

Currently, there is no available method of software-switching back to PostScript or any other emulation mode once leaving the PostScript mode. The correct method is to change the DIP switch settings and wait 30 seconds. If PostScript is desired, switch 1 should be set to the DOWN position. Wait 30 seconds and place the switch back to the UP position.

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Tech Info Library Article Number:4017



# Tech Info Library

## LaserWriter IINTX: Printing in HP Emulation Mode (Part 3 of 3)

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: Printing in HP Emulation Mode (Part 3 of 3)

=====

This article last reviewed: 23 May 1989

Part 3 gives a table of the upper 128 ASCII characters for HP LaserJet Plus emulation.

Upper 128 ASCII Characters for HP LaserJet Plus Emulation

-----

128-160 blank  
161 Agrave  
162 Acircumflex  
163 Egrave  
164 Ecircumflex  
165 Edieresis  
166 Iacute  
167 Idieresis  
168 acute  
169 grave  
170 circumflex  
171 dieresis  
172 tilde  
173 Uacute  
174 Ucircumflex  
175-178 blank  
179 ring  
180 Ccedilla  
181 ccedilla  
182 Ntilde  
183 ntilde  
184 exclamdown  
185 questiondown  
186 currency  
187 sterling  
188 yen  
189 section  
190 florin

191 cent  
192 acircumflex  
193 ecircumflex  
194 ocircumflex  
195 ucircumflex  
196 aacute  
197 eacute  
198 oacute  
199 uacute  
200 agrave  
201 egrave  
202 ograve  
203 ugrave  
204 adieresis  
205 edieresis  
206 odieresis  
207 udieresis  
208 Aring  
209 icircumflex  
210 Oslash  
211 AE  
212 aring  
213 iacute  
214 oslash  
215 ae  
216 Adieresis  
217 igrave  
218 Odieresis  
219 Udieresis  
220 Eacute  
221 idieresis  
222 germandbls  
223 Ocircumflex  
224 Aacute  
225 Atilde  
226 atilde  
227 Eth  
228 eth  
229 Iacute  
230 Igrave  
231 Oacute  
232 Ograve  
233 Otilde  
234 otilde  
235 Scaron  
236 scaron  
237 Uacute  
238 Ydieresis  
239 ydieresis  
240 pmacron  
241 Pmacron  
242 cedilla  
243 dotlessi

244 caron  
245 blank  
246 emdash  
247 quarter  
248 half  
249 ordfeminine  
250 ordmasculine  
251 guillemotleft  
252 blank  
253 guillemotright  
254 plusminus  
255 blank

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Tech Info Library Article Number:4018



# Tech Info Library

## Apple IIGS Game Port Information

Revised: 8/4/89  
Security: Everyone

Apple IIGS Game Port Information

=====

This article last reviewed: 23 June 1989

Some questions have been raised as to whether one should attach a third-party device to the Apple IIGS game port that directly supplies +5 volts to the port and does not have a resistor for limiting voltage to the port. People fear that additional voltage without a resistor might short the logic board.

The truth is that even if the third-party device is actually shorting the logic board, it would not necessarily be caused by the lack of a current-limiting resistor.

Applying +5V through the device to the game port is not a problem, because the game port has +5V on it already. However, because the inputs from the game port go directly to a TTL device, voltages greater than +5V should not be applied to the port.

Joysticks and game paddles have a 270-ohm resistor connected from ground to the "Normally Open" side of the pushbutton switch. The "Normally Closed" side of the switch goes back to the game port, then to the logic board, and also to Signal Ground. This resistor limits the amount of current drawn from the power supply by closing the switch. It does not limit the current going back to the game port.

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Tech Info Library Article Number:4019



# Tech Info Library

## AppleTalk Network Problem and Fix: A Case Study

Revised: 8/4/89  
Security: Everyone

AppleTalk Network Problem and Fix: A Case Study

=====

This article last reviewed: 23 May 1989

This article describes a problem with a school lab network and how the problem (after two attempts) was solved. The network has a PhoneNET backbone of 2100 feet with a repeater in the middle. Workstations include 25 Apple IIe systems, 3 Macintosh systems, 1 Apple IIGS, a few AppleTalk ImageWriter II printers, and one AppleTalk ImageWriter LQ printer. Devices are connected off of the backbone with RJ-11 jacks/wires as small trunks.

In the diagrams below, nodes (jack boxes on backbone) are the numbers 1 through 22. R denotes a Farallon repeater. "f.s." denotes a Macintosh SE with HD20 SC File Server.

```
1-2-3-4-5-6-7-8a=R=8b-9-10-11-12-13-14-15-16-17-18-19-20-21-22
      |
      f.s.
```

The problem was that prior to installation of the repeater, various Apple IIe systems would only intermittently be able to start up off of the server ("f.s." located at node 7); particularly, those toward the ends of the backbone.

### Solution #1: Adding a Repeater

-----

A repeater was installed by separating node 8 into 2 nodes (8a and 8b) and placing the repeater between the two nodes. While installing node 8, the engineer noticed a loose, but electrically continuous connection, within the RJ-11 box. Thinking nothing of it, he installed the repeater and tightened the screws. All worked great--everyone gave all of the credit to the repeater (Farallon had said, all along, that we shouldn't need one with only 2100 feet of backbone. We had to try something, so we bought one.)

4-5 Weeks Later

-----



A teacher's class was disrupted by a loud "popping" noise from an Apple IIe in her classroom. The screen inverted, became garbled, and returned to normal. Coincidentally, the network quit working, and machines could no longer start up on the network--everything went back to the way it was four or five weeks earlier.

This was too much of a coincidence and pointed to the repeater. (All the board, computer, and ohmmeter checks of the backbone tested fine.) Furthermore, after taking out the repeater, the engineer got a few more of the machines to start. All the machines within 700 feet of the repeater and the file server started up regularly.

After many hours of lost labor time and much frustration, the engineer took the only approach that he could think of to narrow down the cause of the problem; he asked for a replacement repeater. But once installed, there was no change. Additional tests, inspections, ohm checks, continuity checks, and termination checks failed to give a clue.

#### Solution #2: Damaged, Loose Wiring

-----  
Although the engineer had been warned repeatedly to make sure that there were no extra resistors on the network, after seeing the ohmmeter readings of the backbone, he defied logic and put another 100-ohm resistor where the highest resistance measurement was taken (node 15: 80.1 ohms with the repeater installed). The result: five more machines came up (nodes 16 through 20).

He decided to put in another resistor (maximum of four, now), and there was no further change. This came as a surprise, because node 20 now started with lightning speed (it was sluggish before), while node 21 just sat there looking "dumb." That's when it was clear that it was time to crawl along the wires again to see what was going on.

The loose wire idea came up, so an inspection was made of node 21. There it was. The pair of wires coming into the box (#21) had been damaged to the point that they were "broken" but not fully severed. This pair had been all but fully separated from the wiring posts. This fit the confusing symptoms of passing the ohmmeter checks, but possibly causing data reflections in an AC mode setting. After reconnecting the wires, all was fine. (Reflection checks still passed the requirements.)

The installation at the box did not have a complete plastic molding installed to protect the wires from the young students' feet. The wire had been kicked and stretched to the breaking point. A plan for molding installation is in the works.

The extra resistors were removed; everything worked fine, but a little slower on the ends. One resistor was placed at the high-resistance point again (node 18) with the result that the end units start up very fast (as if they were next to the server).

In retrospect, it appears that the repeater was not needed in the first place. Its installation could have been avoided if the wires had been

tightened. (Reminder: ohmmeter checks can still test okay on bad or loose connections. It's the AC component, the +5V and -5V, that counts). However, the school is planning to add a new lab to the network and will eventually need the repeater anyway.

It appears that all of the other coincidences were merely coincidences. Most likely, a power surge occurred that disrupted the computers. The cable could have been kicked even before the surge, because the low traffic on the network at the time may have caused it to go unnoticed).

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Tech Info Library Article Number:4020



# Tech Info Library

## **LaserWriter IINT/NTX: How To Print Font Samples**

Revised: 3/4/90  
Security: Everyone

LaserWriter IINT/NTX: How To Print Font Samples

=====

This article last reviewed: 23 May 1989

On the disks that come with the LaserWriter II printers is a program called "LaserWriter Font Utility." This program prints a sample of all fonts (in 12-point) in the LaserWriter and/or the hard disk attached to a LaserWriter IINTX. If you want to print the available fonts in multiple sizes, it is necessary to create your own font sample document.

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Tech Info Library Article Number:4021



# Tech Info Library

## Macintosh IIcx: Some NuBus Cards Don't Fit

Revised: 7/14/92  
Security: Everyone

Macintosh IIcx: Some NuBus Cards Don't Fit

=====

Article Created: 23 May 1989  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Does the smaller form factor of the Macintosh IIcx affect the size of NuBus cards? In other words, will cards designed for the Mac II fit inside a IIcx?

DISCUSSION -----

There are two NuBus cards that have problems fitting in a Macintosh IIcx. Both are video cards: the SuperMac Spectrum 8-bit color card and Truevision NuVista 24-bit color card. Apple has been unable to verify whether or not the DCA MacIrma card fits properly in the Macintosh IIcx. We will try to provide more information as it becomes available.

Note: Any NuBus card designed to the physical specifications published by Apple will fit properly in a Macintosh IIcx.

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Tech Info Library Article Number:4022



# Tech Info Library

## ImageWriter II: How To Print From Applesoft BASIC Over A Network

Revised: 12/6/89  
Security: Everyone

ImageWriter II: How To Print From Applesoft BASIC Over A Network

=====

This article last reviewed: 23 May 1989

To print to an ImageWriter II over a network using Applesoft BASIC follow this procedure:

- 1) Ensure that you have run the Chooser II to select the printer that you want to address.
- 2) This code can be used to allow Applesoft BASIC to communicate with the chosen ImageWriter II:

```
10  D$=CHR$(4)
20  Print D$; "PR#7"
30  Print "Hello Printer"
40  Print D$; "PR#0"
50  End
```

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4024



# Tech Info Library

## A/UX: Cray Connectivity (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Cray Connectivity (6/93)

=====

Article Created: 23 May 1989  
Article Reviewed/Updated: 25 June 1993

TOPIC -----

This article describes alternative solutions for A/UX to Cray connectivity.

DISCUSSION -----

In general, A/UX 3.0 is a full implementation of AT&T System 5.2.2 (with Berkeley 4.3 extensions) UNIX Operating System. It is capable of multi-users and multitasking environments. It also provides many defacto standards, including TCP/IP communications protocol, Network File System (NFS) from Sun Microsystems, Berkeley networking services, and X Window System from MIT. As a result, A/UX can talk to almost any machine that any UNIX machine talks to. Here are some connectivity examples:

### Ethernet Connection

-----

If the remote machine (Cray) supports TCP/IP Ethernet, regardless of the type of operating system Cray is running, A/UX can talk to it via "telnet" or "rlogin" and use "ftp" for file transfer.

If the remote machine supports NFS, then either A/UX or the remote machine can be configured as an NFS server or NFS client.

If the remote machine supports X Window System, then both A/UX and the remote machine can run X server and/or X client applications on different displays, so that the two machines to share resources.

### Serial Line Connection

-----

A/UX supports two internal RS-232 serial ports for connecting to any RS-232 devices, like modems, regular terminals, and printers, hard-wired to another computer's RS-232 ports (PC, VAX, Cray, and so on). You can use "cu", "tip", or "kermit" (provided in A/UX) to connect your A/UX to the

remote machine.

Since A/UX 3.0 (as did previous versions) supports SLIP (Serial Line Internet Protocol), if the remote machine also supports SLIP, SLIP might be another solution for doing remote connection and file transfer by using the underlying Internet network services, such as "rlogin", "telnet", "rcp", and "ftp".

Article Change History:

25 Jun 1993 - Revised for technical accuracy.

23 May 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:4025



# Tech Info Library

## MacDraw 1.9.5 & 1.9.6/LaserWriter 5.2 Conflict: Workaround

Revised: 12/6/89  
Security: Everyone

MacDraw 1.9.5 & 1.9.6/LaserWriter 5.2 Conflict: Workaround

=====

This article last reviewed: 23 May 1989

This article describes a workaround for the conflict between MacDraw versions (1.9.5 and 1.9.6) and LaserWriter 5.2: If you get a system bomb when printing from MacDraw, try this:

- Select All
- Group
- Print
- Ungroup

This seems to eliminate system bombs and keeps you from having to "downgrade" the LaserWriter drivers across the network.

(Be careful when you ungroup after printing--click on an object to deselect the selected objects, or you accidentally can move all the objects in your document.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4027





# Tech Info Library

## MacLink Plus: AFE-Compatible File Translation

Revised: 8/4/89  
Security: Everyone

MacLink Plus: AFE-Compatible File Translation

=====

This article last reviewed: 26 May 1989

Some users have had problems with MacLink Plus from DataViz, Inc.; it doesn't work well with Apple File Exchange (AFE) and the Apple 5.25-inch drive. The reason is that earlier versions of MacLink Plus were created before these products were developed.

Prior to the introduction of AFE and the Apple 5.25-inch drive, the earlier versions of MacLink Plus were one of the few file transfer and conversion utilities for moving files between the PC and Macintosh. However, with the introduction of AFE, DataViz diversified its product line by introducing additional translators for AFE. The DataViz AFE translators should fulfill your customer's needs. They also support the Apple 5.25-inch drive.

MacLink Plus/translators v2.12 includes a library of over 46 different translation combinations that extend the translation capabilities of the Apple File Exchange utility. It provides automatic conversion of a file format and contents between a variety of normally incompatible applications.

Users with a number of PCs and Macintoshes should investigate connecting them via LocalTalk and then mounting the files to the desktop using TOPS.

For more details, search the Tech Info Library under "DataViz" and/or "TOPS".

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4028



# Tech Info Library

## AppleShare PC: Won't run as an 8088 window in Windows/386

Revised: 8/4/89  
Security: Everyone

AppleShare PC: Won't run as an 8088 window in Windows/386

=====

This article last reviewed: 26 May 1989

Due to memory constraints, AppleShare PC will not run as an 8088 window in Windows/386. It will, however, run concurrently with Windows/386.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4029



# Tech Info Library

## Whitney Educational Services

Revised: 4/4/97  
Security: Everyone

Whitney Educational Services

=====

Article Created: 18 February 1991  
Article Reviewed/Updated: 4 April 1997

Whitney Educational Services

-----

P.O. Box 25147  
San Mateo, CA 94402

415-341-5818

### Company Profile:

Software, specializing in interactive video and presentation (VideoDiscWriter) interfacing with HyperCard and QuickTime.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4030



# Tech Info Library

## Advanced Software, Inc.

Revised: 4/4/97  
Security: Everyone

Advanced Software, Inc.

=====

Article Created: 12 July 1989  
Article Reviewed/Updated: 4 April 1997

Advanced Software, Inc.

-----

1095 E. Duane Ave.  
Suite 103  
Sunnyvale, CA 94086

800-346-5392

408-733-0745 (Technical Support)

408-733-2335 Fax

Company Profile:  
Software, specializing in document-comparison, to do list and calendaring applications.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number: 4031



# Tech Info Library

## MicroNet Technology (6/95)

Revised: 4/4/97  
Security: Everyone

MicroNet Technology (6/95)

=====

Article Created: 12 July 1989  
Article Reviewed/Updated: 4 April 1997

MicroNet Technology

-----

80 Technology Drive  
Irvine, CA 92718

714-453-6000 (Main/Local Phone Number)

714-837-1164 (Fax)

### Company Profile:

Hardware and software, specializing in mass-storage systems for the Macintosh family, including PCI (Peripheral Component Interconnect) cards, such as their MicroNet Raven Professional PCI Disk Arrays.

### Article Change History:

06 Jun 1995 - Corrected address information.  
25 Aug 1994 - Corrected phone number.

Support Information Services

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4032



# Tech Info Library

## American Power Conversion (APC) Corporation (4/97)

Revised: 4/4/97  
Security: Everyone

American Power Conversion (APC) Corporation (4/97)

=====

Article Created: 14 July 1989  
Article Reviewed/Updated: 4 April 1997

American Power Conversion Corporation (APC)

-----

132 Fairgrounds Rd.  
P.O. Box 278  
West Kingston, RI 02892

800-800-4APC (4272)

401-789-5735

401-789-3180 FAX

Internet, World Wide Web: <http://www.apcc.com>

Company Profile:  
Software and hardware, specializing in a full line of power supply products.

Article Change History:  
11 Jun 1996 - Added internet web site info.  
02 Jul 1993 - New Product

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4033



# Tech Info Library

## **Bear Rock Technologies, Corp. ( Bear Rock Software Company, Inc.)**

Revised: 4/4/97  
Security: Everyone

Bear Rock Technologies, Corp. ( Bear Rock Software Company, Inc.)

=====

Article Created: 07/14/89  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Bear Rock Technologies, Corp.  
-----

4140 Mother Lode Dr.  
Suite 100  
Shingle Springs, CA 95682-8038

800-232-7625

916-672-0244

916-672-1103 Fax

Company Profile:  
Formerly Bear Rock Software Company, Inc., software, specializing in bar code  
printing software for the Macintosh, and PC's

Article Change History: 07/06/93 Phone number changed, New Product  
Information Added

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4034



# Tech Info Library

## Macintosh: CloseView is Compatible with Pyro

Revised: 7/27/93  
Security: Everyone

Macintosh: CloseView is Compatible with Pyro

=====

Article Created: 20 August 1989  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

Some users of CloseView -- a screen magnification program -- have had compatibility problems with various screen savers.

DISCUSSION -----

CloseView users who need a screen-saver can use Pyro, from Fifth Generation Systems, Inc. CloseView and Pyro work well together.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:

27 July 1993 - Company title updated from Fifth Generation Systems to Fifth Generation Systems, Inc.  
2 August 1989 - Updated for technical accuracy.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4042





# Tech Info Library

## LocalTalk PC: No User or Document Name on Print Server Screen

Revised: 8/20/89  
Security: Everyone

LocalTalk PC: No User or Document Name on Print Server Screen

=====

This article last reviewed: 2 August 1989

TOPIC -----

When the users of the LocalTalk PC card spool documents to the AppleShare Print Server, the operation works fine and the documents print properly. However, the user name and the document name field on the print server screen are blank.

DISCUSSION -----

Document and user name data are normally sent to the print server by the PostScript driver. As written, most of the drivers supplied with PC applications do not provide this information to the spooler. There is currently no way around this limitation.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4043



# Tech Info Library

## LaserWriter IINT/NTX: COM1: Port Error in Owner's Manual

Revised: 3/4/90  
Security: Everyone

LaserWriter IINT/NTX: "COM1:" Port Error in Owner's Manual

=====

This article last reviewed: 21 July 1989

TOPIC -----

There is an error in the LaserWriter IINT/NTX Manual (Apple part #030-3215-A) concerning the data bits for word length.

DISCUSSION -----

The LaserWriter IINT/NTX Manual, in the section that tells how to use the LaserWriter II with MS-DOS applications (page 113) says to use the DOS MODE command to set the COM1: port to 7-bit word length. On page 120, the manual states that the default serial word length is 7 data bits.

These are errors. The COM1: port word length must be set to 8 bits, and the default serial word length is also 8 bits.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4044



# Tech Info Library

## Apple III: Converting Three Easy Pieces Files to Macintosh

Revised: 8/20/89  
Security: Everyone

Apple III: Converting "Three Easy Pieces" Files to Macintosh

=====

This article last reviewed: 2 August 1989

TOPIC -----

Is there a way to transfer files from the Apple III package "Three Easy Pieces" to an application on the Macintosh?

DISCUSSION -----

Using an Apple File Exchange (AFE) translator, Three Easy Pieces files can be converted into Microsoft Works files for the Macintosh.

Transfer the files from the Apple III onto a 3.5-inch disk -- use either an Apple IIe or Apple IIIGS running AppleWorks. Read the files into AppleWorks from the 5.25-inch drive and save them to the 3.5-inch drive.

The Works-to-Works translator for Apple File Exchange moves files from AppleWorks into Microsoft Works, as long as the files are on a 3.5-inch disk and in the ProDOS format, since ProDOS and SOS formats are compatible.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4045



# Tech Info Library

## Apple II Family and Chooser: Frequently Asked Questions (12/95)

Revised: 12/1/95  
Security: Everyone

Apple II Family and Chooser: Frequently Asked Questions (12/95)

=====

Article Created: 8 August 1989  
Article Reviewed/Updated: 1 December 1995

TOPIC -----

This article contains frequently asked questions (FAQ) on the Apple II computer and the Chooser.

DISCUSSION -----

Question: When I choose a printer is the choice saved on disk so that I do not need to use Chooser again?

Answer: Yes, the Chooser selection is saved to disk as the user exits Chooser.

Question: When I choose a printer do I need to use Chooser each time?

Answer: You do not need to use the Chooser each time you print. The Chooser is used only when changing printers.

Question: If the choice is saved is it saved on the current startup disk or on the disk Chooser resides on?

Answer: The printer choice is saved to the disk with Chooser on it.

Question: If the choice is saved is it saved only if the disk Chooser resides on is the current startup disk?

Answer: The choice is saved to the Chooser disk no matter where Chooser resides.

Question: If an AppleShare user who starts up over the network does not have a

default printer assigned from the server, will their most recent choice be saved after powering down?

Answer: The last choice is saved as the user exits Chooser.

Question: If an AppleShare user who starts up over the network does not have a default printer assigned from the server, where is it saved?

Answer: This choice is saved on the server from which Chooser is run.

Question: Is there any difference in these characteristics between the Apple IIe and the Apple IIGS?

Answer: There are no differences between an Apple IIe and an Apple IIGS in these matters. The Chooser program is the same on both computers.

NOTE: The user's Chooser selection overrides the Server Admin default printer assignment.

ADDITONAL NOTE: GS/OS 5.0 uses the Control Panel for network choices. If GS/OS 5.0 is being used, the Chooser program is no longer needed.

Article Change History:

01 Dec 1995 - Changed title, added keyword, and updated format.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:4046



# Tech Info Library

## Apple IIGS: How To Print to Local & Network Printers

Revised: 8/20/89  
Security: Everyone

Apple IIGS: How To Print to Local & Network Printers

=====

This article last reviewed: 8 August 1989

TOPIC -----

Is it possible to print to local printers from an Apple IIGS on an Apple II network?

The network in question has an Apple IIGS and an ImageWriter II in each work area. Each of these Apple IIGS systems is networked into a central office where they share a LaserWriter IINTX. Sometimes users need to print to the local printer, other times to the LaserWriter.

Can they do this while on the network without shutting down their machines and restarting with software locally? They are using network versions of AppleWorks with third party applications and E-mail.

DISCUSSION -----

Printing both locally and over the network depends on the application's method of selecting a slot for printing.

AppleWorks does provide a method for assigning a printing slot, allowing three printers to be defined in the Printer Information screen. To do this:

- 1) Set up the printer specifications for the local ImageWriter printer in slot #1.
- 2) Set up an ImageWriter printer for slot #7. (This is for the ImageWriter Emulator used in the LaserWriter.)
- 3) Choose the desired printer by going to the Main Menu/Other Activities/Printer Information screen and selecting a new Open-Apple-H printer.

If the third party programs allow a slot choice within the program, select slot #1 for the local printer and slot #7 for the network printer.

Prior to using a slot #7 printer (the network printer), use the Chooser application to select the appropriate network printer.

(NOTE: These descriptions assume the use of the printer port on the Apple IIGS.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4047



# Tech Info Library

## DECmate III-to-Macintosh Connectivity

Revised: 8/20/89  
Security: Everyone

DECmate III-to-Macintosh Connectivity

=====

This article last reviewed: 8 August 1989

TOPIC -----

Can documents can be transferred from a Macintosh connected to a DECmate III running CP/M-80?

DISCUSSION -----

A DECmate III running CP/M-80 should have no difficulty moving ASCII text files to a Macintosh. As with the DECmate I and DECmate II, a serial connection is made between the DECmate and the Macintosh. This connection can be a direct machine-to-machine connection with a null modem cable, or a modem-to-phoneline-to-modem connection.

The XMODEM file transfer protocol was originally developed for the CP/M operating system. Nearly all of the CP/M communication programs provide support for the XMODEM protocol. Most Macintosh programs also support the XMODEM file transfer protocol. By running applications supporting XMODEM on both computers, a file transfer can be accomplished.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4048





# Tech Info Library

## AppleShare: Set Apple IIGS Startup Slot to 7 To Boot

Revised: 8/20/89  
Security: Everyone

AppleShare: Set Apple IIGS Startup Slot to 7 To Boot

=====

This article last reviewed: 8 August 1989

TOPIC -----

What setting do I use in the AppleShare startup slot on an Apple IIGS?

I have been told that when setting the slots for an Apple IIGS AppleShare workstation the startup slot should be set to "Scan". Others have told me that startup slot should actually be set to 7. Which is correct?

DISCUSSION -----

Since a Scan operation starts at slot 7 and works down the slots until reaching slot 1, setting the startup slot to "Scan" can work. If the ProDOS-prepared server is available as the Apple IIGS starts up, the booting takes place from the server.

However, should the server be unavailable as the Apple IIGS starts up, AND a startup disk is in an attached disk drive, booting takes place from that disk drive.

If booting only from the server is desired, then it is probably a good idea to set the startup slot to 7 to ensure that the boot process ONLY works across the network.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4049



# Tech Info Library

## GS/OS 5.0 AppleShare Access Over Network Bridge

Revised: 9/22/89  
Security: Everyone

GS/OS 5.0 AppleShare Access Over Network Bridge

=====

This article last reviewed: 8 August 1989

TOPIC -----

Does GS/OS 5.0 allow access to an AppleShare File Server through a bridge on the network?

DISCUSSION -----

GS/OS 5.0 does provide network file services to an AppleShare File Server over bridges. This feature works like the Apple IIGS System Disk 3.1 or 3.2.

However, GS/OS 5.0 has the same limitations for network startup that exist with System Disk 3.1 or 3.2: network startup must take place within the physical network -- not across a bridge.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4050



# Tech Info Library

## HayesConnect 1.0C: Corrects Hang Problems of 1.0B

Revised: 8/20/89  
Security: Everyone

HayesConnect 1.0C: Corrects Hang Problems of 1.0B

=====

This article last reviewed: 9 August 1989

TOPIC -----

I have a problem running the Hayes Modem serving software on our AppleShare File Server. Here is the configuration:

Server: Macintosh IICx with 4MB RAM  
Software: AppleShare 2.0.1  
Timbuktu 2.0.1 f2  
HayesConnect 1.0B

The system hangs in AppleLink and in MacTerminal communications. The server also hangs and has to be reset. Why?

DISCUSSION -----

The problem is probably with HayesConnect, version 1.0B. Contact Hayes Technical Support group for an update to HayesConnect 1.0C, which should correct this problem.

For more information, search under: Hayes Microcomputer

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Tech Info Library Article Number:4051



# Tech Info Library

## A/UX: Printing to LaserWriter IINT From AT&T 3B2 (1/96)

Revised: 1/25/96  
Security: Everyone

A/UX: Printing to LaserWriter IINT From AT&T 3B2 (1/96)

Article Created: 8 August 1989  
Article Reviewed/Updated: 25 January 1996

TOPIC -----

I am having a problem printing to a LaserWriter IINT from an AT&T 3B2 workstation.

I want to print from an AT&T 3B2 running System V Release 2. There are no extensions (Berkeley or otherwise), and there are no Macintoshes and no network involved in this configuration. I can "cat" a PostScript file through a port to the LaserWriter IINT without problems.

When I "lp" the file through the standard AT&T spooler and the same port, the LaserWriter IINT green light flashes for several minutes (about 3 to 5 minutes beyond what the cat takes). The green light eventually goes to steady state without printing anything. A check of the queue indicates that it was printed without error; however, there is no output.

I eliminated: the cabling, XON/XOFF, data/start/stop bits, parity, the PostScript file, the history of the LaserWriter IINT and the EEROM being set incorrectly, and also the returned Control-D (EOF) somehow interfering as the problem. There are no error messages or adverse log indications. I am now at 1200 baud to remove some possible problems associated with using 9600 baud.

I checked the output of the port between the cat and the LaserWriter IINT. It appears that the LaserWriter IINT is adding or changing something. I do not know exactly what because of the method used to observe and the lack of time to set up for another (and more revealing) test. I can say that it is different, and I assume this should NOT be the case.

What I don't know is:

- 1) Has anyone successfully connected the LaserWriter IINT to a 3B2 with a vanilla AT&T System 5 "lp" spool/queue (no Berkeley extensions)?

- 2) How does their queue script read? Can I get a copy?
- 3) What is there about a standard lp queue that could add to or alter the contents of a PostScript file passing through?

DISCUSSION -----

A/UX is AT&T System V Release 2 -- the same as the customer's AT&T 3B2 system. If something works for the A/UX system, there should be a way to make it work with the AT&T 3B2. Apple has successfully connected LaserWriter IINTs to A/UX systems and used the A/UX lp print spooler. A/UX does not use the Berkeley extensions for printing.

When printing to a PostScript device, A/UX uses a script located in /usr/spool/lp/model/psinterface. The script used by the 3B2 should be similar, if not identical, to the A/UX version.

The PostScript file going to the printer must have a first line that begins with:

```
%!PS-Adobe-
```

or the LaserWriter IINT won't know what to do with it. Since using cat to send the file directly to the printer works fine, we can assume that the original file is OK and that the connection between the computer and the printer is good.

An error is most likely to be introduced when the psinterface script assigns a magic number to the file being printed. Normally, the magic number for a file is derived from the first few characters of the file, which are then matched against the /etc/magic file to return some information about the contents of the file.

However, the psinterface script assigns its own magic number to the file being printed. Psinterface cuts the first eleven characters from the file to be printed and uses a case statement to assign a magic number to the file. Depending on what that magic number is, psinterface does something different with the file.

In the A/UX version of psinterface, this section of the script reads as:

```
case "$magic" in
%!PS-Adobe-) rev=1 ;;
```

Check the 3B2 version of the script and see if these lines match. If they don't, try changing the 3B2 version to match the A/UX version.

Article Change History:

- 25 Jan 1996 - Changed title to reflect proper product name.
- 22 Aug 1995 - Made minor corrections.
- 08 Sep 1994 - Reviewed and reformatted.

Support Information Services

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Tech Info Library Article Number:4052



# Tech Info Library

## LocalTalk PC Card: Available for MS-DOS, Not OS/2

Revised: 8/20/89  
Security: Everyone

LocalTalk PC Card: Available for MS-DOS, Not OS/2

=====

This article last reviewed: 8 August 1989

TOPIC -----

I want to place PCs running OS/2 on an LocalTalk network. Are there any LocalTalk network PC cards that support OS/2 at this time?

DISCUSSION -----

Apple is unaware of any AppleTalk network PC cards with drivers for OS/2. The AppleTalk network PC card software from Apple contains only MS-DOS drivers.

DayStar Digital makes a MicroChannel version of an AppleTalk network PC card for PS/2 machines, but again, the DayStar card includes only MS-DOS drivers, not OS/2 drivers.

While either of these cards can be placed in an OS/2 system, the cards will be functional only under MS-DOS, since the accompanying software lacks the drivers for OS/2.

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Tech Info Library Article Number:4053



# Tech Info Library

## AppleShare: Virus Can Attack Only User-Write-Accessible Volume

Revised: 8/20/89  
Security: Everyone

AppleShare: Virus Can Attack Only User-Write-Accessible Volume

=====

This article last reviewed: 9 August 1989

TOPIC -----

Here are two questions about AppleShare volumes and viral infections.

DISCUSSION -----

Q) If I partition a server hard disk into a read-only volume and a read-write volume, is it possible for the read-only volume to become infected if the read-write volume becomes infected?

A) No, a virus can attack only folders and files to which the user of the infected program has write access privileges.

Q) If I did some administrative work on the read-only volume -- that is, launched applications that made it write-able under the administrator account -- could a virus infect the volume that was once write-protected?

A) Yes, since the Administrator has write access privileges, so would the virus.

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Tech Info Library Article Number:4054





# Tech Info Library

## Triad Productions, Inc.

Revised: 7/20/93  
Security: Everyone

Triad Productions, Inc.

=====

Article Created: 20 August 1989  
Article Reviewed/Updated: 20 July 1993

Triad Productions, Inc.

-----

1910 Ingersoll Ave.  
Des Moines, IA 50309

515-243-2125

Fax: 515-243-2055

PAN: TRIADPRO

### Company Profile:

Hardware, specializing in studio recordings, control systems for amusement parks, and distribution of MIDI devices.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4055



# Tech Info Library

## HyperCard 1.2.2: Corrects Problem Creating 127th Field

Revised: 8/20/89  
Security: Everyone

HyperCard 1.2.2: Corrects Problem Creating 127th Field

=====

This article last reviewed: 9 August 1989

TOPIC -----

HyperCard 1.0 exhibited a problem that prevented the construction of a 127th field and generated an "error 777" message, and also an "error 1170" when the message box contained the number 128.

Is there a solution yet?

DISCUSSION -----

Yes. HyperCard 1.2.2 does not exhibit this problem.

For more information, search under "HyperCard" and "error" and "field"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4056



# Tech Info Library

## LaserWriter Driver 6.0: Defaults to Color

Revised: 8/20/89  
Security: Everyone

LaserWriter Driver 6.0: Defaults to Color

=====

This article last reviewed: 9 August 1989

TOPIC -----

I am using the new (v6.0) LaserWriter drivers with QMS printers. Printer options default to color/grayscale under these drivers (as opposed to black and white). This seems to slow printing. Is there any way to change this default?

DISCUSSION -----

The primary focus for the LaserWriter 6.0 driver is color printing. This is why the color option is the default setting. There is currently no way to change the default setting to black and white.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4057



# Tech Info Library

## Macintosh-to-Modem Pool Through Rolm Phone System

Revised: 6/18/92  
Security: Everyone

Macintosh-to-Modem Pool Through Rolm Phone System

=====

Article Created: 9 August 1989  
Article Last Reviewed: 18 June 1992  
Article Last Updated:

TOPIC -----

This article tells how to cable a Macintosh from a Rolm phone system to access a modem pool.

DISCUSSION -----

If you want to use a Macintosh from a Rolm phone system and access a modem pool on the switch, you need to provide DTR from the Macintosh. The standard cables do not provide this. You need to make a special cable with the following pinouts to provide the appropriate signalling:

| DB-25 | to | DB-9 |
|-------|----|------|
| ----- |    | ---- |
| 1     |    | 8    |
| 2     |    | 5    |
| 3     |    | 9    |
| 7     |    | 3    |
| 20    |    | 6    |
| 8     |    | 7    |

Use a standard DB-9-to-DIN-8 cable to connect to the Macintosh.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4058



# Tech Info Library

## Macintosh II High-Resolution Video Card: New Features

Revised: 8/20/89  
Security: Everyone

Macintosh II High-Resolution Video Card: New Features

=====

This article last reviewed: 10 August 1989

TOPIC -----

This article describes the new features of the Macintosh II High-Resolution video card.

DISCUSSION -----

The Macintosh II High-Resolution Display Video Card is the cost-reduced replacement for the previous 4- and 8-bit Macintosh II Video Card (M0211 and M5640). This new card is sold in 4- and 8-bit configurations (M0322 and M0324, respectively).

This new release is fully compatible with the previous card when used with Apple's video drivers, monitors, and cable. Applications that make direct hardware calls may not work with the revised card. Also, third-party video cables may need to be changed (see item 2 below).

New Features  
-----

The following minor features were added to the card. They should not have a major impact on the typical use of these cards.

### 1. Monitor Type Detection

At startup, the High-Resolution Display Video Card senses the monitor type by sensing a previously unused signal line: pin 4 in the D-15 video connector. The selection is as follows:

|          |                                |
|----------|--------------------------------|
| SENSE 0  | Monitor Type                   |
| (Pin 4)  |                                |
| 1 or N/C | NTSC Timing RGB video out      |
| 0        | 12- and 13-inch Monitor Timing |

(Note: Some third-party cables may not be wired correctly to support this detection scheme.)

## 2. New Driver Level Control of RS-170 RGB Video

The card supports two RGB interlaced video resolutions:

- 512 by 384 pixel (default mode) and
- 640 by 480 pixels

To select the higher resolution, the system needs the new Monitor CDEV and Slot Manager supplied with the 32-bit QuickDraw, plus the correct cable configuration (see item 1). Selection is made by choosing the monitor icon (highlighted borders) connected to the Macintosh II High-Resolution Video Card and clicking on the Options button. A dialog box will appear with the options.

In addition, the card only produces RGB interlaced video in the 4- and 8-bit mode.

## 3. Enhanced Firmware

In addition to the scanning modes mentioned above, the card supports uncorrected gamma, has an integrated gamma directory, and implements a new set of driver calls to support these new features.

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Tech Info Library Article Number:4059



# Tech Info Library

## MacAPPC and MPW 3.0: Compatibility Issues

Revised: 8/20/89  
Security: Everyone

MacAPPC and MPW 3.0: Compatibility Issues

=====

This article last reviewed: 1 August 1989

TOPIC -----

This article discusses the compatibility of various versions of MacApp and MPW.

DISCUSSION -----

MacApp 1.1.1 programmers should use MPW 2.0.2. Apple does NOT support developing with MacApp 1.1.1 under MPW 3.0.

MacApp 2.0b5 was designed for use under MPW 2.0.2. It is possible to tweak MacApp 2.0b5 to run with MPW 3.0, but this is also an UNSUPPORTED solution.

MacApp 2.0b9 does NOT support MPW 2.0.2, but DOES support MPW 3.0.

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Tech Info Library Article Number:4060



# Tech Info Library

## AppleTalk Internet Router

Revised: 8/21/89  
Security: Everyone

AppleTalk Internet Router

=====

This article last reviewed: 19 June 1989

TOPIC -----

This article gives general information on the AppleTalk Internet Router. It includes common questions with answers.

DISCUSSION -----

The AppleTalk Internet Router is a software router that interconnects AppleTalk networks, including LocalTalk, EtherTalk, and TokenTalk networks, to form an AppleTalk internet. The router moves data from one network to another transparently, so the internet functions like a single network. This means that users access file, print, and mail resources across the internet in the same way they access these resources on a single network.

The AppleTalk Internet Router is fully compatible with AppleTalk Phase 2. As specified in the AppleTalk Phase 2 protocols, you can use the AppleTalk Internet Router to assign a range of network numbers and a list of zone names to a single EtherTalk or TokenTalk network.

The AppleTalk Internet Router has four main purposes:

- It connects two to eight networks, allowing users access to services on other networks. The connected networks can be LocalTalk, EtherTalk, or TokenTalk networks.
- It isolates traffic on different parts of an internet. Although AppleTalk Phase 2 supports very large, single AppleTalk networks, performance can be improved by using a router to break up such a network. The router isolates local traffic and passes traffic onto the internet only when necessary.
- It creates zones that conceptually partition the internet, so that users can more efficiently access shared services.



- It enlarges a network that has reached its maximum length or number of devices. The number of devices per network is an issue for LocalTalk networks. The maximum length is an issue for LocalTalk networks and thin Ethernet networks.

The AppleTalk Internet Router runs on the Macintosh Plus, SE, SE/30, and Macintosh II family of computers. It runs transparently in the background of other processes running on the same system. You can run the router on a machine that is also running the AppleShare File Server, the AppleShare Print Server, and various electronic mail servers. To run the router on the same machine as one or more servers, you must have 2MB of memory.

The AppleTalk Internet Router ships with the "AppleTalk Internet Router Administrator's Guide". The guide has complete information on how to set up the router, when to create an internet, how to plan the physical layout, where to place a router, when to use a backbone network, and so on. It also gives advice on network numbering and zone names. Observing certain guidelines in identifying networks can help maintain order as the internet grows.

The AppleTalk Internet Router also ships with a document titled "AppleTalk Phase 2 Introduction and Upgrade Guide". This booklet describes AppleTalk Phase 2 for the lay person and describes how to upgrade an AppleTalk internet to Phase 2.

The Upgrade Utility will be packaged with the AppleTalk Internet Router for a limited period. The Upgrade Utility permits AppleTalk Phase 2 and Phase 1 routers to operate on the same internet. Upgrading an AppleTalk internet to Phase 2 requires that all routers be upgraded to Phase 2 versions. However, it may not be feasible for customers with very large internets to upgrade all their routers at once. For this reason, Apple has written the Upgrade Utility that runs in the background of the AppleTalk Internet Router and enables that router (and its connected networks) to be part of an internet on which 1.0 routers still exist.

The Node Identification Utility also ships with the AppleTalk Internet Router. It enables you to determine which nodes on an internet have been upgraded to AppleTalk Phase 2.

Customers must buy a copy of the AppleTalk Internet Router for every machine that will run the software. Site licenses will not be available.

#### Questions and Answers on the AppleTalk Internet Router

-----  
Q. Does the AppleTalk Internet Router support TCP/IP or DECnet routing?  
A. No. The AppleTalk Internet Router supports routing of AppleTalk protocols only. It can be run in parallel with a second non-Apple router that supports other network protocols.

Q. How many networks can be interconnected with the AppleTalk Internet Router?

A. The AppleTalk Internet Router allows from two to eight networks to be interconnected. By exchanging information with other routers on the internet, the AppleTalk Internet Router can learn about 1024 other networks in the internet. Each of these 1024 networks can contain multiple AppleTalk Phase 2 "virtual networks."

Q. How many zone names can I assign to one EtherTalk or TokenTalk network?

A. 256.

Q. How can I configure eight networks on the AppleTalk Internet Router?

A. You need to use a Macintosh II or IIX that handles up to six network cards and the two LocalTalk ports to be used by the router. You can use the router without a video card or monitor. To administer such a router, you can use the Timbuktu product from Farallon.

Q. Does the router degrade the performance of the AppleShare File Server or Print Server when run in the background?

A. Yes. The amount of degradation depends on the traffic passing through the router. Typically the router has to be extremely busy to noticeably affect server performance.

Q. Because the AppleTalk Internet Router is a Phase 2 router, will third-party router manufacturers need to upgrade their routers to communicate with Apple's router?

A. Yes. Apple has worked very carefully with all the major third-party router manufacturers. All of them plan to offer Phase 2 upgrades to their products.

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Tech Info Library Article Number:4062



# Tech Info Library

## Coax/Twinax Card: Product Information (8/94)

Revised: 8/3/94  
Security: Everyone

Coax/Twinax Card: Product Information (8/94)

Article Created: 19 July 1989  
Article Reviewed/Updated: 3 August 1994

TOPIC -----

This article provides a description of the Apple Coax/Twinax Card.

DISCUSSION -----

### Overview

-----  
The Coax/Twinax card is a 9-inch NuBus hardware product. The card is based on the National Semiconductor 8344 LSI chip, which provides the encode/decode of Coax Type A and Twinax cable signals. The chip supports full 3270 data streams for Control Unit Terminal(CUT) and Distributed Function Terminal(DFT) operations. The Twinax portion supports all 5250-type devices. (See the "Special Information" section at end of this article).

### Apple Coax/Twinax Card

-----  
The Apple Coax/Twinax card uses the MCP card foundation with additional add-in components to provide coax encoding and decoding of coax commands. The encoder/decoder is National Semiconductor's NC 8344. The Motorola 68000 found on the MCP card manages the terminal session's 3270 presentation space and handles the API calls. The 500K RAM space is used to maintain 68000 code, 8344 code, and the presentation spaces.

The System software required to operate the Coax/Twinax card is the multitasking MCP/OS referred to as A/ROSE and the 3270 CDEV. There are no switches to set on the card. The card's self-test indicates pass/fail based on the status of two LEDs on the card edge. Green indicates the card is OK and Red indicates the card has failed the on-board diagnostic.

### Special Information

-----  
SNA•ps 3270 software does NOT emulate 5250 terminals even though the hardware

MCP card has that capability. It does include support for CUT and NLCA connections on the Apple Coax/Twinax Card. Andrew Corporation provides a product called MacMidrange which provides 5250 terminal services and operates on the Apple Coax/Twinax Card.

Article Change History:

03 Aug 1994 - Update article with SNA•ps 3270 rather than MacDFT and Andrew's MacMidrange product.

Support Information Services

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Tech Info Library Article Number:4063



# Tech Info Library

## HyperCard: How To Determine HyperCard Field Line Count

Revised: 6/24/90  
Security: Everyone

HyperCard: How To Determine HyperCard Field Line Count

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This article last reviewed: 26 May 1989

On occasion, HyperCard programmers need to know how many lines are in a field. There are two ways of looking at this question. One is how to determine the number of display lines in a field due to word wrap. The other thing you might want to know is how many return characters are in a field. HyperCard tells you this, if you ask how many lines are in the given field. The question of how many display lines are in a field is a bit more difficult. The script at the end of this article can get this information for you.

The script works by taking the given field, changing it to a scrolling field (if it isn't already), and then making the height of it the smallest multiple of the size of the text height greater than 50 pixels. This is done because the next step it does is to scroll from the top of the field to the bottom. If field is not at least 50 pixels high, it will not scroll.

Once HyperCard has scrolled to the bottom of the field, it can tell you how much text has been scrolled off. With this information, the size of the window, and the height of the text, you can calculate the number of lines.

The height of the field is made smaller, because if the visible field is not filled enough to scroll, there is no way to determine how much of the field (number of lines) has text in it. However, as stated above, the field also has to be tall enough to scroll. The combination of these two requirements means that the script below can determine the number display lines, if that number is greater than 3. If there are less than three lines, it tells you there are 3, anyway. Here's the script:

```
on mouseUp
  put empty
  lock screen
```

```
put the style of fld test into holdStyle
-- so you can reset the style
```

```
    get the rect of fld test
    put it into holdRect
    -- so you can reset the rect

if the style of fld test does not "scrolling"
then
    set the style of fld test to "scrolling"
    add 15 to item 3 of it
    -- to account for the scroll bar
end if

set the scroll of fld test to 0
    -- get to the top
put (item 2 of the rect of fld test + 50) into item 4 of it
    -- make the field as small as possible to account for small amounts
    -- data and still scroll
set the rect of fld test to it

drag from item 3 of the rect of fld test - 8,item 2 of the rect of
fld test + 20 to item 3 of the rect of fld test - 8,item 4 of
the rect of fld test - 20
    -- grab the thumb and drag to the end of the field

put the scroll of fld test + (item 4 of the rect of fld test - item
2 of the rect of fld test) into fldHeight
    -- gives the height of the field in pixels
put fldHeight / the textHeight of fld test into numLines
    -- gives the number of displayed lines
    -- NOTE! this does not account for carriage returns in the field
put "the number of lines is" && numLines

set the style of fld test to holdStyle
set the rect of fld test to holdRect
unlock screen
end mouseUp
```

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Tech Info Library Article Number:4064



# Tech Info Library

## Apple IIe: MIDI Interface by Passport Designs

Revised: 8/21/89  
Security: Everyone

Apple IIe: MIDI Interface by Passport Designs

=====

This article last reviewed: 30 May 1989

Passport Designs, Inc. manufactures and sells a MIDI interface used by software developers as the standard for Apple IIe computers.

Passport also publishes two software packages, one for recording the MIDI keyboard performance and one for printing the keyboard performance as sheet music. MasterTracks is the name of the recording application. PolyWriter is the software used for printing the sheet music.

For more details, search the Tech Info Library under "Passport Designs, Inc."

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Tech Info Library Article Number:4066



# Tech Info Library

## LocalTalk: PhoneNET and Surge Suppression Information

Revised: 8/21/89  
Security: Everyone

LocalTalk: PhoneNET and Surge Suppression Information

=====

This article last reviewed: 30 May 1989

Farallon, in its PhoneNET connector documentation, recommends that users not connect a LocalTalk connector directly to a twisted-pair backbone via a PhoneNET to LocalTalk adapter cable. The reason is that LocalTalk connectors don't have sufficient surge protection when connected directly to the phone line. The documentation says that the first connector out of the wall should be a PhoneNET connector. Then, it's safe to branch LocalTalk from that using the adapter cable.

Farallon incorporates a proprietary transformer and surge protection system into their connector modules. They do this because phone wire is not shielded and is subjected to RFI and EMI. Because LocalTalk cable is shielded, the same level of surge protection is not required in LocalTalk connectors. Connecting LocalTalk cable to PhoneNET via an adapter is not recommended, because it reduces the shielding effect at the cable. There are other reasons, including differences in impedance. Farallon's suggestion correctly interfaces phone wire to LocalTalk with a module that provides some form of surge suppression.

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Tech Info Library Article Number:4067





# Tech Info Library

## Y-Term FTP: Converter Available for the Macintosh

Revised: 8/21/89  
Security: Everyone

Y-Term FTP: Converter Available for the Macintosh

=====

This article last reviewed: 26 May 1989

Y-term is a file transfer protocol used on some IBM mainframe computer systems. FutureSoft sells a program, called DynaComm, that provides the Y-term file transfer protocol for the Macintosh. The communication session must be initiated through an IBM 7171 or Series 1 protocol converter. The terminal that is emulated is a VT100.

For more details, search the Tech Info Library under "FutureSoft."

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Tech Info Library Article Number:4069



# Tech Info Library

## HyperCard: How To Get Custom Drivers

Revised: 8/21/89  
Security: Everyone

HyperCard: How To Get Custom Drivers

=====

This article last reviewed: 26 May 1989

If you are looking for a HyperCard driver for a videodisk player or other multi-media device, you can go to a third-party for a custom driver. As an alternative, you can write your own using the HyperCard Videodisc ToolKit (available from APDA).

For drivers, various discs, and stackware, search the Tech Info Library for "The Voyager Company", "Optical Data", or APDA.

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Tech Info Library Article Number:4071



# Tech Info Library

## A/UX: Output Is Lost in term and X11

Revised: 9/3/92  
Security: Everyone

A/UX: Output Is Lost in "term" and X11

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Article Created: 21 August 1989

Article Change History

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08/31/92 - REVIEWED

•For technical accuracy

TOPIC -----

The following problem indicates a bug in A/UX. The following small program produces a list of 10,000 lines when run:

```
#include <stdio.h>

main()
{
    int i;

    for (i=1; i<10000; i++) {
        printf ("i=%d\n",i);
    }
}
```

This works as expected when running on the console or as single process in "term". However, when this program is started three times in different windows of "term", the output is garbled. When tested under X11, the output is also garbled.

Tech Comm has verified this problem on both the Toolbox application "term" program and the X Window System "xterm" program. Some of the standard output of the program from the last window(s) are lost, if more than two windows (either created by "term" or "xterm") run the test program.

The problem can be reproduced and easily seen by outputting a longer string, like "i====", through the printf() statement.

It seems that both "term" and "xterm" window programs have some limitation on the synchronization of each terminal emulation output. They just do the normal asynchronous terminal output.

However, you may use the "tee" pipe-fitting command to block the standard output on the display without losing any output. For example:

```
foo | tee [file]
```

This lets the output of the program "foo" be displayed on the standard output and/or copied to the file, if the optional file is specified.

DISCUSSION -----

The problem described in this article has been submitted as a bug to A/UX Engineering.

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Tech Info Library Article Number:4072



# Tech Info Library

## MPW: PixMap Color Issue

Revised: 8/21/89  
Security: Everyone

MPW: PixMap Color Issue

=====

This article last reviewed: 9 June 1989

A programmer has a PixMap with a Raster image that has 8-bit pixel values ranging from 0 to 127 and is using CopyBits with the SrcCopy mode. The foreground and background colors are correctly set. The color window has 128 animating colors reserved.

The question is what color table should be assigned to the PixMap? Does he need to use the color table generated by the PaleteToCTab call with the source palette being the palette of the color window?

A NIL handle results in a black and white image. (Note: With tolerant colors used instead of animating colors, the picture appears OK, but you can't animate the colors.)

You can create a similar problem without involving a PixMap. When you use animating entries in the palette, you always get a black and white picture. When you use tolerant entries, we get color. This is a similar problem.

A solution is to use calls to AnimateEntry as a replacement for SetEntryColor. When you use SetEntryColor with animating color entries, you always get black and white. When you use AnimateEntry to set an entry's color, you get color. Specifically:

```
SetPalette(mywindow, mypalette, false);
mycolor.red := 65535;
mycolor.green := 0;
mycolor.blue := 0;
AnimateEntry(mywindow, 2, mycolor);
ActivatePalette(mywindow);
PMForeColor(2);
PaintRect(myrect);
```

yields a red rectangle. If you replace the AnimateEntry call with a

SetEntryColor call, you get a black rectangle. The code segment above assumes "mywindow" is a window pointer to a color window. "mycolor" is a variable of type rgbcolor. "mypalette" is a variable of type palettehandle. "myrect" is a variable of type rect.

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Tech Info Library Article Number:4076



# Tech Info Library

## HyperCard: Method To Check Presence of XCMD

Revised: 6/24/90  
Security: Everyone

HyperCard: Method To Check Presence of XCMD

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This article last reviewed: 9 June 1989

Programmers have asked if HyperCard, has a way to check if an XCMD is installed in a stack? For example, you create a button that requires a certain XCMD to function. You distribute the button to other HyperCard users, but you don't know if they have the particular XCMD installed in their Home Card.

The fact is that HyperCard has no way to determine if a particular XCMD is present. However, it would be a simple matter to write an XFCN that would check for the presence of specific XCMDs and XFCNs. This XFCN would need to use Resource Manager calls, like GetNamedResource and ResError, to see if the XCMD was currently available.

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Tech Info Library Article Number:4077



# Tech Info Library

## ImageWriter II: Condensed Printing from Macintosh (11/94)

Revised: 11/14/94  
Security: Everyone

ImageWriter II: Condensed Printing from Macintosh (11/94)

=====

Article Created: 21 August 1989  
Article Reviewed/Updated: 14 November 1994

TOPIC -----

This article describes printing in a condensed mode on the ImageWriter II.

DISCUSSION -----

If you want an ImageWriter II to print in a condensed font, you can define that through the DIP switches. However, when you are printing using the ImageWriter II driver from a Macintosh, the configuration is overridden by the driver software.

The Macintosh might support condensed print when draft mode printing is selected in the Print dialog box. However, the application doing the printing must support condensed printing. The reason is that the print drivers, by default, override the switch settings and turn off the condensed mode.

To have all applications print in condensed mode, you would have to patch the print drivers at the point where they actually override the switch settings of the ImageWriter II. This is unsupported and undocumented.

The best solution is to utilize a font which is condensed in nature.

Article Change History:  
14 Nov 1994 - Reviewed for technical accuracy, made information public.

Support Information Services

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Tech Info Library Article Number:4078





# Tech Info Library

## AppleShare 2.0.1: Multi-Launching Problem (2/95)

Revised: 2/10/95  
Security: Everyone

AppleShare 2.0.1: Multi-Launching Problem (2/95)

Article Created: 9 June 1989  
Article Reviewed/Updated: 10 February 1995

TOPIC -----

I was able to multi-launch these applications on an AppleShare 1.1 server:

MacDraw 1.9.6  
MacDraw II  
MacWrite 5.0  
MacPaint 2.0  
PageMaker 3.0.

After I upgraded the server to AppleShare 2.0.1, they don't multi-launch anymore, why not?

DISCUSSION -----

We were able to multi-launch MacPaint 2.0, MacWrite 5.0, and MacDraw II using AppleShare 2.0.1. (We did not try the other applications.) These are the steps taken to get the Finder to allow the applications to launch multiple times:

### Step 1

Copy the applications to a folder on an AppleShare 2.0.1 server.

### Step 2

Using ResEdit 1.2b3, or later, turn on the shared bit of each application.

This is a point to double check. In at least two of the cases, a later check show the Shared bit was still not set; the operation did not take.) After you set the bit, quit ResEdit, relaunch ResEdit, and ensure that the bit stayed set.

### Step 3

Make the folder containing the application a read-only folder. When the folder was not read-only, only MacDraw II would multi-launch; the other applications

would not.

The flipping of the bundle bit should have no effect on whether an application will multi-launch. However, older versions of ResEdit did accidentally switch the shared and bundle bits, which may have been causing this problem. Make sure to use ResEdit 1.2b3 or later. We have verified that this version works.

IMPORTANT: Setting these bits is dangerous; these applications are not supported as multi-launch applications. The effects of multi-launching are unknown. Also, keep in mind possible licensing problems, because those applications are sold as single-user applications.

Article Change History:

10 Feb 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4079



# Tech Info Library

## Macintosh: How To Convert OfficeWriter Files

Revised: 8/21/89  
Security: Everyone

Macintosh: How To Convert OfficeWriter Files

=====

This article last reviewed: 9 June 1989

If you want to convert files created in MS-DOS application "OfficeWriter" to the Macintosh, consider a product from DataViz, Inc. called MacLink Plus/Translators. This product is a series of translators between different word processing and other file formats. The translators are for use with the Apple File Exchange application that we ship with each machine on the Utilities 2 disk. The translators, include one for OfficeWriter. For more details, search the Tech Info Library under "DataViz".

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Tech Info Library Article Number:4080



# Tech Info Library

## Apple IIGS: Known ImageWriter LQ and Bin Selection Problem

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Known ImageWriter LQ and Bin Selection Problem

=====

This article last reviewed: 9 June 1989

Some LocalTalk users are unable to select paper bins on the cut-sheet feeder with the Chooser. These users get a "paper out" error message when using the LocalTalk ImageWriter LQ with an Apple IIGS. Yet, when the ImageWriter LQ is directly connected to the Apple IIGS, bin selection works fine. A typical system giving rise to this problem includes:

- an Apple IIGS with LocalTalk PC Card
- a LocalTalk ImageWriter LQ
- a cut-sheet Feeder

The problem appears to be with the LocalTalk interface for the ImageWriter LQ. The escape codes required for changing the bins get stripped from the packets sent to the ImageWriter. At this time, there is no known workaround for this problem.

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Tech Info Library Article Number:4081



# Tech Info Library

## WordStar and LaserWriter: Page Dimension Problems

Revised: 3/4/90  
Security: Everyone

WordStar and LaserWriter: Page Dimension Problems

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This article last reviewed: 9 June 1989

A user has an IBM PC with LocalTalk PC Card and is running WordStar Professional 4.0. He wants to emulate an Epson printer using the LaserWriter program, without having to modify existing documents. He has run up against four problems:

- page width differences
- page length differences
- inability to print overstrikes
- lack of a ".sr" dot command

He prints through the LaserWriter program, using the WordStar option. The results are not good. Text is cropped about 3/8 inch from the right edge of page. Thus, many lines lose a few characters on right.

Second, the LaserWriter prints fewer lines per page than a dot-matrix printer (like an Epson) does. Thus, for each logical page printed, he gets one printed page full of text and a second page either blank or with a single line of text at the top of the page.

The improper cropping of text 3/8 inch from the right edge of the page (causing some characters to be "lost" off of the side of the page) may be caused by margin settings. More than likely, it is caused by switching font sizes within the document.

For example, if a 10-point Courier is chosen and Bold text is selected, the larger bold text may run off the side of the page. This is because the LaserWriter utility assumes that the 10-point Courier size is the size of ALL text within the document and will not take into account a larger text size, whether from bolding or simply using a different font size within the document.

If a line of text is typed, but due to the size of the actual printed text, it will not fit on the printed line, the rest of the characters

will be cut as they print off of the right side of the page. The LaserWriter utility will position the text on the line and attempt to print it on the line in which the text appeared, regardless of whether or not the text actually fits on the line when scaled to the user's selected size. The only recourse is to limit the number of characters for those lines where the problem appears or, if the entire document is affected, to print with smaller text sizes.

Text cropped off of the bottom of the page is due to the same reasons as cropping lines.

The LaserWriter program does not implement the WordStar "overstrike" command. This command, basically, puts a backspace in the text. Neither is the ".sr" dot command present.

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Tech Info Library Article Number:4082



# Tech Info Library

## WordStar and LaserWriter: Character Set Problems

Revised: 3/4/90  
Security: Everyone

WordStar and LaserWriter: Character Set Problems

=====

This article last reviewed: 9 June 1989

A user has an IBM PC with LocalTalk PC Card and is running WordStar Professional 4.0. He wants to emulate an Epson printer using the LaserWriter program, without having to modify existing documents. His question concerns how the international character sets 1 and 2 produce diphthongs (for example, the ae character).

Diphthongs, like AE or OE, are part of the standard LaserWriter character set (see page 255 of the PostScript Language Reference Manual from Adobe Systems Incorporated, published by Addison-Wesley, ISBN 0-201-10174). The standard LaserWriter character set and the unencoded character set can be mapped to a single font (see pages 254 and 255 of the "PostScript Language Reference Manual"). The symbol set (pages 256 and 257) cannot be mapped together with the standard LaserWriter character set or the unencoded character set into a single font.

Here are three questions with answers concerning diphthongs and fonts:

1) Does the Courier font include diphthongs?

Diphthongs are part of the standard LaserWriter character set and are included in the Courier font. Using the standard character set, the diphthongs (AE, OE, ae, and oe) are ASCII codes 225, 234, 241, and 250, respectively.

These characters are mapped to new positions using extended international character sets 1 and 2. Selecting either international character set 1 or 2 from the LaserWriter print options for WordStar documents will allow access to the AE and ae diphthongs at ASCII locations 146 and 145, respectively. See page 91, "Printing from extended character sets" in Appendix A. The OE and oe characters are in the same locations and can be accessed with the same codes as in the standard character set.

2) If the answer to number 1 is no, from which character set do the diphthongs come if one is printing in Courier with international 1 extended characters?

As stated in the answer to question 1, diphthongs are available through the Courier font.

3) If the answer to number 2 is a proportionally spaced font, like Helvetica or Times, how does the use of diphthongs from proportionally-spaced fonts from another font fit with your reasoning that symbol font characters cannot be remapped in this manner, because they are from another font and are proportionally spaced?

Neither Helvetica nor Times fonts, containing standard or unencoded characters, can be mapped with Symbol set characters due to the limitation restated in the question. This is because the Adobe PostScript command, which is used to merge character sets into a single font definition, is limited to the Standard LaserWriter and unencoded character sets.

Symbol set characters cannot be used with proportionally spaced fonts even though both use proportionally spaced graphic images because there is only one set of commands used for merging character sets into a font.

The limitation is not in the use of the commands (as in the hypothetical case of mapping proportional characters with proportional symbols), but in Adobe's limiting implementation of their commands. This causes the remapping not to work with Symbol set characters and standard LaserWriter and unencoded character sets. This means that standard characters and unencoded characters are accessible within Helvetica and Times. Symbol set characters remain inaccessible from the same remapped font. Note: Character sets are not fonts. Fonts are the graphical images to which the character sets are mapped.

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Tech Info Library Article Number:4083





# Tech Info Library

## WordStar and LaserWriter: Absent WordStar Features

Revised: 3/4/90  
Security: Everyone

WordStar and LaserWriter: Absent WordStar Features

=====

This article last reviewed: 9 June 1989

A user has an IBM PC with LocalTalk PC Card and is running WordStar Professional 4.0. He wants to emulate an Epson printer using the LaserWriter program, without having to modify existing documents. He has run up against the inability to print overstrikes and the lack of a ".sr" command

The factgs are that the LaserWriter program does not implement the WordStar "overstrike" command. This command, basically, puts a backspace in the text. Neither is the ".sr" dot command present.

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Tech Info Library Article Number:4084



# Tech Info Library

## MC68030: The Meaning of Internal Harvard Architecture

Revised: 9/28/92  
Security: Everyone

MC68030: The Meaning of "Internal Harvard Architecture"

=====

Article Created: 9 June 1989

### Article Change History

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09/28/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What does "Internal Harvard Architecture" mean?

### DISCUSSION -----

The phrase "Internal Harvard Architecture" has been applied to the Macintosh IIcx. "Harvard Architecture" refers to section 1.8 of the MC68030 User's Manual, Pipelined Architecture. The manual states:

"The MC68030 uses a three-stage pipelined internal architecture to provide for optimum instruction throughput. The pipeline allows as many as three words of a single instruction or three consecutive instructions to be decoded concurrently."

This is a 68030 chip design element that allows faster throughput of the microprocessor's instructions. It is not specific to the Macintosh IIcx; it also is valid for the Macintosh IIX and the Macintosh SE/30.

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Tech Info Library Article Number:4085



# Tech Info Library

## Apple IIGS: Memory Requirements for AppleShare Networking

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Memory Requirements for AppleShare Networking

=====

This article last reviewed: 9 June 1989

The Apple IIGS requires 768K of memory to load all of the resources needed for network operation and all of the operating system and to still have room for applications. However, some users have reported running successfully with just 512K of RAM.

If you're running with 512K of RAM, and no problems have surfaced, you have been extremely lucky in the use of your networked Apple IIGS systems. The 512K configuration is not a supported environment for networked Apple IIGS systems. Should difficulties occur in the future, immediately increase RAM to 768K.

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Tech Info Library Article Number:4086



# Tech Info Library

## 3278 Terminal Emulation Over TCP/IP (9/95)

Revised: 9/28/95  
Security: Everyone

3278 Terminal Emulation Over TCP/IP (9/95)

=====

Article Created: 14 June 1989  
Article Reviewed/Updated: 28 September 1995

TOPIC -----

A Government contractor needs a 3278 terminal emulator. The emulator must work over a TCP/IP hardware connection, in the same way that asynchronous terminals are emulated by NCSA Telnet.

DISCUSSION -----

There are three third-party vendors that we know of which provide what you are looking for. Here is what we know about them.

Attachmate's EXTRA! for Macintosh 2.0 is a TN3270 emulator that lets Macintosh users connect to mainframes over NetWare for SAA as well as over TCP/IP, FTP file transfer to IBM hosts. Also a new 3278 host-printer emulation lets you preview, format, and print terminal documents to AppleTalk printers.

5 PM TermOffice 3.0 from About Software provide a wide range of terminal emulations, including those for IBM mainframes; AS/400 midrange computers, and VAX, UNIX, Unisys, and Honeywell/Bull hosts.

The following information was taken from an AppleLink article in the "News" section of the "Third-Party Press Releases" folder. The article is called "Update to TCP/Connect: IBM TN3270 Terminal Emulation".

InterCon's TCP/Connect gives users access to the power of the Department of Defense networking standard TCP/IP. TCP/IP was developed so that computers of different types could communicate over a mixed-media network. TCP/IP offers a standard way to transfer files, emulate terminals, and other functions between dissimilar computers and operating systems.

Apple has announced support for TCP/IP with the introduction of MacTCP (a set of TCP/IP drivers for the Macintosh). InterCon supports MacTCP. IBM 3278 emulation is included in the TCP/Connect-Extended and in the TCP/Connect-3270 software

packages. TCP/Connect features include Telnet, FTP, and varied hardware support:

#### Telnet

-----

Telnet is an implementation of the standard, virtual-terminal protocol through which you log onto any Telnet-supporting host. Features included in TCP/Connect are:

- Tektronix(TM) 4014 emulation
- IBM 3278 emulation through TN3270 Protocol
- DEC VT102 emulation
- DEC VT240/241 graphics terminal emulation
- Copy of graphics from any of the graphics terminals
- Copy/Paste of text between sessions and other applications
- Up to 20 simultaneous sessions
- Scroll-back within the terminal window
- User-defined macro keys

#### FTP

---

FTP, the File Transfer Protocol, lets you transfer files to and from remote hosts using a Macintosh. The remote host must have an FTP server in operation. ASCII, binary, and MacBinary transfers are supported.

#### Supported Hardware

-----

Hardware supported by TCP/Connect include:

- Macintosh Plus, SE, SE/30, II, IIX, and IICx
- Kinetics EtherSC(TM), EtherSE(TM), and EtherPort II
- Dove FastNet II(TM), FastNet III(TM), Marathon LAN 020
- 3Com EtherLink II(TM), EtherLink/SE
- Everex
- Apple EtherTalk any EtherTalk compatible device

Including any LocalTalk to Ethernet gateways, like the GatorBox by Cayman Systems, and Kinetics FastPath devices.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

#### Article Change History:

28 Sep 1995 - Added Attachmate and About Software products.

#### Support Information Services

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Tech Info Library Article Number:4087



# Tech Info Library

## AppleShare Print Server: Out-of-Paper Message

Revised: 8/21/89  
Security: Everyone

AppleShare Print Server: Out-of-Paper Message

=====

This article last reviewed: 14 June 1989

TOPIC -----

This is regarding the AppleShare Print Server. On page 53 of the Print Server's Admin Guide, it states that "If a printer is out of paper, or if the paper is jammed, a message appears not only in the status line of the print queue window but also on the screen of every workstation that's spooling a document to the print server."

We could not get a message or a beep from any of our workstations. The server was the only device that indicated that the printer was out of paper. Is the manual wrong? Could you clarify the situation for us?

DISCUSSION -----

The "AppleShare Print Server User's Guide" states that error messages appear on the screens of all workstations that are spooling documents. Once the spooling process is complete, no messages are sent to the user. The print server starts making the connection to the printer as soon as it starts receiving data packets.

In many cases (especially those involving short documents, busy networks, or large networks), it is possible for the entire document to be spooled before the connection to the printer is established. This eliminates the reporting of any printer errors to the user. Once the server is aware of a problem with a spooled printer, all users who try to spool are notified of the problem when they try to print.

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Tech Info Library Article Number:4088



# Tech Info Library

## Macintosh SE/30: Recommended Way To Connect Kodak DataShow

Revised: 9/28/92  
Security: Everyone

Macintosh SE/30: Recommended Way To Connect Kodak DataShow

=====

Article Created: 15 June 1989

### Article Change History

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09/28/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Connecting the Kodak DataShow to the Macintosh SE/30 created quite a controversy as to which chip and pin on the logic board contains the signal for the pixel clock.

### DISCUSSION -----

Initially, an article stated that pin 1 of UG6 was the correct location to find the pixel clock (according to the engineer who designed the logic board). Soon thereafter, Kodak recommended pin 1 of UG7.

A copy of the Macintosh SE/30 logic board schematics showed that both pin 1 of UG6 and pin 1 of UG7 are tied together and generate the same signal. In fact, several chips on the logic board, beside UG6 and UG7, generate the pixel clock signal. Engineers confirmed this with a continuity meter and verified a connection between pin 1 of UG6 and pin 1 of UG7. An oscilloscope also verified that the signals were identical.

Tech Comm engineers obtained a Kodak DataShow unit and successfully installed it on pin 1 of UG6 and pin 1 of UG7. Perhaps other factors caused the unsuccessful installations of the DataShow unit on UG6 and UG7. For example, perhaps pin 1 and pin 2 were shorted together. It is also possible that a good connection was not made between pin 1 and the DataShow interface.

Recommendation: Use pin 1 of UG7. This is for two reasons:

- 1) Pin 1 of UG7 is what Kodak recommends.
- 2) It is easier to install the DataShow connector on pin 1 of UG7.

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Tech Info Library Article Number:4089





# Tech Info Library

## Macintosh: Where To Get Keystroke Recording Applications

Revised: 8/21/89  
Security: Everyone

Macintosh: Where To Get Keystroke Recording Applications

=====

This article last reviewed: 15 June 1989

TOPIC -----

A NuBus developing VAR needs software that does keystroke recording and playback) for the debugging/QA process.

DISCUSSION -----

MacroMaker (from Apple), QuicKeys, and Tempo II provide varying levels of keystroke recording; Tempo II also records mouse movements. Tempo II is probably the best solution for your customer, based on the information provided. For more information on Tempo II and QuicKeys, search the Tech Info Library under "CE Software" and "Affinity."

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Tech Info Library Article Number:4091



# Tech Info Library

## Tech Tours: How To Unlock Tech Tour Stack

Revised: 6/17/92  
Security: Everyone

Tech Tours: How To Unlock Tech Tour Stack

=====

Article Created: 15 June 1989  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

A user wanted to translate the Tech Tours for the Macintosh IICx into Spanish, but found that the HyperCard stacks are locked. This article describes how to unlock such stacks.

DISCUSSION -----

The Tech Tour stacks are locked to prevent accidental changing of the information contained in the stacks. We are not trying to prevent the information in the stacks from being used. To unlock the stack, hold down the Command key while pulling down the "File" menu. Select the "Protect Stack..." menu option. Click on the check box next to the phrase "Can't Modify Stack" and then set the user level to "Scripting". This makes it possible to edit the stack as normal.

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Tech Info Library Article Number:4092



# Tech Info Library

## A/UX: AppleTalk Interface Script Error (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: AppleTalk Interface Script Error (8/94)

Article Created: 15 June 1989  
Article Reviewed/Updated: 24 August 1994

### TOPIC -----

This article covers a small shell script documentation error--an inconsistent variable reference ("username" versus "title") found in the AppleTalk printer interface script.

### DISCUSSION -----

This is in the file you get when you define a printer with ADD\_AT (AppleTalk printer connection). This is valid with A/UX 1.1.

In the interface directory, check the printer interface file you get. Check the comment line that looks like this:

```
# lpsched invokes the following command line; I marked the lines that
# are incorrect with an ending of <<!!!!:
#
#   argv[0] is the interface program:  interface/PRINTERNAME
#   argv[1] is the request id:          PRINTERNAME-#id
#   argv[2] is the requesters id:      USERNAME                <<!!!!
#   argv[3] is the number of copies:   #COPYS
#   argv[4] is the list of options:    -OPTIONS
#   argv[5] is the list of files:      /usr/spool/lp/request/PRINTERNAME..
#
# Now parse it.
#
seqid=$1
name=$2
title="$3"          <<!!!!
copies=$4
options="$5"
shift;shift;shift;shift;shift
```

The comment speaks about the username when the parameter is used for the title.

Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:4094



# Tech Info Library

## A/UX: Bourne Shell Resource Loophole

Revised: 9/18/92  
Security: Everyone

A/UX: Bourne Shell Resource Loophole

=====

Article Created: 15 June 1989

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

The Bourne Shell has had a well-known and famous resource loophole since version 7. This article describes it.

### DISCUSSION -----

The following line of code starts a big loop that exhausts memory after a while.

```
$<<`ls`
```

This yields messages like "Swap space running out, Needed xx pages", and you have to "kill" the program. The "kill" generates a core file that is LARGE. In most cases, the core file can't be dumped on the file system, due to lack of space.

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Tech Info Library Article Number:4095



# Tech Info Library

## Macintosh-to-AT&T 3B2 Cable Pinout (9/94)

Revised: 9/14/94  
Security: Everyone

Macintosh-to-AT&T 3B2 Cable Pinout (9/94)

Article Created: 15 June 1989  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

A company needs a cable to connect a Macintosh SE, Macintosh II, Macintosh IIX, or Macintosh IICx to its AT&T 3B2. They want to go directly from the Macintosh (mini DIN-8) to an RJ45 female on the 3B2. This is not a dial-in situation. The 3B2 will be in close proximity to the Macintoshes.

DISCUSSION -----

Currently, AT&T terminals direct-connect asynchronously through twisted-pair cabling with RJ45 plugs on each end. On the terminal side, the RJ45 plugs into a hardware flow control plug that snaps onto the back of the terminal. On the 3B2 side, the RJ45 plugs directly into one of the ports on the back of the 3B2. AT&T indicates that the pin configurations on the 3B2 are:

| Pin # | Transmission Type |
|-------|-------------------|
| 1     | SG lead           |
| 2     | CTS (?) lead      |
| 3     | TxD lead          |
| 4     | DTR lead          |
| 5     | RXD lead          |
| 6     | DCD lead          |
| 7     | PG lead           |
| 8     | RTS (?) lead      |

The Macintosh Mini DIN-8 port pins have the following correspondent functions required to use them for RS-232:

Mini DIN-8

| Pin# | Function               | RS-232 | Pin# |
|------|------------------------|--------|------|
| 1    | HSKo (Handshake input) | DTR    | 20   |

|   |                                                |     |   |
|---|------------------------------------------------|-----|---|
| 2 | HSKi (Handshake output)                        | DCD | 8 |
| 3 | TxD- (Transmit data, negative going component) | TXD | 3 |
| 4 | GND (Chassis/Signal ground)                    | GND | 7 |
| 5 | RxD- (Receive data, negative going component)  | RXD | 2 |
| 6 | TxD+ (Transmit data, positive going component) | GND | 7 |
| 7 | GPI (General-Purpose input)                    | NC  |   |
| 8 | RxD+ (Receive data, positive going component)  | GND | 7 |

According to AT&T 3B2 pin configurations with RJ45 plugs described above, you can make a cable with the following pinouts and signals for the direct connection between an AT&T 3B2 and a Macintosh SE, Macintosh II, Macintosh IIX, or Macintosh IICx:

|                 | Macintosh  |         | AT&T 3B2      |                 |
|-----------------|------------|---------|---------------|-----------------|
|                 | Mini DIN-8 |         | RJ45          |                 |
| Signal (in/out) | Pin#       |         | Pin#          | Signal (in/out) |
| -----           | -----      |         | -----         | -----           |
| HSKo (out)      | 1          | <-----> | 4             | DTR lead (in)   |
| HSKi (in)       | 2          | <-----> | 2             | CTS lead (out)  |
| TxD- (in)       | 3          | <-----> | 3             | TxD lead (out)  |
| GND             | *4         | <-----> | 1             | SG lead         |
| RxD- (out)      | 5          | <-----> | 5             | RXD lead (in)   |
| TxD+            | *6         | <-----> |               |                 |
| GPI             | 7          | <-----> | No Connection |                 |
| RxD+            | *8         | <-----> |               |                 |

\*There are many variations for connecting pins 4, 6, and 8, but the basic intent is to bring all three of these pins to ground on the Macintosh side. Connect Signal Ground to Chassis Ground if you want a slightly better noise margin.

If the above configuration doesn't work, try the following cable connection:

|            |   |   |               |
|------------|---|---|---------------|
| HSKo (out) | 1 | 8 | RTS lead (in) |
|------------|---|---|---------------|

Currently, Tech Comm does not know of an Apple cable product that has been made for this particular configuration (Circular Mini DIN-8 <-> RJ45 plug).

However, if the standard RS-232 DB-25 connectors are directly used in AT&T 3B2, the Apple cable finished product number A2C0311, same as Part Number 590-0331 (beige color), or A2C0312, same as Part Number 590-0555 (smoke color), a circular Mini DIN-8-to-DB-25 cable, can be used for the connection between the 3B2 and the Macintosh.

Because the AT&T 3B2 is a UNIX-based system, any Macintosh under Macintosh OS can be connected via:

- 1) A direct serial line or a modem, and use MacTerminal as a VT100 terminal emulator to access the AT&T 3B2.
- 2) An Ethernet with EtherTalk card (for Macintosh II, Macintosh IIX, or Macintosh IICx) or EtherPort SE card (for Macintosh SE), and use NCSA Telnet or MacTCP software to connect to the 3B2 machine. Of course, the

3B2 must have Ethernet TCP/IP capability.

A Macintosh II, Macintosh IIX, or Macintosh IICx, running A/UX, also can be connected to a 3B2 machine via:

- 1) A direct serial line or a modem by using any UNIX communication software program, such as "cu", "tip", "uucp", or "kermit", to connect to the remote 3B2 machine.
- 2) An Ethernet with EtherTalk card (for Macintosh II, Macintosh IIX, or Macintosh IICx) by using Internet protocols software, like "telnet", "rlogin", or "ftp". Of course, the 3B2 machine needs to have Ethernet TCP/IP capability.

Article Change History:

13 Sep 1994 - Reviewed. Changed title.

Support Information Services

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Tech Info Library Article Number:4097





# Tech Info Library

## HD80 SC and HD160 SC Drives: Noise Levels

Revised: 9/29/90  
Security: Everyone

HD80 SC and HD160 SC Drives: Noise Levels

=====

This article last reviewed: 22 June 1989

TOPIC -----

This article gives the noise levels for the HD80 SC and HD160 SC drives.

DISCUSSION -----

The noise specifications for all of Apple 3.5-inch hard drives are the same. Measurements are taken 1 foot from the drive. At idle, the noise level is to be no greater than 45 dba. At seek, the noise level is to be no greater than 50 dba.

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Tech Info Library Article Number:4098



# Tech Info Library

## Status of Switcher

Revised: 8/21/89  
Security: Everyone

Status of Switcher

=====

This article last reviewed: 22 June 1989

TOPIC -----

This article discusses the status of Switcher as of June 1989.

DISCUSSION -----

- 1) Switcher was not a public domain product and has been discontinued.
- 2) It still is supported by Apple: Finder 5.3, System 3.2.
- 3) For most users, Switcher has been replaced by MultiFinder. However, it is still a viable option for Macintosh XL, Macintosh 512K, Macintosh 512Ke, and 1MB Macintosh Plus systems.

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Tech Info Library Article Number:4099



# Tech Info Library

## Altos Files: How to Transfer them to/from a Macintosh

Revised: 8/21/89  
Security: Everyone

Altos Files: How to Transfer them to/from a Macintosh

=====

This article last reviewed: 22 June 1989

TOPIC -----

A customer wants to transfer (word processing) files from an Altos, running Altos Office Management System, to a Macintosh for page composition.

DISCUSSION -----

The Altos Office Management System runs under the Xenix operating system, Microsoft's variation on UNIX. Xenix and UNIX store all data and applications in the same type of file. This file type may contain any ASCII value from 0 to 255. If the word processor can save a plain ASCII text file, Macintosh can accept the file with little work. However, if the word processor only creates files that also contain Control, Escape, or extended characters, these additional characters need to be removed before Macintosh can make use of the data in the file.

If the file does contain Control, Escape, or extended characters, a filter or translation program is needed to extract the plain text characters stored in the file. This can be accomplished on the Altos side or the Macintosh side. On the Xenix side, "sed" (the stream editor) can be used to change or eliminate unwanted characters. Also, on Xenix, the "strings" command can be used to extract only printable ASCII characters from a file. On the Macintosh side, utilities, like Vantage (McSink), can strip unwanted control characters from the file.

Moving either of these files to the Macintosh is relatively simple. Using a serial connection (direct serial port-to-serial port or two modems), the file can be moved with a standard file transfer protocol, like Kermit. You can also have Xenix "stream" or "print" the file to a serial port. If the Macintosh is set up to capture the data coming from the Altos serial port, the captured data can then be copied and pasted from the capture buffer. A capture buffer is provided in MacTerminal by selecting the Record Lines Off Top under the Commands menu.

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Tech Info Library Article Number:4100



# Tech Info Library

## AppleShare PC 1.2 and Third-Party LocalTalk PC Cards

Revised: 8/28/90  
Security: Everyone

AppleShare PC 1.2 and Third-Party LocalTalk PC Cards

=====

This article last reviewed: 22 June 1989

TOPIC -----

This article discusses AppleShare PC 1.2 and its compatibility with third-party LocalTalk PC Cards.

DISCUSSION -----

AppleShare PC 1.2 has the potential for use with third-party LocalTalk PC Cards. However, the third-party manufacturers need to write new AppleTalk Link Access Protocol (ALAP) layers for their cards to integrate into the AppleShare PC environment.

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Tech Info Library Article Number:4101



# Tech Info Library

## Macintosh: B-Tree Indexing Software

Revised: 8/21/89  
Security: Everyone

Macintosh: B-Tree Indexing Software

=====

This article last reviewed: 22 June 1989

TOPIC -----

Does Apple have anything comparable to B-trieve from Softcraft (sold by Novell)? Apparently, it gives C programmers access to retrieval functions for Novell file services?

DISCUSSION -----

B-trieve is a B-tree indexing system for MS-DOS. Softcraft-Novell are planning to develop B-trieve for the Macintosh. When a Macintosh version is completed, both Macintosh and MS-DOS applications using B-trieve will be able to access the same files.

There are B-tree indexing products available for Macintosh. These are not specific to a Novell environment and will not work with Softcraft's B-trieve product.

- db\_VISTA v. 3.0 is a database development environment using B-tree indexing in the C language from Raima Corp.
- C-Data Manager has B-Tree indexing with multiple keys from Database Technologies
- C-Tree File Handler provides low-level B+Tree utilities from Faircom
- Turbo Pascal Database Toolbox uses B-tree indexing methods from Borland International

For more details, search the Tech Info Library under "Raima", "Database Technologies", "Faircom", and "Borland".

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Tech Info Library Article Number:4102



# Tech Info Library

## AppleShare: Apple II Practical Node Limits

Revised: 3/27/90  
Security: Everyone

AppleShare: Apple II Practical Node Limits

=====

This article last reviewed: 28 February 1990

TOPIC -----

How many Apple IIs can be started up from an Macintosh SE/30 AppleShare File Server? Theoretically, 50 nodes can be logged on to an AppleShare file server at a time, but what is the practical limit? I've never seen an Apple II network larger than about 30 nodes, so I can't really estimate the degradation in performance. Do you know of any sites running 40 or more Apple IIe or Apple IIGS systems off of one file server?

DISCUSSION -----

With 1MB RAM, a Macintosh SE/30 allows 25 Apple II workstations to start up from the server at the same time. With 2MB RAM, the limit is increased to 50 Apple II workstations.

The practical limit for booting depends on the user's situation. For example, 20 Apple IIGS systems starting up at same time from the same server takes approximately 10 minutes, whereas 20 Apple IIe systems take about 4 minutes. The reason is that the Apple IIGS has more than 120K to load across the network, compared to about 20K for the Apple IIe.

The practical limit for workstations logged on to one server depends on the amount of activity taking place on the network. With low traffic, 50 users logged on at one time may be acceptable. As traffic becomes heavier, it is probable that the practical maximum number of active users will decrease.

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Tech Info Library Article Number:4103



# Tech Info Library

## Macintosh-to-Texas Instruments System 1300 Connectivity

Revised: 8/21/89  
Security: Everyone

Macintosh-to-Texas Instruments System 1300 Connectivity

=====

This article last reviewed: 22 June 1989

TOPIC -----

A customer would like to use his Macintosh as a replacement for his Texas Instrument terminal, which is connected to a TI System 1300.

DISCUSSION -----

Texas Instruments System 1300 runs the Xenix operating system. A terminal emulation package that supports VT100 will work well in this environment. MacTerminal is one telecommunication package that provides VT100 emulation on the Macintosh.

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Tech Info Library Article Number:4104





# Tech Info Library

## AppleColor Monitor: Chrominance and Luminance Specifications

Revised: 8/21/89  
Security: Everyone

AppleColor Monitor: Chrominance and Luminance Specifications

=====

This article last reviewed: 22 June 1989

TOPIC -----

A customer has requested the following specifications for the AppleColor Monitor:

CIE Chromaticity Coordinates

Phosphor Types

White Point Specifications:

Typical or normal luminance level in footlamberts

Color temperature

Contrast ratio

Center-to-corner uniformity as a percentage of center level

DISCUSSION -----

Due to contractual agreements, the only specification available for release is the typical luminance level.

The AppleColor High-Resolution RGB Monitor (M0401) has a luminance level of 20 footlamberts with the brightness control in the center detent position. With the brightness control in the full-open position, the luminance level is 25 footlamberts.

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Tech Info Library Article Number:4106



# Tech Info Library

## Apple HD Backup 1.1: 800K InvisHDMMainBo3b Invisible File

Revised: 8/21/89  
Security: Everyone

Apple HD Backup 1.1: 800K "InvisHDMMainBo3b" Invisible File

=====

This article last reviewed: 22 June 1989

TOPIC -----

Why does HD Backup version 1.1 create an 800K invisible file called "InvisHDMMainBo3b". Do you have any idea why it should be so large?

DISCUSSION -----

The "InvisHDMMainBo3b" invisible file contains only 4 bytes of data and should be no larger than 2K. The file stores the date of the last backup.

Neither Tech Comm nor the programmer of HD Backup knows why the file would grow to 800K. If anyone in the field has experienced this problem and knows the cause, please AppleLink TECH.COMM.

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Tech Info Library Article Number:4107



# Tech Info Library

## Macintosh SE/30: Third-Party Color Card Availability

Revised: 2/10/93  
Security: Everyone

Macintosh SE/30: Third-Party Color Card Availability

=====

Article Created: 22 June 1989

### Article Change History

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09/28/92 - REVISED

- To include information on Micron Technologies.

02/09/93 - UPDATED

- Micron Technologies acquired by Xceed Technologies.

### TOPIC -----

I'm looking for a color card for the processor-direct slot in the Macintosh SE/30 that supports the AppleColor High-Resolution 13-inch RGB Monitor. Do you know of any?

### DISCUSSION -----

SuperMac Technologies, and RasterOps make cards for the processor-direct slot in the Macintosh SE/30 that supports the AppleColor High-Resolution 13-inch RGB Monitor.

The SuperMac Spectrum Series II for the Macintosh SE/30 supports standard display resolutions of 640 x 480, 640 x 870, and 1024 x 768. The board supports 256 colors or grayscales at these resolutions. Monitors supported include the Apple High-Resolution 12-inch Monochrome Monitor, the AppleColor High-Resolution 13-inch RGB Monitor, the Apple Macintosh Portrait Display, and various SuperMac monitors.

The RasterOps Colorboard 108 SE/30 for the Macintosh SE/30 supports standard display resolutions of 640 x 480, 800 x 600, and 1024 x 768. The board supports 256 colors or grayscales at these resolutions. Monitors supported include the Apple High-Resolution 12-inch Monochrome Monitor, the AppleColor High-Resolution 13-inch RGB Monitor, and various RasterOps monitors.

In addition, Micron Technologies (acquired by Xceed Technolgoies) also makes both 8-bit and 24-bit color video cards for the SE/30.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4108



# Tech Info Library

## Macintosh IIcx: MacIrma 1.2 Compatibility

Revised: 7/14/92  
Security: Everyone

Macintosh IIcx: MacIrma 1.2 Compatibility

=====

Article Created: 21 June 1989  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

This article discusses Macintosh IIcx and MacIrma version 1.20 compatibility.

DISCUSSION -----

According to DCA (Digital Communications Associates, Inc.) support, version 1.20 or higher of the MacIrma software is required for compatibility with the Macintosh IIcx. There appears to be no problem with the actual fit of the board, itself. Apple has installed one in a Macintosh IIcx, and there were no problems. Contact DCA concerning upgrade policy and costs (if any).

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4109



# Tech Info Library

## Macintosh: Menu Bar Emulation for Multiple Monitor System

Revised: 8/21/89  
Security: Everyone

Macintosh: Menu Bar Emulation for Multiple Monitor System

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This article last reviewed: 20 July 1989

TOPIC -----

Can you create a Macintosh application that puts the menu bar on all of the monitors of a multiple monitor workstation, or does that break an "Inside Macintosh" rule? If you can, what is the maximum number of monitors?

DISCUSSION -----

The Macintosh Toolbox does not provide a method for placing actual menu bars on multiple monitors. Only one monitor can have the menu bar.

It is possible to write an application that creates pop-up menus at the top of each monitor that emulate the menu bar while that application is running. Information on pop-up menus is on pages 241 and 242 of "Inside Macintosh Volume V" and "Tech Note #156."

An easy solution would be a third-party product, like POWERmenus from Magic Software. With it, you can display a hierarchical pop-up menu containing the same items as the real menu bar anywhere on any screen. This utility works with all applications.

There is another INIT utility called "Tear-Off Menus" (TOM) from AIP (Advanced Interface Programming). With TOM, a user can tear off either "pull-down" menus or the titles of the menus, which then can be activated in the same manner as standard menus. Menus also can be dragged across multiple monitors. You can also set TOM to automatically disable with applications that "misbehave". Some of these applications are specified (hard-coded). You can expand the list to include other applications that don't work correctly.

The product incorporates a serialization scheme for counting users on the network. So, if, for example, you want to have five people running TOM on one network, you need to buy a "large" enough license to support that number.

For more details, search the Tech Info Library under "Magic Software" and  
"Advanced Interface Programming."

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Tech Info Library Article Number:4110



# Tech Info Library

## Macintosh IIcx: New MacIrma Software

Revised: 8/21/89  
Security: Everyone

Macintosh IIcx: New MacIrma Software

=====

This article last reviewed: 22 June 1989

TOPIC -----

Version 1.20 of MacIrma available

DISCUSSION -----

Version 1.20 of MacIrma works with the Macintosh IIcx; previous versions did not work. Version 1.20 is available now. For upgrade information, contact Digital Communications Associates, Inc.

Search the Tech Info Library under "Digital Communications Associates".

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Tech Info Library Article Number:4111





# Tech Info Library

## LaserWriter Family: How the Out of Paper Notification Works

Revised: 8/21/89  
Security: Everyone

LaserWriter Family: How the Out of Paper Notification Works

=====

This article last reviewed: 22 June 1989

TOPIC -----

A customer has asked why the Macintosh no longer beeps when the selected LaserWriter is out of paper as it did with previous versions of printer drivers and PrintMonitor.

DISCUSSION -----

The LaserWriter family of printers, in conjunction with Apple's printer drivers, still reports to the user when the LaserWriter is out of paper, if it is printing more than a single page.

The LaserWriter will image one page with a paper-out condition and not report the error to the user. For example, the LaserWriter is out of paper and no image is in the LaserWriters memory. A one-page print job is sent to the LaserWriter. The page is imaged, and no error is sent to the machine that sent the print job.

If a page has been imaged and another page or more than one page is sent to a LaserWriter with no paper, the machine that sent the print job will be notified that a paper-out condition has occurred.

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Tech Info Library Article Number:4112



# Tech Info Library

## Apple Two-Page Monochrome Monitor: Supports 4 Gray Levels

Revised: 10/22/90  
Security: Everyone

Apple Two-Page Monochrome Monitor: Supports 4 Gray Levels

=====

This article last reviewed: 22 June 1989

TOPIC -----

How many gray levels does the Apple Two-Page Monochrome Monitor Video Card support?

DISCUSSION -----

The Apple Two-Page Monochrome Monitor Video Card (M0260) supports four levels of gray in its standard configuration. The video card accepts additional video memory, which lets it support 16 levels of gray. The Video Memory Expansion Kit (M0213) is the same as for the standard Macintosh II Video Card.

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Tech Info Library Article Number:4113



# Tech Info Library

## CD-ROM: Some Tips on How to Create One

Revised: 7/27/93  
Security: Everyone

CD-ROM: Some Tips on How to Create One

Article Created: 21 June 1989  
Article Reviewed/Updated: 12 July 1993

TOPIC -----

This article discusses the process for preparing data for a CD-ROM pressing. It assumes that you're looking at a moderate number of CDs (100 to 1000).

For more detailed information refer to the "Apple CD-ROM Handbook" published by Addison-Wesley, ISBN 0-201-63230-6. The handbook is a guide to planning, creating, and producing a CD-ROM.

DISCUSSION -----

It makes sense to press a CD-ROM if you have 10 megabytes or more of data and need 100 or more copies of it. CD-ROMs behave just like a locked, fast, very big floppy. If you can run your program or Hypercard stack on a locked floppy, it will run on a CD-ROM.

To press a CD-ROM, you have two options: the easy way and the way with many sophisticated options. The easy way gives you a Macintosh CD that's a copy of a hard disk. The second way gives you the Macintosh CD plus the ability to create CD-quality sound tracks. You can also create a CD in High Sierra format. High Sierra discs can be used across many operating systems.

The easy way is to put all of your data onto an ordinary Apple hard disk and send it to one of the companies listed below. They will create an image copy (an exact duplicate) of your hard disk and put that image onto CDs.

The basic costs for such a CD include a mastering charge (for creating the initial image) plus a duplication charge for each CD. The mastering charge varies (depending on how quickly you want it done), but usually starts under \$1000. The duplication charge is around \$1 to \$2.00 per CD. The average turn-around time is 5 to 10 days.

If you want faster turn-around time, you must pay additional money. Typical mastering charges for one-day turnaround start above \$2500. If you want large numbers of CDs, you'll pay less money.

Some disc-pressing companies: (See the "Apple CD-ROM Handbook" for a more complete listing of companies.)

- 3M Optical Recording
- Digital Audio Disc Corporation (DADC)
- Discovery Systems
- Philips Dupont Optical

The sophisticated way of pressing a CD-ROM demands a pre-mastering system to create a tape. The pressing plant uses this tape, rather than a disk, to create the master. Tape provides greater flexibility, because you control what goes on the tape. You need much more technical knowledge. You also need access to a pre-mastering facility. A typical fee for pre-mastering is \$250 to \$500, depending on the number of files on the disc.

There are companies that rent time on their pre-mastering system and help you with the details (for a fee). One of these is Optical Media International. Other companies will probably appear as the market matures.

If you want to press a CD that can be used on different operating systems, use the High Sierra volume format (also known by the name of its international standard, ISO 9660). If you press a CD in this format, you can read it on a Macintosh, Apple IIGS, MS-DOS machine, and so on.

If you choose the High Sierra option, plan your data carefully, so that it can be read by many machines. For example, Microsoft Excel can share files with MS-DOS's Lotus 1-2-3. Hypercard uses a proprietary format that can only be used on the Macintosh, so it's not a good choice for a High Sierra CD.

For a good overview of CD-ROM technology, read the "AppleCD SC Developer's Guide," available from APDA. To find out what's available in CD titles, see the latest issues of the following magazines: CD-ROM Review, New Media, MacWEEK, MacUser, and MACWORLD.

To locate a vendor's address and phone numbers, use vendor name as a search string.

## Article Change History

12 July 1993 - Revised to include reference information and updated prices.

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Tech Info Library Article Number:4114



# Tech Info Library

## AppleTalk: Problem with FastPath and Network Number Setting

Revised: 8/21/89  
Security: Everyone

AppleTalk: Problem with FastPath and Network Number Setting

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This article last reviewed: 22 June 1989

TOPIC -----

Here's a question concerning bridges and "Net" numbers. We have a 40-node AppleTalk network with six printers, an IBM 3270 gateway (Netway 1000), and a Kinetics FastPath 4.

When the FastPath is up, everyone's "Net" number (according to Inter-Poll) is 92 (in the AppleTalk zone). The Zone name is "applek". When the Kinetics is brought down, the devices that were on "Net = 92" are still set to 92. The Zone name goes away. If we turn on something new, it gets a Net of 0 and no Zone name, as one would expect. So, with the FastPath down, we have no Zone name, but everyone who has started up since the FastPath went down has a Net number of 0, and everyone who was running when the FastPath went down has a Net number of 92. When someone with a Net number 0 tries to print to a LaserWriter with a Net number of 92, a message is received that states that it can't find the LaserWriter.

So far, the only solution we have found is to restart all of the machines that have a Net number greater than 0. This is not acceptable. For the gateway, this involves bringing down the line, recycling the box, reloading it, and bringing up the mainframe line.

Because the Kinetics can send a broadcast to say that there is a bridge and that everyone should join Net number "x" when the bridge goes down, how can we reset the Net number to 0 without shutting all of the machines off? Is there a utility that would accomplish the task?

DISCUSSION -----

Apple Tech Comm knows of no way around this problem. Without a router, like the FastPath, operating on the network, there is no provision for getting (or setting) a network number on a machine. We are not aware of a utility that addresses this issue, and writing one would not be a trivial task.

If this is a recurring problem, the first issue that should be addressed is the FastPath going down so regularly. This should not be happening. When it does, bringing the FastPath up again would resolve the issue.

To address the window of time when the FastPath is down, you might consider setting the network number in the FastPath's configuration to zero. Although this will work for only one local network on an Internet, it would resolve the issue until the FastPath could be made to operate reliably.

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Tech Info Library Article Number:4116



# Tech Info Library

## Ethernet Card: ROM Upgrade Is for Heavy Traffic Networks

Revised: 10/4/89  
Security: Everyone

Ethernet Card: ROM Upgrade Is for Heavy Traffic Networks

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This article last reviewed: 22 June 1989

TOPIC -----

There is a ROM upgrade available for the older Ethernet cards. Who should upgrade to the new ROMs?

DISCUSSION -----

Those who should upgrade are those who are connected to heavy traffic networks. Given that it is difficult to exactly define how much traffic is heavy traffic, Apple Tech Comm suggests a conservative approach when deciding if a network has heavy use. If a network is having no problems, there is little reason to upgrade.

To upgrade, customers should contact their service providers. They should have a service notice in their Service Programs Binder detailing which cards need upgrading and how to do the upgrade.

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Tech Info Library Article Number:4117



# Tech Info Library

## HyperCard: How to Debug Too Much Recursion Error Message

Revised: 6/24/90  
Security: Everyone

HyperCard: How to Debug "Too Much Recursion" Error Message

=====

This article last reviewed: 22 June 1989

TOPIC -----

A user is having a "too much recursion" problem in a HyperCard stack that he is developing. The error occurs during a callback into HyperCard from an XCMD, which he wrote. He has checked his code for problems. Is there a way to determine what triggers the "too much recursion" message (like a traceback)?

DISCUSSION -----

We are not aware of any trace-back facilities available for HyperCard. HyperCard, itself, does not have the type of tracing needed here. Further, we could not locate any third-party add-ons available to resolve this problem.

To debug a problem of this sort, put information from the scripts and XCMDs you are using into debugging fields. This information usually includes a line per handler or XCMD call that includes the parameters being passed. When the recursion problem occurs, you then can inspect the trace that you have effectively created.

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Tech Info Library Article Number:4118





# Tech Info Library

## MacWorkStation 3.0: Exec Questions & Answers (11/95)

Revised: 11/29/95  
Security: Everyone

MacWorkStation 3.0: Exec Questions & Answers (11/95)

Article Created: 21 August 1989  
Article Reviewed/Updated: 29 November 1995

TOPIC -----

This article answers the following questions about MacWorkStation 3.0:

- 1) Can I use SADE to debug my MacWorkStation exec modules?
- 2) Can I override MWS for mouse down events that are external to my\_exec window contents?
- 3) For the grow window instruction, can I define size\_rec?
- 4) Are exec construction rules the same as DAs in that the global data segment must = 0? If so, can I defeat some select global QuickDraw variables, such as ldgray and others?
- 5) I have written an exec that does not have a window. When a user generates a menu event, I trapped dosend, looked up record tp\_exec\_ref, and found that the xEvent field is 0 and has not recorded the modifier key.

DISCUSSION -----

It is important to equate MacWorkStation exec modules with FKEYs, HyperCard XCMDs, or INITs, not desk accessories. This understanding leads directly to some of the answers below.

- 1) Question: Can I use SADE to debug my MacWorkStation exec modules?

Answer: Currently, SADE cannot be used for debugging code segments, like MacWorkStation exec modules, FKEYs, or XCMDs.

- 2) Question: Can I override MWS for mouse down events that are external to

my\_exec window contents?

Answer: The Mouse command is only passed when a mouse down event occurs in the exec's window. You may be able to trap some of the mouse down events, only if you don't want to handle the event yourself, by trapping all sends and passing them through. However, this works only for those events that MacWorkStation determines it needs to generate a message to the host. A different option would be to implement an event loop in an exec module that trapped all of the events and then somehow caused MacWorkStation to deal only with specific events. This would definitely not be a trivial task.

3) Question: For the grow window instruction, can I define size\_rec?

Answer: This problem is similar to the one above in that MacWorkStation 3.0 does not provide access to this mechanism. This makes the process of intercepting and modifying this information difficult and likely to break in future releases of the product.

4) Question: Are exec construction rules the same as DAs in that the global data segment must = 0? If so, can I defeat some select global QuickDraw variables, such as ldgray and others?

Answer: Exec modules are restricted to a size of 32K, and they cannot access global data.

5) Question: I have written an exec that does not have a window. When a user generates a menu event, I trapped dosend, looked up record tp\_exec\_ref, and found that the xEvent field is 0 and has not recorded the modifier key.

Answer: xEvent is filled out only for the Active, Key, and Mouse commands passed to the Exec module.

Article Change History:

29 Nov 1995 - Updated format.

Support Information Services

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Tech Info Library Article Number:4119



# Tech Info Library

## Xerox XNS-to-Macintosh Connectivity Solutions

Revised: 8/21/89  
Security: Everyone

Xerox XNS-to-Macintosh Connectivity Solutions

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This article last reviewed: 14 July 1989

TOPIC -----

Is there any way to connect a Macintosh to a Xerox network?

DISCUSSION -----

There are at least two ways to connect a Macintosh to a Xerox network. You can connect a Macintosh to a Xerox network through Xerox's ITS (Interactive Terminal Service), a serial interface to an 8000 server. ITS acts as a bulletin board service for users with PCs to call in to and access mail, file, and print capabilities of the network. You could set up a NetSerial or equivalent and log on via a terminal emulator to get access to the services required.

The other solution uses an asynchronous terminal emulator (like VersaTerm Pro). Connect the Macintosh modem port to an asynchronous terminal server (like Bridge Communications CS/1, CS/100, or other) and have the terminal server provide the XNS protocol services.

Terminal servers, like the Bridge Communications devices, provide a wide range of Ethernet/XNS services. This, combined with the Macintosh power, creates a very cost-effective solution.

For more details, search the Tech Info Library under "Bridge Communications" and "VersaTerm".

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Tech Info Library Article Number:4120



# Tech Info Library

## System 6.0.3: Don't Use on Mac II Without SuperDrive (9/95)

Revised: 9/15/95  
Security: Everyone

System 6.0.3: Don't Use on Mac II Without SuperDrive (9/95)

Article Created: 21 August 1989  
Article Reviewed/Updated: 15 September 1995

TOPIC -----

Here is a report of multiple oddities about System 6.0.3 when used on a 68020 Macintosh II with two monitors and MultiFinder. If you display source or work on the second screen, several applications (including MS QuickBASIC 1.0, MacDraw 1.9.6, Capilano's DesignWorks 1.11, and MPW 2.0.2 and 3.0) hang the machine when saving or quitting. Note that the save operation is NOT completed before the crash.

Also, mounting a new volume when the last active window was on the secondary monitor occasionally causes an unusually long mount time, on the order of several minutes. (This may be due to a difficulty with building the desktop file). The system also hangs at shutdown, but only following directory changes (as when you move a file from one folder to another).

Admittedly, there were several (four or five) standard INITs in the System Folders on both the machines where the problems occurred. These are probably not a factor, because the problem went away immediately after reinstalling System 6.0.2. Because these were true work sessions, not debugging sessions, the sequence of operations that may have caused the difficulties is uncertain.

DISCUSSION -----

Apple Tech Comm has run and continues to run Macintosh IIs with multiple monitors under System 6.0.3 without experiencing the problems you reported. We have been running similar software and using it in similar fashions. This makes us suspect that there was some difference between your system configurations and ours.

If there was a problem with corrupted system software, removing and reinstalling the System and Finder would definitely have resolved the issue. It is possible for problems of this nature to manifest themselves on Macintosh IIs and not on Macintosh IIX or Macintosh IICX systems.

Although you stated that the INITs you were using are fairly standard INITs, we have seen problems caused by INITs, which you would not suspect as being the culprits. It is possible that one of these INITs does not work properly with System 6.0.3 and that was the root of the problem.

Unless you have an Apple SuperDrive (formerly Apple FDHD) upgrade in your Macintosh II, there is no reason to be running System 6.0.3--System 6.0.2 has the same functionality.

The FDHD/SuperDrive upgrade is no longer available.

Article Change History:

15 Sep 1995 - Revised to show discontinued upgrade.

Support Information Services

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Tech Info Library Article Number:4121



# Tech Info Library

## Tektronix 401x Terminal Emulator for Macintosh

Revised: 8/21/89  
Security: Everyone

Tektronix 401x Terminal Emulator for Macintosh

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This article last reviewed: 22 June 1989

TOPIC -----

Is there a Tektronix 401x terminal emulator for the Macintosh that works over a TCP/IP connection?

DISCUSSION -----

InterCon offers a TCP/IP Telnet/ftp product that supports VT240, Tektronix 4010/4014 graphics, and TN3270. Another solution is NCSA Telnet (version 2.2). This application also provides Tektronix 401x emulation, although it is not as well-advertised as InterCon's. NCSA Telnet is written by the National Center for SuperComputer Applications at the University of Illinois at Champaign-Urbana.

For more details, search the Tech Info Library under "InterCon" and "NCSA".

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Tech Info Library Article Number:4122



# Tech Info Library

## LaserWriter: Adobe Font Metrics Information

Revised: 8/21/89  
Security: Everyone

LaserWriter: Adobe Font Metrics Information

=====

This article last reviewed: 22 June 1989

TOPIC -----

This article discusses how to set the actual size (the width and height) of the characters of the built-in fonts. These are the Adobe Font Metrics (AFM). The LaserWriter does not use true fonts for Bold, Italic, and so on. Instead it does some algorithmic calculation to create the these fonts from the plain typeface. This is where the discrepancies between the LaserWriter documents and some typesetting equipment appears. One typesetter uses the true Bold and Italics, and the LaserWriter uses algorithms. As a result, the documents are not quite the same.

DISCUSSION -----

Within PostScript, the shape of each character used in a given font is described in the Metrics for the character. There is no size associated with the character, only a description of how the character is to be drawn. The size of a character is set within a PostScript program using the command "scalefont".

For example: /Times-Roman findfont 12 scalefont setfont

Complete information on how PostScript fonts are scaled is in the "PostScript Language Reference Manual, ISBN #0-201-10174-2", Chapter 5, section 5.2, Organization and Use of Fonts.

The actual PostScript fonts used in the LaserWriter ROMs are available from Adobe as downloadable. When using the LaserWriter fonts in PostScript, the font type must be declared (Bold, Italic, Demi, and so on). Here is a list of the proper font names for the LaserWriter Plus:

Times-Roman  
Times-Bold  
Times-Italic

Times-BoldItalic  
Helvetica  
Helvetica-Bold  
Helvetica-Oblique  
Helvetica-BoldOblique  
Courier-Bold  
Courier-Oblique  
Courier-BoldOblique  
Symbol  
AvantGarade-DemiOblique  
AvantGarade-BookOblique  
AvantGarade-Demi  
AvantGarade-Book  
Bookman-DemiItalic  
Bookman-LightItalic  
Bookman-Demi  
Bookman-Light  
Helvetica-Narrow-BoldOblique  
Helvetica-Narrow-Oblique  
Helvetica-Narrow-Bold  
Helvetica-Narrow  
NewCenturySchlbk-BoldItalic  
NewCenturySchlbk-Italic  
NewCenturySchlbk-Bold  
NewCenturySchlbk-Roman  
Palatino-BoldItalic  
Palatino-Italic  
Palatino-Bold  
Palatino-Roman  
ZapfChancery-MediumItalic  
ZapfDingbats

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Tech Info Library Article Number:4123





# Tech Info Library

## TIFF: Caution - Not All TIFF Files are the Same

Revised: 6/15/92  
Security: Everyone

TIFF: Caution - Not All TIFF Files are the Same

Article Created: 22 June 1989  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

### TOPIC -----

A user tried to copy a file created with MacView/AGFA Scanner for porting to Microsoft Windows, and it didn't work. Are there differences between the TIFF used on the Macintosh and the one used by Microsoft?

### DISCUSSION -----

The ability of applications to read TIFF files, created by another application, is based on the conformance of both applications to the TIFF specification, not the CPU type or operating system. Below is a copy of the TIFF Conformance Specification.

### Conformance -----

"Many of the application programs that read the contents of TIFF image files will not support all of the features described in this document. In some cases, little more than the default options will be supported. It is up to each organization to determine the costs and benefits associated with different levels of conformity. Therefore, claims of conformity to this specification should be interpreted with a certain amount of caution.

"It follows that the usage of this specification does not preclude the need for coordination between image file writers and image file readers. It is up to the application designer that initially writes a file in this format to verify that the desired file options are supported by the applications that will read the file."

To resolve this problem, contact the vendors of both products to confirm the conformance of the applications to the TIFF specification

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Tech Info Library Article Number:4125



# Tech Info Library

## Apple II: Program To Recover Deleted Files

Revised: 8/21/89  
Security: Everyone

Apple II: Program To Recover Deleted Files

=====

This article last reviewed: 22 June 1989

TOPIC -----

Is there a way to recover deleted files on an Apple II under Apple DOS 3.3 and ProDOS?

DISCUSSION -----

Central Point Software offers Copy II Plus, which allows deleted files to be restored in both DOS 3.3 and ProDOS--provided you have not written to the disk since the file was deleted.

For more details, search the Tech Info Library under "Central Point".

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Tech Info Library Article Number:4126



# Tech Info Library

## AppleShare: What Determines the Volume Order In Chooser

Revised: 8/21/89  
Security: Everyone

AppleShare: What Determines the Volume Order In Chooser

=====

This article last reviewed: 22 June 1989

TOPIC -----

On a server with more than one volume, what determines the order of the volumes in the Chooser log-on sequence?

When our office server had only one volume, it obviously was the at the top of the list. When we added a CD-ROM drive, it took the top spot in the volume list. When I recently added a second hard drive to make it three volumes, it was inserted after the CD-ROM and before the startup volume. The startup volume is still last on the list.

DISCUSSION -----

Our tests and information provided by engineers involved in the development of the server revealed the following:

- At the server, devices are displayed in Finder order: startup volume first, followed by SCSI drives in descending order of SCSI address, followed by devices connected via the drive port in the order returned by the getVolInfo call.
- At the workstation, the devices are displayed in exactly the opposite order, placing the startup volume at the bottom of the list.

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Tech Info Library Article Number:4127



# Tech Info Library

## AppleCD SC: Problem Mounting with Scanner and Macintosh IIX

Revised: 8/21/89  
Security: Everyone

AppleCD SC: Problem Mounting with Scanner and Macintosh IIX

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This article last reviewed: 22 June 1989

TOPIC -----

When I had an Apple Scanner and AppleCD SC attached to a Macintosh IIX, I couldn't get the AppleCD SC to mount a disk. Instead, I'd get the standard DIBadmount dialog box, which would ask me if I wanted to initialize the disk. I'm certain the AppleCD SC and Apple Scanner were properly cabled and all software correctly installed.

DISCUSSION -----

Apple Tech Comm has seen this problem, but cannot reliably reproduce it. In the past, we have been able to eliminate the problem by installing version 1.0 of the CD-ROM drivers, followed by reinstalling version 2.0 of the drivers. Recently, however, we learned that the problem could be caused by a faulty terminator. Replacing the terminator usually solves the problem.

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Tech Info Library Article Number:4128



# Tech Info Library

## DataPoint: How to Transfer Files to Macintosh

Revised: 7/24/92  
Security: Everyone

DataPoint: How to Transfer Files to Macintosh

=====

Article Created: 21 August 1989  
Article Last Reviewed: 14 July 1989  
Article Last Updated: 17 July 1992

TOPIC -----

Is there a way to transfer files from DataPoint to the Macintosh?

DISCUSSION -----

Mainstay's Telescape offers ASCII text file transfer between DataPoint systems and Macintosh. You can also check with Opal Software Pty Ltd. (VIA Systems, Inc. distributes Opal products in the U.S.)

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4129



# Tech Info Library

## Logic Analyzer Controller: Gould Solution for the Macintosh II

Revised: 8/21/89  
Security: Everyone

Logic Analyzer Controller: Gould Solution for the Macintosh II

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This article last reviewed: 22 June 1989

TOPIC -----

This article describes Gould uses a Macintosh II as a controller for a multi-module logic analyzer.

DISCUSSION -----

In the January issue of Electronic Design, a new product from Gould Electronics was reviewed. Gould manufactures high-performance superminis often found in defense, electronic-development environments.

The new product is a very sophisticated, multi-unit "mainframe" logic analyzer controlled via SCSI by a Macintosh II. The Gould unit is a device that houses up to four independent logic analyzer modules (hence, "mainframe"). Each unit contains an instrument that can monitor and record up to 384 inputs from a system under test. The mainframe houses up to four of these. Each unit can be used separately or in conjunction with one or more of the other, optional units, allowing simultaneous analysis of up to four separate computer systems.

Analyzers connect to the system under test with two types of probes: the 96-channel Pyramid, which can run up to 10-nanosecond resolution (100 MHz), or the 16-channel Magnifying Glass, which does 1-nanosecond resolution (1 GigaHertz). These probes are intelligent devices that can be reconfigured graphically by the host Macintosh.

The article suggests that Gould Electronics viewed the Macintosh as the solution to a massive problem: normal logic analyzers are very complex to set up, control, and interpret and require quite an investment in time and patience. The user is prompted with dialog boxes as he selects functions he wants to enable. Individual inputs on the probes can be reconfigured in this manner as needed. Many other features make it an useful analytical tool.

Although not cheap, this may be the instrument of choice for the high-tech defense electronics lab, or the graduate electronics/computer science department that prefers to spend more time teaching the concepts and less time teaching an instrument.

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Tech Info Library Article Number:4130





# Tech Info Library

## Apple Video Displays are Non-Interlaced

Revised: 8/21/89  
Security: Everyone

Apple Video Displays are Non-Interlaced

=====

This article last reviewed: 7 July 1989

TOPIC -----

An Apple user is looking at the new monitors and asked if they are interlaced. What is interlacing and do Apple Monitors have it?

DISCUSSION -----

Interlacing is a technique used on character-based displays to create solid character text. It is also used on home television sets, the dominant standard in the United States being NTSC. Using alternate scan lines, the monitor performs high-speed retraces to create the illusion that the monitor has twice as many lines as it does. A major drawback of interlaced displays is their tendency to noticeably flicker thin horizontal lines, lines that are frequently used on the Macintosh interface.

Macintosh displays assign pixels to scan lines on a one-to-one basis eliminating the need for interlacing.

There are several third-party scan converters available for the Macintosh that will output Macintosh non-interlace video as interlaced. For more information search on "NTSC" or "interlace".

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Tech Info Library Article Number:4131



# Tech Info Library

## AppleShare: Why is there Activity When Opening Local Folders?

Revised: 8/21/89  
Security: Everyone

AppleShare: Why is there Activity When Opening Local Folders?

=====

This article last reviewed: 12 July 1989

TOPIC -----

Some users have noticed that when you open the Macintosh System Folder on the startup disk, the AppleShare network traffic arrows flash (sometimes causing a very long delay in opening the System Folder). This, of course, does not happen when AppleShare volumes are not mounted. Why does this happen?

DISCUSSION -----

When any folder is opened, the Finder checks the Creator of every file in that folder and looks in the Desktop file of the current volume to see if it can find a match. If there is no entry for that Creator type on the current volume, it continues to look through the Desktop file of each mounted volume until it finds an entry with a match to that Creator or until there are no more volumes.

Any file that appears in the Finder with the type of "document" when the folder is viewed by name or by date causes this to happen. This is because the Finder makes "document" the type, only if it doesn't have an entry for that Creator type in the Desktop file.

It is very common for applications to put files containing option settings in the System Folder. MacWrite and Microsoft Word both do this. MacWrite puts an unknown Creator type for that document. It, therefore, appears as "document" type. If you have any servers mounted whenever the System Folder is opened, selected, or redrawn, the servers are checked for an entry in the Desktop file matching the Creator type of the file.

Another case would be if you used an application on a server and created a document that you saved on your local disk. Whenever the folder containing that document is opened, the Finder searches the mounted volumes for the Creator of that document, because the local disk does not have an entry in the Desktop file to match it. Microsoft Word creates an options file,

which is put into your System Folder, with the Creator type of Microsoft Word. It, therefore, shows up as a Microsoft Word file. If, however, you don't have Microsoft Word on your local disk because you used an application from the server, when you open the System Folder again, the mounted servers are searched.

Once an application is copied to a volume, the Creator type of that application is saved in the Desktop file of that volume. Even if that application is removed from the volume, there is still an entry in the Desktop file of that volume for that application's Creator type. When the Desktop file is rebuilt, the old Desktop file is thrown away, and a new one is created. Immediately after the Desktop is rebuilt, the Desktop file will contain entries for every application on that volume.

A file that was created by an application that is no longer on the volume may not cause the Finder to search the desktops of other volumes for a Creator type, if there is still an entry in the Desktop file of that volume. For example, if you have Microsoft Word on your local disk, create a document, and later throw Microsoft Word away, the Desktop still will have an entry for Microsoft Word. The Finder will not search the desktops of other volumes. If the Desktop is rebuilt, the local Desktop no longer will contain an entry for Microsoft Word, and the Finder, therefore, will search the desktop of any mounted volumes.

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Tech Info Library Article Number:4132



# Tech Info Library

## Apple IIGS: Cannot Access 3COM Server

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Cannot Access 3COM Server

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This article last reviewed: 12 July 1989

TOPIC -----

A customer with an existing 3COM network wants to connect an Apple IIGS system and have access to the 3COM server. Is this possible?

DISCUSSION -----

To connect an Apple IIGS to a file server, the file server must be an AppleTalk Filing Protocol (AFP) file server. 3COM's file server is not an AFP file server. Their file server can coexist with AFP file servers but does not function as an AFP device.

The reason the server must use the AFP for the Apple IIGS is because software must be installed into the AppleShare File Server Admin application before the Apple IIGS recognizes the server. Because the 3COM file server uses its own network filing protocols, the Apple IIGS will not recognize the 3COM server.

The Apple IIGS can be attached to a LocalTalk network that is connected to the 3COM server, but it will not be able to access the 3COM server. If there are LaserWriters on the LocalTalk network, the Apple IIGS can print to them.

Until 3COM's file server is seen as an AFP server by the AppleTalk, a way to provide file service from 3COM to the Apple IIGS seems unlikely.

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Tech Info Library Article Number:4134



# Tech Info Library

## Macintosh-to-IBM 2780/3780 Connectivity

Revised: 8/21/89  
Security: Everyone

Macintosh-to-IBM 2780/3780 Connectivity

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This article last reviewed: 14 July 1989

TOPIC -----

Are you aware of any method for connecting a Macintosh to IBM 2780 and 3780 machines? Apparently, they are an old series of mainframe/mini. They take the BACS operating system and are used in the U.K. in the banking sector.

DISCUSSION -----

Cleo Software's Mac-3780Plus SSM from Cleo Software is a complete, Macintosh hardware/software package designed to emulate an IBM 2780 or 3780 terminal.

Files can be transferred to any other micro, mini, or mainframe that supports the IBM 2780/3780 BSC (Binary Synchronous Communications or Bisynchronous) protocol. Files can be stored, processed, or printed. Files received from another 2780/3780 device can be printed, saved to disk, or displayed on the console.

The package has a menu format for

- interactive execution
- job file
- log file support for unattended operation
- a line trace monitor for diagnostics
- a "System" command for executing local programs without leaving communications.

For more details, search the Tech Info Library under "CLEO Software".

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Tech Info Library Article Number:4135



# Tech Info Library

## Microsoft Windows: LaserWriter Compatibility

Revised: 3/4/90  
Security: Everyone

Microsoft Windows: LaserWriter Compatibility

=====

This article last reviewed: 13 October 1989

TOPIC -----

Is it true that Microsoft's "Windows" needs ROM 2.0 or greater present in the LaserWriter IINTX to function properly. Is there another issue here?

DISCUSSION -----

The issue is not the version of the ROM but the version of PostScript residing in the ROMs. The original LaserWriters started with ROM version 1 or PostScript version 23. The second ROM set for the original LaserWriters is known as ROM version 2 or PostScript version 38. The third ROM set is known ROM version 3 or PostScript version 47.

The LaserWriter IINT and LaserWriter IINTX both use PostScript version 47. However, the ROMs in the LaserWriter IINT and LaserWriter IINTX have additions to the ROMs, which are in the original LaserWriters. The ROMs in the LaserWriter IINT and LaserWriter IINTX are considered ROM version 1.0 for the LaserWriter IINT and LaserWriter IINTX, although the PostScript version is 47.

Microsoft Windows requires PostScript version 38. In the older LaserWriters, version 38 of PostScript was also known as version 2 of the ROM.

The latest versions of Windows (Windows 2.11) and its PostScript driver (PostScript driver 3.1) do not suffer from this problem and will print to a LaserWriter II successfully.

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Tech Info Library Article Number:4136



# Tech Info Library

## Apple Two-Page Monitor: Correction to Slot Info in Manual

Revised: 10/22/90  
Security: Everyone

Apple Two-Page Monitor: Correction to Slot Info in Manual

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This article last reviewed: 12 July 1989

TOPIC -----

The documentation for the Apple Two-Page Monochrome Monitor states that the video card must be the card closest to the power supply. Is this necessary, and, if so, why?

DISCUSSION -----

The manual for the Apple Two-Page Monochrome Monitor is incorrect. You can put the video card in any slot. This statement will be removed from the manual in its next revision.

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Tech Info Library Article Number:4139



# Tech Info Library

## MultiTalk: No Longer Available for AppleTalk Network

Revised: 8/21/89  
Security: Everyone

MultiTalk: No Longer Available for AppleTalk Network

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This article last reviewed: 12 July 1989

TOPIC -----

Abaton discontinued distribution of MultiTalk in late spring 1988. The following is a brief description of MultiTalk and known incompatibilities:

DISCUSSION -----

MultiTalk lets AppleTalk network users share serial devices. It has four mini-circular-8 connectors: one for AppleTalk (RS-422) and three for RS-232. The RS-232 connectors support modems, scanners, plotters, printers, or protocol converters. The user can select from four ports when the modem port is logically selected, and there can be up to four MultiTalks per zone.

MultiTalk is incompatible with MacLink Plus, Switcher (intermittent), Telescape Pro.

MultiTalk fails to cause DTR to drop on disconnect when using VersaTerm.

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Tech Info Library Article Number:4140





# Tech Info Library

## Macintosh-to-Oracle Connectivity

Revised: 8/21/89  
Security: Everyone

Macintosh-to-Oracle Connectivity

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This article last reviewed: 12 July 1989

TOPIC -----

This information is from Banyan about their Macintosh products:

DISCUSSION -----

Banyan is now shipping a mail gateway between VINES Network Mail and CE Software QuickMail.

Banyan's Oracle Server for VINES will allow Macintoshes, running Oracle for Macintosh to connect into databases running on Apple servers.

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Tech Info Library Article Number:4141



# Tech Info Library

## PostScript: How To Modify LaserWriter Character Sets

Revised: 8/21/89  
Security: Everyone

PostScript: How To Modify LaserWriter Character Sets

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This article last reviewed: 12 July 1989

TOPIC -----

In each of the Adobe fonts contained in the ROMs of the LaserWriter IINT, there are three types of characters that some users (especially in high-end publishing) need. The three characters are: uppercase and lowercase "thorn", uppercase and lowercase "eth", and a "agoneck."

These characters cannot be seen in Key Caps but are printable from a PC connected to the LaserWriter IINT. When the PostScript code is sent directly to the printer, it works. However, the user needs to print from a word processor. When trying to print from Microsoft Word, the encoding vector in the Laser Prep file does not allow these characters. Here is additional information:

PostScript codes for characters (ref. ISO 6973)

/thorn 374 Octal  
/THORN 354 Octal

/eth 342 Octal  
/ETH 363 Octal

/agoneck 254 Octal

DISCUSSION -----

According to PostScript documentation, and after having interrogated the LaserWriter's complete character sets, Apple Tech Comm has determined that the thorn, THORN, eth, ETH, and agoneck characters are not encoded by the Laser Prep file. However, the user can create these required characters by using one of two methods. The first method is the more complicated of the two and requires modifying the Laser Prep file with ResEdit.

Method #1

-----

Any modifications to the System file and Laser Prep file should be made using copies of the files. Once the modifications have been successfully completed, then the original System file and Laser Prep file can be replaced with the modified files.

Using ResEdit, follow these steps to encode the required characters:

- 1) Determine what characters are currently available (using Key Caps), but seldom, if ever, used. These will be the characters that you will replace with the thorn, THORN, eth, ETH, and agoneck.
- 2) Using ResEdit, open the Laser Prep file and POST resource. Locate POST resource -8181 (this is the resource that encodes and maps special characters) and open it as type "STR#" using the "Open As..." menu item.
- 3) Starting at the 8th string, the special characters are encoded by name. Locate the characters, by name, that you determined were not used in step 1.
- 4) One at a time, select the name of the character to be substituted and type the name of the new character (thorn, THORN, eth, ETH, and agoneck).
- 5) Close the resource and the Laser Prep file and answer "YES" to save the changes.
- 6) Open the System file, select and open the FONT resource, and select the font(s) you want to display the thorn, THORN, eth, ETH, and agoneck characters.
- 7) Edit the substituted characters in the fonts to match the new characters.
- 8) Close the resource and the System file and answer "YES" to save the changes.

The Laser Prep file and System file now have been edited to allow the use of the thorn, THORN, eth, ETH, and agoneck characters. They will be recognized by all LaserWriter fonts.

Note: The LaserWriter must be initialized with this new Laser Prep file for the modified font dictionary to be invoked (turn the LaserWriter off and back on). Ensure that the system with the modified Laser Prep file is the first system to print to the printer.

Method #2

-----

The second method is to use a third-party laser font utility. One of the more popular laser font utilities is Fontographer 2.4 from Altsys Corp. For more details, search the Tech Info Library under "Altsys Corp." Here is a description of Fontographer:

Fontographer is a professional outline font editor for the Macintosh computer and PostScript printers. Using Fontographer, you can create a professional-quality PostScript font in hours. When complete, your font can be printed on Apple's LaserWriter, LaserWriter Plus, or any PostScript-compatible device. The characters are defined with cubic Bezier curves and straight lines, so your characters look good at any size or resolution from 300 dot-per-inch laser printers to 2450 dot-per-inch typesetting machines.

Fontographer fonts work just like the standard built-in LaserWriter fonts to give you fast, high-resolution printing. Bitmap fonts can be generated automatically. A copy of FONTastic font editor is included to perform the final fine-tuning of your bitmap fonts for screen display.

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Tech Info Library Article Number:4142



# Tech Info Library

## Apple Presents..: Problem Installing on Corvus Net

Revised: 8/21/89  
Security: Everyone

"Apple Presents..": Problem Installing on Corvus Net

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This article last reviewed: 14 July 1989

TOPIC -----

This article concerns a school lab consisting of Apple IIGS systems and a Corvus server running Constellation 3 software. The school was able to load the "Apple Presents Apple" disk on the server and run the program by making the following modifications:

- 1) They copied SYSTEM.PASCAL into the keyboard volume.
- 2) They modified the SYSTEM.LIBRARY by copying LONGINTI, TRANSCEN, and RTUNIT into the SYSTEM.LIBRARY.

They would like to load the "Apple Presents the Apple IIe, An Introduction" disk (Pascal-based, 1984, 691-0020-A) and run the program from the Corvus, too. The procedure they used for the "Apple Presents Apple" disk does not seem to work for this disk. What should they do?

DISCUSSION -----

There are several issues involved when installing the "Apple Presents.." (691-0020) disk on the Corvus network:

- 1) The disk they successfully installed was a Pascal 1.0 disk, while the one they are trying to install is Pascal 1.2-based.
- 2) Each of the "Apple Presents.." disks was created for a specific purpose and may or may not use a standard version of the Run Time system.
- 3) Here's the most important one: the SYSTEM.LIBRARY file for the "Apple Presents.." (691-0020) disk contains the following units:

| Unit No. | Unit Name | Size |
|----------|-----------|------|
| -----    | -----     | ---- |

|    |          |      |
|----|----------|------|
| 20 | SHORTGRA | 3144 |
| 21 | SHORTGRA | 18   |
| 26 | INTROLIB | 6598 |
| 27 | INTROLIB | 5696 |
| 25 | TYPE1UNI | 1518 |
| 23 | TYPE2UNI | 4426 |
| 24 | TYPE3UNI | 317  |

and the SYSTEM.LIBRARY file for the successfully installed "Apple Presents.." disk contains the following units:

| Unit No. | Unit Name | Size |
|----------|-----------|------|
| -----    | -----     | ---- |
| 31       | PASCALIO  | 2082 |
| 28       | CHAINSTU  | 212  |
| 20       | TURTLEGR  | 3108 |
| 21       | TURTLEGR  | 18   |
| 22       | APPLESTU  | 678  |
| 26       | INTROLIB  | 2072 |
| 27       | INTROLIB  | 1642 |

What does this mean to the school? Notice that both libraries contain two units named "INTROLIB". Unfortunately, the library used on the disk that they school was able to install on the network is private. That is, it has no interface section). This is a trick used by developers to protect their code.

Most of the "Apple Presents.." software was created under contract, and Apple doesn't own the code. If the school is still interested in installing both of these packages on the network, they should combine the two libraries using the INTROLIB from the "Apple Presents.." (691-0020) disk. This may or may not work; Tech Comm can't duplicate the Corvus network, because Corvus is out of business.

The school might also look at the "Apple Presents.." disks that come with the Apple IIc Plus. These packages are fairly generic and are ProDOS-based. The school may have better luck installing them on the network.

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Tech Info Library Article Number:4143



# Tech Info Library

## LaserWriter Family: Hammermill Paper Smudging Problem

Revised: 8/21/89  
Security: Everyone

LaserWriter Family: Hammermill Paper Smudging Problem

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This article last reviewed: 14 July 1989

TOPIC -----

This article discusses how to tell non-smudging Hammermill "Laser Plus" paper from earlier papers that exhibited smudging problems.

DISCUSSION -----

Hammermill Paper initiated a process change at the end of 1988 with its "Laser Plus" paper. This change led to some smudging when printing to Apple LaserWriter printers. In 1989, the process was again changed to correct this situation. All paper manufactured in 1989 should work without any problem.

You can identify paper that is manufactured in 1989 by looking at the ream number, which is printed in black ink on the top of the ream. If there is a "J" in the ream number, about midway, then it was manufactured in 1989. An "I" indicates a 1988 manufacturing date, and paper that may cause smudging.

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Tech Info Library Article Number:4144



# Tech Info Library

## ADA Programming Capabilities for the Macintosh

Revised: 8/21/89  
Security: Everyone

ADA Programming Capabilities for the Macintosh

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This article last reviewed: 14 July 1989

TOPIC -----

Is there a compiler that provides ADA programming capabilities for Macintosh computers? Currently, the only two suppliers of such a product that I know of are Alsys and Meridian. The Alsys product currently runs under A/UX only. I understand that the Meridian product runs under Macintosh OS.

DISCUSSION -----

AdaVantage is the product you're probably referring to. Note that it will become available from APDA in the future. For a more complete description of the product, contact Meridian or see the product description in the Macintosh Buyer's Guide: A Redgate Publication, Winter 1989.

AdaVantage Compiler 2.2

-----

Minimum Configuration: Macintosh Plus, 2MB RAM, 20MB hard disk drive,  
MPW C.

The AdaVantage compiler provides ADA programming capabilities for Macintosh computers. An optional debugger and code optimizer are available.

Standard features:

- provides support for full generics, tasking, and separate compilation
- provides all standard packages
- implements most of the implementation-dependent system programming facilities (ANSI/MIL-STD-1815A Chapter 13)
- includes a set of library management tools that provide control over programming project organization and databases of compilation units
- includes auxiliary directory arrangements that permit separation of source code and compiler-generated files.



The optional Meridian AdaVantage Optimizer improves code output by providing constant expression evaluation, dead code removal, jump optimizations, common subexpression elimination, strength reduction, and unused program removal.

The optional Meridian AdaVantage Debugger provides an interactive source-level debugging capability. The debugger supports breakpoints, subprogram traces, single-stepping, subprogram callback traces, and full ADA variable reference syntax.

The AdaVantage compiler is supplied on four disks. Included are:

- the compiler
- a high-level linker
- library management tools
- standard support packages
- additional I/O packages
- run-time object libraries

For more details, search the Tech Info Library under "Meridian Software Systems".

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Tech Info Library Article Number:4146



# Tech Info Library

## AppleTalk: Connecting to Phone Company New Advanced Services

Revised: 7/23/92  
Security: Everyone

AppleTalk: Connecting to Phone Company New Advanced Services

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Article Created: 21 August 1989  
Article Last Reviewed: 14 July 1989  
Article Last Updated: 22 June 1992

TOPIC -----

A customer wants to route AppleTalk into what sounds like an ISDN circuit. Pacific Bell is offering a new service called "Advanced Digital Network" (ADN). This new topology is ready through central offices, and the charge has been approved by the California Public Utilities Commission.

The circuit end points require a third-party device called CSU/DSU (Customer Service Unit/Digital Service Unit).

- 1) Whose CSU/DSU works?
- 2) How do I get AppleTalk into the CSU/DSU?

DISCUSSION -----

ADN is a new Pacific Bell Telephone service facilitating high-speed point-to-point communication. It is a 64K digitized voice or 56K bps data DDS (Digital Data Service) line incorporating new, digital, cross switches. These switches are better suited to high-speed digital transmissions than to sending digital information modulated on carrier signals over standard, public, telephone, voice-communication circuits. Note that this service is currently marketed under many different names by other common carriers.

DSU stands for "Data Service Unit," which is the interface to the ADN. It is somewhat analogous to a "digital" modem. The DSUs translate the computer's unipolar serial data to baseband bipolar signals. The DSU uses a DCE interface to communicate with the terminal, and then transmits the data in a special format over the ADN.

CSU ("Channel Service Unit") is sometimes required at the end of some links. The trend today is to incorporate the CSU into the DSU.

AT&T offers many types of DSUs/CSUs. They vary by the data rates they support for use in stand-alone or multiple-mount installations. Installations can run short distances point-to-point in a building or campus environment using LADS ("Local Area Data Sets"), using DSU units, CSU units or combinations of both. These units usually conform to EIA RS-232-C standards, with data and clock signals that meet CCITT V.35. The DSU DCE-to-terminal interface is full duplex.

Routing AppleTalk packets over ADN should be straightforward. You need an AppleTalk bridge between the Macintosh and DSU. Because the AppleTalk bridges are asynchronous, you also need a commonly-available, asynchronous-to-synchronous converter between the bridge and DSU. Among the bridges, only Telebridge supports data rates up to 57,600 bps; R-Server currently supports up to 19.2K bps. You could substitute an Ethernet bridge for the AppleTalk bridge above if using EtherTalk.

Apple uses many types of links, including Ethernet, LocalTalk, T-1, and fiber. We are not presently using ADN. Data rates can be much higher using T-1 or ISDN lines as compared to ADN.

ISDN lines are not yet a "tariff" service; they are not priced by the California Public Utilities Commission. This doesn't mean ISDN lines are not available. They are and are acquired via contracts, usually making them less cost-effective presently than other services. Additionally, ISDN interfaces are not yet commercially available for the Macintosh.

Because Pacific Bell offers intrastate service, the account may need to contact MCI or AT&T, for instance, to discuss interstate services.

For more details, search the Tech Info Library under "Shiva Corp".

Editor's note 22 June 1992: Removed reference to Solana Electronics.

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Tech Info Library Article Number:4147



# Tech Info Library

## Motorola 2000-to-Macintosh Connectivity

Revised: 8/21/89  
Security: Everyone

Motorola 2000-to-Macintosh Connectivity

=====

This article last reviewed: 14 July 1989

TOPIC -----

Is there any way to emulate a Motorola 2000 terminal?

DISCUSSION -----

Terminals connected to the Motorola 2000 are very basic and can be configured for baud rate, data bits, stop bits, and parity. The port can be configured for either RS-232 or RS-422. It shouldn't require any special out-of-the ordinary protocols. All of this means that almost any multipurpose terminal emulation program for the Macintosh can be used to connect to a Motorola 2000.

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Tech Info Library Article Number:4148



# Tech Info Library

## AppleTalk: Network General Sniffer Functions as Line Monitor

Revised: 8/21/89  
Security: Everyone

AppleTalk: Network General "Sniffer" Functions as Line Monitor

=====

This article last reviewed: 14 July 1989

TOPIC -----

What is available as an AppleTalk line monitor as a diagnostic tool for debugging network problems?

DISCUSSION -----

Network General Sniffer provides an option for AppleTalk protocols. Sniffer, running on a portable PC, handles for various packet types and media. The following is an example of raw network data and the Sniffer decode.

- - - - - Begin Dump - - - - -

Following is a message dump of some traced broadcast messages:

```
12:52:44.34  8:0:89:a0:44:99 ff:ff:ff:ff:ff:ff 809b  46:
              ff99 0100 1801 0101 0001 0899 3801 0100
              0100 3802 0238 0300 3bb9 0000 0000 0000
12:52:54.26  8:0:89:a0:44:99 ff:ff:ff:ff:ff:ff 809b  46:
              ff99 0100 1801 0101 0001 0899 3801 0100
              0100 3802 0238 0300 3bb9 0000 0000 0000
12:52:56.86  8:0:89:a0:49:40 ff:ff:ff:ff:ff:ff 809b  46:
              ffc0 0100 1801 0101 0001 08c0 3801 0000
              0100 3802 0138 0301 3bb9 0000 0000 0000
```

(AppleTalk decode courtesy of the Network General Sniffer PA-1310 AppleTalk Protocol Suite option.)

- - - - - Frame 2 - - - - -

| SUMMARY | Delta T | Destination | Source       | Summary                          |
|---------|---------|-------------|--------------|----------------------------------|
| M 2     | 0.0000  | Broadcast   | KinetxA04499 | RTMP R NET=1.0 Routing entries=5 |

```
RTMP:----- RTMP Data ----- RTMP:
RTMP: Net = 1.0
RTMP: Node id length = 8 bits
RTMP: Node id = 153
RTMP: Tuple 1 : Net = 14337.0, Distance = 1
RTMP: Tuple 2 : Net = 1.0, Distance = 0
RTMP: Tuple 3 : Net = 14338.0, Distance = 2
RTMP: Tuple 4 : Net = 14339.0, Distance = 0
RTMP: Tuple 5 : Net = 15289.0, Distance = 0
RTMP:
RTMP:[Normal end of "RTMP Data ".]
```

```
- - - - - Frame 3 - - - - -
SUMMARY Delta T Destination Source Summary
      3 0.0000 Broadcast KinetxA04499 RTMP R NET=1.0 Routing entries=5
RTMP:----- RTMP Data -----
RTMP: Net = 1.0
RTMP: Node id length = 8 bits
RTMP: Node id = 192
RTMP: Tuple 1 : Net = 14337.0, Distance = 1
RTMP: Tuple 2 : Net = 1.0, Distance = 0
RTMP: Tuple 3 : Net = 14338.0, Distance = 1
RTMP: Tuple 4 : Net = 14339.0, Distance = 1
RTMP: Tuple 5 : Net = 15289.0, Distance = 0
RTMP:[Normal end of "RTMP Data ".]
```

- - - - - End Dump - - - - -

For more details, search the Tech Info Library under "Network General".

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Tech Info Library Article Number:4150



# Tech Info Library

## Apple IIGS: How to Access the Clock

Revised: 8/21/89  
Security: Everyone

Apple IIGS: How to Access the Clock

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This article last reviewed: 14 July 1989

TOPIC -----

I have a customer using Z-BASIC on his Apple IIGS under ProDOS, running as an Apple IIe. Although there are no toolbox calls for accessing the Apple IIGS clock from Z-BASIC, is there a way to do this from Z-BASIC with PEEKS and POKES or a machine language call?

DISCUSSION -----

The preferred method is to use the ProDOS GET\_TIME call. Note: You need ProDOS 8 version 1.2 or later to get the time on the Apple IIGS.

This method works on any Apple II running under ProDOS and with most Apple II-compatible clocks (because they all come with ProDOS patch routines). More information on the format of the GET\_TIME call and other ProDOS commands is in the ProDOS Technical Reference Manual. The GET\_TIME call is documented on page 71. Additional information is on page 99 and pages 104 through 106.

When the GET\_TIME routine is called, the system date and time are placed into the documented locations. Using PEEKs, the data in those locations can be extracted.

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Tech Info Library Article Number:4151



# Tech Info Library

## Apple IIGS: How To Print to a LaserWriter

Revised: 8/21/89  
Security: Everyone

Apple IIGS: How To Print to a LaserWriter

=====

This article last reviewed: 14 July 1989

TOPIC -----

A person using Music Writer software on an Apple IIGS wants to print to a LaserWriter IINTX in the Sonata font, which Music Writer uses. How do you do this? Can you use fonts other than Courier and Times with AppleWorks 2.0?

DISCUSSION -----

Music Writer uses Pyware's own music font. It is similar to Adobe's Sonata font, but not from Adobe. The font is included with Music Writer. To print to any member of the PostScript LaserWriter family, make the usual ProDOS 16 or GS/OS printer choice. Then, from Music Writer, select the print command. The musical score then can be printed on the LaserWriter.

To use other fonts with AppleWorks requires PostScript programming knowledge. Beyond the changes mentioned, font selection for ProDOS 8 applications relies on changing the ImageWriter Emulator (IWEM) PostScript code. The font to be used is designated within the IWEM downloadable PostScript file.

For more details, search the Tech Info Library under "Pygraphics".

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Tech Info Library Article Number:4152





# Tech Info Library

## MARS: Multimedia Color Database for the Macintosh (9/93)

Revised: 9/2/93  
Security: Everyone

MARS: Multimedia Color Database for the Macintosh (9/93)

=====  
Article Created: 21 August 1993  
Article Reviewed/Updated: 2 September 1993

TOPIC -----

I want to implement a database of color images that can be accessed locally or remotely. I'm flexible as to how these images can be input (scanned photos, videotape, and so on). Any suggestions?

DISCUSSION -----

MARS (Multi-User Archival and Retrieval System) from MicroDynamics, Ltd. offers one solution. MARS can take input from any kind of document through an appropriate scanner. The documents are then stored on WORM (Write Once Read Many) optical disks. These documents can be used over and over again, but the original can never be changed.

The system also has OCR (Optical Character Recognition) capability, that lets you convert any digitized document to text and then edit it with a word processor. You can add these revised documents to the optical disk.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:  
2 September 1993 - Corrected company name.

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Tech Info Library Article Number:4153



# Tech Info Library

## HyperCard: How to Configure for Modem Dialing

Revised: 8/21/89  
Security: Everyone

HyperCard: How to Configure for Modem Dialing

=====

This article last reviewed: 14 July 1989

TOPIC -----

Can the phone-dialing portion of HyperCard support 9600-bps modems? Also, can HyperCard dial out through an internal modem, like an Epic 2400?

DISCUSSION -----

HyperCard's dial command is designed for voice-only calls. There is no support for data communications with the dial command.

If the 9600-bps modem is a Hayes command set-compatible modem, HyperCard can dial the modem.

The dial command is only applicable to the Macintosh speaker/audio port or to a modem attached to the serial port. HyperCard requires an XCMD or XFCN to recognize a NuBus modem.

If you want to do data communications after dialling, you need a different approach is required. The HyperCard Serial Communications Toolkit, available from APDA, makes HyperCard dialing and data communications possible.

Another option for data communications is a set of external commands and code resources called FITOS from MITEM Corporation. These include a number of different terminal emulators. The advantage of this package is that it handles everything except the actual information that would normally be presented to the user. You don't have to be concerned about the communications protocols used or the terminal formatting characters sent by the host. The possible disadvantage is that if it does not support the type of terminal that you need it to support, you have to deal with the terminal emulation yourself.

For data communications with NuBus modems, you need XCMDs and/or XFCNs designed

for NuBus modems. Apple Tech Comm does not know of any XCMD or XFCN available for the internals modems.

For more details, search the Tech Info Library under "MITEM Corporation".

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Tech Info Library Article Number:4154



# Tech Info Library

## Macintosh: How to Increase the Maximum Number of Open Files

Revised: 8/21/89  
Security: Everyone

Macintosh: How to Increase the Maximum Number of Open Files

=====

This article last reviewed: 14 July 1989

TOPIC -----

How does one change the number of concurrent files open at the same time under the Macintosh OS?

DISCUSSION -----

(Important: Any modification to boot block information is not supported by Apple.)

The SystemStartup information (for a Macintosh system or a file server), is stored in logical blocks 0 and 1 of an HFS startup disk. It contains the maximum number of files that can be open simultaneously. This is currently set to 10. The location for this parameter is \$7A of logical block 0 on an HFS disk. The number at \$7A (default is \$000A or Decimal 10) serves as the parameter for files open at one time.

The number \$000A (or Decimal 10), for instance, is proper for 128K and 512K systems. If the Macintosh is equipped with 1MB or more of memory, the system multiplies the number at \$7A by four (that is, it becomes decimal 40) and uses the new number as the new file limiter.

You can use a disk editor, like FEdit, to change this number. The File Control Block Buffer and System Heap size will be calculated with the changed files open parameter upon restarting.

If you must raise this number, do it in small increments. Raising the number in location \$7A, as some users have done, can force the system to set aside too much memory. This causes a system error, which, because it is unexpected, the system cannot handle. The result is a system lockup.

Tech Note 113 also relates to the topic.

Note: FoxBase allows a maximum of 48 open files, regardless of how many the Macintosh OS allows.

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Tech Info Library Article Number:4156



# Tech Info Library

## 8775 Terminal Emulator: None Yet Available for the Macintosh

Revised: 4/11/91  
Security: Everyone

8775 Terminal Emulator: None Yet Available for the Macintosh

=====

This article last reviewed: 19 July 1989

TOPIC -----

Have you heard of Macintoshes connected to an IBM 8100 mini-computer using 8775 terminal?

DISCUSSION -----

Apple Tech Comm does not know of any 8775 terminal emulators available for the Macintosh.

The 8775 Display Terminal is a high-function, single-station, cathode-ray tube, microprocessor-controlled terminal that provides a means of entering data to, and receiving data from, the 8100 Information System and System/370, 30XX, and 4300.

It is available in four models. The base 8775 offers equivalent function to 3276/3278 display units. The other models offer differing connection options.

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Tech Info Library Article Number:4157



# Tech Info Library

## VAX: How To Print to a LaserWriter Connected to a Terminal

Revised: 3/4/90  
Security: Everyone

VAX: How To Print to a LaserWriter Connected to a Terminal

=====

This article last reviewed: 19 July 1989

TOPIC -----

Many applications for VAX systems, such as All-in-1, let the host program print to a printer that is connected to the terminal. This is called pass-through printing and was a feature of the old VT102 terminals; it is still a part of the newest DEC terminals.

Is there a Macintosh terminal emulation product that allows a VAX program to access a networked LaserWriter in this fashion? There are several options for setting up a LaserWriter as a system printer, but is it also possible to emulate a printer that is connected to the user's terminal?

DISCUSSION -----

There are some Macintosh terminal emulation products that echo the output being sent to the terminal to a printer. The printer support for this is limited to printers connected directly to the Macintosh acting as the terminal. This prohibits the use of the LaserWriter over AppleTalk for this purpose.

The type of printer for which this pass-through printing is intended is a printer that prints one character at a time as opposed to one page at a time. The LaserWriter prints one page at a time.

MicroPhone II from Software Ventures and Red Ryder 10.0 from The FreeSoft Company come close to providing this functionality. They have the ability to turn printing on and off. When printing is on, they buffer the output until you turn printing off. At that point, they send the output one page at a time to the LaserWriter.

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Tech Info Library Article Number:4159



# Tech Info Library

## AppleFax Modem: How To Use as 9600-Baud Modem

Revised: 8/21/89  
Security: Everyone

AppleFax Modem: How To Use as 9600-Baud Modem

=====

This article last reviewed: 19 July 1989

TOPIC -----

The AppleFax Modem manual implies that the modem allows a Macintosh file to be transferred from one Macintosh to another Macintosh via two AppleFax Modems at 9600 baud. Is this accurate?

DISCUSSION -----

Page 92 of the "AppleFax Modem User's Guide" states the following:

"If you want, you can use a communications application as long as you're communicating with another AppleFax Modem. A communications application lets you transmit Macintosh files, type messages back and forth, and use the modem commands described in Appendix B."

The manual goes on to say (on page 92) what communications parameters the AppleFax Modem requires for successful use a 9600-baud modem.

This means that the AppleFax Modem allows you to transmit Macintosh files (text files, MacPaint files, PICT files, and so on) to another Macintosh at 9600 baud as long as both modems are AppleFax Modems. It is not necessary for both AppleFax Modems to be using the same communications software as long they support the same transfer protocol.

The AppleFax Modem does support a subset of the Hayes "AT" command set. For more information on this, look in Appendix B, which starts on page 137.

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Tech Info Library Article Number:4160





# Tech Info Library

## Macintosh: Using Wrong System Installer Causes Color Problems

Revised: 8/21/89  
Security: Everyone

Macintosh: Using Wrong System Installer Causes Color Problems

=====

This article last reviewed: 20 July 1989

TOPIC -----

A user installs the System on a Macintosh IICx attached to a color monitor with either 16 or 256 colors selected. The monitor shows a color desktop, but the Apple and Macintosh icons remains black and white. The typical diagnosis is a hardware problem with the monitor or video card.

DISCUSSION -----

The problem lies with the choice of installation disks. Using the Utilities One disk to install the System instead of the System Tools disk causes this problem. The Utilities One disk contains the minimum Installer scripts, which do not include the color Apple icon, or the color Macintosh icon (which appears in the "Welcome to Macintosh" startup dialog), among other things.

Use the System Tools disk included in the new "Open Me First" package that ships with the Macintosh IICx, not the Utilities One disk that is in the traditional place we have put system disks. This installs a complete system, including the color icons.

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Tech Info Library Article Number:4162



# Tech Info Library

## A/UX 1.1: Solution for loop:bad value Error

Revised: 11/10/92  
Security: Everyone

A/UX 1.1: Solution for "loop:bad value" Error

=====

Article Created: 20 July 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

A user gets the message

"loop:bad value"

before the Ethernet messages  
on A/UX startup. All Ethernet communications work well. Is this message  
related to Ethernet, or something else?

### DISCUSSION -----

This error message comes from the startup script BNET in /etc/startup.d.  
It can be caused by an incorrect entry in the /etc/hosts file for the loop  
address. The line for the loop address should look like this:

```
127.0.0.1    loop  loo  lo    localhost    Software_Loopback
```

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Tech Info Library Article Number:4164



# Tech Info Library

## A/UX 1.1: toolboxdaemon Problem Solved

Revised: 9/3/92  
Security: Everyone

A/UX 1.1: "toolboxdaemon" Problem Solved

=====

Article Created: 21 August 1989

Article Change History

-----

08/31/92 - REVIEWED

•For technical accuracy

TOPIC -----

I can't seem to get the toolboxdaemon to run correctly in the release version. I have set the command in the inittab file to "once" and restarted. When I try to run HFX, I get messages saying that the toolboxdaemon seems to be dead and fatal toolbox error. I also tried the newunix toolbox command and restarted. That didn't help. Next, I put a command in the /etc/startup file to automatically run toolboxdaemon in the background. Everything seems OK until I quit from HFX. Instead of seeing the console screen, I get a series of tiny "windows" across the screen. I can type in commands, but I can't read them. What's wrong?

DISCUSSION -----

The first error message appears when a toolbox application is started, and the toolboxdaemon is not running. The entry in the /etc/inittab file is correct when set to once, but the toolboxdaemon won't be started, unless the system is brought into multi-user mode with the command:

```
init 2
```

The reason for the tiny windows is that the system is running in color mode under the toolbox application and is trying to talk to a monochrome display (the A/UX console) when the error occurs. Try running the system in monochrome mode so that you can read the error message being sent to the screen.

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Tech Info Library Article Number:4166



# Tech Info Library

## LaserWriter: How To Restore Factory Defaults

Revised: 3/5/92  
Security: Everyone

LaserWriter: How To Restore Factory Defaults

=====

Article Created: 21 August 1989  
Article Last Reviewed: 5 March 1992  
Article Last Updated: 5 March 1992

TOPIC -----

A user modified some of their LaserWriter's persistent parameters through PostScript commands. They would now like to restore all settings to the factory defaults. Is there a PostScript command to do this?

DISCUSSION -----

There is no standard command within the PostScript language to reset all parameters to the default settings. However, it is possible to write a PostScript program that, when downloaded to the LaserWriter, resets each parameter individually to its default settings. Since a number of persistent parameters are product specific, this program would have to be modified for each LaserWriter model: the LaserWriter, LaserWriter Plus, LaserWriter IINT and NTX, and the Personal LaserWriter NT.

The LaserWriter IIx and IIg do have the ability to restore factory defaults through a single command. This is a device specific feature, and will not work on earlier LaserWriter models. The following PostScript program will restore the factory defaults of either a LaserWriter IIx or IIg.

```
0 serverdict begin exitserver
<< /FactoryDefaults true >> setsystemparams
systemdict begin
realtime 10000 add
{ dup realtime le { pop exit } if } loop
quit
```

To send this program to your LaserWriter, copy and paste it into a blank TeachText document. Save the result, and download it with the LaserWriter Utility's "Download PostScript File" feature.

## ..TIL04167-LaserWriter-How\_To\_Restore\_Factory\_Defaults\_(TA40164).pdf

Note that the user definable settings for push-wheel positions 6-9 will also revert to their defaults after the program is downloaded. This means you must be careful if the LaserWriter is connected to a LocalTalk network and you reset the defaults. If the default type for the mini-8 port at the current push-wheel setting isn't LocalTalk, resetting the defaults will disable your ability to communicate with the LaserWriter and can disrupt network traffic.

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Tech Info Library Article Number:4167



# Tech Info Library

## A/UX 1.1: SCSI Block Access

Revised: 9/16/92  
Security: Everyone

A/UX 1.1: SCSI Block Access

=====

Article Created: 10 July 1989

### Article Change History

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08/27/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

A customer wants some information on block read/write functions in A/UX 1.1. She mentioned library files, like "ncr5380" and "ncr5380.h", as examples. Are there generic SCSI libraries?

### DISCUSSION -----

Apple Tech Comm could not locate generic SCSI libraries in the distributed A/UX binary. All device drivers and related routines are imbedded in the A/UX kernel. The only header files related to SCSI and the NCR 5380 SCSI chip are in the /usr/include/sys directory. These are:

ncr.h - interface to NCR 5380 SCSI chip  
ncr5380.h - interface to NCR 5380 SCSI chip and SCSI manager  
SCSI\*.h - generic SCSI driver interface header files

As an alternative, the customer might get an A/UX Device Drivers Kit from APDA. The kit includes the driver source code files, routines, samples, and detailed information on how to build and install a device driver into the kernel.

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Tech Info Library Article Number:4168



# Tech Info Library

## Macintosh: Databases with Graphics Capability

Revised: 2/12/93  
Security: Everyone

Macintosh: Databases with Graphics Capability

Article Created: 21 August 1989

### Article Change History

02/12/93 - UPDATED

- Fox Software, Inc. acquired by Microsoft Corporation

### TOPIC -----

What database products for the Macintosh support a field type for vector graphic objects?

### DISCUSSION -----

We assume that what you mean by vector graphic objects is anything other than bitmapped objects. The PICT format is one example of a non-bitmapped graphics file. If our assumption is correct, then you have a few solutions. If this is not the case, we'll need to know specific details about the format of the graphic object and the application that created it. Even within a single file format there are often slight variations used by different applications that can cause strange incompatibilities, so it's difficult to give a simple answer to this kind of question.

PictureBase, from Symmetry Corp., is a database that manages pictures. It can store both bitmapped images and PICT images. It lets you pull up these images and search by keywords (which you input for each picture) or by words in the filename. No other kinds of data can be stored along with the picture.

FoxBase+/Mac, from Microsoft Corporation, also lets you store PICT images and bitmapped images. This is a full-blown database that handles pictures as a field type. It also has character, numeric, date, logical, and memo field types. This information can be manipulated in many ways, which is typical of a relational database management system.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4171





# Tech Info Library

## Apple IIGS: Printing to Legal-Size Paper From AppleWorks

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Printing to Legal-Size Paper From AppleWorks

=====

This article last reviewed: 20 July 1989

TOPIC -----

A user is having problems printing to a LaserWriter from AppleWorks (on an Apple IIGS). He can print on letter-size paper but not legal. He has a legal tray and has set the paper length to Legal in AppleWorks. Does AppleWorks on an Apple II support legal printing from a LaserWriter?

DISCUSSION -----

If you print in an AppleWorks 2.0 and ProDOS 8 environment, the ImageWriter Emulator (IWEM) does not support legal-size paper; it supports only letter-size paper. IWEM is not alone; the LaserWriter Diablo 630 emulator does not support paper lengths longer than 11 inches.

However, if you try this in AppleWorks on an Apple IIGS with GS/OS environment, everything works smoothly and with the desired results. In addition, the user can select various fonts and styles in AppleWorks for more pleasing results.

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Tech Info Library Article Number:4172



# Tech Info Library

## LaserWriter IINTX: Switching Modes Requires Using DIP Switches

Revised: 9/22/89  
Security: Everyone

LaserWriter IINTX: Switching Modes Requires Using DIP Switches

=====

This article last reviewed: 20 July 1989

TOPIC -----

I have read that although it was possible to switch from PostScript to Diablo or LaserJet emulation via software on the LaserWriter IINTX, switching back to PostScript could be done only via the DIP switches due to a ROM problem. Is this still accurate?

DISCUSSION -----

Unfortunately, yes. Switching back to PostScript from Diablo or LaserJet emulation can be done only by resetting the DIP switches. This is a known problem that Adobe and Apple are both working on.

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Tech Info Library Article Number:4173



# Tech Info Library

## MacTCP: Comparison to Kinetics K-Talk

Revised: 12/4/89  
Security: Everyone

MacTCP: Comparison to Kinetics K-Talk

=====

This article last reviewed: 06 October 1989

TOPIC -----

Is Mt. Xinu's K-Talk (formerly distributed by Kinetics) similar in function to MacTCP?

DISCUSSION -----

Although you can achieve similar results from MacTCP and K-Talk, there are some differences that you should be aware of. MacTCP is software installed on individual Macintoshes while K-Talk is software installed on a UNIX host. MacTCP provides TCP/IP connections for a Macintosh while K-Talk provides AppleTalk connections for a UNIX host.

At the point the packets reach the host machine running K-Talk, there is no need for a translation to TCP/IP. The K-Talk package, running on the UNIX host, translates the AppleTalk messages directly into UNIX file system calls without any intermediate steps.

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Tech Info Library Article Number:4175



# Tech Info Library

## Ethernet/LocalTalk: TCP/IP Packets and GatorBox

Revised: 8/21/89  
Security: Everyone

Ethernet/LocalTalk: TCP/IP Packets and GatorBox

=====

This article last reviewed: 20 July 1989

TOPIC -----

The GatorBox is an Ethernet/LocalTalk bridge with NFS-to-AFP conversion. NFS runs over TCP/IP. AFP is an AppleTalk protocol. One would assume that the GatorBox takes NFS data in TCP/IP packets and converts them into AppleTalk packets with AFP suitable for AppleShare-style access via the Chooser. One also would assume that no TCP/IP is ever sent on to the LocalTalk side, and no AppleTalk on the Ethernet side, in this environment. Is this true?

DISCUSSION -----

On the LocalTalk side, the TCP/IP packets are encapsulated within AppleTalk packets by the router (the GatorBox) and shipped to the Macintosh. The Macintosh then interprets the TCP/IP "data" and does the necessary operations. In the environment specified, it is likely that no AppleTalk packets are being sent to the Ethernet, unless you are also using the GatorBox as an AppleTalk router.

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Tech Info Library Article Number:4176



# Tech Info Library

## MacTCP: TCP/IP Encapsulation and DDP-IP Functionality

Revised: 8/21/89  
Security: Everyone

MacTCP: TCP/IP Encapsulation and DDP-IP Functionality

=====

This article last reviewed: 20 July 1989

TOPIC -----

Regarding DDP-IP functionality, is it true that MacTCP can send TCP/IP data embedded in AppleTalk packets (necessitating use of the DDP-IP gateway)? Can MacTCP direct TCP/IP packets directly on to an Ethernet (without a DDP-IP gateway)? Can K-Talk do this?

DISCUSSION -----

Yes, this is a fair representation of the functionality provided by MacTCP. When you are on a LocalTalk-based network, the TCP/IP packets are encapsulated within AppleTalk packets. When you are on an Ethernet, MacTCP uses TCP/IP directly without the encapsulation.

K-Talk does not provide quite the same capability. The best way to understand K-Talk is that it is software that resides on a UNIX host and provides AppleTalk services for AppleTalk clients (usually Macintoshes).

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Tech Info Library Article Number:4178



# Tech Info Library

## Apple EtherTalk Card: 802.3 Implementation Described (8/94)

Revised: 8/31/94  
Security: Everyone

Apple EtherTalk Card: 802.3 Implementation Described (8/94)

=====

Article Created: 20 July 1989  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

This article discusses Apple's implementation of 802.3.

DISCUSSION -----

Apple's implementation of 802.3 on the EtherTalk card is compliant with the 802.3 version 1 standard without any deviation. That is, Apple does not buffer its packets.

Apple uses the National Semiconductor 802.3 chip set consisting of a DP 8390 Network Interface Controller, DP 8391 Serial Network Interface, and the DP 8392 Coaxial Transceiver Interface. Buffering is handled in the DP 8390.

Apple's implementation should not raise any technical concerns with regard to bridging Ethernet segments, because Ethernet is a separate LAN specification from the 802.3 standard. Our Ethernet standard is compliant with the Digital/Intel/Xerox specification for an Ethernet local area network.

Article Change History:  
31 Aug 1994 - Reviewed for accuracy.

Support Information Services

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Tech Info Library Article Number:4179



# Tech Info Library

## Macintosh-to-AT&T 6544/IBM 3174 Controllers Connectivity

Revised: 8/21/89  
Security: Everyone

Macintosh-to-AT&T 6544/IBM 3174 Controllers Connectivity

=====

This article last reviewed: 20 July 1989

TOPIC -----

A customer has AT&T 6544 controllers. They are using IBM PCs (with Attachmate cards) to connect to the controllers to get to the mainframes. (The customer says that the wiring is twisted-pair.)

Is there a similar card available for a Macintosh II? Do you have any other suggestions on how to connect the Macintosh to the 6544 controller?

DISCUSSION -----

The AT&T 6544 controllers are clones of the IBM 3174 controllers with AT&T-added functions for twisted-pair terminal connections and support. For all practical purposes, your customer's configuration can be approached as a connection to an IBM 3174.

This can be done through an AppleLine or other third-party product for 3174 support (like an Avatar or DCA 3270 Coax Card) and terminal emulation software (like MacTerminal and 3270 FT from Apple or other third-party products). There are a number of such products, and some are listed in Tech Info Library.

While coax connections to the 6544 controller are possible, you can also connect to the twisted-pair RJ-11 connectors. A Balun is needed at the male end of a coax connector, for converting the signal levels to that of RJ-11 wiring. The Balun is similar to that found on the AppleLine product. Baluns are listed in most data communications trade catalogs, like the Black Box Catalog.

For more details, search the Tech Info Library under "Black Box Corp".

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Tech Info Library Article Number:4180





# Tech Info Library

## AppleShare Print Server: Printing Problems Can Be Bad Net

Revised: 8/21/89  
Security: Everyone

AppleShare Print Server: Printing Problems Can Be Bad Net

=====

This article last reviewed: 20 July 1989

TOPIC -----

Apple Tech Comm has received a number problem reports recently concerning to AppleShare Print Server 2.0. The problem is "double printing" a print job or not printing all pages of a long print job (more than 10 pages) and restarting the print job. Here are two examples:

### Example #1

-----

If the spooler is chosen, the job is accepted and starts to spool to the printer. If the job is less than 10 pages, the print process completes with no problems. If the print job is greater than 10 pages, the print spools to the printer and stops at about page 6, and the print job repeats (from page 1). Our guess is that the LaserWriter times out and the print spooler restarts the job.

### Example #2

-----

AppleShare Print Server seems to have a problem. When a single-page document is sent to print with multiple copies, it seems to double the print request. That is, request 25 copies, receive 50 copies.

There is no indication in the print queue that two jobs are being printed, nor is there any mention of it in the print log. The problem occurs when printing from several Macintoshes so I know it is not the software on one particular Macintosh that is at fault.

DISCUSSION -----

It sounds as if the networks involved in these cases are poorly terminated. Poor termination can result in LaserWriters timing out. When connected to the print server, timing out prevents the print job from being closed out. Because the print server thinks the job failed before completion, it resends the entire

job, which results in double printing. Apple Tech Comm has experienced the same problem and eliminated it by cleaning the network connections.

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Tech Info Library Article Number:4181



# Tech Info Library

## Meridian Software Systems, Inc.

Revised: 7/13/93  
Security: Everyone

Meridian Software Systems, Inc.

=====

Article Created: 08/21/89  
Article Reviewed: 07/13/93  
Article Updated:

Meridian Software Systems, Inc.

-----

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Company Profile:  
Software, specializing in ADA compilers and components.

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Tech Info Library Article Number:4182



# Tech Info Library

## Apple IIGS: How To Prevent Control Panel Access

Revised: 10/18/91  
Security: Everyone

Apple IIGS: How To Prevent Control Panel Access

=====

This article last reviewed: 20 July 1989

TOPIC -----

Is there a way to lock the Control Panel on an Apple IIGS? If the Control Panel cannot be locked, is there a way to write an INIT to reset the PRAM to a predetermined setting?

DISCUSSION -----

The disposition of this problem depends on whether you have a pre-1MB Apple IIGS computer or a 1MB Apple IIGS computer:

Pre-1MB Apple IIGS Computer

-----

For older (pre-1MB Apple IIGS computers) you can, under ProDOS 16 and GS/OS, intercept the interrupt created by the Control Panel access keystroke. For these computers, you need to write an interrupt handler that accepts the Control Panel interrupt and disposes of it.

Startup programs, or INITs, are discussed in "Apple IIGS ProDOS 16 Reference" (ISBN 0-201-17754-4), published by Addison-Wesley. Pages 52 through 57 deal with the issues of boot initialization and the SYSTEM.SETUP subdirectory. Both issues are of importance to the creation of startup programs.

Interrupts and interrupt handlers are discussed in several places throughout the book. Use the index to review the issues connected with interrupts.

One shortcoming when using a startup program with ProDOS 16 or GS/OS concerns ProDOS 8 applications. When a ProDOS 8 application is executed, ProDOS also is executed, and, in the process, the INITs of ProDOS 16 or GS/OS are not active until ProDOS 16 or GS/OS is executed again.

1MB Apple IIGS Computer  
-----

The newer 1MB Apple IIGS computer has a jumper at W1 that disables the Control Panel. W1 is a two-pin jumper located on the logic board near the power supply.

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Tech Info Library Article Number:4183



# Tech Info Library

## AppleFax Modem: Problems Receiving Data from Another Fax

Revised: 8/21/89  
Security: Everyone

AppleFax Modem: Problems Receiving Data from Another Fax

=====

This article last reviewed: 20 July 1989

TOPIC -----

A user with an AppleFax Modem is having trouble receiving Faxes from another Fax machine (the Hitachi DEX 6000). He has the new ROMs and is running System 6.0.2 and AppleFax 1.2 software on a Macintosh II.

A Hitachi technical representative told him that our modem was responding with an "RTP", not the expected "MCF".

He says that when the DEX initiates the call, it waits a moment and then tells him there was an error in communicating. On the Macintosh side, the AppleFax Modem answers the call and seems to be receiving the Fax, but when he prints it, he just gets garbage.

DISCUSSION -----

The "RTP" response sent by the AppleFax Modem is a request for retraining. The modem sends this request when the data sent by the calling Fax machine is corrupted during transmission. Phone line noise is one of the most common causes. The "RTP" response is a valid response according to the T.30 specification (the standard for Fax machine communications).

The "MCF" response expected by the DEX 6000 is a message confirmation response. This response is sent if the AppleFax Modem receives clean data from the phone line.

It appears that the DEX 6000 is sending a packet of information that is being corrupted by the phone lines. In response to the corrupted data, the AppleFax Modem is sending a request for retraining, which seems to be ignored by the DEX 6000. The AppleFax Modem continues to wait for the retraining that it has requested. The DEX 6000 apparently does not understand the "RTP" message, considers it an invalid response, and returns an error code to the DEX user.

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Tech Info Library Article Number:4184



# Tech Info Library

## LocalTalk PC: Background Printing on AppleShare Not Supported

Revised: 8/21/89  
Security: Everyone

LocalTalk PC: Background Printing on AppleShare Not Supported

=====

This article last reviewed: 20 July 1989

TOPIC -----

A user has an AppleShare File Server and an MS-DOS machine using a LocalTalk PC Card. If he prints a file on LocalTalk (not on the server) in the background and, at the same time, tries to copy a file from the server to the MS-DOS computer, it bombs. He can do these separately, but not at the same time. Can you explain?

DISCUSSION -----

We don't know how background printing is being attempted in this situation. The AppleShare PC or LocalTalk PC environment does not provide a method for background printing. If the customer is attempting the background operations via some MS-DOS utility, the customer is exploring an untested and unsupported environment.

For MS-DOS, the only solution Apple provides is print spooling, which is accomplished using the AppleShare Print Server. Background printing is not provided.

The difference is that print spooling is provided by a network-accessible device that can be used by several network users. Background printing is a process that takes place on an individual's workstation and is accessible by that workstation's user only.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4185





# Tech Info Library

## Data Conversion Services for Mac-to-Third Party File Transfer

Revised: 8/21/89  
Security: Everyone

Data Conversion Services for Mac-to-Third Party File Transfer

=====

This article last reviewed: 21 July 1989

TOPIC -----

A customer has a lot of IBM DisplayWriters (model 6580). They need to transfer the files from the DisplayWriters to the Macintosh. The DisplayWriters are connected as 3270 terminals to the mainframe, but they do not have any uploading or downloading capability (for security reasons). Is there any solution for transferring the files from the DisplayWriters to the Macintosh systems? The DisplayWriter uses 8-inch floppy disks.

DISCUSSION -----

A data conversion service can provide the answer. We are aware of three such services that can handle the DisplayWriters' 8-inch disk conversion to the Macintosh format:

Pivar Computing Services, Inc.  
Convert-It!  
Tropus, Inc.

For more details, search the Tech Info Library under any of these company names.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4186



# Tech Info Library

## PC Terminal Emulation Over LocalTalk to VAX

Revised: 8/21/89  
Security: Everyone

PC Terminal Emulation Over LocalTalk to VAX

=====

This article last reviewed: 21 July 1989

TOPIC -----

A customer has several AppleTalk network combinations (Macintoshes and PCs). They want to do terminal emulation on the PCs over the LocalTalk PC Card to a VAX. Do you know of any products that might handle this?

DISCUSSION -----

TCP/Connect by InterCon supports MS-DOS machines attached to LocalTalk via any of the available cards and includes VT220 emulation. They also have a TCP/Connect for the Macintosh.

For more details, search the Tech Info Library under "InterCon Corp"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4187



# Tech Info Library

## MacAPPC: VTAM and NCP Supported

Revised: 8/21/89  
Security: Everyone

MacAPPC: VTAM and NCP Supported

=====

This article last reviewed: 20 July 1989

TOPIC -----

This article discusses APPC support in particular versions of VTAM and NCP.

DISCUSSION -----

Native PU 2.1 support is provided in VTAM Version 3 Release 2, NCP Version 4 Release 3, and NCP Version 5 Release 2.

One can, however, establish APPC connectivity under earlier releases of both products using a PU type 2 definition with many restrictions on the types of configurations supported.

These restrictions are:

- 1) Using a PU type 2 definition, the APPC node is relegated to the role of a SECONDARY logical unit. The APPC node defined as a PU type 2 CANNOT be a primary or negotiate roles.
- 2) The APPC node defined with a PU type 2 definition can have only ONE session with an application in the same subarea network. Parallel sessions and multiple sessions are NOT supported with a PU type 2 definition.

Therefore, you can run a MacAPPC node defined as a PU type 2 with earlier releases of VTAM and NCP with SINGLE SESSION, SECONDARY logical unit support only.

Please note that this restriction is NOT unique to MacAPPC only. All PU type 2.1 products (including System 3X and the IBM PC) share the same restrictions on sessions and logical unit roles in the VTAM/NCP environment.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4189



# Tech Info Library

## Apple IIGS: Power Specifications and Discussion

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Power Specifications and Discussion

=====

This article last reviewed: 21 July 1989

TOPIC -----

What is the milliampere output on the Apple IIGS? Is an overload possible? A customer has an Apple IIGS with all slots filled, and he cannot use his internal 2400-baud modem without disconnecting a card.

DISCUSSION -----

The following is a compendium of information from four different manuals and four engineers, with some common sense thrown in.

All DC outputs are regulated at the same time and their voltages will, to some extent, reflect unequal loadings. For example, if the +5V is loaded very heavily, then all other supply voltages will rise slightly. Conversely, if the +5V is lightly loaded, and the +12V is heavily loaded, both it and all other supplies will sag slightly.

Nominal current load ratio is:

+12V is 1/2 the +5V  
-5V is 1/10 the +5V  
-12V is 1/10 the +5V

The current capacities for the Apple IIGS power supply are:

| Power Supply | Max. Current Available |
|--------------|------------------------|
| -----        | -----                  |
| +12V         | 1.5A                   |
| +5V          | 4.0A                   |
| -12V         | 250 mA                 |
| -5V          | 250 mA                 |

This information was obtained from the label on the bottom of the power

supply.

The primary reasons for the stated limitations on the various supply voltages:

- 1) To ensure that the current capabilities of the traces and connectors are not exceeded.
- 2) To ensure nominal system loading.
- 3) To allow for memory card and its effects on the supply.
- 4) To ensure compatibility with existing cards.

It is a misconception that the current draw on any given supply on any given slot should be 1/7th the total current available. If there is 500 mA available on the +5V line, this means that the total current draw per slot should not exceed the stated maximum. One-seventh of 500 mA is 71.43 mA, which would almost demand the use of CMOS on all boards, but this is not the case. Some of Apple's interface cards exceed 71 mA.

#### Points To Ponder

- 
- 1) Tech Comm doesn't know of a test that would indicate a maximum current drain from each supply. As you can see from the earlier paragraph, the loading ratio plays a part in how the system reacts under load.
  - 2) Misconception as stated above. As long as the loading ratios are close to the stated ratio, higher supply loading might be possible without degradation.

#### Added Concerns

- 
- 1) The power supply capabilities are from the label on the bottom of the supply. These specifications were designed into, and marked on, the power supply by the manufacturer.
  - 2) The specified currents should not exceed the capabilities of the traces and connectors. If the customer is experiencing failures, it may be due to improper loading ratios and not current limitations. There is nothing physically added to the logic board to limit any current supplied to an interface card.

Our only concern, in this instance, is the loading ratio and the imbalance in the current drawn from the +12V and the +5V supplies. They are drawing almost three times the current from the +12V as the +5V. The best thing to do is to find a way to balance the load to match recommended the load ratio.

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Tech Info Library Article Number:4192



# Tech Info Library

## CD-ROM Review Is No Longer Published

Revised: 8/21/89  
Security: Everyone

"CD-ROM Review" Is No Longer Published

=====

This article last reviewed: 21 July 1989

TOPIC -----

IDG Communications is still in business. However, "CD-ROM Review" has discontinued publication. All of their subscribers were notified.

DISCUSSION -----

CD-ROM Review, a monthly magazine, published CD-ROM lists each month. Recently, these lists were theme-based; that is, Government, business, under \$500, Macintosh, and so on. This magazine has been one of the better sources of CD-ROM availability.

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Tech Info Library Article Number:4194



# Tech Info Library

## LaserWriter Plus: 3.0 ROM, PostScript 47 Upgrade Available

Revised: 8/21/89  
Security: Everyone

LaserWriter Plus: 3.0 ROM, PostScript 47 Upgrade Available

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This article last reviewed: 21 July 1989

TOPIC -----

Is there a version 3.0 ROM for the LaserWriter Plus?

DISCUSSION -----

Yes, version 3.0 of the LaserWriter Plus ROMs contains version 47 of PostScript. To determine if a LaserWriter Plus has 3.0 ROMs, look on the test page at the line graph. The version number of the ROMs is at the bottom left corner of the chart.

If a LaserWriter or LaserWriter Plus does not have version 3.0 ROMs (PostScript version 47), you can upgrade the printers with the LaserWriter Plus Kit (M0191).

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Tech Info Library Article Number:4195





# Tech Info Library

## Two-Page Monochrome and Portrait Display Video Cards: Pinouts

Revised: 9/28/92  
Security: Everyone

Two-Page Monochrome and Portrait Display Video Cards: Pinouts

=====

Article Created: 21 July 1989

### Article Change History

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09/28/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What are the pinouts of the interface cards for the Two-Page Monochrome Monitor and the Portrait Display?

### DISCUSSION -----

Actually, the Two-Page Monochrome Monitor Video Card and the Portrait Display Video Card are the same cards with different clock crystals and ROMs. Here are the pinouts:

- 1 Ground
- 2 Vertical Sync
- 3 Sense Line 2
- 4 Ground
- 5 Composite Sync
- 6 Horizontal Sync
- 7 Ground
- 8 Sense Line 1
- 9 Sense Line 0
- 10 Ground

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Tech Info Library Article Number:4196



# Tech Info Library

## Macintosh II Video Card: Problem Recognizing Other Video Cards

Revised: 8/21/89  
Security: Everyone

Macintosh II Video Card: Problem Recognizing Other Video Cards

=====

This article last reviewed: 21 July 1989

TOPIC -----

I have a Macintosh II 8-Bit Video Card and one Macintosh II Portrait Display Video Card in a Macintosh IICx. I've transported the Macintosh back and forth between two locations, one with an RGB monitor and the other with a Portrait Display monitor.

If the Portrait Display monitor is not connected, the Control Panel has no monitor selection and the Macintosh transfers all open windows and startup information (menu bar) to the RGB monitor. (This must be a new feature of the Portrait Display board only.) When I connect the Portrait Display and no RGB monitor, all of the information is output to the RGB card, and I cannot revert via the Control Panel.

It seems that only the Portrait Display Video Card senses if a monitor is connected. Can I make the RGB monitor disappear in the same way as the Portrait Display without pulling the card each time I transfer the Macintosh (my current strategy)?

Is this a new feature and will all new monitor boards have it?

DISCUSSION -----

Yes, this is a new feature that has been included in the Macintosh II Portrait Display Video Card and the Two-Page Monochrome Monitor Video Card. This feature will most likely be included in all of our future video cards.

There is no way to modify the Macintosh II 1-Bit Video Card, 4-Bit Video Card, or 8-Bit Video Card to behave in this manner.

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Tech Info Library Article Number:4197



# Tech Info Library

## Macintosh: Performance in High-RFI Environments

Revised: 6/1/92  
Security: Everyone

Macintosh: Performance in High-RFI Environments

=====  
Article Created: 21 August 1989  
Article Last Reviewed: 27 May 1992  
Article Last Updated:

TOPIC -----

A user wants to put a Macintosh within three meters of medical equipment that generates sound waves up to 27.12 MHz. Can a Macintosh and an peripheral, like an ImageWriter or LaserWriter, work under these conditions without malfunctioning within a specified period?

The device is a CURAPULS 419; it generates HF signals as follows:

Generator frequency: 27.12 MHz  
Intensity (continuous): HF max 400W  
                          (pulsing): HF max 1000W  
Pulse rate: about 400 microseconds  
Pulse modulation: adjustable in 10 steps from 15-200 Hz

DISCUSSION -----

The frequency and wattage of the CURAPULS are not unlike that of high-frequency radio waves output by ham radios. Ham radio high-frequency waves are approximately 15 meters peak-to-peak at 21 MHz, or 10 meters at 28 MHz; whereas, the CURAPULS is 12 meters peak-to-peak at 27 MHz (27.12 MHz). Typical ham radio power output is 2,000 watts PEP (peak envelope power) and 1,000 watts DC (direct current), while the CARAPULS's appears to be 1,000 watts PEP and 400 watts DC.

Many ham operators are also computer enthusiasts and successfully use both electronic devices simultaneously. The key to the CURAPULS's impact on the Macintosh is how the radio waves are radiated. That is, will waves radiate from a roof antenna, or (because it is a medical instrument) contained within a shielded space or focused wand? If the waves are directly focused at the Macintosh with a high volts-per-meter intensity, you may have

difficulties.

Less hazardous symptoms of the high-frequency waves include distortion of the screen. Potentially more damaging symptoms include interference with reading and writing to disk drives.

Good shielding and grounding of the Macintosh and peripherals will reduce the effects of any symptoms. For instance, Macintoshes with internal drives are less susceptible to radio interference than external drives. Internal hard disks are less susceptible than external hard disks, which tend to have poorer shielding. External devices also have their own power cords, thereby making for a greater chance of ground loop interference.

Because Macintoshes aren't tested for susceptibility to external RFI, we cannot definitively state the amount of interference a Macintosh tolerates before problems may occur. Given the number of ham radio operators using computers near their antennas, and the similarity of the ham radio waves and the CURAPULS radio waves, it is not likely that there will be any major problems using the Macintosh while using the CURAPULS. However, be cautious; experiment with the location of the equipment using nonessential data. Such experiments might include a high number of read/write cycles to disks, followed by verification of data integrity.

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Tech Info Library Article Number:4198



# Tech Info Library

## A/UX: CD-ROM Installation Issue

Revised: 9/29/92  
Security: Everyone

A/UX: CD-ROM Installation Issue

Article Created: 11 March 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

The README file on the A/UX CD-ROM installation floppy disc explains how to create space in the root file system. It says to remove the hard disk images of the manual pages and use the usr/catman files on the CD-ROM-based root&usr file system.

The last step is supposed to create a symbolic link, but the command contains an error that links the two catman directories together rather than symbolically providing the a\_man and u\_man files to the root file system.

The command as stated in README file:

```
ln -s /mnt/usr/catman /usr/catman
```

should be:

```
ln -s /mnt/usr/catman/* /usr/catman
```

Because of the permanent nature of the recommended changes, I strongly believe that the instructions should have the user create a dedicated mount point rather than using the /mnt mount point.

I believe that all Macintosh CD-ROMs should be mastered with the desktop icon closed as they are mounted. The A/UX 1.1 CD-ROM violates that common courtesy, and I hope the next version fixes that issue.

DISCUSSION -----

Yes, you're right. It must use "ln -s /mnt/usr/catman/\* /usr/catman" or the "man" will fail.

According to the previous remove commands in the README instruction, after finishing the 'rm -r /usr/catman/a\_man' and the 'rm -r /usr/catman/u\_man', the /usr/catman still remains a directory. Anything symbolically linked to the EXISTING directory will be created under that directory. Under this circumstance, the command:

```
ln -s /mnt/usr/catman /usr/catman
```

creates a symbolic link named "catman" under the /usr/catman directory.

Another comment on the 'ln -s' command: if the 'usr/catman' does not exist before using 'ln -s ...', the "/usr/catman" is created as a symbolic link to the /mnt/usr/catman directory.

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Tech Info Library Article Number:4199



# Tech Info Library

## TCP/IP Packets: How AppleTalk Encapsulation Works (11/94)

Revised: 11/21/94  
Security: Everyone

TCP/IP Packets: How AppleTalk Encapsulation Works (11/94)

=====

Article Created: 21 June 1989  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

TCP/IP packets are encapsulated in an AppleTalk packet for transmission over an AppleTalk network (for example, LocalTalk). When a router ships this encapsulated packet to the recipient Macintosh, how does the Macintosh know how to strip off the TCP/IP packet surrounding the data?

The Macintosh must know how to strip off AppleTalk packet information to get at the data, but what happens to the TCP/IP packet stored within that? If something, like MacTCP, is installed, this could take care of it. However, how does the GatorBox manage this, because the Macintosh can use NFS servers as AFP servers with no additional software other than the AppleShare workstation drivers installed?

DISCUSSION -----

As you stated, when the Macintosh receives TCP/IP packets encapsulated within AppleTalk packets, two steps are taken. The first is the stripping of the AppleTalk information and the passing of the enclosed data to the appropriate communications application or driver.

The second step is the interpretation of the TCP/IP packets by the receiving program. If you are using MacTCP, it handles the TCP/IP information in the same way that the AppleTalk drivers handle the AppleTalk information. If you are using an application that is not using MacTCP, like NCSA Telnet, then the application is responsible for providing the same functionality as that provided by MacTCP.

A GatorBox or similar device acts as a higher-level gateway. It translates NFS (Network File System) protocols into AFP (AppleTalk Filing Protocol) and presents it to a Macintosh. The Macintosh "sees" an AppleShare server and sends AFP requests to that server. These AFP requests are translated into NFS requests by the GatorBox software and are then sent to the host.

Article Change History:

21 Nov 1994 - Change title to better reflect article.

Support Information Services

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Tech Info Library Article Number:4200





# Tech Info Library

## AppleTalk: FastPath & GatorBox are Protocol Converter & Router

Revised: 8/21/89  
Security: Everyone

AppleTalk: FastPath & GatorBox are Protocol Converter & Router

=====

This article last reviewed: 21 June 1989

TOPIC -----

Is it true that a box, like the GatorBox and FastPath, can act in two modes, both operating at the same time if necessary?

DISCUSSION -----

It is true that a FastPath (and a GatorBox) can be both a protocol converter and an AppleTalk router.

These modes are as a simple router and as a gateway. As a simple router, it takes AppleTalk packets from one physical network (like LocalTalk) and routes them to another physical network (like EtherTalk). As a gateway, it takes data from a TCP/IP network and converts it to AppleTalk protocols (encapsulating the TCP/IP packet in an AppleTalk packet) at the same time as sending from one physical network to another in the same manner as the router aspect.

A vocabulary note: A gateway performs protocol conversion, like AppleTalk to TCP/IP. A bridge connects two physical networks as one logical network. In AppleTalk terms, this would mean that both physical networks would have the same network number. A router connects two physical networks and maintains them as separate logical networks. In AppleTalk terms, this means that each network has different network numbers although they may or may not be in the same zone.

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Tech Info Library Article Number:4201



# Tech Info Library

## Apple IIGS: Error 911 Is Too Many Sync Errors on ADB

Revised: 8/21/89  
Security: Everyone

Apple IIGS: Error 911 Is Too Many Sync Errors on ADB

=====

This article last reviewed: 21 July 1989

TOPIC -----

On an Apple IIGS with the 0077B ROM installed using GS/OS, I occasionally run into a Fatal System Error ID=911. In one case, it happens when the I switch from MS-DOS (Applied Engineering, PC Transporter) to ProDOS. In another case, it occurs after shutting down the Control Panel. Running the Cortland Diagnostics does not locate the problem. Error ID=911 has to do with the Apple Desktop Bus.

DISCUSSION -----

ID=911 means that too many sync errors occurred on the Desktop Bus. This problem has been identified but not fixed in currently produced logic boards. It has, however, been targeted for inclusion in future revisions.

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Tech Info Library Article Number:4202



# Tech Info Library

## LaserWriter IINTX: Attached Hard Disk Can Slow Printing Speed

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: Attached Hard Disk Can Slow Printing Speed

=====

This article last reviewed: 21 July 1989

TOPIC -----

I have heard from Adobe Technical Support that adding a hard disk to a LaserWriter IINTX does NOT increase printing speed. Do we have any general or specific speed comparisons on the hard disk and LaserWriter IINTX configuration?

DISCUSSION -----

Technically, adding a hard disk to a LaserWriter IINTX does slow down printing. This is because when searching the font list (ROM and disk-based), the system searches the entire list (even though the font may be in ROM) and sends one packet for each and every font. Further, the search continues through the list even after the desired font is found. Engineering is aware of this and is planning to fix it in a future revision.

When printing using a font not contained in the LaserWriter II ROM, the fastest printing is achieved once the font is held in the LaserWriter II RAM. Fonts downloaded from the System Folder result in the slowest printing. Printing with fonts stored on the hard disk falls somewhere in between.

Depending on the context of your discussions with Adobe Technical Support, their statements could be accurate. Most of the information we gathered in previous discussions on this subject came from Adobe engineers.

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Tech Info Library Article Number:4203



# Tech Info Library

## AppleFax Modem: Power Supply Pinouts

Revised: 8/21/89  
Security: Everyone

AppleFax Modem: Power Supply Pinouts

=====

This article last reviewed: 21 July 1989

TOPIC -----

I need the pinouts on the back of the AppleFax Modem for the power supply cable.

DISCUSSION -----

The pin assignments in the cable:

| Pin | Function     |
|-----|--------------|
| 1   | +12 volts    |
| 2   | Earth Ground |
| 3   | Return       |
| 4   | +12 volts    |
| 5   | Return       |
| 6   | -12 volts    |
| 7   | +5 volts     |

The end view of the pin layout in the cable's connector looks like:

```

  7  x      x  6
3  x      x  1
  5  x      x  4
      x
      2
```

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Tech Info Library Article Number:4204



# Tech Info Library

## Intermedia: General Information

Revised: 9/14/92  
Security: Everyone

Intermedia: General Information

Article Created: 21 August 1989

### Article Change History

08/31/92 - REVIEWED

- For technical accuracy

Swami

### TOPIC -----

This article describes the Intermedia software product.

### DISCUSSION -----

Intermedia, developed by Brown University's Institute for Research in Information and Scholarship (IRIS), in conjunction with Apple Computer, is a tool that lets users build "webs" of information consisting of text, graphics, timelines and scanned images. Intermedia runs under A/UX, using the Macintosh Toolbox interface. Documents are shared using NFS (Network File System).

Intermedia consists of four integrated applications:

- InterWord, a word processing program
- InterDraw, a structured graphics editor that with InterPix, a scanned image viewer, lets users create and display diagrams and bitmap images
- InterPix, a scanned image viewer
- InterVal, a timeline editor that helps manage temporal events by displaying them in chronological order. It has the capability to link together materials created by those applications into an exploratory web of ideas.

The IRIS Intermedia system has two parts. First is the IRIS Intermedia

Server. It runs on a Macintosh system connected to a network and manages both the document file system and a network-accessible database. The database contains the information about interdocument links and the Intermedia Client.

Intermedia Client runs on individual workstations and includes the four applications--InterWord, InterDraw, InterPix, and InterVal. The IRIS InterLex Server is an optional Intermedia component, providing network-wide access to a full version of Houghton Mifflin's American Heritage Dictionary from any of the other applications.

In a sample IRIS Intermedia web, "Exploring the Moon," students interested in lunar exploration can browse through a collection of materials about the Apollo Missions, including details of the scientific objectives and goals of each mission.

The IRIS Intermedia system is available through APDA for or through IRIS. When purchased through APDA, customers in the U. S. are eligible for up to two hours of free A/UX hotline support for the first 90 days. The package includes the Intermedia Server and Intermedia Client software, tutorials, and documentation. Available directly from IRIS at Brown are "Exploring the Moon" and the IRIS InterLex Server.

In a stand-alone installation, Intermedia requires one dedicated Macintosh II, IIx, or IICx system running A/UX 1.1, with at least 4 megabytes of RAM to act as both the server and client. In a networked installation, Intermedia requires one dedicated Macintosh II, IIx or IICx running A/UX 1.1, with at least 4 megabytes of RAM to act as the server and any number of similarly-configured Macintosh systems to run as clients. An additional 40 to 80 megabyte hard disk is recommended for storing documents and data of any significant size.

For more details, search the Tech Info Library under "APDA" and "IRIS".

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Tech Info Library Article Number:4205



# Tech Info Library

## Future Soft Engineering

Revised: 4/4/97  
Security: Everyone

Future Soft Engineering

=====

Article Created: 08/21/89  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Future Soft Engineering

-----

1001 South Dairy Ashford  
Suite 101  
Houston, TX 77077

713-496-9400

713-496-1090 Fax

Company Profile:  
Software, specializing in protocols and terminal emulation.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4208



# Tech Info Library

## Convert-It!

Revised: 7/7/93  
Security: Everyone

Convert-It!

=====

Article Created: 08/21/89  
Article Reviewed: 07/07/93  
Article Updated: 07/07/93

Convert-It!  
-----

5120 Campbell Ave.  
Suite 201  
San Jose, CA 95130

408-370-0123

408-378-2531 Fax

Company Profile:  
Software, specializing in data format conversion from one computer to another.

Article Change History: 07/07/93 New Product Information Changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4209





# Tech Info Library

## Tropus, Inc.

Revised: 7/20/93  
Security: Everyone

Tropus, Inc.

=====

Article Created: 21 August 1989  
Article Reviewed/Updated: 20 July 1993

Tropus, Inc.

-----

100 Mallard Creek Rd.  
Suite 250  
Louisville, KY 40207

800-368-6403

502-895-6667

Fax: 502-895-6668

### Company Profile:

Hardware and software, specializing in information management system  
integration and data format conversion.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4211



# Tech Info Library

## IBM 319X: Terminal Product Line Overview

Revised: 10/4/89  
Security: Everyone

IBM 319X: Terminal Product Line Overview

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This article last reviewed: 26 May 1989

Throughout 1987 and 1988, IBM introduced a number of new display terminals. These new devices are functional equivalents to the 3X7X coaxial and 525X twin-axial devices. In June, 1988, IBM added to it's line of ASCII Asynchronous terminals.

There are some significant new features with the product line over the older 327X and 317X devices. Enhancements include color support on all models (previously restricted to mod 2 and 3 devices) and DFT support with 3194's.

The new graphics workstation supports a mouse. The recently discontinued light pen feature is back on selected mod 2 and 3 devices.

The new devices reduce the required "footprint" of 328X devices by about 50%. Newer electronics speed the processing of the displays, making the devices slightly faster than earlier products. These redesigns allow for printer buffering, pass through, and some other features (on selected models) which have been popular on 327X-compatible devices and ASCII terminals offered by third parties for many years.

IBM claims to have reduced the number of keyboard options from over 200 to three basic models. This is not quite true, as data entry and APL keyboards are still available. The new keyboards are waterproof. 319X series devices feature "auto dim screen savers" to reduce the amount of screen burn-in and increase CRT life

The 319X line (except the 3193) also features built-in baluns. Baluns are used with a special IBM cable that has a keyed coaxial connector at one end and an RJ11 at the other. The following is a summary of the devices and features now offered by IBM.

The older 327X and 317X devices are no longer on IBM's price list. However, the 3290 gas-plasma display is still available.

The 319X 3270 replacements will operate on 3274, 3174 controllers, and 937X direct coaxial attachments except as noted in the special features section.

The 3196 and 3197 operate on System 3X or AS/400 direct attached twin-ax or the 5251-12 (with restrictions) and 5294 remote controllers, except as noted in the special features section.

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Tech Info Library Article Number:4212



# Tech Info Library

## IBM 3151 ASCII Display Station Family

Revised: 10/4/89  
Security: Everyone

IBM 3151 ASCII Display Station Family

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This article last reviewed: 26 May 1989

This product line was introduced in June, 1988. These ASCII displays augment the already existing line of 316X ASCII displays. The model 310 and 410 feature plug in cartridges to implement optional terminal emulators and features, such as RS422A. 3708 enhancement mode allows pass through printing as a local or system printer to a display attached ASCII printer by seizing two LU's from the 3708 remote protocol converter. Three models are offered. The following table summarizes the features of each model.

|                         | 3151-101<br>-----                                                                       | 3151-310<br>-----                                                                       | 3151-410<br>-----                 |
|-------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------|
| Phosphor                | Green                                                                                   | Green                                                                                   | Green or Amber                    |
| Keyboards               | 84 key                                                                                  | 102 key (PC)                                                                            | 102 key (PC)                      |
| Screen Size             | 14 inch                                                                                 | 14 inch                                                                                 | 14 inch                           |
| Printer Port            | yes                                                                                     | yes                                                                                     | yes                               |
| Screen Format           | 80x24<br>80x25 (3270 status)<br>28x80 (opt)<br>24x132<br>25x132 (3270 status)<br>28x132 | 24x80<br>25x80 (3270 status)<br>28x80 (opt)<br>24x132<br>25x132 (3270 status)<br>28x132 | 24x80<br>25x80 (3270 status)      |
| Connection<br>Interface | RS232C<br>RS422A (opt)                                                                  | RS232C<br>RS422A (opt)                                                                  | RS232C                            |
| Communications          | 50 to 38.4KBPS<br>char/block/echo                                                       | 50 to 38.4KBPS<br>char/block/echo                                                       | 50 to 38.4KBPS<br>char/block/echo |
| Aux I/F                 | RS232C dedicated                                                                        | RS232C daisy chain                                                                      | RS232C daisy chain                |

Base emulators

|              |              |              |              |
|--------------|--------------|--------------|--------------|
| TeleVideo    | 910-925e     | 910-925e     | 910-925e     |
| Lear Siegler | ADM3a/5      | ADM3a/5      | ADM3a/5      |
| ADDS         | Viewpoint A2 | Viewpoint A2 | Viewpoint A2 |
| Hazeltine    | 1500         | 1500         | 1500         |
| IBM          | 3101         | 3101         |              |

Plug-in

cartridge

emulators \*

|                   |                   |
|-------------------|-------------------|
| WYSE 50/50        | WYSE 50/50        |
| DEC VT220/100/52  | DEC VT220/100/52  |
| 3708 enhance mode | 3708 enhance mode |

|            |                     |                     |                     |
|------------|---------------------|---------------------|---------------------|
| Base Price | \$399 (1 year warr) | \$525 (1 year warr) | \$525 (1 year warr) |
|            | \$499 (3 year warr) | \$555 (3 year warr) | \$555 (3 year warr) |

\* Plug in cartridges range from \$25.00 to \$70.00 each.

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Tech Info Library Article Number:4213



# Tech Info Library

## IBM 3191 Displays

Revised: 10/4/89  
Security: Everyone

IBM 3191 Displays

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This article last reviewed: 30 May 1989

The IBM 3191 displays are functional replacements to the 3178 and 3278 class of devices. There are seventeen different models. Here are some of the highlights:

### Displays and Phosphor for 3191 Displays

-----  
A series models feature 12-inch green phosphor screens and support mod 2 (24x80 with 1 status line) formats.

B series models feature 12-inch amber-gold phosphor screens and support mod 2 formats.

D series models have 14-inch green phosphor screens and support mod 2 and 3 (32x80 with 1 status line) formats.

E series models feature 14-inch amber-gold screens and support mod 2 and 3 formats.

L series displays have green phosphor 14-inch screens and support mod 2 and 3 formats.

3191's do not support graphics.

### Keyboards

-----  
The three standard keyboards are offered. The 102 key keyboard is a PC keyboard with 24 function keys. The 104 key is a full, typewriter keyboard with 24 function keys and no numeric pad. The 122 is a full, typewriter keyboard with 24 function keys and a numeric pad. A fourth keyboard (Data Entry configuration based on a 104 key keyboard) is offered on the A40 and B40 display stations. Each keyboard is bundled with a display, so the second digit of the model number indicates which keyboard is in the bundle. The keyboard is waterproof and can be modified in setup mode. The keycaps

can be removed and replaced for specific applications.

#### Special Features

-----  
The L series features a light pen. The D, E, and L series devices support an async "personal printer port" for local screen prints directly from the display. 3191's have internal baluns and use a special IBM cable with a special, keyed connector with a coaxial attachment at one end and an RJ11 on the other.

#### Pricing

-----  
The 3191 series devices are priced as follows (list price as of 8/17/88)  
One- and three-year warranties are offered with all 3191's.

|          | 1 yr warr | 3 yr warr |
|----------|-----------|-----------|
| A series | \$1235    | \$1355    |
| B series | \$1290    | \$1355    |
| D series | \$1490    | \$1595    |
| E series | \$1490    | \$1595    |
| L series | \$1880    | \$2160    |

Internal Balun special cable \$15.00

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Tech Info Library Article Number:4214



# Tech Info Library

## IBM 3192 Displays

Revised: 10/4/89  
Security: Everyone

IBM 3192 Displays

=====

This article last reviewed: 30 May 1989

The IBM 3192 displays are functional replacements for the 3279 and 3179 series display stations. There are 19 different models. Here are some of the highlights:

### Displays and Phosphors

-----

The 3192 C series has 14-inch color screens and supports mod 2 and 3 formats. The C series does not support graphics.

The D series features 15-inch screens with green phosphor and is available in mod 2, 3, 4 (43x80 with one status line), and 5 (27x132 and one status line) formats. The D series does not support graphics.

The F series features 14-inch color screens and supports mod 2, 3, 4, and 5 formats. The F series does not support graphics.

The G series features 14-inch color screens and is available in mod 2 and 3 formats. The G series supports graphics and replaces the 3279-S3G, 3179-G10, and G20 graphics display stations. These devices require GDDM version 1 release 4 or GDDM version 2 and the Presentation Graphics Feature (PGF) on the mainframe to operate in graphics mode.

The L series features 14-inch color screens and supports mod 2 and 3 formats. The L series features a light pen. The L series does not support graphics.

The W series features 15-inch screens with Black characters on a White background. This feature can be reversed (for IBM purists). The W series supports mod 2, 3, 4, and 5 formats. The W series does not support graphics.

### Keyboards

-----



Three, standard keyboards are offered. The 102 key keyboard is a PC keyboard with 24 function keys. The 104 key is a full typewriter keyboard with 24 function keys and no numeric pad. The 122 is a full typewriter keyboard with 24 function keys and a numeric pad. A fourth APL keyboard is offered for two models in the G series in 104 and 122 key formats. The keyboard is waterproof and can be modified in setup mode. The keycaps can be removed and replaced for specific applications. Each keyboard is bundled with a display. The second digit of the model number indicates which keyboard is in the bundle.

#### Special Features

-----  
All 3192 displays support the printer port feature. All 3192 C and L series devices support the Record/Play/Pause feature. This means the user can store up to 1500 characters and "play back" or modify these characters. The 3192 C and L series also support the "screen trim" feature. This lets you use the cursor to "box in" what will be printed on your personal printer. The 3192 C series is functionally compatible with the 3279 S2A, S2B, S2X, and the 3179-1. The G series supports the IBM Color Jetprinter (3852 model 2) off the printer port. The G series also supports the IBM 5277 Mouse, the IBM 6180-2, 6184, 7371, and 7372 Color Plotters via the IBM 3979 Expansion Unit. The G series displays cannot be attached to 3174 81R or 82R remote controllers.

3192s have internal baluns and use a special IBM cable \* with a special keyed connector with a coaxial attachment at one end and an RJ11 on the other.

#### Pricing

-----  
The 3192 series devices are priced as follows (list price as of 8/17/88)  
One and three year warranties are offered with all 3192's.

|          | 1 year warr | 3 year warr |
|----------|-------------|-------------|
| C series | \$1985      | \$2140      |
| D series | \$1880      | \$1985      |
| F series | \$2195      | \$2350      |
| G series | \$2925      | \$3135      |
| L series | \$2405      | \$2745      |
| W series | \$2090      | \$2245      |

\* Internal Balun special cable is \$15.00

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Tech Info Library Article Number:4215



# Tech Info Library

## IBM 3193 Displays

Revised: 10/4/89  
Security: Everyone

IBM 3193 Displays

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This article last reviewed: 30 May 1989

The 3193's are "image processing" devices. IBM "image processing" devices use predefined (fixed) graphics images. These images are treated like character sets and are called "graphics symbol sets." The 3193 product line is used on 370-architecture systems with specialized applications.

### Displays and Phosphors

-----

The 3193 features black on white displays with 15-inch screens. They support mod 2, 3, and 4 formats plus a 48X80 image-processing format. The 3193 screen is designed as a full-page display.

### Keyboards

-----

The 3193 supports the 102 and 122 key keyboards. The keyboard is waterproof, and can be modified in setup mode. The keycaps can be removed and replaced for specific applications.

### Special Features

-----

The 3193 does not support the printer port. The 3193's can support attachment of IBM 3117 and 3118 scanners.

### Pricing

-----

The 3193 series devices are priced as follows (list price as of 8/17/88) A one-year warranty is offered with the 3193.

Model 010 \$2610

Model 020 \$2610

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Tech Info Library Article Number:4216



# Tech Info Library

## IBM 3194 Advanced Function Displays

Revised: 10/4/89  
Security: Everyone

IBM 3194 "Advanced Function" Displays

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This article last reviewed: 30 May 1989

The 3194 is the most powerful of the nine models in the new display station product line. All 3194 display stations are capable of running in CUT or DFT mode. This represents a significant enhancement to the IBM display-station, product line. In the past, DFT mode was restricted to the 3290 gas-plasma display.

The 3194 is almost a PC system with an 8 mhz 80186 microprocessor, 640K of memory and a 720KB 3.5 inch floppy disk drive as standard features. However, there are many incompatibilities between a 3194 and an MS/DOS or OS/2 system. Please read the "Special Features" section before jumping to any conclusions about this product. It's quite sophisticated, but it's not an IBM PC.

### Displays

-----

The C series features a 12-inch color screen and supports mod 2 and 3 formats. The C series does not support graphics.

The D series features 15-inch green phosphor screens and supports mod 2, 3, 4, and 5 formats. The D series does not support graphics.

The H series features 14-inch color screens and supports mod 2, 3, 4, and 5 formats. The H series does not support graphics.

### Keyboards

-----

The three standard keyboards are offered. The 102 key keyboard is a PC keyboard with 24 function keys. The 104 key is a full, typewriter keyboard with 24 function keys and no numeric pad. The 122 is a full, typewriter keyboard with 24 function keys and a numeric pad. The keyboard is waterproof and can be modified in setup mode. The keycaps can be removed and replaced for specific applications. Each keyboard is bundled with a display, so the second digit of the model number indicates which keyboard is

in the bundle.

#### Special Features

-----  
In addition to the standard 640K of memory, you can add a memory upgrade of an additional 192K. A 2MB 3.5 inch floppy drive is also available.

DFT support gives the user the capability of having five host sessions active at once. Four of these sessions can be 3270. With an optional async interface, one of these sessions can be with an ASCII/Async host. The Async feature uses VT100 terminal emulation. The device also supports two notepads and one local "utility session", used to customize the display, manage the diskettes, initiate file transfers, and do maintenance functions like traces, dumps, and patches. The 3194 does not do "windows" in the Macintosh sense, but instead toggles (using a "jump" key) from session to session and provides a "screen split" capability.

Another significant feature is the implementation of an open 3270 API interface on the 3194 products in DFT mode. This allows custom programming of the device allowing multiple host/multiple session capabilities transparent to the end user through application specific API programming (using IBM's HLLAPI). This lets the programmer create "composite" screens from multiple sessions to one or more host applications.

The API applications MUST be downloaded from the host. You cannot store these on the local floppy disk. Development of these custom applications can be done on an IBM PC with your favorite compiler using HLLAPI extensions. This program is then compiled on the PC and uploaded to the host, which distributes it to the devices. A "Device Function Modifier" package is used to develop applications on the 3194 (if you don't want to use a PC). The applications are uploaded to the host for distribution to target 3194's.

The disk drive also lets you use DFT implementations on remote controllers which do not support downline loading of microcode (like the 3174-81R or 82R).

The 3194's operating system has a restricted user "shell." The 3194 does not run MS-DOS programs. It is intended for use in accounts where some local intelligence (for custom API programming) is desirable, but PC implementations are not. This puts control of the device firmly in the hands of MIS management, rather than in those of the end user.

The disk drive format is incompatible with OS/2 and MS/DOS storage formats, so forget about reading a 3194 disk on an MS/DOS or OS/2 compatible disk drive.

The device supports file transfers to IBM IND\$FILE packages under MVS/TSO, VM/CMS, and CICS version 1 release 6 mod 1. You can use this file transfer capability to enhance the API programming and API functionality of the workstations. As the disk storage formats are incompatible with the MS/DOS or OS/2 product line, you cannot share this data with a MS/DOS or OS/2 compatible disk drive. The local Utility session capability lets the user

initiate file transfers with IND\$FILE mainframes. File transfers may also be initiated by a custom API program.

All 3194 displays support the printer-port feature. All 3194's support the Record/Play/Pause feature, through which the user can store up to 1500 characters and "play back" or modify these characters. 3194's have internal baluns and use a special IBM cable with a special keyed connector with a co-axial attachment at one end and an RJ11 on the other.

#### Pricing

-----

The 3194 series devices are priced as follows (list price as of 8/17/88)  
One-year warranties are offered with all 3194's.

|          |               |
|----------|---------------|
| C series | \$2495-\$2695 |
| D series | \$2195-\$2395 |
| H series | \$2895-\$3095 |

|                              |         |
|------------------------------|---------|
| Memory Upgrade               | \$325   |
| ASCII feature                | \$325   |
| Internal Balun special cable | \$15.00 |

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Tech Info Library Article Number:4217



# Tech Info Library

## IBM 3196 and 3197 Displays

Revised: 10/4/89  
Security: Everyone

IBM 3196 and 3197 Displays

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This article last reviewed: 30 May 1989

The 3196 and 3197 displays are functional replacements for the 5251 and 5292 product line. These are twin-ax devices, intended for use on the System 3X and AS/400 product lines. There are four models in the 3196 line and seven models in the 3197 line. These devices do not display graphics.

### Displays and Phosphor

-----

The 3196 A series features 12-inch green phosphor screens, in 24x80 (with one status line) format. The 3196 B series features 12-inch amber-gold screens in the 24x80 (with one status line) format.

The 3197 C series features 14-inch color screens and supports 24x80 (with one status line) formats. The 3197 D series features 15-inch green phosphor screens and supports 24x80 (with one status line) and 27x132 (with one status line) formats. The 3197 W series features 15-inch black on white displays in 24x80 (with one status line) and 27x132 (with one status line) formats.

### Keyboards

-----

Both product lines support the 102 PC keyboard with 24 function keys and the 122 key keyboard with 24 function keys and a numeric pad. A data entry keyboard, based on the 122 key offering, is available on the 3197 D40. The keyboards are waterproof and have System 3X-oriented key caps.

### Special Features

-----

Both product lines support the Record/Play/Pause feature, through which the user to store up to 1500 characters and "play back" or modify these characters. The printer-port feature is available on the 3197 product line. The 3197 C series supports dual sessions, applications designed for the 5292 model 1 and 3179 model 2, and system printing through the printer port. All these workstations attach directly to a System 3X or AS/400. Remote attachment to a 5251-12 is supported only for 24x80 screen sizes. The

5251-12 does not support color. Remote attachment of 3196 models A20 and B20 are not supported on either remote controller. The remainder of the displays (including color) can attach to the 5294 remote controller.

#### Pricing

-----

The 3196 and 3197 series devices are priced as follows (list price as of 8/17/88)

|          | 1-yr warr | 3-yr warr |
|----------|-----------|-----------|
| A series | \$1270    | \$1355    |
| B series | \$1270    | \$1355    |
| C series | \$1895    | \$2140    |
| D series | \$1795    | \$1985    |
| W series | \$2090    | \$2245    |

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Tech Info Library Article Number:4218



# Tech Info Library

## Truevision

Revised: 4/4/97  
Security: Everyone

Truevision

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Article Created: 23 August 1989  
Article Reviewed/Updated: 4 April 1997

Truevision  
-----

7340 Shadeland Station  
Indianapolis, IN 46256

317-841-0332

Fax: 317-576-7700

Company Profile:  
Hardware, specializing in video cards.

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Tech Info Library Article Number:4233





# Tech Info Library

## Altsys Corp.

Revised: 4/4/97  
Security: Everyone

Altsys Corp.

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Article Created: 02/18/91  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

Altsys Corp.

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269 W. Renner Parkway  
Richardson, TX 75080

214-680-2060

214-680-0537 Fax

### Company Profile:

Software, specializing in font and graphic design programs for the Macintosh, Windows environment, NeXT and SUN computers.

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Tech Info Library Article Number:4235



# Tech Info Library

## HyperCard: How To Find Character Number in a Field

Revised: 6/24/90  
Security: Everyone

HyperCard: How To Find Character Number in a Field

=====

This article last reviewed: 17 August 1989

TOPIC -----

How can I return the "number" of the first character of a line in a HyperCard field?

Since each TextEdit Record contains an array containing the number of the first character of the line, I'd like to access that information.

DISCUSSION -----

You can find the number of the first character of line x in a HyperCard field by using the following script:

```
if x = 1
then
  put 1 into charNum
else
  put (the length of line 1 to (x-1) of fld test) + 1 into charNum
end if
```

The only problem with the script is that HyperCard considers a line as a line only if it is terminated with a carriage return. Line endings that result from word-wrap in a field are not counted as lines.

For example, a field set to display eight characters wide is filled with 20,000 characters without a carriage return. The display shows approximately x lines, but HyperCard considers the field to only have one line.

Since HyperCard returns only a null-terminated string of characters as field contents, you cannot use an XCMD to retrieve the line-starts information.

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Tech Info Library Article Number:4237



# Tech Info Library

## AppleShare Print Server: Extra Line Feeds on ImageWriter II

Revised: 12/14/92  
Security: Everyone

AppleShare Print Server: Extra Line Feeds on ImageWriter II

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Article Created: 17 August 1989

### Article Change History

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12/10/92 - UPDATED

- To include AppleShare 3.0.1 Print Server information.

### TOPIC -----

I'm printing to an ImageWriter II with AppleShare Print Server. With spooling and the sheetfeeder attached, I get additional line feeds at the top of the page. If I bypass spooling, it prints fine.

### DISCUSSION -----

With AppleShare Print Server versions 2.0 and 3.0, the print server supplied incorrect information to the client about the printer configuration. This caused the paper to advance before the start of the page and again at the end of the page.

AppleShare Print Server version 3.0.1 fixes the problem.

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Tech Info Library Article Number:4238



# Tech Info Library

## HyperCard: Problem With Dial Command and Apple Personal Modems

Revised: 8/23/89  
Security: Everyone

HyperCard: Problem With Dial Command and Apple Personal Modems

=====

This article last reviewed: 17 August 1989

TOPIC -----

Where can I find the documentation for driving (play) telephone tones from HyperCard?

The application that I am working on requires talking to an audio response unit at a bank that automates bill paying. The remote machine talks using digitized audio requesting account code, password, and so on, expecting the user to type in appropriate responses from the telephone keypad. I want to automate this in HyperCard.

My Apple Personal Modem and the dial command appear to have limitations (perhaps just limited documentation) that prevent me from doing what's needed -- namely, to order the modem to dial a number with a ";" appended so that it remains off hook when a voice answers. Instead, the dial command appears to strip off this character.

Can the modem be used this way?

DISCUSSION -----

Certain Apple Personal Modems, those with a serial numbers beginning with a C621301 to C745577, do not work properly with the HyperDialer stack.

The problem exists because one of Apple's vendors incorrectly substituted 2.3-ohm resistors for 4.7-ohm resistors, which altered some characteristics of the modem. The resistors are surface-mount type, numbered R106-107, with the following numbers on the resistors: 4R7 (incorrect) or 2R3 (correct).

Try to dial using a modem outside the range specified above. If the problem is not present in that situation, the original modem can be fixed by any Apple service provider.

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Tech Info Library Article Number:4239



# Tech Info Library

## AppleShare: Why Macintosh Can't Launch From Server

Revised: 10/4/89  
Security: Everyone

AppleShare: Why Macintosh Can't Launch From Server

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This article last reviewed: 17 August 1989

TOPIC -----

Why is it possible to boot from an AppleShare server with Apple IIGS, when it has never been possible to do that with the Macintosh?

DISCUSSION -----

The design goals for the Macintosh are different from the design goals for the Apple IIGS. The size of a System file on the Macintosh can easily get to be very large; thus, it would take a long time to launch a large System file from an AppleShare server.

Also, since the Apple IIGS was intended for different purposes, being able to launch from the server was considered vital. This is not the case with Macintosh.

Because of the size of a Macintosh System file versus the size of an Apple IIGS or Apple IIe System file, it would take too long to launch a Macintosh from an AppleShare server.

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Tech Info Library Article Number:4240



# Tech Info Library

## Source for Anti-Glare Screens

Revised: 8/23/89  
Security: Everyone

Source for Anti-Glare Screens

=====

This article last reviewed: 10 August 1989

TOPIC -----

I need an anti-glare filter for an AppleColor 13" RGB monitor. Where can I find it?

DISCUSSION -----

Kensington Microware sells anti-glare filters for a variety of monitors, including the AppleColor 13" RGB monitor.

For more information, search under: "Kensington"

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Tech Info Library Article Number:4241



# Tech Info Library

## AppleShare: AFP User Authentication Methods

Revised: 10/4/89  
Security: Everyone

AppleShare: AFP User Authentication Methods

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This article last reviewed: 17 August 1989

TOPIC -----

In a test I did using Peek over the AppleShare network, I was able to identify both my name and password. Why?

DISCUSSION -----

There are three defined user authentication methods available to AFP servers and workstations. The workstation indicates its choice of user authentication method (UAM) by giving the server a UAM string.

- 1) No user authentication: This method needs no specification. No user name or password information is required in the FPLLogin call. The corresponding UAM string is 'No User Authent'. An example of this would be to log on as a guest.
- 2) Cleartext password: This method uses the UAM string of 'Cleartxt Passwrđ'. The password is transmitted as clear text and is not encoded in any way. The User Info part of the FPLLogin call consists of the user name followed by the user's password.
- 3) Random number exchange: This method is best used when a network is not secure from eavesdropping. This method uses the UAM string of 'Randnum Exchange'. If this method is not supported by the AFP server, the workstation will use the Cleartext password UAM. This is the method used by Apple workstation software when accessing an AppleShare file server.

The Apple workstation software uses the FPGetSrvrInfo call to find out what UAMs the server supports. This is done to determine what password UAM should be used. A way to find out what password UAM is supported is to use the AppleShare Chooser item and select a server. Next to the password field you will see either '(Scrambled)' or '(Clear text)'. If you see



'(Clear text)', it means that the AFP server does not support the Random number exchange UAM.

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Tech Info Library Article Number:4242



# Tech Info Library

## CD-ROM: Information on Different CD Formats

Revised: 8/23/89  
Security: Everyone

CD-ROM: Information on Different CD Formats

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Article Created: 17 August 1989  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

This article contains a list of CD format acronyms and some explanation of their function.

DISCUSSION -----

A glossary of CD acronyms:

|           |                                        |
|-----------|----------------------------------------|
| CD+G      | Compact Disc plus Graphics             |
| CD+V      | Compact Disc plus Video                |
| CD+MIDI   | Compact Disc plus MIDI                 |
| CD+MIDI+G | Compact Disc plus MIDI plus Graphics   |
| CDI       | Compact Disc Interactive               |
| CD-DVI    | Compact Disc Digital Video Interactive |

The graphics of the "CD+G" format are simple computer-type graphic images.

The video of the "CD+V" format is an NTSC video signal, such as what is found on laser discs. This format allows the use of part of the CD for the video signal. This is used most often for music videos. A typical CD will include twenty minutes of music without video and a five-minute or less music video.

The MIDI of the "CD+MIDI" format is MIDI data stored on the CD for use with MIDI-controlled electronic instruments. This allows use of your own MIDI instruments as supplemental instruments to what is recorded on the CD. For example, should you want more bass on a particular song, connect a MIDI instrument with a bass sound to a CD player supporting CD+MIDI, assign the MIDI instrument to the proper channel, and adjust the level of the MIDI device to complement the song coming from the CD music tracks.

The "CD+MIDI+G" format combines the "+G" format and the "+MIDI" format on one disc. This format requires the chip sets for both the graphics decoding and the MIDI decoding.

"CDI" is very similar in many ways to the video disc/HyperCard presentations that have been shown. Generally, however, the computer information and the video information are both stored on the CD.

"CD-DVI" is also very similar at the presentation level to the video disc/HyperCard environment. However, the chip set for this environment is proprietary to Princeton University and Intel. The difference between DVI and CDI relates to the method of storing the video images. DVI digitizes and compresses the video frames prior to storage on the disc. During playback the video frames are decompressed by the chip set. CDI uses analog video for its video storage.

With the exception of the CD+V format, these formats have been proposed by one or maybe two organizations. The worldwide CD industry has not adopted these formats. Much discussion is taking place among both the hardware manufacturers and the software producers concerning how this diverse set of standards are going to be handled. There are several limited projects taking place within each of these CD formats; however, without worldwide industry support, some of these formats may fall by the wayside.

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Tech Info Library Article Number:4243



# Tech Info Library

## AppleCD SC: Cannot Play CD+G, or Other Formats

Revised: 8/23/89  
Security: Everyone

AppleCD SC: Cannot Play CD+G, or Other Formats

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This article last reviewed: 17 August 1989

TOPIC -----

Can the AppleCD SC be modified to play in the CD+G format?

CD+G players have one laser (standard) that reads the music track and the graphics (G) track, then sends the signals to separate outputs.

The graphics are sent to an attached monitor. From what I have been told, any CD player can perform this task with proper circuitry.

Can the AppleCD SC be modified to play this format? Can the pinouts on the SCSI be tapped to read the video signal and displayed on a monitor device?

DISCUSSION -----

The key to achieving this is the "proper circuitry". This proper circuitry (a chip set somewhat like the audio chip set in the AppleCD SC) must tap the signal coming directly from the laser, not a downstream location such as the SCSI connector. The laser controller must also be aware of the need to scan the graphics tracks as well as audio tracks. Since the circuitry is needed simply to find the graphics tracks, the graphics information is NOT available within the AppleCD SC.

Adding the graphics mode to any CD player requires the initial design to allow that mode. Since the AppleCD SC was designed and manufactured prior to the CD+G format becoming a reality, adding this feature is not possible: a completely new design would be required to support the CD+G disc format.

The same situation faces support for CD+V, CD+MIDI, CD+MIDI+G, CDI, and CD-DVI; each different disc format requires supporting circuitry to decode the appropriate digital information recorded on the disc.

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Tech Info Library Article Number:4244



# Tech Info Library

## AppleShare PC: NetBIOS Interrupt Problem

Revised: 8/23/89  
Security: Everyone

AppleShare PC: NetBIOS Interrupt Problem

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This article last reviewed: 10 August 1989

TOPIC -----

I am currently trying to run an IBM-XT as a gateway/router between the AppleTalk network and MS-DOS on Ethernet.

This is to support an electronic mail system for use in both the DOS and Apple environment.

The standard NetBIOS call is performed through INT 5Ch. When the Ungermann-Bass or Excelan network is started, this software interrupt is enabled as part of the standard Microsoft network software. AppleShare PC steals this interrupt away from the standard Microsoft NetBIOS.

This allows using the predefined network interface with AppleShare PC but does not allow it to coexist with the normal PC LAN software.

DISCUSSION -----

AppleShare PC uses the standard Microsoft redirector that communicates with other processes via interrupt 5C. If a process similar to AppleShare PC does not properly share this interrupt with the other processes trying to get access to the redirector, the symptoms you describe occur. AppleShare PC has been written to coexist with other "interrupt 5C friendly" programs.

Try running AppleShare PC as the last of your startup programs. It will try to maintain the interrupt for another process that isn't as "friendly" in the use of interrupt 5C. This often works, because AppleShare PC looks at the previously installed vectors for that interrupt; when it gets information not belonging to it, it passes it along the chain to whoever was there before it.

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Tech Info Library Article Number:4246



# Tech Info Library

## LocalTalk PC Card: Only Available With AppleShare PC 1.2

Revised: 8/23/89  
Security: Everyone

LocalTalk PC Card: Only Available With AppleShare PC 1.2

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This article last reviewed: 17 August 1989

TOPIC -----

Is there a way to get the LocalTalk PC card without buying AppleShare PC?

DISCUSSION -----

As of May 15th, 1989, the LocalTalk PC Card is only available bundled with AppleShare PC v1.2.

The Apple part number of this bundle is B0040LL/A.

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Tech Info Library Article Number:4247



# Tech Info Library

## Macintosh Computers: Anchor Pad Security Systems

Revised: 6/1/92  
Security: Everyone

Macintosh Computers: Anchor Pad Security Systems

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Article Created: 23 August 1989  
Article Last Reviewed: 27 May 1992  
Article Last Updated:

If you want to secure your Macintosh systems from theft, but want something other than the standard cable around the desk method, consider Anchor Pad International. They sell a variety of security systems for Macintosh computers.

For more information, search the Tech Info Library under "Anchor Pad International".

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Tech Info Library Article Number:4248





# Tech Info Library

## Macintosh: Desktop Media & the Making of Pencil Test (1 of 2)

Revised: 8/23/89  
Security: Everyone

Macintosh: Desktop Media & the Making of Pencil Test (1 of 2)

=====

This article last reviewed: 18 August 1989

TOPIC -----

Companies who want to implement computer-generated video systems for their training and PR departments wonder whether to go with the Macintosh open, modular system or with an integrated system.

Some have seen non-Apple solutions that include a single, Amiga-based package with automated, three-dimensional, frame-by-frame generation of NTSC video sequences. The package also handles the problems of hiding window borders/title bars, genlocking, and so on.

Most have seen the "Pencil Test" video and feel that the quality of this video is acceptable, but they were told from one of the other vendors that Apple invested incredible resources into creating "Pencil Test" and that the process used for "Pencil Test" was very time-consuming and inefficient.

What was the exact process for the creation of "Pencil Test"? How many people worked for how long to produce the video?

DISCUSSION -----

There are advantages and disadvantages both to the totally integrated systems and the open modular systems. Totally integrated system's advantages include having hardware and software tied directly together and having one place to get support. Disadvantages include being locked into the one company's point of view about how to do things, working only with their tools, and, often, being locked into that company's software. An integrated solution on non-Macintosh systems is most likely pieced together from a variety of third-party products.

Open module systems offer one of the main advantages of Macintosh: integration. With the Macintosh consistency of user interface, different modules from different publishers have the familiar user interface. The best drawing program can be used with the best animation program while using the best video card.

There are standard graphics file formats that are used by animation applications. Also, graphic images can be copied and pasted among most Macintosh applications. For example, if a corporate logo is designed for publishing in Macintosh publishing programs, that logo can be brought into the Macintosh animation programs. The logo also can be used in programs for making 35mm slides or overhead transparencies. You don't need to redraw it or convert from one computer format to another.

Another advantage of having a modular system is the hardware. The current standard for graphics applications is 8 bits of data for each pixel or 256 colors at one time. Many hardware and software companies are now working on 32 bits of data for each pixel or more than 16,000,000 colors on screen at one time. In a modular environment, as technology progresses, the animation environment can progress by updating the portions that are necessary--not changing to something entirely different.

The basis of the MacroMind system is VideoWorks. VideoWorks II and Director has the ability to hide window borders, title bars, and menu bar. MacroMind has also worked with other graphics companies to establish a standard file format for the exchange of animated sequences. This format is called PICS.

Aegis offers Showcase F/X for doing animated titles.

Certain Macintosh video cards, designed for outputting to NTSC, correctly handle all the issues concerned with placing Macintosh graphics on video tape, like overscan and genlock. The AST video board, the Mass-Micro Color-Space II, ComputerFriends TV Producer, TrueVision NuVista cards with VIDI/O Box, and RasterOps ColorBoard 64NC all are boards that handle the proper placement of the graphic images for full-screen coverage and genlock.

There are other methods for moving Macintosh graphics to video tape. For example, RGB Technology has RGB/Videolink 400, 1400, and 1400A. These are video scan converters for the RGB output of the Macintosh II. One issue that normally surfaces with the NTSC boards is NTSC flicker. Flicker occurs because a television image is created by scanning alternate lines. When a computer graphic image is only one pixel wide, it is put on the screen only half of the time. This is what causes flicker. Video scan converters eliminate this interlace flicker.

For a Pencil Test-quality production, any system from any vendor requires similar amounts of time and resources to be spent. It is a simple equation in the computer animation business:  $\text{Quality} = \text{Time} + \text{Resources}$ .

Amiga animation and Pencil Test do not compare well. The Amiga solution uses 256 colors/8 bits per pixel, while Pencil Test uses 16,800,000 colors or 24 bits per pixel. Doing the shading used in Pencil Test on an Amiga results in a palette of a few main colors with many shades of those few colors. Also, be aware that many of the video products for the Amiga work at a resolution of 320 x 200 pixels. This is a fairly low-resolution graphics when compared to the Macintosh solutions using a minimum of 640 x 480 pixels. Using a product like RGB/Videolink 1400A, it is feasible to use pixel counts as high as can be purchased; that is, 2048 x 1024, 1024 x 1024, and so on.

Of interest, the developers of the top Amiga animation products are in the process of moving their applications to the Macintosh II. Many have completed the move.

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Tech Info Library Article Number:4250



# Tech Info Library

## MacDFT: Description (Discontinued)

Revised: 10/7/93  
Security: Everyone

MacDFT: Description (Discontinued)

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Article Created: 23 August 1989

### Article Change History

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02/12/93 - UPDATED

- KMW now Andrew Corporation.

06/15/93 - RETITLED

- To show MacDFT is a discontinued product.

For information on currently shipping SNA products from Apple Computer, search under SNA•ps.

### Overview

MacDFT is the first complete 3270-based product from Apple Computer for the Macintosh II. It makes use of several Macintosh Coprocessor Platform (MCP) cards, such as, the Apple Coax/Twinax card and the TokenTalk card. These cards run the multitasking operating system named A/ROSE.

The software portion of MacDFT consists of three types of device drivers for the MCP cards. Two of the drivers support support CUT or DFT coax connections to 3X74 Control Units using the Caox/Twinax card. The third driver supports DFT over Token Ring with attachments to 3174 Token Ring adaptor equipped controller or Token Ring Interface Couplers (TICs) found on Front End Processors (FEPs).

The first version (September 1989) of the MacDFT terminal emulator (Version 1.0), which will ship with the Apple Coax/Twinax card, can operate as a CUT mode terminal with one session per Macintosh. A later version (December 1989, Version 1.1), to be sold as a separate product, will implement a DFT mode terminal with up to five (5) sessions per Macintosh. The sessions will be configurable via a Control Device (CDEV) in the Control Panel, which will also support communications with the cluster control unit via both the Coax/Twinax card and the TokenTalk NB card.

The MacDFT software supports IBM's IND\$FILE host file transfer system in both CUT and DFT mode. The files can be sent to Time Sharing Option (TSO) or

## ..TIL04251-MacDFT-Description\_Discontinued.pdf

Conversation Monitor System (CMS). File modes supported are text, MacBinary, and binary.

MacDFT is the first product from Apple that makes use of the Apple 3270 Application Program Interface (API). The MacDFT terminal emulator is written around calls to the API boundary and therefore has no hardware or connectivity dependencies. MacDFT, combined with the API, enables Apple to have "one application with many drivers" as an architected solution. The MacDFT application operates over Coax Type A media attached to IBM 3X74 cluster control units or compatibles. The MacDFT product is also intended to be used in conjunction with the Apple Token-Ring card. A Macintosh on a Token Ring network will be able to receive 3270 data streams from a LAN-based 3174 or a 37X5 Communications Controller or Front End Processor (FEP).

### MacDFT product elements

The MacDFT product is shipped in two packages. The hardware is referred to as the Apple Coax/Twinax card.

The software (Version 1.0) shipping in September includes:

- CUT-only CDEV Driver
- MCP Multi-tasking OS (Apple A/ROSE)
- MacDFT Terminal Emulation with file transfer
- Apple 3270 API (included with MacDFT application)

The software shipping in December includes:

- CUT/DFT CDEV Driver supporting Coax/Twinax and TokenTalk cards)
- MCP Multi-tasking OS (Apple A/ROSE)
- MacDFT Terminal Emulation with file transfer
- Apple 3270 API (included with MacDFT application)

### MacDFT application functions

By December, the MacDFT application (Version 1.1) will support the following 3270 workstation features:

- CUT terminal emulation (LU type 2 only)
- DFT terminal emulation (LU type 2 only)
- Multi-session terminal emulation using Token Ring  
(PU type 2 services with multiple LU type 2s)
- File transfer to the host using the IBM PC file transfer standard  
IND\$FILE in TSO and CMS environments.

When MacDFT is used as a CUT, DFT or Token Ring mode terminal, it provides:

A C-DEV Driver that has three modes of operation:

- A 3270 CUT driver, which supports one 3278/79 session.

- A 3270 DFT driver, which supports up to 5 3278/79 sessions.

## ..TIL04251-MacDFT-Description\_Discontinued.pdf

A 3270 Token Ring driver, which supports PU type 2 as a downstream PU on the ring and up to five (5) 3278/79 sessions per workstation.

Implemented using the Apple 3270 API.

Multifinder compatibility, with support for background processing.

Emulation of 3278/79 screen sizes: 24x80, 32x80, 43x80, and 27x132, corresponding to display models 2, 3, 4, and 5. The user can select the model number. Alternate screen size support is provided by the Apple 3270 API. This includes notification to the application if the host application changes screen size, so that the Macintosh application can make the appropriate changes.

Support for the IBM 87-key typewriter keyboard, which maps to the Macintosh extended keyboard.

An autokey feature to allow storage and playback of host application sequences such as logon sequences.

Print screen and save screen to disk file.

Copy and paste into and out of 3270 screens.

Copy table.

Color support that includes:

- Monochrome (2 color)
- Base Color (red, blue, green, white)
- Extended Color (red, blue, green, white, yellow, turquoise, pink)

Attribute support that includes:

- Protected/unprotected fields
- Normal/intensified display
- Alphanumeric/numeric data
- Auto skip
- Modified data tag

Extended attributes:

- Normal
- Blink (blink attributes are provided on the Macintosh using italics on a monochrome display and using color on an RGB display)
- Field outlining
- Reverse video
- Underline
- Extended color

File transfer that uses the IND\$FILE file transfer protocol. The IND\$FILE protocol sends full or partially full screens from the CUT presentation space to the host; the screen information is then processed by the IND\$FILE host application. When MacDFT is used as a DFT or Token Ring mode terminal, it

# ..TIL04251-MacDFT-Description\_Discontinued.pdf

provides file transfer via the Destination/Origin (DO) Structured Field file transfer protocol. This protocol relies upon 'pass-thru-data' API service requests to transfer data to and from the host.

## MacDFT unsupported functions

The CUT and DFT device drivers used by MacDFT do not support the following features:

### Standard attributes

- Light pen detectable/undetectable

### Extended attributes

- Programmed symbols including APL
- Background color
- Transparency

### Graphics

- GDDM
- Program symbols
- All points addressable (APA)
- Non-Roman (Kanji)

### Keyboards

- Data entry
- ASCII
- Text
- 102-key typewriter
- Keyboard RPQs

### Miscellaneous

- Entry assist
- Explicit partitions (DFT)
- Magnetic readers
- Convergence feature

### Special Information

MacDFT software does NOT emulate 5250 terminals even though the hardware MCP card has that capability. KMW Systems of Austin, Texas (now Andrew Corporation) announced on June 12,1989 at the Apple N & C Product rollout that they will ship a product ApLink which is 5250 terminal services with file transfer which uses the Apple Coax/Twinax MCP card.

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Tech Info Library Article Number:4251



# Tech Info Library

## Apple Color Plotter Pen Sources

Revised: 8/23/89  
Security: Everyone

Apple Color Plotter Pen Sources

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This article last reviewed: 21 July 1989

TOPIC -----

Can you recommend an alternative source for Color Plotter pens?

DISCUSSION -----

Tech Comm knows of two suppliers: Yokogawa Corporation and Sun Remarketing.

For particulars, search the Tech Info Library under "Yokogawa" or "Sun Remarketing".

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Tech Info Library Article Number:4252





# Tech Info Library

## Apple Scanner: Not Designed for High-End Publishing

Revised: 8/23/89  
Security: Everyone

Apple Scanner: Not Designed for High-End Publishing

=====

This article last reviewed: 18 August 1989

TOPIC -----

Why doesn't the Apple Scanner support 256 shades of gray like the competition. When I took some scanned data to a publishing service for Linotronic output, I was told that my output was of poor quality and needed rescanning. I have two questions:

- 1) For Linotronic output, do third-party scanners, such as the Abaton (also known as MicroTek), have a technical advantage by offering 256 shades of grays instead of 16?
- 2) Will a ROM upgrade to the Apple Scanner address this issue in the future?

DISCUSSION -----

The Apple Scanner isn't designed as a high-end scanner. It is an attractive, low-cost, entry-level scanner that is ideal for outputting to LaserWriters, using with HyperCard and OCR applications, capturing line art, for "draft" scans to assist in document layout, and so on.

To get the best scanned output from the Linotronic, it is best to use an 8-bit scanner. The disadvantage of 256 grayscale images is the incredible amount of disk space the scanned images consume. An 8- by 10-inch image at 300 dpi with 8 bits per sample, saved without using any compression scheme, consumes upwards of 8MB of disk space. This kind of density also requires a lot of time to scan and print. The average price of an 8-bit scanner is quite a bit more than the Apple Scanner, too!

To support a greater number of grayscales, like 256 on the Apple Scanner would require more than just a new ROM; it is more a limitation of the scanner hardware itself.

The Apple Scanner has been well received by customers and reviewers, but it isn't for everyone. You may be better served by another product.

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Tech Info Library Article Number:4253



# Tech Info Library

## 3270 Terminal Emulator with Asynchronous IND\$FILE Transfer

Revised: 4/11/91  
Security: Everyone

3270 Terminal Emulator with Asynchronous IND\$FILE Transfer

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This article last reviewed: 18 August 1989

TOPIC -----

Do you know of an asynchronous 3270 terminal emulator that also supports IBM's IND\$FILE file transfer? Apple's FT/3270 software is a possible solution, but I want to avoid installing additional host software, if possible.

DISCUSSION -----

Avatar's MacMainFrame DX supports asynchronous access to a 3270 mainframe, and their current release of software supports IND\$FILE file transfer.

Tri-Data's Netway 1000, release 6 or later, provides asynchronous access to IND\$FILE.

For more details, search the Tech Info Library under "Tri-Data" and "Avatar."

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Tech Info Library Article Number:4254



# Tech Info Library

## Macintosh: Foreign File Access Error Message

Revised: 8/23/89  
Security: Everyone

Macintosh: Foreign File Access Error Message

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Article Created: 18 August 1989  
Article Last Reviewed: 21 July 1992  
Article Last Updated: 21 July 1992

### TOPIC -----

I received this message when starting a Macintosh with an attached CD-ROM drive:

"No File System Access Modules could be found in your System Folder.  
Therefore, the Foreign File Access Software was not installed."

Can you explain?

### DISCUSSION -----

You get this message when you have the Foreign File Access INIT in your System Folder, but no access files.

You may have or may once have had an Apple CD-ROM drive with the appropriate software to access it. At some point, the files High Sierra File Access, ISO 9660 File Access, and Audio CD Access were removed from the System Folder. Now at startup, the Foreign File Access INIT is unable to locate them and issues that message.

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Tech Info Library Article Number:4255



# Tech Info Library

## System 6: Maximum Number of Fonts

Revised: 8/23/89  
Security: Everyone

System 6: Maximum Number of Fonts

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Article Created: 18 August 1989  
Article Last Reviewed: 5 August 1992  
Article Last Updated: 5 August 1992

TOPIC -----

I am experiencing problems when using over 250 fonts with System 6.0.3 software on a Macintosh II. This is a standard system with Adobe fonts. Is this still a problem? I thought the maximum number of fonts problem was resolved long ago.

Are there any special precautions, like Font/DA version, to take into account?

DISCUSSION -----

A 'FONT' resource uses bits 7-14 for the font's resource ID and bits 0-6 for the font's point size. Thus, there are 256 (0-255) numbers available for font family IDs using a 'FONT' resource.

The 128K ROM introduced a new way of identifying fonts, using 'FOND' and 'NFNT' resources. This new strategy allows you to use all 15 (0-14) bits for font family IDs, giving you 32,768 possible IDs. Of these 32,768, there are 16,384 available for Roman systems.

However, in order to be compatible with the old way of identifying fonts, both 'FONT' and 'NFNT' resources can be used. There is still the limitation of 256 'FONT' resources. Therefore, the number of fonts you can install depends on which resource types the fonts use.

What seems to be the real problem, however, is that all fonts put into the System File should be installed using the Font/DA mover. The Font/DA mover will only support 200 fonts. You should use Font/DA Mover 3.8 (or later). Turning off virus detection utilities, setting RAM cache to off, and installing fonts under Finder are all prudent activities, but are

rarely essential.

If you want to use more fonts you will need to use a resource-organization utility, like Suitcase II or Font/DA Juggler Plus, which allow you to organize groups of fonts in a variety of ways, including by families into files. Then you can open just those files when you need to access those fonts. Suitcase should be able to give you as many fonts as you need. Each Suitcase file has a limit in the number of fonts you can install; however, you can have multiple Suitcase files.

For more details, search for "Fifth Generation Systems" and "3rd" or "Alsoft" and "3rd".

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Tech Info Library Article Number:4256



# Tech Info Library

## Apple Scanner: Bulb Life Span

Revised: 8/23/89  
Security: Everyone

Apple Scanner: Bulb Life Span

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This article last reviewed: 18 August 1989

TOPIC -----

What is the life span of the Apple Scanner bulb?

DISCUSSION -----

Though Apple didn't formally test the life span of the Apple Scanner bulb, only a rough estimate as to how long they are likely to last is possible.

We specify that the Apple Scanner bulbs supplied to us by vendors last a minimum of 200 hours of continuous use at an elevated temperature of 40 degrees Centigrade. Our experience using the Apple Scanner shows that all bulbs that stopped working had been in use longer than 230 hours at elevated temperatures of 48 degrees Centigrade. This translates into a possible life span of approximately 2400 scans. The actual life span of bulbs in a user environment might be a bit longer, but we are unable to establish any life span with specific test data at this time.

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Tech Info Library Article Number:4257



# Tech Info Library

## Tape Cartridge: Life Span

Revised: 8/23/89  
Security: Everyone

Tape Cartridge: Life Span

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This article last reviewed: 18 August 1989

TOPIC -----

I am trying determine the life span of a tape cartridge. The article says "5,000 passes". Can you give me the suggested usage limits for a tape cartridge? How many backups is that? How many times does the tape pass through the drive during a backup?

DISCUSSION -----

The tape cartridge life span can be greatly influenced by the environment you store and use them in, and by whether you back up the tapes by Volume or by File.

If you are backing up tapes by volume, your cartridge can last for a few thousand backups. This estimate is not based on any controlled study, but on the assumption that during a Volume backup, after the initial tensioning of the tape, the drive generally records information on the tape from the beginning to wherever it stops once it has completed transferring all of the data. This is usually in one or two continuous passes. Incidentally, the noise the drive makes when performing a Volume backup, changes in pitch, and variance of the volume is not from the drive stopping the tape, rewinding it, and proceeding forward--it is the drive switching tracks.

Backing up onto the tapes by File is much more stressful on the tape. The drive may have to reverse direction of the tape many times to put the files down sequentially on the tape, especially when the files are fractured on the drive. We are unable to predict the longevity of a tape used for file backups because of the great variance in the quantity of files backed up at any time, the differences in sizes, and the degree to which they are fractured. However, prudence should dictate practice when archiving data.

The operating environment also influences the tape life. Prior to using the cartridge, let it acclimate to your operating environment for



eight hours or for the amount of time it has been exposed to dissimilar conditions--whichever is less. Recommended operating environment:

|                              |                                         |
|------------------------------|-----------------------------------------|
| Temperature                  | 41 to 113 degrees F (5 to 45 degrees C) |
| Relative Humidity            | 20 to 80% noncondensing                 |
| Maximum Wet Bulb Temperature | 79 degrees F (26 degrees C)             |

Tapes should be stored out of direct sunlight and not be exposed to high temperatures.

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Tech Info Library Article Number:4258



# Tech Info Library

## Macintosh: Desktop Media & the Making of Pencil Test (2 of 2)

Revised: 2/12/93  
Security: Everyone

Macintosh: Desktop Media & the Making of Pencil Test (2 of 2)

=====

Article Created: 23 August 1989

### Article Change History

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02/12/93 - UPDATED

- MacroMind-Paracomp now MacroMedia.

Pencil Test was modeled with Super3D from Silicon Beach Software (now Aldus Consumer Division). These 3D models were animated using MacTwixt, a Macintosh version of the public-domain animation package Twixt, developed at the University of Ohio by Dr. Julian Gomez.

Apple's Advanced Technology Graphics Group developed custom, 3D-rendering applications to render each frame of the film, adding material properties, like color, texture, smoothness, specularly, and shininess, to the geometric models (illuminated by one to four light sources and shaded by the method of Gouraud or Phong). A 24-bit Z-buffer was used to resolve the hidden surfaces. Digital bitmaps of the wood grain on the desktop, the cartoon on the mug, and the computer screen were texture-mapped onto the objects. In one scene, temporal anti-aliasing was used to create the effect of camera motion blurring.

The frames were rendered as 24-bit images at a resolution of 2160 x 1458. Each image was decimated by a factor of 3 in each dimension, using a windowed-sinc filter to reduce aliasing artifacts, to the target resolution of 720 x 486. This was then gamma-corrected and converted to (Y, R-Y, B-Y) in the CCIR-601 digital format.

Each of the approximately 5,000 frames took an average of 30 minutes to render, for a total rendering time of 2,500 hours, or 104 days. A distributed rendering program was used to produce this in parallel in a period of four days of elapsed time on a network of 25 Macintosh II computers over the EtherTalk network.

A master program parceled rendering jobs to available machines and collected and compressed the finished frames. The finished frames, totalling 3 minutes

and 10 seconds, occupied 1.4 gigabytes of a 2.5-gigabyte SCSI disk drive attached to a Macintosh II acting as an AppleShare File Server. The frames were then decompressed and transferred to an Abekas A60 digital sequence store. A Sony D-1 digital component video recorder was used to record the final video sequence off of the Abekas.

Along with the high-resolution digital video version, a Macintosh II version of Pencil Test was created by filtering every other 720 x 486 frame by a factor of 2 in each dimension with a windowed-sinc function to a target resolution of 360 x 243 (24-bit RGB). A custom-written application can replay the compressed 75MB animation in near real-time from an Apple HD80 SC SCSI hard disk on any 32-bit Macintosh II graphic interface card. The sound track for the video was created using Macintosh computers connected to music synthesizers via the Apple MIDI interface.

The score was composed and sequenced using the Performer application from Mark of the Unicorn. The sound effects were edited on the Macintosh using Sound Designer from digidesign and Opcode Patch Librarian from Opcode Systems. The effects were then cued to the video using digidesign's Cue Sheet. During final mixdown, two Macintosh computers were synchronized to the Sony D-1 digital video recorder using two Opcode Systems' SMPTE Timecode machines. One of the Macintosh systems controlled a Roland S-330 sampling instrument that played the score, while the other Macintosh controlled two E-Mu Systems' Emax sampling instruments playing the sound effects. The soundtrack was mastered directly back onto the Sony D-1.

As a comparison, the opening sequence of Steven Spielberg's television show, Amazing Stories, used a crew of 60 people. They spent 60 16-hour days working with a Cray supercomputer to produce 30 seconds of animation, or 6.5 man-years of work. We have no information on other animation programs for the Macintosh II. However, in addition to MacroMind, two companies to watch are Aegis Development Inc. and Byte by Byte.

With the general overview of Macintosh animation covered, here are some plausible, low-cost to state-of-the-art systems:

- 1) Super 3D and/or Swivel 3D, MacroMind's Director, one of the above-mentioned 8-bit color video card with NTSC and GenLock, and a high-quality VHS VCR.
- 2) Any graphics program that produces PICT2 or PICS files, TapeOp, Color-Space II, Color-Space II F/X, and a Betacam BVW-XX VTR.
- 3) Any graphics application that produces PICT2 or PICS file formats, TapeOp, Macintosh II Video Card with RAM expansion kit, RGB Technology's RGB/Videolink 400 (or 1400 or 1400A), and Sony Umatic BVW-XXX VTR.
- 4) Any graphics application, Macintosh II Video Card with RAM expansion kit, and GigaPix tape hardware system.

Starting with the first system, animation in this environment is 8-bit color running in real time. Productions created with this setup can be done relatively quick and easy. The images are created in a 3D graphics application

or in Director. If Swivel 3D or Super 3D 2.0 are used, then the 3D-image series can be moved to Director via a Scrapbook file or PICS, respectively. Once in Director, the animation is recorded in real time to video tape, or, as the animation is played back in Director, it is recorded to tape. Most production time is spent creating the artwork and creating the animation.

Either system 2 or 3 lets you do production in a frame-by-frame manner. This is the more traditional method of animation and is especially helpful when animating complex images. Complex images may slow the real-time animation process to the point of customer dissatisfaction. Using a frame-by-frame technique allows the complex images to be drawn at whatever speed is necessary for the computer, and then placed one frame at a time on the video tape. Graphics are produced in any Macintosh graphics applications. The graphics needs to be saved in either PICT2 or PICS file formats.

The TapeOp application reads either file format and records the single frame graphics image to the video recorder for the specified number of frames. This is an automated process; the TapeOp application can be started in the evening and left to work through the night.

The system 4 method for creating animation is similar to the technique used for Pencil Test. Again, a frame-by-frame technique is used. The images are created in your choice of applications. Genius provides FKEYs for saving the images in the GigaPix format. Once each of the frames for the animation has been stored to the GigaPix tape, the tape is sent to a GigaPix service bureau for transfer to an Abekas digital frame storage device. A Sony D-1 digital component video recorder records the final sequence from the Abekas. From the Sony D-1 recorder, the animation is transferred to the appropriate video format: 1-inch, Betacam, Super-VHS, or regular VHS.

Vendors of video and animation hardware and software include:

- Genius, Inc.
- Macromind-Paracomp, Inc. (now MacroMedia)
- Silicon Beach Software (now Aldus Consumer Division)
- Aegis Development, Inc.
- Master Digital, Inc.
- RGB Technology
- Mass-Micro
- RasterOps
- ComputerFriends
- TrueVision

To locate a vendors address and phone numbers, use the vendor's name as a search string.

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Tech Info Library Article Number:4259



# Tech Info Library

## A/UX: Implementing Dialback To a Remote Location (8/94)

Revised: 8/23/94  
Security: Everyone

A/UX: Implementing Dialback To a Remote Location (8/94)

=====

Article Created: 23 August 1989  
Article Reviewed/Updated: 19 August 1994

TOPIC -----

This article gives the basic steps for setting up an A/UX system with dial-back capability. That is, after following these steps, you can dial into an A/UX machine from a remote location and have the machine hang up the line and dial your remote modem. Many A/UX users want this capability for security reasons.

Note: Either 4.3 UUCP or HoneyDanber UUCP needs to be implemented to have this feature.

DISCUSSION -----

- 1) Using "cu", "kermit", or other means, "login" into the remote UNIX machine.
- 2) Execute a program or a shell script saying "dialback"; the "dialback" should perform the following tasks:
  - Logout your current terminal session
  - Hang up the phone line
  - Put the originating modem in the listen mode
  - Set the proper TTY bits mode to be used as a dial-out port
  - Wait a couple of seconds
  - Clear the phone line
  - Dial the phone number the user provided
  - Execute "/bin/login" to respawn a login session.

Update note: UUCP under A/UX 3.0 is HoneyDanber. A/UX 3.0 adds F protocol to HoneyDanber, so you can communicate over X.25 networks.

An historical note: Regarding the use of `"/bin/ct"` under A/UX 1.0 (or for that matter 1.1), `"ct(1)"` is a holdover from System III, and possibly even Version 7 UNIX days. Therefore, it only implements dialer code for a DEC DN-11 dialer. The DN-11 was an early dialer for non-smart modems. `"ct(1)"` only sends the telephone number digits, because that's all it expects. There should be support for today's smart modems (or, at least, the Hayes command set) in all of `"uucp/cu/ct"`. But in A/UX 1.0 and 1.1, that is not the case. Apple needs to implement either the complete 4.3BSD UUCP, or HoneyDanBer UUCP/CU/CT to have that functionality.

Article Change History:

19 Aug 1994 - Changed title from A/UX 1.0 to just A/UX.  
17 Jun 1993 - Revised to include A/UX 3.0 information.  
23 Aug 1993 - Reviewed for technical accuracy.

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:4260



# Tech Info Library

## GS/OS 4.0: Disk Drive Anomaly

Revised: 9/22/89  
Security: Everyone

GS/OS 4.0: Disk Drive Anomaly

=====

This article last reviewed: 22 August 1989

This article describes a configuration in which GS/OS 4.0 thinks disks are locked when they aren't or unlocked when they aren't. To see the problem "live", try the following on an Apple IIGS with one or two 3.5-inch disk drives and one 5.25-inch disk drive all daisy-chained from the SmartPort.

- 1) Start GS/OS on the 3.5-inch drives.
- 2) Insert a locked 5.25-inch disk into its drive and put it on the desktop.
- 3) Remove the 5.25-inch disk.
- 4) Insert a write-enabled 5.25-inch disk and mount it on the desktop.
- 5) Copy the locked 5.25-inch disk onto the unlocked 5.25-inch disk. When the copy process ends, try to rename the unlocked 5.25-inch disk.

The Finder thinks the disk is locked. The problem appears to be with the driver for the 5.25-inch drives and seems to be related to how GS/OS sees 3.5-inch disks. If a 3.5-inch disk is unlocked, then the "Get Info" for all 5.25-inch disks displays "Unlocked", whether the 5.25-inch disk is physically locked or unlocked. Conversely, the same is true for a locked 3.5-inch disk. If a 3.5-inch disk is locked, then the "Get Info" for all 5.25-inch disks displays "Locked". Again, it does not matter if the 5.25-inch disk is physically locked or unlocked.

The workaround for this problem is to make sure that your 3.5-inch disks are not write-protected. This lets the user make copies and rename new 5.25-inch disks without having to restart the system.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4261



# Tech Info Library

## Magna

Revised: 4/4/97  
Security: Everyone

Magna

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Article Created: 07/10/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Magna  
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332 Commercial St.  
San Jose, CA 95112

408-282-0900

408-275-9147 Fax

Company Profile:  
Software, specializing in data security systems for the Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4264





# Tech Info Library

## Bowers Development Corporation

Revised: 4/4/97  
Security: Everyone

Bowers Development Corporation

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Article Created: 02/18/91  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Bowers Development Corporation

-----

97 Lowell Rd.  
Concord, MA 01742

508-369-8175

508-369-8224 Fax

Company Profile:  
Software, specializing in programmer tools.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4265



# Tech Info Library

## Oxxi Inc.

Revised: 7/16/93  
Security: Everyone

Oxxi Inc.

=====

Article Created: 18 September 1989  
Article Reviewed/Updated: 15 July 1993

Oxxi Inc.

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1339 E. 28th St.  
P.O.Box 90309  
Long Beach, CA 90809

310-427-1227

310-427-0971 Fax

### Company Profile:

Software, specializing in multimedia software for the Macintosh family and Windows environment (product Video Showcase F/X).

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4266



# Tech Info Library

## Datalogic, Inc.

Revised: 7/8/93  
Security: Everyone

Datalogic, Inc.

=====  
Article Created: 02/18/91  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Datalogic, Inc.(Headquarters)  
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104 Whispering Pines Drive  
Scotts Valley, CA 95066

408-438-7000

408-438-5768 Fax

Company Profile:  
Hardware, specializing in input devices,  
i.e. wedge decoder and Datapen, a light pen for the Macintosh.

Article Change History: 07/08/93 Name Information Added

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4272



# Tech Info Library

## Mix Bookshelf

Revised: 7/13/93  
Security: Everyone

Mix Bookshelf

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Article Created: 09/18/89  
Article Reviewed: 07/13/93  
Article Updated:

Mix Bookshelf

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6400 Hollis St.  
Suite 12  
Emeryville, CA 94608

800-233-9604

510-653-3307

510-653-5142 Fax

Company Profile:

Mail order bookstore, specializing in books on recording technologies, MIDI,  
and electronic music.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4273



# Tech Info Library

## Logitech, Inc.

Revised: 7/12/93  
Security: Everyone

Logitech, Inc.

=====

Article Created: 09/18/89  
Article Reviewed: 07/12/93  
Article Updated: 06/29/92

Logitech, Inc.

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6505 Kaiser Dr.  
Fremont, CA 94555

510-795-8500 (General)  
510-795-8100 (Tech. Support)

510-792-8901 (General) Fax  
510-505-0978 (Tech. Support) Fax

Company Profile:  
Hardware, specializing in peripherals.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4274



# Tech Info Library

## MacSema

Revised: 4/4/97  
Security: Everyone

MacSema

=====  
Article Created: 09/18/89  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

MacSema  
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1650 SW Western  
Corvalis, OR 97333

503-757-1520

503-757-1146 Fax

Company Profile:  
Hardware, specializing in NuBus cards and peripherals for the Macintosh and portable data acquisitions (i.e. handheld computers), memory button

Article Change History: 07/13/93 Address changed, new product information added.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4275



# Tech Info Library

## MARKERTEK Video Supply

Revised: 7/13/93  
Security: Everyone

MARKERTEK Video Supply

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Article Created: 09/18/89  
Article Reviewed: 07/13/93  
Article Updated:

MARKERTEK Video Supply

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4 Hith St.  
P.O. Box 397  
Saugerties, NY 12477

800-522-2025

914-246-3036

914-246-1757 Fax

Company Profile:

Hardware, specializing in video products and various cables, connectors, and adapters for computer-to-video connections.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4276



# Tech Info Library

## McGill University Master Samples

Revised: 7/13/93  
Security: Everyone

McGill University Master Samples

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Article Created: 09/18/89  
Article Reviewed: 07/13/93  
Article Updated:

McGill University Master Samples

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555 Sherbrooke St. West  
Montreal, Quebec H3A 1E3  
CANADA

514-398-4548

514-398-8061 Fax

Company Profile:  
Hardware, specializing in audio CDs for musicians and digidesign sample cards.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4277





# Tech Info Library

## Prosonus

Revised: 4/4/97  
Security: Everyone

Prosonus

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Article Created: 18 September 1989  
Article Reviewed/Updated: 4 April 1997

Prosonus  
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11126 Weddington St.  
North Hollywood, CA 91601

800-999-6191

818-766-5221

818-766-6098 Fax

Company Profile:  
Specializing in sound libraries that include both audio CDs, CD-ROMs, and  
floppy disk samples.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4278



# Tech Info Library

## Sound Ideas

Revised: 7/19/93  
Security: Everyone

Sound Ideas

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Article Created: 18 September 1989  
Article Reviewed/Updated: 19 July 1993

Sound Ideas  
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105 West Beaver Creek Rd.  
Suite 4  
Richmond Hill, Ontario L4B 1C6  
CANADA

416-886-5000

800-387-3030

Fax: 416-886-6800

Company Profile:  
Hardware, specializing in audio CDs.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4279



# Tech Info Library

## MacroMedia (formerly Macromind-Paracomp, Inc.)-(5/96)

Revised: 5/22/96  
Security: Everyone

MacroMedia (formerly Macromind-Paracomp, Inc.)-(5/96)

Article Created: 18 September 1989  
Article Reviewed/Updated: 21 May 1996

MacroMedia

-----  
600 Townsend St.  
San Francisco, CA 94103

800-288-4797

415-252-2000 Main  
415-252-9080 Technical Support

415-626-0190 Fax

Company Profile:  
Formerly Macromind-Paracomp, Inc., software, specializing in multimedia  
software for the Macintosh and Windows.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:4280



# Tech Info Library

## Micol Systems

Revised: 7/16/93  
Security: Everyone

Micol Systems

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Article Created: 18 September 1989  
Article Reviewed/Updated: 16 July 1993

Micol Systems

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9 Lynch Rd.  
Willowdale, Ontario M2J 2V6  
CANADA

416-495-6864

Fax: 416-396-9190

Company Profile:  
Software, specializing in computer languages for the Apple II.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4282



# Tech Info Library

## So What Software

Revised: 4/4/97  
Security: Everyone

So What Software

=====

Article Created: 18 September 1989  
Article Reviewed/Updated: 4 April 1997

So What Software

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10211 Slater Ave.  
Suite 102  
Fountain Valley, CA 92708

714-963-3392

714-964-4298 Fax

Company Profile:  
Software, specializing in tools for the Apple II familyline.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4283



# Tech Info Library

## Complete Technologies

Revised: 4/1/92  
Security: Everyone

Complete Technologies

=====

Article Created: 18 February 1991  
Article Last Reviewed: 1 April 1992  
Article Last Updated: 21 August 1991

Complete Technologies, software, specializing in computer language  
compilers.

Complete Technologies  
2443 South Colorado  
Denver, CO 80222  
303-758-0920

Copyright 1990, 1991, Apple Computer, Inc.

Tech Info Library Article Number:4284



# Tech Info Library

## AFP: How To Implement Record-Locking

Revised: 9/18/89  
Security: Everyone

AFP: How To Implement Record-Locking

=====

This article last reviewed: 6 September 1989

TOPIC -----

How does multi-user software (like 4th Dimension) work with regard to AFP?  
Doesn't AFP provide a record-locking feature, so that the record is locked automatically or is that part of some structure inherent in multi-user software (like 4th Dimension)?

DISCUSSION -----

The AppleTalk Filing Protocol (AFP) lets a workstation on an AppleTalk network access files on an AFP-compatible file server. AFP specifies a remote filing system that provides user authentication and an access-control mechanism that supports volume- and folder-level access rights.

AFP does not provide file-locking and record-locking features to applications automatically. File-locking may be implemented by the application if the appropriate parameter is passed to the AFP call (FPOpenFork) made by the application that opens the file. These parameters include:

|   |           |                                                                          |
|---|-----------|--------------------------------------------------------------------------|
| 0 | Read      | allows the file to be read                                               |
| 1 | Write     | allows the file to be written to                                         |
| 4 | DenyRead  | denies others the right to read the file while this user has it open     |
| 5 | DenyWrite | denies others the right to write to the file while this user has it open |

Record-locking is accomplished in a much more complicated fashion. The application may lock a record by using the AFP command "FPByteRangeLock". To do this, the application must calculate where in the file the record starts and stops. This information is then passed to the "FPByteRangeLock" command and that range in the file is locked. The record may also be unlocked by using the "FPByteRangeLock" command.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4285





# Tech Info Library

## Bit 3 Computer Corp.

Revised: 4/4/97  
Security: Everyone

Bit 3 Computer Corp.

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Article Created: 09/18/89  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Bit 3 Computer Corp.

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8120 Penn Ave. South  
Minneapolis, MN 55431

612-881-6955

612-881-9674 Fax

### Company Profile:

Hardware, specializing in deterministic memory mapped NuBus-to MultiBus,  
VME-bus, and DEC-Qbusbus interfaces.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4286



# Tech Info Library

## Flavors Technology, Inc.

Revised: 4/4/97  
Security: Everyone

Flavors Technology, Inc.

=====

Article Created: 09/18/89  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Flavors Technology, Inc.

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3 Northern Blvd.  
Amherst, NH 03031

603-672-3340

603-672-2438 Fax

Company Profile:  
Hardware and software, specializing in factory automation and control.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4288



# Tech Info Library

## Lextel, Inc.

Revised: 7/13/93  
Security: Everyone

Lextel, Inc.

=====

Article Created: 09/18/89  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

Lextel, Inc.

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38 Lake St.  
P.O. Box 306  
Wakefield, MA 08180

617-245-5017

617-245-6369 Fax

### Company Profile:

Hardware and software, specializing in NuBus cards, products that plug into the Macintosh and S/W file transfer at high rates

Article Change History: 07/13/93 New product information added, address information corrected, name changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4289



# Tech Info Library

## Shulman Software Company

Revised: 4/4/97  
Security: Everyone

Shulman Software Company

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Article Created: 18 February 1991  
Article Reviewed/Updated: 4 April 1997

Shulman Software Company

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1111 W. El Camino Real  
Suite 109MAC  
Sunnyvale, CA 94087-1057

408-245-1890

24 hr. Fax: 408-245-1891

Company Profile:  
Software, specializing in anti-virus tools.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4290



# Tech Info Library

## Dream Maker Software

Revised: 4/4/97  
Security: Everyone

Dream Maker Software

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Article Created: 09/18/89  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Dream Maker Software

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925 W. Kenyon Ave.  
Suite 16  
Englewood, CO 80110

800-876-5665

303-762-1001

303-762-0762 Fax

### Company Profile:

Dream Maker Software, software, specializing in clip art for the  
Macintosh and DOS-based PCs.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4292



# Tech Info Library

## Banyan Systems, Inc.

Revised: 4/4/97  
Security: Everyone

Banyan Systems, Inc.

=====  
Article Created: 09/18/89  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Banyan Systems, Inc.  
-----

120 or 115 Flanders Rd.  
Westboro, MA 01581

800-828-2404 (End-User Information)  
800-222-6926 (Product Information)  
800-222-6926 (Customer Comment Hotline)

508-898-1000

Company Profile:  
Software, specializing in gateways, network operating systems

Article Change History: 07/06/93 Phone number added, New Product Information Added

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4295



# Tech Info Library

## Computona (Princeton Graphics Systems)

Revised: 7/15/93  
Security: Everyone

Computona (Princeton Graphics Systems)

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Article Created: 18 September 1989  
Article Reviewed/Updated: 15 July 1993

Computona  
-----

1100 Northmeadow Parkway, Suite 150  
P. O. Box 100040  
Roswell, GA 30076

800-241-3946

404-343-8138

404-664-1510 (Sales) Fax  
404-664-1110 (Tech. Support) Fax

Company Profile:

Formerly Princeton Graphics Systems, hardware, specializing in monochrome and color monitors for the Macintosh.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4296



# Tech Info Library

## Queue, Inc.

Revised: 7/16/93  
Security: Everyone

Queue, Inc.

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Article Created:  
Article Reviewed/Updated: 16 July 1993

Queue, Inc.

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338 Commerce Dr.  
Fairfield, CT 06430

203-335-0908

800-232-2224

Fax: 203-336-2481

Company Profile:  
Queue, Inc., software, specializing in educational programs for the Macintosh,  
Apple II and IBM PCs.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4297





# Tech Info Library

## MacX25: General Overview

Revised: 9/18/89  
Security: Everyone

MacX25: General Overview

=====

This article last reviewed: 30 August 1989

- MacX25: Introduction

First introduced on June 12, 1989 at the MacIS Conference in New York City, MacX25 is a network integration tool and a developer tool. On the network integration tool side, there are two components: MacX25 Server and MacPAD. The MacX25 Server runs on an Apple Serial NB card in a Macintosh II family. MacPAD is a connection tool that resides in the Communication Toolbox environment. The developer tool is the MacX25 Programming Library. It is the development interface that allows developers to create applications that access a packet switched network as the transmission facility. Macintosh Programmer's Workshop (MPW) Version 3.0 with MPW C is required.

The MacX25 Server behaves as a gateway that is physically connected to the packet switched network via a dial-up modem or leased line. The connection interface to the packet switched network is located on the Serial NB card (62-pin connector). There are two connection interfaces available: RS-232C and V.35. The RS-232C interface supports speeds up to 19.2 Kbps and the V.35 supports speeds up to 64Kbps.

MacX25 Server runs in background under Multifinder. The maximum number of active servers per Macintosh II is five. Other system requirements include System Software Version 6.0.3 (or later), 2 MB of RAM and the appropriate Appletalk LAN cable connector.

The server has a MacX25 Admin program (similar to the Appleshare Admin program) and should be maintained by a network administrator or by a Network Control Center (NCC). This program provides the following services:

- \* Logs the activities of the server
- \* Provides password protection
- \* Creates and modifies servers
- \* Creates and modifies user databases
- \* Selects and modifies X.25 parameter files

- \* Builds and maintains a Master Address Book

#### - MacPAD

MacPAD enables an asynchronous terminal, such as a Macintosh Plus or SE, to interact with a host system. MacPAD packetizes characters transmitted to the server/network and de-packetizes characters received from the server/network.

MacPAD communicates with the server over the Appletalk LAN, whether that be Localtalk, Ethertalk, or Tokentalk. This allows users with a terminal application that uses the Communication Toolbox to place a call to any subscribed service on the packet switched network.

System requirements include a Macintosh Plus, Macintosh SE, Macintosh SE/30, or Macintosh II family with System Software Version 6.0.3 or later and the appropriate Appletalk LAN cable connector. A terminal service application that uses the Macintosh Communication Toolbox is also required.

#### - MacX25 Programming Library

MacX25 Programming Library is a C routine toolkit that allow users to connect and disconnect from the server, and to query server status and circuit information. A packet-level interface that uses control blocks is provided for developers who require maximum control. A higher level logical packet interface performs data translation and formatting services, creates X.25 packets, and relieves the programmer of some lower-level tasks.

Some examples of applications that can be developed include electronic mail systems, sales order systems, inventory control and processing, database inquiries and retrievals, and credit card verification.

System requirements include a Macintosh Plus, Macintosh SE, Macintosh SE/30, or Macintosh II family with System Software Version 6.0.3 or later and the appropriate Appletalk LAN cable connectors.

#### - Additional MacX25 References

- 1.) MacX25 Administrator's Guide, Engineering Part No. 030-2204
- 2.) MacX25 User's Guide, Engineering Part No.
- 3.) MacX25 Programming Guide, Engineering Part No.
- 4.) MacX25 Data Sheet, Order No. M0247LL/A
- 5.) Product Orientation for Salespeople, Order No. P1039LL/A
- 6.) The X.25 Admin Program External Reference Specification
- 7.) MacPAD External Reference Specification

8.) The X.25 Interface Library External Reference Specification

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4298



# Tech Info Library

## Macintosh: System Crashes and Basic Troubleshooting (2 of 2)

Revised: 4/8/94  
Security: Everyone

Macintosh: System Crashes and Basic Troubleshooting (2 of 2)

Article Created: 18 September, 1989  
Article Reviewed/Updated: 8 April 1994

(Continued from previous article: "Macintosh: System Crashes and Basic Troubleshooting (1 of 2)")

WHAT CAUSES A CRASH - A PROGRAM TO NO LONGER RUN - UNEXPECTEDLY QUIT?  
There are many causes for problems of this nature, leading among them:

- Corrupted application

The application you are trying to use may be corrupted. This can occur on a floppy if the floppy is damaged by being stored in extreme heat or cold areas, near magnets, etc. On a hard drive, it may be that the sector on the drive has become corrupted, or one or more of its files may have been accidentally deleted. Delete the application and reinstall it.

- Application Wars

Occasionally, you may run into two or more applications, or combination of applications and DA's, Extensions, or CDev's that simply refuse to coexist in harmony. This is difficult to troubleshoot because there may be many factors interacting with each other and the problem may be intermittent, occurring only if the applications were opened in a specific order, or if a certain DA had been run sometime prior to application launch in the same work session, etc. Your solution is to remove any add-on programs (cdevs, inits, da's) that are contributing to the problem; learn not to run them at the same time; get in touch with the software vendors for assistance and fix.

- Multiple System Software Schizophrenia

Leaving the best and most common cause for last - multiple copies or versions of System Software WILL cause you to experience repeated and multiple system crashes, system freezes, peculiar and highly unusual headaches of the finest kind. NEVER, EVER, UNDER ANY CIRCUMSTANCES EVER have more than one version of System Software on your disk or disk drive. Learn good housekeeping habits. The only things that belong in your system folder are your system software, device drivers, inits, and other related programs. If you find system or

finder anywhere else, TRASH IT!

It is EASY to inadvertently clutter your hard drive with multiple copies. Every time that you copy software up to your hard drive, you may be copying System Software with it. Most applications you purchase come with System Software on the disk, or on one of the disks if it is a multi-disk package. Make sure you do NOT copy the System Software to your hard drive - and as a double check - get into the habit of periodically using Find File to do a search on all your connected drives for "System" and "Finder." If you find multiples, get rid of them. Keep only the officially installed System Software in your System Folder.

## SYSTEMATIC TROUBLESHOOTING PROCEDURES BEFORE PANIC

1. If your problems started after installing new Extensions or Control Panels, remove them to determine if they are incompatible.
2. If your problems started after installing new System Software, check with software vendor to determine if there is a compatibility problem.
3. If your problems started after installing new application software, try running from the floppy to make sure the software is in good working order; check documentation to determine that you are using system software with which it is compatible; check with software vendor to determine if there is a compatibility problem or known bug.
4. Try quitting other applications.
5. Try launching the problem application first.
6. Make sure that the application you are trying to run has not been deleted or damaged. Delete the copy on drive and reinstall.
7. Check memory allocation and increase if necessary.
8. Replace system software. Use the installer on your original system software diskettes or CD ROM.
9. Rebuild your desktop.
10. Create a folder within your system folder and call it "Suspects". Put all your inits, cdev's, startup and control panel programs in that folder and restart your system. If your crashes or unreliable operation problems disappear, you can be fairly confident that one of the "suspects" was causative. Replace the "suspects" to your system folder level ONE AT A TIME, (rebooting your system after each time) and run your system for a day or two or longer to make sure the problem doesn't come back. Now replace another of the suspects until you begin to have crashes again. Once you start to crash, you can be fairly certain that the last reinstated add-on program is the culprit. Get rid of it.

Remember - while not necessarily likely, it is not unheard of to be plagued with more than one causative factor when you have crashing problems. Keep working at it until you've eliminated all possibilities.

If you have investigated all of the procedures above, then you have justification in believing that you may be looking at a hardware problem. Consult your local Apple Authorized service provider and have your computer checked out.

HELPFUL HINT: When your system freezes, if you have your programmer's switch installed, you MAY be able to get back into your program long enough to save off whatever you were working on before, for the sake of safety, rebooting and starting again. Here is what you do:

Press the first button on the programmer's switch (the one with the circle on it, the triangle will restart your computer). You will be taken into the monitor and you will see a carat ">" prompt:

Type the following:

```
SM 0 A9F4      (press RETURN)
G 0            (press RETURN)
```

This procedure will not work all the time, but will work often enough to permit you to quickly do a Save or a Quit, then permit you to reboot your system so that you will not lose your valuable data.

Remember, you can always replace your system software, add on software and applications. But the ONLY way you can replace your data is if you are conscientious about BACKING IT UP routinely.

#### Article Change History

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8 April 1994 - Reviewed for technical accuracy  
29 October 1992 - Corrected typo in title.  
29 September 1990 - Reviewed for technical accuracy

Support Information Services

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Tech Info Library Article Number:4299



# Tech Info Library

## Apple Data Modem 2400: Pinouts and Hardware Description

Revised: 9/18/89  
Security: Everyone

Apple Data Modem 2400: Pinouts and Hardware Description

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This article last reviewed: 29 August 1989

### Front Panel

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- Green LED  
This indicates that the modem is powered on and the serial signal from the computer is routed to the modem. (Normal startup state)
- Amber LED  
This indicates that the modem is powered on and the serial signal is passing through the modem and is being routed out of a second serial port on the modem.
- Mode Switch  
This is used to toggle between the modem and the pass-through serial ports.
  - The Mode switch state is indicated by the two LEDs.
  - The Mode switch is situated between the LEDs on the front panel.
  - The Mode switch is inactive when the modem is connected to a remote modem.
  - The Mode switch can be used to reset the modem to the factory settings. If the Mode switch is held down during power-up, the modem reads its settings from the ROM. (This is the hardware equivalent of the "AT&F" command.)
  - There is no software control of the Mode switch.

### Right Side Panel

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- Volume Control Lever  
This is used to control the volume of the speaker built in to the bottom of the modem. There is a detent that indicates the center of the volume range. Move the lever forward or backward to adjust the volume.

Back Panel

-----

- On/Off Switch

This switch controls the power from the AC adapter to the modem circuitry.

- Telephone Line RJ-11 Jack (RJ-11 Socket icon)

This provides a port to connect the modem to the wall outlet.

- Telephone Set RJ-11 Jack (Telephone icon)

This provides a port to connect the modem to a telephone set. This port is disconnected when the modem is using the telephone line.

- Modem Mini-DIN 8-Pin Serial Port (Macintosh icon)

This connects the computer to the modem. It uses the standard Macintosh serial port pinout.

| Pin   | Pin Name | Definition         |
|-------|----------|--------------------|
| ---   | -----    | -----              |
| 1     | Hsko     | CTS from modem     |
| 2     | Hski     | DTR from local CPU |
| 3     | TxD-     | Transmit data (-)  |
| 4     | Sgnd     | Signal ground      |
| 5     | RxD-     | Receive data (-)   |
| 6     | TxD+     | Transmit data (+)  |
| 7     | GPI      | DCD from modem     |
| 8     | RxD+     | Receive data (+)   |
| Shell | Ground   | Chassis ground     |

Note: This product works with both the Macintosh and Apple II computer families.

- Modem Mini-DIN 8-Pin Serial Port (Telephone Handset icon)

This allows a serial device to be daisy-chained to the modem. This port is disabled when the modem is in use (indicated by green LED) or when the modem is powered off.

- This port is not rated for AppleTalk transmission speeds (the maximum speed is 56.7 kilobits per second); therefore, it cannot be used to pass-through AppleTalk signals.

- 5-Pin DIN Power Connector

This allows a wall-mounted AC adapter to be connected to the modem.

- Security Cable Socket

This is used to secure the modem.

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Tech Info Library Article Number:4300





# Tech Info Library

## Artisen 1023 Plotter: Driver Is Available From MacPlot

Revised: 9/18/89  
Security: Everyone

Artisen 1023 Plotter: Driver Is Available From MacPlot

=====

This article last reviewed: 29 August 1989

TOPIC -----

I would like to use a Artisen 1023 Plotter with a Macintosh IIX. Is there a driver for the Macintosh, and how can I get it?

DISCUSSION -----

MacPlot is a Macintosh driver for multiple plotters; one of the plotters it supports is the Artisen 1023 Plotter.

For more information search on "Microspot" in the Tech Info library.

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Tech Info Library Article Number:4303



# Tech Info Library

## AFE: Problems Translating Into RFT and DCA Formats

Revised: 9/18/89  
Security: Everyone

AFE: Problems Translating Into RFT and DCA Formats

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This article last reviewed: 31 August 1989

TOPIC -----

I have had numerous experiences using Apple File Exchange to translate RFT files where the translator generates an error stating that the file is not a standard RFT file format. I've seen this many times with files brought over from a 5520 or DisplayWriter.

Now, I am trying to create a DisplayWrite 4 file on a IBM PC-AT and save it to a 3.5" 720K disk. AFE translates it fine. I do the same thing on my PS/2 Model 60, and the error occurs. If I copy that file to my IBM AT, then resave it, the error remains. I am running the same versions of DisplayWrite on both machines.

I'm thinking of trying the DataViz translators. The RFT translator seems much more robust (it has never flagged any errors where Apple's supplied translator does).

Two questions:

- What is the difference between the supplied RFT-to-MacWrite translator and the one available from DataViz?
- Do you have any ideas on why a file created on the Model 60 would be different from the file created on the IBM AT?

DISCUSSION -----

The RFT translator that currently ships with AFE is not compatible with DCA/RFT documents created by DisplayWrite 4 or other software packages that use the more recent releases of the DCA standard. Apple is evaluating whether to create a new version of the translator that is compatible with the recent releases of the DCA standard.

There should be no difference in the files created by DisplayWrite 4 on any IBM-compatible computer. We cannot begin to guess why the files appear to be different; we suspect that they aren't.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4304



# Tech Info Library

## Apple Data Modem 2400: Overview

Revised: 9/18/89  
Security: Everyone

Apple Data Modem 2400: Overview

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This article last reviewed: 29 August 1989

On June 12, 1989, Apple introduced the Apple Data Modem 2400. It is a 2400 bits per second (bps) external modem for the Apple II and Macintosh family of computers.

The Apple Data Modem 2400 supports the standard 2400/1200/300 bps modem protocols Classes 1 through 4 error correction protocols and is fully Hayes-compatible.

### Features

-----

- Two serial ports for connecting to the computer and to daisy-chain a serial device, such as the AppleFax Modem.
- Two RJ-11 ports to connect to the wall outlet and a telephone handset.
- A wall-mounted AC power adapter that plugs into the modem.
- An on/off switch built in to the modem.
- A built-in speaker with external volume control.
- A security slot.
- Nonvolatile RAM to store modem settings.

### Support Issues

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- It is possible to plug the AppleFax Modem or Apple IIc power supply into the Apple Data Modem 2400. If this is done, the modem will not power up, but it will not cause any damage to the modem or power supply.
- Only the two inner lines (tip and ring) of the RJ-11 jacks are passed through. This may cause problems with certain PBX systems that use the outer two lines for special-feature signaling. In this situation, it is best to have separate telephone lines for the modem and the telephone set.
- Unlike the Apple Personal Modem, this unit uses nonvolatile RAM to store the modem settings, which means that the modem does not automatically power up with the factory settings. The modem can be forced to the factory settings by either issuing the AT&F command or holding down the

Mode button on the front panel during power-up.

- Because the serial port is rated for a maximum speed of 56.7 kilobits per second, AppleTalk devices cannot be daisy-chained to the modem.
- The ports for the telephone line and telephone set cannot be interchanged because the telephone set port is disconnected when the modem is in use. The same applies to the serial connections because the signals are directional. The ports must be used as marked.

#### Availability

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The Apple Data Modem 2400 will be sold only by authorized Apple Desktop Communications dealers.

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Tech Info Library Article Number:4305



# Tech Info Library

## Apple Data Modem 2400: Specifications (Discontinued)

Revised: 6/20/94  
Security: Everyone

Apple Data Modem 2400: Specifications (Discontinued)

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Article Created: 18 September, 1989

### I. Technical Specifications

#### A. Regulatory

1. FCC Registration Number: BCG794-12381-DM-E
2. Ringer Equivalence Number: 1.1B
  - a. The total number of ringer equivalence numbers on any one telephone line cannot exceed 5.0.
3. Canadian Load Number: 7

#### B. Self-Test

1. The modem executes a brief self-test when first powered up, and sounds two beeps if all tests pass.
  - a. This test and response cannot be disabled.

#### C. Data Format

1. Protocol: Asynchronous
2. Character Length
  - a. 7 data bits
    - 1) Stop bits: 1 or 2
    - 2) Parity: Odd, even, fixed: mark/space
  - b. 7 data bits
    - 1) Stop bits: 2
    - 2) No parity
  - c. 8 data bits
    - 1) Stop bits: 1 or 2
    - 2) No parity
3. Mode: Full duplex

#### D. Compatibility

1. Complete set of Hayes modem command instructions

#### E. Error Correction

1. Microcom Network Protocol (MNP) Classes 1 through 4

F. Transmission Speeds

1. For all speeds
  - a. Tolerance in character asynchronous format (DTE data rate)
    - 1) +1.0%
    - 2) -2.5%
  - b. Tolerance in modulation rate
    - 1) +/- 0.01%
2. 2400 bits per second (bps)
  - a. Standard: V.22bis
  - b. Modulation: Quadrature Amplitude Modulation (QAM)
3. 1200 bits per second (bps)
  - a. Standard: V.22A/B, Bell 212A
  - b. Modulation: Differential phase-shift keying (DPSK)
4. 300 bits per second (bps)
  - a. Standard: Bell 103
  - b. Modulation: Differential phase-shift keying (DPSK)

G. Operating Modes

1. Auto or manual dial (including redial)
  - a. Tone: DTMF (Dual-Tone Multi-Frequency--"Touch Tone")
    - 1) Frequency tolerance: +/- 1/0%
    - 2) Tone balance: Within 3dB
  - b. Pulse (Rotary)
    - 1) Dialing duty cycle: 39%/61% mark/break ratio
    - 2) Dialing rate: 10 pps
2. Auto or manual answer

H. Receiver Dynamic Range

1. -10 to -45 dBm, full duplex

I. Transmitter Level

1. -10dBm +/- 1dB, fixed

J. Parameter Memory

1. Nonvolatile RAM for storing settings
  - a) 10,000-cycle life

K. Command Buffer

1. 40 characters, not including AT or any following spaces, dashes, or parentheses.

L. Interface

1. RS-422-A, with mini-DIN8 connector (standard Macintosh pinout)

M. Environmental Specifications

1. Operating temperature: 32-104 degree F (0-40 degree C)
2. Relative humidity: 95% noncondensing

N. Line Monitoring

1. Software: Print status messages to computer
2. Audio: Built-in speaker with external volume adjustment

- O. Power Source
  - 1. AC input (U.S. and Canada)
    - a. 110V +/- 10%, 60 Hz
- P. Power Consumption
  - 1. 7 watts maximum
- Q. Physical Characteristics (modem only)
  - 1. Dimensions: 200mm x 120mm x 45mm
  - 2. Weight: 500 grams

## II. System Configuration

- A. Computer
  - 1. Apple II, Apple II Plus, or Apple IIe with Super Serial Card or compatible serial interface
  - 2. Apple IIc with serial number greater than 510,000
    - a. Apple IIc with serial number of 510,000 or lower, contact Authorized Apple Dealer for information on free logic board upgrade.
  - 3. Macintosh family
  - 4. Computer with RS-232 port
- B. Interface Cable
  - 1. Macintosh Plus or later: M0197
  - 2. Macintosh 512K or earlier: M0196
  - 3. Apple II, Apple II Plus, Apple IIe: A2C0312
  - 4. Apple IIc: A2C4313
  - 5. Apple IIc Plus, Apple IIGS: M0197
- C. Standard single-line telephone cable with RJ-11 modular jack

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Tech Info Library Article Number:4306





# Tech Info Library

## VAX-to-Mac Connectivity: Starting Sequence is Critical

Revised: 9/18/89  
Security: Everyone

VAX-to-Mac Connectivity: Starting Sequence is Critical

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This article last reviewed: 29 August 1989

When running the following software on the same VAX:

- VAX 8800
- VMS 5.02
- AppleTalk 2.0
- PACER 4.5
- ALISA 3.2
- PCSA 2.1

the order in which these programs are started is critical. Otherwise the Macintosh computers on the network will not see these services, or the PACER and ALISA products will not start. If AppleTalk for VMS is started before PACER when attempting to start PACER, it will fail; AppleTalk should be the last product started. These are undocumented but known problems with PACER and ALISA.

Here is a recommended starting sequence:

1. DECnet
2. PCSA
3. PACER
4. ALISA
5. ATALK for VMS

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Tech Info Library Article Number:4307



# Tech Info Library

## 4th Dimension: How to Customize the CLUT 9/89

Revised: 3/15/93  
Security: Everyone

4th Dimension: How to Customize the CLUT 9/89

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Article Created: 18 September 1989

Some people have noticed a problem with the presentation tools with 4th Dimension when using splash screen that needed colors that weren't in the default palette. The following workaround is usefull if you need to change a few colors (for a Corporate logo, for example).

1. Copy the palette for the image using ResEdit
2. paste the palette for the image into 4th Dimension
3. Change the CLUT ID (color lookup table) to 0 so that it becomes the default palette on application launch. This way

Unfortunately, this solution means that you are stuck with that palette until changed in the application (for all files). To minimize this drawback, try starting with the default system palette and change only some obscure, less used colors in that palette to the ones you want and leave the other standard colors alone.

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Tech Info Library Article Number:4308



# Tech Info Library

## X.25: A Technical Overview

Revised: 9/18/89  
Security: Everyone

### X.25: A Technical Overview

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This article last reviewed: 30 August 1989

- X.25

X.25 is a CCITT recommendation for a synchronous interface between a data terminal equipment (DTE) operating in a packet mode and the data circuit terminating equipment (DCE) on the public data network. The elements of the interface is defined independently as:

Physical - the mechanical, electrical, functional, and procedural characteristics to activate, maintain, and deactivate the physical connection between the DTE and DCE.

Link - the link access procedure for data interchange across the link between the DTE and the DCE.

Packet - the packet format and control procedures for the exchange of packets containing control information and user data between the DTE and the DCE.

These three levels are associated with the first three levels in the International Standards Organization (ISO) Open System Interconnect (OSI) Reference Model.

- Physical

The interface characteristics for a DTE connected to a packet switched transmission service by a dedicated circuit or by a circuit switched network is defined in Recommendation X.21 and X.21bis (V.24). Recommendation X.21 is only for connections via a circuit-switched data network while X.21bis can be used for connections via a circuit-switched data network and a telephone network.

- Link

The Link Access Procedure, LAP and LAPB, is the protocol and the frame format is High-level Data Link Control (HDLC). LAPB defines procedures for link set-up, error control, flow control, and link disconnect. The frames used within the LAPB ensures error-free packets on the access link.

- Packet

The packet level procedures pertain to virtual calls on the X.25 access link, and is independent of the internal protocol of the packet switched network. Procedures are defined for the setting up and clearing of switched virtual circuits, data transmission, and restart of switched and permanent circuits.

The packet format includes a user facility field which allow users to subscribe to various features such as Closed User Group, Reverse charging, and fast select.

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Tech Info Library Article Number:4310



# Tech Info Library

## **X.3, X.28, X.29: CCIT Parameters and Acronym Glossary (9/94)**

Revised: 9/2/94  
Security: Everyone

X.3, X.28, X.29: CCIT Parameters and Acronym Glossary (9/94)

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Article Created: 30 August 1989  
Article Reviewed/Updated: 2 September 1994

TOPIC -----

This article describes X.3, X.28, X.29: CCIT Parameters and Acronym Glossary.

DISCUSSION -----

CCITT Recommendation X.3, X.28, and X.29 define how an asynchronous (start-stop) terminal connects to a synchronous packet switched network. A Packet Assembler/Disassembler (PAD) is employed to perform the X.25 functions that the asynchronous terminal cannot manage by itself. The PAD can reside in the network or at the DTE end. X.3 describes the parameters that the PAD uses and can be modified by the terminal and host. There are 22 parameters defined in the CCITT Red Book:

- 1) Escape from Data Transfer - if enabled, tells the PAD what key is used to toggle between the data transfer mode and command mode.
- 2) Echo - decides whether characters sent from the asynchronous terminal should be echoed.
- 3) Data Forwarding Signal - tells the PAD which char(s) mean that it is time to assemble and send a packet.
- 4) Idle Timer Delay - if enabled, tells the PAD that if no char(s) have been sent from the asynchronous terminal after the specified time, packetize and send the data in the input buffer.
- 5) Ancillary Time Control - decides whether flow control is used for data sent from a terminal with an attached floppy disk or data storage medium to the PAD.
- 6) PAD Service Signals - decides whether Service signals are to be sent to the terminal. Service signals are sent by the PAD to the operator in response to the commands sent by the operator.

- 7) Procedure on Break - defines the resulting action when the operator has hit the break key.
- 8) Discard Output - used together with parameter 7. Set by the X.25 computer to tell the PAD whether any data in the output buffer should be discarded or sent to the terminal.
- 9) Padding after CR - if enabled, specifies the number of padding characters to insert after a CR when transmitting to the terminal.
- 10) Line Folding - if enabled, inserts a CR after a predefined number of chars in the input buffer.
- 11) Terminal Data Rate - read-only parameter for the operator to view the speed of the asynchronous terminal.
- 12) Flow control of the PAD - If enabled, allows the terminal to control the data flow from the PAD.
- 13) Linefeed Insertion - if enabled, tells the PAD when to insert a linefeed after CR.
- 14) Linefeed Padding - if enabled, specifies the number of padding character to insert after an LF is sent to the terminal.
- 15) Editing - defines whether editing of the data in the PAD input buffer, while in data transfer mode, is permitted. Parameter 16, 17, and 18 define which keys are to be used for editing.
- 16) Character Delete - defines which character is used to mean char delete.
- 17) Line Delete - defines which character is used to mean line delete.
- 18) Line Display - defines which character is used to display a line of text. Useful when the user is editing text.
- 19) Editing, PAD Service Signals - defines the character the PAD will respond with when it receives a char delete or line delete from the terminal.
- 20) Echo mask - specifies which characters are not to be echoed.
- 21) Parity Treatment - defines the manner in which the PAD treats the parity bit, bit 8.
- 22) Page Wait - if enabled, defines the number of LFs the text can contain before the PAD waits for a signal from the terminal to proceed with data transmission. Allows time for a new sheet of paper to be fed into a printer or to store received chars on a diskette.

X.28 defines the interface, mainly the command language, between the asynchronous terminal and PAD. These commands enable the following functions:

- \* Set up and clear of a virtual call
- \* Select a profile that suits the terminal
- \* Modify the X.3 values
- \* Read the values of the X.3 parameters
- \* Send an Interrupt packet
- \* Query the status of a virtual call
- \* Request reset of a virtual call

X.29 is the protocol between the PAD and the X.25 terminal/host. PAD messages are used by the X.25 host to set or read X.3 parameters in the PAD and to receive an indication that the terminal has sent a BREAK and an INVITATION TO CLEAR.

#### Acronym Glossary

-----

ACK - Acknowledgement

ANSI - American National Standards Institute

ATDM - Asynchronous time division multiplexing

BER - Bit error rate

BOP - Bit-oriented protocol

BPS - Bits per second

BSC - Binary synchronous communication

CCITT - International Telegraph and Telephone Consultative Committee

CNS - Communication network systems

CS - Circuit switching

DCE - Data Circuit-Terminating Equipment

DDCMP - Digital data communication message protocol

DNIC - Data network identification code

DSU - Data service unit

DTE - Data Terminating Equipment

FDM - Frequency division multiplexing

FDX - Full duplex

FIFO - First-in-first-out

FM - Frequency modulation

FSK - Frequency shift keying

HDLC - High-level Data link control

HDX - Half-duplex

IPSS - International packet switching service

ISO - International Standards Organization

LAPB - Link access procedure, balanced

LCN - Logical channel number

LIFO - Last-in-first-out

MS - Message switching

MTBF - Mean time between failures

NAK - No acknowledgement

NCC - Network Control Center

NMC - Network management center

NPA - Numbering plan area

PABX - Private automatic branch exchange

PDN - Public data network

PPS - Private packet switching

PS - Packet switching

PSK - Phase shift keying

PTT - Postal, Telephone, and Telegraph

RJE - Remote job entry

SDLC - Synchronous data link control

S/F - Store and forward

SNA - System network architecture

TCO - Telenet central office

TDM - Time division multiplexing



TELCO - Telephone company

TP - Telenet processor

VAN - Value-added network

VC - Virtual Connection

WATS - Wide-Area Telecommunication Service

Article Change History:

02 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:4311



# Tech Info Library

## MPW: Projector Is Macintosh Equivalent of Panvalet on a PC

Revised: 6/29/90  
Security: Everyone

MPW: Projector Is Macintosh Equivalent of Panvalet on a PC

=====

This article last reviewed: 30 August 1989

TOPIC -----

Is there a program for the Macintosh that is similar to Panvalet for the IBM?

DISCUSSION -----

Panvalet is used for software development project management on PCs. To locate a similar program on a Macintosh, one doesn't have to look any further than MPW 3.0, which contains Projector. Projector is an easy-to-use collection of built-in MPW commands and windows that help programmers, individually and in teams, to control and account for changes to all the files (documentation, source, applications, and so on) associated with a software project.

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Tech Info Library Article Number:4313



# Tech Info Library

## Macintosh: How To Get Localized System Software and Hardware

Revised: 9/18/89  
Security: Everyone

Macintosh: How To Get Localized System Software and Hardware

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This article last reviewed: 30 August 1989

TOPIC -----

Where can I get for the Macintosh:

- 1) The Spanish language system tools.
- 2) The Spanish language keyboard.
- 3) A list of Spanish software.

DISCUSSION -----

- 1) The Macintosh System Software localized in Spanish is available through APDA.
- 2) International keyboards can be ordered through your Customer Support Representative at the distribution center. Because Apple USA doesn't regularly stock International keyboards, you might want to place your request in advance of your need, due to the amount of time it can sometimes take to acquire. Generally speaking, if you have a good source, it is typically faster to obtain International components in those countries.
- 3) This might be more difficult to acquire. We are unaware of any USA-based companies that distribute International software domestically. Of all of our previous inquiries, CLARIS was the only company we contacted that was investigating doing so. Alternatives include purchasing software from a computer store doing business in that country.

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Tech Info Library Article Number:4314



# Tech Info Library

## Macintosh: How to Use as a Telex

Revised: 9/18/89  
Security: Everyone

Macintosh: How to Use as a Telex

=====

This article last reviewed: 30 August 1989

TOPIC -----

Can a telex machine be connected to a Macintosh so that the Macintosh receives the wires?

DISCUSSION -----

Many VT100 emulation packages have a TTY or Teletype emulator, including MacTerminal. Therefore, after acquiring a Western Union EasyLink account providing you with access to the telex services, a modem, and telephone line, along with MacTerminal and a Macintosh, you will then have all of the necessary items to send and receive telex messages.

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Tech Info Library Article Number:4315



# Tech Info Library

## A/UX 1.1: X11 and Color Support

Revised: 9/21/92  
Security: Everyone

A/UX 1.1: X11 and Color Support

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Article Created: 30 August 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

If X11 supports only 8-bit deep screens, does that mean I can't have color using the Macintosh II Video Card without upgrading it with the Expansion Kit (from 4 bits per pixel to 8 bits per pixel) ?.

### DISCUSSION -----

We have verified that the current A/UX X11R3 MacX server supports only 1-bit and 8-bit colors. The 4 bits per pixel is not supported at this time.

The "X11 -screen 0 -depth 4" command still shows only black and white even if you have the Video Expansion Kit installed.

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Tech Info Library Article Number:4317



# Tech Info Library

## AppleFax Modem: Reception Problem May Be Due to Line Noise

Revised: 9/18/89  
Security: Everyone

AppleFax Modem: Reception Problem May Be Due to Line Noise

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This article last reviewed: 30 August 1989

TOPIC -----

I have been having a number of problems with the AppleFax Modem while receiving from a NEC model NEFAX Bit-1 to my Macintosh SE/30.

The problem was when I was receiving from the NEC Fax; I was able to open and view the document, but it was nothing but dots down the center of the page. The document was 227K.

I had the sending end retransmit and was able to read the document the second time with no problems, but this time it was 127K. Previously, I had been unable to read an AppleFax document although it showed up as an AppleFax Document.

Is there a problem with this configuration or with this transmitting Fax? Have you had any reports of a similar nature? Is there anything I can do?

RESPONSE -----

Since the problem is intermittent, we suspect that line noise is the cause--not an incompatibility between the AppleFax Modem and the NEC Fax machine. If there was an actual incompatibility, you would not be able to receive the document successfully. The AppleFax Modem has the capability to drop down from 9600 baud to 4800 baud in the case of line problems, but it is not uncommon to have connections that do not support 4800 baud reliably. We suspect that this had happened in this case, and the only suggestion we have is to ensure the use of clean lines from the transmitting machine to the modem.

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Tech Info Library Article Number:4318



# Tech Info Library

## AlisaShare: Increasing Finder Requirement

Revised: 9/22/89  
Security: Everyone

AlisaShare: Increasing Finder Requirement

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This article last reviewed: 30 August 1989

The mysterious "growing Finder" problem appears to be an AlisaShare file named ASROOT.CAT. This is a binary file used as an index datafile. ASROOT.CAT is a root level directory that writes entries for every file written to a specific volume. ASROOT.CAT is the file written to the Macintosh Finder for desktop information.

ASROOT.CAT is initially allocated 32K (64 blocks) for its contents, which in typical environments, would not be a problem. However, using a remote VAX volume (DOCUMENT+, Virtual Files) makes this transactional in nature--an application that more resembles a database. As DOCUMENT+ writes transaction files on Virtual Files, ASROOT.CAT is updated with the new file index entry. As the transaction files are deleted on Virtual Files, the associated index entries in ASROOT.CAT are not purged. Consequently, ASROOT.CAT continues to grow, which, in turn, forces the Finder requirements to increase respectively.

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Tech Info Library Article Number:4319



# Tech Info Library

## AppleTalk for VMS: Concurrent User Limit

Revised: 9/18/89  
Security: Everyone

AppleTalk for VMS: Concurrent User Limit

=====

This article last reviewed: 30 August 1989

TOPIC -----

Under AppleTalk for VMS, which is AlisaShare, am I still limited to 50 concurrent users? Does this have anything to do with AppleTalk's 128-socket limit? With two sockets per node and some overhead, this leaves an absolute maximum of 62. How accurate is this, but more importantly, will this limitation ever be addressed in future versions of AppleTalk?

DISCUSSION -----

The number of concurrent users allowed on a server is defined by the developer of the server. In the case of AppleTalk for VMS-based servers, there are ways to extend the number of users beyond the limitations set by the number of sockets per node.

There actually is nothing that limits an AFP server to having one connection per socket. AppleShare uses a one-client-per-socket method to simplify bookkeeping since the machines it is running on cannot support enough users to require multiple users per socket. The processing power and disk performance usually provide the limitations of a server's capabilities.

The number of sockets allowed per node is not changing in AppleTalk Phase II. In both Phase I and Phase II, the socket number is represented as a byte, which gives 256 possible values: 128 of these are reserved, leaving 128 for dynamic socket allocation. Changing this field to a word size would require a major change to many of the routines and protocols of AppleTalk, beyond even the scope of the changes being implemented in AppleTalk Phase II.

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Tech Info Library Article Number:4320





# Tech Info Library

## AppleShare File Server: Macintosh SE Versus Macintosh SE/30

Revised: 10/4/89  
Security: Everyone

AppleShare File Server: Macintosh SE Versus Macintosh SE/30

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This article last reviewed: 30 August 1989

TOPIC -----

Is there a performance increase when using a Macintosh SE/30 as an AppleShare file server instead of a Macintosh SE? Are there any benchmarks that illustrate a performance increase?

DISCUSSION -----

The question as to whether or not there will be a performance increase when using a Macintosh SE/30 instead of a Macintosh SE as a file server depends on where the bottleneck is for the network. If your network is currently waiting for the server, then using a Macintosh SE/30 will increase the performance. If the network itself is sending packets slowly, the Macintosh SE/30 will not help.

There are quite a few advantages to using a Macintosh SE/30 instead of a Macintosh SE as a file server if your server is the bottleneck. First of all, the CPU in the Macintosh SE is the MC68000, which runs at 7.8336 MHz. The Macintosh SE/30 has the MC68030, which runs at 15.6672 MHz. This, obviously, will speed up anything that requires processing time.

Secondly, the SCSI hard drive access time is much faster. The Macintosh SE uses a 2:1 interleave. The Macintosh SE/30 uses a 1:1 interleave because the processor is fast enough to handle the information at that transfer rate. Therefore, the access of any given hard drive is faster on the Macintosh SE/30 than the same hard drive on the Macintosh SE, which is important for servers.

Additionally, the Macintosh SE/30 has a faster hard drive than the Macintosh SE. The Macintosh SE, which has an HD20 SC, has an average access time of 65ms. The Macintosh SE/30, which has the new 3.5-inch HD40 SC or HD80 SC, has an average access time of 20ms. This, along with the faster interleave, gives a much faster overall SCSI hard disk access time.

Finally, the Macintosh SE/30 has the same logic board as the Macintosh IIX. Because of this, as with the Macintosh IIX, if there is more than 1MB of RAM, the AppleShare File Server allows up to 50 users to be logged on to it, rather than the 25 users allowed with the Macintosh SE.

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Tech Info Library Article Number:4323



# Tech Info Library

## ProDOS 8: How To Set, Save, and Retrieve Date/Time Data

Revised: 9/18/89  
Security: Everyone

ProDOS 8: How To Set, Save, and Retrieve Date/Time Data

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This article last reviewed: 30 August 1989

TOPIC -----

I have a third-party clock device connected to the game port of an Apple IIe. I also have a BASIC routine that returns the time and date in a variable. The problem is that the routine does not store the date and time in a place where other ProDOS programs (that is, AppleWorks) can access them. Is there a standard memory location and format for storing the time and date so that all other applications can retrieve it? I'm assuming that most ProDOS programs use the "GetTime" call. Is it possible to preload the memory locations that "GetTime" references?

DISCUSSION -----

There is a standard memory location and format designated by ProDOS for the Date/Time data.

ProDOS has a built-in clock driver that queries a clock/calendar card for the date and time. After the routine stores that information in the ProDOS Global Page (\$BF90-\$BF93), either ProDOS or your own application programs can use it.

The locations reserved by ProDOS for the Date/Time are \$BF90-\$Bf93. The format looks like this:

|       |                |        |                |
|-------|----------------|--------|----------------|
|       | 49041 (\$BF91) |        | 49040 (\$BF90) |
|       | 7 6 5 4 3 2 1  |        | 7 6 5 4 3 2 1  |
| Date: | \| Year \| | Month | \| Day \| |
|       | 49043 (\$BF93) |        | 49042 (\$BF92) |
|       | 7 6 5 4 3 2 1  |        | 7 6 5 4 3 2 1  |
| Time: | \| Hour \| | Minute | \| |

The ProDOS clock driver expects the clock card to send an ASCII string to the GETLN input buffer (\$200). This string must have the following format (including the commas):

mo,da,dt,hr,mn

where:

mo is the month (01 Jan...12 Dec)

da is the day of the week (00 Sun..06 Sat)

dt is the date (00 through 31)

hr is the hour (00 through 23)

mn is the minute (00 through 59)

For example, 07,04,14,22,46 represents Thursday, July 14, 10:46 PM. The year is looked up in a table in the clock driver.

To support clock cards that do not follow the ProDOS protocol defined above, you can locate your code in a number of places. The cleanest solution is to replace the ProDOS routines with your own, if they fit. If you look at \$BF07, \$BF08, you will find the location to put your code. There is room for 125 bytes.

There is more information about this subject in the ProDOS 8 Technical Reference Manual, Chapter 6, "Adding Routines to ProDOS", beginning on page 104.

The disadvantage is that once the date/time is loaded by your routine, there is no way to update it without returning to your own program to reset the memory locations with the new date/time. This would get pretty cumbersome if done often.

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Tech Info Library Article Number:4324



# Tech Info Library

## Macintosh: System Crashes and Basic Troubleshooting (1 of 2)

Revised: 4/8/94  
Security: Everyone

Macintosh: System Crashes and Basic Troubleshooting (1 of 2)

Article Created: 9 August 1989  
Article Reviewed/Updated: 8 April 1994

TOPIC -----

One problem that every Macintosh user faces sooner later is a system crash, freeze, or other unexpected event. Depending on the user's knowledge and familiarity with his system, such an event may simply be shrugged off with no great concern, or lead to phone calls or sudden visits to the local Apple Authorized Dealer. All too often the user immediately suspects a hardware failure and panics, thinking of hundreds of dollars of repair costs. Usually, the problem is not related to hardware failure. The purpose of this article is to help users understand what is happening, help them to troubleshoot their problem, resolve it, or to fairly conclusively determine that they may in fact be looking at a hardware failure and be in need of service.

DISCUSSION -----

### HOW TO START TROUBLESHOOTING

The most useful thing you can do for yourself and for anyone else who may become involved in helping you troubleshoot your system, is to set up a problem log in which you record exactly what was going on when the problem occurred. The format below should prove useful:

- Which version of system software is being used
- Program being run (include version number)
- Other Applications open at the time
- List all Extensions, Control Panels
- What were you doing EXACTLY when the problem occurred
- What was the result (freeze, reboot, crash, error message, etc.)
- What you tried to do to get out of it and with what results
- Did you have to reboot?
- Did things work okay after reboot

If you experience multiple crashes and begin the troubleshooting cycle below, note what you do and with what results.

If it becomes necessary for you to take your system to your dealer to assist you with the troubleshoot, this information will be helpful for explaining the problem.

WHAT CAUSES A CRASH - A PROGRAM TO NO LONGER RUN - UNEXPECTEDLY QUIT?

There are many causes for problems of this nature, leading among them:

- Corrupted System Software from a previous crash or incompatible add-on

Although this sounds like a round-robin, and in fact is, the plain truth is that any system crash could corrupt your application or System Software to some degree which, if not corrected, will continue to haunt you until the problem is determined and corrected. The solution is to reinstall System Software and, as a matter of good habit, the application. It is usually wise to err on the side of precaution than not - and good practice to keep your copy of System Software nearby so that you can reinstall after any serious crash. An incompatible extension or Control Panel after being run, even if removed, may leave "bits and pieces" of itself behind. Reinstalling System Software will correct this problem as well.

- System and Application Version Incompatibility

Not all versions of System Software and application software are compatible. Most applications that you purchase will clearly indicate what version of System Software is required to permit the program to run correctly. If you are using an older version of System Software, you may have problems. If you are running current System Software, but using an old version of application software you may run into problems. Occasionally, when System Software is updated, some previously functioning applications may fail to run, crash, or fail to perform reliably. This is a compatibility problem, you have only two alternatives: first, revert to an older version of System Software under which the application ran well; and/or get in touch with the software vendor and notify him of the problems, and inquire about the availability of a "patch" or upgrade.

- Out of Memory condition - real or "imagined"

Some programs are "memory hogs": You may discover that you have simply not enough memory to open, or to run the application with all features working correctly. Some programs will fail to open at all; others will open and run for a while until you try to do a cut and paste, edit, print, sort, etc., operations which require additional memory. Your available options are to close another application to permit you to use the one that is crashing and/or obtain more memory.

In some instances, the "out of memory" condition is not real. This situation may exist when a program requires that you have a certain amount of "contiguous" memory available. While you may show that you have 1MB available, and the program only needs 267K, you may not have 267K of memory all in one chunk. Close the other applications you have open, then launch the program you had problems with.

Occasionally a complete system restart will be necessary. In some situations, your application may not have enough memory allocated to it to permit it to run correctly: This includes your finder. Select the application by single-clicking on it. Do a "Get Info" from the Menu Bar (or Command-I). If you

do not have as much memory allocated as is recommended, increase to the recommended amount. If you have the correct allocation, try doubling it to see if that helps.

### - Extension or Control Panel Compatibility Problem

Some add on software, such as Extensions, CDevs, and DAs may not have been written to permit them to be compatible with some versions of System Software. This is a situation that you can usually identify fairly quickly. Usually crashes and problems develop shortly after you install some new add on software or after you install new version of System Software. Your only recourse is to remove the offending add on software and pursue a long-term solution with the software vendor or author.

### - Desktop Manager "Confusion"

The most telling clue to this problem is when you try to open an application by double-clicking on one of its documents, or in trying to print one of its documents from the desktop, you receive a message that tells you the "application is busy or missing." If this is the case, either your application IS busy (for instance, you are trying to run a single user program on a network when someone else is already running it); it is missing (it is corrupt or you've trashed it inadvertently); or the desktop manager is unable to locate the application.

First, check and make sure the application really is on your drive. Next, launch the application and make sure that it is not corrupted. If the application is not being used by anyone else, it is on your drive, and it does work, then restart your computer while holding down the Option and Command keys.

A dialog box will appear informing you that rebuilding your desktop will take a few minutes, and given the option to continue or abort. Click OK (you can stop holding down the two keys at this point). Your desktop will be rebuilt and you should be able to continue without any problems. It is usually prudent to update desktop periodically.

(This article continues on in: "Macintosh: System Crashes and Basic Troubleshooting (2 of 2)").

### Article Change History:

8 April 1994 - Reviewed for technical accuracy.

### Support Information Services

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Tech Info Library Article Number:4327



# Tech Info Library

## Macintosh II: Certificate of Occupancy Information (9/94)

Revised: 9/2/94  
Security: Everyone

Macintosh II: Certificate of Occupancy Information (9/94)

Article Created: 30 August 1989  
Article Reviewed/Updated: 02 September 1994

### TOPIC -----

When furnishing a new office with Macintosh computers, a Certificate of Occupancy is often required. Information needed for this certificate includes:

- EMI (Electro-Mechanical Interference) levels
- Burn test results, meaning what is released when a Macintosh is consumed by fire
- Power and grounding parameters

### DISCUSSION -----

Quite often, the information needed for a Certificate of Occupancy is a certificate of compliance from a governmental or a recognized industrial or other safety committee to ensure that adequate protection exists for users against potential health hazards, such as radiation, electrical shocks, and fire hazards, and from RFI interference to radio and television reception. The Macintosh II computer meets national and international product safety requirements. The Macintosh II is approved by the American (Underwriters Laboratories--UL, and FCC), Canadian (Canadian Standards Association--CSA), and European (Institute for Industrial Research and Standards--IIRS) groups, and so on. The evidence of certification that it may be sold in a particular country is in the form of a label affixed to the bottom of the case.

Apple's grounding requirements are usually within those required by building codes in most communities. We suggest that the "third" wire be grounded for the safety of the operator, so that grounding loops don't build within devices, from which one could obtain an electrical shock.

Apple doesn't perform burn tests but works with the UL, which does, to ensure we are avoiding using materials that could contribute to a fire. This includes PCB material, housing plastic (which contains a fire retardant), and other parts. In general, PCB material is flame rated 94V-1 or better, wire should be



UL-Listed/CSA-Certified VW-1, and plastic parts within the enclosure are flame rated 94V-2 or better. We generally use components that have been certified by the safety agencies. Components include such things as lithium batteries, power relays, tape drives, and so on.

Most plastics do give off toxins when burned; however, as mentioned above, the housings and plastics do contain fire retardants, and are all UL-approved.

For more information see:

- The Macintosh Hardware Family Reference manual, Chapter 23, Macintosh II Power. This chapter goes into the AC input power requirements in detail.
- The Tech Info library article, "Electrical Specifications of Most Apple Hardware", and search on "Macintosh" and "specification".

Article Change History:

02 Sep 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:4328



# Tech Info Library

## AppleTalk Internet Router: Doesn't Translate DDP-to-IP (11/94)

Revised: 11/30/94  
Security: Everyone

AppleTalk Internet Router: Doesn't Translate DDP-to-IP (11/94)

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Article Created 4 September 1989  
Article Reviewed/Updated: 30 November 1994

QUESTION -----

Is there any way using the Apple Internet Router and the MacTCP drivers to encapsulate an AppleTalk protocol and place it on a TCP/IP-based backbone?

The reason I ask is that I have a customer changing their networking strategies to implement a TCP/IP-backbone only. If you can't play in this environment, they don't want you on the backbone. What the customer wants is to connect their 30 Macintosh networks onto the backbone using TCP/IP. They like the idea of the Internet Router over a Cayman- or Kinetics-type solution.

RESPONSE -----

With the release of the newer Apple Internet Router, TCP/IP tunneling is possible. Also the Apple IP Gateway is a DDP-to-IP gateway. For more information about these products use them as a search string.

The older AppleTalk Internet Router does not provide DDP-to-IP translation. It also does not have the ability to encapsulate AppleTalk packets within IP packets to ship the packets to another router over a backbone. It provides AppleTalk Phase II routing over multiple physical media (Token Ring, Ethernet, and LocalTalk).

MacTCP performs the opposite of what your customer is requesting. When it is on a machine on an AppleTalk network, MacTCP encapsulates TCP/IP packets within AppleTalk packets. It then sends the packets to a DDP-to-IP gateway, which strips the AppleTalk information and sends the TCP/IP packets to the appropriate TCP/IP network device, such as a UNIX system.

The Cayman GatorBox and Kinetics FastPath are examples of the DDP-to-IP gateway mentioned above. They do not encapsulate AppleTalk packets within TCP/IP packets either. Also, when they act as AppleTalk routers, they perform the same types of operations for an AppleTalk Phase I network as the Apple Internet

Router provides for a Phase II network. Note that we are discussing the current versions of these products, which do not yet support AppleTalk Phase II; however, adding Phase II support to these products still would not provide the functionality your customer desires.

For more information, search on "Cayman" or "Kinetics" in the Tech Info library.

Article Change History:

30 Nov 1994 - Added references to the newer Apple Internet Router and the Apple IP Gateway.

Support Information Services

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Tech Info Library Article Number:4330



# Tech Info Library

## Apple Data Modem 2400: Supports Flash Command

Revised: 9/18/89  
Security: Everyone

Apple Data Modem 2400: Supports "Flash" Command

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This article last reviewed: 4 September 1989

TOPIC -----

I have an application that requires approximately a 1/2-second break (sometimes referred to as a 'flash hook' or a 'switch hook') to be generated by the modem. There are a number of modems that provide this feature by sending an exclamation point ('!'). The Apple Personal Modem does not support this.

Does the new Apple Data Modem 2400 support this feature?

DISCUSSION -----

Yes, the Apple Data Modem 2400 does support the 'Flash' command; the character used is the exclamation point ('!'). This command causes the modem to go ON-HOOK for half a second, then go OFF-HOOK. This is a useful command for transferring telephone calls on some telephone systems.

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Tech Info Library Article Number:4331



# Tech Info Library

## AppleShare PC: OS/2, MS-DOS Compatibility

Revised: 8/28/90  
Security: Everyone

AppleShare PC: OS/2, MS-DOS Compatibility

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This article last reviewed: 31 August 1989

TOPIC -----

Does the new AppleShare PC run under the OS/2 compatibility box?

DISCUSSION -----

AppleShare PC 1.2 and AppleShare PC 2.0 do not support OS/2 or the MS-DOS compatibility box in OS/2. The OS/2 compatibility box is not compatible for file services because the redirector does not work, and low-level calls that AppleShare PC uses for printing are not supported either.

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Tech Info Library Article Number:4332



# Tech Info Library

## AppleShare File Server 2.0.x: File Limits and Memory (1/97)

Revised: 1/25/97  
Security: Everyone

AppleShare File Server 2.0.x: File Limits and Memory (1/97)

=====

Article Created: 31 August 1989  
Article Reviewed/Updated: 25 January 1997

TOPIC -----

Are there any limits imposed by AppleShare File Server as far as the following parameters are concerned?

- 1) Total number of files per volume.
- 2) Total number of files in a folder.
- 3) Total number of files on the file server.
- 4) Total number of open files.
- 5) The memory used by open and closed files?

Is it possible that a large number of files can cause memory problems on AppleShare File Servers?

DISCUSSION -----

AppleShare does not impose any additional limits that HFS does not. HFS and AppleShare allow the following:

1) Total number of files per volume.  
A count of the total number of files and directories on the volume is maintained, as a LongInt, in the master directory block (block 2). Directory IDs are also LongInts. This limits the number of files and folders on the volume to  $2^{32}-1$  (roughly 4.3 billion). That many folders could be created as long as there's room on the volume to hold the expanding catalog B\*-Tree. Because each file occupies at least one allocation block, all of the, at most, 65,536 allocation blocks (also numbered by Integers) will be allocated just before that many files are written on the volume. 65,536 is the maximum number of files on an HFS volume.

2) Total number of files in a folder.  
There is another limitation imposed: a directory's valence is an Integer, and,

furthermore, on GetCatInfo requests, any negative number in the ioFlIndex field is interpreted as a request for information on the directory itself. So, while HFS allows the creation of up to 65,536 files in each directory, all of which can be accessed by name, only 32,767 can be enumerated--a real limitation on folder contents. In practice, the user's patience will run out well before this many items can be enumerated.

3) Total number of files on the file server.

The maximum number of files on a file server vary depending on the version of AppleShare you use.

AppleShare 2.0.x allows 16 volumes

$$16 \times 65,536 = 1,048,576$$

AppleShare 3.0.x and later allows 50 volumes

$$50 \times 65,536 = 3,276,800$$

4) Total number of open files.

If the server is equipped with 1MB, the default maximum number of files that can be opened is 80. If you increase the server's RAM to 2MB, the default maximum number of files that can be opened also increases to 160.

The number of FCBs is pointed at by the value in \$34E (hex). The number of FCBs is indicated in the first word in that table. On a 1MB machine, the default value is \$1D62; on a 2MB server, the value is \$3AC2. There is a one-to-one relationship between the File Control Blocks and the number of individual files you can have opened; that is, each file uses one FCB.

An easy solution to problems involving "too many files" is to increase the amount of RAM. If you increase the FCB, you, potentially, would subject your server to system errors, possibly at times when you are maximizing RAM usage.

With servers now having more RAM, there are maximum limits for open files. They are as follows:

|                       |        |
|-----------------------|--------|
| AppleShare Pro        | 5000   |
| AppleShare 4.2.x      | 3000 * |
| AppleShare 4.x        | 346    |
| AppleShare 3.x        | 346    |
| AppleShare 2.0.1      | 160    |
| Personal File Sharing | 346    |

\* 3000 instances of 346 unique files.

5) The memory used by open and closed files?

Closed files use no RAM space at all. Just opening a file uses no memory either, but it does take an FCB. Loading the resources into memory uses more memory, and how much depends on the particular files.

And finally, no, an AppleShare File Server is not encumbered by a volume or volumes with a large number of files because it does not cache any of the file directory information.

Article Change History:

25 Jan 1997 - Changed title to reflect information is mostly for version 2.0.x.

06 Nov 1996 - Updated item 3 and item 4.

09 Dec 1994 - Added maximum number of open files.

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Tech Info Library Article Number:4334





# Tech Info Library

## LaserWriter Driver 6.0: Compatibility Issues

Revised: 11/1/91  
Security: Everyone

LaserWriter Driver 6.0: Compatibility Issues

=====

Article Created: 31 August 1989  
Article Last Reviewed: 31 October 1991  
Article Last Updated: 31 October 1991

TOPIC -----

I have three questions about the LaserWriter 6.0 driver in a mixed AppleTalk environment.

- 1) Are there compatibility issues among LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX printers?
- 2) How does the page format for #10 envelopes work with the software (that is, do the margins automatically adjust)? I assume that one should not choose this option if working with older LaserWriter products that do not have center feed.
- 3) Because installation of LaserWriter 6.0 requires System 6.0.3, is there a system problem when running on Macintosh Plus, and earlier computers?

DISCUSSION -----

- 1) The LaserWriter 6.0 drivers are compatible with the LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX printers.
- 2) The page format information is retrievable by the application from the printer driver. Not all applications adjust their page formats based on this information. The #10 envelope setting is intended for the LaserWriter II family of printers and their center-feed mechanism.
- 3) The LaserWriter 6.0 drivers require System Software 6.0 or later. This means that the Macintosh Plus and later support the LaserWriter 6.0 drivers. The Macintosh 512e and earlier computers do not. Note: The LaserWriter 6.0 drivers use the Notification Manager, which is available only in System Software 6.0 and later.

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Tech Info Library Article Number:4335



# Tech Info Library

## Macintosh Plus: Dual-Voltage Switch (4/93)

Revised: 4/8/93  
Security: Everyone

Macintosh Plus: Dual-Voltage Switch (4/93)

Article Created: 31 August 1989

### Article Change History

04/07/93 - REVISED

- Separated unrelated information into another article.

### TOPIC -----

The Macintosh Family Hardware Reference (Addison-Wesley) states at the end of the Macintosh Plus section that all late model Macintosh Plus systems have a dual-voltage 50/60 Hz 110-120/220-240VAC power supply that comes preset to 110-120VAC but can be changed to the higher voltage via a switch on the analog board. I can't find it the switch. Is this a publication error, or is the switch really there?

### DISCUSSION -----

Only international versions of the Macintosh Plus ship with the dual-voltage 50/60 Hz 110-120/220-240VAC power supplies. The domestic version of the Macintosh Plus system ships with the 50/60 Hz 110-120VAC power supply.

The information to which you are referring is on page 7-2 of the Macintosh Family Hardware Reference and is incorrect.

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Tech Info Library Article Number:4336



# Tech Info Library

## Macintosh SE, SE/30: Possible Combinations of Internal Drives

Revised: 8/7/92  
Security: Everyone

Macintosh SE, SE/30: Possible Combinations of Internal Drives

=====

Article Created: 18 September 1989  
Article Last Reviewed: 7 August 1992  
Article Last Updated: 22 August 1991

TOPIC -----

What are the possible combinations for the internal drives on a Macintosh SE and SE/30?

DISCUSSION -----

The Macintosh SE chassis is capable of holding two 3.5-inch storage devices. The Macintosh SE and Macintosh SE/30 logic boards use the same amount of space in the Macintosh SE chassis. The Macintosh SE/30 logic board has only one internal floppy-drive connector. Based on this information, it is possible to have these combinations of hardware installed in the Macintosh SE chassis:

- 1) Macintosh SE logic board; one 800K floppy drive.
- 2) Macintosh SE logic board; one Apple SuperDrive (formerly Apple FDHD).
- 3) Macintosh SE logic board; two 800K floppy drives.
- 4) Macintosh SE logic board; two Apple SuperDrives.
- 5) Macintosh SE logic board; one 800K floppy drive, one 3.5-inch hard drive.
- 6) Macintosh SE logic board; one Apple SuperDrive, one 3.5-inch hard drive.
- 7) Macintosh SE/30 logic board; one 800K floppy drive.
- 8) Macintosh SE/30 logic board; one 800K floppy drive, one 3.5-inch hard

drive.

9) Macintosh SE/30 logic board; one Apple SuperDrive.

10) Macintosh SE/30 logic board; one Apple SuperDrive, one 3.5-inch hard drive.

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Tech Info Library Article Number:4337



# Tech Info Library

## MacDraw II 1.0: Does Not Curently Support Color QuickDraw

Revised: 9/18/89  
Security: Everyone

MacDraw II 1.0: Does Not Curently Support Color QuickDraw

=====

This article last reviewed: 31 August 1989

TOPIC -----

I am using both PixelPaint and MacDraw. When I copy and paste from PixelPaint into MacDraw, I lose the color I have painstakingly put into the graphics.

Do you have any suggestions on a cause and remedy?

DISCUSSION -----

MacDraw and MacDraw II do not support Color QuickDraw. MacDraw II displays the eight colors that the original QuickDraw supported. This is why the color information from a PixelPaint object(s) is lost when pasted into MacDraw II.

Another problem is that PixelPaint allows you to modify the palette of colors being used. If the system palette is not used, the colors may change when pasted into another application.

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Tech Info Library Article Number:4338



# Tech Info Library

## AppleShare PC: How To Change the Printer Timeout Parameter

Revised: 9/18/89  
Security: Everyone

AppleShare PC: How To Change the Printer Timeout Parameter

=====

This article last reviewed: 31 August 1989

TOPIC -----

I am trying to permanently change the printer timeout parameter in AppleShare PC 1.x. I can change the parameter, but whenever the machine is restarted, the parameter is reset to default.

DISCUSSION -----

The printer timeout parameter should stay as set even if the machine is restarted. We tested this on an IBM-XT running AppleShare PC 1.2.

Make sure that you reply "Yes" to the question:

Connect automatically at startup?

in the LaserWriter Connect window.

Another way to ensure that the timeout parameter stays after restart is to use the ANET command CONNECT in the PC AUTOEXEC.BAT file. Example:

```
ANET CONNECT LPT1: N(Printer Name) P(LaserWriter) D(timeout)
```

Please refer to the AppleTalk PC Update of the AppleTalk PC Printer Driver, part no 031-1031-A, for more information.

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Tech Info Library Article Number:4339



# Tech Info Library

## MacDFT: Supports Only Coax/Twinax & TokenTalk NB Cards

Revised: 7/27/93  
Security: Everyone

MacDFT: Supports Only Coax/Twinax & TokenTalk NB Cards

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Article Created: 22 September 1989  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

Does MacDFT work with either AppleLine or DCA's (formerly Avatar) MacMainFrame DX?

DISCUSSION -----

MacDFT supports only the Coax/Twinax Card and the TokenTalk NB card. MacMainFrame DX requires DCA (formerly Avatar) own software. AppleLine will continue to be supported by the 3278 terminal option in MacTerminal.

MacDFT will not work with AppleLine (the interface is VT100 and needs MacTerminal). MacDFT will not work with MacMainFrame DX. DCA (formerly Avatar) has released their new DFT software for beta testing.

### Article Change History:

26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates).  
31 August 1989 - Updated for technical accuracy.

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Tech Info Library Article Number:4340





# Tech Info Library

## MacDFT: Compatibility with Other Communications Products

Revised: 9/22/89  
Security: Everyone

MacDFT: Compatibility with Other Communications Products

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This article last reviewed: 31 August 1989

TOPIC -----

How does a Macintosh on Token Ring appear to NetView? Will NetView see Macintoshes attached to the Token Ring via LocalTalk or Ethernet using our Internet Router?

Will Apple's first release of MacDFT, which supports DFT over Token Ring from a 3174 controller, allow mainframe sessions to be distributed to Macintoshes over LocalTalk and/or Ethernet?

Likewise, will Apple's first release of MacDFT, which supports DFT, allow sessions to be distributed from our coax card to Macintoshes on LocalTalk and/or Ethernet?

DISCUSSION -----

Apple Computer's TokenTalk product conforms to the 802.5 Token Ring standard of the Medium Access Control (Macintosh) layer as defined by IEEE 802 Local Area Network Committee. A Macintosh with the TokenTalk NB Card appears to NetView as a Token Ring node, but it does not support NetView diagnostic functions because these NetView functions are not implemented in AppleTalk.

NetView does not see Macintoshes attached to the Token Ring via LocalTalk or Ethernet through the Internet Router because the Internet Router was not developed to support NetView and, therefore, does not pass LocalTalk and EtherTalk node information to NetView.

The first release of MacDFT, which supports DFT on coax or Token Ring cards, does not support distributions of mainframe sessions over LocalTalk or EtherTalk.

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Tech Info Library Article Number:4341



# Tech Info Library

## Electronics Data Interchange (EDI): General Description (9/94)

Revised: 9/8/94  
Security: Everyone

Electronics Data Interchange (EDI): General Description (9/94)

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Article Created: 5 April 1990  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

This article provides a general description of Electronics Data Interchange (EDI).

DISCUSSION -----

EDI stands for Electronics Data Interchange. Officially, it is Electronics Business Data Interchange (EBDI), but the "Business" part of the title is often left out. EDI refers specifically to the exchange of business data. It defines the format and data content of business documents, like purchase orders, so that both the buyer's and seller's computers can process them, typically, at an enormous savings in data entry costs.

There are currently two EDI standards-setting groups in the United States: the TDCC and ANSI X.12 Committee. The worldwide standard-setting body for EDI is EDIFACT (part of ISO); EDIFACT standards are just beginning to be developed but are moving quickly. EDIFACT and ANSI are working toward compatibility.

TDCC, a transportation industry standards group, originally began developing EDI standards and then asked ANSI to endorse standards for all industries. TDCC and ANSI use a common data element dictionary, but they build their transaction sets differently.

Industries, other than transportation, use the ANSI standard. The standard is very large and general because it has to meet the needs of all businesses in the USA. Specific industry groups, such as EIDX for the electronics industry, use the ANSI standards but decide which optional segments and elements are used for each transaction set. Also, the industry groups select which table values to use. For example, ANSI has several hundred unit of measure values that may overlay, such as each, piece, box, set, unit, and so on. EIDX has adopted each as the only unit of measure the electronics industry needs. These industry groups simplify exchange within the industry.

The structure of an EDI message is:

- 1) Transaction Set is equivalent to a business document, such as a purchase order. Each transaction set is made up of data segments. Transaction sets are listed in Transactions Set Tables.
- 2) Data Segments are logical groups of data elements that together convey information, such as invoice terms, shipping information, or purchase order line. Data Segments are listed in the Data Segment Directory.
- 3) Data Elements are individual fields, such as purchase order number, quantity on order, unit price, and so on. Data Elements are listed in the Data Element Directory.

Article Change History:

8 Sep 1994 - Reviewed for accuracy.

Support Information Services

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Tech Info Library Article Number:4342



# Tech Info Library

## A/UX: Block-to-inode Mapping

Revised: 9/30/92  
Security: Everyone

A/UX: Block-to-inode Mapping

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Article Created: 31 August 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I am having some problems with a bad block on the disk. I want to 'badblk' it, but I also want to save the file (inode) that used the block to another file before doing that.

I noticed that there is no utility in A/UX 1.1 that does a block-to inode mapping. In SysV systems you usually find icheck, which does this kind of stuff. Did I misread the manuals, or is there no facility to backtrace the blocks to the originated inode? Can I port the icheck to the next release of A/UX?

Another issue with badblk is the so-called "hardware sparing". This is mapped to a ioctl(fd,GD\_SPARE),block) inside badblk, which is then translated to a SCSI call in our device driver. I'm using Rodime drives, so I really don't know the hardware-specific way of doing the hardware sparing. I am curious to know how Apple's disks do this. Does Apple support this hardware sparing with our disks? (One could speculate that the disk device copies the block information to another pure block, changes some kind of internal pointer table, and maps the bad block to a bad block table.)

### DISCUSSION -----

We, too, noticed that the 'icheck' utility (block number to i-node number mapping) is not included in A/UX 1.1. The porting of 'icheck' utility has not been implemented.

We don't know how well the Rodime hard disk supports the "hardware sparing" either. However, we believe that the Apple HD80 SC (Quantum Q280) drives are intelligent disk drives and capable of "hardware sparing" support; it incorporates media defect handling and error correcting code capabilities. During regular disk operation, the drive can continue to scan and compensate for any new defective sectors that may show up later on the disks.

On the software side of the bad-blocking (the 'badblk'-set or update bad block information), we have the following test, and it seems to work.

```
# badblk /dev/rdisk/c0d0s31
==> badblk:  block #33988 was not bad blocked
==> badblk:  block #33999 was not bad blocked
==> no blocks bad blocked
```

```
# badblk /dev/rdisk/c0d0s31 33988 33999
==> 2 blocks spared, 0 blocks altblked
```

```
# badblk /dev/rdisk/c0d0s31
==> no blocks bad blocked
```

According to the description of 'badblk', badblk first attempts to alter a bad block by hardware sparing. If the hardware sparing fails and the device supports alternate bad blocking, badblk attempts to alternate block the bad block.

Note that for the space-saving reasons, the current A/UX distribution disk partitions do not have the alternate block area reserved for bad block handling. If the bad sectors occur, it will be done by the hardware sparing.

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Tech Info Library Article Number:4344



# Tech Info Library

## AppleShare 2.0.1: Adding or Copying Drop Boxes (5/95)

Revised: 5/25/94  
Security: Everyone

AppleShare 2.0.1: Adding or Copying Drop Boxes (5/95)

=====

Article Created: 31 August 1989  
Article Reviewed/Updated: 25 May 1994

TOPIC -----

I am running AppleShare 2.0.1 on a Macintosh II and am having trouble with the drop boxes. I have installed two new 140MB hard drives on my AppleShare File Servers; each is treated as an additional "volume". There is no trouble accessing either of the new volumes or placing folders and documents on them. The trouble is that drop boxes do not appear as drop boxes. For example, some drop boxes were copied from the original volume to the new one, and the arrow no longer appears--the drop box is essentially another folder. When new folders are added, and someone goes to Access Privileges and creates a drop box, the same thing happens. Correcting this problem is very important due to security.

DISCUSSION -----

We do not have any difficulty creating drop boxes under this version of AppleShare. When you copy a folder from one AppleShare volume to another, one of two things happens: If you set the copy inherit bit in the LAYO resource in the Finder to on, the copied folder "inherits" the privileges of the directory it is being copied to. Or, if this bit is not set, the folder being copied has the default settings with access completely restricted to the owner of the folder (you). Either way, the privileges are being changed from the settings of the originating folder.

Also, ensure that whoever owns the drop box is not the one logged on. If it is, this person will not see the folder as a drop box; rather as an owned folder. Check the privileges on the folder after you change them to those of a drop box.

If the settings are reported correctly, have a nonowner try to open the folder and copy files. The nonowner clearly should not be able to. If it can, then have that account check the folder's privileges.

Another possible cause of the problem may be the 140MB hard drives being used. Since we tested this using standard Apple hard disk drives, it is possible that the hard drives are the difference between our configuration and yours. We

would suggest checking with the manufacturer of your drive to verify that it doesn't have problems working with AppleShare 2.0.1.

Article Change History:

25 May 1994 - Updated Title to reflect 2.0.1 information only.

Support Information Services

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Tech Info Library Article Number:4345





# Tech Info Library

## AppleTalk: Wide-Area Networking Issues Using Satellite Links

Revised: 9/22/89  
Security: Everyone

AppleTalk: Wide-Area Networking Issues Using Satellite Links

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This article last reviewed: 31 August 1989

TOPIC -----

I am working toward extending our AppleTalk network from Plano, Texas, to various other offices (such as, specifically, Anchorage via 56Kb phone links for Ethernet). This 'extended' Ethernet is primarily being done to support some VAX systems, but AppleTalk packets get out over the TransLan bridges anyway, so AppleTalk goes 'piggyback' on the Ethernet with no particular trouble.

So far, Plano and downtown Dallas are connected. There is Liaison and FastPaths on the Plano end and Liaison in Dallas. AppleShare servers and printers and zones show up fine, although response time is a bit slow.

In a few weeks, I hope to have Anchorage on-line via telephone satellite. I have been trying to get some idea of how bad the delay caused by the satellite phone link will be.

Are any software packages that make use of the ADSP protocol (which sounds to me like what we really need for eliminating the wait for every packet's response)?. For instance, I've heard that CE's newest QuickMail product does this. Based on the times involved, my estimate is that the time delay due to the 24,000 mile distance to the satellite will be slightly better than that seen with a Liaison remote phone link with a 9600-baud modem.

Is this reasonable, or is there some other problem I don't know about? Will AppleShare tolerate these time delays?

DISCUSSION -----

A satellite link will add approximately a quarter-second delay between the time a packet is transmitted at one end of the link until the time it is received at the other end of the link. This propagation delay is about 15 times greater than that seen in a 3000-mile ground link, which approaches a fiftieth of a

second. This assumes perfectly clean channels; when you include error rates, ground-based analog lines have greater error rates than satellites, which require more retransmissions.

The quarter-second delay would be most noticeable in the case of extremely bursty types of communications. The best example of this type of communication is a full-duplex character mode terminal session. If the character typed at the terminal has to be echoed by the remote host before it is displayed on the screen, you see a one-half-second delay between the time a character was typed and the time it was displayed on the screen.

At the other end of the spectrum is the completely one-way transmission of large amounts of data. The quarter-second delay caused by the satellite link would then become virtually unnoticeable.

Reality will fall somewhere between these two scenarios. Typically, the amount of data transmitted in each AppleTalk packet will be in the hundreds of bytes. Also, constant send/receive-style communication is greatly reduced. For instance, communication between a Macintosh and a LaserWriter follows the pattern of 8 data packets being sent by the Macintosh, followed by a request for the next set of 8 sent back by the LaserWriter. This transaction-based communications is at the heart of most AppleTalk traffic.

AppleShare servers and LaserWriters communicate via the AppleTalk Transaction Protocol (ATP), which implements these communications along with guaranteed packet delivery. Using files servers and printers over this long distance link, as if they were locally attached, is not a recommended solution. However, we have seen these types of operations work reliably at speeds as low as 1200 baud via asynchronous links, so communications via the satellite link should work.

Problems that slower speed links cause often are caused by errors on the network. Satellite links themselves are very reliable, but if one of the ends of the link is having network errors, continual retransmission requests across the link, due to packets lost on the misbehaving side, will cause problems. This makes it doubly important that the quality of the networks on both sides be doubly checked and well within the recommended limits of cable lengths and nodes per network.

Also, in AppleTalk Phase 1, there is no best router algorithms in use, so sometimes a Macintosh will use a router on the other side of a slow link as its router to devices on its side of the link. This is a problem only with Macintoshes directly connected (via Ethernet cards, and so on) to the backbone that includes the long distance link, and it can cause significant delays. AppleTalk Phase 2 addresses this problem, and your customer should seriously consider upgrading to Phase 2.

To address the ADSP question above, ADSP is typically used for data-stream-type communications over a network. The classic example of this is terminal services over a network. ADSP was implemented to try to reduce the impact of the problems posed by the character-by-character nature of these transactions. We do not see a need to look for other network applications that specifically use ADSP unless you are looking at the possibility of terminal services across

the remote link, such as logging on to a VAX via PacerLink.

It is important to realize that the actual throughput and user-perceived throughput will vary on a case-by-case basis. As the backbone traffic increases, causing more delays due to nodes waiting to send, the actual delay from the satellite link will become a smaller and smaller portion of the overall delays on the network. If network services are configured to take the link into account, perceived throughput will be even greater. For instance, electronic mail services could be configured so that messages sent across the link were only sent twice a day at low-activity periods.

As a final note, the issues discussed above are mostly not AppleTalk- specific. Adding satellite links to any networking schemes magnifies the complexity of that network by an order of magnitude. This is definitely not a plug-and-play operation (not yet, anyway), but it has been successfully implemented within the AppleTalk world, and much more often in the TCP/IP world.

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Tech Info Library Article Number:4346



# Tech Info Library

## AppleTalk Phase 2: Questions and Answers (11/94)

Revised: 11/14/94  
Security: Everyone

AppleTalk Phase 2: Questions and Answers (11/94)

Article Created: 22 September 1989  
Article Reviewed/Updated: 14 November 1994

TOPIC -----

The announcement of AppleTalk Phase 2 has been both a delight and yet scary to some of our customers with large (>2500 Macintoshes) and varied AppleTalk networks (LocalTalk and Ethernet). I have not seen a good document describing upgrade procedures. Is there one that you know of? If not, here are some unclear areas of concern that I need answered:

- 1) Does the Upgrade Utility of the AppleTalk Internet Router software handle the compatibility between Phase 1 and Phase 2 nodes connected to the same Ethernet, or am I going to have a compatibility problem between EtherTalk 1.x and 2.0?
- 2) If so, can I put a single AppleTalk Internet Router with the Upgrade Utility on Ethernet to handle the compatibility between Phase 1 and Phase 2 nodes throughout the entire network (some Macintoshes are on the Ethernet, and some are on LocalTalk networks bridged with Kinetics FastPaths)? Or, will a Router be needed at each LocalTalk-to-Ethernet junction?
- 3) Will AppleTalk Phase 2 require a particular level of Macintosh OS; that is, will there be any problem having Macintoshes with 5.x/AppleTalk Phase 2 and Macintoshes with 6.x/AppleTalk Phase 2?
- 4) Will an upgrade to AppleShare be required?

RESPONSE -----

- 1) The Upgrade Utility was specifically designed to allow both AppleTalk Phase 2 and AppleTalk Phase 1 to work together on the same network.
- 2) If you have a Phase 1 router connected to a LocalTalk network, every Phase 2 router that needs to communicate with the Phase 1 router must

run the Upgrade Utility. If you have a Phase 1 router connected to an Ethernet, it is possible to have only one Phase 2 router connected to the Ethernet running the Upgrade Utility. A manual will be provided with the Upgrade Utility specifying in greater detail the possible configurations and which routers need to run the Upgrade Utility. Also, see the binders associated with the LAN Minds training for more information.

- 3) TokenTalk, EtherTalk 2.0, and the Apple Internet Router have been tested only with System 6.0.3, so devices specifically running AppleTalk Phase 2 products must run System 6.0.3. Other devices should be able to run older versions of the System software without any ill effects.
- 4) AppleShare will not require an upgrade to work with AppleTalk Phase 2. AppleTalk Phase 2 should only affect bridge, router, and gateway products. The upgrade should be transparent to network services, such as file servers and printers.

Article Change History:

14 Nov 1994 - Reviewed for technical accuracy, made information public.

Support Information Services

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Tech Info Library Article Number:4347



# Tech Info Library

## Macintosh II: Problems Adjusting the Color with 4-bit Video

Revised: 9/22/89  
Security: Everyone

Macintosh II: Problems Adjusting the Color with 4-bit Video

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This article last reviewed: 31 August 1989

TOPIC -----

Sometimes the color selection works fine, and sometimes it does not. It seems to work OK on the primary colors along the outer rim of the color wheel. However, when I move in toward the center, choose a color, say OK, I get a completely different color than what I chose. Sometimes the color does not change at all--it stays a dark gray.

Another problem is that when you change the color successfully and restart, the color returns to the color before the change! I tried this on an 8-bit video card system, and it worked fine. So, at this point, it seems to be a problem with 4-bit video systems. This is the first color problem I have encountered, but it is easy to duplicate on a 4-bit video system by going into the "color" option in the Control Panel and making various changes to the default color. I am running System 6.0.3.

Is there a workaround for this, or is this a problem being addressed by a new update for the operating system?

DISCUSSION -----

The situation you are describing is a direct result of the number of colors that can be displayed on a screen at one time. With a 4-bit video card, this number of colors is a total of 16 at any one time.

The Color Picker will display any one of the 16.7 million colors that Color QuickDraw is capable of generating. It does this by altering its color lookup table on the fly as you request different colors. When you click the OK button, the values chosen are returned to the calling program (in this case the Color Control Panel Device). The program then uses this value; the Color CDEV uses it to set the color of text selections. However, the way this color actually is displayed depends on the current color lookup table (CLUT) in use, which has no bearing on what was being used in the Color Picker Package. In

most cases, the CLUT being used is the standard system CLUT. The color chosen in the Color Picker is mapped to the closest available color in the system CLUT, and that color is the one that you actually see on the screen.

When you only have 16 colors available on the screen at one time, it is likely that you will not get the color displayed in the Color Picker, and, quite often, you see the exact same color you had on the screen before--even though the actual RGB values specified are very different. This same sequence of events occurs with an 8-bit video card. The difference is that with 256 colors on the screen at one time, you have more colors to map to in the system CLUT, and it seems as though you are getting the actual values requested.

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Tech Info Library Article Number:4348



# Tech Info Library

## Macintosh-to-Data General Connectivity

Revised: 9/22/89  
Security: Everyone

Macintosh-to-Data General Connectivity

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This article last reviewed: 31 August 1989

TOPIC -----

Is it possible to connect a Macintosh through Ethernet to a Data General computer?

DISCUSSION -----

The method of connection will depend on the operating system and network protocols supported on the Data General machine. If you are running UNIX on the Data General, then the standard TCP/IP connectivity solutions should work. These would include terminal emulation and file transfer programs, such as NCSA Telnet.

If you are running the proprietary Data General operating system, then being able to connect will depend on the protocols supported by that operating system. Once again, it is possible that the operating system will support TCP/IP, at which point you would be able to connect over the Ethernet. It is also possible that the Data General would support another set of protocols we can connect to, but TCP/IP is most likely.

If neither of the above options is available, you will be restricted to serial connections using a terminal emulation package, such as MacTerminal.

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Tech Info Library Article Number:4349





# Tech Info Library

## DAL and TCP/IP in VM Environments (12/94)

Revised: 12/5/94  
Security: Everyone

DAL and TCP/IP in VM Environments (12/94)

=====

Article Created: 22 September 1989  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

I have a question concerning Data Access Language (DAL) and TCP/IP. With the DAL for VM solution, I normally would have a 3278 emulation terminal with a coax connection to the cluster controller-FEP-host.

If on the 802.3 backbone we had IBM mainframes and access to them via TN3278 (either NCSA's or Intercon's product), would DAL in the Macintosh connected via LocalTalk to a FastPath 4 or GatorBox work in this case? The IBM host would have to be running all of the proper software, and again, the 802.3 cable can only have IP packets on it.

DISCUSSION -----

Dal supports TCP/IP access via Mac TCP to a VM DAL server as of release 1.3.

Article Change History:  
05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4350



# Tech Info Library

## AppleShare: UNIX Compatible Development Encouraged

Revised: 9/22/89  
Security: Everyone

AppleShare: UNIX Compatible Development Encouraged

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This article last reviewed: 7 September 1989

TOPIC -----

Does Appple want people to develop AppleShare-compatible file servers for other platforms?

I am working with a local mini-super manufacturer running a variant of UNIX and they are very interested in bundling some Macintosh system services with their package.

Can you guide me to the proper resources?

DISCUSSION -----

Apple actively encourages people to develop AFP-compatible file servers. You also should inform them of the existing products that turn UNIX systems into AppleShare servers, such as Columbia AppleTalk Package (CAP) from Columbia University and uShare from Information Presentation Technologies. Search on the above names in Tech Info library for more details on these products.

You should advise your mini-super computer manufacturer to contact Apple Developer Services Hot Lines at 408-974-4897 to get more information about developing AFP-compatible file servers. Contact Software Licensing at 408-974-4667 for information about bundling Macintosh System software with their package.

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Tech Info Library Article Number:4353



# Tech Info Library

## MacTCP: TCP/IP Ethernet and AppleTalk Compatibility

Revised: 9/22/89  
Security: Everyone

MacTCP: TCP/IP Ethernet and AppleTalk Compatibility

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This article last reviewed: 7 September 1989

TOPIC -----

Here is a question about Macintosh-to-Cray connectivity and AppleTalk Phase 2 products. Will the GatorBox and Kinetics boxes be able to communicate using TCP/IP?

Also, will I be able to use MacTCP with Apple's EtherTalk NB Card and VersaTerm Pro?

DISCUSSION -----

The Kinetics FastPath and the GatorBox are both Datagram Delivery Protocol-Internet Protocol (DDP-IP) gateways. Both perform the same function of taking a TCP/IP packet that is encapsulated in DDP and AppleTalk protocol, and converting it to Ethernet format from LocalTalk. DDP-IP gateways also can assign addresses to MacTCP nodes and handle routing to other networks. PacerLink software from Pacer Software, Inc. can be used in this situation to emulate VT100 terminal with softkeys. VersaTerm Pro terminal emulation software does similar functions and can be used as well.

MacTCP runs over both Ethernet- and LocalTalk-compatible cabling systems. If you run MacTCP on LocalTalk cable, you need a DDP-IP gateway, like the FastPath or the GatorBox. By default, the DDP-IP gateway should be located in the same AppleTalk zone as the Macintosh computer running MacTCP. Alternatively, a single DDP-IP gateway can support Macintosh computers in multiple AppleTalk zones; in this case, the zone where the DDP-IP gateway resides must be selected by the user using the MacTCP Control Panel.

If you run MacTCP over Ethernet using our Ethernet NB Card, you do not need a DDP-IP gateway. You do not need PacerLink or VersaTerm Pro. To provide remote terminal service, you need software, like NCSA Telnet or Internet Systems Corporation (also known as Intercon) TCP/Connect. Both of these software packages provide terminal emulation and file transfer protocol.

For more information, search on the above company names in the Tech Info library.

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Tech Info Library Article Number:4354



# Tech Info Library

## Macintosh Finder: Trash Can and Directory Changes

Revised: 7/19/91  
Security: Everyone

Macintosh Finder: Trash Can and Directory Changes

=====

Article Created: 7 September 1989  
Article Last Reviewed: 2 February 1991  
Article Last Updated:

TOPIC -----

Why can I open an application in MultiFinder, then drag documents into the Trash, yet still be able to open these same documents from the launched application?

Conversely, when I open a document put into the Trash directly from the Finder, the following error message appears: "Please drag the item out of the Trash."

DISCUSSION -----

What you are experiencing is not a bug. The reason you can open a "deleted" document is that applications can still see the directory entry for a document that you have put it in the Trash, but not emptied. The Finder empties the Trash when an application launches.

In your case, you launched your application before dragging the document into the Trash, so the file still had an entry in the directory. On the other hand, the Finder knows when you are trying to open a file from the Trash and displays an error message saying that you should not do so.

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Tech Info Library Article Number:4355



# Tech Info Library

## Macintosh-to-Amdahl Connectivity

Revised: 9/22/89  
Security: Everyone

Macintosh-to-Amdahl Connectivity

=====

This article last reviewed: 7 September 1989

TOPIC -----

Do you have any information on Amdahl mainframes running the operating system TCAM? I need to connect a 10-node Macintosh network to an Amdahl mainframe, model 5890. I want the mainframe to be able to access the network. Should I connect each Macintosh via an IRMA board to the mainframe?

Also, will the MacDFT product and the Coax/Twinax Card allow a network or only a single workstation to access to the mainframe?

DISCUSSION -----

TCAM is not an operating system. It is an access method like BTAM and VTAM. Amdahl mainframes either run an IBM operating system, such as VM, MVS, or DOS, or their UNIX operating system UTS.

Since you are doing terminal emulation, the operating system and access method are not as important to know as the environment they are in; that is, SNA or bisynchronous. Because SNA only runs VTAM and you have mentioned TCAM, we assume that the environment is bisynchronous.

The IRMA board allows single workstation connection (CUT mode). There are versions for the Macintosh SE, Macintosh SE/30, and Macintosh II. They work in both SNA and bisynchronous environments. Use this approach if you are running bisynchronous, or if you are running SNA but do not have any Macintosh IIs. Avatar's MacMainFrame products are equivalent to IRMA boards and can be used as well.

The first version of MacDFT, which will ship with the Apple Coax/Twinax Card, can operate as a CUT mode terminal with one session per Macintosh. A later version will implement a DFT mode terminal with up to five sessions per Macintosh. There are versions for Macintosh II, and stated support is for SNA and non-SNA (channel attached) only. However, if the users are running in

single-session (CUT) mode, they can use MacDFT version 1.0 or 1.1, whether it is SNA, non-SNA, or bisynchronous.

MacDFT only allows single workstation access to the mainframe. For network access, you will be able to use a Macintosh II running MacAPPC with a Serial NB Card, when that product is shipped. If your need is immediate, you'll need an IRMA board or MacDFT with Coax/Twinax Card from each Macintosh to a cluster controller, or to check into the gateway product by Tri-Data Systems.

For more information, search on "Avatar Technology" and "Tri-Data Systems" in the Tech Info library.

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Tech Info Library Article Number:4356



# Tech Info Library

## Macintosh-to-MS-DOS Connectivity: AFE and SuperDrive Problems

Revised: 8/23/91  
Security: Everyone

Macintosh-to-MS-DOS Connectivity: AFE and SuperDrive Problems

=====

Article Created: 22 September 1989  
Article Last Reviewed: 22 August 1991  
Article Last Updated: 22 August 1991

### TOPIC -----

Some questions on Macintosh-to-MS-DOS connectivity:

- 1) Users of PS/2 systems routinely format double-sided, double-density disks as 1.44MB (high-density). Apple File Exchange won't mount these disks. Is this a hardware limitation, or could a software patch be issued?
- 2) When storing Microsoft Word 5.0 for the PC documents on an AppleShare File Server (using AppleShare PC 1.2), I have not been able to get Microsoft Word 3.01 or 4.0 on the Macintosh to open the files. AFE routinely does an incorrect WordPerfect translation of these documents.
- 3) Excel 2.x on the PC and Macintosh seems to use the same file format, so that using AFE with default translation easily converts documents from the disk. Is there a simple way to move from Microsoft Word 5.0 on the PC and Word 3.01 or 4.0 on the Macintosh, which preserves style sheets?

### DISCUSSION -----

High-density disks are physically different and tested to a different specification than double-density disks. The high-density disks have a special, thin recording surface that allows the higher data rates used in MFM (Modified Frequency Modulation). The 800K or 400K disk may not be sensitive enough to properly pick up and align the magnetic particles when the Apple SuperDrive (formerly Apple FDHD) writes in MFM. This could cause corruption of the stored data and may result in errors. The SuperDrive looks for the additional "bonus hole" in the upper left-hand corner of the disk. If the hole is not there, the drive will not recognize the MS-DOS disk as a high-density disk. It is not a hardware limitation. This practice is unreliable,



unsupported, and not suggested. For more information, use keyword "SuperDive" to search the Tech Info Library.

We do not have Microsoft Word 5.0 on PC to test the conversion. We are not sure why you mentioned WordPerfect translation in your question either. Microsoft told us that Word on the Macintosh should be able to directly read the document and do the translation. Here are a couple things you might want to try:

- 1) In Word 4.0, see if you can read your MS-DOS document this way: Hold down the Shift key while going into "File" to open the file. "Open" will change to "Open any file".
- 2) Make sure you use the latest and correct AFE translator file. The DCA-RTF/Microsoft Word translator file is on the Microsoft Word Utilities 1 Disk.

Because of the differences in the program on MS-DOS and Macintosh, features such as outlining levels, styles, and tables may not be transferable.

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Tech Info Library Article Number:4357



# Tech Info Library

## MacDFT: Terminal Session Limits & Foreign Language Support

Revised: 9/22/89  
Security: Everyone

MacDFT: Terminal Session Limits & Foreign Language Support

=====

This article last reviewed: 7 September 1989

MacDFT supports up to five 3270 terminal sessions per Macintosh using either the Coax/Twinax Card or TokenTalk NB Card. There is no such distinction between host sessions and terminal sessions. The IBM PC 3270, which first used DFT, was designed to support four terminal sessions and one 3287 printer session. Since MacDFT does not support 3287 printing, all five sessions are used for terminal sessions. You do, however, need a 3X74 controller customized to have up to five LUs assigned to the physical coax in use. The LU numbers assigned have to be included in the NCP gen and have to be active or vary'd on by the host operator. The same sort of issues are involved with the Token Ring implementation.

Non-English character set support is part of the product design and is located under the Config Menu labelled Country. Currently, it lists English and Italian. If you need to support foreign language sets, a ResEdit of the ASCII-to-Device Buffer Code table is required within the application.

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Tech Info Library Article Number:4358



# Tech Info Library

## MacDraw II, 1.1: ImageWriter LQ Printing Problem

Revised: 9/22/89  
Security: Everyone

MacDraw II, 1.1: ImageWriter LQ Printing Problem

=====

This article last reviewed: 7 September 1989

There is a known problem when using a Macintosh SE/30 with System 6.0.3, ImageWriter Driver 2.0, ImageWriter LQ, and MacDraw II 1.1.

When trying to print on computer paper with a reduction of 66%, the first half of the document is skipped (the printer starts to print from the middle of the document in the middle of the page).

However, If you place a small line (it can even be a point) on the file and print the document, everything will print as normal.

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Tech Info Library Article Number:4359



# Tech Info Library

## Virtual Network: Apple's Definition

Revised: 9/22/89  
Security: Everyone

Virtual Network: Apple's Definition

=====

This article last reviewed: 7 September 1989

TOPIC -----

How does Apple define the term virtual network?

I have heard virtual network defined as the entire Internet; that is, encompassing all networks attached to the physical cable. However, I understood the term virtual network to mean an individual network, which is, in turn, attached to the Internet. Do you know if one definition is an industry standard and the other an Apple definition?

DISCUSSION -----

From our research, there is no industry standard definition for the term "virtual network".

In AppleTalk Phase 2, a physical network can have a range of network numbers associated with it. Each of these network numbers is assigned to a virtual network. A node on this extended network would dynamically choose its network number from the range. What this means is that users can use the virtual network numbers to have more than 253 nodes on a large physical network without having to break up their large physical networks into cables with fewer nodes on them.

We are not sure about your first definition. It sounds like a definition for a "logical network" that encompasses all entities that make up the entire network, regardless of protocols or physical cabling.

For more information, please refer to the Technical Details of AppleTalk Phase 2 section in the LAN Minds training binders.

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Tech Info Library Article Number:4362



# Tech Info Library

## VT100 Emulation: IND\$FILE File Transfer Not Yet Available

Revised: 9/22/89  
Security: Everyone

VT100 Emulation: IND\$FILE File Transfer Not Yet Available

=====

This article last reviewed: 7 September 1989

TOPIC -----

I need to get a terminal emulator for a VT100 terminal type with the IND\$FILE transfer protocol built in. I want to connect this through a Sytek serial network to an IBM 7171 protocol converter. The only acceptable file transfer protocol is IND\$FILE. I am currently using FT/Term for my IBM PCs.

DISCUSSION -----

There are no VT100 terminal emulators with IND\$FILE file transfer protocol to our knowledge. You might want to contact the FT/Term vendor to see if they are aware of any such product for the Macintosh.

If anyone is aware of such a product, please Link TECH.COMM the information.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4363



# Tech Info Library

## A/UX: Powering Down without Root Permission (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Powering Down without Root Permission (6/93)

Article Created: 7 September 1989  
Article Reviewed/Updated: 24 June 1993

TOPIC -----

I want to be able to restart or power down in A/UX when I'm not the SU  
(super user):

```
chmod 7777 /etc/powerdown  
chown user /etc/powerdown
```

This doesn't seem to work: Do you have any ideas?

I understand some of the implications like shutting down processes, but  
shouldn't one be able to simulate this as a user?

DISCUSSION -----

The reason why the procedure mentioned above doesn't work is because the  
/etc/powerdown program performs a `getuid()` system call to check which user  
is running the program. This call returns the real user ID of the user and  
not the effective user ID obtained with the `set uid` bit.

The only way to execute the power-down without actually logging on is to  
make an entry in the file /etc/passwd in which the starting program is  
/etc/powerdown, and the user ID is "0" (zero). This entry could look like:

```
stop::0:1000:Entry to powerdown the system:/:/etc/powerdown
```

We do not recommend powering down the system this way, because there are  
several processes running in the background when the system is in an init  
level other than "s" (single-user mode).

The proper way to power is to execute the shutdown command, and, when the  
machine reaches "Single User Mode", execute the /etc/powerdown command.

Article Change History:

24 Jun 1993 - Revised for clarity.

31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:4364



# Tech Info Library

## A/UX: LaserWriter IINTX Connection Documentation Error

Revised: 9/28/92  
Security: Everyone

A/UX: LaserWriter IINTX Connection Documentation Error

=====

Article Created: 7 September 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

In the A/UX Local System Administration (030-5595-B) manual (page 7-34, step 2), the user is instructed to attach the LaserWriter IINTX to the A/UX host via a SCSI cable in addition to the serial connection. Is this correct? There was no mention of the reason for this connection, nor was there mention in the LaserWriter manual. I have the most recent version of the A/UX documentation.

If this is incorrect, what is the potential damage to systems connected this way?

### DISCUSSION -----

The instructions mentioned above are wrong. There is no need to connect the SCSI cable between the LaserWriter IINTX and the A/UX host.

Also, there is no potential damage having the systems connected that way.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4365





# Tech Info Library

## AppleFax Modem: How It Handles Busy Signals During Transmission

Revised: 9/22/89  
Security: Everyone

AppleFax Modem: How It Handles Busy Signals During Transmission

=====

This article last reviewed: 7 September 1989

TOPIC -----

When several "envelopes" are "stuffed" and prepared for later transmission, and the AppleFax Modem dials the addressed number on the envelope and encounters a busy signal:

- Will the AppleFax continue to dial until it gets through?
- Will it cycle through all of the envelopes and come back to the ones it could not send on the first pass?
- Will they not be sent until the send time tomorrow?

DISCUSSION -----

If the AppleFax modem is unable to connect with another Fax machine, the envelope is not sent, and an error occurs requiring you to Restore the envelope before it can be sent again. The AppleFax will, however, continue to transmit all other envelopes to other accessible faxes.

Once the AppleFax has attempted to send an envelope, the envelope's icon is dimmed, and you are unable to open or change the envelope. When checking the activity report after sending an envelope, if you discover that errors occurred and that you need to resend the envelope, you must first restore the envelope to its original condition:

1. Select the dimmed envelopes that you want to restore.
2. Choose Restore Selected Envelopes from the AppleFax menu.

The envelopes are no longer dimmed and can be opened, changed, and re-sent as necessary.

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Tech Info Library Article Number:4366



# Tech Info Library

## AppleWorks: Early Versions Don't Support RAM Cards

Revised: 9/22/89  
Security: Everyone

AppleWorks: Early Versions Don't Support RAM Cards

=====

This article last reviewed: 7 September 1989

TOPIC -----

I have upgraded my Apple IIe by installing a 512K memory expansion card.

When I tried to run AppleWorks 1.0.1, the memory accessed was only 10K. And when I tried AppleWorks 1.1.1, I got a message saying "not enough memory, need 128K". All this after installing the card and ProDOS. A diagnostics test, however, confirms that the 512K of RAM is available: yet AppleWorks still won't run.

DISCUSSION -----

Early versions of AppleWorks do not support memory cards; you need version 1.3 or later. Version 2.1 is available from CLARIS at an upgrade price. Contact them for an upgrade order form.

For more information, search on "CLARIS" in the Tech Info library.

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Tech Info Library Article Number:4367



# Tech Info Library

## A/UX: VT220, Intermedia, and Cartridge Drives (12/95)

Revised: 12/1/95  
Security: Everyone

A/UX: VT220, Intermedia, and Cartridge Drives (12/95)

=====

Article Created: 7 September 1989  
Article Reviewed/Updated: 1 December 1995

TOPIC -----

### 1. VT220 on the Console

I've ported an accounting system to A/UX (which can be used with Apple's national character set). I'm using VT220 terminals to generate masks for this application. Neither the console nor "term" give full VT220 functionality. Is there a way to run VT220 on the console? Will "term" support VT220 in the near future, or has someone already added this feature to "term"? Is there anyone else interested in getting VT220 either as console or in "term"?

### 2. Intermedia and Printing

A/UX is set up as an Intermedia Server and Client with a SuperMac CommCard for printing over LocalTalk. Printing over LocalTalk works fine from a shell and from a Macintosh application. I can choose a LaserWriter in the Chooser when running Intermedia but printing fails. No job goes to the queue and the printer dialog box shows the default setting for "LaserWriter" and "3.1" for the Laser Prep version!

### 3. Infinity and A/UX

I'm using Infinity removable cartridge drives (40 turbo) extensively. I've tried to use them as exchangeable user filesystems under A/UX without success. "mkfs" didn't work, nor did the setup utility. When I finally tried dp, I got error messages:

```
- dp /dev/dsk/c4d0s31  
- c4d0s31: error: more data than SCSI device requested
```

then four times:

```
generic disk c4d0s31
retry limit: logical block 0, physical block 0
/dev/rdisk/c4d0s31: no such device or address
warning: size of disk indeterminable
warning: this will hinder validity checking on input
warning: unable to read disk partition map
```

Is there a way to use these disks with A/UX?

#### DISCUSSION -----

1. The current A/UX 3.0 keyboard/console driver emulates a VT102 terminal. The A/UX Toolbox "term" terminal emulator program also emulates a VT100. None can fully provide full VT220 functionality at this time.

Your concern on the console and the Toolbox "term" with VT220 terminal emulation capability will be submitted to A/UX Engineering as an enhancement request.

2. We have tested the newly installed IRIS Intermedia package and had the same printing problem you described. According to the "IRIS System Administrator's Guide (page 39), "The printer should be set up as a 9600-baud serial printer, and it must be connected to the Intermedia server." If this is true, then there is a problem printing to an AppleTalk printer via the SuperMac CommCard.

3. No one here seems to have had any success using the removable cartridge disk drive from either Mass Microsystems or Infinity. According to Mass Microsystems, it seems that their driver works with Mac OS but not with A/UX. If anyone has successfully used a removable cartridge drive under A/UX, please Link  
TECH.COMM.

#### Article Change History:

01 Dec 1995 - Changed title.

08 Sep 1994 - Reviewed and reformatted.

31 Aug 1992 - Updated to include A/UX 3.0 information.

Support Information Services

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Tech Info Library Article Number:4371



# Tech Info Library

## A/UX: pagesize Information (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: "pagesize" Information (9/94)

Article Created: 7 September 1989  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

I assume that a click in A/UX is the normal SysV 2K (2048 bytes). In /usr/include/sys/mmu.h, if the NEW\_PMMU is defined, the PAGESIZE is defined as (1 << PAGESHIFT), and the PAGESHIFT is earlier defined as PS4K, that is, 11. So the logical shift makes it 2048. I am unsure if the A/UX kernel has NEW\_PMMU set or not.

I need the click size information for shared memory tuning.

DISCUSSION -----

From our research, the A/UX 1.1 kernel is compiled with the NEW\_PMMU defined in the kernel MAKEFILE.

In the /usr/include/sys/mmu.h file:

|                             |                                 |
|-----------------------------|---------------------------------|
| The PAGESIZE is defined as  | #define PAGESIZE (1<<PAGESHIFT) |
| The PAGESHIFT is defined as | #define PAGESHIFT PS4K          |
| The PS4K is defined as      | #define PS4K 12                 |

From the above formula, the PAGESIZE can be calculated as 1 << 12, which equals 4096. It's 4K, not 2K.

The command, called "pagesize", can also be used to display the current system page size.

Support Information Services

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Tech Info Library Article Number:4372



# Tech Info Library

## A/UX 1.1: Wyse termcap/terminfo Entries

Revised: 9/25/92  
Security: Everyone

A/UX 1.1: Wyse termcap/terminfo Entries

Article Created: 7 September 1989

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

For those of you having problems trying to find all the Wyse termcap/terminfo entries in A/UX 1.1, here are most of them.

### DISCUSSION -----

Note: These have not been thoroughly tested, so proceed with caution.

```
v8|tvi925|925|televideo model 925:\
:am=bs:co#80:li#24:cm=\E=%+ %+ :cl=^Z:cd=\EY:ce=\ET:\
:is=\El\E"\E<\E.2:\
:al=\EE:dl=\ER:im=:ei=:ic=\EQ:dc=\EW:if=/usr/lib/tabset/std:\
:ho=^^:nd=^L:bt=\EI:pt:so=\EG4:se=\EG0:sg#1:us=\EG8:ue=\EG0:ug#1:\
:up=^K:do=^V:kb=^H:ku=^K:kd=^V:kl=^H:kr=^L:kh=^^:ma=^V^J^L :\  
:k1=^A\r:k2=^AA\r:k3=^AB\r:k4=^AC\r:k5=^AD\r:k6=^AE\r:k7=^AF\r:\
:k8=^AG\r:k9=^AH\r:k0=^AI\r:ko=ic,dc,al,dl,cl,ce,cd,bt:\
:hs:ts=\Eg\Ef\EG0:fs=\r:ds=\Eg\Ef\r:
w6|wy60|wyse60|wyse 60:\
:al=\EE:am=bs:bt=\EI:cd=\Ey:\
:ce=\Et:cl=\E*:cm=\Ea%i%dR%dC:co#80:\
:dc=\EW:dl=\ER:do=^J:ei=\Er:eo:\
:ho=\E{:if=/usr/lib/tabset/stdcrt:im=\Eq:\
:kb=^H:kd=^J:kl=^H:kr=^L:ku=^K:kh=^^:\
:li#25:mi:nd=^L:pt:se=\EG0:so=\EG4:\
:ue=\EG0:us=\EG8:ul:up=^K:\
:ds=\E`a:fs=^M:hs:ts=\EF:
```

```
w5|wy50|wyse50|wyse 50:\
:al=\EE:am:bs:bt=\EI:cd=\Ey:\
:ce=\Et:cl=\E*:cm=\Ea%i%dR%dC:co#80:\
:dc=\EW:dl=\ER:do=^J:ei=\Er:eo:\
:ho=\E{:if=/usr/lib/tabset/stdcrt:im=\Eq:\
:kb=^H:kd=^J:kl=^H:kr=^L:ku=^K:\
:li#24:mi:nd=^L:pt:se=\EG0:sg#1:so=\EG4:\
:ue=\EG0:ug#1:us=\EG8:ul:up=^K:\
:vb=\EA01\200\200\200\200\200\200\200\200\200\200\200\200\EA00:
w5|wy50-w|wyse50-w|wyse 50 132-column:\
:al=\EE:am:bs:bt=\EI:cd=\Ey:\
:ce=\Et:cl=\E*:cm=\Ea%i%dR%dC:co#132:\
:dc=\EW:dl=\ER:do=^J:ei=\Er:eo:\
:ho=\E{:if=/usr/lib/tabset/stdcrt-132:im=\Eq:\
:kb=^H:kd=^J:kl=^H:kr=^L:ku=^K:\
:li#24:mi:nd=^L:pt:se=\EG0:sg#1:so=\EG4:\
:ue=\EG0:ug#1:us=\EG8:ul:up=^K:\
:vb=\EA01\200\200\200\200\200\200\200\200\200\200\200\200\EA00:
w7|wy75|wyse75|wyse 75:\
:ae=\E(B:as=\E(0:al=\E[L:bs:\
:bt=\E[Z:cd=50\E[J:ce=3\E[K:cl=50\E[H\E[J:\
:cm=\E[%i%d;%dH:co#80:\
:cs=\E[%i%d;%dr:dc=\E[P:dl=\E[M:\
:do=\E[B:ei=\E[4l:eo:ho=10\E[H:\
:if=/usr/lib/tabset/vt100:\
:is=\E[35h\E[?31\E[1t:\
:im=\E[4h:\
:kb=^H:kd=\E[B:kh=\E[H:kl=\E[D:kn#10:\
:ko=al,ce,dl,ta:kr=\E[C:ku=\E[A:\
:ks=\E[?11\E>:ke=\E[?11\E>:\
:k0=\EOP:k1=\EOQ:k2=\EOR:k3=\EOS:k4=\E[M:\
:k5=\E[17~:k6=\E[31~:k7=\E[18~:k8=\E[19~:k9=\E[20~:\
:l0=PF1:l1=PF2:l2=PF3:l3=PF4:l4=F5:\
:l5=F6:l6=F7:l7=F8:l8=F9:l9=F10:\
:li#24:l1=\E[24;1H:nd=\E[C:pt:se=2\E[0m:so=2\E[1m:ta=\E[I:\
:md=\E[1m:mr=\E[7m:mb=\E[5m:me=\E[m:\
:rf=/usr/lib/tabset/vt100:rc=\E8:sc=\E7:\
:ue=\E[p:ug#1:ul:up=\E[A:us=\E[8p:\
:AL=1*\E[%dL:DL=1*\E[%dM:IC=4\E[%d@:DC=4\E[%dP:rp=1*%.\E%db:\
:hs:ts=\E[>,^A:fs=^A:ds=:
w7|wy75-vb|wy75vb|wyse 75 with visible bell:\
:vb=\E[?5h\E,\E[?5l:tc=wy75:
w7|wy75-w|wy75-w|wy75w|wy75-132|wyse 75 in 132-column mode:\
:co#132:is=\E[35h\E[?3h:tc=wy75:
w7|wy75-wvb|wy75wvb|wyse 75 with visible bell, 132 columns:\
:vb=\E[?5h\E,\E[?5l:tc=wy75-w:
```

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Tech Info Library Article Number:4374





# Tech Info Library

## A/UX: IPC Tools (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: IPC Tools (9/94)

=====  
Article Created: 22 September 1989  
Article Reviewed: 21 September 1994

TOPIC -----

If I remember correctly, Sys V.2 had two really good tools by which you could check the use of shared memory, segment sizes, flags on semaphores, and so on. I think this tool was called `icps`.

The other tool could be used for releasing shared memory segments. I did not find any equivalent tools under A/UX. I think this tool was called `icpr`. Please correct me if these tools exist under A/UX.

Otherwise, I would ask for an RFC because to tweak shared memory you need to know how much is in use at the moment. The problems with shared memory segments is that they hang in the system after the program has used them.

DISCUSSION -----

The two IPC tools, which you mentioned above, are called "`ipcs`" and "`ipcrm`", and both DO exist in A/UX 3.0.

The "`ipcs`" allows you to print the status of the active interprocess communication facilities.

The "`ipcrm`" allows you to remove one or more specified interprocess communication facilities, such as message, semaphore, or shared memory identifiers.

For more details, type "`man ipcs`" and "`man ipcrm`" in the A/UX Command Shell.

Article Change History:  
21 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:4376



# Tech Info Library

## A/UX: Determining Available Memory (9/94)

Revised: 9/14/94  
Security: Everyone

A/UX: Determining Available Memory (9/94)

=====

Article Created: 7 September 1989  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

After I start up A/UX, and the splash screen is gone, how can I determine how much memory is installed in the system and how much is available? I am looking for a shell command, if it exists.

DISCUSSION -----

There is no command shipped with A/UX that will provide this information. It would be possible to write a program that returned these values, but none are included.

We don't think these values change frequently enough to require much attention. Users generally know when they change the amount of installed RAM, and the available memory only changes when the kernel is reconfigured.

A/UX 2.0: Select About the Finder in the Apple menu (while in the Finder)

A/UX 3.0: Open the Memory Control Panel for a display of both physical and virtual memory. ( Control panels can be found under the Apple menu)

Article Change History:  
13 Sep 1994 - Reviewed.  
31 Aug 1992 - Updated to include A/UX 2.0 and 3.0

Support Information Services

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Tech Info Library Article Number:4378



# Tech Info Library

## LocalTalk PC Card: Problem Using with Zenith Systems

Revised: 9/22/89  
Security: Everyone

LocalTalk PC Card: Problem Using with Zenith Systems

=====

This article last reviewed: 7 September 1989

TOPIC -----

I am using two LocalTalk adapters, one in a Zenith 8088 machine, and the other in a Zenith 386 machine.

Each time I try using them, the system locks. I have version 1.0 of the software, which came with the adapter. An article in the Tech Info Library states that, most likely, there is an IRQ conflict, or that the system needs to be told that the IRQ has been changed. I double checked for IRQ conflicts (I even removed all of the adapters in the machine that may have caused the conflict), and I have the proper command in my autoexec, as described in the manual.

Do you know of anything else to try, or do you know of some incompatibility with Zenith machines?

DISCUSSION -----

Although you have removed all of the add-in cards in the Zenith machines, there is still a possibility of an IRQ or DMA conflict.

Most Zenith PCs come with built-in serial and parallel ports. On some models, the serial ports use the same interrupt as the default interrupt for the LocalTalk PC Card. You should check the Zenith documentation for information on the interrupt lines used by the built-in ports.

Since you are using the original software that came with the card, we assume you are using LW.EXE. We recommend that you obtain the current release of AppleShare PC.

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Tech Info Library Article Number:4379



# Tech Info Library

## Ethernet-to-Cable TV/Broadband Network Connectivity

Revised: 9/22/89  
Security: Everyone

Ethernet-to-Cable TV/Broadband Network Connectivity

=====

This article last reviewed: 7 September 1989

TOPIC -----

I'm interested in creating Ethernet drops onto the broadband, such as cable TV. Do you know specific companies who make this hardware product, or is it normal Ethernet drops that customers would use?

DISCUSSION -----

Ethernet over broadband cable is definitely not a standard coax Ethernet drop. The cable types are different, and only a portion of the bandwidth of the broadband cable is used for Ethernet while the rest remains free for video and audio information.

There are a number of companies that provide the hardware for implementing Ethernet over broadband cable. They include Digital Equipment Corporation, Bridge Communications, and Allen-Bradley Company. We want to emphasize that configuring this type of network is not plug-and-play, and you need to work closely with a network consultant or one of the above companies to determine the best configuration for your needs.

For more information, search on the above company names in the Tech Info library.

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Tech Info Library Article Number:4380



# Tech Info Library

## AppleTalk: Cable TV/Broadband Network Connectivity

Revised: 12/12/90  
Security: Everyone

AppleTalk: Cable TV/Broadband Network Connectivity

=====

This article last reviewed: 15 November 1990

TOPIC -----

Can AppleTalk operate over cable TV wires? If so, how?

Since cable TV mainly uses coax-type cable, how do I make the connection? If it needs to be done serially (connection to the cable), would a Hayes InterBridge-type product be able to do this?

For home use, the only thing I can think of is using Liaison (if asynchronous is still the way to go) in the Macintosh.

Can any of the solutions work with Apple II computers? This is needed for home use to connect to a ANS network to a school.

DISCUSSION -----

It is possible to have Ethernet channels running on a broadband network, which is typically used in cable TV installations. It is important that the group responsible for the cable be intimately involved in this process since this is not a plug-and-play situation. There are a number of different alternatives possible once you have the hardware and software support for Ethernet in place on the cable network.

Usually, you would connect routers, such as the AppleTalk Internet Router, to the Ethernet drops from the broadband, and all of the other Macintoshes are connected to the Internet via routers. The routers then would be the only Macintoshes required to have Ethernet boards. You also could use FastPaths, GatorBoxes, or Macintoshes running Liaison as the routers.

Network Resources also offers several products that allow Macintosh users to connect to broadband. Their MultiGate 2000 hardware router connects LocalTalk to broadband, as if connecting a LocalTalk network to Ethernet via a router. Their MultiGate Bridge connects any combination of broadband, Ethernet, and

fiber optics. These solutions do not require running Ethernet on broadband. For more information on their products, search on "Network Resources and broadband" in the Technical Info Library.

A Hayes InterBridge would not be a solution because it is a LocalTalk-to-LocalTalk bridge, and you need an Ethernet connection.

For the asynchronous connection, Liaison definitely seems a good choice since it also has the other capabilities mentioned above.

On the Apple II front, we are not aware of anything that will provide remote, serial AppleTalk access similar to what is available for the Macintosh.

We strongly suggest that you get assistance from a network consultant capable of assisting you in all phases of this type of setup. You should also be aware that anyone doing this will need full approval from whomever owns and operates the cable system.

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Tech Info Library Article Number:4381



# Tech Info Library

## Kodak DataShow: Pixels Limits Prevent Showing of Full Screen

Revised: 9/22/89  
Security: Everyone

Kodak DataShow: Pixels Limits Prevent Showing of Full Screen

=====

This article last reviewed: 7 September 1989

TOPIC -----

When using the Kodak DataShow for giving presentations, the problem is that the overhead projection system places these buttons below the viewing area on the screen display as well as on the projected display. In other words, I don't have access to the buttons to start an animation or set the volume, for example. This happens whenever I have the projection system connected to the Macintosh. If the projection system is not connected to the Macintosh, the screen displays the entire screen including the buttons at the bottom.

DISCUSSION -----

The Kodak DataShow displays only 512x342 pixels regardless of which computer you're using. Since this becomes your screen size for your presentation, anything outside of these boundaries will not be accessible. You could try one of the screen extender packages, such as Stepping Out. Otherwise, you need to work with a projection system that is capable of displaying more pixels.

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Tech Info Library Article Number:4382





# Tech Info Library

## LaserWriter IINTX: LaserJet Emulation and Landscape Problem

Revised: 9/22/89  
Security: Everyone

LaserWriter IINTX: LaserJet Emulation and Landscape Problem

=====

This article last reviewed: 7 September 1989

TOPIC -----

I am printing in Landscape rather than Portrait mode to a LaserWriter IINTX in LaserJet emulation mode.

I am using a PC-clone and driving the printer from dBASE III+. All the HP command codes I send to our printer work except the code for Landscape mode. When I send this, nothing happens.

The code being used is:

```
CHR(27)+"&10"
```

I have tried using a zero instead of letter O and also put a CHR(13) at the end of the command, and it still does not work.

DISCUSSION -----

It appears that you should be using a different escape sequence. According to our documentation, you should try the following:

in decimal:  
`chr(27)+chr(38)+chr(108)+chr(49)+chr(79)`

in ASCII:  
`esc "&l10"`

Substituting the 49 with a 48 should put you back in Portrait mode.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4383



# Tech Info Library

## MacAPPC: Using it to Create an IBM Compatible File Server

Revised: 7/27/93  
Security: Everyone

MacAPPC: Using it to Create an IBM Compatible File Server

Article Created: 22 September 1989  
Article Reviewed/Updated: 23 July 1993

MacAPPC does not inherently provide AFP-compatible file services for the Macintosh. MacAPPC is a development tool kit that allows the user to write custom transaction programs to provide a variety of functions to the end user using the LU6.2 verb set.

To Apple's knowledge, there is no AFP-compatible file service available for any IBM mainframe operating system. Someone could write one, using MacAPPC, but they would have to implement AFP on the mainframe end and create a custom application for the Macintosh. The Macintosh side would have to be written to "tunnel" or encapsulate AFP frames within SNA. One would have to examine their environment a bit closer to get a handle on what mainframe components would be required to accomplish this.

However, using APPC as a basis, a "simple" file server on the mainframe could be created which would allow the devices on the remote network to connect to it. This, however, would not be an AFP-compatible file server.

Something to investigate is a package called XCOM 6.2 from Legent Corp. (formerly Spectrum Concepts). XCOM, currently in development, sits on top of MacAPPC and permits file transfers to an IBM mainframe with a HyperCard front end. This package will support binary formats, allowing you to distribute Macintosh files from the mainframe, as well as text. Spectrum Concepts likes to position this as an RJE replacement package. This package, however, will not give you AFP/AppleShare look, feel, or functionality.

If there are 3X74 remote controllers installed, a 3270 file transfer package, like Avatar's, can provide a similar service in the 3270 world. A 3X74 replacement with similar capability is the Netway 1000. These packages allow MacBinary transfers, in addition to regular binary and text. These also do not have an AFP/AppleShare look and feel. DCA's MacIrma and Simware could also be used, but they provide binary and text transfers only, not MacBinary.

By using these packages in conjunction with a TSO-partitioned data set, one

could create a "simple" file server, but without the ease of operation of AppleShare. Transport, in this instance, is file transfer. By transferring the files as text, one could share files with IBM PCs.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

#### Article Change History

23 July 1993 - Company title changed from Spectrum Concepts to Legent Corp.

9 February 1993 - Updated, Spectrum Concepts acquired by Legent Corporation.

9 July 1989 - Reviewed, for technical accuracy.

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Tech Info Library Article Number:4384



# Tech Info Library

## AppleFax Modem: Serial NB Card Doesn't Support Multiple Modems

Revised: 9/22/89  
Security: Everyone

AppleFax Modem: Serial NB Card Doesn't Support Multiple Modems

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This article last reviewed: 7 September 1989

TOPIC -----

I who would like to use six AppleFax Modems on a single Macintosh with a Serial NB Card.

1. Is this possible (that is, are there drivers available for this card)?
2. Is there any software that supports this situation?

DISCUSSION -----

We are not aware of any drivers that support the Serial NB Card for the AppleFax modem. Also, since the modem is treated as an output or Chooser-style device, only one can be supported for output purposes. In terms of receiving input, the software also works with only one modem. We do not know of any third-party software that supports multiple modems.

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Tech Info Library Article Number:4387



# Tech Info Library

## VT100 Emulation Package that Can Adjust Screen Display Size

Revised: 7/24/92  
Security: Everyone

VT100 Emulation Package that Can Adjust Screen Display Size

=====  
Article Created: 22 September 1989  
Article Last Reviewed: 8 September 1989  
Article Last Updated: 17 July 1992

TOPIC -----

Is there a product that you can recommend that will use the full 13-inch Apple screen to do a VT100 emulation?

I am using Macintosh IIcx systems to trap data from a Hewlett Packard via a VT100 emulation session. The emulation packages I am using cannot take advantage of the whole of the screen in VT100 mode.

Before I started using Macintosh, the dumb terminals had a screen size of about 11 to 12 inches square. Unfortunately, the Macintosh emulation packages, such as OPAL (VIA Systems, Inc. is the U.S. distributor), MicroPhone II, and VersaTerm PRO, leave a 1-inch strip at the bottom and right of the screen when doing the emulation, and the actual size of the display is smaller than before.

Certainly, the screen can be resized to fill the 13-inch screen, but at 12-point, the 80 characters leave this 1-inch strip. In 14-point, the 80 characters flow off of the screen by about 3 to 4 characters.

I need more control over the actual font being used--either a 13-point font, or a slightly different font might solve the problem.

DISCUSSION -----

A possible solution would be to use Red Ryder from FreeSoft. This package has the ability to choose the font size you want as long as the font you choose is installed in the application. The application has a specific font with ID 98 that it looks for when setting the font size. You could build a 13-point font from one of the existing sizes that would then be accessible from Red Ryder. Building this font requires using a Font Editor, such as Fontastic from Altsys Corp.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4388



# Tech Info Library

## 3M DC 2000 Tape Cartridge: Estimated Shelf Life

Revised: 4/11/91  
Security: Everyone

3M DC 2000 Tape Cartridge: Estimated Shelf Life

=====

This article last reviewed: 8 September 1989

TOPIC -----

What is the shelf life of a DC 2000 tape?

DISCUSSION -----

According to 3M Data Storage Products Division, the expected shelf life of a DC 2000 mini-data cartridge is 2 to 5 years. This shelf life is based on the active life of the lubricants used in the cartridge. The shelf life is affected by environmental conditions (temperature, humidity, and so on). The magnetic tape itself is rated for use, not shelf life, normally at 5000 passes.

For more information, search on "3M" in the Tech Info library and contact their Data Storage Products Division.

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Tech Info Library Article Number:4389



# Tech Info Library

## MFLOPS Ratings: How They're Calculated and Used

Revised: 3/19/93  
Security: Everyone

MFLOPS Ratings: How They're Calculated and Used

=====

Article Created: 22 September 1989

### Article Change History

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03/16/93 - RETITLED

- From "Motorola 68020/68030: How To Calculate MFLOPS Ratings"

### TOPIC -----

Does Apple publish MFLOPS ratings for the various Macintosh computers? How accurate is this rating for comparing system performance between vendors?

### DISCUSSION -----

MFLOPS (Million Floating Point Operations Per Second) is a measurement generally used in reference to supercomputers rather than personal computers or workstations. Measuring MFLOPS is an inaccurate art, at best. The reference manuals we consulted all stated that an MFLOPS rating can be misleading. The issue that causes MFLOPS ratings to be suspect is that not all instructions take the same time. On the 68881, a single instruction can take from 29 to over 600 machine cycles.

From Motorola's 68020/68030 Performance Report:

"Benchmarking microprocessors is much like water-witching. Everyone wants to use the results but are skeptical of the 900-methods. From the user's point of view, the best benchmark to use in making a decision on a given microprocessor is to run the code which will be run in the final application. This, however, is usually difficult at best, and expensive and time consuming at least. Since running the actual code is usually not feasible, most users and all microprocessor manufacturers turn to either synthetic benchmarks - ones that simulate real-world conditions - or small standard benchmark programs which are designed to



indicate real-world performance. Not everyone can agree on what simulates real conditions; thus, there are numerous benchmark programs available, each written to test some aspect of performance that the writer is interested in testing."

For many of the same reasons that Apple does not publish MIPS ratings and those stated above, Apple does not publish MFLOPS ratings. However, you can calculate this value on your own.

Using chapter 6 of the Motorola MC68881 Floating-Point Coprocessor User's Manual, figure the average time for a floating-point operation. Here's that problem mentioned above. Do you add the times for all instructions and divide by the number of instructions? Do you pick a few "popular" instructions and average their times? Do you pick the instruction that requires the least amount of time (very sneaky)?

We suggest the first method. For the sake of this discussion, let's say that value is xx cycles/instruction.

Assume that the floating-point unit and the microprocessor are clocked one for one. On the Macintosh IIX, this value would be 15.6672 m-cycles/sec.

Invert the first number and multiply by the second giving you m-instructions/sec (MFLOPS).

$$\begin{array}{ccccccc} 1 \text{ instructions} & 15.6672 \text{ million cycles} & & 15.6672 & \text{million instructions} \\ \text{--} & \text{-----} & * & \text{-----} & = & \text{-----} & \text{-----} \\ \text{xx} & \text{cycle} & & \text{sec} & & \text{xx} & \text{sec} \end{array}$$

It is generally assumed that the 68882 is 1.5x faster than the 68881.

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Tech Info Library Article Number:4390



# Tech Info Library

## MicroExplorer: Compatible with NuBus

Revised: 9/22/89  
Security: Everyone

MicroExplorer: Compatible with NuBus

=====

This article last reviewed: 8 September 1989

TOPIC -----

Does the Texas Instruments MicroExplorer work in the Macintosh IIX and the Macintosh IICX?

DISCUSSION -----

The Texas Instruments MicroExplorer is NuBus-compatible. It will work with the Macintosh II, the Macintosh IIX and the Macintosh IICX.

The MicroExplorer card comes with 4MB of memory but is usually configured with an additional 4MB of memory. This extra memory comes on an expansion board that takes the space of a second slot although it does not use a connector. In the Macintosh II and the Macintosh IIX, two slots are used. Because there are only three slots in the Macintosh IICX, Texas Instruments bends a pin so that the MicroExplorer only uses one slot. You can then use two additional cards in the Macintosh IICX.

Unless you want only 4MB of memory, the Macintosh IICX configuration must be purchased from Texas Instruments as a system because they bend the pin. The Macintosh II and the Macintosh IIX configuration can be bought as a package, or the card can be bought separately.

For more information, search on "Texas Instruments" in the Tech Info library.

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Tech Info Library Article Number:4391



# Tech Info Library

## Omnis: Lack of Virtual Memory Limits Large Database Sorting

Revised: 9/22/89  
Security: Everyone

Omnis: Lack of Virtual Memory Limits Large Database Sorting

=====

This article last reviewed: 8 September 1989

TOPIC -----

A have a huge (1.5-million record) Omnis database that they need to sort using a Macintosh II with 8MB of RAM.

The system is running under Finder, and the system has been stripped of all INITs, extra fonts, even the RAM cache is off. I am able to sort up to 1.2 million records, but shortly thereafter, Omnis returns an error message that the system is out of memory.

Part of the problem lies with Apple's operating system, and the fact that it only addresses 8MB of RAM. The other part of the problem is with Blyth, and the fact that they do the complete sort in RAM.

It has been suggested that I add some of the new 4MB SIMM strips that are available for the Macintosh II, but this will cost upwards of \$5,000 to \$10,000 just to test, and might not even work.

What should I do?

DISCUSSION -----

We contacted Blyth Software, and they confirmed that their sort routines bring all of the information they need into RAM. Their sort routines do not write anything out to disk to allow for larger amounts of information to be sorted.

Omnis has a line at the bottom of the sort window that tells you how many records it can sort. This number is calculated according to how much memory you have available at the time. This information can, at least, can help you to determine if the sort will be complete or not before you run the sort.

We are not aware of any workaround for this problem. Adding 4MB SIMMs will

not work. The Macintosh OS only addresses a maximum of 8MB of memory. It is possible that with System Software 7.0 and virtual memory, there will be enough addressable memory for this sort to work, but that obviously is not a solution now.

This is not a hardware limitation, but rather a software limitation. It is possible to write software that will write information to disk as it is sorting, so that such a large amount of RAM is not needed. FoxBase+/Mac, for example, writes information to a temporary file when it is sorting. It requires that you have twice as much disk space available as the information that you want to sort. A possible solution would be to change databases; however, we realize that with a custom database already written and all of the data in it that this is not a trivial thing to do.

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Tech Info Library Article Number:4392



# Tech Info Library

## GS/OS 5.0: Can Create Accented and Special Characters

Revised: 9/22/89  
Security: Everyone

GS/OS 5.0: Can Create Accented and Special Characters

=====

This article last reviewed: 8 September 1989

TOPIC -----

I want to be able to display accented French characters on a localized Apple IIGS. What are my options?

DISCUSSION -----

The announcement of GS/OS 5.0 has some information that pertains to this very subject:

"The ability to create accented and special characters directly from the keyboard, something particularly important to customers working with legal and math symbols and other languages, is also a great addition."

GS/OS 5.0 has the capability of generating accented characters in the same manner as is done on the Macintosh.

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Tech Info Library Article Number:4395



# Tech Info Library

## LaserWriter IINTX: Space Amounts for an Attached Hard Drive

Revised: 9/22/89  
Security: Everyone

LaserWriter IINTX: Space Amounts for an Attached Hard Drive

=====

This article last reviewed: 8 September 1989

TOPIC -----

This is a request for basic information about hard drives that are attached to the LaserWriter IINTX. Specifically, I would like additional information on the following issues.

- 1) How can a person determine how much space is available on the drive? Let's say I have 60 fonts downloaded to the drive and would like to check available space to determine how many additional fonts I can download. The "diskstatus" operator tells how many Kbytes are available, but what about the ratio of cache versus font storage? Is it with the "userdiskpercent" operator?
- 2) At what point does the system/printer alert me that the space available on the drive will limit performance? Does it depend on the ratio of font caching space versus font storage space, or an actual total MB value of space that's available?
- 3) What affect does the amount of free space have on the performance of the LaserWriter speed?

DISCUSSION -----

The following information was obtained from the LaserWriter Reference Manual from Addison-Wesley (ISBN 0-201-19258-6), Chapter 2 "Working With Fonts", and the LaserWriter IINT/NTX Manual from Apple (030-3215-A), Appendix A "LaserWriter II Upgrades".

- 1) Initialization of a hard disk attached to a LaserWriter IINTX allocates 20% of the disk space to font storage and 80% to font caching. The LaserWriter Font Utility informs the user how much space is available for additional font storage. The "diskstatus" operator returns the number of pages currently available and the maximum number of pages

available (a page being 1024 characters). The operator "userdiskpercent" returns the percentage of disk space allocated for user files. The operator "setuserdiskpercent" allows setting the percentage of space on the drive allotted for user files. This operator also removes the least recently used cached bitmaps from the disk file system until there is enough free space.

- 2) The Font Utility application issues the warning to the user when the storage percentage is high enough to threaten font caching performance. Since the LaserWriter IINTX automatically increases the storage percentage as needed, this warning is probably related to the number of fonts on the disk versus the amount of cache space left on the disk.
- 3) As long as there is enough font cache space to create the needed bitmaps for the downloaded fonts on the hard disk, there should be no decrease in throughput of the LaserWriter as available space on the hard disk gets smaller. The warning from the Font Utility should be adequate.

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Tech Info Library Article Number:4396



# Tech Info Library

## Apple IIGS: Hard Drive Always Starts Up From 1st Partition

Revised: 9/22/89  
Security: Everyone

Apple IIGS: Hard Drive Always Starts Up From 1st Partition

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This article last reviewed: 8 September 1989

TOPIC -----

I'm using a 20MB hard drive with an Apple IIGS. I used the Advanced Disk Utilities to partition the drive into four partitions. I installed AppleWorks on the first partition and the System files on the fourth partition. Every time I start up the system, it launches AppleWorks first, which is not what I want.

Is there some way to control which partition gets opened first?

DISCUSSION -----

There is no method available for specifying which partition the system will start up from.

As the software is currently written, the system always starts up from the first partition. If you want to start up with the System files first, it is necessary to have the Finder, and so on, in the first partition. Then have your other applications follow in partitions of ascending numerical order.

There are currently no plans to change this method of operation.

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Tech Info Library Article Number:4397





# Tech Info Library

## MacLink Plus: Explanation of Errors 106 and 124

Revised: 9/22/89  
Security: Everyone

MacLink Plus: Explanation of Errors 106 and 124

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This article last reviewed: 8 September 1989

TOPIC -----

I've had a report of errors 106 and 124 appearing in MacLink Plus when going from Macintosh to Macintosh via the cable provided. What do these mean?

DISCUSSION -----

These errors are generated by, and are specific to MacLink Plus. We called DataViz Technical Support and received the following information:

Error 106 is a "can't connect error" and occurs when MacLink Plus cannot complete a connection.

Error 124 is a "port set error". This error indicates that there is a port conflict. An example of this is having both MacLink Plus and AppleTalk set to the same port.

For more information, we suggest contacting DataViz Technical Support at 203-268-0030.

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Tech Info Library Article Number:4401



# Tech Info Library

## Apple EtherTalk Card: Revisions J and K Explained

Revised: 10/4/89  
Security: Everyone

Apple EtherTalk Card: Revisions "J" and "K" Explained

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This article last reviewed: 8 September 1989

TOPIC -----

What is the latest revision of the Apple EtherTalk adapter? Is there a specific revision required to support the Internet Router and AppleTalk Phase 2?

DISCUSSION -----

The latest revision of the Apple EtherTalk Card is Revision "K".

To be assured of good performance when there is a lot of network traffic, you should use Apple's EtherTalk Card with EtherTalk 2.0. You should use Revision "J" of the EtherTalk Card. Revision "J" fixed a problem in earlier revisions that caused data corruption.

When a Macintosh IICx is used as an EtherTalk 2.0 workstation, then Revision "K" of the EtherTalk Card should be used. Revision "K" fixed a problem that caused a Macintosh IICx with only one card installed not to start.

Both problems occur only in rare instances, but to be safe, Revision "J" or "K" should be used.

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Tech Info Library Article Number:4402



# Tech Info Library

## Inter•Poll: Asynchronous and Lookup Interval Options Explained

Revised: 3/1/93  
Security: Everyone

Inter•Poll: Asynchronous and Lookup Interval Options Explained

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This article last reviewed: 8 September 1989

TOPIC -----

In the Inter•Poll "Settings" command of the "Special" menu, there are two options called "Asynchronous Interval" and "Lookup Interval". The documentation says that "Lookup Interval" determines the wait time between asynchronous lookups (page 74), and it's the same thing for "Asynchronous Interval". What is the difference?

DISCUSSION -----

On page 74 of the "Inter•Poll Network Administrator's Guide", there is a screen shot of the "Setting" dialog. The "Lookup Interval" describes, in seconds, how often NBP Lookup packets are sent to the AppleTalk network.

The "Asynchronous Interval" and "Asynchronous Count" come into play when the lookup packet or packets do not generate a response. The "Asynchronous Count" field describes how many times a resend occurs, and the "Asynchronous Interval" field describes how long (in 8-tick increments) the system waits between resends.

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Tech Info Library Article Number:4404



# Tech Info Library

## Internet Router: Correction to Administrator's Guide

Revised: 2/6/90  
Security: Everyone

Internet Router: Correction to Administrator's Guide

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This article last reviewed: 8 SSeptember 1989

TOPIC -----

On page 129, of the AppleTalk Internet Router Administrator's Guide, (Appendix A: Planning an AppleTalk Internet, Figure A-8) it appears that the cable segments are LocalTalk (printer is on the same cable segment) and the workstations are all LocalTalk.

How do you get workstations and printers physically connected to the router via LocalTalk to be in separate zones as the picture describes?

How do you build a work group consisting of a few LocalTalk users, LocalTalk printers, and some EtherTalk users in one zone?

The only workstation zone selectable under the Apple-Control Panel-Network is for EtherTalk and TokenTalk? Is this correct? Is the zone for the LocalTalk printers always the single LocalTalk zone name?

DISCUSSION -----

The diagram on page 129 of the "AppleTalk Internet Router Administrator's Guide" is misleading. A LocalTalk network can be associated with only one zone. This is the same as it was with AppleTalk Phase 1.

With AppleTalk Phase 2, any node on an AppleTalk network (other than LocalTalk) can belong to any zone selected from a list of available zone names. This would include EtherTalk 2.0 and TokenTalk 2.0. More information on this is on page 4 of the "AppleTalk Phase 2 Introduction and Upgrade Guide".

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Tech Info Library Article Number:4405



# Tech Info Library

## LaserWriter: Workaround to The Namer Utility Naming Problem

Revised: 4/9/93  
Security: Everyone

LaserWriter: Workaround to The Namer Utility Naming Problem

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Article Created: 8 September 1989

### Article Revision History

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04/09/93 - REVISED

- To include information on the LaserWriter Utility

### TOPIC -----

I'm having problems naming a LaserWriter Plus using The Namer 2.1 utility.

I'm trying to name the printer "2040/1825 EUC LW+", but The Namer creates a name of "2040/1825 EUC LW+ ". Notice the space AFTER the + character.

What is in this name that causes this to happen? I am sure that I did not type the space when using the Namer.

### DISCUSSION -----

The Namer utility, including version 7.0, appears to add a trailing space to some printer names. We have been unable to determine what causes the space to be added.

Here is an alternate method for renaming the printer:

The printer name is stored as a string in the persistent parameters of all LaserWriters. This string can be changed by the following PostScript program:

```
serverdict begin 0 exitserver
statusdict begin (NEWNAME) setprintername
```

In your case, replace "NEWNAME" with "2040/1825 EUC LW+". This program can download to the LaserWriter in batch or interactive mode. Note that the brackets are required. Make sure you have selected the correct LaserWriter using the Chooser before downloading this program (so you don't rename the

wrong LaserWriter). The name can be up to 31 characters and should consist entirely of printing characters--the "@" and ":" cannot be used.

This problem has been cured in version 7.4 of the LaserWriter Utility.

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Tech Info Library Article Number:4406



# Tech Info Library

## Microsoft Technical Support (5/96)

Revised: 5/17/96  
Security: Everyone

Microsoft Technical Support (5/96)

Article Created: 01 March 1994  
Article Reviewed/Updated: 17 May 1996

### TOPIC -----

- 1) Does Microsoft provide any form of online technical support?
- 2) Does Microsoft provide support for Windows 95?

### DISCUSSION -----

1) Microsoft provides technical information from the Microsoft Software Library and Microsoft Knowledge Base via the internet at the following locations:

World Wide Web: <http://www.microsoft.com>

FTP site: <ftp.microsoft.com>

Fee-based support called "Microsoft TechNet". is also available for annual support rates call sales support 800-334-2121.

2) Below are all Microsoft AnswerPoint Standard Support (automated question & answer) phone numbers for Microsoft products. FastTips is available 24 hours a day, every day.

#### Microsoft FastTips

-----  
An automated service providing quick answers to common technical questions via automated toll-free telephone, fax or mail.

|                            |              |
|----------------------------|--------------|
| Desktop Applications:      | 800-936-4100 |
| Personal Systems products: | 800-936-4200 |
| Development Products:      | 800-936-4300 |
| Business Systems:          | 800-936-4400 |

-----  
Desktop Applications  
-----

|                                            |              |              |
|--------------------------------------------|--------------|--------------|
| Microsoft Access/DB Web                    | 206-635-7050 | 905-568-2294 |
| Microsoft Automap                          | 206-635-7146 | 905-568-3503 |
| Microsoft Bob                              | 206-635-7044 | 905-568-3503 |
| Microsoft Excel for the Macintosh          | 206-635-7080 | 905-568-2294 |
| Microsoft Excel for Windows, OS/2          | 206-635-7070 | 905-568-2294 |
| Microsoft Magic School Bus & Kids Products | 206-635-7140 | 905-568-3503 |
| Microsoft Money                            | 206-635-7131 | 905-568-3503 |
| Microsoft Bookshelf, Encarta, Multimedia   | 206-635-7172 | 905-568-3503 |
| Microsoft Office for the Macintosh         | 206-635-7055 | 905-568-2294 |
| Microsoft Office for Windows               | 206-635-7056 | 905-568-2294 |
| Microsoft Office Switcher line             | 206-635-7041 | --           |
| Microsoft PowerPoint                       | 206-635-7145 | 905-568-2294 |
| Microsoft Profit                           | 800-723-3333 | --           |
| Microsoft Project                          | 206-635-7155 | 905-568-3503 |
| Microsoft Publisher                        | 206-635-7140 | 905-568-3503 |
| Microsoft Schedule+                        | 206-635-7049 | 905-568-2294 |
| Microsoft Scenes and Games                 | 206-637-9308 | 905-568-3503 |
| Microsoft Video for Windows                | 206-635-7172 | 905-568-3503 |
| Microsoft Windows Entertainment Products   | 206-637-9308 | 905-568-3503 |
| Microsoft Word For the Macintosh           | 206-635-7200 | 905-568-2294 |
| Microsoft Word for MS-DOS                  | 206-635-7210 | 905-568-2294 |
| Microsoft Word for Windows                 | 206-462-9673 | 905-568-2294 |
| Microsoft Works For the Macintosh          | 206-635-7160 | 905-568-3503 |
| Microsoft Works for MS-DOS                 | 206-635-7150 | 905-568-3503 |
| Microsoft Works for Windows                |              |              |

Other Numbers  
-----

|                                     |                     |
|-------------------------------------|---------------------|
| Microsoft Developer Network Library | 800-759-5474        |
| TDD Support and Service (TDD/TT)    | 206-635-4948        |
| Microsoft Download Service          | 206-936-6735 (MSDL) |

Article Change History:

15 May 1996 - Updated phone numbers, added Canadian numbers  
11 Jul 1994 - Revised all information.  
01 Mar 1994 - Verified information.

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Tech Info Library Article Number:4407





# Tech Info Library

## Macintosh: How To Configure When Using Different Monitors

Revised: 7/8/92  
Security: Everyone

Macintosh: How To Configure When Using Different Monitors

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Article Created: 8 September 1989  
Article Last Reviewed: 7 July 1992  
Article Last Updated:

TOPIC -----

I carry my Macintosh IICx back and forth from my home to the office. At home, I have a monochrome monitor; at the office, a Portrait Display. The Macintosh IICx contains interface cards for both monitors, and I want to be able to easily set the menu bar for each monitor.

When using the Macintosh IICx with the Portrait Display, I can still "see" two monitors represented when I open the Monitors CDEV. I can drag the menu bar to the smaller monitor so it will start up on that screen when I'm at home.

However, at home with the monochrome monitor, I cannot set the menu bar to appear on the Portrait Display. The Monitors CDEV 3.3.1 and 4.0 won't let me select the Portrait Display unless it is plugged into the card. So when I get to the office and start up, there is no menu bar. I have to power down, remove the regular video card, and power up again.

As a fix, it has been suggested that I keep a copy of the Monitors CDEV after setting it up for the Portrait Display. At home, I can drag the current CDEV out of the System Folder, and put the "office version" in the System Folder, so it will start up properly without my having to remove the normal video card. This is inconvenient, and I would prefer that the CDEV allow me to specify the Portrait Display when the card is present.

Is there some new version of the Monitors CDEV that fixes this problem? It appears that the possibility of different monitors in multiple locations was overlooked when the CDEV was written. I imagine there are many customers in similar situations.

DISCUSSION -----

The fix recommended above will not work. The "Monitors" CDEV does not save any settings within itself. They are stored in the System file in a resource called the "scrn" resource with an ID = 0. Replacing the "Monitors" CDEV does not affect the settings in any way. The Portrait Display Video Card is an intelligent card that senses at startup if a display is attached. If no display is attached, the video card does not make itself known to the system and does not show up in the "Monitors" CDEV.

We have, however, a solution that should work. With the Portrait Display attached, open the Monitors CDEV and move the menu bar to the icon that represents the Portrait Display and don't adjust the screen that the menu bar is on. When you take the computer home and plug in the monochrome monitor, the menu bar will show up on the monochrome monitor. This happens because the system thinks that only one video card is installed and displays all information to the monochrome monitor. When you take the computer to work and plug in the Portrait Display, the menu bar will appear up on the Portrait Display because of the values stored in the "scrn" resource in the System file.

There is nothing that can be done to the "Monitors" CDEV to resolve this issue.

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Tech Info Library Article Number:4408



# Tech Info Library

## Macintosh: How To Get the Apple NTSC Video Utility (9/94)

Revised: 9/26/94  
Security: Everyone

Macintosh: How To Get the Apple NTSC Video Utility (9/94)

=====

Article Created: 8 September 1989  
Article Reviewed/Updated: 26 September 1994

TOPIC -----

Does Apple distribute a disk that tells developers how to modify an 8-bit Apple Macintosh Video Card to produce conventional NTSC color video as an unsupported feature? How do I get it?

DISCUSSION -----

The information is actually a CDEV/INIT with a documentation file.

The CDEV/INIT file is called "Macintosh II Video Utility"; the documentation file is called "Video Utility Read Me."

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

### Article Change History

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26 Sep 1994 - Removed binary attachments, documented how to obtain them.  
02 Feb 1993 - Updated to explain how to locate the binary attachment if you  
are not using the on-line version of AppleLink.  
29 Jul 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4409



# Tech Info Library

## Microspot

Revised: 4/4/97  
Security: Everyone

Microspot

=====

Article Created: 09/22/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97  
Microspot  
-----

12380 Sratoga/Sunnyvale Rd.  
Saratoga, CA 95070

800-MACPLOT (622-7568)

408-253-2000

408-253-2055 Fax

Company Profile:  
Hardware and software, specializing in plotters and NuBus cards.

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Tech Info Library Article Number:4410



# Tech Info Library

## 3COM EtherLink: Running AppleTalk and EtherTalk Concurrently

Revised: 4/12/91  
Security: Everyone

3COM EtherLink: Running AppleTalk and EtherTalk Concurrently

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This article last reviewed: 23 August 1989

TOPIC -----

Regarding the concurrent use of AppleTalk and EtherTalk:

I have 3COM's EtherLink/NB interface cards using EtherTalk and running 3COM's 3+Share for the Macintosh. Here is my procedure:

- 1) I log on to the Internet Server using the Chooser. (The CDEV is set to EtherTalk.)
- 2) I link the appropriate Servers, printers, shared folders, etc.
- 3) I change the CDEV back to LocalTalk, and a warning dialog box appears telling us that we will lose our current connection. Choose OK.
- 4) I go back to the Chooser and select a LaserWriter from the AppleTalk network.
- 5) I still have an EtherTalk connection! I haven't lost anything, and AppleTalk is active.

I have always thought that a workstation could use only one AppleTalk connection at a time (although it may be physically connected to several networks, sending and receiving data over the selected network connection).

Why and how does this 3COM EtherLink continue to work? Doesn't the LAP Manager send packets to the connection selected in the Control Panel?

DISCUSSION -----

As a user, you can have access to only one physical network at a time through the link access you specify via the Control Panel.

During tests, when we change our network device in the Control Panel, we do lose our connections to our network services. We suspect that the 3COM software is not actually using AppleTalk, but instead is implementing its own protocol stack, which bypasses even the LAP specified by the Network Control Panel device.

If this is the case, then only the AppleTalk-based services would be lost while all of the 3COM services would remain unaffected including the servers. This would mean that you actually don't have EtherTalk, but you do have the 3COM Ethernet connection still up and running.

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Tech Info Library Article Number:4411



# Tech Info Library

## HyperCard 1.2.1: Insufficient Memory when Printing

Revised: 9/22/89  
Security: Everyone

HyperCard 1.2.1: Insufficient Memory when Printing

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This article last reviewed: 23 August 1989

TOPIC -----

HyperCard chokes after I print around 140-150 of the 284 cards in a certain stack. I'm using HyperCard 1.2.1 on a Macintosh II with 2MB of memory running MultiFinder.

DISCUSSION -----

This is probably an out-of-memory error, so try printing without MultiFinder running. Here are some other options you should try (in order):

- 1) Compacting the stack immediately before printing.
- 2) Using HyperCard 1.2.2.
- 3) Write a script that sets the lockmessages and lockrecent properties to true, then go to each card of the stack and issue a Print Card menu command. This is the least-recommended solution, due to the time and trouble involved.

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Tech Info Library Article Number:4412





# Tech Info Library

## Macintosh IIcx: Radio Emissions Can Trigger Radio Devices

Revised: 7/14/92  
Security: Everyone

Macintosh IIcx: Radio Emissions Can Trigger Radio Devices

=====

Article Created: 23 August 1989  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Sometimes my wireless telephone will ring when I do something on my Macintosh IIcx. Is it possible for the IIcx to set off my phone?

DISCUSSION -----

Under certain conditions, EMI or RFI levels from the Macintosh IIcx could be high enough to set off the ringer of a wireless telephone sitting on its cradle (the condition does not exist when off the cradle).

A Macintosh IIcx with HD40 SC and 2MB RAM with Apple 8-bit video card and AppleColor monitor running Director performed this trick. Every time an error condition existed, the telephone was triggered when we closed the error dialog box.

We did not try other software. MoC certification number of the telephone is 5382227A (Send Freq = 49.770 MHz, Recd Freq = 46.710 MHz). The telephone was approximately 4 feet from the monitor, and it is currently Bell's top-of-the-line model (Promenade 1250).

Complete testing has not been done, but garage door or alarm systems may also be affected.

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Tech Info Library Article Number:4413



# Tech Info Library

## Macintosh II: How It Handles Color Versus CGA, VGA, and EGA

Revised: 7/8/92  
Security: Everyone

Macintosh II: How It Handles Color Versus CGA, VGA, and EGA

Article Created: 23 August 1989  
Article Last Reviewed: 7 July 1992  
Article Last Updated:

TOPIC -----

This article discusses how the Macintosh handles color in comparison to CGA (Color Graphics Array), VGA (Video Graphics Array), EGA (Enhanced Graphics Array) and other color standards.

DISCUSSION -----

Background

-----  
CGA

The first color standard for the MS-DOS PC-style computers was CGA (Color Graphics Adapter or Color Graphics Array). The CGA standard can display two colors from a palette of 16 colors at its maximum resolution of 640 by 200. The output of this card is a TTL digital RGB signal.

PGC

The next standard for color on MS-DOS computers was the IBM PGC (Professional Graphics Card), which has a 640 by 480 resolution with 256 colors from a palette of 4096. The PGC provides an analog output. This card gained very little acceptance because EGA, the next standard, provided better price/performance.

EGA

EGA (Enhanced Graphics Array) provided some backward compatibility with the CGA standard. The first EGA had a maximum resolution of 640 by 350 with 16 colors from a palette of 64. The current EGA standard (EGA enhanced) is 640 by 480 with 16 colors. Both EGA standards use a TTL digital RGB output.

VGA

When the PS/2 computers were introduced, the VGA standard came into existence. There are three color graphics modes on the VGA (Video Graphics Array) card: 640 by 480 with two colors, 640 by 480 with 16 colors, and 320 by 200 with 256 colors. The 16- and 256-color modes have a palette of 262,144 colors. The lower resolution of the 256 colors has limited its use with commercial software. With the VGA standard, an analog RGB output is used.

#### MS-DOS Color

-----  
With the CGA, EGA, EGA enhanced, and VGA, it is possible that each card may require a different driver to be installed for each of the individual applications that is run on each computer. It is possible, for example, for a company with five MS-DOS computers to have five different drivers for the same program: on System One a CGA card from Manufacturer A, on System Two an EGA card from Manufacturer B, on System Three an EGA enhanced card from Manufacturer C, on System Four an EGA enhanced card from Manufacturer D, and on System Five a VGA card from Manufacturer E. Each of these systems is running Lotus 1-2-3. For each system to display the 1-2-3 graphs, each system may need a driver for each individual card. Each of these systems will most likely be displaying in different resolutions and with a different number of colors.

Even within one graphics card standard, when moving from one card manufacturer to another, different drivers may be required for the same program. Also, within one graphics card standard, some third parties may have decided to change the rules; that is, 640 by 480 by 16 colors is the standard in EGA enhanced, but there is a card that uses 800 by 560 by 16 colors.

These resolutions remain constant whether a 9-inch or a 19-inch screen is used--creating a situation where an application cannot depend on the screen display to represent any type of "what you see is what you get" environment. A graphic object that is 2 inches by 2 inches on one screen may become 4 inches by 4 inches on another screen.

With the wide variety of possible color display devices for the MS-DOS world, consistency is very difficult to maintain.

#### Macintosh Color

-----  
On the Macintosh, there is more consistency, even when moving from black and white graphics to full 32-bit color graphics. Card developers and software developers need not be concerned about which application or which video card they are going to work with. Both the hardware companies and the software companies focus their resources on QuickDraw. A driver for a particular application is not necessary in the Macintosh environment. Users needn't be concerned about installing drivers to use a particular application.

The typical Macintosh screen is 72 pixels per inch. There is a difference from one screen product to the next--but only a small difference. This allows for a consistent display. A 2-inch by 2-inch

image remains very, very close to 2 inches by 2 inches from screen to screen.

If you have a smaller screen, you have fewer pixels; however, the pixels are very, very close to the size of any other Macintosh screen. This constant pixel size has been a tremendous benefit for the publishing market because an image on Macintosh "A" is very close to the same image on Macintosh "B"-- unlike the MS-DOS world. Since all Macintosh video cards use the same reference (QuickDraw) for image work, it doesn't matter who manufactured the video card: the image appears the same.

With 32-Bit QuickDraw now available, the Macintosh can also display photo-quality images--not available in the CGA, EGA, and VGA environments.

When the graphics environment is enhanced, applications do not need to undergo major changes to continue to work in the new and enhanced graphics model. For example, programs that ran in Macintosh 1-bit display configuration continue to run in the 32-bit display configuration. These applications may not take advantage of the new environment, but they generally continue to work without modification.

CGA and EGA cards require a digital RGB display monitor. VGA and Macintosh can, in many instances, use the same multisync monitors.

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Tech Info Library Article Number:4414



# Tech Info Library

## Macintosh-to-Wang: Emulation VS Serial Communication

Revised: 9/22/89  
Security: Everyone

Macintosh-to-Wang: Emulation VS Serial Communication

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This article last reviewed: 23 August 1989

TOPIC -----

How can I connect and transfer files between a Wang VS 5000 and a Macintosh II over a modem?

DISCUSSION -----

There are several ways to connect the Macintosh computer within the Wang environment. The most common implementations rely on basic Wang terminal emulation and terminal emulation with file transfer and document conversion capabilities. Below is a complete solution, including Wang terminal emulation and asynchronous file transfer.

Basic Wang Terminal Emulation  
-----

Any Macintosh application that supports VT100 emulation -- such as inTalk or MacTerminal software -- can emulate a standard VT100 terminal on a network using the Wang VS. This allows the Macintosh computer to function as a Wang workstation by direct or modem connection to the Wang-provided asynchronous device controller (ADC) or enhanced asynchronous device controller (EADC). These controllers let remote terminals execute Wang software applications, with the following limitations:

- The standard Wang keyboard includes 32 function keys, a Help key, and a Cancel key, all of which are heavily used in Wang applications. With the Macintosh computer and VT100 emulation software, the user needs to memorize several keystrokes to signify each of these keys.
- With the described MacTerminal connection, it is not possible to transfer files between the Macintosh computer and the Wang VS.

Terminal Emulation with File Transfer and Document Interchange

-----

The DataViz MacLink Plus/Wang VS software provides a bridge between Wang word processing and Macintosh applications, including word processing and desktop publishing applications. It also provides two-way file transfer and document translation using the standard Macintosh user interface, while allowing the Macintosh user to access Wang Office electronic-mail services.

Macintosh documents can be converted to standard Wang word processing documents and stored on the Wang VS in a one-step process. Wang VS documents can be sent to the Macintosh computer and automatically translated to MacWrite, Microsoft Word, or WordPerfect format, allowing documents created on the Wang VS to benefit from Macintosh desktop publishing capabilities.

Data files can be transferred in both directions and then translated into a variety of formats. Wang data files can be converted and used on the Macintosh computer as Microsoft Excel spreadsheets. Macintosh files can be stored on the Wang VS in MacBinary format for use by other Macintosh users, and also can be stored in binary format for use by MS-DOS personal computer users -- in all, more than 45 translators are provided.

You can also read mail received via Wang Office electronic mail and copy received files and documents to the Macintosh computer. You can create and send Wang Office memos and packages containing memos, documents, and data files (even MacBinary and binary files) to Wang users, as well as other Macintosh computer and IBM PC users.

A special version of MacLink Plus/Wang VS is available for Macintosh connectivity via the Wang VS TC, TCP, or MLTC ports. The full range of file translators is available for file transfer and conversion. (Wang does not support terminal emulation capability through these ports.)

#### Document Conversion with Smart Kid

-----

Smart Kid from Interpreter, Inc. is a hardware and software product that allows documentation conversion between Wang VS or Wang OIS and various word processors and personal computers. Many systems and software packages are supported, including Microsoft Word and WordPerfect on the Macintosh computer, WP and WP Plus on the Wang, WordPerfect and Massll on Digital's VAX, and a number of IBM PC word processors and dedicated word processors. Smart Kid permits almost 100-percent file conversion, including headers, footers, and footnotes and translates directly from Wang WP and WP Plus into Macintosh word processing formats.

#### Terminal Emulation for Document Transfer and Conversion

-----

VSterm from MacSoft and VsCom/Macintosh from M/H Group (the leading vendor for IBM PC-Wang VS connectivity software) provide Wang 2110 terminal emulation for document transfer and conversion. With VSterm, any PC with a serial port can

emulate the Wang 2100 or VT100 terminals, exchange documents and data with the Wang VS, and convert Wang VS data to popular PC formats. VsCom/Macintosh provides Wang VS 2100 terminal emulation, including quick screen response, complete support of Wang WP graphics and characters, and flexible access to Wang function keys. The program also provides file transfer and conversion between Macintosh and Wang word processing formats.

MacSoft also offers a program called Converse that provides file transfer and conversion through the Wang VS TC-IOP ports, providing a relatively simple, inexpensive solution for file transfer and conversion.

#### MacBLAST for Asynchronous Communication

-----

MacBLAST communications software interfaces with BLAST for the Wang VS/OS (Revision 6.4 or later, equipped with TCP/IP boards and asynchronous ports with ADC/EADC options). MacBLAST provides high-speed, error-free file transfer and text file format-conversion for integrating the Macintosh computer with Wang computer systems. MacBLAST transfers binary data, text, or graphics.

MacBLAST and Wang VS BLAST can be used to create file transfer links or dial-up networks between Wang VS computers and any number of remote Macintosh computers or PCs. MacBLAST uses standard phone lines or X.25 networks to provide reliable, high-speed communications unaffected by line noise or propagation delay on satellite-routed calls and X.25 packet networks.

MacBLAST features include on-line help, automatic dialing, and scripting for creating unattended operations, custom menus, and seamless integration within Macintosh applications.

For more information, search under: "DataViz, Inc."; "Interpreter, Inc."; "MacSoft"; "M/H Group"; and "Communications Research Group".

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Tech Info Library Article Number:4415



# Tech Info Library

## Viruses Rarely Spread Between Different Machine Types

Revised: 9/22/89  
Security: Everyone

Viruses Rarely Spread Between Different Machine Types

=====

This article last reviewed: 29 August 1989

TOPIC -----

Can an infected Macintosh on a network spread a virus to an IBM host?

DISCUSSION -----

A virus rarely spreads between different machine types. (A rare occurrence of this was the virus that infected thousands of UNIX systems through a hole in the mail system. This was possible since the virus actually recompiled itself on each of these machines. Even so, it would not have been possible across operating systems.)

Thus, there should be no way for a virus on a Macintosh to spread to an IBM host. The host would need to be executing 680x0-based code and using all of the basic mechanisms of the Macintosh operating system.

It IS possible, if the host is being used as a file server, for files to become infected. These files still would affect only Macintoshes connected to the host, not the host itself.

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Tech Info Library Article Number:4416





# Tech Info Library

## AppleShare PC: Resetting Timeout

Revised: 9/22/89  
Security: Everyone

AppleShare PC: Resetting Timeout

=====

This article last reviewed: 29 August 1989

TOPIC -----

I have several PCs coexisting with Macintoshes on a PhoneNET network. They are printing to LaserWriters -- primarily the LaserWriter IINTX, but also a LaserWriter IINT.

The Macintoshes are running Microsoft Word on the DOS end, and are having problems printing because Microsoft Word does not release the document when it reaches the end: I have to wait for the timeout.

I can use the DA pop-up application to change the timeout from 3 minutes to a few seconds, but this is a lot of trouble. Can this be automated?

DISCUSSION -----

You can use the command line interface to the DA; the command is called "ANET" and is documented in the AppleShare PC 2.0 manual (Apple part #030-3002-A). The specific subcommand you want is CONNECT, which has an option for setting the LaserWriter timeout value. You also can obtain the exact format of the command by entering the following command at the DOS prompt:

```
ANET HELP CONNECT
```

Once you have the specific command you desire, enter that line in the AUTOEXEC.BAT file so that it is executed at startup, automatically connecting you to the LaserWriter of your choice with your desired timeout values.

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Tech Info Library Article Number:4417



# Tech Info Library

## HyperCard: How to Send a Macro Keystroke Sequence

Revised: 9/29/90  
Security: Everyone

HyperCard: How to Send a Macro Keystroke Sequence

=====

This article last reviewed: 17 August 1990

TOPIC -----

Is there a way to create a button in HyperCard to send a macro keystroke sequence (such as AutoMac or QuicKeys)?

DISCUSSION -----

HyperCard's "type" command does not generate a keydown event, which is needed for this sort of macro. It might be possible to write an XCMD. An easier way is Dewi Williams' excellent "PostEvent" stack. Not only does it call Tempo II and QuicKeys macros, it's invaluable for posting carriage returns to dialogs (that is, the Print Report dialog) without user intervention. It's available in the ordinary places: CI\$, GENie, MacNet, user groups, and so on.

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Tech Info Library Article Number:4418



# Tech Info Library

## Macintosh: Storage at Extreme Temperatures and Altitudes

Revised: 6/8/92  
Security: Everyone

Macintosh: Storage at Extreme Temperatures and Altitudes

=====

Article Created: 22 September 1989  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

Can the Macintosh withstand non-operating temperatures of -80 deg C? Can the Macintosh and a hard drive be modified to operate at altitudes of 12,000 feet?

I am interested in using a Macintosh at the South Pole. The elevation is 10,000 feet, but atmospheric conditions add the equivalent of approximately 2000 feet, for a total altitude factor of 12,000 feet.

The equipment will be installed during the summer (temp is -30 deg C to -40 deg C), which is within Apple's storage temperature specification guidelines. If there were a generator problem during the winter, the temperature could drop to -80 deg C for a period of time.

DISCUSSION -----

There is a great probability of damage to any Macintosh used in the environment you describe.

Apple's storage temperature guidelines are specified for storage only. Under no circumstances should the system be operated at anything under 0 deg C. In fact, if the Macintosh is stored at its minimum temperature, it would need to be returned to above 0 deg C for AT LEAST 2 hours before operation.

Also, the battery on the logic boards of all Macintosh II computers is not good for any temperature under -40 deg C. Lubricants in a hard drive would also solidify at those low temperatures.

We know of no way to modify the Macintosh to work in such conditions.

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# Tech Info Library

## NTSC Video: How To Avoid Flicker on Macintosh

Revised: 7/16/90  
Security: Everyone

NTSC Video: How To Avoid Flicker on Macintosh

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This article last reviewed: 29 August 1989

TOPIC -----

This article discusses how to overcome Macintosh video "flickering" in an NTSC environment. (NTSC is the current broadcast standard for television signals.)

DISCUSSION -----

Macintosh video in an NTSC environment is commonly beset by flickering images.

The flicker is most noticeable when 1-pixel horizontal lines are used in the display. Due to the technique used for NTSC displays, 1-pixel lines are actually on the screen only half of the time. NTSC video is displayed at 30 frames per second, with each frame having 2 fields, or 60 fields per second. A field consists of alternating lines of the frame: odd lines are displayed in the first field, even lines in the second field.

Most video images contain material that exists in each field (each half of the frame). This allows these portions of the image to remain on screen at all times, persisting through both fields. A 1-pixel line exists on the screen only in alternating fields -- half of the time.

This is the nature of NTSC and is not specific to the Macintosh -- ANY computer graphics only 1 pixel wide have a tendency to flicker. There are various methods for resolving this annoyance.

Several companies have converters that capture both fields and display them at the same time. A similar technique is beginning to appear in consumer television receivers, generally labeled "extended definition TV", or EDTV: with both fields displayed, the 1-pixel lines are always on the screen. Information on such professional-level devices can be found in ads in computer graphics magazines.

Mass Microsystems ColorSpace F/X NuBus card for the Macintosh II family uses a

similar approach to provide stable 1-pixel lines on an NTSC video device.

Another approach, used by many computer graphic artists, is to simply use 2-pixel lines for any subject being sent to the NTSC environment.

In some situations, like trainings and demos, the only noticeable flicker is in a Macintosh window's title bar. The software approach for avoiding the annoying title bar flicker is to use an INIT called "NeVR". This INIT makes the title bar a solid pattern rather than the normal 1-pixel horizontal lines.

NeVR is available on many of the public access networks and bulletin boards.

For more information, search under: "Mass Micro"

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Tech Info Library Article Number:4420



# Tech Info Library

## AppleShare PC 2.0: Compatible Network Cards

Revised: 8/28/90  
Security: Everyone

AppleShare PC 2.0: Compatible Network Cards

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This article last reviewed: 29 August 1989

TOPIC -----

This article lists cards known to be supported by AppleShare PC 2.0

DISCUSSION -----

AppleShare PC 2.0 supports the following cards:

3COM EtherLink II  
3COM EtherLink MC (MicroChannel)  
IBM Token Ring 802.2 (long card)  
IBM Token Ring 802.2 (short card)  
IBM Token Ring Adapter/A (MicroChannel)  
DayStar Digital MCA LocalTalk Card (MicroChannel)  
Apple LocalTalk PC Card

Only the cards listed above have drivers included with AppleShare PC 2.0.

Other third-party network cards may also be able to support AppleShare 2.0.

For more information, contact the card manufacturers directly.

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Tech Info Library Article Number:4421



# Tech Info Library

## Apple HD-20 (Non-SCSI): Which Macintosh Computers Support It

Revised: 3/4/91  
Security: Everyone

Apple HD-20 (Non-SCSI): Which Macintosh Computers Support It

=====

This article last reviewed: 27 February 1991

TOPIC -----

With what Macintosh models can I use a serial HD-20?

DISCUSSION -----

Support of the serial HD-20s is not tied to System Software, but to the ROM in the respective systems.

The following Macintosh models have support for the serial (non-SCSI) HD-20 built into ROM:

- Macintosh 512Ke
- Macintosh Plus
- Macintosh SE
- Macintosh Classic
- Macintosh IIfx
- Macintosh Portable

The following Macintosh models do NOT have this support built in:

- Macintosh SE/30
- Macintosh II
- Macintosh IIX
- Macintosh IICx
- Macintosh IISI
- Macintosh IIfx
- Macintosh LC

For more information on the serial HD-20, see the article "Old HD20 and New Mac SE/30".

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Tech Info Library Article Number:4423





# Tech Info Library

## HyperCard: suspend and resume Messages

Revised: 9/22/89  
Security: Everyone

HyperCard: "suspend" and "resume" Messages

=====

This article last reviewed: 29 August 1989

TOPIC -----

Why doesn't HyperCard generate the "suspend" and "resume" messages when running under MultiFinder? Is there a workaround?

DISCUSSION -----

HyperCard uses the "sublaunch" mechanism of the "\_Launch" trap when the "open" command is issued to run other applications. The "sublaunch" mechanism behaves one way with MultiFinder off, another with MultiFinder on.

With MultiFinder turned off, the sublaunch mechanism causes HyperCard to issue a "suspend" message and then quits. The application specified in the "open" command is then launched. When this application is exited, HyperCard is relaunched. HyperCard is able to determine that it is being relaunched and issues the "resume" message.

With MultiFinder turned on, the sublaunch mechanism acts as if the user double-clicked on an application, causing the application to launch. HyperCard never has to quit, so a "suspend" or "resume" message is never generated.

There is currently no way to work around this situation.

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Tech Info Library Article Number:4424



# Tech Info Library

## HyperCard: resume Handler Under MultiFinder

Revised: 6/24/90  
Security: Everyone

HyperCard: "resume" Handler Under MultiFinder

=====

This article last reviewed: 29 August 1989

TOPIC -----

My HyperTalk programming manual says "resume" is sent up the chain of handlers when you quit an application launched from HyperCard. I put the following handler into the "Stack Script":

```
on resume
    put "Hello World"
end resume
```

When I quit the application, nothing happens. Do you have any suggestions?

DISCUSSION -----

HyperCard does not generate "suspend" and "resume" messages when running under MultiFinder. This is probably why the stack script resume handler is never called.

If MultiFinder is not being used, another resume handler is probably called first, and is not passing the message to the next object in the hierarchy.

Messages are passed through the object hierarchy in the following order:

- Buttons and fields
- Cards
- Backgrounds
- Stacks
- Home Stack
- HyperCard

Based on this hierarchy, we would check for resume handlers in the following scripts: the card script for the card from where the application was opened, and the background script for the card from where the application was opened.

(NOTE: The "suspend" and "resume" messages are not passed to buttons and fields.)

If a resume handler is found, add the line "pass resume" just before the "end resume" line in the handler. For example:

```
on resume
  -- Whatever script that happens to be here
  -- Whatever script that happens to be here
  -- Whatever script that happens to be here
  -- Whatever script that happens to be here
  pass resume
end resume
```

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Tech Info Library Article Number:4425



# Tech Info Library

## PostScript: Program for Obtaining LaserWriter Information

Revised: 8/29/91  
Security: Everyone

PostScript: Program for Obtaining LaserWriter Information

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Article Created: 22 September 1989  
Article Last Reviewed: 29 August 1991  
Article Last Updated: 29 August 1991

TOPIC -----

This article contains a PostScript program for gathering LaserWriter information.

DISCUSSION -----

This PostScript program reports information about the printer, including:

- PostScript version
- available fonts
- virtual memory status
- cache status
- a graphic benchmark.

```
%!  
%% Laser Doctor, Version 1.0.0  
%% Written by Jim Sullivan, January, 1989.  
%% This was written out of a need to display as much information  
%% about various Postscript Laserprinters onto one page. More  
%% can be added and anyone is free to modify it for their own  
%% needs.
```

gsave

%% Beginning of definitions \*\*\*\*\*

```
/HB {/Helvetica-Bold} def  
/CBO {/Courier-BoldOblique} def  
/C {/Courier} def
```

```

/FF {findfont} def
/SS {scalefont setfont} def
/mt {moveto} def
/s {show} def
/fontname 30 string def
/getfont {pop fntnm cvs /fontname exch def} def
/fntnm 30 string def
/str 32 string def
/BOLD {CBO FF 10 SS} def
/NORMAL {C FF 10 SS} def
/cnt 0 def
/btime 0 def
/circleofbench
    { 15 15 345
      {gsave
        rotate 0 0 mt
          (Benchmark) oshow
        grestore
      } for
    } def
/oshow {true charpath stroke} def

%% End of definitions *****

BOLD
200 756 mt
(Analysis by Doctor Laser, Version 1.0.0) s %Print title
20 720 mt
NORMAL (This printer is a ) s
BOLD statusdict/product get str cvs s %Gets the name of the
NORMAL ( running version ) s %printer from
BOLD version str cvs s %statusdict/product
NORMAL ( of Postscript.) s %and the version number
20 700 translate %of Postscript from the
% 'version' command

0 0 mt
(Available Fonts : (PaintType)FontName:Example of font) s %Heading
0 -10 mt
(PaintType = 0\((filled\) , 1\((stroked\) , 2\((outlined\) ,) s
0 -20 mt
( 3\((mixed\) , ?\((unknown\))) s
0 -30 translate

BOLD
FontDirectory {BOLD 0 0 mt %Push directory of fonts and
getfont %get the fonts one at a time.
(\() s
{fontname cvn FF /PaintType get str cvs s} stopped {%ifelse
(?) s } {} ifelse %Get the font's PaintType and print its value,
(\) s %or if it is not supplied, print a '?'.

fontname s %Print the name of the font.
```

```
mark
fontname length 1 30 {(-) s} for      %Print dashes out to the font sample
column.
(:) s                                %Print a colon.

{fontname cvn FF 10 SS ( ABCDEFGH abcdefgh) s } stopped {%ifelse
NORMAL (Error implementing font) s } {} ifelse      %Show a sample of each
cleartomark                                         %font.  If an error is
cnt 10 add                                         %trapped, print message
/cnt exch def                                       %indicating an error
0 -10 translate} forall                           %occurred.  Use the
NORMAL                                             %variable 'cnt' to count
cnt 30 add /cnt exch def                           %the number of fonts.

350 cnt mt                                         %Move back up the page 'cnt' points.
(Virtual Memory Status:) s                        %Print the Virtual Memory Status
0 0 translate                                     %using 'vmstatus'.
370 cnt 20 sub mt
(Maximum Available Bytes = ) s BOLD vmstatus str cvs s NORMAL
370 cnt 30 sub mt
(Bytes currently in use  = ) s BOLD str cvs s NORMAL
370 cnt 40 sub mt
(Level of Save Nesting   = ) s BOLD str cvs s NORMAL
350 cnt 60 sub mt

(Cache status \ (Red book p126\):) s %Print out the cache status.
cachestatus
370 cnt 80 sub mt NORMAL (blimit = ) s BOLD str cvs s
370 cnt 90 sub mt NORMAL ( cmax = ) s BOLD str cvs s
370 cnt 100 sub mt NORMAL ( csize = ) s BOLD str cvs s
370 cnt 110 sub mt NORMAL ( mmax = ) s BOLD str cvs s
370 cnt 120 sub mt NORMAL ( msize = ) s BOLD str cvs s
370 cnt 130 sub mt NORMAL ( bmax = ) s BOLD str cvs s
370 cnt 140 sub mt NORMAL ( bsize = ) s BOLD str cvs s

usertime /btime exch def                        %Print a graphic (circleofbench)
HB FF 12 SS                                     %and time how long it takes for
430 cnt 230 sub translate                         %the printer to interpret it.
.5 setlinewidth
circleofbench
0 0 moveto
(Benchmark Testing) true charpath
gsave 1 setgray fill grestore
stroke
-40 -80 mt
NORMAL
(Time to print) s
-40 -90 mt
(the above graphic) s
-40 -100 mt
(was ) s
BOLD
usertime btime sub 0.001 mul str cvs s %Print out the time in seconds.
```

NORMAL

( seconds.) s

grestore

showpage

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Tech Info Library Article Number:4426



# Tech Info Library

## Macintosh: 1-Bit Video Incompatible With Adobe Illustrator

Revised: 9/22/89  
Security: Everyone

Macintosh: 1-Bit Video Incompatible With Adobe Illustrator

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This article last reviewed: 29 August 1989

TOPIC -----

My Adobe Illustrator 88 1.6 bombs on a Macintosh IICx with the Macintosh 1-bit Video Card installed. Have you heard of any problems with the 1-Bit Video Card and software compatibility?

DISCUSSION -----

Versions of Adobe Illustrator 88 prior to version 1.7 are not compatible with Macintosh 1-Bit Video Card.

Adobe Illustrator 88 version 1.8.3 is the latest version, and it does work properly with the Macintosh IICx and the Macintosh 1-Bit Video Card.

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Tech Info Library Article Number:4427





# Tech Info Library

## Routing Table Maintenance Protocol (RTMP): AppleTalk Phase 2

Revised: 9/22/89  
Security: Everyone

Routing Table Maintenance Protocol (RTMP): AppleTalk Phase 2

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This article last reviewed: 29 August 1989

TOPIC -----

Here are some questions and answers about changes to RTMP (Routing Table Maintenance Protocol).

DISCUSSION -----

Q) Are Routing Table Maintenance Protocol (RTMP) timers still at 10-second intervals?

A) Yes, the RTMP packets are still sent out every 10 seconds.

Q) Are RTMP validity timers still at 20-second intervals?

A) The validity timer is still based on 20 seconds.

Q) Do routing tables propagate only when changes are perceived, or are the Phase 1 algorithms still being used?

A) The algorithms used are different, but the changes do not affect when the tables are propagated. The changes specifically affect the amount of data sent in each packet. AppleTalk Phase 2 routers only pass information about routers that are located on the other side of the router. For example:

A----B----C----D

Router B passes information about routers C and D to router A, but it does not tell router A about itself.

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Tech Info Library Article Number:4428



# Tech Info Library

## LaserWriter: Connecting to IBM PC and PS/2 Computers

Revised: 3/4/90  
Security: Everyone

LaserWriter: Connecting to IBM PC and PS/2 Computers

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This article last reviewed: 29 August 1989

TOPIC -----

This article discusses how to connect LaserWriter printers to IBM PC and PS/2 computers.

DISCUSSION -----

To connect IBM PC-XT and all PS/2 systems (all have DB-25 Male Serial connectors from the CPU) to the LaserWriter families, use a Serial Null Modem cable. Here is the cabling scheme for Apple cables:

```
[CPU -- PC or PS/2 DB-25 (Male)] to
[(Female) DB-25 Female-to-Female Gender Changer (Female)] to
  [(Male) 590-0037 (Straight through DB-25 Serial cable) (Male)] to
    [(Female) 590-0166 (Modem Eliminator Cable) (Male)] to
      [(Female) LaserWriter Serial Port]
```

To adapt the IBM PC/AT or other 80286 class MS-DOS machines to the DB-9 serial port, add a DB-9-to-DB-25 adapter between the CPU and the Female-to-Female DB-25 adapter. Radio Shack stocks both adapters. The DB-9-to-DB-25 is Radio Shack part number 26-1388 or 26-265. The DB-25 Female-to-Female is Radio Shack part number 26-1495. If the Apple 590-0166 is not readily available, use a Radio Shack Null modem (Modem Eliminator) adapter.

Testing the Connection

-----

This test, if successful, prints the current DOS directory on the LaserWriter. Before doing the steps below, make sure that a) Everything is connected correctly; and b) the IBM-PC serial port to be used is configured as a known COM: port (like COM1: or COM2:).

Note: The test assumes that COM1: is the serial port. If you're using a different COM port, substitute it as appropriate in step 2 below.

Follow these steps:

1) Set the printer to Diablo emulation mode.

- On a LaserWriter or LaserWriter Plus, set the rotary switch to SPECIAL.
- On a LaserWriter IINT, set switch 1 to ON and 2 to OFF.
- On the LaserWriter IINTX, set switch 1, 2, and 3 to ON and 4, 5, and 6 to OFF.

2) Power on the LaserWriter and the MS-DOS machine. At the DOS prompt, type the following:

```
MODE COM1:96,n,8,1
```

```
MODE LPT1: = COM1:
```

```
DIR > LPT1:
```

```
ECHO ^D > LPT1:
```

Note: The "^D" stands for the keystroke sequence Control-D. This is the "end-of-transmission" command. Note: Use ^D instead of ^L to avoid problems with the printer expecting more information and maintaining the connection after a print.

If all went well, you should have a printout of the current DOS directory. If nothing happened, check these three things:

- Make sure that you have access to the MODE command.
- Make sure that the serial port you think is "there" really is "there".
- Make sure that all cabling is snugly connected.

If you got a good printout, then the physical and logical integrity of the connection between the MS-DOS computer and the LaserWriter is good. Once you have successful test results, you can switch modes on the LaserWriter and expect it to perform well in the MS-DOS-to-LaserWriter printing environment.

However, if you are printing a long document and pieces of the document appear to be missing from the output, the problem is probably not in the fundamental connection between the printer and the computer. This symptom will most likely appear in a PostScript production environment.

The problem probably has to do with the "Handshake" mode settings in the printer and the computer. ("Handshaking" is the process where the computer expects the printer to tell the computer to pause briefly while it finishes the current print job.) The "XON/XOFF" handshaking protocol is supported by both series of printers (LaserWriter and LaserWriter II). The "DSR/DTR" protocol is only supported by the LaserWriter IINT/NTX family.

Further questions about MS-DOS and LaserWriter connectivity are answered in Appendix C of the "LaserWriter IINTX Owner's Guide".

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Tech Info Library Article Number:4429



# Tech Info Library

## Macintosh: Startup Problems When Using CD-ROM (5/96)

Revised: 5/23/96  
Security: Everyone

Macintosh: Startup Problems When Using CD-ROM (5/96)

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Article Created: 22 September 1989  
Article Reviewed/Updated: 23 May 1996

TOPIC -----

When I start my Macintosh with the CD player attached and turned on, everything works fine. But when I have a CD-ROM disc inserted in the player before I start it, the Macintosh will not boot, and freezes.

DISCUSSION -----

In a majority of cases, the system doesn't crash when a CD-ROM is in the drive as described above. However, some non-startup CD-ROM discs have been mastered with data in the boot blocks. When this happens, the computer starts to boot up from the CD-ROM disk but is unable to find a valid system folder and will, then freeze or crash. If a CD is mastered with the first two blocks left blank, the system won't attempt to use the disc as a boot device.

The problem is that the default block size for a CD-ROM drive is 2048 bytes, whereas the default block size for a hard drive is 512 bytes. This difference can cause the system to read unanticipated areas which may lead to the problem described above.

### Article Change History

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23 May 1996 - Simplified and clarified article.  
03 Mar 1996 - Revised and retitled for technical clarity.

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# Tech Info Library

## MacWorkStation: Protocol-Based Communications Problem

Revised: 9/22/89  
Security: Everyone

MacWorkStation: Protocol-Based Communications Problem

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This article last reviewed: 12 April 1989

A developer of a TCP/IP network reports the following problem. Uploads of window or file contents are causing serious problems resulting in line drops. This occurs during EZ read Text (T008), Read Text (T009), Select Existing File (F017), and probably during EZ Read File Fork (F007) and Read File Fork (F008).

The developer is currently using the Simple ASCII transport layer (ID = 2) with 7 data bits. Unfortunately, data in the ranges <00>-<1F> and <80>-<FF> may be contained within windows or files. In particular, if there is a carriage return <0D> within the data, then the IBM mainframe front-end processor (FEP) takes this as an end-of-line character, sends the packet to CP, which sends the packet to the application, which processes it.

Meanwhile, MacWorkStation continues to send the remainder of the packet up until the final carriage return, which it uses to signal end-of-line. Unfortunately, the characters following the first carriage return cause CP interrupts, leaving the virtual machine in CP mode. After some number of interrupts, CP determines that the line is too noisy to continue and signals the FEP to drop it.

The problem here is that they are using a protocol in an unsupported fashion. The serial protocol driver (ID=2) that uses start and stop characters is not designed to support the transfer of binary data, or any data that might contain nonstandard characters. The best choice would be to use the serial driver (ID=1) that supports binary data and should be able to handle the transfer of carriage returns. If this is unacceptable, request a copy of the source for serial driver version 2.

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Tech Info Library Article Number:4431



# Tech Info Library

## LaserWriter IINTX: How to Network PS/2 and Macintosh Computers

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: How to Network PS/2 and Macintosh Computers

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This article last reviewed: 24 August 1989

You can connect multiple IBM PS/2 computers, Macintosh computers, and Apple LaserWriters, so that the connected computers are networked with each other and the LaserWriters. This enables Macintosh and IBM computers to share data and printers through the network interfaces. The following solutions describe the specific interfaces and their configurations.

### DayStar Digital Solution (Direct LocalTalk Connection)

-----

This solution uses a LocalTalk MicroChannel card within IBM PS/2 MicroChannel systems. The MicroChannel systems are networked using the LT200MC MicroChannel LocalTalk card for MicroChannel bus PS/2s by DayStar Digital. The card uses AppleTalk network protocols and associated software so that MicroChannel PS/2s can communicate with other AppleTalk system components, like the LaserWriter IINT and IINTX. The card comes with software for PS/2s to connect to AppleTalk printers. AppleTalk network products like TOPS are reported to work with the card, too. AppleShare PC 1.0, 1.1 and 1.2 is reported to be incompatible with the DayStar card. For more details, search the Tech Info Library under "DayStar".

### 3COM Solution (Ethernet to Server to Serial Connection)

-----

Another solution is to use the EtherLink MC PS/2 card from 3COM. This is a more complex solution, because it comprises several components. The card connects MicroChannel PS/2s to Ethernet. The PS/2s can print to a 3COM 3S200 print server serially-connected to a LaserWriter II. Macintoshes may connect through an Ethernet interface card too or directly through the LocalTalk port of the 3S200 server. 3COM servers do not support AppleTalk connections to LaserWriters and can only connect serially. The 3S200 server supports file, mail services, and print services.



Routers (Ethernet to router to LocalTalk connection)

-----  
A Kinetics FastPath, Gator Box, or an Apple Internet Router can route EtherTalk data from Ethernet connected AppleTalk systems like Macintoshes, PCs, MicroChannel PS/2s, and DEC VMS systems. The computer systems must have an Ethernet, Tokenring, or LocalTalk interface installed with an AppleTalk driver and appropriate network software. Some PC software packages that run with this configuration are TOPs and AppleShare PC 2.0\*. By using the routers, the EtherTalk systems can print to LocalTalk LaserWriters directly through the routers or through print servers from companies like 3COM, Pacer, Alisa, or Apple.

\* A MicroChannel PS/2 EtherNet or TokenRing Card using AppleShare PC 2.0 must use an AppleTalk Phase 2 router. The Apple Internet Router is a phase 2 router.

PS/2 Notes

-----  
There are six PS/2 models 25, 30, 50, 60, 70, and 80. Each model can also be bought in a different configuration. The low-end models 25 and 30 retain a PC and/or AT bus architecture that works with the Apple LocalTalk PC card.

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Tech Info Library Article Number:4432



# Tech Info Library

## AppleWorks 2.0: Problems Printing to Networked ImageWriter

Revised: 9/22/89  
Security: Everyone

AppleWorks 2.0: Problems Printing to Networked ImageWriter

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This article last reviewed: 29 August 1989

TOPIC-----

I have an AppleShare network, including Apple IIe, Apple IIGS, and Macintosh systems, with AppleWorks 2.0 running from the server. I cannot print to the LocalTalk ImageWriter II using AppleWorks, but can print to it from a Macintosh.

DISCUSSION-----

The difficulty in printing concerns the version of AppleWorks being run from the server. The ability to print from Applesoft indicates that the hardware is properly configured. AppleWorks 2.0 is not licensed for, nor designed for, running from an AppleShare server. For a version of AppleWorks licensed and designed for running from a server, use AppleWorks version 2.1N. Be sure, in AppleShare Admin under the Apple II menu, to set the user's account to the desired printer. The alternative would be to run AppleWorks 2.0 from a local disk.

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Tech Info Library Article Number:4433



# Tech Info Library

## AppleWorks: Problems Printing to LocalTalk ImageWriter

Revised: 9/22/89  
Security: Everyone

AppleWorks: Problems Printing to LocalTalk ImageWriter

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This article last reviewed: 29 August 1989

TOPIC-----

AppleShare was recently installed at a client school. I am having problems printing from AppleWorks on the Apple IIe's to a LocalTalk Imagewriter. Here is some background:

- There are no problems accessing the file server.
- The LocalTalk ImageWriter was set as the default printer for Apple II users.
- The AppleShare Print Spooler is NOT on the file server.
- LocalTalk Cards were placed in Slot 7 of the IIe's.
- I added a printer in AppleWorks configured to print to Slot 7.
- If I run CHOOSER.II the printer shows up. If I reselect the printer I still have the same problems.

When I print from AppleWorks I get NOTHING. If I go to BASIC I can type PR#7 and talk to the printer. How can I print to the LocalTalk'd ImageWriter from AppleWorks?

DISCUSSION-----

We cannot get the results you describe. With the Workstation card in slot 7, a networked ImageWriter, a slot 7 ImageWriter selected in AppleWorks, and AppleWorks 2.0 running, we can print across the network with no difficulties.

Our configurations have included all combinations of:

- AppleWorks version 2.0, with an ImageWriter assigned to slot 7

- ProDOS 8 versions 1.4 and 1.6
- Apple IIe, enhanced, with the Workstation card in slot 7
- ImageWriter II with AppleTalk option
- Chooser II version 1.2
- AppleShare II Workstation versions 1.0 and 1.1

In all cases the document printed without need for special actions.

Our boot disk contained

- ProDOS
- ATINIT
- Selector.System
- Sys.Apps (a sub-directory containing:)
  - Basic.System
  - Logoff
  - Logon
- Chooser (a sub-directory containing:)
  - Chooser.II
  - Chooser5.OVR
  - IWEM
  - Chooser4.OVR
  - Chooser3.OVR
  - MTXABS.0
  - Chooser2.OVR
  - Chooser1.OVR
  - Chooser.0
- Namer (a sub-directory containing:)
  - Namer.II
  - Namer.0
  - MTXABS.0
- Access ( a sub-directory containing:)
  - Access
  - Priv.0
  - MTXABS.0
  - Priv1.OVR
  - Priv2.OVR
  - Priv3.OVR
  - Priv4.OVR
- AWORKS (a sub-directory containing:)
  - Aplworks.System
  - SEG.00
  - WWSS
  - SEG.M0
  - SEG.EL
  - SEG.XM
  - SEG.RM
  - SEG.M1

- SEG.PR

Our procedure followed these steps:

- 1) Boot with the above configured disk.
- 2) The selector window will be displayed; select and run Chooser II.
- 3) Press the Down cursor key to highlight "AppleTalk ImageWriter II".
- 4) Press Return to select. The name of the networked ImageWriter should appear in the to right scroll box. If the name does not appear:
  - a) Press the Tab key three times. You are now in the scroll box allowing you to chose between LocalTalk and Serial. Highlight LocalTalk and press Return.
  - b) Press Tab twice. You are now in the top left window. Highlight 'AppleTalk ImageWriter II'. Press Return. The name of the networked ImageWriter should now appear.
- 5) Press Tab twice. Use the Down cursor key to highlight the name of the networked ImageWriter. Press Return to select.
- 6) Press Open-Apple-Q to exit Chooser II.
- 7) Run AppleWorks.
- 8) Select Other Activities, Printer Information.
- 9) Verify a printer is designated as an ImageWriter in Slot 7. If no ImageWriter is set for slot 7, then do these three steps:
  - a) Delete a printer if all three printers are currently defined
  - b) Add a printer. Use ImageWriter. Set for Slot 7.
  - c) Give a name that indicates it is a network printer,i.e., "Network IW II".
- 10) Return to your document. Press Open-Apple-P to access the printer routines.
- 11) Answer the "Print from?" question. (In our test, we answered from beginning)
- 12) Answer "Where...to print the file?" question with the network printer.
- 13) Answer "How many copies?" question.
- 14) On pressing Return after answering the last question, AppleWorks will send the document over the network to the ImageWriter. There was a slight delay between the screen refresh and the printing.

If you have any further questions about this sequence of events please Link TECH.COMM with details of what is taking place.

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Tech Info Library Article Number:4434



# Tech Info Library

## Super Serial Card: Using with Machine Language (12/96)

Revised: 12/16/96  
Security: Everyone

Super Serial Card: Using with Machine Language (12/96)

=====

Article Created: 22 September 89  
Article Reviewed/Updated: 16 December 1996

TOPIC -----

This article describes assembly language addressing methods for the 6502 and 6551 microprocessors through the Super Serial Card.

DISCUSSION -----

The 6502 does a false read to the current page. This is inherent in the 6502 design. A false read occurs during a read to memory. The 6502 will hold the target address + 1 line open after it accesses the target address. This does not alter the contents of the address but can affect a memory-mapped I/O device that is toggled by the address line.

The false read does not affect the Super Serial Card as none of the card's functions are set when the address line is held open by the false read. However, for good programming to an I/O device, where false reads could toggle a function, you should use the indirect indexed-addressing mode with the address for your indirect accesses in the zero page.

The following example is available in the Tech Info Library and uses the absolute, indirect-addressing method; it has been modified here as an example of indirect, indexed-addressing. The program uses zero-page addresses \$FA and \$FB, because these are generally unused by both DOS and BASIC. See pages 74 and 75 of the "Apple II Reference Manual" for a map of the zero-page locations.

Super Serial Card: Accessing It Through Machine Language

-----

Although Apple's Super Serial Card can be used from Applesoft BASIC, it is often desirable to use machine language to increase the speed with which characters are sent and received. The assembler program below illustrates a method of communicating with another computer through the Super Serial Card. You may use this routine as a starting point for your own program.

On page 291 of the "Apple IIe Reference Manual" and on pages 261 to 265 of the Apple IIc Reference Manual, there are lists of the registers and entry points used by routines resident in the Super Serial Card. The equates in the program below use these locations, as well as input/output hooks found in the Apple II family of computers.

The initialization routine (INIT) stores the address of the Super Serial Card's initialization routine in CSW (the Apple II monitor character output hook). This activates the card for output by jumping to COUT. Following this, DOS or ProDOS hooks are reinstalled.

The OUTput routine checks the 6551 status port bit 4. If this is equal to zero, the previous character has not yet been sent, so we must check the status byte again until that register is clear. When the value in bit 4 becomes one, the 6551 is ready to send another character. To do this, store the data in the transmit register (TDREG) of the chip.

Bit 3 of the status port is checked by the INput routine. If this bit is zero, the program either loops continuously or returns to the calling program, depending on the state of the return flag found in location \$FF. If bit 3 is one, a character is waiting at the input port, and the character is then read from the read register (RDREG) of the 6551.

The DEMO portion of this program calls the INIT routine, and sends each letter of the alphabet to the connected device. After each character is sent, the program waits to see if a response has been received from the external device. If a character is waiting, the program ends.

#### Assembly Language Source Code Demo

-----  
Here is a demo of accessing the Super Serial Card with Assembly Language.

```

                ORG      $2000
COUT            EQU      $FDED      ; CHARACTER OUT IN MONITOR
CSWL           EQU      $36        ; OUTPUT HOOK
CSWH           EQU      $37
WAIT           EQU      $FCA8      ; MONITOR ROUTINE TO WAIT
BASELO         EQU      $FA        ; ZERO PAGE INDEX ADDRESS FOR INDIRECT ADDRESSING
BASEHI         EQU      $FB        ; THE TARGET ADDRESS IS STORED IN FA AND FB
IO             EQU      $C0        ; IO PAGE HIBYTE ADDRESS THIS GOES IN BASEHI
;
;   SSC EQUATES
;

DIPSW1         EQU      $81        ; +N0   DIPSWITCH BLOCK 1
DIPSW2         EQU      $82        ; +N0   DIPSWITCH BLOCK 2
TDREG          EQU      $88        ; +N0   6551 DATA REGISTER
RDREG          EQU      $88        ; +N0   6551 DATA REGISTER
STATUS         EQU      $89        ; +N0   6551 STATUS REGISTER
RESET          EQU      $89        ; +N0   6551 SOFTWARE RESET
```



```
COMMAND    EQU    $8A      ; +N0  6551 COMMAND REG
CONTROL    EQU    $8B      ; +N0  6551 CONTROL REG
;
START      JMP     DEMO      ; SKIP AROUND ALL THE SUBROUTINES
;
; USE THE SSC FIRMWARE TO INITIALIZE THE 6551.
;
INIT       LDA     CSWL      ; STORE THE CURRENT CSW
           PHA      ; SO THAT WE DO NOT DISCONNECT
           LDA     CSWH      ; DOS OR ProDOS
           PHA
           LDA     #$00      ; STORE $Cs00 IN CSW
           STA     CSWL
           STX     CSWH      ; THIS ALREADY CONTAINS $Cs
           LDA     #$00
           JSR     COUT      ; JUMP TO COUT TO INIT THE CARD
           PLA
           STA     CSWH      ; RESTORE THE DOS OR ProDOS
           PLA             ; HOOKS AND THEN RETURN
           STA     CSWL
           RTS
;
; OUTPUT A CHARACTER TO 6551
;
OUT        PHA      ; STORE DATA ON STACK
           LDA     #STATUS   ; GET THE STATUS ADDRESS
           STA     BASELO    ; SET UP THE INDIRECT INDEXED ACCESS
OLP        LDA     (BASELO),Y ; CHECK BIT 4 OF STATUS BYTE
           AND     #$10      ; TO SEE IF IT'S OK TO SEND
           BEQ     OLP       ; CHARACTER WAITING TO GO OUT
           LDA     #TDREG    ; ADDRESS FOR TRANSMIT
           STA     BASELO    ; SET UP THE INDIRECT INDEXED ACCESS
           PLA             ; GET DATA BACK FROM STACK
           STA     (BASELO),Y ; AND OUTPUT THE CHARACTER
           RTS
;
; INPUT A CHARACTER FROM 6551
;
IN         LDA     #STATUS   ; GET THE STATUS ADDRESS
           STA     BASELO    ; SET UP THE INDIRECT INDEXED ACCESS
           LDA     (BASELO),Y ; CHECK STATUS
           AND     #$08      ; BIT 3 OF STATUS
           BEQ     INTST     ; NO CHAR WAITING TO BE RECEIVED
           LDA     #RDREG    ; GET THE READ ADDRESS
           STA     BASELO    ; SET UP THE INDIRECT INDEXED ACCESS
           LDA     (BASELO),Y ; GET THE INPUT FROM 6551
           RTS
INTST      LDA     $FF       ; CHECK RETURN FLAG
           BNE     IN        ; IF NOT 0 THEN WAIT FOR INPUT
;
           RTS             ; IF ZERO, DON'T WAIT
;
; BEGIN THE DEMO PROGRAM
```

```
;  
DEMO      LDY      #$10      ; Y CONTAINS $s0 - DEMO USES SLOT 1  
          LDX      #$C1      ; LOAD X WITH $Cs  
          JSR      INIT      ; INIT THE CARD  
          LDA      #IO       ; HIBYTE ADDRESS C0 FOR IO ACCESS  
          STA      BASEHI    ; STORE IT IN ZERO PAGE AS HIBYTE OF ADDRESS  
          LDA      #$FF      ; SET RETURN FLAG FOR INPUT  
          STA      $FF       ; FF MEANS WAIT FOR CHAR  
          JSR      IN        ; INPUT A CHARACTER - SEE ABOVE  
OLOOP     LDX      #$41      ; OUTPUT THE ASCII CODES  
OLP1      TXA          ; FROM A-Z TO THE SSC. IT WILL STOP  
          JSR      OUT       ; WHEN THE SSC RECEIVES A CHAR.  
          LDA      #$80      ; DELAY BETWEEN CHARACTERS  
          JSR      WAIT      ; TO ALLOW TIME FOR INPUT.  
          LDA      #$00  
          STA      $FF       ; RETURN IF NO CHARS WAITING  
          JSR      IN        ; CHECK FOR A CHARACTER  
          BNE      ALLDONE    ; THEY SENT SOMETHING - WE END  
          INX  
          CPX      #$5B      ; THE LETTER 'Z'  
          BNE      OLP1  
          LDA      #$0D  
          JSR      OUT       ; SEND A CARRIAGE RETURN  
          JMP      OLOOP     ; BEGIN THE ALPHABET AGAIN  
ALLDONE   RTS          ; END ROUTINE
```

Article Change History:

16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:4435



# Tech Info Library

## A/UX: AppleShare Server Support (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: AppleShare Server Support (6/93)

=====  
Article Created: 29 August 1989  
Article Reviewed/Updated: 6 June 1993

TOPIC -----

Is it possible to run the AppleShare File Server under A/UX, so that the Macintosh II running it can act as a server and as a UNIX user workstation at the same time?

DISCUSSION -----

The answer depends on what software versions you're running.

A/UX 1.1 did not support the AppleShare 2.0 Server software. However, you can turn an A/UX system into an "AppleShare" server through the use of AUFS from Columbia University or uShare from Information Presentation Technologies. Either of these products runs on under A/UX, turning it into a server supporting AppleShare clients. Also, they do not require a dedicated system.

If you're have the Apple Work Server (AWS) 95, running A/UX 3.0.1 you can. You can also run FileShare under System 7.x.

Article Change History:  
6 June 1993 - Add information about AWS 95 and A/UX 3.0.1.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4436



# Tech Info Library

## System 6.0.3: Incompatible with Macintosh 512Ke and HD20

Revised: 9/22/89  
Security: Everyone

System 6.0.3: Incompatible with Macintosh 512Ke and HD20

=====

This article last reviewed: 14 September 1989

Macintosh 512Ke users (some also running HD-20s have reported the following scenario:

After updating the System on the startup hard disk to System 6.0.3, the system would not start. Attempts to start up from a startup disk with System 6.0.3 gave the same symptoms. That is, the Happy Macintosh face appears. Then, the dialog box appears and stays blank. At that point, the system hangs. Restarting from a System 6.0.1 floppy works.

There are a couple of thing that could cause this lack of compatibility. One is the lack of support for the HD-20, which was dropped with System 6.0. Another is that System 6.0.3 requires XPRAM (256 bytes versus 20 bytes) in the Macintosh. A Macintosh Plus does not have XPRAM, and System 6.0.3 relies on it. This is probably the reason the Macintosh 512Ke hangs when starting up. It is looking for information from XPRAM and cannot find it. Starting up from an HD-20 may be compounding the problem.

According to the System Software manual that came with System 6.0, the latest version of system software recommended for a Macintosh 512Ke is System 4.1, Finder 5.5. It doesn't seem to matter whether an HD-20 is in use or not. Macintosh 512Ke users would do well to re-install Finder 5.5 and System 4.1 on their machines.

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Tech Info Library Article Number:4437



# Tech Info Library

## Motorola CDX268: Terminal Emulation for Macintosh or Apple II

Revised: 9/22/89  
Security: Everyone

Motorola CDX268: Terminal Emulation for Macintosh or Apple II

=====

This article last reviewed: 26 May 1989

Emulating a Motorola CDX268 terminal on a Macintosh or Apple II is easy. The CDX286 is what was once, affectionately, called a "glass TTY". It's a very basic terminal that you can configure for baud rate, data and stop bits, and parity. The port can be configured for either RS-232 or RS-422. It requires no strange or out-of-the-ordinary protocols. All of this means that almost any terminal emulation program for the Macintosh or Apple II can be set up to act like a CDX268.

To do the emulation, set it up CDX286 in TTy mode and connect the appropriate cable to the built-in serial port. The cable, like your configuration, depends on what you're connecting to.

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Tech Info Library Article Number:4439



# Tech Info Library

## Macintosh II: Color Picker and Exact Color Match Issue

Revised: 7/8/92  
Security: Everyone

Macintosh II: Color Picker and Exact Color Match Issue

=====

Article Created: 26 May 1989  
Article Last Reviewed: 7 July 1992  
Article Last Updated:

TOPIC -----

If you have a 4-bit color card in your Macintosh, you may have noticed that the Color Picker displays the entire range of over 16 million colors in the top-half of the color box to the left of the color wheel (inside the color window). However, when you choose color, the actual color is some ugly approximation. This anomaly rests with the Color Picker and the device's Color Look-Up Table (CLUT).

DISCUSSION -----

The Color Picker Package is a tool that presents a standard interface for color selection. With this dialog, any application can ask the user to choose a color. The Color Picker displays all 16.8 million colors available through Color QuickDraw. They are the colors that are available to any color device, regardless of the number of bits that device can display. A 4-bit color card can display only 16 of the 16.8 million different colors at one time. An 8-bit color card can display 256 of the 16.8 million colors at one time. The number of bits that the card has does not limit the number of colors that are available to be shown, but rather it limits the number of colors that the device can show at one time.

The Color Picker returns the RGB color value of the chosen color to the application to do with it what it wants. The application has the choice of going to the device's Color Look-Up Table (CLUT) and approximating the color by picking the color closest to the chosen color, or replacing an entry in the device's CLUT to show the exact color picked. The Color Picker, itself, displays the exact color by borrowing a color table entry from the CLUT and changing it according to the color selected. When it's done, it puts everything back to the way it was. Thus, when you quit the

Color Picker, the CLUT is the same as when Color Picker was called.

The choice of showing the exact color or an approximation is entirely up to the application. The Color Picker is not aware of the colors available in the CLUT, nor does it care. There may be more than one device that the application wants to display color on. In such a case, the CLUT for each of these devices will probably be different. This gives the application the ability to save the RGB color values returned from Color Picker and display a more or less accurate approximation of that color, depending upon the device used.

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Tech Info Library Article Number:4440



# Tech Info Library

## AppleShare Workstation: How to Install It on the Mac SE/30

Revised: 9/22/89  
Security: Everyone

AppleShare Workstation: How to Install It on the Mac SE/30

=====

This article last reviewed: 24 August 1989

Users have had problems installing AppleShare workstation software (release 2.0 is the most common version) on a Macintosh SE/30. For example, after initializing the hard disk on the Macintosh SE/30 and installing System software 6.0.3, they experienced problems installing AppleShare Workstation software. To wit, after installing AppleShare Workstation software and selecting Shut Down, the system hangs with a frozen screen.

When they reinstalled the System software using Minimum Macintosh SE/30, the AppleShare Workstation software worked. Shut Down worked too, although it seemed to take slightly longer. This type of thing can occur if the AppleShare Workstation software was installed from a disk using System software 6.0.2.

To have everything properly installed, do the following:

- 1) Use Macintosh System Tools disk, version 6.0.3, to install the System software.
- 2) Use the Macintosh Utilities Disk 1 disk, version 6.0.3, to install the AppleShare Workstation software.

Both disks are a part of the System software 6.0.3 four-disk set sent with the Macintosh SE/30. Each disk has an Installer and Installer scripts (full system scripts on the Tools disk and minimum system and workstation on the Utilities disk).

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Tech Info Library Article Number:4441





# Tech Info Library

## E-mail Services for Novell's Netware

Revised: 9/22/89  
Security: Everyone

E-mail Services for Novell's Netware

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This article last reviewed: 9 June 1989

E-mail programs that support Novell's Netware Message Handling System (MHS) (designed by Action Technology) should be compatible and able to send mail to other E-mail programs on other systems supporting MHS. Some of those E-mail programs are:

- Coordinator (for MS-DOS clones) or MacAccess (for Macintosh) from Action Technology
- Di Vinci (for PC clones)
- Dyna Mail (for Macintosh)
- EasyGate (offers Fax services to E-mail systems supporting MHS) from Alcom Inc.

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Tech Info Library Article Number:4442



# Tech Info Library

## LocalTalk PC Card: Keyboard Problem in PS/2

Revised: 9/22/89  
Security: Everyone

LocalTalk PC Card: Keyboard Problem in PS/2

=====

This article last reviewed: 28 August 1989

TOPIC -----

While attached to the AppleTalk network, the cursor arrows, instead of moving the cursor, displays the corresponding numeric keypad number (8, 4, 6, or 2). This is intermittent. That is, when they hold down the right arrow key, the cursor moves along the screen and then, suddenly, a "6" appears. Also, some typed characters appear in caps, as if the Shift key was pressed.

Yet, when the LocalTalk PC Card is removed, WordPerfect works fine.

Setup: PS/2 30, running InBox 2.2 and AppleShare 2.0., with a LocalTalk PC Card in it running WordPerfect 4.2 (non-network version).

DISCUSSION -----

Although the Token Ring card is currently not connected, having it in the machine can cause hardware conflicts between it and the LocalTalk PC Card. Check to make sure that the two cards are not using the same IRQ (interrupt) line. Also make sure that the two cards are not using the same DMA channel. A quick way to check if the two cards are in conflict is to remove the Token Ring card. Does the problem goes away?

Another possibility is that the LocalTalk PC Card has gone bad. If you have access to another LocalTalk PC Card, try that card to see if you get the same results.

While you are checking for DMA and IRQ conflicts between the two network cards, also should check the rest of the hardware in the machine for the possibility of such conflicts. For instance, multiple serial ports could cause conflicts with the IRQ line, which is the default on the LocalTalk PC Card.

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Tech Info Library Article Number:4443



# Tech Info Library

## CCITT Group 4: Macintosh Compatibility

Revised: 4/3/90  
Security: Everyone

CCITT Group 4: Macintosh Compatibility

=====

This article last reviewed: 28 August 1989

TOPIC -----

A am in the process of creating a company-wide database on a 3070 mainframe to store images. I have decided on CCITT Group 4 as the format for these images. To use Macintoshes with this system, I need Group 4 compatibility. Does Apple have such a thing, or is this support available from a third party?

DISCUSSION -----

CCITT Group 4 classification is not a format, but rather a classification of facsimile machines for document transmission over the public networks. Groups 1, 2, and 3 are for use over the public telephone network. Group 4 is for use over the public data networks, which also may include the public telephone network. In other words, Group 4 does everything the other groups do, plus more. It specifically incorporates means for reducing the redundant information in the document prior to transmission and assuring essentially error-free reception of the document.

It is important to understand that CCITT Group 4 is not a format. It is many pages of specifications that explain exactly how an apparatus of this grouping works. It specifies the binary description of the document.

As of August, 1989, Tech Comm did not know of any application or utility for the Macintosh that is CCITT Group 4-compatible.

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Tech Info Library Article Number:4444



# Tech Info Library

## AppleShare PC 1.2: MS-DOS 4.0 Incompatibility

Revised: 8/28/90  
Security: Everyone

AppleShare PC 1.2: MS-DOS 4.0 Incompatibility

=====

This article last reviewed: 28 August 1989

TOPIC -----

My AppleShare PC 1.2 does not run with MS-DOS version 4.0. Is there something I can do?

DISCUSSION -----

The best thing to do is upgrade; AppleShare PC 2.0 is fully compatible with MS-DOS 4.0. AppleShare PC through 1.2 is not compatible with MS-DOS 4.0.

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Tech Info Library Article Number:4445



# Tech Info Library

## Canvas 2.0: LaserWriter Printing Problem

Revised: 9/22/89  
Security: Everyone

Canvas 2.0: LaserWriter Printing Problem

=====

This article last reviewed: 28 August 1989

TOPIC -----

I have a problem when overlaying two objects in Canvas 2.0. According to Deneba Software, this is a known problem with the LaserWriter ROMs that has to do with an exclusive-or command. Has this known problem been fixed with the LaserWriter Rev 47 ROMs?

DISCUSSION -----

No, the problem remains. Tech Comm recreated the problem with the 2.0 ROMs (Rev 38 of PostScript) and with the 3.0 ROMs (Rev 47 of PostScript) on a LaserWriter Plus and on a LaserWriter IINT.

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Tech Info Library Article Number:4446



# Tech Info Library

## LaserWriter: How To Send Asynchronous PostScript File

Revised: 9/22/89  
Security: Everyone

LaserWriter: How To Send Asynchronous PostScript File

=====

Article Created: 28 August 1989  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

### TOPIC -----

How can I send a PostScript file, produced with the Command-K combination (under System 6.x) or by clicking the "Postscript File" destination in the Print dialog (under System 7), to a LaserWriter using asynchronous file transfer? I've been unsuccessful using "Send File..." from MacTerminal and others. I can send the file successfully using SendPS over AppleTalk, but I get a PostScript error when I send the same file using a 9600-baud asynchronous connection. It appears that XON/XOFF doesn't properly control the flow. What am I missing?

### DISCUSSION -----

The use of Command-K (under System 6.x), or using the "Postscript File" destination option in the Print dialog (under System 7) to create a PostScript file actually adds the information from Laser Prep to the beginning of the file being generated. This eliminates the need to send the Laser Prep header separately. In fact, there is a chance that the problem is being caused because the header is being included.

There is a segment of PostScript included in Laser Prep header that checks to see if certain routines are already loaded in the LaserWriter RAM. If they are, everything from that point in the header to the next Control-D character is deleted from the print job. Unfortunately, when the header is added to the PostScript file, no Control-D is appended at the end of the header information. Therefore, the next Control-D reached is the end of the file, which effectively flushes the job by deleting everything but the header.

Solution

-----

- 1) Using a blank document, generate a PostScript file, which contains the header, by (under System 6.x) holding down Command-K when you select the OK button in the Print dialog box, or by (under System 7) clicking the "Postscript File" radio button in the Print dialog. This generates the header only. Send this file to the LaserWriter. You must do this once per power-on cycle of the LaserWriter, unless you need to switch headers.
  
- 2) When you are creating files from documents that you want printed, hold down Command-F (under System 6.x) when you select the OK button in the print dialog box. This generates a PostScript file without the Laser Prep header. Because you already have sent the header, the necessary dictionary is already loaded, and your files should print properly. Unfortunately, to generate a PostScript file without the Laser Prep header in System 7, you need a shareware program like Trimmer, which gives the option of stripping the header from an existing PostScript file.

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Tech Info Library Article Number:4447





# Tech Info Library

## MPW 3.0: Conflicts Caused by INITs Misusing PBHSetVol

Revised: 9/22/89  
Security: Everyone

MPW 3.0: Conflicts Caused by INITs Misusing PBHSetVol

=====

This article last reviewed: 28 August 1989

TOPIC -----

Apple Tech Comm has found a problem in a number of third-party INITs that cause the MPW Installer to fail. This problem is the result of these products doing a HSetVol by calling PBHSetVol. Macintosh Technical Note 140, "Why PBHSetVol is Dangerous," warns against using PBHSetVol. This problem has been reported most frequently with TOPS from TOPS, a Sun Microsystems Company.

DISCUSSION -----

When you try to run the MPW Installer while running a third-party INIT, you get an error saying the "DoIt" script cannot be found. The message appears when an INIT uses PBHGetVol to get and save the working directory and then tries to restore the working directory using PBHSetVol. The result is that such an INIT sets the working directory to the root of the volume containing the installation volume. Note: Any mention of installation in this article refers to the procedure outlined in the "Macintosh Programmer's Workshop Development Environment Reference, Volume 1." Here are three workarounds for this problem.

First, you can install MPW by hand and forego the MPW Installer. However, this does not stop problems caused by INITs that use PBHSetVol. Any INIT that uses PBHSetVol interferes with the setting of the working directory any time you insert a disk while running MPW. After inserting a disk, the problem manifests itself when:

- MPW tries to access a script in the current directory.
- A tool tries to open a file in the current directory.

In both of these cases, a "directory :" command (as given in step 2 below) restores your environment.

Second, you can install MPW without the INIT running. In the case of TOPS,

restart while holding down the Command key. During the restart process, TOPS will bring up a dialog asking if you want to install TOPS. Answer no, and proceed to install MPW 3.0.

Third, you can modify the installation script by following the procedure described below:

- 1) Open up the file "Startup" in the Installation Folder using any editor that can read text files.
- 2) Search for the line: "DoIt copyStuff >= errorFile" and insert the line "directory :" immediately before it. This forces the MPW Shell to reset the working directory to Installation Folder before running the "DoIt" script.
- 3) Save the "Startup" file and then do the installation procedure outlined in the "Macintosh Programmer's Workshop Development Environment Reference, Volume 1."

References: See "Macintosh Programmer's Workshop 3.0 Errata: MPW Installation Problems;" revision date: March 13, 1989

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Tech Info Library Article Number:4448



# Tech Info Library

## A/UX: Where To Find Current Third-Party Product Lists

Revised: 9/14/92  
Security: Everyone

A/UX: Where To Find Current Third-Party Product Lists

=====

Article Created: 22 September 1989

Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

TOPIC -----

Where do I get an up-to-date A/UX third-party software listing?

DISCUSSION -----

The A/UX third-party product listings in the Tech Info Library are old. For an up-to-date listing of the A/UX third-party products, follow this AppleLink hierarchical path, to folders maintained by Apple Developer Programs:

Developer Services  
Third Party Products/New Features  
A/UX

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Tech Info Library Article Number:4449



# Tech Info Library

## HyperCard: Information on ADSP XCMDs in MacTutor

Revised: 7/26/93  
Security: Everyone

HyperCard: Information on ADSP XCMDs in MacTutor

=====

Article Created: 30 August 1989  
Article Reviewed/Updated: 22 July 1993

TOPIC -----

I need to do HyperCard AppleTalk-type developing. My project requires data streaming and zones, but the current HyperAppleTalk Toolkit does not support ADSP (Apple Data Stream Protocol). Will the toolkit be updated to provide this support? If not, where can I get more information on writing my own XCMDs and XFCNs?

DISCUSSION -----

Apple is not planning any updates to the package. However, "Inside Macintosh" contains all the information you need to create the kind of XCMDs you require. Further, the author of the toolkit XCMDs wrote a series of articles in "MacTutor" (publication now known as MachTech) magazine describing AppleTalk XCMDs including ADSP. The articles are an excellent source of information on how it all works. The series ran from January through May of 1989.

Article Change History:  
22 July 1993 - Company title changed from MacTutor to MacTech.

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Tech Info Library Article Number:4450



# Tech Info Library

## Macintosh Compatible Hand-Held Scanners and Bar Code Readers

Revised: 7/27/93  
Security: Everyone

Macintosh Compatible Hand-Held Scanners and Bar Code Readers

=====

Article Created: 30 August 1989  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

I need a light pen for the Macintosh (NuBus or ADB).

DISCUSSION -----

We have listed examples of four different types of "light pen input devices" or related devices.

### Fixed-Position Bar-Code Readers

-----

- UNi Bar Code Reader from TPS Electronics, connects via the keyboard or ADB port
- Datapen from Datalogic, Inc., connects via the keyboard

### Portable Bar-Code Readers

-----

- TimeWand from Videx, Inc. (a serial device requiring serial download through a communications program which is available from Videx.)
- XP-300 Portable Bar Code Reader from TPS Electronics, a portable, serial device.

### Hand-Held Scanners

-----

- LightningScan from Thunderware, Inc. A hand-held scanner capable of handling images up to 4 inches wide; interfaces to any Macintosh SCSI port.
- ScanMan for Macintosh from Logitech, Inc. A hand-held scanner capable of handling images up to 4.1 inches wide; interfaces to any Macintosh SCSI port.

Touch Screen

-----

Mac 'N Touch from MicroTouch Systems, Inc.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

26 July 1993 - Company title updated from Datalogic Electronics, Inc. to  
Datalogic, Inc.

19 January 1993 - Updated, vendor Information.

13 September 1991 - Reviewed, for accuracy.

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Tech Info Library Article Number:4451



# Tech Info Library

## Macintosh II, IIfx & IIfx: Auto-Power-On Device

Revised: 7/24/92  
Security: Everyone

Macintosh II, IIfx & IIfx: Auto-Power-On Device

=====  
Article Created: 30 August 1989  
Article Last Reviewed: 21 July 1992  
Article Last Updated: 24 July 1992

TOPIC -----

I need a device that can automatically start a Macintosh II (or Macintosh IIfx and IIfx) following a power outage and that can start the computer at a specified time.

DISCUSSION -----

The only solution we know of is a NuBus card called MacClock II from MacSema. MacClock II contains a real-time clock with battery. It also restarts the computer when power is applied to the electrical circuit (as would be the case when power comes back on after an outage). MacClock II also starts a Macintosh system at a specified time and can execute macros via programs like Tempo II and QuicKeys.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4452



# Tech Info Library

## VME-to-NuBus Interface Cards

Revised: 7/21/92  
Security: Everyone

VME-to-NuBus Interface Cards

=====  
Article Created: 6 September 1989  
Article Last Reviewed: 21 July 1992  
Article Last Updated: 13 February 1992

TOPIC -----

This article lists NuBus interface cards for VMEBus.

DISCUSSION -----

| Product<br>-----  | Vendor<br>-----    | Description<br>-----              |
|-------------------|--------------------|-----------------------------------|
| Buslink           | Flavors Technology | VMEbus, Qbus,<br>Unibus interface |
| Lexilink          | Lexis              | VMEbus board chassis<br>interface |
| MacVee Micron     | Sparrow            | VMEbus board chassis<br>interface |
| NuBus VME Adapter | Bit 3 Computer     | VMEbus computer<br>interface      |

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4455





# Tech Info Library

## Apple IIGS Super-High-Res Graphics: Access from BASIC

Revised: 10/29/90  
Security: Everyone

Apple IIGS Super-High-Res Graphics: Access from BASIC

=====

This article last reviewed: 25 October 1990

TOPIC -----

Are there any Applesoft BASIC commands to invoke super-high-resolution graphics on an Apple IIGS?

DISCUSSION -----

The super-high-resolution graphics of the Apple IIGS are not directly available from Applesoft. Applesoft BASIC supports only the original Apple II low-resolution graphics (40x48 or 40x40 with 4 lines of text) and high-resolution graphics (280x192 or 280x160 with 4 lines of text).

One solution is "Iconix IIGS" from So What Software. This is a set of machine language subroutines accessible from Applesoft. They provide an interface to the super-high-resolution graphics mode of the Apple IIGS.

Other BASIC solutions for super-high-resolution graphics mode include Complete BASIC Compiler from Complete Technologies, AC/BASIC from Absoft Corporation, and Micol Advanced BASIC from Micol Systems.

The Complete BASIC Compiler is similar to Apple's GSBASIC (available from APDA) with the addition of graphics support. AC/BASIC is compatible with Microsoft's QuickBASIC language and provides graphics support similar to what is found in QuickBASIC for the Macintosh. Micol Advanced BASIC is modeled after Applesoft. Anyone familiar with Applesoft should be comfortable with Advanced BASIC.

GSBASIC from APDA provides calls to QuickDraw II. However, GSBASIC does not directly support graphics commands within the BASIC language syntax.

For more details, search the Tech Info Library under "So What Software", "Complete Technologies", "Absoft Corp", and "Micol Systems".

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Tech Info Library Article Number:4456



# Tech Info Library

## System 6.0.X: Not Compatible with Macintosh 512Ke

Revised: 9/22/89  
Security: Everyone

System 6.0.X: Not Compatible with Macintosh 512Ke

=====

This article last reviewed: 5 September 1989

TOPIC -----

Has Apple determined if a Macintosh 512Ke can be used with System Software 6.0.3? I have a Macintosh 512Ke with a third-party 2MB memory upgrade. I cannot start the system with either System 6.0.2 or System 6.0.3.

DISCUSSION -----

Officially, System 6.0 and later were not designed, tested, or recommended for Macintosh systems prior to the Macintosh Plus. The total memory installed in the system is irrelevant. The fact that the Macintosh Plus and later Macintosh computers have 256 bytes of PRAM is a major part of the compatibility problem. This is Apple's official position.

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Tech Info Library Article Number:4457



# Tech Info Library

## Apple Portrait Display: Macintosh SE Card

Revised: 10/22/90  
Security: Everyone

Apple Portrait Display: Macintosh SE Card

=====

This article last reviewed: 5 September 1989

TOPIC -----

Does anyone make a card to connect the Apple Portrait Display to a Macintosh SE?

DISCUSSION -----

RasterOps makes a card called the Clearview APD for the Macintosh SE that drives an Apple Portrait Display. The board is also an accelerator running a 68000 at 16 MHz. Includes a socket for a 68881 math coprocessor. ("APD" stands for "Apple Portrait Display.")

For more information, search on "RasterOps" in the Tech Info library.

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Tech Info Library Article Number:4458



# Tech Info Library

## Sony GDM-1601 and 1602 Monitors: Incompatible With Macintosh

Revised: 9/22/89  
Security: Everyone

Sony GDM-1601 and 1602 Monitors: Incompatible With Macintosh

=====

This article last reviewed: 5 September 1989

TOPIC -----

How can I connect large a Sony GDM-1601 monitor to my Macintosh? What about the Sony GDM-1602?

DISCUSSION -----

The Sony GDM-1601 and Sony GDM-1602 monitors are not compatible with the Macintosh 1-bit, 4-bit, or 8-bit video cards. These monitors may be compatible with video cards from companies like RasterOps, Radius, or SuperMac Technologies. Check with them for more information. (For more details, search the Tech Info Library under "RasterOps", "Radius", and "SuperMac".

The primary difference between the two displays is that the Sony GDM-1601 has a display resolution of 1280 x 1024, while the Sony GDM-1602 has a display resolution of 1024 x 768.

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Tech Info Library Article Number:4459



# Tech Info Library

## Apple FDHD: Formatting PS/2 720K Disks in 1.44 Drives

Revised: 9/22/89  
Security: Everyone

Apple FDHD: Formatting PS/2 720K Disks in 1.44 Drives

=====

This article last reviewed: 14 September 1989

TOPIC -----

- 1) PS/2 machines with 1.44MB drives will, by default, initialize double-sided dual-density disks to the 1.44MB format when the unsuspecting user simply types FORMAT A:.
- 2) IBM recommends against this and refers the user to the MS-DOS documentation for the proper arcane FORMAT options needed to properly format double-sided dual-density disks.
- 3) Most users don't know about any of this and use FORMAT A: just like they used to.
- 4) Entire departments are, therefore, evolving collections of double-sided dual-density disks that are readable on PS/2 machines and unreadable on Macintoshes (so much for data exchange).
- 5) Apple's choices are clear:
  - a) Embark on a massive PS/2 user education program.
  - b) Make a "best effort" try to read the disks (possibly with an informative alert).

RESPONSE -----

This is not a problem with AFE. Apple designed the drive to work properly, and it looks for the "bonus hole" to determine whether a disk is high-density. The drive design will not be changed.

Installations with PS/2 machines should make an effort to educate users in proper way to format disks instead of trying to find a patch and jeopardize their data integrity.

The command to format a DOS disk as 720K in a 1.44MB drive is:

FORMAT A:/N:9/T:80

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Tech Info Library Article Number:4461



# Tech Info Library

## Macintosh-to-VAX Connectivity and Tunneling

Revised: 9/22/89  
Security: Everyone

Macintosh-to-VAX Connectivity and "Tunneling"

=====

This article last reviewed: 5 September 1989

TOPIC -----

I am evaluating AlisaShare/Macintosh-to-VAX connectivity. This system will consist of a HyperCard front end that, based on selections made by the user (for example, clicking on a series of buttons), downloads a number of Microsoft Word files from the AlisaShare volume and then merges them together into a single document. The front end is running smoothly.

The goal of this project is to have all of the components of the proposal system (for example, the individual premerge Microsoft Word documents) sitting on a hub VAX at the corporate site. Smaller VAX systems at each remote field location are connected to the VAX using DECnet. The Macintoshes, on which the HyperCard front end will run, are then attached to these local VAX systems through a router (either a FastPath 4 or an Apple Internet Router). I know that the ability to "tunnel" AppleTalk protocols through DECnet is on the way, but I need a solution now.

- 1) Do I need to be concerned about tunneling AppleTalk through DECnet, or can the Macintoshes access the VAX at the corporate site directly through the Ethernet?
- 2) Will AppleTalk Phase 2 be necessary? If so, when can I anticipate Phase 2 for VMS?

DISCUSSION -----

If the remote sites are connected to the hub site via Ethernet bridges, you do not need to use DECnet "tunneling" as long as the bridges pass the AppleTalk packets. On the other hand, if the VAX systems function as half bridges with bridge processes on one communicating with other bridge processes using DECnet as the link between them, "tunneling" is required.

"Tunneling" is available for AppleTalk for VMS 2.0. You do not have to wait



## ..TIL04462-Macintosh-to-VAX\_Connectivity\_and\_Tunneling.pdf

for AppleTalk Phase 2. However, you should be aware of some possible "tunneling" problems with AppleTalk for VMS 2.0. These problems are documented in the Tech Info Library. Search on "tunneling".

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Tech Info Library Article Number:4462



# Tech Info Library

## Token Ring Network: Model 5 Capabilities for Macintosh

Revised: 9/22/89  
Security: Everyone

Token Ring Network: Model 5 Capabilities for Macintosh

=====

This article last reviewed: 5 September 1989

TOPIC -----

I have an IBM 3090 and a 3x74 controller with a Token Ring Interface Coupler (TIC). Attached to the TIC is a Compaq AT serving as a dedicated gateway. The gateway machine contains a Token Ring card and is running IBM's Token Ring support driver, Novell NetBIOS, and Attachmate Extra! 3270 Gateway software.

The gateway also contains a 3COM Ethernet card for attaching Ethernet workstations. I want to attach Macintoshes to this network, but I need to have the Model 5 extended attributes and DFT capabilities. Attachmate currently does not have a solution for this.

Is there a way to attach Macintoshes to this network and get these capabilities through their gateway (as with the Internet Router), or should I use something like a Netway 1000?

DISCUSSION -----

We are not sure which network you want to attach the Macintoshes to. If you connect the Macintoshes to the Token Ring network, MacDFT over the TokenTalk NB Card is a solution for you. It supports Model 5 capabilities with all the extended attributes you mentioned.

As of July 1989, we don't know of a terminal emulation solution for attaching your Macintoshes directly to the Ethernet network. The Netway 1000 supports only LocalTalk cabling.

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Tech Info Library Article Number:4463



# Tech Info Library

## MacTCP: Questions and Answers

Revised: 11/29/95  
Security: Everyone

MacTCP: Questions and Answers

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Article Created: 22 September 1989  
Article Reviewed/Updated: 29 November 1995

TOPIC -----

Here are a few questions on Apple's TCP/IP functionality. In all cases, I am assuming the use of Apple's MacTCP software.

- 1) Do the PD programs, like NCSA, support Macintosh-to-Macintosh FTP over LocalTalk and/or EtherTalk?
- 2) Are there any problems using MacTCP-based products with EtherTalk Phase 2 (due to the change from Ethernet to 802.3 framing)?
- 3) Can I run MacTCP sessions concurrently with AppleTalk sessions over the same physical media?
- 4) Can I run MacTCP sessions concurrently with AppleTalk sessions over different physical media (for example, AppleTalk on LocalTalk concurrent with TCP/IP over Ethernet on the same Macintosh)?

DISCUSSION -----

1) Question: Do the PD programs, like NCSA, support Macintosh-to-Macintosh FTP over LocalTalk and/or EtherTalk?

Answer: NCSA does NOT support Macintosh-to-Macintosh FTP over LocalTalk or Ethernet cabling.

2) Question: Are there any problems using MacTCP-based products with EtherTalk Phase 2 (due to the change from Ethernet to 802.3 framing)?

Answer: There should not be any problems regarding framing when using MacTCP-based products with EtherTalk Phase 2. MacTCP is co-resident with AppleTalk protocols so there can be concurrent TCP/IP and AppleTalk operations. EtherTalk

manages data flow so it can co-exist on Ethernet cable with TCP/IP protocols.

3) Question: Can I run MacTCP sessions concurrently with AppleTalk sessions over the same physical media?

Answer: Yes, for the same reason as (2). For example, MacTCP can be run while a print job goes to an Apple LaserWriter printer over LocalTalk cabling.

4) Question: Can I run MacTCP sessions concurrently with AppleTalk sessions over different physical media (for example, AppleTalk on LocalTalk concurrent with TCP/IP over Ethernet on the same Macintosh)?

Answer: AppleTalk and MacTCP can run over the same media, or one protocol can run over one medium while the other protocol runs over a different medium.

#### Article Change History:

29 Nov 1995 - Updated format, reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4464



# Tech Info Library

## SMB File Utility: Difficulties Over Ethernet

Revised: 10/4/89  
Security: Everyone

SMB File Utility: Difficulties Over Ethernet

=====

This article last reviewed: 5 September 1989

TOPIC -----

I am running PC LAN over Ethernet cabling and would like to access a PC LAN file server from an Ethernet connected Macintosh. Can I use the SMB File Utility over Ethernet? Or, is it strictly a Token Ring situation?

DISCUSSION -----

While the SMB protocols are not limited to running on Token Ring, they are usually thought of in conjunction with Token Ring. Because Apple SMB File Transfer Utility works so closely with the Texas Instrument Token Ring interface controller chip set on the TokenTalk NB Card, it would be difficult to port to an Ethernet environment without a major rewrite of the software.

For file transfer and sharing in a PC/Macintosh environment over Ethernet, try an AppleTalk Filing Protocol Server solution, like Novell's NetWare or even AppleShare.

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Tech Info Library Article Number:4465



# Tech Info Library

## TokenTalk 2.0: Token Ring and Source Routing Bridges

Revised: 9/22/89  
Security: Everyone

TokenTalk 2.0: Token Ring and Source Routing Bridges

=====

This article last reviewed: 6 September 1989

TOPIC -----

A client resides on a 4MB Token Ring called A. The server is on a 4MB Token Ring called B. Connecting the two rings is a 16MB fiber backbone, and at either end of each sub ring A and B is an IBM bridge. Can we pass our AppleTalk packets through these bridges?

DISCUSSION -----

The TokenTalk 2.0 software works in Token Ring environments where two or more Token Ring networks are bridged together with source routing bridges.

For more information on TokenTalk 2.0 software and source routing bridges, please refer to the "LAN Minds" and "MacDecathLAN" training materials.

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Tech Info Library Article Number:4466



# Tech Info Library

## A/UX: NFS Not a directory Message (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS "Not a directory" Message (9/94)

=====

Article Created: 22 September 1989  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

I have some problems with an nfs configuration. Here is what happens:

```
#mount
/dev/dsk/c5d0s0 on / type 5.2 (rw,noquota)

#ls -la /udd/halles
total 2
drwxrwxrwx  2 root    root      32 Jan 12 06:40 ./
drwxrwxrwx  6 root    root      96 Jan 12 06:40 ../
```

```
#mount ilog:/udd/halles /udd/halles
#mount
/dev/dsk/c5d0s0 on / type 5.2 (rw,noquota)
ilog:/udd/halles on /udd/halles type nfs (rw)
```

To prove the exchange of information, the command df:

```
#df
/                /dev/dsk/c5d0s0      7064 blocks    9443 i-nodes
/udd/halles ilog:/udd/halles  1514 blocks     0 i-nodes
```

It runs, and ls runs, too (the permissions are the remote permissions).

```
#ls -l /udd
drwxrwxrwx  6 root    root      96 Jan 12 06:40 ./
drwxr-xr-x 17 root    root     720 Jan 12 07:17 ../
drwxrwxrwx  2 root    root      32 Jan 12 06:40 chatelet/
drwxrwxrwx  2 root    root      32 Jan 12 06:40 cite/
drwxr-xr-x 61 root    ilog    1536 Jul  3 1989 halles/
```

Now the problem:

```
#cd /udd/halles
/udd/halles : Not a directory
```

I run a command like `ls /udd/halles`, and I get a list of the subdirectory with the error message: `<dir> : Not a directory`.

#### DISCUSSION -----

As you described, there doesn't seem to be anything wrong on your local NFS client side. However, from the error message "Not a directory", it sounds like the REMOTE NFS server exported filesystem or directory, `/udd/halles` in this case, is not a directory type.

Check the spelling of the exported directories on the remote NFS server; both the exported entries in the `/etc/exports` file and the actual filesystem object MUST be a directories. After checking the spelling from the remote NFS server, at the local NFS client do `/etc/umount /udd/halles`, and try the NFS mount command again.

Also the `"showmount [a] [d] [e] [host]"` is a nice tool for NFS to display things like directories that have been mounted by clients, the list of exported filesystems from the server, and so on. See `showmount (1M)` for details.

#### Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy

#### Support Information Services

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Tech Info Library Article Number:4468





# Tech Info Library

## PowerPoint: How To Speed Up Printing

Revised: 9/22/89  
Security: Everyone

PowerPoint: How To Speed Up Printing

=====

This article last reviewed: 6 September 1989

TOPIC -----

Here is a tip to speed up printing for PowerPoint users

DISCUSSION -----

From "One-on-One with Microsoft" newsletter, Summer 1989, p.6:

The LaserWriter printer is optimized for printing bitmaps in Tall (Portrait) orientation. Normally, however, PowerPoint presentations are printed in Wide (Landscape) orientation. To avoid slow printing, deselect the Faster Bitmap Printing option in the Page Setup dialog box.

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Tech Info Library Article Number:4470



# Tech Info Library

## Apple II Network: Drop Box Creation From Finder Only

Revised: 9/22/89  
Security: Everyone

Apple II Network: Drop Box Creation From Finder Only

=====

This article last reviewed: 6 September 1989

TOPIC -----

I work on an AppleShare/Aristotle network setup. I created a Drop Box on the server, so that users can save their AppleWorks files directly into the Drop Box on the server by using the appropriate ProDOS pathname. It doesn't work! (Owner has all privileges, everyone else has Make Changes only.)

I first tested this on a Macintosh workstation, trying to save a document to a Drop Box using the "Save As" command. Drop Boxes are dimmed in the dialog box, so I wasn't able to open the Drop Box folder and save the document. The only alternative I could think of was to save the document somewhere else, return to the Finder, and then drag the document into the Drop Box.

Are there any alternatives for Apple II users who want to use Drop Boxes?

DISCUSSION -----

The Finder is the only mechanism we are aware of that lets you put files into a Drop Box folder.

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Tech Info Library Article Number:4471



# Tech Info Library

## AppleTalk Phase 2: Network Numbers, Nodes, and Zones

Revised: 7/10/91  
Security: Everyone

AppleTalk Phase 2: Network Numbers, Nodes, and Zones

=====

Article Created: 6 September 1989  
Article Last Reviewed: 8 July 1991  
Article Last Updated: 8 July 1991

TOPIC -----

I have some questions about AppleTalk Phase 2. The material I have read states that AppleTalk Phase 2 will provide for:

- 1) 65,534 possible network numbers
- 2) 16 million nodes
- 3) 256 zones per network
- 4) 1,024 networks per Internet

How were these numbers arrived at?

DISCUSSION -----

- 1) Network numbers are defined by a 16-bit number:  $2^{16} = 65,536$ . The network number 0 is reserved to mean unknown, and network number 65,535 is reserved for future use. This means a total of 65,534 networks are possible.
- 2) AppleTalk Phase 1 supported  $2^8$  nodes minus the reserved nodes, ID 0 and ID 255, which resulted in a total 254 nodes possible. AppleTalk Phase 2 nodes on the physical network are identified by their virtual network number and their 8-bit node ID. The node IDs of 0, 254, and 255 are reserved in AppleTalk Phase 2.

Because it is possible to have 65,534 networks with 253 nodes in each network, it is possible to have a maximum of 16,580,102 nodes ( $65,534 * 253 = 16,580,102$ ). Note: Network numbers 65,280 through 65,534 are used only when a router is not present.

- 3) Actually, the maximum number of physical zones per network is 255. This is

an architectural limitation of AppleTalk Phase 2. The AppleTalk Internet Router supports a maximum of 255 names on a single zone list. The reason for 255 is because the zone list may apply to a single physical network.

Also, an AppleTalk Phase 2 internet (1 or more physical networks connected together via routers) is capable of supporting more than 256 zones. But the AppleTalk Internet Routers supports a maximum of 256 zones on an internet.

- 4) There can be a maximum of 1,024 entries in the routing table for the AppleTalk Internet Router. Each entry can refer to an individual network number or a range of network numbers. This limitation is not AppleTalk Phase 2-specific.

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Tech Info Library Article Number:4472



# Tech Info Library

## Macintosh IIci: General Description (Discontinued)

Revised: 6/1/94  
Security: Everyone

Macintosh IIci: General Description (Discontinued)

=====

Article Created: 18 September 1989  
Article Last Reviewed: 8 July 1992  
Article Last Updated: 8 July 1992

TOPIC -----

This article describes the Macintosh IIci.

DISCUSSION -----

The Macintosh IIci is an improved Macintosh IICx that offers higher performance and enhanced functionality. Features offered by the IIci that are not available on the IICx include:

- A 25 MHz Motorola MC68030 microprocessor and a MC68882 numerics coprocessor.
- A Built-In Video connector that allows IIci users to connect specific Apple monitors to a IIci without requiring the use of a NuBus video card. Monitors supported by Built-In video include:
  - + Apple High-Resolution Monochrome Monitor at 2, 4, 16 and 256 grays
  - + AppleColor High-Resolution RGB Monitor at 2, 4, 16 and 256 colors/grays
  - + Apple Macintosh Portrait Display at 2, 4 and 16 grays
- A cache connector that supports the use of an optional high-speed cache card.
- RAM Parity error detection is offered in IIci parity configurations that customers can special order.

Features that are common to the IIci and IICx include:

- Support for one internal 1440K Apple SuperDrive (formerly Apple FDHD) and an external drive port for one external Apple SuperDrive
- Support for one internal 3 1/2" SCSI hard disk, and an external SCSI port for additional SCSI devices.
- Three NuBus system expansion slots

- Two serial ports
- One stereo sound port
- Two ADB ports

#### UPGRADES

For those those who wish to upgrade their Macintosh IICx units upgrade to a Macintosh IIci units, upgrades will be offered. This upgrade will include a new logic board, a new bottom chasis, 1 MB of DRAM, Macintosh system software 6.0.4, HyperCard 1.2.5, and IIci manuals. (NOTE: Parity upgrades, IICx to parity IIci or non-parity IIci to parity IIci, will not be offered.)

#### MC68030

The Macintosh IIci uses the Motorola MC68030 at 25 MHz. The CPU speed for previous members of the Macintosh II family has been 15.6672 MHz. Also, 68030 burst reads to the on-chip data and instruction caches are supported in the IIci to further increase performance. The MC68030 is Motorola's second-generation 32-bit microprocessor, and combines a central processing unit, a data cache, an instruction cache, an enhanced bus controller (NOT the NuBus controller), and a memory management unit into a single VLSI device. Internal function blocks of the microprocessor are designed to operate in parallel, allowing instruction execution to overlap.

The MC68030 integrates the functionality of the MC68020 32-bit microprocessor with a subset of the MC68851 Paged Memory Management Unit (PMMU). Commonly called the 030 (pronounced "oh-three-oh"), the MC68030 is compatible with Macintosh IIX timing and software.

#### MC68882

The MC68882 numerics coprocessor (also called the Floating Point Unit, or FPU) provides high speed, extremely accurate, floating-point computation to IEEE standards.

The processor operates in parallel with the MC68030 and is clocked at 25 MHz. The FPU speed for previous members of the Macintosh II family has been 15.6672 MHz. Calls to the Apple SANE routines will use the MC68882. The MC68882, also called the 882 (pronounced "eight-eighty two").

Both processors use the same base instruction set--the major advantage of the MC68882 is increased speed. With the MC68882, you can perform both memory moves and chip operations in parallel--as long as they don't conflict.

#### Memory Management

Macintosh IIci can support the A/UX operating system without adding the PMMU, thanks to on-chip memory management by the MC68030. The MC68030 allows true 32-bit address translation with hardware page replacement. The built-in memory unit is also capable of ignoring the high 8-bits of the

address to allow Macintosh software to run in 24-bit mode.

(NOTE: The MC68030 PMMU is a subset of the MC68851 PMMU, rather than an exact replacement.)

## Macintosh IIfx Cache Card

The Macintosh IIfx Cache Card includes 32K of 25-nanosecond static RAM. With a IIfx Cache Card installed, system performance is increased by 20 to 30 percent. As of September 1, 1991 all Macintosh IIfx computers include the Apple Macintosh IIfx Cache Card.

## Apple SuperDrive

The SuperDrive can read from and write to any of the major 3.5-inch disk formats, including Macintosh (GCR 400K, 800K, and MFM 1.44MB), Apple II (800K), MS-DOS and OS/2 (MFM 720 and 1.44MB).

GCR stands for Group Code Recording; MFM stands for Modified Frequency Modulation. MFM and GCR only effect how the bits are placed on the disk, not the directory structure. The drive is supported by the SWIM (Sander, Woz Integrated Machine) chip.

(NOTE: There is special 1.44MB media that should NOT be used in the older 400K or 800K drives.)

## SWIM Chip

The SWIM chip is a single-chip combination MFM/GCR controller for internal and external floppy drives. It was designed for the SuperDrive, but is compatible with the current 400K and 800K drives. The SWIM chip replaces the IWM chip, and is pin- and function-compatible with that device.

## Logic Board ROM and ROM SIMM

The Macintosh IIfx comes with 512K of ROM, which is soldered to the logic board. For update and upgrade purposes, the IIfx logic board has a ROM SIMM slot. When the ROMs in a IIfx unit are updated or upgraded, a ROM SIMM card with the new ROM chips is placed in the SIMM slot, and the jumper block is removed. Removing this block disables the logic board ROM and enables the ROM SIMM.

## Programmer's Switches

The programmer's switches (Reset and NMI) is located in the front of the Macintosh IIfx. This allows the IIfx to be placed on its side without restrictions regarding user access to the switch. This also makes it easier to move the computer off of the desk to a more convenient location. As long as the user has access to the front of the computer, which is necessary to gain access to the drive port and to view the power-on and HD-activity lamps, the user can reach the programmer's switches.

## Internal Hard Disk

As with the Macintosh IIfx, the Macintosh IIfx supports an internal hard disk drive. Since the IIfx has less internal space than the II and IIfx, the IIfx only supports 3.5-inch mechanisms.

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Tech Info Library Article Number:4474





# Tech Info Library

## Macintosh IIci: Specifications (Discontinued 2/93)

Revised: 10/29/93  
Security: Everyone

Macintosh IIci: Specifications (Discontinued 2/93)

Article Created: 18 September 1989  
Article Reviewed/Updated: 8 July 1992

TOPIC -----

Following are the technical specifications for the Macintosh IIci.

DISCUSSION -----

### CENTRAL PROCESSING UNIT (CPU)

- Microprocessor : 25 MHz MC68030 CPU
- Address Bus : 32-bit
- Registers (32-bit) : 16 general-purpose data and address, two 32-bit Supervisor stack pointers, ten special-purpose control registers
- Addressing Modes : 18
- 256-byte instruction cache and 256-byte data cache
- Built-in Paged Memory Management Unit (PMMU)

### COPROCESSOR

- MC68882 floating-point unit (follows IEEE standards)

### MEMORY

- 1, 2, 4, 5, 8 MB RAM (Random Access Memory)  
80 nanosecond, Fast Page Mode DRAM
- RAM Parity error detection (Optional, Special Order)
- 512Kbytes of ROM (Read-Only Memory)
- 256 bytes of settable parameter memory with built-in battery backup

### KEYBOARD (not included)

- Apple Keyboard or Apple Extended Keyboard can be connected through the Apple Desktop Bus port

### MOUSE

- Apple Desktop Bus Mouse (ADB) mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch

(3.94 +- 0.39 pulse per mm) of travel.

#### DISK DRIVE

- One 1.4 MB high-density internal Apple SuperDrive (formerly Apple FDHD). Only one internal, floppy drive is supported. The unit ships with the Apple SuperDrive, but the logic board also supports an 800K drive.
- External connector for 800K or 1.4MB external floppy

#### HARD DISK DRIVE

- 3.5" 40MB or 80MB hard drive configurations are available.

#### INTERFACES

- Two Apple Desktop Bus (ADB) connectors for keyboard, mouse, and low-speed input devices.
- Three NuBus Slots supporting full 32-bit address and data lines through a 96-pin Euro-DIN connector.
- Cache Connector supporting an optional high-speed RAM cache card. The connector is a 120-pin Euro-DIN connector.  
(\* NOTE: This connector IS NOT compatible with 030 Direct cards \*)  
(\* for the SE/30. Installing one of these cards in this slot can \*)  
(\* result in damage to the card and/or the logic board. \*)  
(\* As of September 1, 1991 the Apple Macintosh IIci Cache Card \*)  
(\* is included with all Macintosh IIci computers. \*)
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally).
- Built-In Video DB-15 pin connector, supporting the following monitors:
  - + Apple High-Resolution Monochrome Monitor at 2, 4, 16 and 256 grays
  - + AppleColor High-Resolution RGB Monitor at 2, 4, 16 and 256 colors/grays
  - + Apple Macintosh Portrait Display at 2, 4 and 16 grays
- SCSI interface
- Stereo sound port for external audio amplifier

#### SOUND GENERATION

- Apple Sound Chip (ASC) including 4-voice wave-table synthesis and stereo sampling generator capable of driving stereo mini-phono jack headphones or stereo equipment
- Mixed stereo monophonic sound output through internal speaker

#### ELECTRICAL REQUIRMENTS

- Line voltage: 100 to 240 volts AC, RMS automatically configured
- Line frequency: 50 to 60 hertz single phase
- Maximum power consumption: 130 watts maximum, 90 watts maximum continuous

#### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 TO 104 degrees F (10 TO 40 C)
- Storage temperature: -40 TO 116.6 degrees F
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)
- Fan: 17 CFM radial

#### SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 478 Electronic Data Processing Equipment

- CSA (Canadian Standards Assn.) 220 Information Processing and Business Equipment

SIZE AND WEIGHT

- Main Unit
  - Height: 5.5 inches (140 mm)
  - Width: 11.9 inches (302 mm)
  - Depth: 14.4 inches (365 mm)
  - Weight: 13 lbs. 10 oz. (6.2 kg)
- Apple Keyboard (not included)
  - Height: 1.8 inches (44.5 mm)
  - Width: 16.5 inches (418.3 mm)
  - Depth: 5.6 inches (142.0 mm)
  - Weight: 2 lbs. 2 oz. (1 kg)
- Apple Extended Keyboard (not included)
  - Height: 2.3 inches (56.4 mm)
  - Width: 19.1 inches (486 mm)
  - Depth: 7.4 inches (188 mm)
  - Weight: 3 lbs. 10 oz. (1.6 kg)
- Apple Mouse (ADB)
  - Height: 1.1 inches (27.9 mm)
  - Width: 2.1 inches (53.3 mm)
  - Depth: 3.8 inches (96.5 mm)
  - Weight: 6 oz. (.175 kg)

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Tech Info Library Article Number:4475



# Tech Info Library

## Apple Data Modem Int'l XP 2400 Modem: Specs (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple Data Modem Int'l XP 2400 Modem: Specs (Discontinued)

=====

Article Created: 18 Spetmebr 1989

### I. Technical Specifications

#### A. Regulatory

1. Refer to the modem for specific European registration information.

#### B. Data Format

1. Protocol: Asynchronous
2. Character Length
  - a. 7 data bits
    - 1) Stop bits: 1 or 2
    - 2) Parity: Odd, even, fixed: mark/space
  - b. 7 data bits
    - 1) Stop bits: 2
    - 2) No parity
  - c. 8 data bits
    - 1) Stop bits: 1 or 2
    - 2) No parity
3. Mode: Full duplex

#### C. Compatibility

1. Subset of Hayes AT modem command set

#### D. Error Correction (optional)

1. Microcom Network Protocol (MNP) Classes 4 through 5  
Added via daughterboard to modem card

#### E. Transmission Speeds

1. For all speeds
  - a. Tolerance in character asynchronous format (DTE data rate)
    - 1) +1.0%
    - 2) -2.5%
  - b. Tolerance in modulation rate
    - 1) +/- 0.01%

2. 2400 bits per second (bps)
  - a. Standard: V.22bis
  - b. Modulation: Quadrature Amplitude Modulation (QAM)
3. 1200/75 bits per second (bps)
  - a. Standard: V.23
  - b. Modulation: Frequency shift keying (FSK)
4. 1200 bits per second (bps)
  - a. Standard: V.22A/B, Bell 212A
  - b. Modulation: Differential phase-shift keying (DPSK)
5. 300 bits per second (bps)
  - a. Standard: Bell 103
  - b. Modulation: Frequency shift keying (FSK)

F. Operating Modes

1. Auto or manual dial (including redial)
  - a. Tone: DTMF (Dual-Tone Multi-Frequency--"Touch Tone")
    - 1) Frequency tolerance: +/- 1/0%
    - 2) Tone balance: Within 3dB
  - b. Pulse (Rotary)
    - 1) Dialing duty cycle: see specific modem for mark/break ratio
    - 2) Dialing rate: 10 pps
2. Auto or manual answer

G. Receiver Dynamic Range

1. -10 to -43 dBm, full duplex

H. Transmitter Level

1. Refer to the modem for specific registration information.

I. Command Buffer

1. 40 characters

J. Computer interface

1. 18-pin dual-in-line female connector

K. Power Requirement

1. DC input
  - a. +5.2V +/- 5%
  - b. -5.0V +/- 5%

L. Power Consumption

1. 800 mW maximum

II. System Configuration

A. Computer

1. Macintosh Portable

B. Modem Configuration

1. Universal internal modem card
2. External country specific Data Access Arrangement (DAA) module.

It plugs into the internal card via an attached Mini-DIN 8 cable.

C. Country specific phone cable appropriate for DAA

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Tech Info Library Article Number:4476



# Tech Info Library

## Macintosh Portable: Modem Connector Pinouts (6/94)

Revised: 6/23/94  
Security: Everyone

Macintosh Portable: Modem Connector Pinouts (6/94)

Article Created: 18 September 1989  
Article Reviewed/Updated: 23 June 1994

Macintosh Portable Data Interface: 18-pin dual-in-line connector

| Pin | Pin Name     | Definition                                    |
|-----|--------------|-----------------------------------------------|
| --- | -----        | -----                                         |
| 1   | /Modem_Power | System power status                           |
| 2   | Ground       | Ground                                        |
| 3   | /RTS         | Request to send                               |
| 4   | /DCD         | Data Carrier Detect                           |
| 5   | RxD          | Receive data                                  |
| 6   | /CTS         | Clear to send                                 |
| 7   | Modem_sound  | Analog sound output                           |
| 8   | TxD          | Transmit data                                 |
| 9   | /RI_EXT      | Ring indicator                                |
| 10  | -5 VDC       | Power (switchable)                            |
| 11  | +5 VDC       | Power (unswitched)                            |
| 12  | /DTR         | Data terminal ready                           |
| 13  | V1           | Sound volume control bit (Least significant)  |
| 14  | V3           | Sound volume control bit (Most significant)   |
| 15  | V2           | Sound volume control bit (Middle significant) |
| 16  | /Modem_Ins   | Modem installed                               |
| 17  | /Modem_Busy  | Modem busy                                    |
| 18  | MS_Enable    | Modem sound enable                            |

Data Access Arrangement (DAA) Interface: Mini-DIN8 connector

| Pin | Definiton                               |
|-----|-----------------------------------------|
| --- | -----                                   |
| 1   | Ring Indicator to modem board           |
| 2   | Clock for reading data from modem board |
| 3   | Command 2 (Relay) from modem board      |
| 4   | Ground                                  |

5       Data Read (Country code) to modem board  
6       Command 1 (Relay or Data Enable) from modem board  
7       + 5 VDC  
8       Receive/Transmit Analog signal line  
Shell   Chassis ground

Article Change History:

23 Jun 1994 - Reviewed for technical accuracy, title changed to more accurately  
             reflect content of article.

Support Information Services

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Tech Info Library Article Number:4477





# Tech Info Library

## Apple Extended Keyboard II - ISO Layout: Specifications

Revised: 8/5/92  
Security: Everyone

Apple Extended Keyboard II - ISO Layout: Specifications

=====

This article last reviewed: 4 December 1989

### --Description:

The "Apple Extended Keyboard II - ISO layout" is a keyboard specially designed for the European market. The layout complies with ISO 1091 standard on the "Layout of printing and function keys."

### --Packing List (M0312Z):

Apple Extended Keyboard II - ISO layout  
1.0 m (3 ft.) ADB cable  
Double-sided template to place over function keys  
Owner's guide  
Warranty statement

### --System Requirements:

Any Apple personal computer with an Apple Desktop bus interface  
International Macintosh System Software: Version 6.0.3 or later  
US Macintosh System Software: Version 6.0.4 or later

### --Technical Specifications:

Total 106 keys, including  
18-key numeric pad  
15 function keys  
4 arrow cursor-control keys in inverted T-style layout  
6 cursor-control keys (Home, Page Up, Page Down, Forward Delete, End, and Help)

### --Size and Weight:

Front Height: 19 mm (0.75 in.)  
Rear Height: 41 mm (1.6 in.)

|                 |                   |
|-----------------|-------------------|
| Keyboard angle: | 14 degree maximum |
|                 | 6 degree minimum  |
| Width:          | 475 mm (18.7 in.) |
| Depth:          | 195 mm (7.7 in.)  |
| Weight:         | 1.8 kg (4.8 lbs)  |

--Product Details:

The keyboard has 15 function keys (F1-F15) and 6 cursor-control keys (home, Page Up, Page Down, Forward Delete, End, and Help).

F1-F4 are labeled on the housing under the keys F1=undo, F2=cut, F3=copy, and F4=paste. These are not predefined default values; however, developers are being encouraged to use these definitions as appropriate. The remaining 11 function keys can also be defined by the user. A template is provide for users to mark the key's function.

The function keys are operative by using a macro utility program or by using an MS-DOS application with the appropriate coprocessor card.

The Caps Lock LED is operative in the Macintosh environment. The Num Lock and Scroll Lock are not operative except by using an MS-DOS application with appropriate coprocessor card. Developers are being encouraged to support these LED's in their applications.

The keyboard has an adjustable foot in the rear of the keyboard. The height of the keyboard is adjusted with a lever in the rear of the keyboard. It can be adjusted with a tilt from the unextended 6 degree to a maximum of 14 degrees from horizontal.

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Tech Info Library Article Number:4478



# Tech Info Library

## Macintosh Portable: Internal Modem Installation Guide

Revised: 9/18/89  
Security: Everyone

Macintosh Portable: Internal Modem Installation Guide

=====

This article last reviewed: 18 September 1989

All power must be disconnected before the modem can be installed. The AC adapter must be disconnected, the main battery removed and the battery cover must be in place to shut off the backup battery to insure the unswitched +5 volt connection is disconnected. If the power is not completely shut off, the modem may be damaged.

Note: This action will cause all RAM to lose power. This will erase RAM disks, reset all Control Panel settings including the system clock and lose any unsaved documents which are open.

This procedure is also the recommended method to hardware reset the modem.

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Tech Info Library Article Number:4479



# Tech Info Library

## Macintosh Portable Data Modem 2400: Pinouts

Revised: 9/18/89  
Security: Everyone

Macintosh Portable Data Modem 2400: Pinouts

=====

This article last reviewed: 18 September 1989

### Macintosh Portable Data Interface

| Pin | Pin Name     | Definition                                    |
|-----|--------------|-----------------------------------------------|
| --- | -----        | -----                                         |
| 1   | /Modem_Power | System power status                           |
| 2   | Ground       | Ground                                        |
| 3   | /RTS         | Request to send                               |
| 4   | /DCD         | Data Carrier Detect                           |
| 5   | RxD          | Receive data                                  |
| 6   | /CTS         | Clear to send                                 |
| 7   | Modem_sound  | Analog sound output                           |
| 8   | TxD          | Transmit data                                 |
| 9   | /RI_EXT      | Ring indicator                                |
| 10  | -5 VDC       | Power (switchable)                            |
| 11  | +5 VDC       | Power (unswitched)                            |
| 12  | /DTR         | Data terminal ready                           |
| 13  | V1           | Sound volume control bit (Least significant)  |
| 14  | V3           | Sound volume control bit (Most significant)   |
| 15  | V2           | Sound volume control bit (Middle significant) |
| 16  | /Modem_Ins   | Modem installed                               |
| 17  | /Modem_Busy  | Modem busy                                    |
| 18  | MS_Enable    | Modem sound enable                            |

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Tech Info Library Article Number:4480



# Tech Info Library

## Macintosh Portable Data Modem 2400: Specifications(Discontinued)

Revised: 6/21/94  
Security: Everyone

Macintosh Portable Data Modem 2400: Specifications(Discontinued)

=====

Article Created: 2 October 1989  
Article Reviewed/Updated: 16 March 1994

TOPIC -----

This articles gives the technical specifications for the Macintosh Portable Data Modem 2400.

DISCUSSION -----

### I. Technical Specifications

#### A. Regulatory

1. FCC Registration Number: BCGM0250
2. Ringer Equivalence Number: 0.3B
  - a. The total number of ringer equivalence numbers on any one telephone line cannot exceed 5.0.
3. Canadian Load Number: 9

#### B. Data Format

1. Protocol: Asynchronous
2. Character Length
  - a. 7 data bits
    - 1) Stop bit: 1
    - 2) Parity: Odd, even, fixed: mark/space
  - b. 7 data bits
    - 1) Stop bits: 2
    - 2) No parity
  - c. 8 data bits
    - 1) Stop bits: 1
    - 2) No parity
3. Mode: Full duplex

#### C. Compatibility

1. Subset of Hayes AT modem command set

D. Transmission Speeds

1. For all speeds
  - a. Tolerance in character asynchronous format (DTE data rate)
    - 1) +1.0%
    - 2) -2.5%
  - b. Tolerance in modulation rate
    - 1) +/- 0.01%
2. 2400 bits per second (bps)
  - a. Standard: V.22bis
  - b. Modulation: Quadrature Amplitude Modulation (QAM)
3. 1200 bits per second (bps)
  - a. Standard: V.22, Bell 212A
  - b. Modulation: Differential phase-shift keying (DPSK)
4. 300 bits per second (bps)
  - a. Standard: Bell 103
  - b. Modulation: Differential phase-shift keying (DPSK)

E. Operating Modes

1. Auto dial (including redial)
  - a. Tone: DTMF (Dual-Tone Multi-Frequency--"Touch Tone")
    - 1) Frequency tolerance: +/- 1/0%
    - 2) Tone balance: Within 3dB
  - b. Pulse (Rotary)
    - 1) Dialing duty cycle: 39%/61% or 33%/67% mark/break ratio
    - 2) Dialing rate: 10 pps
2. Auto or manual answer

F. Receiver Dynamic Range

1. -10 to -43 dBm, full duplex

G. Transmitter Level

1. -10dBm +/- 1dB, fixed as per FCC interconnect specification, Part 68

H. Command Buffer

1. 40 characters

I. Computer interface

1. 18-pin dual-in-line female connector

J. Power Requirement

1. DC input (U.S. and Canada)
  - a. +5.2V +/- 5%
  - b. -5.0V +/- 5%

K. Power Consumption

1. Operational mode:
  - a. 750 mW maximum
  - b. 525 mW typical
2. Sleep Mode
  - a. 3 mW maximum

II. System Configuration

A. Computer

1. Macintosh Portable

B. Standard single-line telephone cable with RJ-11 modular jack

Article Change History:

16 March 1994 - Product discontinued-change title.

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Tech Info Library Article Number:4481



# Tech Info Library

## Macintosh Portable: Battery

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Battery

=====

Article Created: 13 September 1989  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

This article describes the Macintosh Portable sealed, lead-acid battery.

DISCUSSION -----

The Macintosh Portable uses a sealed, lead-acid (SLA) battery. SLA cells have a constant voltage drop as they lose their charge. This enables the Macintosh Portable to alert the user when power is running low.

The cycle life of an SLA battery varies depending on the depth of discharge. If the battery is discharged to 100% of the energy in the battery, the battery can get 200 charge/discharge cycles before it has to be replaced. If discharged to 25% depth, the battery can get 2,000 charge/discharge cycles. The recharging system used in the Macintosh Portable keeps the battery at full charge to extend the number of charge/discharge cycles.

The external battery recharger charges a spare battery when the user is still using the Macintosh Portable. It uses the same power adapter as the Macintosh Portable, and has the same power input requirements as the Macintosh Portable power adapter (120/240 VAC 50/60Hz). It includes a recharge cradle to hold the battery. The battery charger LED, located on the top of the unit, will display:

| LED Color      | Status          |
|----------------|-----------------|
| -----          | -----           |
| Amber (Yellow) | Charging        |
| Green          | Fully Charged   |
| No Light       | Replace Battery |



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Tech Info Library Article Number:4483



# Tech Info Library

## Macintosh: Liquid Crystal Displays (LCDs) Compared (3/95)

Revised: 3/23/95  
Security: Everyone

Macintosh: Liquid Crystal Displays (LCDs) Compared (3/95)

Article Created: 13 September 1989  
Article Reviewed/Updated: 23 March 1995

TOPIC -----

This article gives an overview of active- and passive-matrix liquid crystal displays.

DISCUSSION -----

Liquid Crystal Display (LCD) is the display technology used on the screens of Macintosh Portable and PowerBook computers. LCDs are non-emissive (no Extra Low Frequency (ELF) or Very Low Frequency (VLF) emissions); they do not create their own light, but reflect and block light. (The PowerBook series includes a bulb to aid in viewing the screen at different light levels.) LCDs use a reflector, backlight, sidelight, or a combination of a reflector and back/sidelight to send the image to the user. The main difference from a Cathode Ray Tube (CRT) display is that the pixel (the little dots of light that comprise the picture on a computer or TV screen) is not the source of light. A typical LCD consists of a reflector, rear polarizer, back glass, liquid crystal material, front glass, and front polarizer.

The liquid crystal material is a liquid with rod-shaped molecules inside. The rod-shaped molecules can form a twisting helix, or spiral pattern and bend light that enters the display. When a current is applied, the rods straighten out and no longer bend the light. The inside surfaces of the glass are treated and polished to induce the rod-shaped molecules in the liquid crystal material to line up with the polarizers.

The display uses two polarizers to line up the light and reduce glare. If the light is out of phase, it can not pass through the polarizer. By using two polarizers 90 degrees out of phase with each other, the light is blocked. The liquid crystal material bends the light 90 degrees so it will pass through the polarizer. When the LCD has power to it, it does not bend the light, hence it does not pass through the polarizer.

This type of display is called an active matrix, or Thin-Film Transistor (TFT), display. Passive matrix, or Film SuperTwisted Nematic (FSTN), displays are similar to TFT displays, but the liquid crystal molecules in a SuperTwist Display bends or twists light much farther than in a standard TFT display. In fact, the molecules in a SuperTwist display can bend 270 degrees or more to transmit light. One difference you may notice between passive and active matrix screens is that active matrix has a much wider viewing range than passive matrix. In other words, you can see information displayed on the screen from a wider side angle on an active matrix display than on a passive matrix display.

#### Passive Matrix

-----

In a passive matrix, or Film SuperTwisted Nematic (FSTN), display a grid of electronic control wires or lines are placed on the front and back glass. A pixel is located at the junction of each row and column control lines. Passive matrix displays use one transistor to address each row and one to address each column of pixels. Pixels are turned on when both row and column lines are energized and off when both control lines are de-energized. This addressing scheme is called multiplexing.

The residual electrical current that travels down each control line can cause crosstalk at unselected pixels. Crosstalk partially darkens pixels and lowers the display's overall contrast. This usually appears on a passive matrix PowerBook display as two dark boxes, parallel to each other on the display.

#### Active Matrix

-----

The active matrix, or Thin-Film Transistor (TFT) display is the latest technology used in Macintosh PowerBook computers. Rather than using multiplexing (row and column wires on the glass) techniques to address the matrix of crystals, the active matrix LCD includes a transistor fabricated along with each pixel. You can think of the display as one large Integrated Circuit (IC), with the transistors acting as switches to turn on individual pixels. (An IC is a slice or chip of material on which is etched or imprinted a circuit comprised of electronic components and their interconnections.) Because of the transistors, pixels can be turned on and off at a very fast rate. The transistor at each pixel eliminates the crosstalk phenomenon, which lowers contrast on an FSTN display.

The TFT method eliminates the time dependency associated with multiplexed displays by directly addressing each pixel.

#### Article Change History:

23 Mar 1995 - Made several technical updates.  
15 Feb 1995 - Reviewed for technical accuracy.  
19 Apr 1993 - Updated to include information on FSTN Displays

#### Support Information Services

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# Tech Info Library

## Macintosh Portable: Internal 40SC Hard Disk

Revised: 7/27/92  
Security: Everyone

Macintosh Portable: Internal 40SC Hard Disk

Article Created: 13 September 1989  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

### TOPIC -----

This article gives the a technical description of the Macintosh Portable Internal 40SC Hard Disk.

### DISCUSSION -----

The Macintosh Portable Internal 40SC Hard Disk provides fast, reliable access to high-performance storage and large-capacity applications. One-inch high, weighing 1.1 pounds, the Macintosh Internal Hard Disk 40SC has been designed especially for use with the Macintosh Portable. It draws little power from system batteries and virtually eliminates disk swapping, because it can accomodate multiple applications, complex documents, and large databases in one convenient location.

### SPECIFICATIONS

Mechanism Size : 3.5 Inches

#### CAPACITY 40MB

- Data Capacity: 40MB Formatted
- Data surfaces: 2
- Heads/Surfaces: 1
- Block Size: 512 bytes
- Total disk blocks: 82,080
- Blocks/Tracks: 40

#### CHARACTERISTICS

- Average Seek Time : 25 milliseconds
- Rotational Speed: 3,557 rpm
- Startup Time: 20 seconds

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- Spin-down Time: 10 seconds
- Automatically retracks to the inner stop (non-data area) upon power down to protect data area during travel and startup.

## ENVIRONMENTAL

- Operating Temperature: 50 degrees F to 104 degrees F (10 degrees C to 40 degreesC)
- Non-Operating Temperature: 32 degrees F to 122 degrees F (0 degrees C to 50 degrees C)
- Humidity: 20% to 80% relative humidity non condensing

Interface : internal 34-pin connector

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Tech Info Library Article Number:4485



# Tech Info Library

## Macintosh Portable: Power-Saving Features

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Power-Saving Features

=====

Article Created: 13 September 1989  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

This article describes Macintosh Portable computer's power saving features.

DISCUSSION -----

The Macintosh Portable has a number of power-saving features that give it 6 to 12 hours of battery life. The Macintosh Portable contains two batteries: a main battery that provides power while the computer is in use, and a backup 9-volt transistor battery that sustains the computer's memory while the main battery is disconnected (as when a fresh main battery is being installed).

Note: The main battery is required for operation of the Macintosh Portable. The hard drive will not spin up without the internal battery.

The power-saving features are controlled by the power-manager processor. The power-manager processor is a separate "computer" inside the unit that controls the power functions of the unit.

The Macintosh Portable is the only member of the Macintosh family that is designed to be powered by a battery. In normal operation, the Macintosh Portable never switches off. Rather, it goes into a low-power consumption\ state, the sleep state, when it is not in use. Ideally, the Macintosh portable is switched on only when the battery is first installed or after the battery has been removed to install an expansion card in the machine.

Sleep

-----

System sleep helps the Macintosh Portable operate longer between charges.

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When in sleep state, the Macintosh Portable maintains full power to system RAM, video RAM, and the power-manager processor. The power-manager processor stops the clocks to the SCC, the SWIM, and the ASC. Stopping the clocks to these devices, reduces their power consumption to almost zero without requiring that they be reset. The power-manager processor switches off power to the serial drivers, ROM, flat panel display, the ASC, the Sony sound chips, the SCSI, and to a variety of pull-up resistors and other components. The power-manager processor also sends a signal to the internal modem that causes the modem to shut itself down, if not in use.

The system can enter sleep in the following ways:

- The user selects sleep from the Special menu in the Finder.
- The user selects sleep from the Battery DA.
- The system enters sleep after a period of inactivity (the interval is user selectable).
- The system enters sleep, because battery power is at the software-shutdown level.
- This is the first time power is being applied.
- The power-manager processor is reset.

The system will not enter sleep, if the internal modem is executing an AT command or if the modem is off-hook, except at hardware shutdown.

Macintosh Portable will come out of sleep for any of the following reasons:

- A key is pressed on the keyboard (except Caps Lock).
- The wake-up timer matches the real-time clock.
- The internal modem is installed, and a ring detect comes in, while the modem is set to watch for ring detect.

Note: If the unit is in software shutdown, the Macintosh Portable does not come out of shutdown until the power adapter is plugged in or until the battery is replaced.

When power is first applied to the Macintosh Portable, the power-manager processor immediately puts the system into the sleep state. When a key is pressed, the power-manager processor initiates a system reset and the Macintosh Portable goes through the same sequence of start-up events as the Macintosh SE.

Macintosh Portable presents four dialogs to the user when the battery is running low. The first three warn the user about the power condition, and the last lets the user know the system is going to sleep mode.

## Sleep vs Shut Down

-----

The Shut Down menu item doesn't care about memory contents and quits applications before shut down. Sleep saves memory contents. Shut Down should be used for the following:

- To have the unit wake up and reboot
- To add an external peripheral
- To make sure all applications have been quit
- Hard Drive Sleep. If the Macintosh Portable has a hard drive, the control panel displays an option to put the hard drive to sleep. This causes the hard drive to stop spinning. Hard drive sleep automatically occurs when the Macintosh Portable goes into system sleep.

Any hard disk activity causes the Macintosh Portable to come back out of hard drive sleep. It takes one or two seconds for the hard drive to get up to speed, slowing access to the drive.

## Rest

----

The power-manager processor monitors the amount of time the Macintosh Portable has been inactive. After a period of 15 seconds without any activity, the unit goes into Rest mode. It causes the CPU to insert 64 wait states into RAM and ROM accesses which lowers the effective clock rate to approximately 1 MHz. Interrupts continue to be processed at the same rate. As soon as the trackball or mouse moves, or any peripheral device is activated, the computer comes up to full speed instantly.

The following items are checked and stop the unit from entering rest mode:

- Mouse movement
- I/O activity, (keyboard, trackball, modem, etc..)
- Cursor change
- Serial port access

This feature can be turned off, when running Video Works or some other program that avoids detection by the rest routine. The user can disable rest mode by doing the following:

- 1) Enter the Control Panel DA and select the Portable icon.
- 2) Hold Down the Option key and click the words "Minutes Until Automatic Sleep."
- 3) Click on Don't Rest in the dialog box that comes up, and select OK



## Low Power Warnings

-----

When the battery starts to run low, a series of messages appears, warning the user that it is time to recharge. A flashing battery replaces the Apple Icon in the menu bar. When these messages start to appear, save any open documents and plug the Macintosh Portable into the power adapter as soon as possible. (Saving work is a good thing to do every once and a while, anyway.) The computer can be active, while it is recharging the battery.

After the fourth warning, the computer automatically goes into system sleep, while there is still enough power to hold the contents of memory for five days.

Note: As long the battery is recharged within five days, the contents of memory remain intact, and the computer will pick up where it left off before the battery ran low. The only consequence of not recharging within five days is that the contents of memory are lost.

When not using the computer for more than one month, save any files and select Shut Down from the Special menu. After shut down, remove the battery to make sure the battery does not become completely discharged.

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Tech Info Library Article Number:4486



# Tech Info Library

## Macintosh Portable: Specifications (Discontinued)

Revised: 10/18/95  
Security: Everyone

Macintosh Portable: Specifications (Discontinued)

Article Created: 13 September 1989  
Article Reviewed/Updated: 18 October 1995

TOPIC -----

This article gives specifications for the Apple Macintosh Portable computer.

DISCUSSION -----

The Apple Macintosh Portable computer offers complete Macintosh functionality in a portable design. It runs virtually all current versions of Macintosh software and provides full compatibility with other Macintosh hardware. There are two versions of the Macintosh Portable. The new Macintosh Portable features a backlight for added display visibility in low-light conditions.

The Apple Macintosh Portable computer is the one Macintosh for the workplace, home, and any destination. With built-in networking and the ability to run virtually all current versions of Macintosh software twice as fast as the Macintosh Classic, the Macintosh Portable gives you all the capabilities you need for your primary computer.

You also can take the Macintosh Portable with you and use it at meetings, at a client's office, or at home because everything you need--central processing unit (CPU), screen, standard size keyboard, pointing device, battery, and disk storage--is integrated into a single, easy-to-carry package.

The Macintosh Portable delivers the superior graphics that people have come to associate with the Macintosh. Its backlight, active-matrix liquid crystal display (LCD) lets you see the full page width for easy editing of word-processing and other documents. This screen also has such a fast response time that the Macintosh interface looks and feels just like any other Macintosh computer. And the display's backlighting can be adjusted for a wide range of lighting situations, so you can see the screen as

easily in bright light as you can in a dimly lit room.

The Macintosh Portable has been designed to conserve power and extend battery life, so you can use it for 3 to 6 hours (6 to 12 on non-backlighted units) before the battery needs recharging. A battery desk accessory monitors and warns you when the battery is getting low.

Like other Macintosh computers, the Macintosh Portable comes with the 1.4 MB SuperDrive, which allows you to work easily in different computing environments because it can read from and write to 3.5-inch Macintosh disks as well as MS-DOS, OS/2, and ProDOS disks. In addition, an internal 40MB hard disk drive accommodates large files and applications. You'll also find plenty of opportunities to extend the Macintosh Portable's capabilities. You can use eight built-in ports to expand the system with popular peripheral equipment, such as scanners and printers.

Four internal expansion slots let you customize the Macintosh Portable to your specific needs. Your system can accommodate up to 8 MB of memory if you use third-party memory cards in the processor-direct slot. You also can use the processor-direct slot to add high-performance expansion cards for video, networking, and communications.

#### Specifications:

##### CENTRAL PROCESSING UNIT (CPU)

- Microprocessor: 16MHz CMOS 68000
- Address Bus: 24-bit
- Registers (32-bit): 17
- Addressing Modes: 14

##### COPROCESSOR

- Power Manager Processor, Mitsubishi M50753 microcomputer chip

##### MEMORY

- Original Macintosh Portable: 1 MB of static RAM, expandable to 2 MB through the installation of a memory card in the RAM slot, and up to 9 MB when higher-density chips become available; 1 Wait state to access SRAM
- New Macintosh Portable: 1, 2, or 4 MB of pseudostatic RAM, 2 and 4 MB through the installation of a memory card in the RAM slot, and up to 8 MB through the PDS slot (Apple Memory Card must be removed when you install a PDS memory card)\*; 0 wait states to access PSRAM; PSRAM has a refresh cycle to refresh the chips every 15.6  $\mu$ seconds.
- 256K bytes of ROM (Read-Only Memory)
- 128 bytes of settable parameter memory with built-in battery backup
- 32K bytes of RAM for the video display

##### SCREEN

- Active-Matrix Liquid Crystal
- Full-page width
- 640x400 pixels
- New Macintosh Portable features a CCFL backlight for up to 55 nits of brightness

#### KEYBOARD

- Built-in 63-key keyboard
- Optional 18-key numeric keypad (as trackball alternative)
- Keyboard on New Macintosh Portable uses quiet keyswitches

#### TRACKBALL

- Low-power Apple Desktop Bus Trackball, 1.3-inch diameter trackball as pointing device
- Left- or right-hand placement
- Replaceable by numeric keypad

#### MOUSE

- Low-power Apple Desktop Bus Mouse (ADB), mechanical tracking, optical shaft encoding at 3.54 pulses per mm (90 pulses per inch) of travel

#### DISK DRIVE

- One 1.4 MB high-density SuperDrive (internal); two internal floppy drives when hard drive is not installed
- External connector for 800K or 1.4 MB external floppy

#### HARD DISK DRIVE

- A low-power, ruggedized internal 3.5-inch 40MB drive
- 40MB hard drive is standard on the new Macintosh Portable

#### INTERFACES

- One Apple Desktop Bus (ADB) connector for keyboard, mouse, and low-speed input devices
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally)
- SCSI interface
- Stereo sound port for external audio amplifier
- External drive port
- External video port

#### SOUND GENERATION

- Apple Sound Chip (ASC) including 4-voice, wave-table synthesis and stereo sampling generator capable of driving stereo mini-phono-jack headphones or stereo equipment
- Mixed stereo monophonic sound output through internal speaker

#### ELECTRICAL REQUIRMENTS

- Line voltage: 70 to 270Vac
- Line frequency: 48 to 62Hz
- Maximum power consumption: 15 watts

#### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104F (10 to 40C) degrees
- Storage temperature: -40 to 140F (-25 to 60C) for a period not to exceed 3 days; storage for longer periods must be within operating temperature range
- Relative humidity: 5% to 95%
- Altitude: 0 to 10,000 feet (0 to 3048m)

#### SIZE AND WEIGHT

- Height
  - Rear panel: 4.05 inches (102.87mm)
  - Front panel: 2.1 inches (53.34mm)
  - Base to highest point with display open: 11.0 inches (279.4mm)
- Width: 15.25 inches (387.35mm)
- Depth: 14.83 inches (365.25mm)
- Weight (including battery): 13.75 lbs. (6.25kg)
- Weight (including battery and hard drive): 15.75 lbs. (7.16kg)

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Here is a list of changes to the Macintosh Portable.

#### Original Macintosh Portable

-----

- 640x400 Active-Matrix Display
- 1MB SRAM on logic board, 1 wait state
- Screen brightness-controlled contrast
- 1MB Memory Card
- System Software 6.0.4
- Backlight upgrade available
- Standard keyswitches
- Hybrid chip
- Custom Macintosh Portable manuals
- Steel plate in keyboard
- 6- to 12-hour battery life
- Apple Memory Card and third-party PDS card memory supported

#### Backlight Macintosh Portable Model

-----

- 640x400 Backlight Active-Matrix Display
- 1MB CMOS Pseudostatic RAM, 0 wait states
- CDEV controls backlight
- 1MB and 3MB Memory Cards Pseudostatic
- System Software 6.0.7 and new CDEV disk
- Backlight standard
- Quiet keyswitches
- Custom resistor packs
- Standard manual suite with Macintosh Portable handbook
- Aluminum plate for keyboard
- 3- to 6-hour battery life
- Third-party PDS card memory cannot be used when Apple Memory Card is installed\*

\*A problem with the memory decode chip on the Apple Memory Cards (1 MB and 3 MB) prevents third-party memory cards in the PDS slot from correctly addressing memory.

#### Article Change History:

18 Oct 1995 - Changed title.

#### Support Information Services

Copyright 1989, 1991 Apple Computer, Inc.

Tech Info Library Article Number:4487



# Tech Info Library

## Macintosh Portable: External Video Port Pinouts

Revised: 7/27/92  
Security: Everyone

Macintosh Portable: External Video Port Pinouts

Article Created: 13 September 1989  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

This article describes the external video port pinouts of the Macintosh Portable.

DISCUSSION -----

The External Video Port drives video devices with a digital signal. It does not provide an analog signal used by a monitor.

Display Electronics

The display uses a digital signal to generate information, not an analog signal like a CRT. There are three signals generated in the video logic IC:

- the pixel synchronization signal; it marks the end of a byte.
- the horizontal synchronization signal; it marks the end of a 640 pixel line.
- the vertical synchronization signal; it marks the beginning of a new video frame.

The Macintosh Portable produces signals for an external video display through an 8-bit interface that is similar to the interface for the built-in display. A video adapter is required to convert the 8-bit data stream into a signal that can drive an external video device.

Connector: Density and 1/2 15-pin (same size as DB-9 with 15 pins)

PINOUTS

- 1 - FPDATA(0) Data bit 0
- 2 - FPDATA(1) Data bit 1
- 3 - +5 volts \*\*
- 4 - FPDATA(2) Data bit 2
- 5 - FPDATA(3) Data bit 3
- 6 - FPDATA(4) Data bit 4
- 7 - GND Signal Ground
- 8 - +5 volts \*\*
- 9 - GND Signal Ground
- 10 - FPDATA(5) Data bit 5
- 11 - FPDATA(6) Data bit 6
- 12 - FPDATA(7) Data bit 7
- 13 - BATT\_VOLTAGE
- 14 - FLM from Video chip, Begin frame scan over
- 15 - CL2/ from Video chip, Byte clock

\*\* Maximum current on 5 volt line is 50ma

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4489



# Tech Info Library

## Lattice, Inc.

Revised: 7/12/93  
Security: Everyone

Lattice, Inc.

=====

Article Created: 10/04/89  
Article Reviewed: 07/12/93  
Article Updated: 11/19/92

Lattice, Inc.

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3010 Woodcreek Dr.  
Suite A  
Downers Grove, IL 60515

800-444-4309

708-769-4060

708-769-4083 Fax

TELEX: 532253

Company Profile:  
Software, specializing in software development tools.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4492





# Tech Info Library

## MetaWare Incorporated

Revised: 7/13/93  
Security: Everyone

MetaWare Incorporated

=====

Article Created: 10/04/89  
Article Reviewed: 07/13/93  
Article Updated:

MetaWare Incorporated

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2161 Delaware Ave.  
Santa Cruz, CA 95060

408-429-6382

408-429-9273 Fax

Company Profile:  
Software, specializing in software development tools.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4493



# Tech Info Library

## Oasys

Revised: 4/4/97  
Security: Everyone

Oasys

=====

Article Created: 4 October 89  
Article Reviewed/Updated: 4 April 1997

Oasys  
-----

1 Cranberry Hill  
Lexington, MA 02173

617-862-2002

617-863-2633 Fax

Company Profile:  
Software, specializing in software development tools.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:4494



# Tech Info Library

## Intermetrics, Inc.

Revised: 4/4/97  
Security: Everyone

Intermetrics, Inc.

=====

Article Created: 10/04/89  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

Intermetrics, Inc.  
733 Concord Ave.  
Cambridge, MA 02138

617-661-1840

800-356-3594

Fax: 617-868-2843

Company Profile:  
Software, specializing in software development tools for the PC and VAX.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4496



# Tech Info Library

## Andyne Computing Limited

Revised: 4/4/97  
Security: Everyone

Andyne Computing Limited

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Article Created: 11/19/92  
Article Reviewed: 07/02/93  
Article Updated: 04/04/97

Andyne Computing Limited

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552 Princess St.  
Kingston, Ontario K7L 1C7  
CANADA

800-267-0665

613-548-4355

613-548-7801 Fax

### Company Profile:

Software, specializing in Data Access Language applications, like GQL, a generic database browser.

Copyright 1989-97 Apple Computer, Inc.

Tech Info Library Article Number:4498



# Tech Info Library

## Fairfield Software, Inc. (Division of Clear Access Corp.)

Revised: 4/4/97  
Security: Everyone

Fairfield Software, Inc. (Division of Clear Access Corp.)

=====

Article Created: 10/04/89  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Fairfield Software, Inc.  
-----

200 West Lowe  
Fairfield, IA 52556

800-522-4252

515-472-7077

515-472-7198 Fax

Company Profile:  
Software, specializing in Data Access Language (DAL) applications and a  
generic database browser, clear access - data access, browsing, reporting,  
training, and development

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4499



# Tech Info Library

## Neuron Data

Revised: 4/4/97  
Security: Everyone

Neuron Data

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Neuron Data

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156 University Ave.  
Palo Alto, CA 94301

800-876-4900 (Sales)

415-321-4488

415-321-2238 Fax

Company Profile:  
Software, specializing in artificial intelligence.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4500



# Tech Info Library

## Tactics International

Revised: 4/4/97  
Security: Everyone

Tactics International

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Tactics International

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16 Haverhill St.  
Andover, MA 01810

508-475-4475

800-WARROOM (927-7666)

Fax: 508-475-2136

Company Profile:  
Software, specializing in connecting data with management for competitive advantage.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4501



# Tech Info Library

## Belkin Components

Revised: 7/6/93  
Security: Everyone

Belkin Components

=====

Article Created: 10/04/89  
Article Reviewed: 07/06/93  
Article Updated: 03/31/92

Belkin Components

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1303 Walnut Pkwy.  
Compton, CA 90220

800-223-5546

310-898-1100

310-898-1111 Fax

Company Profile:

Hardware, specializing in cables, connectors, switchboards, networks, and surge protectors.

Article Change History: 07/06/93 Phone number changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4502





# Tech Info Library

## **Creative Solutions, Inc.**

Revised: 4/4/97  
Security: Everyone

Creative Solutions, Inc.

=====

Article Created: 10/04/89  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Creative Solutions, Inc.

-----

4701 Randolph Rd.  
Suite 12  
Rockville, MD 20852

800-367-8465

301-984-0262

301-770-1675 Fax

Company Profile:  
Hardware, specializing in add-on boards.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4503



# Tech Info Library

## Nevada Western, Inc.

Revised: 7/14/93  
Security: Everyone

Nevada Western, Inc.

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 14 July 1993

Nevada Western  
-----

1737 N. First St.  
Suite 100  
San Jose, CA 95112-4522

408-436-2315

408-437-0208 Fax

Company Profile:  
Hardware, specializing in cables and connectors.

Head Quarters Office  
1001 Frontier Rd.  
Bridgewater, NJ 08807

908-685-1600

Fax: 908-707-2145

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4504



# Tech Info Library

## NCR Corporation

Revised: 7/27/93  
Security: Everyone

NCR Corporation

=====

Article Created: 10 April 1989  
Article Reviewed/Updated: 20 July 1993

NCR Corporation Corporate Headquarters:

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1700 S. Patterson Blvd.  
Dayton, OH 45479

513-445-5000 (Corporate Office)

513-445-1286 Fax

Mainframes and Servers:  
2700 Snelling Ave. N  
St. Paul, MN 55113

612-638-7777

Company Profile:

Hardware and software, specializing in banking systems, PCs, and compilers.  
Also specializing in mainframes and intelligent communication servers (St. Paul  
address). NCR/Teradata Corp., hardware, software, and networking, specializing  
in very large database server machines.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4505



# Tech Info Library

## Parity Systems, Inc. (PSI)

Revised: 7/15/93  
Security: Everyone

Parity Systems, Inc. (PSI)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 15 July 1993

Parity Systems, Inc. (PSI)

-----

30270 Spring River Drive  
Southfield, MI 48076

313-647-8649

313-647-6843 Fax

Company Profile:  
Software, specializing in system integrators for business and accounting applications.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4506



# Tech Info Library

## Network Systems Corp.(Formerly VitaLink Comm. Corp.)

Revised: 4/4/97  
Security: Everyone

Network Systems Corp.(Formerly VitaLink Comm. Corp.)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Network Systems Corporation

-----

48761 Kato Rd.  
Fremont, CA 94538

510-226-6500

800-523-9550 (Technical Support)  
800-443-5740 (Sales)

Fax: 510-440-2380

Telex: 345566

Company Profile:  
Formerly Vitalink Communications Corporation, software and hardware,  
specializing in bridge and router that links local and wide area networks.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4508



# Tech Info Library

## Cellabs

Revised: 7/7/93  
Security: Everyone

Cellabs

=====  
Article Created: 10/04/89  
Article Reviewed: 07/07/93  
Article Updated: 04/01/92

Cellabs  
-----

21111 Osborne  
Canoga, CA 91304

818-773-2020

818-700-1300 Fax

Company Profile:  
Datacomm, specializing in cellular phone products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4510



# Tech Info Library

## CelluTel (formerly Celluland of Palo Alto)

Revised: 7/16/93  
Security: Everyone

CelluTel (formerly Celluland of Palo Alto)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 16 July 1993

CelluTel  
-----

2001 El Camino Real  
Palo Alto, CA 94306

415-323-2000

Fax: 415-323-9280

Company Profile:  
Datacomm, specializing in mobilephones and modems.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4511



# Tech Info Library

## Everex Systems

Revised: 4/4/97  
Security: Everyone

Everex Systems

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Everex Systems (Abaton, Emac Division)

-----

901 Page Ave.  
Fremont, CA 94538

510-498-1111 (Main)  
510-683-2383 (Info Center, operator)  
510-498-1115 (Main Tech. Support)  
510-498-4440 (Tech. Support)

800-444-5321  
800-821-0806

Fax: 510-651-4322

Company Profile  
Hardware, peripherals

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4512





# Tech Info Library

## Mobile Land

Revised: 7/13/93  
Security: Everyone

Mobile Land

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Article Created: 10/04/89  
Article Reviewed: 07/13/93  
Article Updated:

Mobile Land  
-----

41917 Albrae St.  
Fremont, CA 94538

510-490-5263

510-490-6123 Fax

Company Profile:  
Datacomm, specializing in mobile phones and modems.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4513



# Tech Info Library

## Redgate Communications Corp.

Revised: 4/4/97  
Security: Everyone

Redgate Communications Corp.

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Redgate Communications Corp.

-----

660 Beachland Blvd.  
Vero Beach, FL 32963

800-333-8760 (Advertising)

407-231-6904

407-231-6847 Fax

### Company Profile:

Publications, specializing in communications, including integrated marketing and publication of Macintosh 'Product Registry', and 'The World of Macintosh Multimedia', available on CD

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4514



# Tech Info Library

## Control Concepts

Revised: 7/7/93  
Security: Everyone

Control Concepts

=====

Article Created: 10/04/89  
Article Reviewed: 07/07/93  
Article Updated:

Control Concepts  
-----

8500 Executive Park Ave.  
Fairfax, VA 22031

800-922-9259

703-876-6444

703-876-6416 Fax

Company Profile:  
Hardware, specializing in disk drives.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4516



# Tech Info Library

## Micro Planning International

Revised: 7/12/93  
Security: Everyone

Micro Planning International

=====

Article Created: 10/04/89  
Article Updated: 07/09/93  
Article Updated: 07/09/93

Micro Planning International  
-----

3801 E. Florida Ave.  
Suite 601  
Denver, CO 80210

303-757-2216

Fax: 303-757-2047

### Company Profile:

Software, specializing in project planning software for DOS computers in a standard and EMS versions, X-Pert, Manager - a mid level management package, Key Plan, DOS Instaplan, Professional, Microplanner for Windows

Article Change History: 07/09/93 New product information added, name changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4518



# Tech Info Library

## Jets Cybernetics

Revised: 4/4/97  
Security: Everyone

Jets Cybernetics

=====

Article Created: 10/04/89  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Jets Cybernetics

-----

The Penthouse  
535 Ramona St.  
Palo Alto, CA 94301

415-323-7070  
415-322-JETS (5387)

Fax: 415-327-JETS (5387)

### Company Profile:

Hardware and software, specializing in coprocessors, advanced peripheral  
deviced, and multimedia support mechanisms.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4519



# Tech Info Library

## Newer Technology (8/96)

Revised: 8/26/96  
Security: Everyone

Newer Technology (8/96)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 26 August 1996

Newer Technology

-----

4848 W. Irving St.  
Wichita, KS 67209

800-678-3726

316-943-0222

316-685-9368 Fax

E-Mail Addresses & Internet

-----

WWW Site:  
<http://www.newertech.com/>

Internet Mail:  
Sales Department is at [sales@newertech.com](mailto:sales@newertech.com).  
Technical Support is at [techsupport@newertech.com](mailto:techsupport@newertech.com).  
General information is at [info@newertech.com](mailto:info@newertech.com).

AppleLink:  
Sales Department can be reached at "Newer.Sales"  
Technical Support can be reached at "Newer.Tech"  
Engineering Dept. can be reached at "Newer.Eng"

America Online:  
All Departments may be reached at "NewerRAM"

# ..TIL04520-Newer\_Technology\_8-96\_(TA40464).pdf

## Company Profile:

Makers of Macintosh hardware, specializing in RAM chips.

## Article Change History:

26 Aug 1996 - Added new address info.

Copyright 1989-96, Apple Computer, Inc.

Tech Info Library Article Number:4520



# Tech Info Library

## Network Resources Corporation

Revised: 4/4/97  
Security: Everyone

Network Resources Corporation

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Network Resources Corporation

-----

61 E. Dagget Dr.  
San Jose, CA 95134

408-383-9300

408-263-0136 Fax

Company Profile:  
Hardware and software, specializing in networking products for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:4523





# Tech Info Library

## AppleShare PC 2.0: How To Configure for DOS 4.0

Revised: 10/4/89  
Security: Everyone

AppleShare PC 2.0: How To Configure for DOS 4.0

=====

This article last reviewed: 12 September 1989

TOPIC -----

I have installed a 3COM EtherLink/MC card into a PS/2 Model 50z running DOS 4.0.

I also installed AppleShare PC 2.0 with EtherLink/MC options (with standard setting on the interrupt level, DMA, and and so on). I have no other interface cards except a 1MB RAM upgrade in the machine.

However, when I restart the machine, it hangs at:

"Initializing AppleTalk. One moment please..."

Is AppleShare PC 2.0 incompatible with DOS 4.0, or did I do something wrong?

DISCUSSION -----

AppleShare PC 2.0 is compatible with DOS 4.0, but it appears that you missed one item.

You need to select "3" as the primary interrupt line for the MLID used by this card (ETHER\$). If you leave the default interrupt line intact, it will certainly fail.

Both the default primary memory address 0C0000H and the default primary port address 0300H are correct and do not need to be changed.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4526



# Tech Info Library

## HyperCard: AppleTalk XCMDs to Query Networks

Revised: 12/17/91  
Security: Everyone

HyperCard: AppleTalk XCMDs to Query Networks

=====

Article Created: 12 September 1989  
Article Last Reviewed: 10 August 1992  
Article Last Updated:

TOPIC -----

I have over 200 zones on my AppleTalk network; it has become far too much trouble to look for devices through the Chooser. Can I use AppleTalk HyperCard XCMDs to build an intelligent stack to query the network for devices and inform the user?

DISCUSSION -----

The AppleTalk XCMDs can do this. There is, however, one feature missing that would require some extra work. Because the XCMDs do not provide zone information, you need to know the zone names prior to looking up the devices.

The only constraints on creating a stack to do AppleTalk device queries are machine configurations. For this stack to be a workable solution, you should be running MultiFinder or System 7, and you should use a hard disk.

Copyright 1989, 1992, Apple Computer, Inc.

Tech Info Library Article Number:4527



# Tech Info Library

## A/UX: How To Convert PICT File to PostScript (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: How To Convert PICT File to PostScript (9/94)

=====

Article Created: 12 September 1989  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

Under A/UX, can I take a PICT format file and convert it to a PostScript file without going through a printer? It seems that all the toolbox calls to do such a thing are only in the Print Manager.

DISCUSSION -----

The simplest way to convert a PICT file may be to use Command-F from the print dialog of an application that can print PICT documents. (MacDraw is a good example.) You don't have to connect a LaserWriter for this to work.

Make sure the LaserWriter driver has been chosen from among the different options in the Chooser. Don't worry about not being able to actually select a LaserWriter.

When you get to the MacDraw print dialog, click the OK button, then immediately press and hold Command-F. You should see the message "Creating PostScript File" at the top of your screen above the normal MacDraw "print progress" indicator. You can release the keys when you see this message.

This puts a PostScript file in /usr/lib/Macintosh named PostScriptN, where N starts at 0 and increases by 1 each time you generate a PostScript file this way (up to a maximum of 9).

If this is not an acceptable solution, there are also Macintosh OS applications that can read PICT files and save them as PostScript. One of these which also runs under A/UX is Adobe Illustrator 88. Illustrator 88 can read a MacDraw II-generated PICT file and save it as PostScript.

For more information, search under: "Adobe Systems"

Article Change History:

08 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1989-94, Apple Computer, Inc.

Tech Info Library Article Number:4528



# Tech Info Library

## Abaton Scanner Upgrade: Incompatible with AppleScan

Revised: 1/18/93  
Security: Everyone

Abaton Scanner Upgrade: Incompatible with AppleScan

=====

Article Created: 4 October 1989

### Article Change History

-----

1/15/93 - UPDATED  
• Abaton is now Everex Systems.  
9/26/89 - REVIEWED  
• For accuracy.

### TOPIC -----

This article concerns the incompatibility of the Abaton 8-bit upgrade with Apple's scanning software.

### DISCUSSION -----

Abaton's (now Everex Systems) 8-bit upgrade for the Apple Scanner -- a logic board swap -- may create more problems than it solves. An upgraded scanner does not work with the AppleScan or HyperScan software.

If you only use gray scale images, Digital Darkroom or Image Studio are probably more appropriate pieces of software. The upgrade does not affect them.

However, for more general scanning (line art, halftone, and HyperCard images), the Apple software (AppleScan and HyperScan) is the usual choice. This software does NOT work with the upgrade.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4530



# Tech Info Library

## Apple Equipment: Special Enclosures for Dirty Environments

Revised: 6/8/92  
Security: Everyone

Apple Equipment: Special Enclosures for Dirty Environments

=====

Article Created: 4 October 1989  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

Are there ways to ensure cleanliness for the Macintosh operating environment?

I need to install about 500 Macintosh IIcx systems in truck garages and loading docks. Are there any special covers or enclosures that filter fumes and soot, but still permit access to a Macintosh IIcx? Also, is there anything that prevents the typical mechanic from setting a wrench or dripping oil can on top of the equipment? Proper air circulation is my main concern.

Aso, is it necessary (or possible) to "ruggedize" an AppleCD SC for this environment? Mechanics aren't very gentle with the ROM caddies.

DISCUSSION -----

What you really need is a NEMA (National Electrical Manufacturers Association) enclosure. Check your local area for a NEMA office that can make recommendations.

The two big issues are heat and dirt. To keep the dirt (air-based carbons and oil from diesel trucks) out of the system requires filters that restrict the airflow. Reduced airflow equals increased heat, which reduces the system's life span. Without filters, the soot gets into the fan bearings, slowing it down and increasing heat.

Adapting the AppleCD SC to these conditions results in the same sorts of problems.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4531



# Tech Info Library

## Macintosh: Multiple SCSI Device Startup Problems

Revised: 10/4/89  
Security: Everyone

Macintosh: Multiple SCSI Device Startup Problems

=====

This article last reviewed: 13 September 1989

TOPIC -----

I have a Macintosh IIX with internal HD80 SC drive, AppleCD SC, and Apple Scanner. When all devices are connected, the last device on the SCSI chain does not show up.

I have already tried switching the order of devices, changing SCSI ID numbers, and starting up the three machines in every possible order. The last device is terminated but I still can't see it. The first device always works (whether it's the AppleCD SC or the Apple Scanner).

Do you have any suggestions?

DISCUSSION -----

You are encountering a problem known as impedance matching. This is a known problem with the Apple Scanner. The situation occurs when the impedance created by a combination of devices and terminators on the SCSI chain causes one device to be "lost" on the chain.

Change the impedance of the SCSI chain by adding one or more terminators, SCSI devices, and/or additional SCSI extender cable, and the device will reappear.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4532



# Tech Info Library

## Macintosh IIcx: PDR (Floating Point Decimal) Rating

Revised: 7/14/92  
Security: Everyone

Macintosh IIcx: PDR (Floating Point Decimal) Rating

=====

Article Created: 12 September 1989  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

I want to send a Macintosh IIcx overseas, and need to know the PDR  
(floating point decimal rate) specification.

DISCUSSION -----

The Macintosh IIcx has a PDR of 89.9 megabits per second.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4534





# Tech Info Library

## Apple Scanner: How To Get Straight Lines

Revised: 10/4/89  
Security: Everyone

Apple Scanner: How To Get Straight Lines

=====

This article last reviewed: 13 September 1989

TOPIC -----

This article explains how to get horizontal and vertical lines straight when scanning. (This applies primarily to line art images.)

DISCUSSION -----

After previewing the image, use the selector tool to focus on an area that has a vertical or horizontal line. Select the Threshold setting and the Settings window appears. Click the Apply button and view the current alignment of the original image on the scanner bed.

If the scanned line is not straight, lift the scanner lid, rotate the original slightly, and click again on Apply. Repeat this until the horizontal or vertical line is straight. When the line is straight, put the lid down and scan the entire page.

The scanned lines now should be straight (assuming the original is straight).

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4535



# Tech Info Library

## Macintosh-to-VME Connectivity Solution

Revised: 10/4/89  
Security: Everyone

Macintosh-to-VME Connectivity Solution

=====

This article last reviewed: 13 September 1989

TOPIC -----

Here is one solution for Macintosh-to-VME connectivity.

DISCUSSION -----

A company in Holland advertises a direct connection from the Macintosh II family to a VME bus.

The company, Bergoz, makes an interface called MacVEE, which consists of a NuBus card with DMA and a connection through a flat cable to a VME and CAMAC subrack. The cable can be up to 100 meters. (The MacVEE product was developed at the European CERN, a large research institute based in Geneva.)

For more information, contact Bergoz or CERN.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4537



# Tech Info Library

## Access II: Use Version 1.2 With Apple IIGS

Revised: 10/4/89  
Security: Everyone

Access II: Use Version 1.2 With Apple IIGS

=====

This article last reviewed: 13 September 1989

TOPIC -----

I use Apple IIe and Apple IIc systems to communicate with my server HP by typing:

```
in#2
Control-A
T
```

at the Applesoft BASIC prompt.

When I tried this on an Apple IIGS, it didn't work. I set all communication parameters from the Control Panel exactly the same as the hardware settings on the Super Serial Card.

I tried starting up from a System disk, running BASIC.SYSTEM, and typing the program:

```
10 PRINT CHR$(4),"in#2"
```

```
RUN
```

This doesn't seem like a good permanent solution. Apparently, my version of Access II doesn't work on the Apple IIGS. Should I look for other terminal emulation software?

DISCUSSION -----

There should be no problem with this procedure on an Apple IIGS. You are invoking the Terminal mode from the Super Serial Card firmware, which should work.

The firmware may not be in modem mode. If this is the case, the method should

be Control-I T instead of Control-A T. (Control-I T is the command for the Printer/Terminal mode of the firmware, Control-A T is for the Modem mode.)

Access II does work on the Apple IIGS if version 1.2 is used.

Another terminal package is "ASCII Express MouseTalk" from United Software Industries.

Shareware terminal packages are available from various bulletin boards, but without a terminal package, accessing a bulletin board would be difficult at best.

For more information, search under: "United Software"

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Tech Info Library Article Number:4538



# Tech Info Library

## AppleShare: Server Problems Using Removeable Media (9/94)

Revised: 9/13/94  
Security: Everyone

AppleShare: Server Problems Using Removeable Media (9/94)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

I'm having problems using optical disk drives as server volumes on AppleShare 2.0.1.

I'm using 350MB, double-sided media. The problems seem to occur when using this device as a slave drive for AppleShare (that is, not the startup volume). I wanted to get high-volume replaceable media on line.

But when attempting to change the media, I have found that AppleShare is a bit unreliable in recognizing and mounting the slave volume (even when it's been mounted previously).

The situations that arise are:

- Server acquires the volume but has to re-prepare it for use.
- Server does not find the volume at all.
- Server acquires the volume with no problems.
- On restarting the server, the system often responds with Bomb ID=01 or ID= 02, but the Resume button is active; clicking it causes successful continuation of the startup process.

In addition to the above, I once was not able to get the server to recognize the volume at all.

DISCUSSION -----

AppleShare File Server 2.0.1 is not designed to handle the changing of removable media while the server is active. This includes removable media of any type: CD-ROM, Optical Read/Write disks, Syquest hard disk cartridges, and so on. However AppleShare 3.0 allows you to change removable media.

During the startup of the server, each volume's AppleShare Parallel Directory

Structure (PDS) file is read. This allows the server to know which volumes are available for presentation to the user. The creation of the volume's PDS file requires the use of the AppleShare Admin application.

Launching the AppleShare Admin program from the Server Admin floppy disk causes Admin to examine each volume attached to the Macintosh server. If a volume is located that has not been prepared for AppleShare, the Admin program asks whether to skip the volume or to prepare the volume for AppleShare. Preparing the volume adds a Server Folder containing an AppleShare PDS file to the volume.

(On read-only volumes, like CD-ROM, the PDS file is written to the startup volume; otherwise, the PDS file is written to its own volume.)

AppleShare builds a separate PDS file for each on-line server volume that is not skipped. Since the PDS files are built only during the Admin program's preparation, and checked only during the server startup sequence, changing removable storage media while the server is active does not allow AppleShare to review the required PDS file for the newly inserted media. Therefore, the new storage media is an unknown volume to AppleShare and unpredictable results can occur.

The only procedure to assure that removable media is properly recognized involves shutting down the server, changing the media, then restarting the server. This allows AppleShare to read the PDS file for the newly inserted removable media.

NOTE: Check your INITs, too. The purpose of an INIT does not necessarily determine whether it causes problems. The specific actions taken within the INIT, and the relationship of those actions to other system functions, are the factors that may cause difficulty in the operation of the Macintosh.

In the situation describe above, AppleShare's procedure for working with on-line volumes, not the INIT, plays a larger part in the success or failure of the procedure. However, make sure the INIT gets installed before AppleShare begins verification of server volumes. This is easy to detect if the INIT displays an icon at startup time. If the icon appears during the "Welcome to Macintosh" screen, then the INIT has installed at an appropriate time. (INITs are installed by name, using the ASCII notation as a sorting guide.)

#### Article Change History:

13 Sep 1994 - Combined multiple articles on this subject.

24 Nov 1992 - Updated to include AppleShare 3.0 information.

Support Information Services

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Tech Info Library Article Number:4539



# Tech Info Library

## Color Printers for the Apple IIGS

Revised: 10/4/89  
Security: Everyone

Color Printers for the Apple IIGS

=====

This article last reviewed: 13 September 1989

TOPIC -----

Are there any third-party vendors that make a color printer for the Apple IIGS?

I know the ImageWriter II prints color, and most Apple IIGS software talks PostScript.

I am interested in the HP PaintJet and other HP color printers, but I wonder if they can do the job: since they are not QuickDraw-compatible, most Apple IIGS software probably won't work.

DISCUSSION -----

With the advent of GS/OS for the Apple IIGS, printer communications follow a Macintosh-style architecture; both Macintosh OS and GS/OS printing are driver-based.

The print driver technique allows a wide variety of printers to be attached to the Apple IIGS -- once the driver is written. This allows Apple IIGS-specific applications to talk with the Print Manager. In turn, the Print Manager communicates with the Graphic Control Panel-selected print driver, which is installed in the Apple IIGS. Thus, the communication to printers relies on the availability of print drivers for the Apple IIGS, not on the specific application.

As shipped from Apple, GS/OS 5.0 provides direct connection drivers for the ImageWriter, ImageWriter LQ, and the Epson printers. For LocalTalk printers, LaserWriter, AppleTalk ImageWriter, and AppleTalk ImageWriter LPG drivers are included. Only the ImageWriter drivers provide color support; the Epson driver does not provide color capabilities.

Hewlett-Packard does not support the Apple IIGS-to-PaintJet (or other HP

printers) connection. Apple Tech Comm does not know of any third-party Apple IIGS print drivers that allow the selection of the PaintJet from the GS/OS Graphic Control Panel.

Orange Micro markets a product called Grappler C/Mac/GS. This is a serial-to-parallel converter. The Grappler device also provides ImageWriter II emulation for Epson, Okidata, Panasonic, and other Epson-compatible parallel printers. The Grappler C/Mac/GS can print in color on parallel color printers. We have been unable to define which of the following printers are color; however, Orange Micro has provided this list of Grappler C/Mac/GS-compatible printers:

- Epson : EX, FX, JX, RX, LX series; and the MX series with Graftrax
- Star : SD, SR, SG series; and Gemini 10X, NX-10 (in Epson FX mode)
- Okidata : 190, 290 series
- C.Itoh : C310XPR (Epson FX mode), ProWriter Jr.
- Panasonic: 1080, 1090 series
- Citizen : MSP-10 (Epson FX mode)
- Printers fully compatible with any listed above.

For more information, search under: "Orange Micro"

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Tech Info Library Article Number:4540





# Tech Info Library

## MacDFT: Does Not Support Explicit Partitioning

Revised: 10/4/89  
Security: Everyone

MacDFT: Does Not Support Explicit Partitioning

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This article last reviewed: 13 September 1989

TOPIC -----

Does MacDFT support "explicit partitioning"? Apparently, it's a feature that is available on the new IBM 3290 Information Display Panel (gas-plasma screen). From what I understand, this hardware divides the screen and uses one data stream over coax to drive several sessions.

Does this make any sense to you?

DISCUSSION -----

Explicit partitions on the IBM 3290 screen allow up to four session windows to be displayed at one time. To define the session windows' size and location, a 3270 system extension, known as explicit partition, is used. Explicit partition sends a partition-structured field command from the host to the 3290 to tell the display the size and location of each session window.

MacDFT does not support explicit partitions. We are not aware of any third-party products that support this 3270 extension. However, MacDFT, when attached to a host's DFT port, can define a document with four windows positioned on the Macintosh screen. With this ability, MacDFT accomplishes the desired results of four sessions at once. This method places the session window management in the Macintosh, not on the host -- thus, allowing the host to concentrate on more important computing concerns.

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Tech Info Library Article Number:4541



# Tech Info Library

## GS/OS: Making a Startup Disk With Printer Drivers

Revised: 10/4/89  
Security: Everyone

GS/OS: Making a Startup Disk With Printer Drivers

=====

This article last reviewed: 26 September 1989

TOPIC -----

I want to create a startup disk for GS/OS 5.0 that contains drivers for both a direct connect ImageWriter and a LaserWriter -- but even after reducing the number of resources on a startup System Disk by using the Installer, there is still insufficient disk space to install the LaserWriter drivers.

We didn't find any ideas on how to accomplish this task in The only solutions we found are:

- To remove drivers from the System Disk, which renders it nearly unusable (no P8, CDEVs, and so on).
- To recommend that the customer purchase a hard disk.

Is there another solution or minimum configuration that can be used.

DISCUSSION -----

"Chapter 5: Using The Installer" of the the Apple IIGS System Software User's Guide, version 5.0. (Apple part #030-1622-A) has a section on p. 99 called "Deciding What To Install", which discusses how to fit the desired parts of GS/OS onto a 3.5-inch disk for stand-alone Apple IIGS computers.

At the top of page 100, there is a paragraph referring the user to the "AppleTalk Network User's Guide for the Apple IIGS" -- which is included with GS/OS 5.0 -- for advice on how to install the required items for a networked Apple IIGS.

At the back of the AppleTalk Network User's Guide (Apple part #030-1633-A) is a four-page "Update to AppleTalk Network User's Guide for the Apple IIGS", which replaces "Creating a 3.5-Inch Networking Startup Disk" on pp. 24-26 of the network guide.

This update lists the procedures for:

- Using AppleShare File Servers, but not network printers.
- Using AppleShare File Servers and LaserWriter printers.
- Using one or two Types of network printers, but not AppleShare File Servers.
- Using AppleShare File Servers and ImageWriter or ImageWriter LQ printers.

Using the third procedure, substitute a direct connect ImageWriter for the AppleTalk ImageWriter used in the procedure. The resulting disk provides access to both the direct connect ImageWriter and the networked LaserWriter.

The disk will include:

Graphic Control Panel

DC Printer CDEV

LaserWriter CDEV

RAM CDEV

P8

Drivers for:

AppleDisk3.5

Console

Atalk

SCC

Printer port

ImageWriter

LaserWriter

with 11K still available.

This does not allow support of AppleShare file services. One of the printers needs to be discarded before file services can be provided. This is noted by the Installer during the installation procedure for AppleShare on a 3.5-inch disk. When AppleShare for 3.5 is selected, a dialog appears with the following message:

"WARNING: This update makes a 3.5-inch disk into an AppleShare disk. Files will be removed. Install any printer driver you want (only one will fit)."

(NOTE: Do NOT install this on your only copy of the System Disk.)

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Tech Info Library Article Number:4542



# Tech Info Library

## Apple Monitors: Why Screen Flickers When Image Is Dragged

Revised: 10/4/89  
Security: Everyone

Apple Monitors: Why Screen Flickers When Image Is Dragged

=====

This article last reviewed: 26 September 1989

TOPIC -----

There seems to be a flicker in the Apple High-Resolution Monochrome Monitor and AppleColor High-Resolution RGB Monitor.

To produce the flicker, use MacPaint to create a black box approximately 1 inch by .5 inch. Then select the black box and move it from left to right. In one area of the screen (approximately the bottom one third), you will notice the black box flickering or breaking up as you move it.

This flicker also happens on some Macintosh SE screens (approximately the top one third).

What causes this?

DISCUSSION -----

The flicker is a result of non-synchronous timing between drawing the bitmap to the screen and refreshing the screen. It is a difficult programming task to synchronize the drawing of the image to the screen refresh rate. When this anomaly affects only the moving of selected images, the synchronization is often not implemented. When smooth animation is vital to the application's function, the problem generally does not occur.

The flicker can be seen with most bitmapped-based graphic applications (HyperCard, SuperPaint, MacPaint, FullPaint) that select an image and then directly drag the image. In applications like MacDraw, where only an outline of the image is moved, the flicker is not as evident.

The flicker has been reproduced with several combinations of applications and Macintosh models, and with a variety of monitors. Different combinations demonstrate the effect more prominently than others. We have unable to determine the exact reason certain areas of certain screens display this

effect more than others. Timing issues play a large part in this anomaly.

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Tech Info Library Article Number:4544



# Tech Info Library

## Apple SuperDrive: User Guide (Part 1 of 3)

Revised: 8/23/91  
Security: Everyone

Apple SuperDrive: User Guide (Part 1 of 3)

=====

Article Created: 4 October 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

This article, the first of three parts, contains suggestions for best use of the Apple SuperDrive (formerly Apple FDHD)

DISCUSSION -----

The Apple SuperDrive is a disk drive that can read and write in the standard Macintosh 400K and 800K formats, as well as the newer 1.4MB format. It also allows reading and writing 800K Apple II ProDOS, 720K MS-DOS, and 1.44MB MS-DOS formats.

(NOTE: The format used for MS-DOS is the same one used by OS/2.)

The SuperDrive uses 3.5-inch disks. These disks are available from several sources and come in three "flavors": single-sided (400K), double-sided (800K), and high-density (1.4MB). As a rule, the various disk types are guaranteed by the manufacturer to provide a certain level of storage per disk with little or no errors at the rated storage capacity.

The single-sided disk can be formatted to 400K, and the double-sided disk can be formatted as 800K with confidence (it can also be formatted to 400K). If you do format the 800K disk as a 400K disk, you lose about one-half of the disk's actual rated storage capacity. This may be useful if you want to pass data to a friend who has a Macintosh 512K or a Macintosh XL, which can read only 400K disks. You do not need to buy 400K disks -- just use your 800K disks formatted as 400K.

(Many single-sided disks are really double-sided disks that did not pass the factory's stringent testing standards for double-sided media, but passed as single-sided disks. So, other than the guarantee from the manufacturer,

double-sided and single-sided disks are manufactured with the same process.

High-density disks, however, are manufactured with a completely different process [different oxides, different rating of magnetic flux capacity per square inch, and so on].)

If you have a Macintosh that does NOT have the FDHD capability (like a Macintosh Plus), it is possible to take the high-density media and format it as a 400K or an 800K disk, but is NOT supported.

Unlike the double-density disk (800K), which can be formatted as 400K and be guaranteed to work as a 400K disk, there is no guarantee (especially from the manufacturers of the disk media) that the high-density (1.4MB) disk, when formatted as a 800K or 400K, will work as flawlessly as the user might expect.

The high-density media is a completely different media than is used in the single-sided and double-sided disks. Even the process to read and write information to the 1.4MB disk differs from the 400/800K modes of disk operation. A Macintosh configured for a SuperDrive as one of its floppy drives can tell the difference.

IMPORTANT NOTE: The Macintoshes that support SuperDrives include:

- Macintosh IIX
- Macintosh IICx
- Macintosh SE/30
- Macintosh SEs sold after August 2, 1989.

This article is continued in "Apple SuperDrive: User Guide (Part 2 of 3)".

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Tech Info Library Article Number:4545



# Tech Info Library

## Apple SuperDrive: User Guide (Part 2 of 3)

Revised: 8/23/91  
Security: Everyone

Apple SuperDrive: User Guide (Part 2 of 3)

=====

Article Created: 4 October 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

This article, a continuation of "Apple SuperDrive: User Guide (Part 1 of 3)", contains suggestions for best use of the Apple SuperDrive (formerly Apple FDHD).

DISCUSSION -----

(The Apple SuperDrive is a disk drive that can read and write in the standard Macintosh 400K and 800K formats, as well as the newer 1.4MB format. It also allows reading and writing 800K Apple II ProDOS, 720K MS-DOS, and 1.44MB MS-DOS formats.)

If you compare a 3.5-inch single- or double-sided disk to the 3.5-inch high-density disk, you will notice only small differences. There may be a difference in the disk labeling (whether it is silk-screened or ink-stamped), or the plastic jacket coloring, but the only two ways to spot the difference with certainty is that the high-density media have a "bonus hole" at the top of the disk and the letters "HD" on the front of the disk. The bonus hole is on the same end of the disk as the Write Enable/Write Protect tab, but on the opposite side. The letters "HD" are found around the shutter at the front face of the disk.

When you insert a 3.5-inch high-density disk into Macintosh computers without an Apple SuperDrive, which do not have the necessary mechanisms to detect the bonus hole, the computers presume that it is a "normal" single- or double-sided disk and try to operate with it as expected.

When the high-density disk is put into the SuperDrive-equipped Macintoshes, the SuperDrive senses the bonus hole and locks itself into the mode that allows the Macintosh to treat it as a 1.4MB disk. This is a hardware



function of the drive that cannot be overridden.

- If you insert and format a brand new double-sided disk into a SuperDrive-equipped Macintosh, the disk is formatted at a minimum of 400K or a maximum of 800K. The 400K format is interchangeable with all Macintoshes, and the 800K is interchangeable with all Macintoshes above the Macintosh 512K. So, going from the SuperDrive to the other Macintoshes, everything works just fine as long as you do not use the high-density disks.
- If you take a Macintosh Plus, insert a double-sided disk and format it, the best that you can hope for is 800K of storage on it. The Macintosh Plus then operates with the disk as expected (you insert the disk, the icon appears on the desktop. You can then open it, access applications and documents, and so on). If you take that same double-sided disk to the SuperDrive-equipped Macintosh and insert it into the SuperDrive, the SuperDrive does not sense the bonus hole, and therefore presumes that it is a 400K- or 800K-formatted disk. It reads the 400K/800K-formatted data off of the disk and all operates as expected -- just as on the Macintosh Plus.

Now, if you take that same Macintosh Plus, insert and format a high-density disk, you get a maximum of an 800K-formatted disk. Take this high-density disk to the SuperDrive-equipped Macintosh and insert it into the SuperDrive. The SuperDrive now senses the bonus hole, and therefore presumes that it is a 1.4MB-formatted disk. It tries to read the information on the disk in the 1.4MB mode and sees nothing that it recognizes as 1.4MB type of information. It cannot read the 400K/800K format that the Macintosh Plus put on it in the 1.4MB mode, and therefore gives the user the dialog box stating that it is not a readable disk.

The user sees a disk that works fine in another Macintosh, but does not work in the SuperDrive-equipped Macintosh, and assumes that it is a SuperDrive failure problem. Rather, it is because the SuperDrive has some intelligence, and processes the disk types differently.

A fix for this problem, as well as other information, can be found in the conclusion of this article, "Apple SuperDrive: User Guide (Part 3 of 3)"

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Tech Info Library Article Number:4546



# Tech Info Library

## Apple SuperDrive: User Guide (Part 3 of 3)

Revised: 8/23/91  
Security: Everyone

Apple SuperDrive: User Guide (Part 3 of 3)

=====

Article Created: 4 October 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

### TOPIC -----

This article, a continuation of "Apple SuperDrive: User Guide (Part 2 of 3)", contains suggestions for best use of the Apple SuperDrive (formerly Apple FDHD).

### DISCUSSION -----

(The Apple SuperDrive is a disk drive that can read and write in the standard Macintosh 400K and 800K formats, as well as the newer 1.4MB format. It also allows reading and writing 800K Apple II ProDOS, 720K MS-DOS, and 1.44MB MS-DOS formats.)

### The "Fix" -----

If you put the original high-density disk back into the Macintosh Plus and copy the 800K data from the high-density disk onto an 800K- formatted double-sided disk, you can then put the double-sided disk into the SuperDrive, and the Macintosh with the SuperDrive will read the data properly.

The SuperDrive also has the ability to exchange data on disks between Macintoshes and 3.5-inch drive-equipped MS-DOS or OS/2 computers.

Here are some scenarios to help you understand the combinations of disk types, drive use, and supported (and unsupported) combinations between the two:

- A user on an MS-DOS machine that uses 3.5-inch disks takes a brand new double-sided disk and formats it to 720K. The user can copy his Lotus 1-2-3 spreadsheets from his hard disk to the newly formatted disk and remove the disk from the MS-DOS machine. The user can go to the

Macintosh, launch Apple File Exchange (AFE), and insert the MS-DOS disk into the FDHD. A listing of the contents of the disk, including the spreadsheet that the user wants to transfer to the Macintosh, appears in the AFE window. All behaves just as expected (well, at least, like the manual says it will).

- A user on an MS-DOS machine who uses 3.5-inch disks takes a brand new high-density disk and formats it to 1.44MB. The user can copy his Lotus 1-2-3 spreadsheets from his hard disk to the newly formatted disk and remove the disk from the MS-DOS machine. The user can go to the Macintosh, launch Apple File Exchange (AFE), and insert the MS-DOS disk into the SuperDrive. A listing of the contents of the disk, including the spreadsheet that the user wants to transfer to the Macintosh, appears in the AFE window. Everything behaves as expected.
- A user on an MS-DOS machine who uses 3.5-inch disks takes a brand new high-density disk and formats it to 720K. The user can copy his Lotus 1-2-3 spreadsheets from his hard disk to the newly formatted disk and remove the disk from the MS-DOS machine. (In this instance, the MS-DOS machine does not care whether the disk is high-density or not. It only "cares" that it moved the data successfully to the target disk.) The user can go to the Macintosh, launch Apple File Exchange (AFE), and insert the high-density 720K-formatted MS-DOS disk into the SuperDrive. The SuperDrive cannot read the 720K-formatted MS-DOS disk in the 1.4MB mode, and the Macintosh gives the familiar dialog box that it is not a readable disk, Eject or initialize".
- A user on an MS-DOS machine that uses 3.5-inch disks takes a brand new double-density disk and formats it to 1.44MB. (Note: although this may be possible, it is NOT a supported configuration.) The user should be able to copy his Lotus 1-2-3 spreadsheets from his hard disk to the newly formatted disk. The user removes the disk from the MS-DOS machine. The user can go to the Macintosh, launch Apple File Exchange (AFE), and insert the double-density 1.44MB-formatted MS-DOS disk into the SuperDrive. The SuperDrive senses that the disk is not a high-density disk (no bonus hole) and attempts to read the disk in 400K/800K mode. The SuperDrive cannot read the 1.44MB-formatted MS-DOS disk in the 720K mode, and the Macintosh gives the familiar dialog box that it is not a readable disk, Eject or initialize.

(By the way, the correct MS-DOS command to format a double-density disk to 720K in a 1.44MB disk drive is:

```
FORMAT A:/N:9 /T:80
```

This tells MS-DOS to format the disk in drive A: to 9 sectors per track and 80 tracks, which fits the specifications of the double-density media. If you typed only `FORMAT A:`, MS-DOS assumes that the disk is high-density and tries to format it to 1.44MB. This is not a supported configuration even though it may be physically possible.)

Summary

-----

When you use the SuperDrive, make sure that you are using the correct disk for the job that you are doing. There are only two rules to remember:

- 1) If you are exchanging disks with older Macintoshes, Apple IIs, or 720K formatted MS-DOS machines, use only single- or double-sided disks.
- 2) If you are exchanging data with SuperDrive-equipped Macintoshes or with 1.44MB-formatted MS-DOS machines (most PS/2 machines fit this description), make sure that you are using high-density disks (the ones with the bonus hole).

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Tech Info Library Article Number:4547



# Tech Info Library

## Macintosh: Menu Manager and Printer Font Handling

Revised: 11/11/91  
Security: Everyone

Macintosh: Menu Manager and Printer Font Handling

=====

Article Created: 4 October 1989  
Article Last Reviewed: 11 November 1991  
Article Last Updated: 4 October 1989

TOPIC -----

Technically, is there any difference between the ImageWriter, ImageWriter LQ, and LaserWriter IISC fonts and the normal fonts (FONT, FOND, and NFNT resources)? Or, is the Font Manager just looking for the 2x, 3x, or 4x fonts and using them?

If it is the latter, how does the Menu Manager know the right font sizes? Is it considering what printer driver is used? If an ImageWriter LQ is connected and the same fonts are installed, it had to show different font sizes installed than if an ImageWriter II is installed! Is the Menu Manager just showing the right fonts for the screen and doesn't care about the output?

DISCUSSION -----

The fonts that come with the ImageWriter LQ and LaserWriter IISC are bitmap fonts, just like the fonts that come with the System Software. The only difference is that they come in larger sizes. The Menu Manager and the Font Manager do not behave any differently than normal.

The printer drivers, however, do have an affect on how the fonts are used during the printing process.

For example, if you have a document comprised entirely of Geneva 12, and you are printing to an ImageWriter LQ, the ImageWriter LQ driver attempts to locate Geneva 36 and scale it down to the same size as Geneva 12.

This is done to make the printouts look better. Doing the same thing with the LaserWriter IISC would result in the LaserWriter IISC driver looking for Geneva 48. The ImageWriter II driver would look for Geneva 24.

This is the only difference in the way fonts are handled in these systems.

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Tech Info Library Article Number:4548



# Tech Info Library

## LaserWriter IINT: How To Set PostScript Interactive Mode

Revised: 10/4/89  
Security: Everyone

LaserWriter IINT: How To Set PostScript Interactive Mode

=====

This article last reviewed: 26 September 1989

TOPIC -----

It is possible to set the LaserWriter IINTX to interactive PostScript mode via DIP switch settings, but the LaserWriter IINT cannot be set to interactive PostScript mode through hardware DIP switches.

Is it possible through PostScript (batch mode) to set the LaserWriter IINT to an interactive mode?

DISCUSSION -----

Yes. Both the LaserWriter IINT and the the LaserWriter IINTX can be set to PostScript interactive mode via PostScript.

Use the PostScript procedure that selects PostScript interactive mode. Type "executive", followed by a return or line-feed, and the LaserWriter will be in interactive mode.

Control-D or the PostScript "quit" operator causes the LaserWriter to go back to batch mode.

For more information, see pp. 289-290 of the "PostScript Language Reference Manual", also known as the "Red Book" (Addison-Wesley, ISBN #0-201-10174-2).

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Tech Info Library Article Number:4549



# Tech Info Library

## When ADB Keyboards Do Not Function Properly

Revised: 10/4/89  
Security: Everyone

When ADB Keyboards Do Not Function Properly

=====

This article last reviewed: 28 September 1989

TOPIC -----

What causes a keyboard to act sporadically on a given machine? I have a Macintosh IIcx, and any keyboard connected to it eventually begins to act strangely. It throws characters and mistypes them. When ports are changed, the same thing happens. Is there anything wrong with the system file?

DISCUSSION -----

We suspect that the problem resides in the logic board of this specific Macintosh. Since using the other ADB port on this specific board did not work, we suggest running diagnostics on the logic board. An alternative would be to replace the board to see if the problems remain. It is quite likely that the hardware that controls the Apple Desktop Bus is intermittently failing.

If this does not resolve the problem, you can try using the Control Panel and resetting parameter RAM. You should also set the keyboard settings to their slowest level and then back to the desired settings. Parameter RAM does contain settings that can affect the performance of the keyboard.

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Tech Info Library Article Number:4551





# Tech Info Library

## AppleFax Modem: Two Modems Needed To Send Text Files

Revised: 10/4/89  
Security: Everyone

AppleFax Modem: Two Modems Needed To Send Text Files

=====

This article last reviewed: 28 September 1989

TOPIC -----

AppleFax Modems are fine for sending Faxes, but I would also like to receive text files.

Is there a way to save the file as text, short of importing the received paint file into OmniPage and converting it?

DISCUSSION -----

Fax technology was designed to send and receive a facsimile (photocopy) of a document quickly across long distances. The ability to manipulate the received document defeats the purpose of the facsimile concept, since a manipulated document is no longer a facsimile of the original.

The facsimile communication protocol does not transmit and receive text. This protocol is based on the transmission of a graphic image. A Fax document is composed of scan line information at a resolution of approximately 200 dots per inch. Thus, the data sent via a Fax machine/modem contains no computer-readable text -- it's only a graphic image of the original document. A character recognition application is necessary to translate the graphic image into text, which a computer can edit.

However, when communicating with a second AppleFax Modem, the AppleFax Modem has the ability to transmit and receive Macintosh disk files at Fax speeds.

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Tech Info Library Article Number:4552



# Tech Info Library

## Macintosh: System 6 Heap Size not an Issue With DAs

Revised: 6/16/92  
Security: Everyone

Macintosh: System 6 Heap Size not an Issue With DAs

=====

Article Created: 28 September 1989  
Article Last Reviewed: 29 May 1992  
Article Last Updated: 29 May 1992

Note: The following information pertains only to system software version 6.0.X.

### TOPIC -----

I am concerned about the possibility of running out of system heap space under System 6 when using certain DAs (Desk Accessories). Is there a suggested method for increasing system heap size?

### DISCUSSION -----

System heap size is not an issue as far as DAs are concerned under System 6.

When MultiFinder is not active, DAs are loaded into the application heap. With MultiFinder active, DAs are open and closed via the DA Handler. The DA Handler loads the DAs into the system heap, whose size is automatically increased by MultiFinder, as necessary. When a DA is closed, MultiFinder reduces the size of the system heap.

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Tech Info Library Article Number:4553



# Tech Info Library

## AppleShare PC: Printing To Shared LaserWriter

Revised: 10/4/89  
Security: Everyone

AppleShare PC: Printing To Shared LaserWriter

=====  
This article last reviewed: 28 September 1989

TOPIC -----

I am using AppleShare PC software with my IBM PCs -- I want to share LaserWriters between Macintoshes and PCs.

The problem is that I want to print dBASE IV and Harvard Graphics documents, and am limited by the list of document types Apple supports in the software. Do you have any solutions?

DISCUSSION -----

It sounds to us like you are not using AppleShare PC print services at all, but instead you are using the old PC LaserWriter Program that USED to come bundled with the card. Only in that documentation are application and file types mentioned -- they are only relevant with the PC Laserwriter Program. This program is no longer bundled with the card for a variety of reasons, including: lack of flexibility, supporting only select PC programs, and the need to quit from the application before you could print.

The PC LaserWriter Program lets you print files created with WordStar, MultiMate, Lotus 1-2-3, Microsoft Word, or other applications that create files in ASCII format or files prepared for printing on a Diablo 630 printer.

The AppleShare PC program lets those programs that produce PostScript output to print in pass-through mode, or emulates and translates output intended for any number of Epson printers (listed below). It also translates printer commands and information intended for Epson printers into commands for output to an ImageWriter.

If the program you want to print from cannot produce (PostScript or) LQ2500 output, configure the program to produce output compatible with one of the printers in the list that follows. Use the first compatible printer in the

list. The Epson LQ2500 command set is a superset of these printer command sets, and can use them as well:

- Lq2500
- LQ1000
- LQ800
- LQ1500
- EX series
- FX series
- LX series
- RX series
- MX series
- Epson printer
- Standard printer
- Draft printer

Though we don't have any experience printing documents from either dBASE IV or Harvard Graphics, since they both support Epson printers and Harvard Graphics outputs in PostScript, we know of no reason why they couldn't be printed using the AppleShare PC printing facilities.

For more information, search under: "AppleShare PC 2.0"

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Tech Info Library Article Number:4554



# Tech Info Library

## EtherTalk Card: Optimized for 32-Bit Data Transfer

Revised: 10/4/89  
Security: Everyone

EtherTalk Card: Optimized for 32-Bit Data Transfer

=====

This article last reviewed: 28 September 1989

TOPIC -----

Is Apple's EtherTalk Card conversing over the NuBus in 32-, 16-, or 8-bit mode?

DISCUSSION -----

The EtherTalk Card transfers data using the full 32-bit NuBus path. Although NuBus supports 8-bit and 16-bit data transfers, it is optimized for 32-bit data transfer, and the EtherTalk Card has been designed to take advantage of the full data bus size.

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Tech Info Library Article Number:4555



# Tech Info Library

## Multidisk Audio CD Player Controlled from Macintosh

Revised: 10/4/89  
Security: Everyone

Multidisk Audio CD Player Controlled from Macintosh

=====

This article last reviewed: 28 September 1989

TOPIC -----

Can a multidisk audio CD player be controlled from Macintosh?

These CD players are controlled by standard cordless remote controls. Are there any infrared controllers that can be connected to a Macintosh serial port?

DISCUSSION -----

We are not aware of any commercially available infrared controllers that connect to the Macintosh.

If someone is interested in building a controller, they should check a back issue listing in Byte magazine. Several years ago Steve Ciarcia published an article describing the construction of a programmable infrared controller in his Byte column, "Ciarcia's Circuit Cellar".

Another approach for controlling multiple audio CDs from the Macintosh is using up to seven AppleCD SC drives daisy-chained on the SCSI bus. These are individually controllable from HyperCard via the HyperCard CD Audio Toolkit available from APDA.

For more information, search under: "APDA"

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Tech Info Library Article Number:4556



# Tech Info Library

## Internet Router: Router Version Mismatch Field

Revised: 2/6/90  
Security: Everyone

Internet Router: "Router Version Mismatch" Field

=====

This article last reviewed: 28 September 1989

TOPIC -----

I recently installed the released AppleTalk Internet Router in a Macintosh IIX with:

- AppleTalk Phase 2 Upgrade Utility.
- An Ethernet card running EtherTalk 1.2, which is connected to a MicroVAX running AlisaShare. (No Macintosh system is directly on Ethernet yet.)
- A Token Ring card that goes to an MAU that includes a Macintosh IIcx and an IBM Model 30.

The printer port includes a small Internet of several Macintoshes and a LaserWriter IINTX. The modem port goes to a backbone of several AppleTalk Phase 1 Internets.

Everything seems to be working fine -- that is, I can see all the zones and access all the servers, including the VAX. However, under the Internet Router statistics, I am getting a lot of packet traffic for "Router Version Mismatch". Is that something that the Upgrade Utility is compensating for, or do I have something wrong?

DISCUSSION -----

The "Router Version Mismatch" field tells you how many AppleTalk Phase 1 RTMP (Routing Table Maintenance Protocol) packets that the AppleTalk Internet Router has received. This is not a problem as long as the machine the router is on is also running the AppleTalk Phase 2 Upgrade Utility.

(NOTE: This does not mean that additional packet traffic is being generated.)

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# Tech Info Library

## **AFE: Reading 720K MS-DOS Disk Requires SuperDrive**

Revised: 8/23/91  
Security: Everyone

AFE: Reading 720K MS-DOS Disk Requires SuperDrive

=====

Article Created: 4 October 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

I have a Macintosh Plus and want to use Apple File Exchange and DataViz translators to read 720K MS-DOS disks.

Whenever I insert a disk, the Macintosh responds with the message that the disk is unreadable and asks if I want to initialize it.

The Macintosh Utilities User's Guide says: "The File Exchange Utility runs on any Macintosh computer that has a built-in 800K disk drive."

Why doesn't it work on a Macintosh Plus, but does work when tested on a Macintosh SE?

DISCUSSION -----

Apple File Exchange should run on any Macintosh computer with a built-in 800K disk drive.

The problem here is not AFE, but the disk, so the manual's statements about the File Exchange Utility are beside the point. It is not possible to read an IBM-formatted (MFM) 720K disk in a Macintosh 800K drive. Only the Apple SuperDrive (formerly Apple FDHD) has this ability.

The Macintosh SE you used for testing is able to read a 720K MS-DOS disk, it must have an Apple SuperDrive installed.

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Tech Info Library Article Number:4558



# Tech Info Library

## Internet Router: Needs One EtherTalk Card To Run 1.2 AND 2.0

Revised: 2/6/90  
Security: Everyone

Internet Router: Needs One EtherTalk Card To Run 1.2 AND 2.0

=====

This article last reviewed: 28 September 1989

TOPIC -----

In the EtherTalk documentation, it mentions that I can run both EtherTalk 1.2 and EtherTalk 2.0 on the same machine until my migration is complete to AppleTalk Phase 2.

Do I need two EtherTalk Cards in the router machine to accomplish this?

DISCUSSION -----

No, only one EtherTalk Card is required to communicate in EtherTalk 1.2 and EtherTalk 2.0 packets on the same network.

Complete details on this, including installation, are in Chapter 3 of the "AppleTalk Phase 2 Introduction and Upgrade Guide". This document was included in the "LAN Minds, Volume 1" binder under tab 9.

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Tech Info Library Article Number:4559



# Tech Info Library

## TokenTalk NB Card, OS/2 LAN Server, and SMB

Revised: 10/4/89  
Security: Everyone

TokenTalk NB Card, OS/2 LAN Server, and SMB

=====

This article last reviewed: 28 September 1989

TOPIC -----

I am able to connect my Macintosh to an IBM running MS-DOS and PC LAN 1.3, but I'm having problems with the system running the OS/2 LAN software.

I am trying to connect the TokenTalk NB Card to an OS/2 LAN Server and use the SMB File transfer, but I'm having difficulties. As near as I can tell, I am getting a connection to the OS/2 server but cannot perform file transfers.

I am using the SMB server desk accessory to add and to connect to the server, and it seems to be working OK. The OS/2 system's disk flashes while the connection is established, and then it just stops. When I go to AFE, the SMB server is no longer visible. Apparently, there is another level of security with the OS/2 system that is preventing a firm connection. Is there a workaround? Does Apple support OS/2 LAN?

DISCUSSION -----

The SMB File Transfer Utility can communicate with the SMB file servers implemented in the IBM PC LAN Program versions 1.2 and 1.3 and in the OS/2 LAN server. When adding SMB File Transfer Utility users to the OS/2 server, be sure to identify them as DOS users. The Macintosh SMB File Transfer workstation name must match the OS/2 user name exactly.

If no files or folders appear in the AFE window for any directory on an SMB server, there are three possible explanations:

- 1) You have no access privileges for that directory.
- 2) There are no files or folders within that directory.
- 3) SMB File Transfer cannot determine your access privileges for the directory volume. If this is the case, the SMB File Transfer assumes

that you have no access privileges for this directory.

To determine access privileges when communicating with the OS/2 LAN Server, SMB File Transfer requires that you have either all privileges (A) for the directory to which you connect, or that at least one file exists in that directory.

If you do not have the required privileges, the network administrator needs to create at least one file in the directory to which users connect. This file gives the SMB File Transfer the information it needs to determine your access privileges.

For more information about communicating with an OS/2 LAN server, please read the Update to Apple SMB File Transfer Utility User's Guide shipped with the TokenTalk NB Card.

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Tech Info Library Article Number:4560



# Tech Info Library

## AppleShare PC 2.0: PCLAN Compatibility

Revised: 8/28/90  
Security: Everyone

AppleShare PC 2.0: PCLAN Compatibility

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This article last reviewed: 28 September 1989

TOPIC -----

I am trying to use a PS/2 Mod 70/25 as a bridge between a broadband-based PCLAN server and AppleShare. I need to be able to update files on an AppleShare server from an SMB server every 30 seconds, and AFE's SMB Transfer Utility can't handle this repetitive task.

I installed a DayStar Digital MCA LocalTalk card in the PS/2 along with AppleShare PC 2.0. Both printing and file services worked as advertised. When I issued a "net use" to start up the PCLAN program, I was disappointed. I got some obscure DOS message about "out of buffer memory".

Next, I reconfigured the system to load PCLAN first. When AppleTalk tried to load, I got an error message stating that the session was already bound. After reading the AppleShare PC Read Me file, I came to the conclusion that I was having an interrupt conflict over 5C. Can I change the interrupt in AppleShare PC 2.0?

My next adventure actually worked. I installed the DayStar software, and after changing the load order, I was able to mount both an SMB server and an AppleShare volume on the same machine. I was able to copy files back and forth, and this appears to give me what I need. However, I would feel better using Apple's software, if possible.

Can I get AppleShare PC and PCLAN to co-exist?

DISCUSSION -----

It is possible to configure AppleShare PC 2.0 to use different interrupts and DMA channels.

The card being used must first be configured via its hardware (DIP switches, and so on) to also use those different settings. Once you have the settings for

the card, you have a couple of options available to configure AppleShare PC 2.0 properly.

The first is described on pages 20 through 22 of the AppleShare PC 2.0 manual (Apple Part #030-3002-A), and involves using the configuration menus supplied for the hardware you are using.

The second method is to edit the NET.CFG file, which is created during the configuration process mentioned above. Appendix C of the AppleShare PC 2.0 manual describes the various entries in this file and the different possible settings. It is important to remember that the card being used must have already been configured for the settings you choose in AppleShare PC, or the software will not run.

This should -- no guarantees, unfortunately -- let the two networking packages coexist peacefully. As a final note, Appendix C also contains information on setting buffer sizes as well as the interrupts and DMA channels.

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Tech Info Library Article Number:4561



# Tech Info Library

## Macintosh: Continuous Digital Sound Playback Limited by RAM

Revised: 10/4/89  
Security: Everyone

Macintosh: Continuous Digital Sound Playback Limited by RAM

=====

This article last reviewed: 28 September 1989

TOPIC -----

Is the maximum length of continuous sound that a Macintosh II, IIfx, or IIfx can play determined by RAM size or hard disk size?

Maybe I should put it this way:

Is there any software that is capable of moving sound from hard disk to RAM and Audio Output fast enough to play hundreds of megabytes of continuous music on the Macintosh? Do we need special hardware (like a NuBus card) to do this?

DISCUSSION -----

Most of the Macintosh applications that record and play back 8-bit internal Macintosh digitized sound have their limits set by the amount of RAM in the machine. There are some high-end, higher cost, 16-bit, CD-quality sound solutions available. One of these is Sound Tools from Digidesign. This solution includes a NuBus card, external hardware, and software for the Macintosh II.

For more information, search under: "Digidesign"

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Tech Info Library Article Number:4562



# Tech Info Library

## LaserWriter Driver: Font File Distinctive Icons Lost

Revised: 11/5/91  
Security: Everyone

LaserWriter Driver: Font File Distinctive Icons Lost

=====

Article Created: 4 October 1989  
Article Last Reviewed: 5 November 1991  
Article Last Updated: 4 October 1989

TOPIC -----

The original LaserWriter drivers had a creator of LWRT and a bundle resource that gave a desktop icon to PostScript font files that had the LWRT creator and a type of LWFN or LWFn, as well as to Laser Prep files with a type of LROM and creator LWRT. The new LaserWriter driver has a creator of LWRR, as does the new Laser Prep.

So far, all the downloadable font files that I have seen still have a creator of LWRT. Therefore, when one rebuilds the desktop, the icons for the downloadable font files are lost unless one of the old LaserWriter drivers is available. I tried changing the creator of a font file to LWRR, but even rebuilding the desktop with a copy of the new LaserWriter driver on the same disk does not result in anything other than a blank, generic icon. Is there a trick I need to use?

DISCUSSION -----

Changing the font file's creator to LWRR should have worked. It turns out that there is an anomaly in the BNDL resource in the LaserWriter 5.2 drivers that keeps the necessary information from being copied to the Desktop file of a disk.

Specifically, the LaserWriter 5.2 BNDL resource specifies FREF resources of IDs -8185 and -8186 for the two types of downloadable font files. However, these FREF resources actually have resource IDs of -8189 and -8190. Since the BNDL entries do not agree with the actual resource IDs for each FREF, the information is not copied by the Finder to the Desktop file, and the file icons remain blank.

If you want the icons to appear as they should, you can use ResEdit to



change the resource IDs of FREF -8189 to -8185 and FREF -8190 to -8186.

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Tech Info Library Article Number:4563



# Tech Info Library

## **ZNW Software Development (formerly United Software Industries)**

Revised: 4/4/97  
Security: Everyone

ZNW Software Development (formerly United Software Industries)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

ZNW Software Development

-----

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Woodland Hills, CA 91364

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Company Profile:  
Software, specializing in telecommunications.

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Tech Info Library Article Number:4564



# Tech Info Library

## A/UX-to-MS-DOS C Cross-Compiler

Revised: 9/15/92  
Security: Everyone

A/UX-to-MS-DOS C Cross-Compiler

=====

Article Created: 24 April 1989

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy

### TOPIC -----

I am looking for a C cross-compiler that works under A/UX 1.1 and produces code for MS-DOS (Intel 8086 and 80286). What do you suggest?

### DISCUSSION-----

We do not know of any third-party system developer who has a specific C cross-compiler for A/UX 1.1 that can produce code for MS-DOS Intel 8086 and 80286. However, we know of a couple of third-party system developers (listed below) who have C cross-compilers running under a variety of UNIX System V for 8086, 80286, and 80386 codes. Contact them directly. For more details, search the Tech Info Library under any of the company names given below.

InterMetrics Inc (bought out Whitesmiths, Ltd.)  
Product: Version 3 C Cross-Compiler

Lattice, Inc.  
Product: Lattice C Cross-Compiler

MetaWare Incorporated  
Product: High C Compiler

Oasys  
Product: Microsoft Cross C Development System

Omron Tateisi Electronics Co.

Product: Cross C Compiler

Green Hills Software Inc.

Product: Optimizing compiler C-386

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Tech Info Library Article Number:4565



# Tech Info Library

## MacX25: Compatibility with Bridges and Routers

Revised: 10/4/89  
Security: Everyone

MacX25: Compatibility with Bridges and Routers

=====

This article last reviewed: 25 September 1989

TOPIC -----

What are the support and compatibility concerns of MacX25 and bridges and/or routers?

DISCUSSION -----

MacX25 and the Internet Router can run on the same Macintosh II. However, MacX25 1.0 does not let you connect two AppleTalk networks together over X.25. In other words, one cannot run MacX25 with the Internet Router and expect to link two AppleTalk networks together over X.25.

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Tech Info Library Article Number:4566



# Tech Info Library

## MacX25: Dial-out Capabilities

Revised: 10/4/89  
Security: Everyone

MacX25: Dial-out Capabilities

=====

This article last reviewed: 25 September 1989

TOPIC -----

What about MacX25 dial-out capabilities?

DISCUSSION -----

MacX25 works with "private dial X.25 services," like those offered by Telenet. MacX25 does not support X.32, which is the defined way of doing PUBLIC X.25 dial-in. X.32 is not widely-used today.

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Tech Info Library Article Number:4567



# Tech Info Library

## MacX25: Modem Capability

Revised: 10/4/89  
Security: Everyone

MacX25: Modem Capability

=====

This article last reviewed: 25 September 1989

TOPIC -----

What modems are compatible with MacX25? Will MacX25 work with internal 2400 baud modem?

DISCUSSION -----

MacX25 supports RS232C (V.24/V.28) and V.35 connections. Modems which use these correctly work with MacX25. MacX25 does not support an internal 2400 baud modem.

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Tech Info Library Article Number:4568



# Tech Info Library

## X.25 to LocalTalk: Performance Degradation

Revised: 10/4/89  
Security: Everyone

X.25 to LocalTalk: Performance Degradation

=====

This article last reviewed: 25 September 1989

TOPIC -----

Are there any performance degradations when transmitting from a X.25 network to LocalTalk?

DISCUSSION -----

LocalTalk speed is a factor of 4 to 100 times FASTER than X.25 speeds. LocalTalk is 230.4Kbps, whereas most X.25 access lines are 2400 to 19,200bps, with a maximum of 64Kbps. Therefore, going from a LocalTalk to X.25 link will show lower "performance" than LocalTalk to LocalTalk.

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Tech Info Library Article Number:4569





# Tech Info Library

## MacX25: Number of Server Connections Supported (7/93)

Revised: 7/8/93  
Security: Everyone

MacX25: Number of Server Connections Supported (7/93)

=====

Article Created: 25 September 1989

### Article Change History

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07/07/93 - UPDATED

- To include new information.

### TOPIC -----

What is the practical, maximum number of MacX25 connections one server can open? Does the MacX25 server software require a dedicated machine?

### DISCUSSION -----

The maximum number of virtual circuits (VCs) supported is dependent upon the number of Serial NuBus cards used by the MacX25 server. Each card supports a maximum of 64 VCs. There is a maximum number of VCs supported by the MacX25 server itself of around 250 VCs. So if you configured a MacX25 server using 4 Serial NuBus cards, you could theoretically support  $4 * 64 = 256$ , or 250 VCs.

The actual number of users that can be simultaneously supported depends on:

- The speed of the line (2400bps or a rate from 9600bps to 64000bps)
- The usage pattern (terminal traffic vs file transfer)
- The LAN media (EtherTalk or LocalTalk)

The X.25 server can run in the background; therefore, you do not need to dedicate a Macintosh to run MacX25.

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Tech Info Library Article Number:4570



# Tech Info Library

## LaserWriter II: Paper Jam Problem/Cure

Revised: 10/4/89  
Security: Everyone

LaserWriter II: Paper Jam Problem/Cure

=====

This article last reviewed: 28 August 1989

BEFORE YOU START: Familiarize yourself with the LaserWriter II Technical Procedures. Be sure to follow proper ESD procedures.

Problem: Even after the printed paper is delivered to the output tray, sometime the Delivery Sensing Lever (P/N 949-0186) may not return in place completely, causing the engine to sense it as a paper jam.

Solution: To ensure the lever returns to its proper position, the shape of the lever was changed. This occurred in the fall of 1988. Changing the delivery sensor lever will correct the problem. Use part number 949-0186.

The old lever has a single chambered counter weight near the sensor interrupt portion of the Delivery Sensor Level. The new version has a double chambered counterweight, at the same location.

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Tech Info Library Article Number:4572



# Tech Info Library

## LaserWriter IINTX: Changing Typeface in LaserJet+ Emulation

Revised: 10/4/89  
Security: Everyone

LaserWriter IINTX: Changing Typeface in LaserJet+ Emulation

=====

This article last reviewed: 13 September 1989

TOPIC -----

I am using the IBM PS/2-30-to-LaserWriter IINTX in HP LaserJet+ emulation mode connection.

Everything works perfectly until I try to select a typeface according to:

```
ESC(s3T Courier
ESC(s4T Helvetica
ESC(s5T Times Roman
```

It doesn't work but according to your paper and the manual, it should. I created a text file called font2.txt, which contains:

```
ESC(s4T
```

Then I create a file called helv.bat containing:

```
type font2.txt > lpt1    %Sends ESC-code.
dir > lpt1                %Print text; in this case, the directory.
end                       %Sends Control-D to empty buffer.
```

I execute that file by typing:

```
helv
```

Everything is sent to the printer, but the same typeface is still printed. The printer accepts the escape code but doesn't do anything. What is wrong?

DISCUSSION -----

The reason you could not select the typeface you wanted has to do with the way

the HP LaserJet+ works with characteristics. You changed the typeface to Helvetica without specifying the "Proportional character spacing" characteristic. Because this is a high-priority characteristic, and you did not specifically ask for it, the printer pointed back to the typeface with "Fixed character spacing," which is Courier.

The escape sequence to make this work is:

```
ESC(s1P
ESC(s4T
```

Note that the escape sequence to select Fixed character spacing is ESC(s0P. Characteristics priority is described in the "HP LaserJet Technical Manual."

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Tech Info Library Article Number:4573



# Tech Info Library

## SMB Server: Printing and Spooler Questions

Revised: 10/4/89  
Security: Everyone

SMB Server: Printing and Spooler Questions

=====

This article last reviewed: 13 September 1989

TOPIC -----

Does Apple's implementation of Token Ring allow access to IBM PC LAN server-based spoolers? In other words, can a Macintosh print to a LaserJet serviced by a spooler on an SMB Server? Can an IBM PC print to a LaserWriter II through the same configuration?

DISCUSSION -----

As of September, 1989, we don't know of any LaserWriter IINT/NTX spooler for an IBM PC LAN server, or any method of printing directly from a Macintosh to a LaserJet on an SMB server. The SMB File Transfer Utility, which is bundled with the TokenTalk NB Card, provides only file transfer and translation between MS-DOS files on the SMB file server and the Macintoshes on the Token Ring network.

To print a file from the Macintosh to the LaserJet, first transfer the file to the SMB server using SMB File Transfer. Then, the start the print job.

An IBM PC running TokenTalk can print directly to LaserWriter, if the LaserWriter is connected to a Macintosh running the Apple Internet Router and the AppleShare Print Server.

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Tech Info Library Article Number:4575



# Tech Info Library

## Macintosh-to-TenNET Connectivity

Revised: 10/4/89  
Security: Everyone

Macintosh-to-TenNET Connectivity

=====

This article last reviewed: 13 September 1989

TOPIC -----

Does anyone know of a Macintosh product that lets a Macintosh communicate with a PC that is running 10Net. 10Net, from what I have been told, is a network package that runs on IBM PCs, but I can't find any information about it.

DISCUSSION -----

We were unable to locate 10Net. However, there is a PC-based product called TenNET from TenNET Communications. Their PC LAN is based on the 802.3 standard, supporting 1MBps on twisted pair and 10MBps on either thick or thin coax.

TenNet Communications suggests that their users use QuickShare by Compatible Systems for accessing any PC hard disk from a Macintosh. This software/hardware product connects a SCSI port from a PC to the SCSI port on the Macintosh. It also supports text and bitmap graphics translations.

For more information, search the Tech Info Library under "TenNET Communications" and "Compatible Systems."

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Tech Info Library Article Number:4576



# Tech Info Library

## Macintosh: Twinax/Coax Card Supports One Operation at a Time

Revised: 10/4/89  
Security: Everyone

Macintosh: Twinax/Coax Card Supports One Operation at a Time

=====

This article last reviewed: 19 September 1989

TOPIC -----

If I plugged a twinax connection and a coax connection into an Apple Twinax/Coax Card, can I work on both host environments simultaneously. (That is, run simultaneous 3270 sessions and 5250 sessions under MultiFinder)?

DISCUSSION -----

You cannot use the twinax and coax connections simultaneously on the Apple Coax/Twinax Card. This is due to the limitation of the chip set, which can support only one operation at a time.

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Tech Info Library Article Number:4577



# Tech Info Library

## AppleShare 2.0: Desktop Manager and UnMounting Cartridge Disks

Revised: 10/4/89  
Security: Everyone

AppleShare 2.0: Desktop Manager and UnMounting Cartridge Disks

=====

This article last reviewed: 19 September 1989

TOPIC -----

I have some Videoworks/Director demos that rely on the AppleShare 2.0 Desktop Manager System file for some special file management functions. This file causes problems with removable cartridge disk systems, when ejecting one volume and mounting another.

An easy solution is to simply drag the Desktop Manager out of the System Folder. However, this means that you can't use these cartridge systems for different animation demos, unless you are willing to restart with the new cartridge in place. Do you have any other solutions?

DISCUSSION -----

Our guess is that you have a copy of the Desktop Manager in the System Folder of your startup volume. This INIT shipped with AppleShare and is intended to be used on the server but can be copied to and used with any Macintosh volume. With this INIT in place, you can't unmount any volume you mount at startup, unless you use special utilities as you mentioned above.

Removing the Desktop Manager from the System Folder of the startup volume should let you unmount volumes by dragging the volume to the Trash, as would be expected.

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Tech Info Library Article Number:4579





# Tech Info Library

## Macintosh: Mini-8-to-RJ-45 Connection

Revised: 6/17/92  
Security: Everyone

Macintosh: Mini-8-to-RJ-45 Connection

Article Created: 19 September 1989  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

I have an AT&T 6544 controller with RJ-45 connections, but no coax or RJ-11 installed. (Access to corporate VAX and IBM systems is through the AT&T.) How can I connect a Macintosh asynchronously to this device?

DISCUSSION -----

Our goal was to connect one of the 8-pin serial ports on the back on the Macintosh to an RJ-45 connector. To do this, you need some kind of adapter. We used an RJ-45-to-DB-25 adapter from Black Box Corporation; it doesn't require solder. The DB-25 adapter can be connected to a DB-8-to-DB-25 serial cable. Here are the Black Box part numbers:

- EVMAI: Apple II-to-ImageWriter cable (or use one of our cables)
- FA027: RS-232/RJ-45 modular kit, female

Note: Not all AT&T controllers are wired the same for RJ-45 connection, so there is no guarantee that this exact wiring scheme will work for you. However, it may give you a starting point. Follow these steps:

- 1) Test the wiring. (It's a good idea to use colors on the RJ-45 side to avoid confusion). In this case, the following scheme worked:

| RJ-45 pin |        | DB-25 pin |
|-----------|--------|-----------|
| -----     |        | -----     |
| brown     | -----> | 8         |
| green     | -----> | 2         |
| black     | -----> | 20        |
| red       | -----> | 3         |

- 2) Connect the pins on the RJ-45 connector directly to the pins of the cable and attach a breakout box. You can monitor signals first at the user site and make any necessary changes before you construct the adapter. (Once the connections are plugged into the adapter, they're hard to extract.)
- 3) When you've got the correct pinouts, construct the adapter accordingly and screw it together.
- 4) Plug the cable into the back of the Macintosh, the adapter into the cable, and the RJ-45 connection into the adapter for asynchronous access to the AT&T. This works with MacTerminal and Red Ryder (two emulations packages we use).

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Tech Info Library Article Number:4580



# Tech Info Library

## A/UX 1.1: Korn Shell and rootksh Problem Report

Revised: 9/16/92  
Security: Everyone

A/UX 1.1: Korn Shell and "rootksh" Problem Report

Article Created: 19 September 1989

### Article Change History

-----  
08/27/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I have a problem with the Korn shell option that lets you edit and reuse commands: "set -o vi". Normally, if you type this in a Korn-shell, you can edit and reuse previous commands (see "A/UX User Interface" page 3-8) by pressing Escape and then "+" or "-" to scroll through your commands and edit them using vi-commands.

This works perfectly well except in one case. If you go to multi-user ("init 2") and log on as "rootksh", you can't go back to previous commands (after a "set -o vi"). You still have to type "i" (after an Escape) before you can enter commands. This means that the keyboard input is intercepted by that pseudo-vi editor and not all functions are allowed, although you should be in a normal Korn-shell. If you try to do "exec ksh" from there, you will have the same problem in that shell, but everything works fine if you start another Korn shell ("ksh"). If you do a "su rootksh", you don't have the problem.

You only have the problem (as far as I tested it) when you go to multi-user and log on as "rootksh". This seems to generate a shell that doesn't behave like other Korn shells. Is this normal? Is this a known Korn shell problem (I didn't test this on other UNIX machines)? Is this typical for A/UX?

### DISCUSSION -----

We have verified the problem that the particular "rootksh" login account cannot perform the Korn shell previous command function by issuing Escape and "-".

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4583



# Tech Info Library

## NCSA Telnet 2.3 Release Notice (8/94)

Revised: 8/8/94  
Security: Everyone

NCSA Telnet 2.3 Release Notice (8/94)

=====  
Article Created: 10 November 1989  
Article Reviewed/Updated: 8 August 1994

TOPIC -----

NCSA Telnet version 2.3 Release Notice Macintosh version only (July 14, 1989).

DISCUSSION -----

NCSA (National Center for Supercomputing Applications) Telnet is a combined Telnet client and FTP server program for the Macintosh. It emphasizes a convenient, powerful, user interface and can be configured to match the characteristics of your TCP/IP hosts. We have included support for a wide variety of Ethernet options. Complete user documentation is available: printed or in Macintosh Microsoft Word format files. NCSA Telnet is in the public domain and is available via anonymous FTP or by placing an order.

Features included in version 2.3 of NCSA Telnet

-----  
DARPA standard Telnet  
Built-in standard FTP server for file transfer  
VT102 emulation in multiple, simultaneous sessions  
Tektronix 4014 graphics emulation  
Scrollbar for each session  
Domain name lookup with default domain suffix  
RARP for dynamic IP address assignment  
Full color support (PC and Macintosh II)  
Font and size support (Macintosh)  
MacBinary FTP transfer (Macintosh)  
Apple MacTCP support  
Screens larger than 24 lines supported  
Color Raster display protocol (ICR)

Hardware required for NCSA Telnet

-----  
Macintosh: Macintosh Plus, Macintosh SE, Macintosh II, Macintosh IIX, or

Macintosh IIcx with 1MB memory and System 5.0 or later.

An AppleTalk-to-Ethernet gateway, one of:

- FastPath from Kinetics Inc. and Kinetics gateway software or Stanford KIP (Croft) gateway software
- GatorBox from Cayman Systems and associated gateway software
- Alternate FastPath-compatible LocalTalk-to-Ethernet gateway

or

- EtherTalk software, combined with any of the following hardware:
- EtherSC or EtherPort SE or EtherPort II from Kinetics
- EtherTalk Card from Apple Computer, Inc.
- EtherLink/NB (3C543) or EtherLink/SE (3C563) from 3COM Corporation
- Nodem products from Adaptec.
- MacConnect NIA310 from Interlan, Inc.
- Alternate EtherTalk-compatible systems for the Macintosh

EtherTalk software drivers are generally bundled with the hardware.

Where to Get a Copy

-----

You can get a copy from any of the following:

- From a friend. The documentation, program and source code are in the public domain. Copy, modify, and distribute, as you wish.
- Anonymous FTP from: ftp.NCSA.uiuc.edu (128.174.20.50)

You may want to ftp the READ ME file(s) to determine which files to transfer to your home machine. In particular, only transfer the source (1MB) if you really want it, and only get the MacTCP version if you need it.

The Macintosh version consists of several files encoded with StuffIt and BinHex 4.0. For those of you with BinHex only, UnStuffit is provided in BinHex form. Download the selections you need with an ASCII transfer method (Kermit, NCSA Telnet) and extract the individual files. The documentation is in Microsoft Word 3.X format (not fast-saved).

- Disk or Tape

Disk copies and printed manuals are available for a small fee, which covers materials, handling, and postage. The anonymous FTP tape covers the contents of all disks. Orders are accepted only if accompanied by a check in U.S. dollars made out to the University of Illinois. You can get an order form by contacting:

NCSA Telnet Orders  
152 Computing Applications Building  
605 E. Springfield Ave.  
Champaign, IL 61820

- Archive Server

Electronic mail a request to archive-server@ncsa.uiuc.edu. Include in the subject or message a line with "help" and a line with "index". This is a controlled-access server that E-mails the distribution to you one segment at a time. It is slow, but gateways to BITNET and overseas. To save time for access to NCSA Telnet, also include a line with "index Telnet\_Mac".

- LISTSERV at Brown University (LISTSERV@BROWNVNVM)

To request a file from LISTSERV@BROWNVNVM, send a GET command:

GET filename filetype

The files currently available are:

| NCSA file              | LISTSERV filename | filetype |
|------------------------|-------------------|----------|
| -----                  | -----             | -----    |
| README                 | README            | MEMO     |
| Telnet.src.sithqx      | TELSRC            | PACKAGE  |
| Telnet.2.3.docs.sithqx | TEL23DOC          | SITHQX   |
| Telnet.2.3.sithqx      | TEL23             | SITHQX   |
| Telnet.mactcp.sithqx   | TELMTCP           | SITHQX   |

In addition, the current list is available in the file NCSA FILELIST. To stay within BITNET file size guidelines, TELSRC PACKAGE consists of the file Telnet.src.sithqx split into three pieces. They must be combined using an editor or file utility before running BinHex.

LISTSERV accepts commands either interactively or via mail. Interactive commands are sent as messages to LISTSERV@BROWNVNVM. For example, on an IBM VM system, the TELL command is used: tell listserv at brownvm get NCSA filelist. To send a command via mail, send mail to LISTSERV@BROWNVNVM (BITNET address) or listserv@brownvm.brown.edu (Internet address), and specify the command as the first line of text in the body of the mail.

#### Electronic Mailing List

Mail to telnet-request@ncsa.uiuc.edu to be added to the list of recipients. To post messages to the list, mail to telnet@ncsa.uiuc.edu.

#### Article Change History:

08 Aug 1994 - Removed Dove Computer from article.  
26 Jul 1993 - Company title updated from Adaptec, Inc. to Adaptec.

#### Support Information Services

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Tech Info Library Article Number:4587



# Tech Info Library

## ImageWriter LQ: ROM Upgrade Service Program

Revised: 10/4/89  
Security: Everyone

ImageWriter LQ: ROM Upgrade Service Program

=====

This article last reviewed: 20 September 1989

TOPIC-----

I have a small network of approximately 10 Macintosh II systems, all using EtherTalk Cards with thinnet wiring. The Ethernet network runs connects through a Kinetics FastPath to a PhoneNET network containing two ImageWriter LQs with LocalTalk PC Cards.

With the original ImageWriter LQ logic board with the ROM version 00 everything worked fine. The printer was available on the network from both the Ethernet side and the PhoneNET side. When the dealer installed a new "Reworked" logic board with a ROM version 02 was installed in the ImageWriter LQ, the Macintoshes could access the printer on the PhoneNET side of the network. However, the printers became invisible on the Ethernet side.

Do you have any suggestions for solving this problem?

DISCUSSION-----

There are problems like the one you described that occur as a result of the ImageWriter LQ ROM Upgrade. To solve the problem, a second service program will replace the main logic board with a newer version. The part number of the board is 661-0563. Use the 02 ROMs and driver version 2.0 for the best results.

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Tech Info Library Article Number:4588





# Tech Info Library

## MacIrma 1.20: Use With MultiFinder

Revised: 11/10/89  
Security: Everyone

MacIrma 1.20: Use With MultiFinder

=====

This article last reviewed: 20 September 1989

TOPIC-----

I have a Macintosh II with 5MB of memory under MultiFinder, running System 6.0.2. I use a DCA MacIrma board for IBM host connectivity. When I print five to ten mainframe screens in a row, the system freezes and must be restarted. Background printing is on, and there is no AppleShare Print Server on the network. Do you have any ideas?

DISCUSSION-----

According to our local MacIrma expert, this is a known problem in earlier versions of the software. Make sure that you are using version 1.20 of MacIrma, and the problem should disappear. If the problem does not clear up, contact DCA, Inc. For more details, search the Tech Info Library under "DCA."

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Tech Info Library Article Number:4589



# Tech Info Library

## Scanners for Macintosh Computers

Revised: 10/4/89  
Security: Everyone

Scanners for Macintosh Computers

=====

This article last reviewed: 20 September 1989

TOPIC-----

Do you have a list of available scanners that can scan color slides in 35mm, 6x4, and 6x6 formats? Whether the scanner is a flatbed, a video camera or other doesn't matter.

DISCUSSION-----

We located three scanners that have transparency scanning capabilities. They are the Sharp JX-450, the Howtek Scanmaster, and the Truvel TruScan TZ-3T family.

Using a video camera to scan flat objects usually induces a small amount of curvature due to the camera lens optics. This is not noticeable when a video camera is used for scanning three-dimensional objects. However, the curvature may become unacceptable when used with two-dimensional items.

Most people feel that using the transparency to create a high-quality photographic print and then scanning the print on a color, flatbed scanner to be a more efficient method. The Howtek Scanmaster, Truvel's TruScan TZ-3C family, and the Sharp JX-300 or JX-450 work well with this technique.

For more details, search the Tech Info Library under "Truvel," "Howtek," and "Sharp."

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Tech Info Library Article Number:4591



# Tech Info Library

## AppleShare Print Server: Error Code -127 Problem Solved

Revised: 10/4/89  
Security: Everyone

AppleShare Print Server: Error Code -127 Problem Solved

=====

This article last reviewed: 20 September 1989

TOPIC-----

I am having trouble in my lab. It contains the following:

Server hardware: Macintosh SE  
File server: AppleShare File Server  
Print server: AppleShare Print Server  
Workstations: Macintosh SE

All the workstations are running System Software 6.0. A fatal error occurred so the print server tried to clean up before releasing the printer. I got Error Code -127

The workstation (the fourth one that was about to print) got the message:

Printing cancelled. A problem occurred while printing. Error -4100

What can I do?

DISCUSSION-----

We tested a similar configuration in two labs. The first runs System 6.0 and the second lab System 6.0.2. We have no problems in the second lab. When we exchanged some equipment between the labs, the first lab still had problems. Running System 6.0.2 in the first lab resolved the printer errors.

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Tech Info Library Article Number:4592



# Tech Info Library

## TokenTalk NB Card Connector Issues

Revised: 11/10/89  
Security: Everyone

TokenTalk NB Card Connector Issues

=====

This article last reviewed: 20 September 1989

TOPIC-----

I have an IBM PS/2 attached to a Token Ring. Can the DB-9 connector be detached from the back of the PS/2 and connected to the TokenTalk NB Card in the Macintosh?

Also, what do you do about the different types of connectors, like the yellow and green color-coded connections? Is it true that using the wrong type (color-coded) connector may bring down the Token Ring?

DISCUSSION-----

If the DB-9 attached to the PS/2 is a Type 2 connector, everything will work correctly when connected to the TokenTalk NB Card. However, if the DB-9 connected to the PS/2 is a Type 3 connector, one issue exists. This concerns the size of the DB-9 being attached the PS/2. Some Type 3 DB-9 connectors may be too wide to fit the opening of the Macintosh card slot. Using either the Nevada Western or the Belkin Type 3 connectors designed specifically for the Macintosh resolves the issue.

Using the incorrect cable may induce problems within the Token Ring. The following list describes what various color coding symbolizes.

- Green cables indicate a normal (straight-through, pin-to-pin) cable. This is the standard Type 2 cable.
- A yellow (or possibly red) stripe on the cable indicates that the cable has a built-in Type 3 filter. Type 3 filters are used when phone wire is the physical layer of the Token Ring.
- A yellow cable indicates that the transmit and receive pairs are swapped in the cable. This cable is used ONLY when connecting two Token Ring repeaters.

- An IBM adapter card, which has a green DOT on it, indicates that this connection is for an adapter cable (a DB-9-to-Data Connector adapter cable).

For more complete information on Token Ring connectors, refer to the IBM document #GA27-3677-0x, Token Ring Planning Guide.

For more details, search the Tech Info Library under "Belkin" and "Nevada Western."

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Tech Info Library Article Number:4593



# Tech Info Library

## AppleTalk: Zone and Performance Issues

Revised: 10/4/89  
Security: Everyone

AppleTalk: Zone and Performance Issues

=====

This article last reviewed: 20 September 1989

TOPIC-----

I have an Internet containing five networks with a total of 75 Macintosh systems using Hayes InterBridges as routers. All five networks are in a single zone to minimize user confusion.

Is there a performance loss doing this? Should I separate the networks into different zones?

DISCUSSION-----

Zones provide almost no performance benefit. Zones were implemented to provide a more convenient interface to the Internet for the user and network administrator. NBP lookups are faster with more than one zone. Other than that, there is no performance difference.

It would not be a good idea to have all the file servers or LaserWriters for one Internet within a single network. The following is an example of improperly designed Internet:

Network "A" contains 15 Macintosh systems. Network "B" contains four LaserWriter printers and 15 Macintosh systems. Both networks are connected to a backbone via routers.

Here is what happens during a sample printing operation:

Printing from a node on network A to a LaserWriter in network B:

- 1) The packets from the node on network A are sent to the network A router.
- 2) The packets are then sent by the network A router, over the backbone, to the network B router.

- 3) The network B router sends the packets to the destination LaserWriter on network B.
- 4) All packets sent by the LaserWriter giving the job status return to the node on network A, along the same path in reverse.

Printing from a node on network B to a LaserWriter in network B:

- 1) The packets from the node on network B are sent to the destination LaserWriter on network B.
- 2) All packets sent by the LaserWriter giving the job status return to the node on network B directly.

As you can see by the two examples, it is significantly more efficient to print to a LaserWriter within the same network, whether or not the LaserWriter is in the same zone.

When deciding what components to put into a network, keep the above information in mind. It also applies to other networked devices, like file servers, not just LaserWriters.

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Tech Info Library Article Number:4594



# Tech Info Library

## EtherTalk 2.0: Allows Serial & AppleTalk Communication

Revised: 6/29/90  
Security: Everyone

EtherTalk 2.0: Allows Serial & AppleTalk Communication

=====

This article last reviewed: 20 September 1989

TOPIC -----

I am having some difficulty printing with the ImageWriter LQ.

I have an EtherTalk Card for accessing AppleShare servers and other network entities, and an ImageWriter LQ on the printer port. When using Chooser to select the ImageWriter LQ (instead of LaserWriter) and selecting the printer port, all AppleShare connections are destroyed.

I notice that the A-L Historical Listing of software (6/89) in the Tech Info Library shows ImageWriter LQ disks rev 2.0.1. Could it be that this problem has been addressed with Revision 2.0.1?

DISCUSSION -----

Actually, it has nothing to do with the ImageWriter LQ driver. The EtherTalk 1.0 (1.1 and 1.2, inclusive) drivers make it impossible to use the printer port when EtherTalk is selected and AppleTalk is turned on.

The EtherTalk 2.0 drivers have solved this problem by freeing the printer port for serial or non-AppleTalk communications.

We do have a resolution to the problem, however. Here are the steps:

- 1) Remove the EtherTalk 1.0 software using the EtherTalk 1.0 installer.
- 2) Install the EtherTalk 2.0 software using the EtherTalk 2.0 installer.
- 3) Copy the EtherTalk 1.0 ADEV into the System Folder of the target machine; the name of the file is "EtherTalk".
- 4) Remove the file called "EtherTalk2.0". This file is used only when connecting to an AppleTalk, Phase 2-based, EtherTalk network.



The ImageWriter LQ disks rev 2.0.1, mentioned above, refer to the revision of the disk and not the software on the disk. ImageWriter LQ 2.0 is the latest revision of the driver.

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Tech Info Library Article Number:4595



# Tech Info Library

## TextEdit: Limits and Alternatives

Revised: 6/29/90  
Security: Everyone

TextEdit: Limits and Alternatives

=====

Article Created: 21 September 1989  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

I have developed an alpha version of an electronic mail system for a Sun 4 server running UNIX with Macintosh front ends. Documents are limited to approximately 32,000 characters, because of the 16-bit count in the text editor (buffer). I want the system to handle longer documents, and this brings up a couple of questions:

- 1) "Inside Macintosh Volume I," page 392, shows "teLength" as an integer (16-bit). Is this the variable in question?
- 2) Does System Software 7.0 implement longint (32-bit) count?
- 3) Is there a tool kit available for developers that would help in this effort?

DISCUSSION -----

- 1) TextEdit is able to handle text up to 32,767 characters long. This is a design or implementation limit. The "teLength" field just happens to reflect this limit. Remember, TextEdit was designed for limited text handling tasks; it was not intended to be the foundation for an editor or word processor.
- 2) TextEdit will still be limited to 32,767 characters in System Software 7.0.
- 3) There is a text-editor tool kit available from Symantec call "CAPPS" that is compatible with their Think C and Think Pascal products. DataPak Software has a product called "WP-Engine" that may also meet your needs.

# ..TIL04596-TextEdit-Limits\_and\_Alternatives\_(TA40522).pdf

For more details, search for "Symantic AND 3rd" and "DataPak AND 3rd".

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Tech Info Library Article Number:4596



# Tech Info Library

## AppleTalk: Zone Design Issues

Revised: 10/4/89  
Security: Everyone

AppleTalk: Zone Design Issues

=====

This article last reviewed: 21 September 1989

TOPIC-----

This article discusses technical advantages exist for communications within a zone:

- 1) Is there a simplified routing algorithm used within a zone?
- 2) How much performance difference is there between intra-zone and inter-zone transmission (for a given physical Internet)?
- 3) Are there any downside tradeoffs to grouping several networks as a zone?

We have been told that it is generally best to assign each network to its own zone. However, the Kinetics FastPath 4 manual (page 1-13) says that "...it is fastest to communicate with devices that are within one's own zone", and "...zones should be based on network traffic patterns". Which is correct?

DISCUSSION-----

- 1) There is no simplified routing algorithm used within a zone as compared to routing to another zone. This is because all routing depends on node IDs, socket numbers, and network numbers.
- 2) In most situations, there is very little difference. NBP lookups are faster when communicating within a single zone. Other than this, there are no performance difference.
- 3) It depends: the Kinetics FastPath 4 manual is correct saying that "zones should be based on network traffic patterns". It is not a good idea to put several saturated networks within the same zone. Nor is it a good idea to have all the file servers for one Internet within a single zone. It is best to balance the Internet by leveling the traffic

across zones so that a single zone does not contain the majority of the network traffic.

The Kinetics FastPath 4 manual is not completely correct saying "...it is fastest to communicate with devices that are within one's own zone". This statement is correct if each network is its own zone and incorrect if several networks are within a single zone. This is the true because it is necessary to go through a router if Network A is communicating with Network B, whether or not they are in the same zone.

For more information, we recommend reading chapters 7 and 8 of "Inside AppleTalk".

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Tech Info Library Article Number:4597



# Tech Info Library

## Xceed Technologies (acquired Micron Technology)

Revised: 7/21/93  
Security: Everyone

Xceed Technologies (acquired Micron Technology)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 21 July 1993

Xceed Technologies  
-----

37560 31 Mile Rd.  
Richmond, MI 48062

313-727-4085

800-642-7661

Fax: 313-727-3437

Company Profile:  
Hardware, specializing in add-on cards and memory products.

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Tech Info Library Article Number:4598



# Tech Info Library

## Cellular Modems: Availability

Revised: 2/12/93  
Security: Everyone

Cellular Modems: Availability

=====

Article Created: 4 October 1989

### Article Change History

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02/12/93 - UPDATED  
• Vendor information.

### TOPIC-----

Do you know anyone who makes car phone modems?

### DISCUSSION-----

You have two options:

- 1) An internal cellular modem. This is more expensive. However, Fujitsu makes a mobile phone with a datalink option.
- 2) Use a data jack with any existing Hayes-compatible modems. The data jack serves as an gateway and does not interfere with the phone or the modem. It is independent to the modem baud rate. Data jacks costs about \$150 and are available from Cellab in Canoga Park, CA.

You might want to try the phone book in your area for distributors of these products. If you cannot find any information in your area, try the following distributors in Northern California: CelluTel of Palo Alto and Mobile Land in Fremont.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4600



# Tech Info Library

## Macintosh-to-Unisys Connectivity: MacBLAST

Revised: 10/4/89  
Security: Everyone

Macintosh-to-Unisys Connectivity: MacBLAST

=====

This article last reviewed: 26 September 1989

TOPIC-----

Beyond Novell, is there any other way to connect the Macintosh to a Unisys B26, B27, B27LCW, B28, or B38?

DISCUSSION-----

As of August 1989, the only other option we know of is MacBLAST software from Communications Research Group. Their "BLAST" software runs on over 100 different hardware platforms. MacBLAST communications software interfaces with BLAST running on the B series computers you mentioned above. It supports asynchronous communications with speed up to 38.4K.

For more details, search the Tech Info Library under "Communications Research Group".

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Tech Info Library Article Number:4601





# Tech Info Library

## TCP/IP-to-VM Connect and Ethernet Cards for Mac II (8/94)

Revised: 8/8/94  
Security: Everyone

TCP/IP-to-VM Connect and Ethernet Cards for Mac II (8/94)

=====

Article Created: 10 November 1989  
Article Reviewed/Updated: 8 August 1994

TOPIC -----

I want to send TCP/IP protocols to VM in the IBM environment. I also want information on all Ethernet interface cards that can be used in the NuBus slots for the Macintosh II family. Also, can you explain the configuration for connecting a Macintosh II with an Ethernet interface to the VM system?

DISCUSSION -----

1) Here are names and phone numbers of some vendors who support Ethernet interface cards for the Macintosh II:

- Apple Computer, Inc.
- 3COM Corp.
- EMAC, A division of Everex
- Asante Technologies

For a more complete list of hardware and peripherals communications vendors, please consult a commercial publication, like "The Macintosh Buyer's Guide.

2) IBM has a TCP/IP family of products called The Laureate Series. The TCP/IP for VM product (part number 5798-FAL) uses an S/370 channel to attach to a variety of controllers for connection to the selected network. The network controllers supported are:

- IBM 8232 LAN Channel Station
- Series/1 with Realtime Programming System

The 8232 LAN Channel Station is a controller-type device that provides

attachment of Local Area Networks to a host via the S/370 channel. The LAN Channel Station unit supports one or two LAN Channel Controllers. Each LAN Channel Controller supports two LAN connections to a host channel. To be on a VM TCP/IP network over Ethernet, the Macintosh needs an Ethernet adapter, TCP/IP software, like NCSA Telnet or TCP/Connect from InteCon Systems Corp and appropriate Ethernet cables.

3) To get an asynchronous connection to a Macintosh, you have three possibilities:

- Mac3270, by Simware
- MacBLAST, by Communications Research Group
- RELAY Baton, by RELAY Communications

For more details, search the Tech Info Library using the above company names.

Article Change History:

08 Aug 1994 - Removed Dove Computer.

Support Information Services

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Tech Info Library Article Number:4602



# Tech Info Library

## ADB: Development References

Revised: 7/2/92  
Security: Everyone

ADB: Development References

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Article Created: 25 September 1989  
Article Last Reviewed: 26 June 1992  
Article Last Updated:

TOPIC-----

I am developing ADB (Apple Desktop Bus) hardware/firmware. Does Apple already have some sort of an ADB developer's starter kit?

DISCUSSION-----

Apple doesn't have an ADB starter kit. However, ADB information is available from a variety of sources, including:

- "Inside Macintosh Volume 5," Chapter 20, "The Apple Desktop Bus"
- "Macintosh Hardware Reference"
  - Chapter 11, "Macintosh SE ADB Interface"
  - Chapter 19, "Macintosh II ADB Interface"
- "MacUser"
  - Baum, Peter, "Boarding the Bus," 7/87, page 142
- Call A.P.P.L.E., Baum, Peter, "An Overview of Apple Desktop Bus," 6/87, page 24.
- Technical Note #160, "Key Mapping" - Technical Note #206, "Space Aliens Ate My Mouse!!! (ADB--The Untold Story)"
- Macintosh Sample Code Note #17, "ADB Tablet Driver Sample Source"

Note: Apple's Desktop Bus and ADB Device Specifications are a licensable product available through Apple's Software Licensing group.

Technical and Sample Code Notes are posted on AppleLink in the Developer

Services bulletin board.

You might consider becoming an Associate or Partner Developer to obtain development support from Developer Services. For more information, search under "APDA".

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Tech Info Library Article Number:4603



# Tech Info Library

## 10-NET Communications

Revised: 12/4/92  
Security: Everyone

10-NET Communications

=====

Article Created: 4 October 1989

### Article Change History

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12/04/92 - UPDATED

- To reflect changes in company information.

10-NET Communications, networking, specializing in PC LAN (Local Area Network).

### 10-NET Communications

A division of Tiara Computer Systems, Inc.

7887 Washington Village Dr.

Suite 200

Dayton, OH 45459

513-433-2238

800-358-1010

800-346-4519 (Tech. Support)

Fax: 513-434-6305

1041 Shoreline Blvd.

Mountain View, CA 94043

800-638-4272

Fax: 415-965-2677

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Tech Info Library Article Number:4605



# Tech Info Library

## Howtek, Inc.

Revised: 9/4/96  
Security: Everyone

Howtek, Inc.

=====

Article Created: 10/04/89  
Article Reviewed/Updated: 4 September 1996

Howtek, Inc.

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21 Park Ave.  
Hudson, NH 03051

603-882-5200

Fax: 603-880-3843  
Internet Web Site: <http://www.howtek.com>

Company Profile:  
Hardware, specializing in scanners.

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Tech Info Library Article Number:4606



# Tech Info Library

## Pinnacle Micro, Inc.

Revised: 4/4/97  
Security: Everyone

Pinnacle Micro, Inc.

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Pinnacle Micro, Inc.

-----

19 Technology  
Irvine, CA 92718

800-553-7070

714-727-3300

714-727-1913 Fax

Company Profile:  
Hardware, specializing in erasable optical storage devices.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4609



# Tech Info Library

## Truvel Corp. (Division of Vidar Corp.)

Revised: 4/4/97  
Security: Everyone

Truvel Corp. (Division of Vidar Corp.)

=====

Article Created: 4 October 1989  
Article Reviewed/Updated: 4 April 1997

Truvel Corp. (Division of Vidar Corp.)

-----

520 Herndon Parkway  
Herndon, VI 22070

703-742-9500

Fax: 703-471-1165

Company Profile:  
Division of Vidar Corp., hardware, specializing in scanners.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4611





# Tech Info Library

## DAL: Applications 03/93

Revised: 7/27/93  
Security: Everyone

DAL: Applications 03/93

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Article Created: 4 October 1989  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

This article contains a list of applications that have been developed for Data Access Language (DAL), formerly known as "CL/1." Many of the other DAL applications are available from the particular application's vendor. Search the Tech Info Library under the vendor's name for details on any of these packages.

DISCUSSION -----

### Generic Database Browsers

Clear Access from Clear Access Corp. (formerly Fairfield Software, Inc.)

GQL from Andyne Computing Limited

Data Prism & Data Pivot from Brio Technology

Executive Query Tool from ADI (Application Design Inc.) and Apple IS&T

### Spreadsheets

Full Impact from Ashton-Tate

Lotus 1-2-3 for Macintosh from Lotus

WingZ from Informix Software

Excel from Microsoft

### Desktop Mapping

GeoQuery from Odesta Corporation

Tactisian from Tactics International

Atlas Pro from Strategic Mapping

#### Expert Systems

DAL for HyperCard from Apple

Nexpert Object from Neuron Data

Hyper X from Millenium

#### Client/Server Application Development

4th Dimension from ACI US, Inc.

Omnis from Blyth

HyperCard from Claris

Super Card from Aldus

#### Article Change History

23 July 1993 - Company title changed from Fairfield Software, Inc. to Clear  
Access Corp.

15 March 1993 - Updated, Acius is now ACI US, Inc.

6 July 1992 - Reviewed, for accuracy.

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Tech Info Library Article Number:4613



# Tech Info Library

## South Hills Datacomm (formerly S. Hills Elec./Cord Cable)

Revised: 7/19/93  
Security: Everyone

South Hills Datacomm (formerly S. Hills Elec./Cord Cable)

=====

Article Created: 4 December 1989  
Article Reviewed/Updated: 19 July 1993

South Hills Datacomm

-----

760 Beechnut Drive  
Pittsburgh, PA 15205

412-921-9000

800-245-6215

Fax: 412-921-2254

Company Profile:  
Formerly South Hills Electronics/Cord Cable, hardware, specializing in cables and connectors.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4627



# Tech Info Library

## Mobius Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

Mobius Technologies, Inc.

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Article Created: 12/04/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Mobius Technologies, Inc.

-----

5835 Doyle St.  
Suite 107  
Emeryville, CA 94608

800-669-0556 (Technical Support)

510-654-0556

510-654-2834 Fax

Company Profile:  
Hardware, specializing in integrated solutions and peripherals for the  
Macintosh.

Article Change History: 07/13/93 Address information corrected.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4628



# Tech Info Library

## Grandolf Corp. (formerly Infortron Systems Corp.)

Revised: 4/4/97  
Security: Everyone

Grandolf Corp. (formerly Infortron Systems Corp.)

=====

Article Created: 4 December 1989  
Article Reviewed/Updated: 4 April 1997

Grandolf Corp. (formerly Infortron Systems Corp.)

-----

Cherry Hill Indust. Center, #9  
Cherry Hill, NJ 08003-1688

609-424-9400

Fax: 609-751-4370

Company Profile:  
Formwely Infortron Systems Corp., hardware and software, specializing in  
datacomm and telecomm.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4629



# Tech Info Library

## Motorola UDS (Formerly Universal Data Systems)

Revised: 7/20/93  
Security: Everyone

Motorola UDS (Formerly Universal Data Systems)

=====

Article Created: 4 December 1989  
Article Reviewed/Updated: 20 July 1993

Motorola UDS  
-----

5000 Bradford Dr.  
Huntsville, AL 35805

205-430-8000

Fax: 205-430-8889

Company Profile:  
Formerly Universal Data Systems, hardware, specializing in networking, modems,  
and adapters.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4631



# Tech Info Library

## **Kennect Technology**

Revised: 4/6/92  
Security: Everyone

Kennect Technology

=====

Article Created: 4 December 1989  
Article Last Reviewed: 6 April 1992  
Article Last Updated:

Kennect Technology, hardware, specializing in microcomputer hardware and adapters.

Kennect Technology  
120-A Albright Way  
Los Gatos, CA 95030  
800-552-1232  
408-370-2866  
Fax: 408-370-0484  
AppleLink: D2997

Copyright 1989, 1991, Apple Computer, Inc.

Tech Info Library Article Number:4632



# Tech Info Library

## LaserWriter 6.0 Driver: Internet Router Conflict

Revised: 12/16/91  
Security: Everyone

LaserWriter 6.0 Driver: Internet Router Conflict

=====

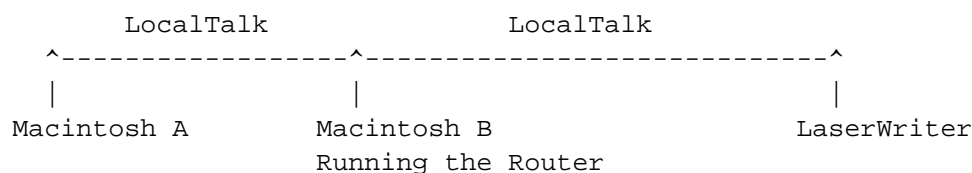
Article Created: 7 October 1989  
Article Last Reviewed: 2 February 1991  
Article Last Updated:

TOPIC -----

I think I have a conflict between the AppleTalk Internet Router and LaserWriter 6.0 drivers. When I send a job to the printer with the gray-scale option, the system crashes completely without any system ID error. It seems to work fine when the black and white option is selected.

DISCUSSION -----

The following diagram will help illustrate our answer:



There should be no problem with Macintosh A printing gray scale to the LaserWriter: we have successfully tested this with no problems.

Printing from Macintosh B to the LaserWriter with the LaserWriter 6.0 driver is not recommended, because it uses much more memory than the LaserWriter 5.2 driver.

Printing

-----

(Note that the following considerations refer to printing from the router machine. These considerations do not refer to a workstation printing, even if it reaches a printer through a router.)

- Avoid background printing on a router machine. When PrintMonitor opens a



printer driver, it uses up memory; the router desk accessory may then run out of memory.

- Do not try 32-bit color printing from a router machine.
- Be aware that the 6.0 LaserWriter driver uses much more memory than the 5.2 driver. Avoid using the 6.0 LaserWriter driver on a 1MB router machine. Also, avoid using the 6.0 LaserWriter driver, when running the router and the AppleShare File Server concurrently.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4634



# Tech Info Library

## SuperDrives: Bad Formatting May Mean Disk Is High-Density

Revised: 8/23/91  
Security: Everyone

SuperDrives: "Bad Formatting" May Mean Disk Is High-Density

=====

Article Created: 4 December 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

### TOPIC -----

On a few occasions, when I have formatted an 800K floppy disk on a Macintosh II or Macintosh SE, then tried to use it in a Macintosh IIfx, Macintosh IICx, or Macintosh SE/30, I received a dialog box stating, "This is not a Macintosh disk, do you want to format it?". Why?

### DISCUSSION -----

This message, asking if you want to format a disk, occurs if the floppy disk formatted in the 800K drive was a high-density disk. Check the disks displaying this problem to see if they have a bonus hole -- an extra hole at the top right corner of the disk. They are also marked as high-density disks. There have been cases where high-density disks were put in packages with 800K disks, so you might not even be aware that there are two different disks.

When high-density disks are put into an Apple SuperDrive (formerly Apple FDHD), the drive sees the bonus hole and knows that it is a high-density disk. It also sees that it was not formatted for 1.44MB and wants to do that.

The medium for the 800K disks is different than for the high-density disks, and data is written differently to each. Because of this, we suggest that if you have any high-density disks that have been formatted as 800K disks, copy the information from the high-density disks onto 800K disks. The high-density disks should then be re-formatted as 1.44MB disks.

For more information, read the three-part Tech Info Library article, "A Guide to Using the AppleSuperDrive". Search under: "SuperDrive"

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Tech Info Library Article Number:4637



# Tech Info Library

## Apple IIfc Plus: How To Print to a LaserWriter IINT

Revised: 12/4/89  
Security: Everyone

Apple IIfc Plus: How To Print to a LaserWriter IINT

=====

This article last reviewed: 3 October 1989

TOPIC -----

I want to print to a LaserWriter IINT in Diablo emulation from an Apple IIfc Plus running AppleWriter v2.0.

I am having some difficulty making this configuration work. Can you provide the cabling, serial port, LaserWriter, and software information necessary?

DISCUSSION -----

We were able to successfully print from an Apple IIfc Plus to a LaserWriter IINT using the following method.

We copied the software (AppleWriter 2.1, in our case) to a 3.5-inch disk. We set up the LaserWriter IINT and set the switches to Diablo mode (SW1 DOWN, SW2 UP) and connected it to the Apple IIfc Plus with an Apple IIe Printer-8 cable (Mini circ-8-to-DB-25 cable) and a Modem eliminator (DB-25 Male-to-DB-25 Female). If you have an Apple IIe Modem-8 cable, it will also work correctly.

We started up the software and set the parameters on the Apple IIfc Plus serial port #1 to 9600 baud, 7 data bits, No parity and 2 stop bits. (Setting the port is done by using the Control-O menu, Option-J "Setting the Printer/Modem Interface", and entering 9600,7,n,2, Return.)

Load a file into AppleWriter and press Control-P, then np, to print.

The main reason you may have had difficulty printing with this particular hardware/software configuration -- given correct cabling -- is that you may have assumed the Apple IIfc Plus serial ports default to a usable baud rate, as have previous Apple IIfc systems.

When setting the Printer/Modem interface through AppleWriter, we noticed that the ports default settings are 0 baud, 8 data bits, no parity, and 2 stop bits.

This needs to be changed to the configuration listed above before you can print.

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Tech Info Library Article Number:4638



# Tech Info Library

## ImageWriter II: Maximum Interface Cable Length

Revised: 12/4/89  
Security: Everyone

ImageWriter II: Maximum Interface Cable Length

=====

This article last reviewed: 3 October 1989

TOPIC -----

I want to have an ImageWriter II printer directly connected to my Macintosh modem port (as a non-AppleTalk device), but have the printer physically located several yards away from the Macintosh. What is the maximum cable length for connecting an ImageWriter II directly to a Macintosh?

DISCUSSION -----

Tech Comm has driven an ImageWriter/ImageWriter II at distances up to 12 feet without difficulty. The RS-232 standard specifies a maximum of 50 feet using the maximum voltage (+/-25V).

If one side of the output device is grounded, to convert the signal from RS-422 to RS-423 signalling, the printer should workable at (approximately) a maximum of 50 feet away.

(NOTE: Since most Macintoshes use the same output device, the 26LS30, this information is relevant for most systems.)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4639



# Tech Info Library

## GS/OS: SCSI Device Driver Error Message (1/94)

Revised: 1/6/94  
Security: Everyone

GS/OS: SCSI Device Driver Error Message (1/94)

Article Created: 4 December 1989  
Article Reviewed/Updated: 6 January 1994

TOPIC -----

After I updated from GS/OS version 4.0 to 5.0, I received a strange error message -- "SCSI DEVICE NEEDS TO HAVE DRIVER INSTALLED" -- when starting up or reloading the desktop from a ProDOS 8 application. If I press RETURN, I can continue as if nothing is wrong.

I have tried various software fixes, including completely reformatting my 20MB hard disk and reloading it, but I continue to get this error.

DISCUSSION -----

It's hard to be specific without knowledge of the exact procedures used during installation, or what type of hard disk is in use. However, the following are generally the reasons the error message is posted.

There's an option called "Install Everything Possible" in the GS/OS 4.0 Installer. If you choose this option, it's likely that the SCSI Hard Disk option gets installed as a part of the "everything possible" option.

GS/OS 5.0 uses the "Latest System Files" option to install the major portion of GS/OS -- GS/OS 5.0 doesn't have the "everything" option. This means that the "SCSI Hard Disk" driver installation must be selected independently of the System Files installation.

The "Apple IIGS System Software User's Guide Version 5.0" (Apple Part #030-1622-A) discusses troubleshooting in Chapter 9. Page 155 of that chapter states:

"SCSI device requires a driver. Please install the SCSI driver on boot disk and restart system."

This message indicates that you've connected a SCSI hard disk, but the current startup disk (or "boot disk" in computer jargon) doesn't include the "SCSI Hard Disk update." Press Return to continue starting up. When the Finder desktop appears, use the Installer to add the "SCSI Hard Disk" update to the current startup disk.

With GS/OS versions 6.0 and 6.0.1, you can still get the error message, and it still means that something is missing from the installation. SCSI drivers are still installed as separate items in most instances. If you have a SCSI device attached and you don't have a SCSI driver installed, you'll get this message.

Article Change History:

4 January 1994 - Reviewed and added version 6.0 and 6.0.1 information.

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Tech Info Library Article Number:4640



# Tech Info Library

## LaserWriter Driver: Will Not Print To LW With Password

Revised: 11/5/91  
Security: Everyone

LaserWriter Driver: Will Not Print To LW With Password

=====

Article Created: 4 December 1989  
Article Last Reviewed: 5 November 1991  
Article Last Updated: 4 December 1989

TOPIC -----

Can the LaserWriter IINTX set an "exitserver" password? Is an exitserver password insufficient to prevent settings from being changed?

DISCUSSION -----

The LaserWriter IINTX CAN have a password, and that password is sufficient to prevent settings in the LaserWriter from being changed.

More importantly, the only password in the LaserWriter family (PostScript) of printers is the system administrator password. If this password is set to anything other than "0", the LaserWriter will not work with the LaserWriter drivers from Apple. If the password is set to zero, the LaserWriter effectively has no password. The LaserWriter drivers expect the LaserWriter to have no password and will not print to a LaserWriter with a password.

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Tech Info Library Article Number:4642





# Tech Info Library

## Macintosh Video Card: Modifying 8-Bit to NTSC Color Video

Revised: 12/4/89  
Security: Everyone

Macintosh Video Card: Modifying 8-Bit to NTSC Color Video

=====

This article last reviewed: 3 October 1989

TOPIC -----

I hear that there are pinouts available for a cable that will modify an 8-bit Apple Macintosh Video Card to produce conventional NTSC color video as an unsupported feature. What are they?

DISCUSSION -----

The information you are looking for is actually a CDEV/INIT and a documentation file. These are on AppleLink in a file called "32-Bit QuickDraw Demos" under the "Developer Services" icon. Here is the path:

Developer Services  
Developer Technical Support  
Macintosh  
32-Bit QuickDraw  
32-Bit QuickDraw Demos

The CDEV/INIT file is called "Macintosh II Video Utility", the documentation file is "Video Utility Read Me".

Here is the information included about the cable:

"You will need a special cable to connect an RS-170-compatible monitor (or VCR) to your Macintosh. One side must plug into the Apple Macintosh II Video Card. It must have a 15-pin male DB-15 connector. The other side must plug into your video equipment. Pin 5 of the DB-15 connector contains the RS-170-compatible monochrome video signal. Pin 6 is the shielding ground for this signal. Typically, you connect pin 5 to the central wire of your video cable, and connect pin 6 to the shielding braid."

"WARNING: It is possible to damage your video equipment and/or your Macintosh II by using an improperly constructed cable. If you are not familiar with

video equipment, you should not try to make a special cable!"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4643



# Tech Info Library

## nFLU Virus: Information

Revised: 12/4/89  
Security: Everyone

nFLU Virus: Information

=====

This article last reviewed: 3 October 1989

TOPIC -----

Do you have any information concerning what to do about "nFLU", a new virus I have heard about?

DISCUSSION -----

The nFLU virus is another clone of the nVIR B virus. (The "Hpat" virus is another example of an nVIR clone.)

There is a shareware program called "Disinfectant 1.2" available on most networks that removes this and all other known viruses from an infected system. Disinfectant 1.2 also contains a good description of all known viruses.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4644



# Tech Info Library

## Internet Router: AppleShare Print Server Memory Requirement

Revised: 2/6/90  
Security: Everyone

Internet Router: AppleShare Print Server Memory Requirement

=====

This article last reviewed: 7 October 1989

TOPIC -----

What are the memory recommendations for an AppleShare Print Server?

I know that you need at least 2MB in the machine to support up to five printers. Does more memory give you better performance? I want to run Internet Router software in the machine as well. (The server will be connected to the network with an Ethernet adapter.) What will this do to the memory requirements?

DISCUSSION -----

Additional memory allows the AppleShare Print Server to capture more printers. It does not provide any speed improvement that we know of.

Here are some considerations for running the Internet Router in the same machine:

- It is recommended that you use 2MB RAM to run the router and the AppleShare Print Server, or to run the router and a mail server package concurrently. As long as you have 2MB RAM, you can also run the router, the AppleShare File Server, and any single foreground application, such as the Print Server.
- Best use of memory can be obtained by minimizing the INITs and desk accessories that run concurrently with the router.
- Run the router in Finder. MultiFinder runs desk accessories in the system heap, so you are likely to run out of memory, since the router driver and any other concurrently running process also takes memory from the system heap.

The following considerations refer to printing FROM the router machine. These

considerations do not refer to a workstation printing, even if it reaches a printer through a router:

- Avoid background printing on a router machine.
- Do not attempt 32-bit color printing from a router machine.
- The LaserWriter driver 6.0 uses much more memory than the 5.2 driver.

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Tech Info Library Article Number:4645



# Tech Info Library

## AppleTalk Phase 2: AlisaShare and PacerShare

Revised: 12/4/89  
Security: Everyone

AppleTalk Phase 2: AlisaShare and PacerShare

=====

This article last reviewed: 7 October 1989

TOPIC -----

Is it possible to run PacerShare without using AppleTalk for VMS 2.0?

I know that AlisaShare will run by itself (modifying the NETWORK parameter in the ATK\$ROOT:[APPLETALK.ALISASHARE]ASPARAMS.DAT file) but will that change allow the server to run on an AppleTalk Phase 2 or Phase 1 network? If running the server directly on Ethernet (without the AppleTalk for VMS bridge process), it will not allow the server to run under AppleTalk Phase 2.

DISCUSSION -----

From what we understand, the NETWORK parameter in the ASPARAMS.DAT file determines the network to which AlisaShare connects. A value of 1 specifies a virtual network configuration, and 2 specifies direct connection to Ethernet.

You will need multiple Ethernet controllers within a single VAX: one for the AlisaShare process, and the other for the AppleTalk for VMS process. This configuration allows a higher performance AlisaShare process connected directly to the Ethernet, while still allowing access to the AppleTalk for VMS virtual network. We see no relation of this parameter to the AppleTalk Phase 2 support.

PacerShare does not use AppleTalk for VMS, only AlisaShare does. Current versions of PacerShare and AlisaShare support AppleTalk Phase 1.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4646



# Tech Info Library

## TokenTalk NB Card: Type 1 Cable Interface

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: Type 1 Cable Interface

=====

This article last reviewed: 7 October 1989

TOPIC -----

I need information on a type 1 cabling interface for Apple's TokenTalk NB Card.

DISCUSSION -----

Here's some information about type 1 cable:

- Two-stranded, AWG #22, shielded twisted pair, solid wire, heavy jacket.
- Supports up to 260 stations, 33 Multi-Station Access Units (MAU) per ring.
- Tested up to 16M bps.
- Maximum lobe length: 330 feet.

To connect to our TokenTalk NB Card, you also need a Token Ring Adapter cable, which is shielded twisted pair about 8 feet long. One end of this cable is the IBM data connector to connect to an MAU; the other end is a DB-9 connector to our TokenTalk NB Card.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4647



# Tech Info Library

## Macintosh II Family: Fan Regulator Voids Warranty

Revised: 7/2/92  
Security: Everyone

Macintosh II Family: Fan Regulator Voids Warranty

=====

Article Created: 7 October 1989  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

I have heard of a small device that can be installed inside the Macintosh II power supply, with a remote temperature sensor mounted near the hard drive. The function of this device is to regulate fan speed based on internal temperature so that fan noise would be greatly decreased.

Does installation of such a device void Apple's warranty?

DISCUSSION -----

Installing such a device definitely voids the warranty.

We strongly discourage installing such a device because of, among other reasons, the differences in temperature within the housing versus where the device's temperature pickup is located. This would be compounded by the quantity and locations of NuBus cards, RAM, and whether there is a hard disk drive or multiple floppy drives installed.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4648





# Tech Info Library

## HyperCard: How To Repair a Corrupted Stack

Revised: 6/10/91  
Security: Everyone

HyperCard: How To Repair a Corrupted Stack

=====

Article Created: 4 December 1989  
Article Last Reviewed: 23 March 1991  
Article Last Updated: 23 March 1991

TOPIC -----

I have a corrupt HyperCard stack.

Other than copying the information on the stack to a new stack (there are over 2000 cards), is there anything I can do to patch the stack, such as deleting or recovering the card?

DISCUSSION -----

We recommend that you use the recovery stack posted on AppleLink. To locate the stack called "Recover Stack.sit", use the BB Pathfinder in the AppleLink Information folder.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4650



# Tech Info Library

## LaserWriter: Using 3rd Party Products To Restrict Access

Revised: 12/6/89  
Security: Everyone

LaserWriter: Using 3rd Party Products To Restrict Access

=====

This article last reviewed: 7 October 1989

TOPIC -----

I need a product that restricts access to a LaserWriter.

I know there is a hardware device that acts as a spooler and provides LaserWriter accounts for tracking printing, but I can't find any information on it. Do you know of this product? The main objective is to limit access to a LaserWriter. I know of the solution to change the type of LaserWriter via a PostScript code and then alter the LaserWriter file as well. If you know of any other software or hardware products, please let me know.

DISCUSSION -----

We were unable to find one product that would fulfill all of your needs. However, what you want to do can be accomplished by using three products together.

Shiva offers zone security: putting the LaserWriter in its own zone with restricted access solves part of the problem.

Farallon's Traffic Watch allows the user to calculate traffic volume and source for a particular node.

Apple's print server software gives the user a page count for each job.

This is a less than perfect solution, but it does give you the results needed.

For more information, search under: "Farallon" and "Shiva"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4651



# Tech Info Library

## System 6 Chooser: Device, Name, Zone, Memory Limits

Revised: 12/4/89  
Security: Everyone

System 6 Chooser: Device, Name, Zone, Memory Limits

=====

Article Created: 7 October 1989  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

This article discusses device, zone, and name limits as displayed and controlled through the System 6 Chooser DA window (which would correspond to version 3.x of the Chooser itself).

DISCUSSION -----

The following information pertains to Chooser versions 3.x:

The Chooser DA window consists of five separate sections:

- 1) The device type list.
  - 2) The AppleTalk zone list (visible only if there are multiple zones).
  - 3) The user name box.
  - 4) The AppleTalk active/inactive controls.
  - 5) The available devices name list.
- 
- 1) The Chooser is able to display a maximum of 16 items in the Chooser device type list. This is the limit that is imposed by the Chooser itself, not by something interfering with the operation of the Chooser.
  - 2) The Chooser allocates memory for the zone list dynamically, up to 32K. Each entry in the zone list uses 1 byte of memory for each character in the zone name, plus 1 byte. The Chooser uses this extra byte as a length byte. For example, the 7-character zone name "My Zone" uses 8 bytes of memory: 7 bytes for the characters and 1 byte for the length byte. The maximum length of a zone name is 32 characters. A 32-character zone name uses 33 bytes of memory.

Based on this information, if every zone had a 32-character name, it would be possible to have a maximum of 992 zones listed in the Chooser (32K / 33 = 992.97, remove the remainder). The maximum number of zones that can be displayed in the Chooser is wholly dependent on the length of the zone names being used.

- 3) The user name can be a maximum of 31 characters.
- 4) This one is self-explanatory; it controls whether or not AppleTalk is active.
- 5) Determining the maximum number of visible Chooser device names:

System 5.x and 6.x Choosers allocate a 512-byte buffer for the Chooser's list of available AppleTalk network device names. Each name in the buffer is embedded in an AppleTalk Name Binding Protocol (NBP) packet received by the Chooser from the selected device type. The NBP packet is called a "lookup reply", and is sent in answer to the Chooser's lookup broadcast for the selected device. An example is the selection of the device type LaserWriter driver, and the displayed LaserWriter object names.

When the 512-byte buffer is filled, this sometimes causes various names in the Chooser selection window to appear and disappear. When selecting the LaserWriter driver in this situation, a LaserWriter disappears and another appears approximately once each 1.5 seconds. This happens whenever there are more names than the buffer can hold. Because the lookups are usually sent in a series, whenever a device does not fit on the display list, the first reply received from a previous lookup is removed and replaced with the name of the device that did not fit. This process continues for each following lookup broadcasted by the Chooser. While the display list is also limited to 32 names, this is never reached when displaying devices like LaserWriters, because even with 1 character per name, the buffer is filled when 22 LaserWriters are displayed.

If you encounter the constantly appearing and disappearing LaserWriter situation, you can either break the network up into zones containing smaller numbers of the particular device, or reduce the length of some or all of the device names.

The buffer space used by each returned AppleTalk device is the length of the NBP reply packet returned by the device to the Chooser's lookup.

#### NBP LaserWriter Lookup Reply Packet Definition

```
-----
Function and Tuple Count:    1 byte
NBP ID:                      1 byte
Network Number:             2 bytes
Node ID:                    1 byte
Socket Number:              1 byte
Enumerator:                 1 byte
Object Field Length:        1 byte
```

|                    |                                           |
|--------------------|-------------------------------------------|
| Object:            | length of name                            |
| Type Field Length: | 1 byte                                    |
| Type:              | 11 bytes for type "LaserWriter"           |
| Zone Field Length: | 1 byte                                    |
| Zone:              | 1 byte for zone "*" the NBP reply default |
| -----              |                                           |
| TOTAL              | 22 bytes + length of the LaserWriter name |

A calculation for determining the maximum number of visible LaserWriters in a zone:

Number of visible LaserWriters = trunc( $512 / (22 + (\text{sum of name lengths} / \text{Number of LaserWriters}))$ )

If the LaserWriter names are all the same length, the calculation is simplified to  $\text{trunc}(512 / (22 + \text{length}))$ . The mean calculation ( $\text{sum of name lengths} / \text{Number of LaserWriters}$ ) is not necessary in this case.

(NOTE: Trunc indicates that decimal values should be ignored. That is, a result of 12.8 indicates 12 LaserWriters.)

The calculation can be used for any other type of AppleTalk device, if the type length and the mean of the device names are known.

In Chooser 3.3.1 selecting the Apple LaserWriter driver displays:

| Mean Name Length | Max Number of Visible LaserWriters |
|------------------|------------------------------------|
| -----            | -----                              |
| 30               | 9                                  |
| 25               | 10                                 |
| 20               | 12                                 |
| 15               | 13                                 |
| 10               | 16                                 |
| 5                | 18                                 |

For information on the System 7 Chooser limits, search on System 7 Chooser.

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Tech Info Library Article Number:4653



# Tech Info Library

## Chooser: NBP LaserWriter Lookup Information

Revised: 12/4/89  
Security: Everyone

Chooser: NBP LaserWriter Lookup Information

=====

This article last reviewed: 7 October 1989

TOPIC -----

This article discusses the performance of NBP lookups by the Chooser.

DISCUSSION -----

Chooser broadcasts are performed when an AppleTalk device is selected from the Chooser.

In the case of the LaserWriter, the Chooser does an NBP lookup or a broadcast request every 1.47 seconds five times. At the end of each set of five NBP lookups, the LaserWriter begins another set of five NBP lookups. Each set corresponds to a unique NBP ID number.

The function of the ID and associated set of five NBP lookups is to allow for incomplete transmission of replies. The time period and retry values for AppleTalk devices are found in the -4096 GNRL resource of AppleTalk drivers. The LaserWriter uses \$0B05. This means 11\*8 ticks (Tick = 1/60th of second) for time intervals between lookups and five retries per NBP lookup or broadcast request.

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Tech Info Library Article Number:4654



# Tech Info Library

## TokenTalk NB Card: Isn't Supported by Mac286, PC LAN Services

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: Isn't Supported by Mac286, PC LAN Services

=====

This article last reviewed: 11 October 1989

TOPIC -----

I have a Mac286 and a TokenTalk NB Card installed in a Macintosh IIX. Can I access typical PC LAN services, such as NETPRINT and NETUSE, or any other services that might typically be supported from PC LAN?

DISCUSSION -----

The Mac286 card has no means of communicating with the TokenTalk NB Card or other NuBus cards, in general. Also, the PC LAN software has not been written to support the TokenTalk NB Card -- especially since it is not a PC bus architecture card, much less an IBM product.

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Tech Info Library Article Number:4655



# Tech Info Library

## MacWorkStation 3.1: Interprets Semicolon as End of Command

Revised: 12/4/89  
Security: Everyone

MacWorkStation 3.1: Interprets Semicolon as End of Command

=====

This article last reviewed: 12 October 1989

TOPIC -----

Regarding MacWorkStation 3.1 (specifically version b6):

I am sending a D010 with a dialog ID and item ID (for example, D010 209;3;), where item ID 3 is an editable text field, to get the text. However, my text contains some semicolons, which MacWorkStation uses as an end-of-line marker!

How can I return all of the text, including all of the semicolons?

DISCUSSION -----

The only way you can send a semicolon and not have it interpreted as the end of a command is to have it enclosed within double quotes (";").

The MacWorkStation manual has the following example:

"This string contains a semicolon;"

The string you are sending must be the entire string parameter for that specific MacWorkStation command, although the command itself and any other parameters would be outside the quoted string.

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Tech Info Library Article Number:4656





# Tech Info Library

## TokenTalk NB Card: Connecting to a 16MB Token Ring Network

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: Connecting to a 16MB Token Ring Network

=====

This article last reviewed: 12 October 1989

TOPIC -----

Is there any way to connect Apple's 4MB cards to a 16MB Token Ring using a PS/2 as a source router?

DISCUSSION -----

Currently, there is only one way to connect a Macintosh II with the Apple TokenTalk NB Card to a 16MB Token Ring network.

You must use an IBM-compatible computer with 16MB and 4MB Token Ring cards installed as a bridge between the 4MB Token Ring network that the Macintosh II is on and the 16MB Token Ring network. The PC needs to run IBM's Token Ring Bridge Program and be dedicated to this bridging function. (This works because we support source routing.)

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Tech Info Library Article Number:4658



# Tech Info Library

## LocalTalk PC Card: Using It for IBM PC-to-VAX Connectivity

Revised: 12/4/89  
Security: Everyone

LocalTalk PC Card: Using It for IBM PC-to-VAX Connectivity

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This article last reviewed: 12 October 1989

TOPIC -----

Is there any software for an IBM PC with LocalTalk PC Card that allows communication (terminal emulation/file transfer) with VAX machines not running AppleTalk for VMS and Alisa/Pacer -- that is, for example, a TCP/IP or VT100 emulation through LocalTalk ->Kinetics FastPath ->Ethernet?

DISCUSSION -----

We are not currently aware of such a product.

Since the LocalTalk PC Card sends AFP calls to access the AppleTalk network, you cannot use it without an AFP-compatible server running on the VAX.

You will probably achieve better performance by connecting to the VAX directly over Ethernet or -- if that is cost-prohibitive -- over an RS-232 serial connection using an IBM PC terminal emulation package.

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Tech Info Library Article Number:4659



# Tech Info Library

## Macintosh: How To Convert Database Files

Revised: 12/4/89  
Security: Everyone

Macintosh: How To Convert Database Files

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This article last reviewed: 12 October 1989

TOPIC -----

I need to transfer database information to Microsoft Works from a Tandy system running an ENABLE-based program called Legis and a program called Q&A.

How can I do this?

DISCUSSION -----

We are not familiar with either Legis or Q&A. However, transferring information from one database to another can be accomplished via several different methods and is fairly straightforward regardless of the method used.

The object is to find a common link between the two systems and their associated databases. This may be matching file formats, a common file format, the ability to import data from a text file, or being able to read an incoming data stream.

For your account, you may be able to use a common file format, such as DIF or SYLK, or save the database information to a text file and use the import feature within Microsoft Works to retrieve the information. In either case, you should be able to move the file from the Tandy to the Macintosh via the Apple PC 5.25 drive and Apple File Exchange.

If the account does not have access to an Apple PC 5.25 drive, the database-generated text file also can be transferred between the systems using either PC MacLink or a direct serial connection with a terminal package running on both systems.

Another method of moving the information would be to use a network solution, like TOPS or AppleShare PC, making the database files available to everyone. Again, to make this a working solution, a common file format is necessary.

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Tech Info Library Article Number:4660



# Tech Info Library

## Apple Scanner: Controlling the Lamp During Scans

Revised: 12/4/89  
Security: Everyone

Apple Scanner: Controlling the Lamp During Scans

=====

This article last reviewed: 17 October 1989

TOPIC -----

Is it possible to perform a scan with the Apple Scanner lamp off?

I am trying to scan some X-ray photographs. However, because they are photo-negatives, they are very dark, and the Apple Scanner lamp:

- 1) Is not bright enough to pick out the white detail.
- 2) Causes reflections off the shiny surface of the "acetate" film.

I can solve problem "1" by balancing a photographic lightbox on top of the Apple Scanner, but then I have to switch off the Apple Scanner lamp when scanning to prevent the reflections in problem "2".

Is it possible to control the lamp via software, or is it controlled by the Apple Scanner hardware? Can I simply remove the lamp from the Apple Scanner, or does it automatically stop operating when the bulb is broken or removed?

As a worst case, is it possible to modify the Apple Scanner board to switch the lamp on and off manually, and also fool the Apple Scanner into thinking that it is on?

DISCUSSION -----

It is possible to control the Apple Scanner lamp through the control flags in the scanner driver. However, in normal operation, this function is controlled exclusively by the AppleScan software, and any changes would require either a modification to the AppleScan software (not a solution supported by Apple) or writing a custom scanner application.

As an alternative, it is also possible to remove the lamp from the Apple Scanner and still be functional with the AppleScan software.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4661



# Tech Info Library

## AppleShare Print Server: Installing Server System

Revised: 2/6/90  
Security: Everyone

AppleShare Print Server: Installing "Server System"

=====

This article last reviewed: 17 October 1989

TOPIC -----

The AppleShare Print Server Administrator's Guide refers to a "Server System" that should be used when installing a server.

What happens when a user wants to set up a server on a 68030-based machine that needs System 6.0.3? This is not provided for in the Server Software package. Since the standard System Software is the only way to obtain System 6.0.3, could this cause problems?

DISCUSSION -----

When installing the AppleShare Print Server on a Macintosh 512Ke, it is important to install the System Software using the AppleShare Print Server installer disk. This guarantees that the AppleShare Print Server software is running in conjunction with System Software that supports both the Macintosh 512Ke and the Print Server software.

On the Macintosh Plus and later Macintosh systems, we recommend installing the System Software from a disk containing the most recent version of System Software available for that particular machine. For example, you should install System Software 6.0.3 for the Macintosh IICx. Then install the AppleShare Print Server software.

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Tech Info Library Article Number:4662



# Tech Info Library

## Apple Internet Router: Memory Issues Using with AppleShare

Revised: 2/6/90  
Security: Everyone

Apple Internet Router: Memory Issues Using with AppleShare

=====

This article last reviewed: 17 October 1989

TOPIC -----

I have this configuration:

Macintosh SE/30  
Dove internal Ethernet card (note--internal card, not the SCSI box)  
AppleShare File Server  
AppleShare Print Server  
Apple Internet Router

All three applications are running on this machine.

- 1) With the AppleShare File Server and Printer Server and the Internet Router running, is 2MB the proper amount of memory for this configuration? Is there any benefit to having more?
- 2) Is this, in general, a recommended configuration? Can I expect the Internet Router to perform reliably on the Macintosh SE/30 with the Dove card? Are there any problems with the Internet Router on the Macintosh SE/30 with any Ethernet card?

DISCUSSION -----

### 1) Memory considerations

- 
- In general 1MB of RAM is sufficient for running the router. However, you should consider the following exceptions:
    - You must use 2MB of RAM when running the router concurrently with the AppleShare File Server. You can add memory beyond 2MB, but that only increases performance of the file server and not of the router. The reason is that the file server uses all additional memory for its RAM cache.



- It is recommended that you use 2MB of RAM to run the router and the AppleShare Print Server or the router and a mail server package concurrently. As long as you have 2MB of RAM, you can also run the router, the AppleShare File Server, and any single foreground application, like a print server.
- To avoid memory problems, do not use MacroMaker on a 1MB router machine.
- Be aware that having MacsBug (or any other debugger) active reduces the amount of memory available to the router. Do not run MacsBug on a 1MB router machine or on a router that is also running the AppleShare File Server.
- To avoid memory problems, do not use 32-Bit QuickDraw on a 1MB router machine.
- Best use of memory can be obtained by minimizing the INITs and desk accessories that run concurrently with the router.
- Because of the way MultiFinder runs desk accessories, we recommend that you run the router in Finder. MultiFinder runs desk accessories in the system heap. This means that when you use the router desk accessory under MultiFinder, you are more likely to run out of memory because the router driver and any other concurrently running process take memory from the system heap.

- 2) As long as you have 2MB of RAM, you can also run the router, the AppleShare File Server, and any single foreground application, like a print server.

The AppleTalk Internet Router was tested with a variety of third-party Ethernet cards, including Dove's. At this time, we cannot recommend their use in a Macintosh acting as a router because of driver anomalies.

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Tech Info Library Article Number:4663



# Tech Info Library

## Macintosh IIci: RAM Requirements

Revised: 9/30/92  
Security: Everyone

Macintosh IIci: RAM Requirements

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Article Created: 17 October 1989

### Article Change History

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09/30/92 - UPDATED

- To include additional information on the use of burst mode with Fast Page Mode RAM.

### TOPIC -----

This article explains the RAM requirements of the Macintosh IIci. Part numbers for Apple labeled SIMM upgrades and service parts that meet these requirements are also included.

### DISCUSSION -----

The increased speed of the Macintosh IIci is primarily due to two factors. The first factor is the increased speed of the 68030 CPU and 68882 FPU. Those chips are clocked at 25 MHz in the IIci.

The second is that the Macintosh IIci support 68030 burst reads to the on-chip data and instruction caches.

The 256 byte 68030 data and instruction caches are each organized in sixteen lines of four long word entries. The 68030 can save cacheable instructions or data into these long word entries. When burst mode is disabled, it takes five processor cycles to fetch each long word entry into the cache. Each entry is read into the cache, one at a time, as needed. To fill an entire cache line would take twenty cycles (5 + 5 + 5 + 5 = 20 cycles).

When burst mode is enabled, the on-chip cache entries are filled one line at a time. It takes five cycles to fetch the first entry, but it takes

only two cycles to fetch each of the remaining three entries, resulting in a total of eleven cycles to fill the entire cache line ( $5 + 2 + 2 + 2 = 11$  cycles). This mode is sometimes referred to as the "5 2 2 2" burst mode.

To satisfy the timing requirements of the 25 MHz 68030, the IIci requires a RAM speed of 80 ns or faster. To satisfy the requirements for burst reads, the IIci requires RAM that has a Fast Page Mode access type. Fast Page Mode (FPM) is a RAM access type that is necessary to support the "2 2 2" portion of the "5 2 2 2" burst mode access.

The use of burst mode with Fast Page Mode RAM gives the processor a maximum RAM access rate of 36.36 MB/sec. That access rate is always true for bank B. For bank A, it is achieved only when not using the built-in video circuits on the logic board; using a NuBus video card.

The built-in video circuits use a video buffer in RAM bank A. The effect of the video RAM cycles can decrease the processor's access to bank A by as little as 6% or as much as 65%, depending on the type of video display in use. Larger displays and display modes with more bits per pixel have a greater effect.

You will obtain better performance when using the built-in video circuitry by installing the larger SIMMS in bank B. For example, in a 5 MB configuration, put the 256KB SIMMS in bank A and the 1 MB SIMMS in bank B.

Ultimately, maximum performance can be achieved by adding a NuBus video card (high end / co-processor type).

If RAM is used in the IIci that is slower than 80ns, or does not support fast page mode, the system will eventually crash. Most of the RAM SIMM modules that are 80 ns have a Fast Page Mode access type. As a result, it should be uncommon for users to unknowingly install RAM in the IIci that do not have this access type. However, it is likely that unknowing or curious users will install RAM SIMMs that are rated slower than 80 ns. In most cases, those users will find that the slower RAM may work for a short time, but the IIci unit WILL eventually crash with a serious system error.

There are several reasons why a Macintosh IIci will not always crash immediately on power up when slower RAM is installed. They include:

- Frequently, RAM speed is rated conservatively. As a result, a chip may actually be faster than it is rated under certain circumstances.
- Many of the RAM SIMMs that are available on the market for use in the Macintosh SE/30, II, IIcx and IIx, including some sold by Apple, are rated for 100 ns, which puts them close to the 80 ns requirements.
- RAM speed is higher in a cooler chip than in a warmer chip with the same rating. When the Macintosh is first turned on, the chips are cool. After the unit is turned on, the chips will heat up, which causes them to slow down.

The part numbers for Apple labeled SIMM upgrades and service parts that meet these requirements are listed below.

Finished Goods RAM Upgrade Packages:

| Finished Goods<br>Upgrade Size | Part Number |
|--------------------------------|-------------|
| -----                          | -----       |
| 1MB, 80 ns FPM                 | M0291LL/A   |
| 4MB, 80 ns FPM                 | M5952LL/A   |
| 4MB (Parity), 80 ns FPM        | M0294LL/A   |

Service Goods RAM SIMM Parts:

| Service<br>RAM Density  | Part Number |
|-------------------------|-------------|
| -----                   | -----       |
| 256KB, 80 ns FPM        | 661-0519    |
| 1MB, 80 ns FPM          | 661-0520    |
| 1MB (Parity), 80 ns FPM | 661-0546    |

To identify 80 ns chips, some RAM manufacturers indicate RAM speed on the chip with a number that is usually expressed in tens. For example, 80 ns chips are marked with an 8, 100 ns with a 10, 120 ns with a 12 and 150 ns with a 15. When the speed is marked on the chip, it is usually set apart from the chip part number with a dash or is positioned in a separate location on the surface of the chip. Also, some SIMM manufacturers indicate the RAM speed on the back of the SIMM board.

For most of the SIMM modules that Apple sells, RAM speed can be identified with one of the above methods. However, RAM speed of some third-party SIMM modules are not so explicitly marked on the chips or the SIMM board.

Identifying RAM that supports fast page mode is more difficult, because this characteristic is usually not explicitly printed on the chip or the SIMM board. In most cases this will not be a problem, because the vast majority of the 80 ns DRAM SIMM can be installed into a IIci support Fast Page Mode.

Although both of these pieces of information can be confirmed in the chip manufacturers' data book, most people will prefer to contact the SIMM vendor to verify that the modules are compatible with the IIci. Customers should avoid purchasing SIMMs that cannot be confirmed to be IIci-compatible.

Many of the 256KB SIMM modules for the IIci will look different from the SIMM modules that we are accustomed to. Until now, Apple labeled RAM SIMM modules have contained eight RAM chips (8 chips x 256K x 1-bit each). Most of the Apple labeled 256KB, 80 ns, fast page mode RAM SIMMs will have only two RAM chips (2 chips x 256K x 4-bits each). Each SIMM module contains 256KB, but each chip contains four bits of each byte, instead of just one bit.

The 256K x 4-bit chips were chosen because 256K x 1-bit, 80 ns, fast page mode chips are not readily available.

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Tech Info Library Article Number:4666



# Tech Info Library

## Macintosh IIci: RAM SIMM Configurations

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: RAM SIMM Configurations

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Article Created: 17 October 1989  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

### TOPIC -----

This article discusses the different RAM SIMM requirements presented by the Macintosh IIci, and provides the RAM configurations that the IIci supports.

### DISCUSSION -----

In all previous Macintosh models that have RAM SIMM slots, there were configuration requirements that dictated the following:

- All SIMM boards within a bank must be the same density.
- Within a bank that contains RAM, all four slots in that bank must be filled.
- All SIMM boards must be installed in Bank A for configurations that fill only one bank.
- Higher density SIMM boards must be installed in Bank A for configurations that have different densities in each bank.

In the IIci, the first two restrictions still apply. However, the second two are not requirements for IIci RAM configurations. These restrictions have been eliminated, due to functionality provided by the Memory Decode Unit (MDU).

Following are the valid RAM configurations supported by the Macintosh IIci:

(SPECIAL NOTE: Some of the RAM configuration recommendations that are

made below will be in direct opposition to configuration requirements on all previous modular Macintosh models.)

- 1MB: Four 256KB SIMMs can be installed in either bank. However, the built-in video feature requires that the RAM be installed in Bank A. If the memory is installed in Bank B, built-in video will be disabled, but the IIci will work fine.
- 2MB: Four 256KB SIMMs are installed in each bank.
- 4MB: Four 1MB SIMMs can be installed in either bank. However, the built-in video feature requires that the RAM be installed in Bank A. If the memory is installed in Bank B, built-in video will be disabled, but the IIci will work fine.
- 5MB: There are two possible 5MB configurations. The preferred is to install four 256KB SIMMs in Bank A, and four 1MB SIMMs in Bank B. This configuration is preferred because it minimizes the effects of video cycle stealing. The second is to install the 1MB SIMMs in Bank A and the 256KB SIMMs in Bank B.
- 8MB: Four 1MB SIMMs are installed in each bank.

4MB SIMM modules when available, can be used in the IIci. All of the above recommendations and requirements will still apply.

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Tech Info Library Article Number:4667



# Tech Info Library

## EtherTalk Card: Problems with Macintosh IIcx/IIci

Revised: 7/2/92  
Security: Everyone

EtherTalk Card: Problems with Macintosh IIcx/IIci

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Article Created: 17 October 1989  
Article Last Reviewed: 26 June 1992  
Article Last Updated:

TOPIC -----

This article discusses the EtherTalk card (Revisions J and earlier) and its timing problem with Macintosh IIcx and IIci units.

DISCUSSION -----

Revisions J and earlier of the EtherTalk card have a timing problem with Macintosh IIcx and Macintosh IIci units.

Symptoms of the problem are intermittent, and include: system hangs on boot, serious system errors, and exceedingly poor network performance.

Revisions K and later of the EtherTalk card have been modified so that they will not exhibit this problem.

The capacitance of a six-slot NuBus was factored into the timing mechanism of the EtherTalk card. Consequently, the capacitance level in a three-slot NuBus is lower, thereby effecting the EtherTalk card's timing.

As additional NuBus cards are installed into a system, the capacitance level is raised on the NuBus. As a result, the problem is less likely to present itself.

The most likely Macintosh IIcx and Macintosh IIci candidates for having the symptoms mentioned above are units with a single EtherTalk card installed and no other NuBus cards in the remaining two slots. This is a configuration that would be commonly used for routers, file servers, mail servers, and so on.

The only current solution is to use EtherTalk card revision K or later.



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Tech Info Library Article Number:4668



# Tech Info Library

## LaserWriter II: Using with Windows 2.11

Revised: 3/4/90  
Security: Everyone

LaserWriter II: Using with Windows 2.11

=====

This article last reviewed: 2 November 1989

TOPIC -----

This article discusses the correct version of Windows to use with a LaserWriter II

DISCUSSION -----

Microsoft Windows, used in conjunction with a LaserWriter II, sometimes has a problem of seeing ROM version I instead of PostScript 47, and thus refusing to print to it.

As of November, 1989, Microsoft UK has informed us that the latest versions of Windows (v2.11) and its PostScript driver (v3.1) do not suffer from this problem and will print to a LaserWriter II successfully.

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Tech Info Library Article Number:4669



# Tech Info Library

## AppleShare File Server: Setting Up Using an Apple IIGS

Revised: 2/6/90  
Security: Everyone

AppleShare File Server: Setting Up Using an Apple IIGS

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This article last reviewed: 20 October 1989

TOPIC -----

I am having problems upgrading AppleShare File Servers with the new Apple IIGS System 5.0 software.

Here is what happens when I try to use the server:

- 1) When using the AppleShare on a 3.5-inch disk, everything works fine. I can log on, launch applications, save to the file server, print to the network printers, and log off the server by pressing ESCAPE.
- 2) When using either AppleShare with No Finder disk or self-booting over the network, I encountered the following situations:
  - a) The administrator can use the server as usual.
  - b) When trying to log onto the server as a user, after I type a name and password, GS/OS begins to load, then crashes with the following message:

"Sorry, system error \$004E occurred while loading the start FST file. Restart."

After further tests, I found that I can log onto the network as a user only after the administrator has previously logged on and used the Quick Logoff feature.

I tried reinstalling the updates, but the problem persists. What's going on?

DISCUSSION -----

The problems you report are most likely caused by not setting folder access privileges correctly on the AppleShare Server. For users to start up a workstation over the network, they must have See Files and See Folders

privileges for both the GS/OS System and Icons folders and all folders within the GS/OS System Folder. Note that we mean the GS/OS system folder named "System", and not the Macintosh "System Folder" or "Server Folder".

If you installed the GS/OS files on the server as the user Administrator, then starting up as Administrator should work properly, because Administrator is the owner of all the files and has complete access. When you start up as any other user with different privileges, it fails, because that user cannot access any or all of the necessary GS/OS files.

The usual problem is not setting privileges on the folders within the System Folder or missing the Icons folder completely. From the error you describe, it sounds like you need to select the "Change all enclosed folders" option when setting the privileges for the System Folder. With this option selected, all folders within the System Folder will be updated to use the same privileges as the System Folder.

The reason other users could log on after the Administrator had previously started up and used Quick Logoff is that all of the necessary files have already been loaded into the Apple IIGS. Using Quick Logoff doesn't clear them from memory; therefore, when the next user logs on, there is no need to access those files.

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Tech Info Library Article Number:4670



# Tech Info Library

## Macintosh: SIMM Thickness

Revised: 6/24/92  
Security: Everyone

Macintosh: SIMM Thickness

=====

Article Created: 2 November 1989  
Article Last Reviewed: 23 June 1992  
Article Last Updated:

TOPIC -----

I need to know the "thickness" of the SIMM boards for the Macintosh.

DISCUSSION -----

The SIMM connectors are designed to accept 1.27 mm (.05 inch) thick memory SIMM expansion boards.

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Tech Info Library Article Number:4671



# Tech Info Library

## HyperCard: Error 1277

Revised: 12/4/89  
Security: Everyone

HyperCard: Error 1277

=====

This article last reviewed: 20 October 1989

TOPIC -----

I keep getting HyperCard error 1277 when I try to add a new card, even though there is enough hard disk space to add a new card. What could the problem be? Is there a list of HyperCard error codes where I could look this up?

DISCUSSION -----

Error 1277 generally occurs when HyperCard tries to allocate space for an additional object and can't. It's usually the result of a corrupted stack. Our only suggestion is to use the recovery utility available on AppleLink.

Error codes in HyperCard are not available in list form because the codes are considered confidential.

For more information, search under: "HyperCard" and "Recovery"

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Tech Info Library Article Number:4672



# Tech Info Library

## AppleShare PC 2.0: Compatible with PCLAN

Revised: 8/28/90  
Security: Everyone

AppleShare PC 2.0: Compatible with PCLAN

=====

This article last reviewed: 20 October 1989

TOPIC -----

This article discusses a method that allows AppleShare PC 2.0 and PCLAN to coexist.

(Some people have had problems running both PCLAN and AppleShare PC at the same time on the same machine. Both PCLAN and AppleShare PC try to install a network redirector to intercept file system calls to network drives.)

DISCUSSION -----

To get AppleShare PC 2.0 and PCLAN to coexist:

You must load PCLAN first, then AppleShare PC 2.0.

However, you will get an error loading the REDIR.EXE and MINSES.EXE programs. The functions provided by these two modules are duplicated in the PCLAN program.

To solve this, edit the batch files created by the install program so that neither REDIR nor MINSES is loaded. You must run PCLAN first because its redirector is a superset of Microsoft's redirector included with AppleShare PC. AppleShare PC can use IBM's redirector, but IBM can't use Microsoft's.

(NOTE: A related question is whether or not PCLAN and AppleShare PC will run at the same time using the same Token Ring card. Unfortunately, version 2.0 of AppleShare PC will not -- IBM's PCLAN software doesn't "share" the Token Ring card.)

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Tech Info Library Article Number:4673



# Tech Info Library

## AppleScan: Problem Enlarging Documents

Revised: 12/4/89  
Security: Everyone

AppleScan: Problem Enlarging Documents

=====

This article last reviewed: 20 October 1989

TOPIC -----

I need some information about how to enlarge a scan area using AppleScan 1.0.2. on a Macintosh II using System 6.0.2.

The manual instructions state that you only need to click on the percentage selector to change the output size. The manual states that you can increase the size up to 400%. This would be great, but I can't seem to get past 100%. Help!

DISCUSSION -----

The ability of AppleScan to enlarge and reduce images is based on the resolution of the scan. Page 196 of the "Apple Scanner Owner's Guide" outlines this relationship and states:

"The Reduce/Enlarge process works in tandem with the resolution you are using. Reduce/Enlarge changes the effective scan resolution, and the values you can choose vary depending on the resolution setting. If you reduce an image, the scanner detects fewer dots per inch; if you enlarge an image, the scanner detects more dots per inch."

If the scanned image resolution is set to 300 dpi, it is not possible to increase the size of the image. This requires the Apple Scanner to have a resolution beyond 300 dpi. However, if the scan resolution is set to 150 dpi, it is then possible to enlarge the scanned image to 200%, or, in effect, 300 dpi for the Apple Scanner.

The complete description of how Reduce/Enlarge works in conjunction with resolution is on pages 194 to 198 of the "Apple Scanner Owner's Guide".

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Tech Info Library Article Number:4675





# Tech Info Library

## SuperDrive: Data Transfer Rate and Rotational Speed Specs

Revised: 8/23/91  
Security: Everyone

SuperDrive: Data Transfer Rate and Rotational Speed Specs

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Article Created: 4 December 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

What is the speed of the Apple SuperDrive (formerly Apple FDHD) -- both the data transfer rate and the speed of rotation?

DISCUSSION -----

Apple SuperDrive data transfer rate and rotational specifications:

|               |                      |
|---------------|----------------------|
| Transfer rate | GCR: 489.6K bits/sec |
|               | MFM: 500K bits/sec   |

|                  |                                   |
|------------------|-----------------------------------|
| Rotational Speed | GCR: Variable from 394 to 590 RPM |
|                  | MFM (720K): 600 RPM               |
|                  | MFM (1440K): 300 RPM              |

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Tech Info Library Article Number:4677



# Tech Info Library

## AppleShare 2.0 : CD-ROM Issues (3/94)

Revised: 3/10/94  
Security: Everyone

AppleShare 2.0 : CD-ROM Issues (3/94)

Article Created: 22 October 1989  
Article Reviewed/Updated: 10 March 1994

TOPIC -----

This article contains questions and answers about a number of CD-ROM issues and AppleShare 2.0. Most does not apply to AppleShare 3.0, or AppleShare 4.0.

DISCUSSION -----

Q) I've got an AppleCD SC running on my AppleShare server. When I run the Administrator to prepare certain large CDs (such as the Boston Computer Society CD-ROM, 300MB and tons of files) for use with the server, I always get a -127 error.

I have no problem preparing and publishing simpler CDs, such as EDUCORP's, but I cannot get the BCS CD-ROM prepared for publication. It seems as though I'm reaching some type of AppleShare limit when the desktop files are being prepared. What's going on?

A) We tested the Boston Computer Society Macintosh PD-CD v2 and v4 discs with AppleShare 2.0.1; both worked flawlessly. We, too, have "prepared" numerous CDs for use as server volumes without difficulty. AppleShare file handling limits are significantly greater than the number of files that can be stored on a compact disc (search in the Tech Info Library under "Macintosh" and "maximum number of files" to get a explanation of the number of files the Macintosh OS allows).

Error -127 is a DS error, which is the equivalent of a system error for the file system and is of little help in identifying this problem.

Possible sources of the problem:

- You might have some INITs causing a conflict.
- You might have a damaged copy of the AppleShare Administrator or

Server software, or an early version that doesn't support locked media.  
You should be using 2.0.1 or later.

- Your compact disc or discs may be damaged.
- The AppleCD SC or other hardware (logic board, RAM, server hard disk) may be malfunctioning.
- You are using old or damaged copies of System Software, AppleCD SC software, and so on.

Q) How can I control the order in which volumes (CDs and hard disks) appear in the scroll box when logging into AppleShare?

A) At the server, devices are displayed in Finder order: startup volume first, followed by SCSI drives in descending order of SCSI address, followed by devices connected via the drive port in the order returned by the getVolInfo call.

At the workstation, the devices are displayed in exactly the opposite order, placing the startup volume at the bottom of the list.

Q) It takes me a very long time to prepare a CD for use with AppleShare. Sometimes the Administrator runs for 3 to 4 hours, and only after that tells you that it already knew about the CD. Your only choice is "OK", and then it still doesn't want to mount anyway!

Isn't there a way to prepare the CD index/desktop/privilege files -- or whatever it does when preparing a CD volume -- offline, so the server doesn't have to be shut down for hours?

A) We agree that it can be frustrating preparing and mounting large CDs. Unfortunately, there aren't really any shortcuts or workarounds, aside from preparing a series of CDs at one sitting to minimize startup time at a later time.

Your difficulties mounting might be related to the above, or possibly the AppleCD SC might not be "online" when the AppleShare program starts up.

#### Article Change History:

10 March 1994 - Made the article specific to AppleShare 2.0. Most issues do not apply to later versions.

Support Information Services

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Tech Info Library Article Number:4678



# Tech Info Library

## A/UX: Available Removable Cartridge Drives

Revised: 8/28/90  
Security: Everyone

A/UX: Available Removable Cartridge Drives

=====

This article last reviewed: 2 November 1989

TOPIC -----

Is there a removable cartridge drive for use with A/UX?

DISCUSSION -----

We know definitely of two companies that sells a removable cartridge drive that works with A/UX.

Advanced Information Concepts sells a drive called the AIC SlimLine, a 45MB removable hard-disk cartridge system that has A/UX drivers, and SlimLine II, a dual cartridge system.

The AIC Slimline uses the popular Syquest mechanism and cartridges with their own proprietary software. Their optional A/UX compatibility software allows Macintosh OS and A/UX partitions to coexist on a single cartridge.

MicroNet also makes a vast array of drives and tape backups that can be partitioned to run under A/UX or Mac OS.

For more information, search under: "Advanced Information Concepts" and "MicroNet"

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Tech Info Library Article Number:4679



# Tech Info Library

## Aristotle: When New Users Aren't Recognized

Revised: 12/4/89  
Security: Everyone

Aristotle: When New Users Aren't Recognized

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This article last reviewed: 23 October 1989

TOPIC -----

I set up an AppleShare network at a school. This network consists of one Macintosh SE/30 with 4MB RAM and an 80MB hard disk. There are 15 Apple IIGS computers set up as workstations over PhoneNET cabling.

On day 1, we input approximately 210 users (all in the student group except for one teacher). These all appeared in Aristotle, and we were able to set up classes (approximately 10 classes). Everything worked fine up to this point.

On day 2, we input approximately 12 more users. We put them into the Macintosh SE/30, assigned them to the student group, set their startup application, restored their startup access, and saved the users and groups. Aristotle, however, did not rebuild the user list to include these new people. We reinstalled Aristotle and AppleShare, and they still do not appear in Aristotle.

I have an identical setup at another site, so I do have experience with this system. I need a solution -- short of starting from scratch and putting all 227 users in again.

DISCUSSION -----

There are several different reasons why Aristotle may not recognize new users that are added to the AppleShare server. Here are a number of important factors to check:

For all users starting up GS/OS from the server:

- AppleShare privileges must allow the user to See Files and Folders in the GS/OS System Folder and all folders within it. If the startup application is set to "Finder", AppleShare privileges must allow them to See Files in the Icons folder.

For all users on Aristotle:

- All users who will be Aristotle teachers must have their primary group set to "Teacher".
- All users who will be Aristotle students must have their primary group set to "Student".
- A Teacher's AppleShare startup application can be set to "Management" or "Finder", depending on your preferences. The startup application for students can be set to "Display" or "Finder", but setting it to anything other than Display tends to defeat much of Aristotle's purpose. The startup prefix for all of these users should be set to the folder that contains their individual startup applications.

Also:

- AppleShare privileges for the Users folder on the server must allow the Owner, Group, and Everyone to See Folders, and the folder's group should be "Teacher".
- The individual folders for Aristotle students and teachers within the Users folder must have their AppleShare privileges set to allow the Owner, Group, and Everyone to See Folders and See Files, and the Owner and Group to Make Changes. Also, the Group of these folders must be set to "Teacher". This is most easily accomplished by setting each user's group at the same time you create the user.

The AppleShare File Server software creates user folders as users are created. If you assign a user to a group when the user is created, then the user's folder is assigned to that group also.

- The Aristotle folder, and all folders within it, must have their AppleShare privileges set to allow the Owner, Group, and Everyone to See Files and See Folders, and the Owner and Group to Make Changes.

Chances are, one of these setups is incorrectly set in your system.

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Tech Info Library Article Number:4680



# Tech Info Library

## Macintosh IIfx: Calculating RAM Speed

Revised: 7/9/92  
Security: Everyone

Macintosh IIfx: Calculating RAM Speed

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Article Created: 24 October 1989  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

Why is the RAM on the Macintosh IIfx 80ns? My own mathematical calculations suggest a required speed of 40ns for a 25MHz chip and no wait states.

DISCUSSION -----

Your math is correct: the 25MHz 68030 CPU clock has a period of 40ns per clock.

However, the minimum memory access cycle for Macintosh IIfx is two clocks, which means that there is at least 80ns between memory accesses (one wait state). The maximum number of cycles between memory accesses is five clocks (three wait states).

For example, the Macintosh IIfx performs a random read from DRAM in five clocks and a four long word burst read in 11 clocks -- five clocks for the first long word and two clocks each for the remaining three long words.

- 1st Long Word - 5 clocks or 3 wait states
- 2nd Long Word - 2 clocks or 1 wait state
- 3rd Long Word - 2 clocks or 1 wait state
- 4th Long Word - 2 clocks or 1 wait state

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Tech Info Library Article Number:4682



# Tech Info Library

## Pascal 1.3: Solutions for Resizing Windows

Revised: 12/4/89  
Security: Everyone

Pascal 1.3: Solutions for Resizing Windows

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This article last reviewed: 24 October 1989

TOPIC -----

This article contains sources for information on resizing Pascal 1.3 windows.

DISCUSSION -----

The default console driver for Pascal 1.3 does not support resizing the text window; however, there are other ways to accomplish that functionality, including implementing an attached console driver.

The Pascal Device Support Tools from APDA shows how this is done. Another example is in the Super PILOT Special Edition source code, which is licenseable.

For more information, search under: "APDA"

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Tech Info Library Article Number:4683





# Tech Info Library

## LaserWriter IINT: How To Print from Sun 360 Under UNIX

Revised: 3/4/90  
Security: Everyone

LaserWriter IINT: How To Print from Sun 360 Under UNIX

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This article last reviewed: 2 November 1989

TOPIC -----

This article discusses how to print to a LaserWriter IINT from a Sun 360, under UNIX.

DISCUSSION -----

Here is a tip on how to get a LaserWriter IINT working with a Sun 360 system under UNIX.

The problem most often described is that the Sun provides PostScript to the LaserWriter, which begins imaging the job (green light flashing) but nothing further happens.

The cause of the problem is probably that the UNIX spooler was adding a header to the print job. After toggling the option off, the LaserWriter IINT should work as expected.

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Tech Info Library Article Number:4684



# Tech Info Library

## AppleShare File Server: Increasing Speed Bottlenecks

Revised: 2/6/90  
Security: Everyone

AppleShare File Server: Increasing Speed Bottlenecks

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This article last reviewed: 2 November 1989

TOPIC -----

I am having performance difficulties using a Macintosh Plus as a network server.

The network is correctly set up, and the load is fairly low (that is, there are only about five users on it).

One possibility is that the problem is caused by using a CPU that is not fast enough for the high performance of the 140MB Rodime external drive. Macintosh IIX systems are often recommended as servers, even for small networks.

I would have thought that the bottlenecks would be the disk performance (all that jumping around to meet different requests) and network performance (particularly on LocalTalk), not CPU performance, and that small networks users would get better value for their money if they used the Macintosh IIX as workstation.

I understand that the drive has to be formatted on its target machine, and I understand that the transfer rate for drives is faster on Macintosh II machines than Macintosh SE systems (but still the network is a bottleneck).

Could you give me some advice on this?

DISCUSSION -----

Access time, CPU speed, and network throughput all affect the "speed" of a network. It's difficult to determine just which one of the three elements mentioned will result in the largest performance increase.

However, if you are restricted to LocalTalk, and already have the Rodime drive, the only way to improve the network performance is to use a faster CPU.

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Tech Info Library Article Number:4685



# Tech Info Library

## RS-170 Versus NTSC Video Standards

Revised: 7/8/92  
Security: Everyone

RS-170 Versus NTSC Video Standards

Article Created: 2 November 1989  
Article Last Reviewed: 7 July 1992  
Article Last Updated:

TOPIC -----

This article contains information about the RS-170 monitor extension software for the Monitors CDEV.

DISCUSSION -----

RS-170 is sometimes described as "the interlaced 60Hz video signal standard used for broadcast video in America."

This statement is a little misleading. RS-170 has not been the broadcast video standard in the United States for more than twenty years. RS-170, drafted in 1957, is a video signal developed by the Engineering Industries Association as a standard for monochrome (black and white) television studio facilities.

RS-170 can be recorded using the "Video In" jacks of most video tape recorders. The Macintosh II Video Card can generate a signal that is very close to the exact specifications of the RS-170 standard--close enough so that it can be displayed on most RS-170 monitors, recorded on most RS-170 video tape recorders, and so on. Unfortunately, the minor deviations from the exact standard causes problems with some video equipment.

Twenty years after the drafting of RS-170, the EIA video signal standard proposal RS-170A evolved into what is known today as NTSC. NTSC is the color television standard of the National Television Standards Committee, and is the standard now used for broadcast video in America. This standard is the result of combining three RS-170 signals into a single encoded color video signal.

While RS-170 signals are compatible with most of today's NTSC video

## ..TIL04688-RS-170\_Versus\_NTSC\_Video\_Standards\_(TA40591).pdf

products, it is NOT broadcast video, NTSC video, or color video. Not knowing this fact can lead to confusion.

For more information, search for "Macintosh and Video Overview".

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Tech Info Library Article Number:4688



# Tech Info Library

## Macintosh Portable and PowerBook: ADB Mouse Q & A 3/93

Revised: 5/16/94  
Security: Everyone

Macintosh Portable and PowerBook: ADB Mouse Q & A 3/93

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Article Created: 2 November 1989  
Article Reviewed/Updated: 03 March 1993

TOPIC -----

This article contains questions and answers about ADB mouse devices and the Macintosh Portable and the Macintosh PowerBook.

DISCUSSION -----

- Q) Can I use the low-power ADB mouse that is available for the Macintosh PowerBook (and originally shipped with the Macintosh Portable) with other computers in the Macintosh family?
- A) Yes, you can use the low-power mouse with ANY Apple computer that has an ADB port. It is equipped with a ferrite EMI filter in the ADB connector to meet EMC standards specifically for the Macintosh Portable and PowerBook.
- Q) Can I use a standard ADB mouse with the Macintosh Portable or PowerBook?
- A) There are two standard ADB mouse devices available. One of these is low-powered. You should not connect either of the standard mouse devices to the Macintosh Portable or the PowerBook. This violates the FCC specifications and would draw too much power if it was not the low-power model.
- Q) Is there any visual way I can distinguish between the mouse devices?
- A) Yes:
- The standard mouse has an ADB connector that is approximately 0.5 inch long.
  - The standard low-power mouse also has an ADB connector that is approximately 0.5 inches long and there is a low-power symbol (a half

circle with a dash across the top) on the product label.

- The low-power mouse has an ADB connector that is approximately 1 inch long and also includes the low-power symbol(a half circle with a dash across the top) on the product label.

#### Article Change History

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10/08/92 -Revised to include the PowerBook and clarify differences between the two low-power ADB mouse devices.

#### Support Information Services

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Tech Info Library Article Number:4689



# Tech Info Library

## Guided Tour System Disk Bombs

Revised: 12/4/89  
Security: Everyone

Guided Tour System Disk Bombs

=====

Article Created: 2 November 1989  
Article Last Reviewed: 1 June 1992  
Article Last Updated: 1 June 1992

TOPIC -----

Whenever I try to run a Guided Tour for an Apple peripheral I bought several years ago, my Macintosh freezes up. The System Folder on the Guided Tour disk, which I am trying to boot from, is 4.1.

DISCUSSION -----

You probably have a Macintosh which requires a more recent version of system software than was included on your Guided Tour disk. A workaround is, instead of booting from the Guided Tour floppy, to drag the Tour Folder from the Guided Tour disk to the hard disk. While still running under the System Folder on the hard disk, launch the tour by double-clicking on its icon (looks like a movie projector).

This workaround should work with several older Guided Tour disks, such as those for the Apple Scanner and the LaserWriter IISC.

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Tech Info Library Article Number:4690





# Tech Info Library

## TokenTalk NB Card: Range of Burned In Addresses

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: Range of "Burned In" Addresses

=====

This article last reviewed: 2 November 1989

TOPIC -----

I have two questions about the TokenTalk NB Card:

- 1) What is Apple's range of "burned in" addresses for the TokenTalk NB Card? I have a customer who has the IBM LAN Manager software and wants to identify the newly installed Macintosh systems by their addresses.
- 2) In the LAN Minds binders, there was mention of a CDEV that comes with MacAPPC and MacDFT that allows the identification and changing of the addresses associated with the TokenTalk NB Card. Can I have some more information?

DISCUSSION -----

- 1) The IEEE 802 committee has assigned Apple the address range of "5000E0000000" to "5000EFFFFFFF". This gives Apple over 268 million possible Token Ring network node addresses.
- 2) The CDEV in question is called "Token Ring" and will be included with MacAPPC but not with MacDFT. The MacDFT CDEV has all the functions of the Token Ring CDEV plus the MacDFT specific features.

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Tech Info Library Article Number:4691



# Tech Info Library

## Apple II: Using a Switchbox With ImageWriter II

Revised: 12/4/89  
Security: Everyone

Apple II: Using a Switchbox With ImageWriter II

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This article last reviewed: 14 November 1989

TOPIC -----

I am having problems with my Apple II, switch boxes, and ImageWriter II.

What actually is the difference between the ImageWriter and the ImageWriter II?  
Is there solution guaranteed to work?

Do you know of anybody who is having success with ImageWriter IIs and switch boxes?

DISCUSSION -----

The workaround is to use XON/XOFF handshaking.

Following is an explanation of what happens when switching between an Apple IIGS and an Apple IIe. Also included is an explanation of why this may not be a problem with ImageWriters, and why a MicroBuffer may cure this as well.

Set-Up:

-----

Our configuration to test this problem was an Apple IIe equipped with a Super Serial Card, an Apple IIGS, and an ImageWriter II, along with two commercial switch boxes. Line status was monitored with a Data Specification RS-232 Break-Out box. A Fluke 8050A Digital Multi-Meter was used to measure the voltage levels. Software used was AppleWriter II with the same file open on both systems.

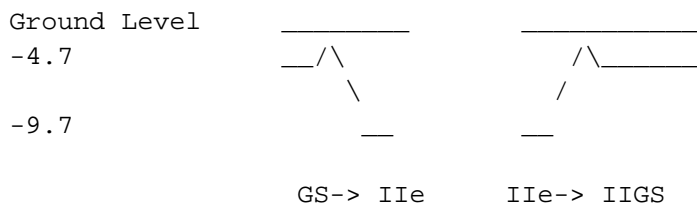
The Test:

-----

When switching between the systems, transitions were noted on the Transmit line, which caused DTR from the printer to go into the high state, effectively

shutting off communication with the connected computer. If the printer does a reset in between the systems, the now-connected system prints correctly. If there is no reset when switching, it is necessary to reset the printer by either deselecting/selecting, as you stated, or by powering off the printer, and powering it on again. Either of these actions resets the DTR line and re-establishes communications with the computer.

Our first thought was to use a switch box with a make-before-break switch. The reason this would not work with Apple IIe and Apple IIGS systems connected is the difference in voltage levels between the systems. The Apple IIGS system output device, AMD 26LS30, is supplied with +/-5VDC, while the Super Serial Card output device, TI 75189, is provided with +/-12VDC. This means that the Apple IIGS outputs -4.7 volts for a "Low" signal while the Apple IIe outputs -9.7 volts. When the switch is thrown from one position to the other, here's what happens:



With the switch type a break-before-make, when the switch opens between contacts, the voltage level rises to Ground, then drops to a Low level again. This positive transition to Ground causes the printer to see either a start bit or a DSR level shift from the computer, which then sets DTR false. If the switch box is a make-before-break switch, there would be current flow from the Apple IIe into the Apple IIGS output because of the different voltage level in the output "Low" signal, which could cause damage to the interface chips in the Apple IIGS.

XON/XOFF works because the printer sends/receives the XON/XOFF handshaking over the normal data communications lines, pins 2 and 3, and even though these lines are affected by the level transitions caused by the switch action, these transitions are not recognized as XON/XOFF by the printer or the computer. Because the equipment doesn't see these transitions as requests to halt data flow, there is no attendant response to incorrect data by the printer, and the information flow continues.

The ImageWriter has 75189 receiver chips installed, functionally equivalent to the 1489 Line Receiver, which are much less sensitive to level transitions because they are designed to operate at lower frequency limits. This causes them to be much more tolerant of the level transitions that occur during the actual time of the switch. ImageWriter IIs have 26LS32s for receivers. They are designed for higher speed use, and thus are much more sensitive to the level transitions occurring. This is our interpretation of why this problem does not exist with the ImageWriter.

A MicroBuffer might cure this problem because the ImageWriter II responds to the level transitions occurring during the switch time, but when this transition is sent to a buffer, it knows it is not data, so it ignores the change in potential between connections.

To use XON/XOFF with older software, it is necessary to use a pre-boot program to set up the Super Serial Card before using the software. On the Apple II GS, if you cannot gain access to the Control Panel from within the application, the pre-boot needs to be used there, too.

The pre-boot program should look like this in DOS 3.3 or ProDOS:

```
10 D$=CHR$(4)
20 PRINT D$;"PR#1"
30 PRINT CHR$(9);"X E";CHR$(13)
40 PRINT D$;"PR#0"
```

Enter this short program into the system in immediate mode prior to starting up the systems, or save it on disk as either a HELLO (DOS 3.3) or STARTUP (ProDOS) program to run before the software boots.

Bottom Line

-----

Change the ImageWriter II to XON/XOFF handshaking by setting SW 2-3 Open, and the problem of not being able to print from multiple systems should vanish. It is less convenient, but we have not been able to make the setup fail using this method.

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Tech Info Library Article Number:4692



# Tech Info Library

## HyperCard: InBox 2.2 Incompatibilty

Revised: 12/4/89  
Security: Everyone

HyperCard: InBox 2.2 Incompatibilty

=====

This article last reviewed: 14 November 1989

TOPIC -----

This article discusses an incompatibility problem between HyperCard and InBox 2.2 under System Software 6.0.4.

DISCUSSION -----

A Macintosh running HyperCard 1.2.5 and System Software version 6.0.4 hangs when HyperCard is the active application in MultiFinder and the user receives an incoming InBox 2.2 memo, triggering Inbox's "audible warning".

The problem persists when the same configuration is used with HyperCard 1.2.2 under the same system software (v6.0.4), so it may be caused by the interaction of InBox and the system software.

Turning off the audible warning in InBox eliminates the problem, and is the only solution to the problem as of November of 1989.

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Tech Info Library Article Number:4693



# Tech Info Library

## TokenTalk NB Card: How the Confidence Test Works

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: How the Confidence Test Works

=====

This article last reviewed: 14 November 1989

TOPIC -----

After installing the SMB File Transfer software, I tried to run the TokenTalk NB Card Confidence Test. The card failed the test. (It passed the test before installing SMB.)

Following the failure, I was unable to access the AFE/SMB software. The message given was specific, and indicated that access to the Token Ring software was not available.

Restarting the Macintosh and accessing the AFE/SMB software resulted in immediate access to the SMB server (Normal operation).

I tried the confidence test again and it failed. Another attempt to access the AFE/SMB software was also unsuccessful.

It appears that there is an incompatibility between the SMB software and the confidence test -- or am I doing something wrong?

DISCUSSION -----

In our quick test, a TokenTalk NB Card also failed the Confidence Test when the test was launched from a hard disk. N&C QA provided us with the following information:

Such results may occur if the Confidence Test launching instructions are not strictly followed because of two inherent characteristics of the diagnostic:

- 1) The Confidence Test is destructive by nature; therefore, the Macintosh must be restarted after running the test.
- 2) The Confidence Test expects the TokenTalk NB Card to be in an idle state; therefore, the test must be run before the TokenTalk NB Card is

used. Any software using the TokenTalk NB Card will interfere with the Confidence Test and cause the test to indicate that the card is bad. (Once installed, Token Ring software may start using the TokenTalk NB Card at startup. So, if one runs the Confidence Test after starting up from a Token Ring software installed disk, the Confidence Test may indicate that the card is bad.)

The trick is to restart from a disk that has no Token Ring software installed, like the User Confidence Test disk, and to restart the Macintosh after running the test.

For more information, refer to the TokenTalk NB Confidence Test's initial dialog and the Apple TokenTalk NB User's Guide (page 18).

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Tech Info Library Article Number:4694



# Tech Info Library

## Apple SCSI Drives: Why Hard Drive Access Time May Vary

Revised: 9/29/90  
Security: Everyone

Apple SCSI Drives: Why Hard Drive Access Time May Vary

=====

This article last reviewed: 14 November 1989

TOPIC -----

What is the "average access time" of internal HD40 SC drives, especially the HD40 SC found in a Macintosh SE/30?

DISCUSSION -----

The hard disk drive specifications that Apple supports are those published in our literature. The Macintosh Internal Hard Disk HD40 SC is rated with an average seek time of 30 milliseconds in literature dated February 1989. This doesn't necessarily mean that all drives will be that exact speed -- just that we claim they'll be at least that fast.

Our computers may ship with different hard drives during their product lifetimes. In the case of the Macintosh SE/30, customers may have received a Quantum, a Seagate, or a Sony. Each of these drives performs similarly, but mild differences are detectable using certain benchmark tests. The most noticeable difference in actual day-to-day operation would probably be the unique sounds made by each drive: the overall performance should not differ all that much.

Many factors influence which drive a customer receives with their Macintosh. When a drive manufacturer is unable to produce adequate quantities for us, we'll use another manufacturer. Sometimes drives are dropped from our approved hardware lists for one reason or another, and others are added. It is almost impossible to predict which drive a Macintosh will have.

The service situation is also difficult to predict. Our pool of service hard drives changes over time, much the same as our pool of new product drives does. All that is guaranteed is that our customers will receive replacement drives that are compatible, and that will match or exceed our published specifications.



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Tech Info Library Article Number:4695



# Tech Info Library

## MacTCP: Ethernet And IEEE 802.3 Packets

Revised: 12/4/89  
Security: Everyone

MacTCP: Ethernet And IEEE 802.3 Packets

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This article last reviewed: 14 November 1989

TOPIC -----

To be useful in our environment, every IP implementation must use an "Ethernet-style data link layer (EtherType field)" type packet instead of the "IEEE 802.3/2 data link layer (Length field and SAPs)" type packet.

Which data link layer does MacTCP's IP use?

DISCUSSION -----

MacTCP, when using the Ethernet link level protocol as selected via the MacTCP CDEV, always uses Ethernet-style packets. We are not aware of any implementations of TCP/IP that use the IEEE 802.3 style packets.

When using the EtherTalk 2.0 link level protocol with MacTCP, IEEE 802.3-style packets are used. These packets have AppleTalk encapsulated in them, and they must be decapsulated by a DDP/IP gateway, such as a FastPath. These packets then are sent to the destination IP address in Ethernet-style packets.

(NOTE: The DDP/IP gateway needs to be AppleTalk Phase 2-compatible to work as described above.)

The only time IEEE 802.3-style packets are used is when using EtherTalk 2.0. These packets are seen only by other EtherTalk 2.0 nodes. EtherTalk 1.x uses the Ethernet-style packets.

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Tech Info Library Article Number:4696



# Tech Info Library

## CE QuickMail: Apple Tape Backup Incompatibility

Revised: 12/4/89  
Security: Everyone

CE QuickMail: Apple Tape Backup Incompatibility

=====

This article last reviewed: 14 November 1989

TOPIC -----

This article contains information about a QuickMail/Apple Tape Backup problem.

DISCUSSION -----

CE Software's QuickMail 2.0 server INIT causes the Apple Tape Backup software to freeze or crash the system when it is launched.

As of November of 1989, the only known workaround is to remove the QuickMail server INIT from the System Folder and restart the machine before attempting to back up the server.

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Tech Info Library Article Number:4697



# Tech Info Library

## Macintosh Portable: Lead Acid Battery Alternative

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Lead Acid Battery Alternative

=====

Article Created: 14 November 1989  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

If the lead acid battery of a Macintosh Portable is removed, and the 9-volt battery is replaced with an AC-to-9-volt adapter (plugged into the wall), can the machine still run? This would allow the user to make the Macintosh Portable a lighter, but transportable only, computer.

DISCUSSION -----

Apple recommends that the Macintosh Portable NOT be used without the internal lead acid battery. The battery is always in use even when the Apple Power Adapter is connected.

The Apple Power Adapter provides 7.5 volts DC at a nominal current of 1.5 amps, peak of 2 amps. This adapter will not adequately power the Portable without the lead acid battery installed.

It might be possible to use an AC/DC 9-volt adapter to power the system, thus eliminating the need for the lead acid battery, but the only gain from this would be the 3-pound reduction in the weight of the system.

Any weight savings obtained by removing the battery would be negated by the size and weight of a 9-volt adapter of the appropriate capacity, and not being able to use the machine without AC power available. These size, weight, and convenience factors seem to be the primary reasons for having a portable machine.

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Tech Info Library Article Number:4698



# Tech Info Library

## TokenTalk NB Card: Using With MacTCP

Revised: 12/4/89  
Security: Everyone

TokenTalk NB Card: Using With MacTCP

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This article last reviewed: 14 November 1989

TOPIC -----

Can I use a TokenTalk NB Card with MacTCP? I would like to encapsulate IP packets in TokenTalk packets and route them through an AppleTalk Internet Router to a DDP-IP gateway, such as the GatorBox.

I know MacTCP is unable to use the TokenTalk NB Card directly, but I want to encapsulate IP in DDP and strip the AppleTalk off at the gateway.

If that is not possible, can I go from LocalTalk to the router to a Token Ring backbone to a router to LocalTalk to a DDP-IP gateway?

DISCUSSION -----

Yes, you can use the Apple TokenTalk NB Card with MacTCP if TokenTalk has been selected via the Network CDEV. (We have tested this configuration with a GatorBox but not with a FastPath 4.)

NOTE: It is important to remember that MacTCP 1.0 will not work across a router, including the AppleTalk Internet Router, if class C addressing is used. Class A and class B addressing, however, work properly.

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Tech Info Library Article Number:4699



# Tech Info Library

## Macintosh Keyboards: Enter Key Problems Are Key Code Difference

Revised: 7/17/92  
Security: Everyone

Macintosh Keyboards: Enter Key Problems Are Key Code Difference

Article Created: 14 November 1989  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

I am experiencing a problem with the Macintosh Portable. It seems that the Enter key on my Macintosh Portable does not act like an Enter key on any of our other keyboards.

I am using terminal software that requires the Enter key. Under MacWrite II, the Enter key causes a page advance. Can you explain?

DISCUSSION -----

The ASCII code generated by the Enter key is \$03, which is consistent with all of Apple's keyboards that have Enter keys. The virtual key code, however, is not the same on all Apple keyboards. Here is a list of Macintosh keyboards and the virtual key codes their Enter keys return:

| Macintosh Keyboard                       | Virtual Key Code |
|------------------------------------------|------------------|
| -----                                    | -----            |
| Macintosh 128K, 512K Keyboard            | \$34             |
| Macintosh 128K, 512K Numeric Keypad      | \$4C             |
| Macintosh Plus Keyboard                  | \$4C             |
| Macintosh Standard Keyboard (ADB)        | \$4C             |
| Macintosh Extended Keyboard (ADB)        | \$4C             |
| Apple Keyboard II                        | \$4C             |
| Apple Extended Keyboard II               | \$4C             |
| Macintosh Portable Keyboard              | \$34             |
| Macintosh Portable Numeric Keypad        | \$4C             |
| Macintosh PowerBook 100 Keyboard         | \$34             |
| Macintosh PowerBook 140 and 170 Keyboard | \$34             |

The fact that the Enter key next to the Space bar on the Macintosh Portable returns a virtual key code of \$34 is most likely the reason the terminal software is having a problem.

These keys have different virtual key codes because it is possible to have two different Enter keys with these keyboards. The authors of the terminal software are not taking into account the possibility of a different virtual key code for the Enter key -- they are looking at the ASCII code of the key being pressed.

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Tech Info Library Article Number:4700



# Tech Info Library

## Macintosh: Turning It Off Versus Leaving It On (8/94)

Revised: 8/1/94  
Security: Everyone

Macintosh: Turning It Off Versus Leaving It On (8/94)

Article Created: 12 April 1989  
Article Reviewed/Updated: 01 August 1994

TOPIC -----

I noticed that many of my fellow employees leave their Macintosh computers on overnight and on weekends. Is this good or bad? Is there a fire risk, or excessive energy waste?

DISCUSSION -----

These are controversial issues compounded by numerous variables.

The energy issue is left up to your conscience or company controller. However, it typically takes more energy to power up a system than may be consumed by leaving a system on. Read the Tech Info Library article, "Monitors Draw Extra Power at Startup."

As for fire risk, it is very low -- as mandated and enforced by various governmental agencies. Refer to the Tech Info Library article on "Certificate of Occupancy" for additional information on specific fire retardant materials, agency approvals, and so on, that our systems have. Service documentation explains the fuse protection that our systems contain.

Experts are strongly polarized as to whether power cycles are stresses beyond what the electronics were designed for, but there are other variables, including "sticktion", quality of power, and so on.

For instance, if you have personally encountered hard disk "sticktion" problems, you may have a strong opinion that hard disks should not be powered off. However, if you are in a region plagued by power outages or lightning-induced spikes or surges and so on, experience may have taught you that electronics should always remain off whenever they are not in use. A/UX users and AppleShare Administrators, of course, will also take into account the amount of time it takes to bring up their systems.



Knowing any particular idiosyncrasies of your system, weighted with any risks in your environment, should help you make the most intelligent decision.

In general though, if you are not going to use the system for 8 hours or more, powering it off is the wise choice.

Article Change History:

01 Aug 1994 - Revised and shortened Topic, revised formatting, checked for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4701



# Tech Info Library

## King's Quest: Compatibility With GS/OS 5.0

Revised: 12/4/89  
Security: Everyone

King's Quest: Compatibility With GS/OS 5.0

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This article last reviewed: 14 November 1989

TOPIC -----

I have an Apple IIGS, and I would like to use King's Quest (from Sierra ON-LINE). Running under System 5.0 with only the icons of 5.0 and AppleWorks GS installed, I tried to install King's Quest and its icons, but the computer always hangs and I have to restart.

Without the Icons, the system performs OK. The same setup with all Icons worked fine on version 4.0 of the operating system. Can you explain?

DISCUSSION -----

There are a couple of things to watch when using some of the King's Quest programs:

- 1) If your version of King's Quest includes the program and icons, eliminate all of the King's Quest icons from your hard disk -- except for the program icon. Deleting these icons will not effect the functionality or performance of the program; these icons were used by the programmer when writing the program, and were not removed before the program disk was duplicated for distribution.
- 2) When using GS/OS 5.0, you must have 768K or more of memory (minimum used to be 512K). Alternatively, run the program from its program disk (which contains an older, less memory consuming version of the OS).

Good Luck King Graham, Gwydion, and Rosella!

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Tech Info Library Article Number:4702



# Tech Info Library

## Macintosh II Family: Why Color Icons Are Black and White

Revised: 7/8/92  
Security: Everyone

Macintosh II Family: Why Color Icons Are Black and White

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Article Created: 14 November 1989  
Article Last Reviewed: 7 July 1992  
Article Last Updated: 7 July 1992

TOPIC -----

I would like to know why my color monitor with a 256-color video card displays a black Apple icon instead of a color icon for the DA menu. Also, why is the startup "Welcome to Macintosh" Macintosh icon not in color, although it is a color system?

DISCUSSION -----

The most likely cause is that your Monitors control panel is set to Black & White. If the Monitors control panel is set to Black & White, the Welcome to Macintosh icon and the Apple icon will be black. To get color icons, all you need to do is set the Monitors control panel to either 16 colors or 256 colors.

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Tech Info Library Article Number:4704



# Tech Info Library

## Network Addressing Without Using A Router

Revised: 12/4/89  
Security: Everyone

Network Addressing Without Using A Router

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This article last reviewed: 14 November 1989

TOPIC -----

Is it possible for EtherTalk 2.0 or TokenTalk 2.0 to address more than 253 nodes without the benefit of a router? I understand that network numbers 65,280 to 65,534 are used only when a router is not present. If it is possible, how is network addressing accomplished?

DISCUSSION -----

Operation Without a Router

-----

If a node has a hint stored in parameter RAM, the node uses the AppleTalk Address Resolution Protocol (AARP) to determine if the address is still unique. If the address is unique, the node can begin communicating on the network. If the address is not unique, the node continues as if it had no hint.

When a node doesn't have a hint node address stored in parameter RAM, the node determines its address by first determining its network number, the first 16 bits of its node address. In the absence of a router, the node picks a network number from the startup range. This range is specified to be 65,280 to 65,534 (\$FF00 to \$FFFE).

A node then picks a node ID in the 0 to 253 (\$00 to \$FD) range. As in the past, a node ID of 0 is reserved to mean "send to myself", and 255 is reserved for broadcasts. With AppleTalk Phase 2, 254 is also reserved for internal use.

The node now has a node address in the form \$FFxxyy, where xx is the last part of the network number, and yy is the node ID. The node uses AARP to determine if any other nodes on the network are already using that node address. If no other nodes are using it, then the node adopts that as its node address. Otherwise, it tries a different node address.

## ..TIL04705-Network\_Addressing\_Without\_Using\_A\_Router\_(TA40609).pdf

For more information, look in the "LAN Minds, Volume 1" binder. (The above and related information can be found under tab 2 on page 14).

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Tech Info Library Article Number:4705



# Tech Info Library

## HDBackup: Problem and Solutions

Revised: 12/4/89  
Security: Everyone

HDBackup: Problem and Solutions

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This article last reviewed: 19 November 1989

TOPIC -----

HDBackup does not always ask for each disk when backing up or restoring a 1.9MB FileMaker II file. Do you have any suggestions?

DISCUSSION -----

We were unable to duplicate this problem.

We tested HDBackup 1.1 with System Software 6.0.2 on a Macintosh II, running MultiFinder and Finder. We were able to back up a variety of sizes of FileMaker files and 'other applications' files that ranged in size from a few K to a few that were so large they required more than one disk to hold them. We backed up using all of the options: all files, changed files, and a single file. We restored using both options: all and a single file.

There are some known problems, however, that can confuse users or jeopardize their data. You may be encountering one or more of these problems.

If you insert a disk containing your backed up information when just running the Finder or MultiFinder, you may never be able to restore from that disk again. Therefore, after backing up information onto disks using HDBackup, immediately write-protect them using the write-protect tab, and store them for use with only the HDBackup program.

If your disk is not recognized by HDBackup when you try to restore, you should be able to recover all of the information that isn't split over multiple disks (for example, you will be able to recover a 200K file but not one that is 1.5MB that is contained on multiple disks). Insert the disk while running the Finder or MultiFinder and merely copy the file.

(NOTE: This does not work with files that are split between two or more disks. Unfortunately, there are no tools or tricks to easily recover large files that

were backed up onto multiple disks.)

When running MultiFinder, if you attempt to restore all, you may immediately encounter the dialog, "That file already exists on the volume. Click continue to replace." Since the file in question is most likely the Desktop file, select OK. Another error message may display, "Tried to open a file to write to it twice -49." Typically, you can ignore this error message because it also refers to the Desktop file and click continue with no ill effects.

After restoring by file while running MultiFinder, close and open the folder or volume to which you restored the file. This alerts MultiFinder to update the new icons on the desktop. (These newly restored files' icons change from the generic document icon to the icon of that application, and Get Info displays the proper attributes of that file.) After which, you will be able to access the files normally.

If the problem you are encountering differs from the known problems described above, the directory structure may be damaged on the disk you are trying to back up, or the file itself may be damaged. Consider rebuilding the Desktop file on that volume and repairing it using a utility, such as Disk First Aid.

Because many of the problems described above are encountered only when using HDBackup under MultiFinder, it is best to run HDBackup under Finder.

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Tech Info Library Article Number:4706



# Tech Info Library

## Macintosh Portable: Sound Volume Problem Solved

Revised: 7/27/92  
Security: Everyone

Macintosh Portable: Sound Volume Problem Solved

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Article Created: 19 November 1989  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

I am having a problem controlling the volume on the internal speaker of our Macintosh Portable. Most of the time, the speaker is barely audible -- even though the volume control in both the General and Sound CDEVs is at 7.

I cleared PRAM by using the keyboard method (Control, Shift, Option, and Command). This procedure worked, but it raises a couple of questions:

- 1) What is causing the speaker volume to become so low?
- 2) Why does resetting the PRAM fix the problem, whereas removing the power supply via the battery removal/power-down sequence does not fix the problem?

DISCUSSION -----

- 1) The volume on your Macintosh Portable was low because the PRAM was getting scrambled.
- 2) To clear PRAM on the Macintosh Portable, both batteries must be removed for an undefined period of time -- probably more than 10 minutes. Otherwise, the 9-volt battery holds the values stored in PRAM. The easiest way to clear this memory is, as you discovered, by keyboard command.

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Tech Info Library Article Number:4707





# Tech Info Library

## AppleTalk Internet Router 1.0 & 2.0: ADEV Files Question

Revised: 2/6/90  
Security: Everyone

AppleTalk Internet Router 1.0 & 2.0: ADEV Files Question

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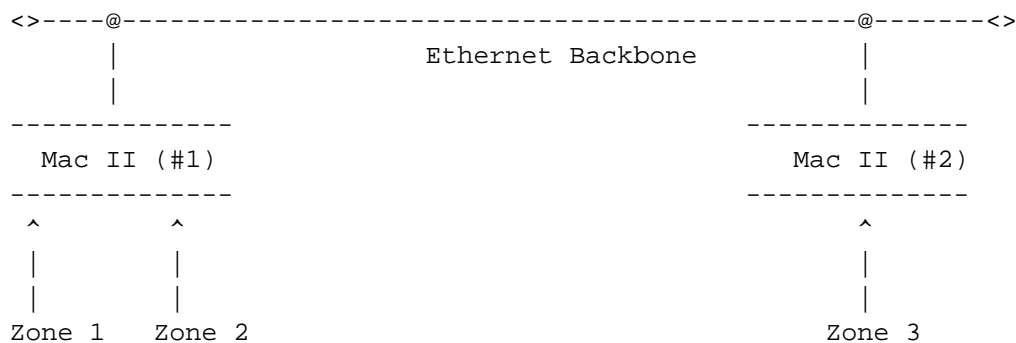
This article last reviewed: 19 November 1989

TOPIC -----

After installing the AppleTalk Internet Router, the following problem occurred and was solved.

Situation  
-----

There are three separate LocalTalk-type networks, each going into a Star Controller (that is, three Star Controllers) -- Zone 1, Zone 2, and Zone 3. There is also an Ethernet backbone. Two Macintosh IIs are acting as routers between Zone 1 and Zone 2 and the Ethernet backbone and Zone 3 and the Ethernet backbone.



Macintosh II 5MB (#1)

- System Software Version 6.0.3
- EtherTalk 2.0
- AppleTalk Internet Router
- AppleShare 2.0.1
- AppleShare Print Server

Macintosh II 1MB (#2)

- System Software Version 6.0.3
- EtherTalk 2.0
- AppleTalk Internet Router
- AppleShare Print Server

#### Problem

-----

When configuring the router in the router setup for Macintosh II (#1), four ports appear: 1 Ethernet port, 1 LocalTalk modem port, and 2 LocalTalk built-in ports.

The appearance of this extra "LocalTalk built-in" port is impossible and doesn't make sense but, for some odd reason, continues to happen no matter how many times I restarted or tried to deactivate the port. The router actually runs in this configuration, but doesn't work properly.

Zone 1 is attached to the built-in port. However, whenever Zone 1 is chosen in the "Chooser" (after the router came on-line), none of the network services available in Zone 1 appear. Also, people in Zone 1 can't see any part of the network--including their zone (Zone 1). If I shut off the routers, everyone can see their respective zones including the Zone 1 people. Therefore, I know there is integrity in the physical media.

#### Solution

-----

Since the router setup on the Macintosh II (#2) was normal (that is, two total LocalTalk ports (modem/built-in) and one EtherTalk port), I assumed that there had to be something wrong with Macintosh II (#1). The only thing I was doing different on Macintosh II (#1) was running the AppleShare File Server.

After examining the System Folders for both Macintosh IIs (#1 and #2), I found two CDEVs that were installed by the AppleTalk Internet Router. "LocalTalk (Built-In)" and "LocalTalk (Modem)". Since I had two "LocalTalk (Built-In)" ports for my router setup on Macintosh II (#1), I decided to throw out the "LocalTalk (Built-In)" CDEV system document in the System Folder for Macintosh II (#1) and left it in Macintosh II (#2).

To my surprise, when I got into my router setup for Macintosh II (#1), everything was normal with one "LocalTalk (Built-In)", one "LocalTalk (Modem)", and one EtherTalk port. When I restarted both routers, the whole network started up, and everyone could see everything in the network -- including Zone 1.

#### Questions

-----

- 1) Why did this happen, and why did the solution work?
- 2) Why do you need a CDEV for "LocalTalk (Built-In)"? I thought that code was an integral part of the system (ROM or on some other chip).

- 3) If "LocalTalk (Built-In)" is not an integral part of the system, why haven't I ever seen a "LocalTalk (Built-In)" CDEV in the System Folder?
- 4) Does AppleShare File Server install some of its own resources that may cause conflicts with the AppleTalk Internet Router "LocalTalk (Built-In)" CDEV? This would explain why the Macintosh II (#2) didn't have any problems with the "LocalTalk (Built-In)" CDEV installed while Macintosh II (#1) did have problems.

#### DISCUSSION -----

- 1) The AppleTalk Internet Router 1.0 beta software (AppleTalk Phase 1 only) installs the files:

- Modem LocalTalk
- Printer LocalTalk

in the System Folder.

The AppleTalk Internet Router 2.0 installs the files:

- LocalTalk (Modem)
- LocalTalk (Printer)

in the System Folder. These four files are ADEVs, not CDEVs.

If the AppleTalk Internet Router 2.0 software was installed on a machine that had the AppleTalk Internet Router 1.0 beta software installed, you would have the "Printer LocalTalk" file from the AppleTalk Internet Router 1.0 beta software and the "LocalTalk (Modem)" and "LocalTalk (Printer)" files from the AppleTalk Internet Router 2.0 software in the System Folder.

The AppleTalk Internet Router 2.0 installer script removes the "Modem LocalTalk" file from the System Folder, but does not remove the "Printer LocalTalk" file. This is why the router setup window shows the two LocalTalk printer ports and the LocalTalk modem port.

The router did not work properly because both LocalTalk Printer port drivers were telling the printer port different things, which, in turn, caused the network problems. When you removed the "LocalTalk (Printer)" file, the AppleTalk Internet Router 2.0 software had only one driver talking to the printer port, and the problems stopped.

It is important to note that the "LocalTalk (Modem)" and "LocalTalk (Printer)" files from the AppleTalk Internet Router 2.0 software should be in the System Folder, and the "Printer LocalTalk" file from the AppleTalk Internet Router 1.0 beta software should be removed.

- 2 and 3) The AppleTalk Internet Router requires special LocalTalk drivers and uses RAM-based drivers instead of the ROM-based drivers. This is why you have not seen these files before.

- 4) The AppleShare File Server and AppleShare Print Server software does not conflict with the AppleTalk Internet Router software.

(NOTE: Apple Tech Comm recommends that the Macintosh II (#2) router have 2MB RAM installed, since it is running the AppleShare Print Server software in conjunction with the AppleTalk Internet Router.)

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Tech Info Library Article Number:4708



# Tech Info Library

## AppleTalk: Node IDs, Node Hints

Revised: 12/4/89  
Security: Everyone

AppleTalk: Node IDs, Node Hints

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This article last reviewed: 19 November 1989

TOPIC -----

I have a large AppleTalk Internet. Using NodeHint by Farallon, I am able to assign node numbers to each workstation, allowing some control over the network. Is there a way to assign node IDs to AppleTalk printers, either by using the same method or another method?

DISCUSSION -----

The node hint is stored in the PRAM of the Macintosh computer. There is no method that we are aware of (as of November 1989) for assigning node hints for AppleTalk-based printers.

Also, using NodeHint to assign node numbers does not guarantee that the workstation will actually have node number assigned in PRAM. See the following for a detailed description of the node number assignment process:

Operation without a router

-----

If a node has a hint stored in parameter RAM, the node uses the AppleTalk Address Resolution Protocol (AARP) to determine if the address is still unique. If the address is unique, the node can begin communicating on the network. If the address is not unique, the node continues as if it had no hint.

When a node doesn't have a hint node address stored in parameter RAM, the node determines its address by first determining its network number, the first 16 bits of its node address. In the absence of a router, the node picks a network number from the startup range. This range is specified as 65,280 to 65,534 (\$FF00 to \$FFFE).

A node then picks a node ID in the 0 to 253 (\$00 to \$FD) range. As in the past, a node ID of 0 is reserved to mean "send to myself", and 255 is reserved for broadcasts. With AppleTalk Phase 2, 254 is also reserved for

internal use.

The node now has an node address in the form \$FFxxyy, where xx is the last part of the network number, and yy is the node ID. The node uses AARP to determine if any other nodes on the network are already using that node address. If no other nodes are using it, then the node adopts that as its node address. Otherwise, it tries a different node address.

#### Operation with a router

When a network administrator sets up a router, a network number range is specified for an extended AppleTalk network. The numbers in this range must be unique on the Internet. The network administrator also specifies a list of zone names that are valid for the extended network. As in the past, a router can depend on a seed router for the authoritative definition of network numbers and zone names.

When a router is present, an AppleTalk Phase 2 workstation node determines its node address in two steps. In the first step, the workstation establishes a potential temporary node address for communicating with a router. If the workstation has no hint to use, then it uses a number in the startup range and uses AARP until it finds a unique address.

If the workstation has been on an AppleTalk network previously, then it uses its hint node address and uses AARP to determine if that node address is still unique. If it isn't unique, then the workstation tries other node IDs with the same network number. If the workstation still can't find a unique address, it tries a network number in the startup range.

In the second step, a workstation uses its potentially temporary node address and proceeds to talk to the router to discover information about its environment. It learns from the router the range of valid network numbers for the cable and confirms that its saved zone name is valid for that cable.

If a node determines that its zone name is not valid, or it does not have a saved zone name, it can ask the router for the list of valid zone names and the name of the default zone. The software can allow the user to choose a zone name from the list of valid zone names. EtherTalk and TokenTalk software support this feature. Until the user goes into the Control Panel and chooses a zone, the node is in the default zone.

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Tech Info Library Article Number:4709



# Tech Info Library

## Lisa Office System: Version 3.1 Still Calls Itself 3.0

Revised: 12/4/89  
Security: Everyone

Lisa Office System: Version 3.1 Still Calls Itself "3.0"

=====

This article last reviewed: 19 November 1989

TOPIC -----

I set up a Lisa with Lisa Office System version 3.1.

The Lisa Office System, however, although marked as version 3.1, appears as version 3.0 when it is installed. What's going on?

DISCUSSION -----

When Apple revised the Lisa Office System software to 3.1, we didn't change the dialog screens that appear when you install the software. Therefore, each disk shows version 3.0.

However, after installing the OS and starting up from the volume onto which you installed the software, check the startup "Wait" message box. This should properly reflect that the Lisa Office System you installed is in fact version 3.1 -- or, as it is commonly called, Lisa 7/7.

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Tech Info Library Article Number:4710



# Tech Info Library

## MacWorks: Localization

Revised: 12/4/89  
Security: Everyone

MacWorks: Localization

=====

This article last reviewed: 19 November 1989

TOPIC -----

Is there a localized version of MacWorks (that is, the bottom two rows on the keyboard are transposed one place to the right, so "b" appears as an "n", and so on)?

DISCUSSION -----

No localized versions of MacWorks were created. Therefore, if you used localized Macintosh System Software, this version of the software assumes that the associated localized Macintosh 128/512K keyboard is being used.

Workarounds might include locating a QuicKeys or Tempo II-like program which is compatible with this older System Software, and which will let you remap the keyboard. Apple Tech Comm is not aware (as of November 1989) of such a program.

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Tech Info Library Article Number:4711





# Tech Info Library

## HyperCard: General Problems with XCMDs and XFCNs

Revised: 6/24/90  
Security: Everyone

HyperCard: General Problems with XCMDs and XFCNs

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This article last reviewed: 24 August 1989

Using your own or someone else's XCMD or XFCN involves some risks. Some XCMDs may cause system crashes or unusual problems to appear. These problems usually result from not programming enough error protection into an XCMD and from lack of testing of the XCMD.

When running a new XCMD, first execute it within a test HyperCard stack. If a problem does occur within and corrupting the test stack, your real stack will not be damaged. Also, be sure to check the result of the XCMD or XFCN for any error messages. It's a good idea to put this statement into the script after executing the command:

"Put the result into the message"

Here are some possible XCMD or XFCN causes of system locks up:

- The memory management system is purging needed data of the XCMD or XFCN, because the XCMD or XFCN has not taken precautions to protect it.
- The XCMD or XFCN has broken the master-pointer block, and the problem is not uncovered until some random, future action.
- The memory manager's application stack has become fragmented causing an out-of-memory error, because the XCMD or XFCN has allocated memory, locked it down, and has not removed the data after it was finished.
- There just is not enough memory available.

There are several ways for XCMDs or XFCNs to crash. Almost all are due to lack of error checking and or defensive programming. Some are simply due to trying to use HyperCard in ways for which it was not designed. Anyone using an XCMD or XFCN needs to test the XCMD or XFCN in a stack by itself and slowly add and execute other XCMDs. Any one of the additions may fragment the memory manager's stack, corrupting the master pointer block, or using up memory by

leaving data floating around.

An XCMD or XFCN may not immediately cause problems. For example, a corrupted, master-pointer block may continue to work until a call is made to a once-valid pointer to your data. Once but is now corrupted the pointer points to garbage. The effect could be returning garbage to the stack, but usually, HyperCard chokes on the unexpected garbage data and crashes. Such a crash can take the system with it.

Apple does not support extensions that are not part of the HyperTalk language. The ability to add extensions was created, so that customers can enhance their stacks. However, each programmer must take the responsibility to check for errors and to report any problems to the user when writing the XCMD or XFCN. Be wary when faced with extensions from unknown sources.

Finally, a user's needs may not be appropriate for the capabilities of HyperCard. There are some supported XCMDs, like those available within legitimate HyperCard software products. We suggest HyperTalk programmers use only those XCMDs that they are confident with or that carry a guarantee for future support.

There are many other programming environments that support and handle advanced programming requirements. HyperTalk is not meant to be a replacement for programming languages like Pascal or C.

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Tech Info Library Article Number:4713



# Tech Info Library

## MPW 3.0: Problem Using C Compiler

Revised: 12/4/89  
Security: Everyone

MPW 3.0: Problem Using C Compiler

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This article last reviewed: 25 October 1989

TOPIC -----

I think that there is a problem in "AppleTalk.h". It seems that the C compiler doesn't feel that the definition of the toolbox routine "BuildDDPwds()" is compatible with the definition of "AddrBlock". It seems like the actual toolbox routine is expecting the parameter to be passed by (a scalar) value, but the compiler is expecting a pointer.

I could not make one of our programs compile and work correctly until I changed the "AddrBlock" parameter to a type "long" in "AppleTalk.h" and passed the AddrBlock parameter in as a type "long" scalar parameter. Here is my change to "AppleTalk.h":

```
#if 0
pascal void BuildDDPwds(Ptr wdsPtr,Ptr headerPtr,Ptr dataPtr,const AddrBlock
*netAddr,short ddpType,short dataLen);
#else
pascal void BuildDDPwds(Ptr wdsPtr,Ptr headerPtr,Ptr dataPtr,long myAddrBlock,
short ddpType,short dataLen);
#endif
```

Any comments?

DISCUSSION -----

Although it seems at first that there is an error in the way this particular parameter is declared, the declaration actually makes sense when you look at the underlying mechanisms used by Macintosh Toolbox calls.

Because Macintosh Toolbox calls use Pascal parameter-passing conventions, an AddrBlock parameter is always passed as the address to that parameter. This happens because any parameter longer than 4 bytes automatically has its address passed to preserve stack space.

To mimic this calling convention, the C declaration for the BuildDDPwds declares the AddrBlock parameter as a pointer to an AddrBlock structure. When you call the BuildDDPwds routine, you are expected to pass a pointer to an AddrBlock structure you have declared.

For more information, see the Parameter types section of the "MPW C Reference."

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Tech Info Library Article Number:4717



# Tech Info Library

## Apple Portrait Monitor: Macintosh SE/30 Card Availability

Revised: 10/22/90  
Security: Everyone

Apple Portrait Monitor: Macintosh SE/30 Card Availability

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This article last reviewed: 25 October 1989

TOPIC -----

I have a Macintosh SE/30 and want to use a full-page (not a two-page) monochrome monitor. Do you know of any monitors that work with the Macintosh SE/30?

DISCUSSION -----

Generation X Technologies has a line of 8-bit graphics cards for the Macintosh SE/30. The line includes the Vision '030X, a 1,024-by-768 resolution card with a 74 Hz vertical refresh rate. It will be available next month. The Vision '030A features 640-by-480 resolution and a refresh rate of 66 Hz. Both products include hardware pan and zoom, virtual desktop capability, and support for 1-, 2-, 4-, or 8-bit graphics.

Nutmeg Systems, Inc. offers also offers an SE/30 card for Apple's large monitors. Both the Apple Two-Page Monochrome Monitor and the Apple Macintosh Portrait Display can be driven by the new Nutmeg card, called the Nutmeg 30/2. The single card can drive either monitor due to the card's use of an auto-sensing circuit which detects which monitor is in use and then sends the appropriate signal to that monitor. If no external monitor is connected, the card lets the SE/30 monitor run by itself.

For more details, search the Tech Info Library under "Generation X" and "Nutmeg."

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Tech Info Library Article Number:4718



# Tech Info Library

## EtherTalk 2.0: How It Reduces Broadcast Traffic (9/96)

Revised: 9/30/96  
Security: Everyone

EtherTalk 2.0: How It Reduces Broadcast Traffic (9/96)

=====

Article Created: 25 October 1989  
Article Reviewed/Updated: 30 September 1996

TOPIC -----

This article discusses how broadcast traffic is reduced when you use EtherTalk 2.0 instead of EtherTalk 1.0.

DISCUSSION -----

### Background

-----

In the past, versions 1.0 through 1.2 of Apple's EtherTalk software have caused excessive broadcast traffic when used on a large number of Macintoshes on an Ethernet network. Apple has fixed this problem with the EtherTalk 2.0 version of the software by using multicast addressing.

### Ethernet Broadcast Traffic

-----

All nodes on an Ethernet local area network listen to broadcast packets that are addressed to the general-purpose broadcast address FF-FF-FF-FF-FF-FF. EtherTalk 1.0 used this address for all AppleTalk name lookups, Routing Table Maintenance Protocol traffic between routers, and other types of AppleTalk broadcast packets. Large sites like universities and research labs found this to be a problem, because all of their non-Apple hardware had to accept Apple's packets, read them, then discard them. This translated into lost machine cycles on VAXs, Suns, and so on. In some extreme cases, Sun diskless workstations can crash if they're booting and take a broadcast packet at the wrong time.

### Ethernet Multicast Addressing

-----

Ethernet addresses actually have two parts. The first 24 bits (written as xx-xx-xx) are a vendor code. Apple's codes are 08-00-07, 00:05:02, and 00:A0:40. The second 24 bits designate a unique machine with that vendor code. If a certain bit in the first byte of the vendor code is turned on, the address is said to be a "multicast address" and ALL Ethernet interface boards with that

vendor code will receive the packet. (Apple's multicast vendor code is 09-00-07).

An Ethernet interface board can be programmed to accept only packets with certain multicast addresses. These are the only packets which are passed to the higher level protocols; the hardware rejects all others. This results in a significant efficiency, because it means that the Ethernet interface board will only interrupt the main CPU when "useful" packets are received.

#### EtherTalk 2.0

-----  
EtherTalk 2.0 no longer sends all AppleTalk broadcasts to the general-purpose Ethernet broadcast address. When EtherTalk 2.0 needs to send a packet to all EtherTalk 2.0 nodes, it sends to the multicast address 09-00-07-FF-FF-FF. All EtherTalk 2.0 nodes are registered to receive these packets.

In addition, EtherTalk 2.0 uses a range of other multicast addresses for its Name Binding Protocol (NBP) lookups. This range includes 09-00-07-00-00-00 through 09-00-07-00-00-FC. If there is a service (like a print spooler, or even Responder) registered on a Macintosh, the Macintosh will listen to NBP packets addressed to an address in the NBP multicast range. The Macintosh's zone name determines which address the Macintosh listens to. For example, if a file server is in zone "foo", it might expect file server client software to send lookup requests to the multicast address 09-00-07-00-00-27.

The Ethernet hardware does not pass lookups for a different zone (different multicast address) onto the EtherTalk software. A file server in a different zone would receive lookup requests to a different multicast address.

(Actually, there isn't an exact one-to-one mapping between zone names and multicast addresses. The Zone Information Protocol on routers assigns multicast addresses to zones, but because of the hash function used, there may sometimes be more than one zone assigned to one multicast address, but this is not likely.)

The important thing to understand is that in almost all cases, nodes are no longer disturbed by broadcast traffic that has no relevance to them. This leaves the CPU available for more important tasks.

#### Improvements for Multi-Vendor Environments

-----  
As discussed above, multicast addressing reduces the amount of processing that Macintoshes need to do because NBP lookups are sent to multicast addresses instead of to the general-purpose Ethernet address. However, the biggest improvement that EtherTalk 2.0 offers is that non-AppleTalk nodes are no longer disturbed by general-purpose Ethernet broadcasts generated by AppleTalk devices. When Macintoshes only run EtherTalk 2.0, they no longer send general-purpose Ethernet broadcasts.

Non-AppleTalk nodes, (i.e. Suns, VAXs, and so on) do not register to receive packets sent to Apple's multicast address 09-00-07-FF-FF-FF or Apple's NBP range of multicast addresses, 09-00-07-00-00-00 through 09-00-07-00-00-FC. Non-AppleTalk nodes no longer need to spend machine cycles reading

Apple-specific Ethernet broadcasts only to learn that they didn't need to. Many large customers, especially university, government, and Fortune 500 business accounts have become more amenable to placing Macintoshes on their Ethernet networks.

NOTE: TokenTalk 2.0 also uses multicast addressing. The concept is the same: non-AppleTalk nodes on the Token Ring will not be disturbed by Apple-specific broadcasts. The exact implementation of Token-Ring, multicast addressing is different than the Ethernet implementation.

Article Change History:

30 Sep 1996 - Updated Apple's Ethernet vendor code.

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Tech Info Library Article Number:4719





# Tech Info Library

## RGB-to-NTSC Video Converter

Revised: 12/4/89  
Security: Everyone

RGB-to-NTSC Video Converter

=====

This article last reviewed: 11 October 1989

TOPIC -----

I am looking for a RGB-to-NTSC video converter that works well with ChunkTV.  
Any suggestions?

DISCUSSION -----

MARKERTEK Video Supply makes a RGB-to-NTSC video converter, model number  
RN-1. The 1989 catalog description reads:

RGB Plus sync input to NTSC video out. This card will only be  
effective if the horizontal scan rate of the input is close to  
the standard NTSC video horizontal sync frequency of approximately  
15.75 KHz. (This is what ChunkTV does.)

You still have to make a special cable for the Macintosh II extended video  
card--nothing terribly difficult, though.

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Tech Info Library Article Number:4720



# Tech Info Library

## NRC Series 2000 AppleTalk Routers: Description

Revised: 12/4/89  
Security: Everyone

NRC Series 2000 AppleTalk Routers: Description

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This article last reviewed: 2 November 1989

TOPIC -----

This article describes Network Resources Corporation's (NRC) Series 2000 family of AppleTalk routers.

DISCUSSION -----

The NRC Series 2000 family of AppleTalk routers are designed for Ethernet, broadband, and fiber-optic backbone media. These products can directly connect Macintoshes, AppleShare servers, and LaserWriters to a backbone. They can also connect a LocalTalk or PhoneNet subnet of Macintoshes, AppleShare servers, and LaserWriters to the same backbone.

The Series 2000 products have an architecture that reduces network overhead and extends network capacity. The following is a list of the features common to all Series 2000 products:

- Full EtherTalk compatibility, ensuring inter-operability with other non-NRC EtherTalk devices (like Kinetics, Apple Ethernet adapters, and so on). This is typically an issue in existing Ethernet user locations.
- Works well with large networks, because it can handle over 10,000 routing table entries.
- Self-configuring by default. Network administrators are not required to assign network ID and the like prior to placing the units into service. Self-configuration greatly reduces complexity and the possibility for error when putting the Series 2000 units into service. The units remain manually configurable, for networks with special needs.
- Minimizes activity on the backbone network improving overall network performance. The Series 2000 routers issue far fewer routing table broadcast and use a smaller size broadcast packet than existing non-NRC

solutions.

- Standard AppleTalk protocol support. This ensures compatibility with products like Inter-Poll.

- AppleTalk Phase II compatible.

The following is a list of the Series 2000 products currently offered:

AT2000 supports a single AppleTalk connection via a standard Apple Peripheral-8 cable, connected to the AppleTalk port of an AppleTalk device.

AT2002 supports two AppleTalk connections via standard Apple Peripheral-8 cables, connected to the AppleTalk ports of any two AppleTalk compatible devices.

LT2000 supports a LocalTalk or PhoneNet subnet, including one or more StarControllers in the PhoneNet configuration.

Mac2000 is an Apple Coprocessor Platform (MCP) NuBus adapter card. The Mac2000 is an intelligent device that processes the protocols on the board for higher throughput. The Mac2000 is best applied to server applications which require direct connection to the high-speed backbone.

#### Specific Media Applications

-----  
The Series 2000 supports three media applications:

- Ethernet cable
- Broadband CATV cable
- Fiber optic cable

Ethernet cable: The Series 2000 Ethernet options support both AUI (thick yellow cable) or Cheapernet (thin coax) connections. All standard Ethernet media support is standard.

Broadband CATV cable: The broadband offering of the Series 2000 makes use of standard broadband CATV cable for the high-speed backbone. Broadband's popularity has grown over the years due to it's ability to cover vast distances with both video and data transmission. Broadband data networks have been particularly popular in universities, manufacturing environments, corporate campus systems, and municipalities. In the latter case, some cities use the community CATV cable system to transport data traffic along with entertainment TV. Series 2000 devices use a 2 Mbps broadband modem to connect to the cable system and one of many 6Mhz TV channels to route AppleTalk packets up to 10 miles across the broadband system.

Fiber optic cable: The Series 2000 supports Fiber Optic high-speed backbones using a hub and star topology. The Series 2000 employs an active 16 port hub which supports either 62.5 micro fiber up to 3000-foot from the

hub or 1000 micro plastic fiber for distances up to 250-foot from the hub.  
The hubs can be tiered so you can daisy chain up to 16 hubs.

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Tech Info Library Article Number:4721



# Tech Info Library

## Inside AppleTalk: Network Questions & Answers (11/95)

Revised: 11/21/95  
Security: Everyone

"Inside AppleTalk": Network Questions & Answers (11/95)

=====

Article Created: 4 December 1989  
Article Reviewed/Updated: 21 November 1995

TOPIC -----

This article contains a series of questions based on material in "Inside AppleTalk" with answers. References to "Inside AppleTalk" are from the March 1989 edition (ISBN 0-201-19257-8), published by Addison-Wesley.

DISCUSSION -----

What's a Protocol Stack

-----

Question: "Inside AppleTalk" suggests that a protocol stack is an implementation of a protocol suite, like AppleTalk for VMS or AppleShare PC. Most other literature refers to a protocol stack as a subset of the OSI model. An example is TCP, which does not include layers 6 and 7 or selected protocols with AppleTalk. Which is more accurate? The implementation idea or the subset idea?

Answer: Protocol stacks often implement only a portion of the OSI 7-layer model. A protocol stack is a suite of protocols that implements the feature set for a particular networking scheme. The term "protocol stack" typically refers to the actual implementation of a networking scheme. TCP/IP's protocol stack only implements the layers that it needs, whereas AppleTalk implements all of the layers.

The OSI Model and Protocols

-----

Question: Often, I have heard (and saw documented in "Inside AppleTalk") that the OSI model is a general description of protocol usage and not the protocols themselves. Yet page I-22 of "Inside AppleTalk" cautions that AppleTalk is not necessarily compatible with the forthcoming OSI protocols.

What are these forthcoming protocols? What is OSI, if not a reference to follow for integration into heterogeneous networks? What protocols for OSI

have already been established? Are these based on CCITT protocols like X.25 and X.400? (It seems to me that although we have protocols that match every layer of OSI, we are only loosely tied to those layers. Is this so?)

Answer: The OSI 7-layer model has become a standard in the industry for describing network architectures. This model was originally designed as a blueprint for the OSI network protocols that were and still are in the process of being implemented. Many of the lower layers have already been implemented, and there are even products available for the Macintosh that provide connectivity solutions to these protocols. The press has often described the OSI architecture as the replacement for TCP/IP.

Although we have a network architecture that fits nicely within the OSI model, AppleTalk cannot be considered an implementation of OSI any more than it can be considered an implementation of TCP/IP. We use the model, because it provides a concise and elegant way to describe our network. We do not use the OSI architecture, because many of its layers remain undefined.

AFP an Application?

-----  
Question: "Inside AppleTalk" shows AFP to be mostly Presentation and part Application.

What aspects of AFP are Application? Wouldn't AppleShare File Server and AppleShare Workstation be applications?

Answer: We are not sure why AFP is listed as falling partially into the application layer. We assume that it has to do with the fact that the description of AFP in later chapters includes actual network services. AFP does define many of the features that need to be implemented in AFP servers. If this is the reason AFP falls partially in this layer, then AppleShare implements the highest part of the application layer, putting the interface on the services that have, at least, been partially defined by AFP.

CMSA/CA

-----  
Question: I understand that CSMA has at least two flavors: 1-persistent and non-persistent. 1-persistent is when a deferring sender grabs the channel as soon as it's released, contending with another sender who grabs the channel at the same time. Non-persistent throws in a random period of time to back off before attempting to grab the channel. Is this what we call CSMA/CA? Or, is CA something different? Or, is it non-persistent including handshaking? (See page 1-3, "Inside AppleTalk.")

Answer: The CA in CSMA/CA stands for "Collision Avoidance". It does implement the random period of time you mentioned as opposed to collision detection (CD).

Ethernet throughput

-----  
Question: They say that the 10MBps of Ethernet is only used under heavy loads and that its throughput does not come through at that rate. What does this mean? Are nodes communicating at 10MBps or not? Is Ethernet a broadband network? How

are the channels within the broadband used? (You can refer me to some other documentation on that last one.)

Answer: "Throughput" is a term used to describe the actual rate of transfer achievable over a network. This is a relative term, similar in reliability to "MIPS" or "megaflops." Network throughput is often measured by copying large files across a network and calculating the amount of data transferred in a specified period. As you can see, this throughput depends on the overhead of the protocols being used and the capability of the servers to transmit data to the client. The 10MBps specified for Ethernet refers to the ideal maximum possible over coaxial cable and is never achieved in real-world situations.

Standard Ethernet coax is baseband cable, not broadband. However, these days, you can run Ethernet over many different media, including broadband cable, unshielded twisted-pair telephone wiring, T1 telephone circuits, satellite links, and leased lines. These have different speeds and characteristics.

Bridge

-----  
Question: A bridge is a datalink layer device only. It separates networks but does not use network numbers. Right?

Answer: A bridge is used to connect two physical networks of the same type into one logical network. As far as any node on the network is concerned, this is a single network.

Router

-----  
Question: A router is a higher-level device (either transport or network layer) that routes like-protocols from one network to another. The networks on either side are identified by their network numbers. Like-protocol routing includes AppleTalk-to-AppleTalk, TCP/IP-to-TCP/IP, SNA-to-SNA, and so on. Right?

A: A router is used to divide two physical networks into separate logical networks using the same protocols. Each logical network has its own unique network identifier(s) distinguishing that network from other networks on the same Internet.

Networks and Bridges

-----  
Question: AppleTalk is a network protocol suite. A network is a specified physical cable and datalink, like Ethernet and Token Ring. A physical network is a cable. Are these accurate? Does a bridge create an Internet? Are the segments on either side of the bridge networks or just physical networks? Are physical networks and segments synonymous?

Answer: The physical network, or layer, typically refers to the physical medium in use. This can be cable, twisted-pair wiring, and so on. If you go with the definition above, a bridge does not create an Internet. A router provides the necessary functionality and acts at a high-enough level to create an Internet.

A "segment," as you are using it, is a piece of cable or set of wiring that is part of a physical network. This usually means as the physical medium on one side of a bridge or router, but it could be a smaller part.

Article Change History:

21 Nov 1995 - Updated title.

Support Information Services

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Tech Info Library Article Number:4722





# Tech Info Library

## A/UX: How To Use Prototyper as Development Tool

Revised: 9/16/92  
Security: Everyone

A/UX: How To Use Prototyper as Development Tool

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Article Created: 12 April 1989

### Article Change History

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08/31/92 - REVIEWED

•For technical accuracy.

### TOPIC -----

These notes explain how to use Prototyper 2.0 as a development platform for A/UX.

### DISCUSSION -----

#### Introduction

-----

Prototyper 2.0 is a screen layout and code generator that produces most of the code and resources necessary for the Macintosh user interface part of the program. Prototyper release 2 includes things like MPW C 3.0 code generation, pop-up and hierarchical menus, and linking icons and menu entries to various other windows and dialog boxes. We hope these notes help people get up to speed when using Prototyper as a development tool for A/UX programs that make use of the Toolbox.

As stated above, Prototyper is a very versatile tool. A programmer saves a lot of time and energy when using Prototyper for the base program. The use of prototyping tools and object-oriented methodologies speeds up the boring parts of the programming job.

In general, one can define a simple interface and produce code within 10 minutes. Depending on the level of complexity, the design phase takes much longer.

#### How To Use Prototyper

-----

Prototyper runs well under A/UX. There are some things that make the program bomb, but, in general, the program is quite stable. When you design anything with Prototyper, you start with the user interface. This phase usually takes much longer than anticipated.

Prototyper saves this frozen user interface in a special file. You are able to cold-run this interface during the prototyping phase as much as you want. This is especially helpful because it saves time compared with endless testing-recompilation phases and sleepless nights.

You can produce either resource code (in .RSRC and .R format, .R stands for the old RMaker program), or both resource and code. In our case, we will choose MPW 3.0 code because this best reflects the A/UX environment.

The only worry when Prototyper produces source and resource code is that the tab settings are a bit unusual for the A/UX environment. This is easy to change with some clever sed programming. Another thing to think about is the 14-character limit of filenames. Prototyper tries happily to produce filenames that reflect the names of windows and dialogs used inside the code, and many times the names are longer than 14 characters. You can define your own names when Prototyper produces the C source code files.

Remember to strip out the AppleSingle/Double stuff from the top of the file before you continue in the A/UX file system with UNIX tools.

#### Resources

-----

The .RSRC format can be translated back to the rez/derez format that rez/derez uses within A/UX. The following shell script does the job handily:

```
if [ -f ${1}.res ] then
    echo Output file \(${1}.res\) exists!
    echo No action taken
    exit
fi
echo Doing derez of file $1.RSRC - new resource file will be $1.res derez
-i/usr/lib/mac/rincludes ${1}.RSRC types.r > ${1}.res
```

What you then need to do with the produced .res file is to include a statement type:

```
#include "types.r"
```

at the top of the file for the ultimate rez of the resource file. This is for the make, so it will find the resource type templates in the A/UX system.

Prototyper makes a special OpenResFile call inside the produced C code that opens a special resource file. Comment this because we will use the AppleDouble style resource files.

#### C Code

-----

The C code produced by Prototyper is very ANSI-C-oriented. Thus, some parts of

the code have to be changed so it will compile under A/UX. The most annoying things to change are the so-called function prototypes, usually found in the .h files.

For instance, if Prototyper produces function declarations like:

```
void Foo(WindowPtr MyWindow, ControlHandle CItem);
```

we have to change this to:

```
void Foo()
```

in the .h files, and sometimes in the .c files. Note that these are function declarations, and not the actual function headers. For me, it is annoying because the function prototypes help a lot when you have written code that wants to call a function with the totally incorrect data type. ANSI C function prototypes complain about it during the compilation; normal K&C compilers like pcc happily accept the variables.

Another issue is the string used in MPW and A/UX. In MPW, you can declare Pascal strings with the handy \p in front of the string, as in:

```
DrawString("\pThis is a Pascal String");
```

This won't work with A/UX, so you have to use the small letter Toolbox calls that know about C strings, like:

```
drawstring("This is my String");
```

The best thing is to define:

```
#define DrawString drawstring
```

in a special header file. This is also true with string functions, such as GetIText and SetIText.

Another thing to change are the filenames for the Toolbox modules. They usually have capital letters in their names, so you need to change names such as QuickDraw.h to quickdraw.h.

Note that all this could be done with #ifdef statements in the code; that is, you could use the same base for both Macintosh OS and A/UX code.

In general, the code produced is stable, but not much is optimized. It also leaves dangling handles that you need to keep track of and remove if you want to have really bug-free code.

Prototyper produces code with comments, so it is very easy to dive into the code and change or modify things. Still, you need to know the fundamentals of Macintosh programming if you want to change or enhance the C code.

Don't forget to use select(2) to poll for interrupts on the Macintosh Toolbox device; otherwise, you spend too many resources for the Macintosh program

itself. For more details, read the term sources.

#### Makefile

-----

The easiest way is to copy the example one found under /usr/lib/mac/examples and tweak this to reflect the source files.

#### End Result

-----

Well, after about 10 minutes and with a clever idea, you have a working base program and can continue with the rest of the UNIX programming. After a while, you realize that with Prototyper the user interface is 80% of the job, and the function coding is a small portion of the creative work. I would highly recommend this product if you want to write A/UX tools and applications that make use of the Macintosh side of A/UX.

If you are unsure (as I am) about scroll bars in windows, check the latest code examples from Phil and Dave's Excellent CD. There is a really good example that works under A/UX, as well.

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Tech Info Library Article Number:4723



# Tech Info Library

## Screen-Dump II: Description

Revised: 12/4/89  
Security: Everyone

Screen-Dump II: Description

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This article last reviewed: 2 November 1989

TOPIC -----

This article discusses a shareware program named Screen-Dump II.

DISCUSSION -----

Screen-Dump II is an FKEY to replace the old Apple FKEYs 3 and 4. Screen-Dump II works on all Macintoshes and adjusts to all screen sizes. Included are three FKEYs, two to dump to black and white (whether or not you are using color). The other one is for dumping to PixelPaint, GIFF, GrayView, or StartUpScreen format in full 256 colors.

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Tech Info Library Article Number:4724



# Tech Info Library

## Macintosh: Determining Video Card Status via Software (1 of 2)

Revised: 12/4/89  
Security: Everyone

Macintosh: Determining Video Card Status via Software (1 of 2)

=====

Article Created: 2 November 1989  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

How can an application detect information about the status of the video display system connected to a Macintosh? For example, how many bits per pixel are selected via the Monitors cdev, and how many bits per pixel is supported by the card in the system? Inside Macintosh Volume V mentions using some high-level Color QuickDraw call. How is this implemented?

DISCUSSION -----

Refer to the QuickDraw chapters of "Inside Macintosh, Volume V." Page 124 documents a function called "GetMainDevice". This function returns a GDHandle (Graphics Device Handle). This handle has the information you want. Here is its description (page 119):

TYPE

```
GDHandle = ^GDPtr;
GDPtr    = ^GDevice;
GDevice  = RECORD
    gdRefNum:    INTEGER;
    gdID:        INTEGER;
    gdType:      INTEGER;
    gdITable:    ITabHandle;
    gdResPref:   INTEGER;
    gdSearchProc: SProcHndl;
    gdCompProc:  CProcHndl;
    gdFlags:     INTEGER;
    gdPMap:      PixMapHandle;
    gdRefCon:    LONGINT;
    gdNextGD:    GDHandle;
    gdRect:      Rect;
```

```
gdMode:      LONGINT;  
gdCCBytes:   INTEGER;  
gdCCDepth:   INTEGER;  
gdCCXData:   Handle;  
gdCCXMask:   Handle;  
gdReserved:  LONGINT;  
END;
```

The field in the above Pascal record with is the "gdPMap" field. The "gdPMap" field contains a PixMapHandle. Here is a description of the handle (pages 52 and 53):

```
TYPE  
  PixMapHandle = ^PixMapPtr;  
  PixMapPtr    = ^PixMap;  
  PixMap       = RECORD  
    baseAddr:  Ptr;  
    rowBytes:  INTEGER;  
    bounds:    Rect;  
    pmVersion: INTEGER;  
    packType:  INTEGER;  
    packSize:  LONGINT;  
    hRes:      Fixed;  
    vRes:      Fixed;  
    pixelType: INTEGER;  
    pixelSize: INTEGER;  
    cmpCount:  INTEGER;  
    cmpSize:   INTEGER;  
    planeBytes: LONGINT;  
    pmTable:   CTabHandle;  
    pmReserved: LONGINT;  
  END;
```

This "PixMap" record has a field called "pixelSize" that contains the current depth, in bits, of the pixels for the graphic device.

The Pascal code to retrieve this information looks something like this:

```
PROCEDURE GetBitsPerPixel;  
  
  VAR  
    mainDevice: GDHandle;  
    theDepth:  INTEGER;  
  
  BEGIN  
    mainDevice := GetMainDevice;  
    theDepth := mainDevice^.gdPMap^.pixelSize;  
  END;
```

If more than one video card is installed in the system, and you need to know what the bits per pixel setting is on all devices, not just on the main device, try the following functions (page 124):

```
GetDeviceList  
GetNextDevice
```

Here is a sample procedure that shows how to use them:

```
PROCEDURE GetGraphicDevs;  
  
  VAR  
    DeviceList: ARRAY[1..6] OF GDHandle;  
    theDepthList: ARRAY[1..6] OF INTEGER;  
    x: INTEGER;  
  
  BEGIN  
    DeviceList[1] := GetDeviceList;  
    theDepthList[1] := DeviceList[1]^^.gdPMap^^.pixelSize;  
    FOR x := 2 TO 6 DO  
      BEGIN  
        DeviceList[x] := GetNextDevice(DeviceList[x - 1]);  
        IF DeviceList[x] <> NIL THEN  
          theDepthList[x] := DeviceList[x]^^.gdPMap^^.pixelSize  
        ELSE  
          x := 6;  
        END;  
      END;  
    END;
```

If you need to find which device in the device list array created above is the main device, use the "TestDeviceAttribute" function described on page 124. Here is a code fragment showing how to use the function:

```
IF TestDeviceAttribute(DeviceList[1], mainScreen) THEN...
```

If the "TestDeviceAttribute" function returned "TRUE" or "1" in the example above, then "DeviceList[1]" is the main screen. If the function returned "FALSE" or "0", then the device is not the main screen. You can also use this function to determine if the device is in color model. For example:

```
IF TestDeviceAttribute(DeviceList[1], gdDevType) THEN...
```

If the "TestDeviceAttribute" function in this example returned "TRUE" or "1", then "DeviceList[1]" is in color mode; if it returned "FALSE" or "0", then it is in monochrome mode.

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Tech Info Library Article Number:4725





# Tech Info Library

## Macintosh: Determining Video Card Status via Software (2 of 2)

Revised: 12/4/89  
Security: Everyone

Macintosh: Determining Video Card Status via Software (2 of 2)

=====

Article Created: 2 November 1989  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

What follows is an MPW Assembly listing that demonstrates, for a given GDevice, how to determine the minimum and maximum depths that the device supports:

```
PRINT      OFF
INCLUDE    "Traps.a"
INCLUDE    "ToolEqu.a"
INCLUDE    "QuickEqu.a"
INCLUDE    "SysEqu.a"
INCLUDE    "PackMacs.a"
INCLUDE    "SlotEqu.a"
INCLUDE    "ROMEQu.a"
INCLUDE    "VideoEqu.a"
PRINT      ON
```

DISCUSSION -----

```
GetScreenMinMax      PROC      EXPORT
;-----
; PROCEDURE GetScreenMinMax(whichScreen : gdHandle;
;                               VAR minDepth, minMode,
;                               maxDepth, maxMode : Integer);
;-----
; This nasty little procedure figures out, for a given GDevice, what the
; minimum and maximum depths that the device supports.  It does this by
; using the Slot Manager to traverse the sResources that are in ROM on
; the video interface card.
```

```
StackFrame      RECORD      {A6Link},DECR
```

```

ParamSize      EQU      *-8
whichScreen    DS.L      1
pMinDepth      DS.L      1
pMinMode       DS.L      1
pMaxDepth      DS.L      1
pMaxMode       DS.L      1
Return         DS.L      1
A6Link         DS.L      1
spBlk          DS        SpBlock.spBlockSize
slotModesPtr   DS.L      1
nextMode       DS.W      1
LocalSize      EQU      *
               ENDR

```

```

WITH           StackFrame,SpBlock,vpBlock

```

```

LINK          A6,#LocalSize

```

```

MOVE.L        pMinDepth(A6), A0          ;Get ptr to minDepth VAR
MOVE.W        #$7FFF, (A0)              ;Init to MAXINT
MOVE.L        pMaxDepth(A6), A0          ;Get ptr to maxDepth VAR
CLR.W         (A0)                      ;Init to zero

```

```

; We need to convert the GDevice's refNum to its unit number.  Then, we
; can look in the unit table for a handle to a NewDCE block.  This
; will tell us in which slot the card for this display is.

```

```

MOVE.L        whichScreen(A6), A0        ;Get the gDevice handle
MOVE.L        (A0), A0                  ;Get a ptr to the gDevice
MOVE.W        gdRefNum(A0), D0           ;Get the device's refNum
NOT.W         D0                        ;Get the unit number
ASL.W         #2, D0                    ;Times 4 (SizeOf UTableEntry)
MOVE.L        UTableBase, A0            ;Get a pointer to the Unit Table
MOVE.L        0(A0, D0.W), A0           ;Get the handle to the NewDCE
MOVE.L        (A0), A0                  ;Get ptr to the NewDCE

```

```

; We only want to deal with sResources on the card that are for Apple-
; style video devices.  (We only care about the data format; it really
; doesn't matter who made the hardware.)  Set up information about the
; type of sResource that we want.

```

```

MOVE.B        dCtlSlot(A0), spBlk+spSlot(A6) ;Put slot of device into parmBlock
CLR.B         spBlk+spID(A6)              ;Start with first sResource
MOVE.W        #catDisplay, spBlk+spCategory(A6) ;Only want Display sResources
MOVE.W        #typVideo, spBlk+spCType(A6)   ;Only want Video sResources
MOVE.W        #drSwApple, spBlk+spDrvrSW(A6) ;Only want Apple-format sResources
MOVE.B        #1, spBlk+spTBMask(A6)        ;Don't care whose hardware

```

```

; Now go and get the first resource that matches our specs.

```

```

LEA           spBlk(A6), A0              ;Pointer to block in A0
_sNextTypesRsrc ;Get sResource that matches
TST.W        D0                          ;Was one found?

```

```
BNE      BadExit          ;Nope.  Oh well.

; We now have a pointer to the sResource List (in spBlk.spsPointer).  This
; sResource List has all of the modes that the card will currently support.

MOVE.L    spBlk+spsPointer(A6), slotModesPtr(A6)  ;Save the result
MOVE.B    #128, nextMode(A6)          ;Start with first video mode

REPEAT

; For Apple-style video data, the first video mode is 128, and they proceed
; sequentially from there, with no gaps.

MOVE.B    nextMode(A6), spBlk+spID(A6)  ;Want entry for nextMode
MOVE.L    slotModesPtr(A6), spBlk+spsPointer(A6)  ;Restore ptr to modes sRsrc
LEA       spBlk(A6), A0                ;Ptr to our parameters
_sFindStruct
TST.W     D0                          ;Was it there?
BNE       NoMoreModes                 ;Nope.  We're done.

; spBlk.spsPointer now contains a pointer to the mode information
; structure we just got.

MOVE.B    #mVidParams, spBlk+spID(A6)  ;We want the video parms data
LEA       spBlk(A6), A0                ;Pointer to param block
_sGetBlock
TST.W     D0                          ;It should always be noErr!
BNE.S     BadExit                     ;It's not.  Bail out!

; spBlk.spResult contains a pointer to the video parms data block.  Now
; we check to see if we have a video mode that QuickDraw can deal with.

MOVE.L    spBlk+spResult(A6), A0        ;Get pointer to video parms
MOVE.W    vpCmpCount(A0), D0            ;How many components/pixel?
CMP.W     #1, D0                       ;Can only handle 1
BNE.S     @1                           ;Don't count this mode
MOVE.W    vpPixelSize(A0), D0           ;How many bits/pixel?
CMP.W     vpCmpSize(A0), D0            ;Does it match component size?
BNE.S     @1                           ;Nope.  QD can't handle it.

; D0 now contains a valid pixel depth, and nextMode(A6) contains the
; mode that has this pixel depth.  Update the minDepth, maxDepth, and so
; on variables if needed.

MOVE.L    pMinDepth(A6), A0            ;Ptr to user's minDepth
CMP.W     (A0), D0                     ;Is this mode less than minDepth?
BGE.S     @2                           ;Nope.  Don't update.

; The pixel size in D0 is less than the pixel size that we have stored in
; minDepth so update minDepth and store this mode into minMode.

MOVE.W    D0, (A0)                    ;Update minDepth
MOVE.L    pMinMode(A6), A0            ;Get pointer to user's minMode
CLR.W     D1                          ;Start with an empty word
```

```
MOVE.B    nextMode(A6), D1        ;Get this mode
MOVE.W    D1, (A0)                ;And save it to user's minMode

@2
MOVE.L    pMaxDepth(A6), A0        ;Ptr to user's maxDepth
CMP.W     (A0), D0                 ;Is this mode > maxDepth?
BLE.S     @1                       ;Nope. Don't update.

; The pixel size in D0 is greater than the pixel size that we have
; stored in maxDepth, so update maxDepth and store this mode into
; maxMode.

MOVE.W    D0, (A0)                ;Update maxDepth
MOVE.L    pMaxMode(A6), A0        ;Get pointer to user's maxMode
CLR.W     D1                       ;Start with an empty word
MOVE.B    nextMode(A6), D1        ;Get this mode
MOVE.W    D1, (A0)                ;And save it to user's maxMode

@1
; Either QuickDraw couldn't handle this video mode, or we're done
; updating the minDepth and maxDepth variables. Now we have to dispose
; of the video parms block we just got.

MOVE.L    spBlk+spResult(A6), spBlk+spsPointer(A6) ;The pointer to vidParms
LEA       spBlk(A6), A0           ;Pointer to our param block
_sDisposePtr                               ;Release this block

ADDI.B    #1, nextMode(A6)        ;Try the next mode
BRA.S     REPEAT

BadExit
; Something went wrong. Set all of the user's variables to zero and
; return.

MOVE.L    pMinDepth(A6), A0        ;Ptr to user's minDepth
CLR.W     (A0)                     ;Set to zero
MOVE.L    pMinMode(A6), A0        ;Ptr to user's minMode
CLR.W     (A0)                     ;Set to zero
MOVE.L    pMaxDepth(A6), A0        ;Ptr to user's maxDepth
CLR.W     (A0)                     ;Set to zero
MOVE.L    pMaxMode(A6), A0        ;Ptr to user's maxMode
CLR.W     (A0)                     ;Set to zero

BRA.S     NoMoreModes             ;Standard clean-up

NoMoreModes
; When we get here, _sFindStruct couldn't find the mode that we were
; for, so there must not be any more. We've looked through all of the
; modes so we're done.

UNLK      A6                       ;Release locals
MOVE.L    (SP)+, A0                ;Get return address
ADDA.L    #ParamSize, SP           ;Pop input params off stack
```

```
JMP      (A0)          ;And return to caller
DC.B     "GETSCREE"    ;Name of routine for debuggers

END
```

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Tech Info Library Article Number:4726



# Tech Info Library

## Apple Internet Router: Memory Bank Manager Compatibility

Revised: 2/6/90  
Security: Everyone

Apple Internet Router: "Memory Bank Manager" Compatibility

=====

This article last reviewed: 11 October 1989

TOPIC -----

Can I run the Apple Internet Router along with a tape backup program from Northern Telecom called "Memory Bank Manager"?.

DISCUSSION -----

As of July, 1989, we have not tested Northern Telecom's "Memory Bank Manager" software (an AppleShare foreground application) and cannot make any statements on whether or not it works properly with AppleShare and the AppleTalk Internet Router. We do recommend that 2MB RAM be used in this situation.

On an AppleShare File Server, the AppleTalk Internet Router runs in the background; it does not run as a foreground application. Because the Internet Router runs in the background, you can run an AppleShare foreground application on the same machine.

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Tech Info Library Article Number:4727



# Tech Info Library

## AppleShare File Server: Process Limits

Revised: 2/6/90  
Security: Everyone

AppleShare File Server: Process Limits

=====

This article last reviewed: 11 October 1989

TOPIC -----

What is the official answer as to how many processes can be run on an AppleShare File Server?

DISCUSSION -----

There is no "official" answer that describes how many processes can be run on an AppleShare File Server at one time. The AppleTalk Internet Router is the only product that we have tested on an AppleShare File Server that is running a foreground application (AppleShare Print Server). Based on this information, three processes is the maximum that we have tested and support.

On an AppleShare File Server, the AppleTalk Internet Router runs in the background; it does not run as a foreground application. Because the Internet Router runs in the background, you can run an AppleShare foreground application on the same machine.

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Tech Info Library Article Number:4728



# Tech Info Library

## Macintosh: No Restriction on System Folder Location

Revised: 12/4/89  
Security: Everyone

Macintosh: No Restriction on System Folder Location

=====

This article last reviewed: 11 October 1989

TOPIC -----

Is there anything wrong with having the System Folder located within another folder on the Macintosh desktop?

DISCUSSION -----

The System Folder can be located on the Desktop, the root level, or anywhere in the volume hierarchy. There is no restriction on where the System Folder can be located. We suggest locating the System Folder at the root level of the volume, because the folder is accessed so often.

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Tech Info Library Article Number:4729





# Tech Info Library

## LaserWriter IISC: Quotation Marks, Printed versus On-Screen

Revised: 12/4/89  
Security: Everyone

LaserWriter IISC: Quotation Marks, Printed versus On-Screen

=====

This article last reviewed: 20 September 1989

TOPIC-----

What is the difference between the way characters appear on my Macintosh screen and on the LaserWriter? In particular, how are the different types of quotation marks produced?

DISCUSSION-----

When the Macintosh displays characters on the screen, it uses the information from the font resource to show the character the best way it can, given that the Macintosh screen is 72 dpi. Likewise, when the driver prints the document to the LaserWriter IISC, it also uses the information from the font resource (rather than the bitmapped display) to create the printed output in its 300 dpi format. The printer always prints a more accurate representation of the actual font than the screen.

Also, be sure you are pressing Option-[ and Option-Shift-[ for open and close double quote marks instead of the quote key. Likewise, Option-] and Option-Shift-] produce open and close single quote marks. In the case of Times, the quote key and Option-Shift-[ produce the same results, but this is not true of all fonts (Helvetica, for example).

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Tech Info Library Article Number:4731



# Tech Info Library

## Apple Internet Router 2.0: Multicast Addressing Description

Revised: 2/6/90  
Security: Everyone

Apple Internet Router 2.0: Multicast Addressing Description

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This article last reviewed: 2 October 1989

TOPIC-----

I am investigating the possibility using my corporate Ethernet backbone to link AppleTalk networks. I need background information on Apple's Internet Router 2.0 and whether it uses broadcast or multicast addressing for its RTMP traffic on the backbone.

DISCUSSION-----

Apple's Internet Router uses multicast addressing for its RTMP updates, sent out every 10 seconds. A more in-depth explanation follows:

Background

-----

In the past, the versions 1.0 through 1.2 of Apple's EtherTalk software have caused excessive broadcast traffic when used on a large number of Macintoshes on an Ethernet network. Apple has fixed this problem with EtherTalk 2.0 by using multicast addressing.

Ethernet Broadcast Traffic

-----

All nodes on an Ethernet local area network listen to broadcast packets that are addressed to the general-purpose broadcast address FF-FF-FF-FF-FF-FF. EtherTalk 1.0 used this address for all AppleTalk name lookups, Routing Table Maintenance Protocol (RTMP) traffic between routers, and other types of AppleTalk broadcast packets. Large sites, like universities and research labs, found this to be a problem, because all of their non-Apple hardware had to accept Apple's packets, read them, and then discard them. This translated into lost cycles on VAXs, Suns, and so on. In fact, in some extreme cases, Sun diskless workstations crash, if they're booting and take a broadcast packet at the wrong time.

Ethernet Multicast Addressing

-----  
Ethernet addresses actually have two parts. The first 24 bits (written as xx-xx-xx) are a vendor code. Apple's code is 08-00-07. The second 24 bits designate a unique machine with that vendor code. If a certain bit in the first byte of the vendor code is turned on, the address is said to be a "multicast address" and ALL Ethernet interface boards with that vendor code receive the packet. (Apple's multicast vendor code is 09-00-07).

An Ethernet interface board can be programmed to accept only packets with certain multicast addresses. These are the only packets that are passed to the higher-level protocols; all others are rejected by the hardware. This results in significant efficiency, because the Ethernet interface board interrupts the main CPU only when "useful" packets are received.

#### EtherTalk 2.0

-----  
EtherTalk 2.0 no longer sends all AppleTalk broadcasts to the general-purpose Ethernet broadcast address. When EtherTalk 2.0 needs to send a packet to all EtherTalk 2.0 nodes, it sends to the multicast address 09-00-07-FF-FF-FF. All EtherTalk 2.0 nodes are registered to receive these packets.

In addition, EtherTalk 2.0 uses a range of other multicast addresses for its Name Binding Protocol (NBP) lookups. This range includes 09-00-07-00-00-00 through 09-00-07-00-00-FC. If there is a service (like a print spooler or even a Responder) registered on a Macintosh, the Macintosh listens to NBP packets addressed to an address in the NBP multicast range. Which address the Macintosh listens to is a function of the Macintosh zone name. For example, if a file server is in zone "foo", it might expect file server client software to send lookup requests to the multicast address 09-00-07-00-00-27.

The Ethernet hardware does not pass lookups for a different zone (different multicast address) onto the EtherTalk software. A file server in a different zone would receive lookup requests to a different multicast address.

(Actually, there isn't an exact one-to-one mapping between zone names and multicast addresses. The Zone Information Protocol on routers assigns multicast addresses to zones. However, because of the hash function used, there may be more than one zone assigned to one multicast address, but this is not likely.)

The important thing to understand is that in almost all cases, nodes are no longer disturbed by broadcast traffic that has no relevance to them. This leaves the CPU available for more important tasks.

#### Improvements for Multi-Vendor Environments

-----  
As discussed above, multicast addressing reduces the amount of processing that Macintoshes need to do, because NBP lookups are sent to multicast addresses instead of to the general-purpose Ethernet address. However, the biggest improvement that EtherTalk 2.0 offers is that non-AppleTalk nodes

are no longer disturbed by general-purpose Ethernet broadcasts generated by AppleTalk devices. When Macintoshes run only EtherTalk 2.0, they no longer send general-purpose Ethernet broadcasts.

Non-AppleTalk nodes, (that is, Suns, VAXs, and so on) do not register to receive packets sent to Apple's multicast address 09-00-07-FF-FF-FF or Apple's NBP range of multicast addresses 09-00-07-00-00-00 through 09-00-07-00-00-FC. Non-AppleTalk nodes no longer need to spend machine cycles reading Apple-specific Ethernet broadcasts only to learn that they don't need to do anything with them. Many large customers, especially university, government, and Fortune 500 business accounts, will now be more amenable to placing Macintoshes on their Ethernet networks.

Note: TokenTalk 2.0 also uses multicast addressing. The concept is the same: non-AppleTalk nodes on the Token Ring are not disturbed by Apple-specific broadcasts. The exact implementation of Token Ring multicast addressing is different than the Ethernet implementation.

All EtherTalk boards require the EtherTalk Phase 2 driver. For additional information, refer to MacDecathLAN, Fall '88, and the LAN Minds, Spring '89, seminar binders.

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Tech Info Library Article Number:4733



# Tech Info Library

## IEEE 802.X LAN Protocols: Brief Descriptions (9/94)

Revised: 9/8/94  
Security: Everyone

IEEE 802.X LAN Protocols: Brief Descriptions (9/94)

Article Created: 2 October 1989  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

I have a question on IEEE 802.X. That is, what should I expect to see for 802.1, 802.2, 802.4, and 802.5?

DISCUSSION -----

The Institute of Electrical and Electronic Engineers (IEEE) was created to establish standards. These standards include Project 802 for specifying interface and protocol specifications for various LAN topologies. The resulting 802 standards correspond with the Physical and Data Link layers of the ISO-OSI Model Layers 1 and 2, the Physical and Data Link layers.

- 802.1 Overview, Interworking and Systems Management
- 802.2 Logical Link Control
- 802.3 CSMA/CD Access Method and Physical Layer Specifications
- 802.4 Token-Passing Bus Access Method and Physical Layer Specifications
- 802.5 Token-Passing Ring Access Method and Physical Layer Specifications
- 802.6 Metropolitan and Network Access Method and Physical Layer Specifications

IEEE 802.1 and 802.2 are still being defined. Furthermore, any associated "packets" aren't going to be seen on the LAN,, because they define the common interface for higher software levels over networks with different topologies, protocols, and media.

IEEE 802.3, 802.4, and 802.5 define different network topologies and media access methods, or the ability of a node to physically send and receive data on a LAN.

Ethernet Data Link Frame Format

-----  
Destination (48 bits), Source (48 bits), Type (16 bits), Data (8n: 46 bytes<= n

<=1500 bytes), CRC (32)

#### 802.3 CSMA/CD Access Method

-----  
Destination (16 or 48 bits), Source (16 or 48 bits), Length (16 bits), Data (8n:  
46 bytes<= n <=1500 bytes), CRC (32)

#### 802.4 Token-Passing Bus

-----  
Destination (16 or 48 bits), Source (16 or 48 bits), Data (8n: our materials  
didn't list the max), CRC (32)

#### 802.5 Token-Passing Ring

-----  
Destination (48 bits), Source (48 bits), Data (8n: max of 4K), CRC (32)

#### Article Change History:

8 Sep 1994 - Reviewed for accuracy.

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Tech Info Library Article Number:4734



# Tech Info Library

## Customizing Fonts: Putting a Tilde where You Want It

Revised: 11/5/91  
Security: Everyone

Customizing Fonts: Putting a Tilde where You Want It

=====

Article Created: 6 December 1989  
Article Last Reviewed: 5 November 1991  
Article Last Updated: 5 November 1991

QUESTION -----

Is there a way to use or create special text characters, like the letters e, i, u, y, with a tilde above the character? These characters are used in the native language of the country, Guarani.

RESPONSE-----

As of August, 1989, we couldn't locate any Guarani fonts. Neither the screen fonts supplied by Apple nor the built-in LaserWriter PostScript fonts generally have the diacritical tilde over any of the characters except for the N, n, O, o, and A, a. However, Microsoft Word versions 3.0 and 4.0 have an overstrike ability that lets you put the tilde (or any symbol or character) over any character.

Other possible options are to try to locate a specific Paraguayan Guarani font or to design a screen font and/or a downloadable PostScript font yourself.

There are many programs that let you design your own fonts, including ATF FontMaker by Kingsley and KeyMaster by Altsys. For more details, search the Tech Info Library under "Microsoft," "ATF," or "KeyMaster."

There is also a company called "Linguist's Software", which sells international word processors, fonts, and other assorted software products. Search under their name to find other possible solutions.

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Tech Info Library Article Number:4735



# Tech Info Library

## EtherShare: Implements AFP/PAP on UNIX Machines

Revised: 12/13/89  
Security: Everyone

EtherShare: Implements AFP/PAP on UNIX Machines

=====

This article last reviewed: 2 October 1989

TOPIC-----

Do you know of software that can make my UNIX machines act as servers in AppleTalk Internets?

DISCUSSION -----

Yes, the German system house Helios Software GmbH has a file server product named EtherShare.

EtherShare implements an AFP fileserver and PAP printserver on UNIX machines in Ethernet. It supports the well-known AppleTalk and the enhanced AppleTalk Phase 2. You decide during the boot process what AppleTalk version to use. It is also capable of routing AppleTalk packets between several Ethernets, when the UNIX machine has more than one Ethernet interface. EtherShare is installed with very few UNIX commands. This means you can do server administration totally from a Macintosh in the typical Macintosh style.

Currently Supported UNIX Machines

-----

- Sun 3/xx, Sun 4/xx, and Sun 386i under Sun OS 4.0 or higher
- Sony NEWS 1500, 1700, 1800, and 1900 (as of September, 1989, AppleTalk Phase 2, because NEWS's Ethernet driver does not support the IEEE standard for MultiCast).

AFP Functionality

-----

EtherShare fileserver can be used by all AppleTalk clients without any changes in the client AppleShare software. These clients include Macintosh, Apple IIGS, and MS-DOS PCs. It also supports all security and



locking mechanisms, like scrambling of passwords, volume password, MS-DOS short names, drop folders, and so on. EtherShare can be used by up to 200 users simultaneously, depending on the server machine. AppleShare clients can access UNIX files if allowed by the administrator. Likewise, UNIX applications can access files stored by AppleShare clients.

#### PAP Functionality

-----

EtherShare implements a PAP printserver in AppleTalk with as many print queues as you want. You can print to PostScript printers (which are directly, asynchronously attached to the UNIX machine) or to other networked PAP print services in the AppleTalk Internet. EtherShare also lets UNIX applications print to PAP printers, like networked LaserWriters.

#### Installation and Administration

-----

It takes very few UNIX commands to install EtherShare. The administration of AFP and PAP servers is done from any Macintosh in the AppleTalk Internet, in a manner similar to Apple's AppleShare admin program. However, you can administer several EtherShare file servers simultaneously and easily exchange users, user groups, and their privileges between different EtherShare servers.

#### EtherShare APIs

-----

Helios provides a full set of programming interfaces. For example, you can write UNIX applications which respect the AFP-locking.

For more details, search the Tech Info Library under "Helios Software."

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Tech Info Library Article Number:4736



# Tech Info Library

## A/UX: Apple Tape Backup 40SC Driver Kernal Name Is tc

Revised: 9/30/92  
Security: Everyone

A/UX: Apple Tape Backup 40SC Driver Kernal Name Is "tc"

=====

Article Created: 2 October 1989

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What is the name of the driver that supports the Apple Tape Backup 40SC in A/UX 1.1?

### DISCUSSION-----

The Apple Tape Backup 40SC driver name is called "tc", short for "tape cartridge." You can display other A/UX kernel module names with the "module\_dump /unix" command.

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Tech Info Library Article Number:4739



# Tech Info Library

## A/UX 1.1: Compatible Cartridge Drives Needed

Revised: 8/28/90  
Security: Everyone

A/UX 1.1: Compatible Cartridge Drives Needed

=====

This article last reviewed: 3 October 1989

QUESTION-----

I have a Mass Microsystems 45MB removable hard disk cartridge, which uses a Syquest 555 drive. I am trying to use it with A/UX 1.1. Unfortunately, all I'm getting is errors.

RESPONSE-----

We have checked with people at Mass Microsystems, and as of August, 1989, their 45MB removable cartridge drive can work only under Macintosh OS. Because the driver is not compatible with A/UX, someone (third-party developer) needs to write a special driver for it.

If anyone knows of any removable cartridge drives that work under A/UX, please Link TECH.COMM.

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Tech Info Library Article Number:4740



# Tech Info Library

## A/UX: System Benchmark Results using lloops

Revised: 1/20/93  
Security: Everyone

A/UX: System Benchmark Results using "lloops"

=====

Article Created: 6 February 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.  
01/20/93 - UPDATED  
• Vendor information.

### TOPIC -----

This article describes the floating-point, computational performance of an A/UX system. The benchmark test run was "lloops," a suite of benchmarks, developed at Lawrence Livermore Labs, and written in FORTRAN. In this case, the suites were written both in NKR Research's (now PenWare, Inc.) Optimizing FORTRAN and f77 (shipped with A/UX) compilers.

### DISCUSSION -----

The test system was a Macintosh IICx with 4MB RAM and a HD80 SC hard drive. All tests were done in single-user mode with all networking and the toolbox turned off. All calculations were made on data defined as REAL\*8. Because "lloops" contains a variety of common scientific and math program segments, floating point performance varies by "sub-test". Overall results (using the NKR compiler) were as follows:

Mflops range: 0.0364 to 0.3148 Mflops/sec  
Harmonic mean: 0.1189 Mflops/sec  
Median rate: 0.1319 Mflops/sec +/- 0.0577 Mflops/sec  
Average rate: 0.1496 Mflops/sec +/- 0.0668 Mflops/sec

Results using the f77 were lower by 30% to 60%--presumably because of the lack of an object optimizer with f77.

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Tech Info Library Article Number:4741



# Tech Info Library

## A/UX: Shift-Click Problem Solved

Revised: 9/3/92  
Security: Everyone

A/UX: Shift-Click Problem Solved

=====

Article Created: 6 February 1990

Article Change History

-----

08/31/92 - REVIEWED

•For technical accuracy

TOPIC-----

When I'm running A/UX, selecting files under "hfx" by pressing shift-click does not work. What's going on?

DISCUSSION-----

The Shift-click in the A/UX "hfx" behaves a bit differently than in the Macintosh OS. As described in the "Getting Started with A/UX", it works as expected. In general:

- To select a "contiguous" group of files and folders, or files and folders on the same level, press Shift while you select files or folders. You can also select the first file in the group, press Shift and select the last file in the group--all files in between are selected.
- To select files or folders that are "not contiguous", press Command and select the files or folders.

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Tech Info Library Article Number:4743



# Tech Info Library

## A/UX: Accessory Kit README File Correction

Revised: 9/21/92  
Security: Everyone

A/UX: Accessory Kit README File Correction

=====

Article Created: 3 October 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

The README file that comes with the A/UX Accessory Kit tells the user to phone 408-446-9836 for software patches.

I've tried this number several times without success. Is it the wrong number, or has the service not been turned on yet?

### DISCUSSION -----

At present, the facility for providing A/UX software patches service has not been set up yet; the number 408-446-9836 is no longer in service. Please ignore the above information in the README file of the "A/UX System Setup and README" floppy disk at this time. We will announce the number as soon as this facility is completed.

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Tech Info Library Article Number:4744



# Tech Info Library

## A/UX: Fix for POSSIBLE FILE SIZE ERROR I=xxx Error

Revised: 11/9/92  
Security: Everyone

A/UX: Fix for "POSSIBLE FILE SIZE ERROR I=xxx Error"

=====

Article Created: 3 October 1989

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### QUESTION -----

When I run fsck on my A/UX system, it shows several possible file size errors and the corresponding inode numbers. Is there any way to fix these files?

### DISCUSSION -----

The "POSSIBLE FILE SIZE ERROR I=xxx" error occurs in the Phase 1 of "fsck" when the file information in the inode table conflicts with the actual file size. With this inconsistency, basically, you can find the file of the inode number, make a copy, and remove it.

For example, with the file system /dev/dsk/c5d0s4 (which encountered the "POSSIBLE FILE SIZE ERROR I=xxx") mounted on /u2, and the inode number 1234 associated with the error, do the following:

- 1) # cd /u2
- 2) # find . -inum 1234 -print  
(It displays the filename path of the inode number 1234.)
- 3) Go to that path and try to make a copy of that file (if it is important).
- 4) Remove that file.
- 5) # cd /
- 6) # umount /u2
- 7) fsck /dev/rdisk/c5d0s4  
(The "POSSIBLE FILE SIZE ERROR" for that inode should go away after "fsck".)



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Tech Info Library Article Number:4746



# Tech Info Library

## A/UX: Problem Retrieving Files From Apple 40SC Tape

Revised: 9/29/92  
Security: Everyone

A/UX: Problem Retrieving Files From Apple 40SC Tape

=====

Article Created: 3 October 1989

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Using an Apple Tape Drive, I tried loading the third-party UNIX applications you shipped to our office on two cartridges. I didn't have directions for extracting the files from the tape, so I used tar. The system replies with a Tape Read Error.

The following commands were unsuccessful:

```
tar -tvf /dev/dsk/t0
tar -tvf /dev/dsk/t1
tar tvf /dev/dsk/t0
tar tvf /dev/dsk/t1
tar -xvf /dev/dsk/t0
tar -xvf /dev/dsk/t1
tar xvf /dev/dsk/t0
tar xvf /dev/dsk/t1
```

The following commands were successful:

```
mt -f /dev/dsk/t1 rewind
mt -f /dev/dsk/t1 fsf 1
```

What did I do wrong?

### DISCUSSION -----

You should have received the instructions to install from the two tapes. The two A/UX demo tapes distributed by A/UX Technical Resources contain many third-party Macintosh/UNIX applications (approximately 80MB). Most of these files are compressed tar format.

The instructions describe in great detail the contents of the tapes, how much space is required, and how to extract files. We would suggest that you get the instructions before trying to extract any files.

In general, instead of `/dev/dsk/`, you should use something like `/dev/rmt/tc`. All logical tape units are stored in the `/dev/rmt` directory. Also, since the Apple 40SC Tape Driver has an 8K buffer boundary in the kernel, you need to state a block factor option in the `"tar"` command.

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Tech Info Library Article Number:4747



# Tech Info Library

## X Windows: Compared to SunView and SunTools

Revised: 9/4/92  
Security: Everyone

X Windows: Compared to SunView and SunTools

=====

Article Created: 3 October 1989

### Article Change History

-----

08/10/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the difference between Sun Microsystems' Suntools, SunView, and X Windows?

### DISCUSSION -----

SunTools and SunView together provide similar functionality to that of X Windows and X Windows-based applications. SunView provides a programming interface and basic windowing capabilities similar to X Windows. However, SunView is Sun's proprietary windowing environment and, hence, is a competitor of X Windows.

To locate a vendor's address and phone number, use the vendor name as a search string.

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Tech Info Library Article Number:4749



# Tech Info Library

## LaserWriter: Utility Provides List of Fonts

Revised: 12/6/89  
Security: Everyone

LaserWriter: Utility Provides List of Fonts

=====

This article last reviewed: 3 October 1989

TOPIC -----

Is there a program that prints a list of all fonts and their font ID numbers in the LaserWriter?

DISCUSSION -----

The LaserWriter Font Utility provides the ability to list all fonts currently installed in a LaserWriter. The LaserWriter (PostScript) does not use font ID numbers; all fonts are referred to by their proper names (Courier, Helvetica, Times-Bold, and so on).

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Tech Info Library Article Number:4751



# Tech Info Library

## Macintosh SE-to-Macintosh SE/30 Upgrade: Drive Issues

Revised: 8/23/91  
Security: Everyone

Macintosh SE-to-Macintosh SE/30 Upgrade: Drive Issues

=====

Article Created: 6 December 1989  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

I have a Macintosh SE with two floppy drives. Can I upgrade to a Macintosh SE/30 with one Apple SuperDrive (formerly Apple FDHD) and one 800K floppy drive?

DISCUSSION -----

It is not possible to upgrade a Macintosh SE with two floppy drives to a Macintosh SE/30 with one SuperDrive and one 800K floppy drive. This is because the Macintosh SE/30 logic board has only one internal floppy-drive connector. When upgrading a dual floppy drive Macintosh SE, you must remove one of the internal floppy drives.

It is possible to upgrade to the SuperDrive without also upgrading to the Macintosh SE/30 logic board. In this case it would be possible to retain both floppy drives.

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Tech Info Library Article Number:4752



# Tech Info Library

## Apple Portrait Display: Macintosh SE Card Is Available

Revised: 2/1/91  
Security: Everyone

Apple Portrait Display: Macintosh SE Card Is Available

=====

This article last reviewed: 21 January 1991

TOPIC -----

Are there any cards that connect Apple Portrait Display to the Macintosh SE?

DISCUSSION -----

Mobius Technologies has a video card that drives the Apple Portrait Display. For more details, search the Tech Info Library under "Mobius."

Copyright 1989, 1991, Apple Computer, Inc.

Tech Info Library Article Number:4753



# Tech Info Library

## TOPS: No Access to AppleShare Driver

Revised: 12/6/89  
Security: Everyone

TOPS: No Access to AppleShare Driver

=====

This article last reviewed: 11 October 1989

TOPIC -----

I want to use AppleShare PC 2.0 with a LocalTalk PC Card to provide print services to a LaserWriter, while continuing to use TOPS to provide file services. Can I?

On a related note, can AppleShare PC use memory above the 640K barrier? Are there any official plans to make it available in the future?

DISCUSSION -----

TOPS doesn't plan to provide access to the AppleShare driver from TOPS, now or in the foreseeable future. Therefore, you must continue to have both the TOPS card and LocalTalk PC Card installed in your system to gain access to both services. This information was provided by TOPS Technical Support.

If you need print services only, you might consider TOPS NetPrint. It is a software package that enables DOS users to print directly to the LaserWriters or other PostScript-compatible printers from within their DOS applications. NetPrint lets DOS users print the full IBM character set, all LaserWriter fonts, and any downloadable fonts.

AppleShare will not load into expanded memory. AppleShare PC 2.0 uses differing amounts of memory based on the options installed, as outlined below:

|                                   |            |
|-----------------------------------|------------|
| File and Print Services:          | 117 - 126K |
| File Services only:               | 91 - 100K  |
| Print Services only:              | 62 - 71K   |
| AppleTalk and MLI driver(s) only: | 49 - 58K   |
| MLI driver(s) only:               | 13 - 22K   |

Add 57K to make the DA memory resident  
Add 6 - 15K per additional MLI driver



For more details, search the Tech Info Library under "TOPS."

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Tech Info Library Article Number:4754



# Tech Info Library

## Macintosh-to-Compugraphic 9600 Connectivity

Revised: 12/6/89  
Security: Everyone

Macintosh-to-Compugraphic 9600 Connectivity

=====

This article last reviewed: 11 October 1989

TOPIC -----

I want to buy a Compugraphic 9600. Can I send output from the Macintosh to the Compugraphic?

DISCUSSION -----

Agfa Compugraphic sells an Adobe PostScript RIP for the Compugraphic 9600. The RIP (Raster Image Processor) comes with the necessary driver software for the Macintosh and requires no modification of files. For more details, search the Tech Info Library under "Agfa Compugraphic

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Tech Info Library Article Number:4755



# Tech Info Library

## Macintosh SE: Internal HD in Dual Floppy Voids Warranty

Revised: 8/7/92  
Security: Everyone

Macintosh SE: Internal HD in Dual Floppy Voids Warranty

=====

Article Created: 11 October 1989  
Article Last Reviewed: 7 August 1992  
Article Last Updated:

TOPIC -----

If I install a third-party hard disk in a dual-floppy Macintosh SE, will I void the warranty on the Macintosh?

DISCUSSION -----

To answer this question, we looked in the Apple Service Programs binder. The following information is under the "Product Notices" tab on page 8.4.12 (6/15/89 is the revision date):

Macintosh SE and Macintosh II Third-Party Add-Ons (Announced September 87)

The addition of third-party peripherals does not void the Apple Limited Warranty, provide that:

- The addition of the third-party peripheral does not require modification to the design of either the Macintosh II or Macintosh SE.
- If a third-party peripheral requires dealer installation, the installation is performed by an Apple Service Certified Technician. ESD precautions should be followed during installation.
- The total number of internal drives does not exceed two for the Macintosh SE.
- Third-party peripheral cards satisfy Apple specifications for the NuBus architecture in the Macintosh II and the SE-Bus architecture in the Macintosh SE.
- Third-party RAM SIMMs must meet Apple specifications for the CPU they

are installed in.

- Third-party hard drives satisfy the thermal, physical, and electronic specifications stated by Apple for internal SCSI devices.

Based on the statement, "The total number of internal drives does not exceed two for the Macintosh SE", any Macintosh SE configuration that has three internal drives voids the Apple Limited Warranty. Also, any configuration that disrupts the internal thermal dynamics (air flow) of the Macintosh SE voids the Apple Limited Warranty.

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Tech Info Library Article Number:4757



# Tech Info Library

## Macintosh Plus: Control Panel Startup Device Not Available

Revised: 6/16/92  
Security: Everyone

Macintosh Plus: Control Panel Startup Device Not Available

=====  
Article Created: 11 October 1989  
Article Last Reviewed: 29 May 1992  
Article Last Updated: 29 May 1992

### TOPIC -----

The Startup Device does not appear in the Control Panel on Macintosh Plus systems. This happens with System 4.3 and with System 6 and later. And using System 7, there is no Startup Disk control panel available either. I have two hard disks and want to choose which one should start up first.

### DISCUSSION -----

That behavior is correct. On Macintosh Plus or earlier Macintoshes, the Startup Device module of the Control Panel does not appear while running System 6.0.X or earlier, nor does the Startup Disk control panel appear while running System 7 or later. The SCSI firmware is different on the Macintosh Plus and does not allow for the same flexibility that later Macintoshes provide. The SCSI device with the highest SCSI number will be the first device to boot (note that an internal hard drive will take SCSI ID 0, while the Macintosh itself will take SCSI ID 7).

For more information, see chapter 18 of "Inside Macintosh Volume V," specifically page 325.

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Tech Info Library Article Number:4759



# Tech Info Library

## A/UX: cpio and Floppy Disk Error (2/95)

Revised: 2/27/95  
Security: Everyone

A/UX: "cpio" and Floppy Disk Error (2/95)

Article Created: 12 October 1989  
Article Reviewed/Updated: 27 February 1995

TOPIC -----

I encountered a problem with "cpio". When I try to restore a big file, which was "cpio"-ed on to two floppy disks, in a directory where the file already exists, I get the message:

"can't read input - errno=25: Not a typewriter"

After some retries, the restore succeeds. When I restore the file in a directory where the file doesn't exist, I don't have the problem. It seems that this error occurs when you try a restore from more than one floppy disk and to a directory where the file already exists.

Also, I am now seeing error number 5 on a regular basis.

DISCUSSION -----

We experienced the same problem you encountered with the "cpio", which involved a big file across two floppy disks.

The error saying "not a typewriter" is an historical error. The text for this error message was created when the terminals attached to the system were teletypes. The error is saying that there is no terminal attached to the process where the process can send messages generated by either STDOUT (standard output) or STDERR (standard error). This message is common on processes that are started from a script, from cron or from inittab. It can also be encountered if a process is started as a background process. If the process generates any kind of output, the message "not a typewriter" is displayed.

As we have debugged further, the problem seems to be with either the "cpio" program itself or the floppy driver. We encountered a state where the errno changed to 25 after the "fgets()" function was called while trying to open the current directory.

The "Can't read input - error=25: Not a typewriter" error message appears when specify a block device rather than a character device.

Normally, the "Can't read input - error=5: I/O error" or the "Can't write output - error=5: I/O error" message appears, when the floppy disk was not inserted in the drive before the "cpio" command tries to open the drive. The driver can also give this messge when it detects a bad floppy disk.

#### Article Change History:

27 Feb 1995 - Added historic information on "not a typewriter".

21 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:4764



# Tech Info Library

## NEC Laser Printer: Patch for Dual-Bin Support

Revised: 12/6/89  
Security: Everyone

NEC Laser Printer: Patch for Dual-Bin Support

=====

This article last reviewed: 12 October 1989

TOPIC -----

I have a NEC LC890 laser printer (a PostScript printer) with a 2-bin sheet feeder, but I can't use it, because with the standard LaserWriter driver you see only one bin. Do you know of a driver that controls two or more bins?

DISCUSSION -----

We contacted NEC Technical Support, and they told us that the NEC LC890 will plug into an AppleTalk network and work with the Apple LaserWriter driver. As you mentioned, only one bin can be seen by this driver. NEC has a patch for the LaserWriter driver that gives you dual-bin support.

NEC told us that this patch is available on their free bulletin board. The number for that bulletin board is 508-264-8816. The patch is in the Apple section. It is called "dual-bin support" (LaserWriter driver 5.2/6.0), and the filename is "dualbin.sit." There is a patch that works with LaserWriter driver 5.2 and a patch that works with LaserWriter driver 6.0, plus documentation included in this StuffIt package.

The patch gives a different print dialog for you to select different bins. Other printers on the network, like an Apple LaserWriter, appear the same as they do now. The print dialog does not change for them.

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Tech Info Library Article Number:4769





# Tech Info Library

## QuickDraw: How It Does Pattern Alignment

Revised: 12/6/89  
Security: Everyone

QuickDraw: How It Does Pattern Alignment

=====

This article last reviewed: 12 October 1989

TOPIC -----

I need to know how QuickDraw aligns its patterns when it's drawing them. I'm using off-screen bitmaps to get patterns that always start in the same place, but a less memory-intensive solution would be nice. Is there a way to do this?

DISCUSSION -----

QuickDraw aligns patterns relative to the origin of the current GrafPort, which is usually a window. The origin of a window is the upper lefthand corner of the window. This causes a pattern to "shift" within a pattern-filled rectangle if that rectangle is placed in different locations within a window. The method of drawing a filled shape in an off-screen bitmap and then placing it in the current window is an acceptable method for forcing a pattern's placement within that filled shape.

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Tech Info Library Article Number:4770



# Tech Info Library

## Macintosh: Remote Power Up (12/93)

Revised: 12/22/93  
Security: Everyone

Macintosh: Remote Power Up (12/93)

Article Created: 13 October 1989  
Article Reviewed/Updated: 22 December 1993

TOPIC -----

I want to remotely power up and remotely reset a Macintosh computer? Are there Apple or third party solutions available?

DISCUSSION -----

Depending on the Macintosh model you have, there are different software and hardware solutions available. Many Desktop (examples: Macintosh IIfx, IIfx) and PowerBook models are capable of being remotely powered up or restarted.

Below are a few examples of some solutions.

- Farallon Timbuktu/Remote Pack includes a cable and software that allows a Macintosh to be started remotely. For further details, contact the vendor, Farallon. To obtain contact information, use "Farallon" as a search string.
- PowerKey is a hardware and software solution for compact and modular desktop Macintoshes. For further details, contact the vendor, Sophisticated Circuits. To obtain contact information, use "Sophisticated Circuits" as a search string.
- If a Macintosh is powered on and is connected to an AppleTalk network, you can use third party network management software to restart Macintoshes over the network. GraceLAN Update Manager by TechWorks and Status\*Mac by ON Technology are two examples. Use the vendor as a search string for contact information for these companies.
- For PowerBook computers, you can use the Auto Wake Up feature in the PowerBook control panel to set a time for your PowerBook to automatically "wake up."

Macintosh II, IIfx computers: Special Information

-----  
The information below describes how to modify the Macintosh II and IIX models, which don't have the auto power capability. One of the scenarios suggested is how the PowerKey product works.

If you want to modify the Macintosh, consider the following. The way to power up the Macintosh II without pressing a button requires a modified power supply or a completely different one. There is circuitry in the Macintosh II power supply that senses a level transition from the logic board, initiated by pressing either the button on the back of the machine or the reset key on the ADB keyboard. If this transition does not occur, the power-up sequence does not start. If a steady voltage is applied to the Power Fail signal line into the power supply, the sequence will not start. The power supply must see the transition to begin the power-up cycle. A modified power supply that powers up with a voltage applied steadily, instead of level-shifted, would work in this case.

To replace the switch on the back with a power-sensing switch, you must ensure the proper connections are made, because the switch is a double-pole, double-throw switch. Also, the new switch needs to perform the same function as the existing mechanical one. That is, it must switch ground into the shutdown circuit to shut off the system. Likewise, to turn the system on, it must switch power in. This is not to say it cannot be done. Just make sure the functions of the power-sensing switch are the same as the current mechanical one.

Another possibility may be to create a circuit that plugs into the ADB port and generates pulses of a sufficient amplitude (between 3.0 and 6.8VDC) and duration (>1.5 seconds) on the proper pins (2 and 4) to operate the Power Fail circuit in the present power supply long enough to bring it up. Perhaps a remote ADB switch would work, too. It would need to momentarily connect pins 2 and 4 on the ADB port.

#### Article Change History:

22 December 1993 - Added new third party information, removed old info.

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Tech Info Library Article Number:4773



# Tech Info Library

## MacWorkStation: A Pseudo-TLPM Workaround

Revised: 12/6/89  
Security: Everyone

MacWorkStation: A Pseudo-TLPM Workaround

=====

This article last reviewed: 13 October 1989

TOPIC -----

Is there a plan to provide a TLPM to run MacWorkStation over the TokenTalk NB Card?

DISCUSSION -----

Providing a TLPM (Transport Layer Protocol Module) to let MacWorkStation run over Token Ring is under investigation. There is no timeframe for implementing it.

As of September, 1989, you can use MacWorkStation over the Apple TokenTalk NB Card via ADSP (Apple Data Stream Protocol), as if you created a pseudo host application on another Macintosh.

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Tech Info Library Article Number:4775



# Tech Info Library

## A/UX 1.1: pstat -m Option Problem

Revised: 9/30/92  
Security: Everyone

A/UX 1.1: "pstat -m" Option Problem

Article Created: 12 October 1989

### Article Change History

-----  
08/31/92 - REVIEWED  
    • For technical accuracy.  
08/31/92 - UPDATED  
    • To include A/UX 3.0 Information.

### TOPIC -----

This article discusses a "pstat -m" option problem.

### DISCUSSION -----

The "pstat -m" option should report about core memory allocations and give a dump of the memory free map with headings about

- core addresses(LOC)
- click addresses (ADDR)
- sizes of clicks (SIZE).

However, when you type "pstat -m", you get a general report about buffers, inodes, procs, file table (type the -a option), and an empty report with no entries about LOC, ADDR, and SIZE.

At the end of the report, you get a statement similar to:

"Total memory = 1023K, currently free = 0K."

This message appears whether it is a non-loaded or even heavily-loaded system (running 5 nntp sessions, nfs, crunching C code, and so on).

This is a problem in A/UX 1.1, not your particular kernel. This problem has been fixed in A/UX 2.0.

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Tech Info Library Article Number:4776



# Tech Info Library

## Apple IIGS: Users Should Upgrade to PrintShop GS 1.1

Revised: 12/6/89  
Security: Everyone

Apple IIGS: Users Should Upgrade to PrintShop GS 1.1

=====

This article last reviewed: 2 November 1989

TOPIC -----

This article describes why and how to get an upgrade for Printshop GS.

DISCUSSION -----

Versions prior to 1.1 of Broderbund's PrintShop GS are incompatible with the new Apple IIGS ROMs. The fix is for the customer to send the PrintShop disk back to Broderbund (address is on the disk label, Attn: Software), along with a receipt of purchase and a letter stating that you would like to upgrade to version 1.1.

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Tech Info Library Article Number:4777



# Tech Info Library

## Ethernet: NFS-to-ATP Translation Over Backbone

Revised: 10/15/90  
Security: Everyone

Ethernet: NFS-to-ATP Translation Over Backbone

=====

This article last reviewed: 10 October 1990

TOPIC -----

I want to connect to an Ethernet backbone to which personal IRIS workstations are connected. I want to do NFS-to-AFP translations. Basically, I want to do the same thing that the Cayman GatorBox does, but I want to eliminate the GatorBox and connect directly. The personal IRIS workstations are UNIX machines; their UNIX adheres to TCP/IP standards. We are looking for a supported solution. I would rather not get Telnet using Excelan's EtherPort SE/30 and host access for the Macintosh. I would rather mount directories onto my Macintosh. Can I do this without a GatorBox?

DISCUSSION -----

Yes, You can do this without a GatorBox by getting the CAP (Columbia AppleTalk Package for UNIX), a public domain software from Columbia University. Here are CAP's prerequisites:

- Kinetics FastPath box
- KIP, a revision of the UDP software, developed by Bill Croft at Stanford University
- Based TCP/IP host running UNIX

For the above CAP/KIP/AUFS solution, basically, the customer needs to install the CAP software on the UNIX host and download the KIP code to the Kinetics FastPath box. The client Macintosh side can run on either LocalTalk or EtherTalk.

For more information on CAP and KIP, search under these words in the Tech Info Library. Also, pay particular attention to the Tech Info Library articles "UNIX: Kip and Cap Information," "Macintosh: Columbia AppleTalk Package And AUFS," and "Macintosh-To-Sin Connectivity."



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Tech Info Library Article Number:4780



# Tech Info Library

## AppleShare PC 2.0: Not Recommended on Single-Drive PC

Revised: 12/6/89  
Security: Everyone

AppleShare PC 2.0: Not Recommended on Single-Drive PC

=====

This article last reviewed: 13 October 1989

TOPIC -----

When installing AppleShare PC on a machine with one 5.25-inch disk remember that it really has two logical drives, A: and B:. To test this at DOS, issue this command:

DISKCOPY A: B:

The DOS DISKCOPY program prompts you to switch disks with a message like

"Please insert the diskette for drive A:."

Because I haven't had a chance to use AppleShare PC 2.0, I don't know how the installer batch file is written. If it asks for drives by drive letter, I'd try specifying A: and B: and let DOS ask you to do a disk swap.

DISCUSSION -----

You are correct that the AppleShare PC 2.0 installer can install from A: to B:--even when B: is just a logical drive. DOS prompts for each disk as it is needed. Unfortunately, because of the installer program's design, this might require swapping disks as many as 100 times--even for print services alone.

This means that we do not recommend installing AppleShare PC 2.0 using a system that has only one floppy drive and no a hard disk. Booting such a system with already installed disks works fine. However, unless you enjoy swapping disks, don't try to install on it.

As a side note, the installer is actually an executable file, not a batch file. You can write a batch file to do the install by using the xcopy command on groups of files. This shortens the install process a great deal and allows installing with a single drive PC. Of course, it also requires manual preparation of AUTOEXEC.BAT and NET.CFG and selection of the proper REDIR file,

depending on what version of DOS is being used.

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Tech Info Library Article Number:4782



# Tech Info Library

## Use MacLink Plus 3.X With Wang VS Release 7

Revised: 12/6/89  
Security: Everyone

Use MacLink Plus 3.X With Wang VS Release 7

=====

This article last reviewed: 13 October 1989

TOPIC -----

I am using MacLink Plus/Wang VS 2.02 to connect the Macintosh to a Wang VS model 15 running the VS release 7 operating system for terminal emulation using direct cable to an ADC port. When connection is established, I get the logon VS screen--but that's all. The characters entered for userid and password don't seem to be accepted by the VS; the Macintosh beeps with each keystroke.

DISCUSSION -----

We talked with DataViz Technical Support, and they confirmed that versions of MacLink Plus prior to version 3 do not work properly with VS release 7. They suggested that you should upgrade to the latest version which is 3.06. According to DataViz, they currently have a free upgrade program in place.

For more in-depth support on their product, we suggest you contact them directly. For more their addresses and numbers, search the Tech Info Library under "DataViz."

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Tech Info Library Article Number:4783



# Tech Info Library

## Macintosh: Database File Conversion

Revised: 12/6/89  
Security: Everyone

Macintosh: Database File Conversion

=====

This article last reviewed: 13 October 1989

TOPIC -----

I need to transfer database information from a Tandy system running an ENABLE-based program called Legis and a program called Q&A to Microsoft Works. Do you know how to do this?

DISCUSSION -----

We are not familiar with either Legis or Q&A. However, you can transfer data from one database to another by way of several different methods. Any of these methods is fairly straightforward. The object is to find a common link between the two systems and their associated databases. This may be matching file formats, a common file format, the ability to import data from a text file, or being able to read an incoming data stream.

You may be able to use a common file format, like DIF or SYLK, or save the database information to a text file and use the import feature within Microsoft Works to retrieve the information. In either case, you should be able to move the file from the Tandy to the Macintosh via the Apple PC 5.25 drive and Apple File Exchange.

If you do not have access to an Apple PC 5.25 drive, the database-generated text file also can be transferred between the systems using either PC MacLink or a direct serial connection with a terminal package running on both systems.

Another method of moving the information would be to use a network solution, like TOPS or AppleShare PC, making the database files available to everyone. Again, to make this a working solution, use a common file format.

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Tech Info Library Article Number:4784



# Tech Info Library

## Mutoh Plotter: Macintosh Compatibility

Revised: 12/6/89  
Security: Everyone

Mutoh Plotter: Macintosh Compatibility

=====

This article last reviewed: 13 October 1989

TOPIC -----

I need compatibility information about the Mutoh plotter series, especially IP-500 and IP-530. Which Macintosh software can drive it? Will MacPlot Professional drive it? Which standard plotters (if any) are these Mutoh plotters compatible with? The data sheets only say that they are HPGL-compatible.

DISCUSSION -----

We contacted the Mutoh Sales Office in Southern California and found that the IP-500 emulates an HP-7580. All they had to say about the IP-530 was that it is HPGL-compatible. It doesn't emulate any specific plotter. The folks at Microspot (MacPlot driver) would not guarantee that the Mutoh plotters would work with their product, because they haven't been tested. They stated that there should be no problem driving any HPGL-compatible plotter.

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Tech Info Library Article Number:4785



# Tech Info Library

## Some Apple Manuals are Available on Disk or in Braille (4/93)

Revised: 4/16/93  
Security: Everyone

Some Apple Manuals are Available on Disk or in Braille (4/93)

=====

Article Created: 13 October 1989

### Article Change History

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04/14/93 - REVIEWED

- To verify company information.

### TOPIC -----

Does Apple provide any manuals or other documentation in Braille? How about disk files for the manual that I could output on my Braille printer.

### DISCUSSION -----

Two companies are licensed to distribute disk copies of some Apple manuals:

- American Printing House for the Blind distributes manuals for various Apple products.
- RFB (Recording For the Blind) distributes disk-based manuals for various Apple products as well as third-party products.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:4786



# Tech Info Library

## Works-to-Works/AppleWorks 3.0: Saves Files in ASCII

Revised: 12/6/89  
Security: Everyone

Works-to-Works/AppleWorks 3.0: Saves Files in ASCII

=====

This article last reviewed: 13 October 1989

TOPIC -----

The name Productivity Software, Inc. appears in the "Get Info" dialog box for the AppleWorks-to-Microsoft Works translator for Apple File Exchange. This translator does not support the new AppleWorks 3.0.

I am receiving a rash of complaints about backward and forward compatibility surrounding AppleWorks 3.0. Is anyone else getting these complaints? It seems that version 3.0 will not read older 1.x files and will not allow the user to save files in older 1.x or 2.x formats.

I am trying to find out if there will be an upgrade? Does anyone have the phone number for Productivity Software, Inc. or know where they are located?

DISCUSSION -----

CLARIS Tech Support is telling their customers to save the files as ASCII for Works-to-Works to function as expected. Using the new features causes AppleWorks 3.0 to use a different creator type, which is not recognized by Works-to-Works. The phone numbers we have for Productivity Software are no longer valid. However, they do still have an active AppleLink account (D0002). We are sending them a copy of this Link.

CLARIS was unaware of problems reading files saved by older versions of the software. As long as no new features are used, AppleWorks 3.0 saves files in a format that can be read by older versions of the software. Once a new feature is used, the creator type is changed and is no longer readable by older software. This is intentional because the old software would get confused when trying to deal with the results of a new feature. Again, they suggest saving the file in ASCII form for reading into previous versions. For further clarification, call CLARIS Technical Support. For more details, search the Tech Info Library under "CLARIS"



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Tech Info Library Article Number:4787



# Tech Info Library

## Micro Touch Screen: Not Compatible with CloseView (11/95)

Revised: 11/29/95  
Security: Everyone

Micro Touch Screen: Not Compatible with CloseView (11/95)

=====

Article Created: 6 December 1989  
Article Reviewed/Updated: 29 November 1995

TOPIC -----

I have a Macintosh SE with 1MB RAM and Micro Touch Screen installed. System software is System 6.0.2 and Finder 6.1. My problem is that Macintosh SE freezes on "Welcome to Macintosh" window.

DISCUSSION -----

Unfortunately, Micro Touch software is not compatible with the Control Panel document "CloseView". Your fix is to remove CloseView from the System Folder.

Article Change History:  
29 Nov 1995 - Corrected minor typo.

Support Information Services

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Tech Info Library Article Number:4789



# Tech Info Library

## AppleShare Print Server: Installing Software

Revised: 2/6/90  
Security: Everyone

AppleShare Print Server: Installing Software

=====

This article last reviewed: 13 October 1989

TOPIC -----

The AppleShare Print Server Administrator's Guide refers to a "Server System" that should be used when installing a server see (page 16, instruction 5).

What happens when a user wants to set up a server on a 68030-based machine that needs System 6.0.3? This is not provided for in the Server Software package. Because the standard System Software is the only way to obtain System 6.0.3, could this cause problems?

DISCUSSION -----

When installing the AppleShare Print Server on a Macintosh 512Ke, it is important to install the System Software using the AppleShare Print Server installer disk. This guarantees that the AppleShare Print Server software is running in conjunction with System Software that supports both the Macintosh 512Ke and the Print Server software.

On the Macintosh Plus and later Macintosh systems, we recommend installing the System Software from a disk containing the most recent version of System Software available for that particular machine. For example, you should install System Software 6.0.3 for the Macintosh IIcx. Then install the AppleShare Print Server software.

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Tech Info Library Article Number:4790



# Tech Info Library

## Macintosh System Software 6.0.4: General Information

Revised: 12/6/89  
Security: Everyone

Macintosh System Software 6.0.4: General Information

=====

This article last reviewed: 13 October 1989

TOPIC -----

This article is a general discussion of Macintosh System Software 6.0.4.

DISCUSSION -----

The Macintosh IIci and Portable REQUIRES Macintosh System Software 6.0.4 or later. Trying to boot either of these computers from versions earlier than 6.0.4 results in a dialog box that reads "This startup disk was created with a 'Minimum' installer script and will not work on this model Macintosh. Use a standard installer script to update the disk for different models.".

The only people who need to upgrade to 6.0.4, are those who will be using the Macintosh IIci or the Portable. In both cases, 6.0.4 is included. Most of the changes that occurred in 6.0.4 were required by the IIci and Portable hardware. Some of the more significant changes to 6.0.4 include:

- The Multi-Disk Installer is introduced with 6.0.4.
- The Sound Manager was modified to use the Time Manager to provide fixed frequency timing.
- The SysEnvirons call has been modified to support the new computers.
- Responder has been modified to recognize the new computers.
- Code to support IIci parity is included in 6.0.4.
- A new version of the Monitors cdev is included with 6.0.4 which supports direct video modes, improved grayscale video modes, and third-party extensibility. On the Macintosh IIci, Monitors also includes special extensions so the sophisticated user can control the amount of RAM dedicated to built-in video.

- The Battery DA was added so users could monitor the power level of the Macintosh Portable battery.
- The Portable cdev is included in 6.0.4. This lets users change various settings for the Macintosh Portable.
- CloseView 1.1 is included in 6.0.4. This version has a better interface than 1.0.

Macintosh System Software 6.0.4 will also be included with all Macintosh models as of the IIci introduction. This version will also be rolled into the stand-alone Macintosh System Software package.

Those who have subscriptions to the Macintosh System Software update service will also receive 6.0.4.

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Tech Info Library Article Number:4791



# Tech Info Library

## HyperCard 1.2.2: Problem With SAM 1.0

Revised: 12/6/89  
Security: Everyone

HyperCard 1.2.2: Problem With SAM 1.0

=====

This article last reviewed: 26 October 1989

TOPIC -----

I experienced a problem with HyperCard 1.2.2 and SAM v1 (Symantec AntiVirus for the Macintosh). When I launch an application from within HyperCard and quit the application with SAM installed, control returns to the Finder, not to HyperCard. I fixed the problem by removing SAM. Obviously, the problem does not occur under MultiFinder, because HyperCard stays open when launching another program. Although the problem was spotted under SAM v1, it also afflicts SAM v1.1.

DISCUSSION -----

The problem you describe is known to Symantec and is reported to be documented in the "Read Me" file distributed with SAM 1.1. The "Read Me" file contains information on other known problems and is considered good reading for all users of SAM.

Symantec indicated that this was something they wanted to fix in the next release of the product. No date is set for future releases of SAM.

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Tech Info Library Article Number:4798



# Tech Info Library

## MacroMaker: How To Simulate a Pause

Revised: 5/14/92  
Security: Everyone

MacroMaker: How To Simulate a Pause

=====  
Article Created: 26 October 1989  
Article Last Reviewed: 14 May 1992  
Article Last Updated:

### TOPIC -----

Is there any way to put in wait states or time delays into a MacroMaker recording?

### DISCUSSION -----

MacroMaker has no built-in pause function, but it is possible to simulate a pause by recording an extended mouse-button press. To create a simulated pause while recording your macro, press and hold the mouse button for the desired length of the pause. When you play back the macro, the extended mouse button press is played back using the same amount of time as when it was recorded.

Be careful to press the mouse button with the mouse pointer in an unimportant part of the screen. For instance, do not pull down a menu to create the pause or important activities may be suspended for its duration. Your best bet may be to hold the mouse button down while the pointer is in a lower corner of the screen, to avoid affecting the operation of other software.

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Tech Info Library Article Number:4799



# Tech Info Library

## Legislative-Information Databases: A List

Revised: 12/17/91  
Security: Everyone

Legislative-Information Databases: A List

=====

Article Created: 9 November 1989  
Article Last Reviewed: 10 August 1992  
Article Last Updated: 14 May 1991

TOPIC -----

Can you give me a list of services that provide electronic access to legislative-information databases?

DISCUSSION -----

So many services provide electronic access to legislative-information databases that we cannot describe them all. Here is a brief list of those that seem most appropriate with contacts for each:

LEGI-SLATE

-----

Legi-Slate, Inc.  
777 North Capitol, Suite 900  
Washington, DC 20002  
202-898-2300

Updated daily. Available on-line via LEGI-SLATE.

LEGI-SLATE reports federal legislative and regulatory information. It comprises the following six services: Congressional Service, Federal Register Service, Bill Text Service, Member Profile and Rating Service, News Service, Press Briefing Service.

CQ Weekly Report

-----

Congressional Quarterly Inc.  
1414 22nd St., N.W.  
Washington, DC 20037  
202-887-6353



Updated weekly. Available on-line via DataTimes as the CQWEEK file.

CQ Weekly Report covers U.S. Congressional and political activity, including legislation and election news. It reports on legislative proposals, decisions, and historical backgrounds; interest group lobbying; and Supreme Court decisions. CQ provides pre-election forecasts, post-election analysis, candidate and new member profiles, and vote studies.

#### Congressional Activities

-----

Oliphant Washington Services (OWS)  
1819 H St., N.W., Suite 330  
Washington, DC 20006-3677  
202-296-0924

Updated weekly. Available on-line via NewsNet, Inc.

Congressional Activities provides information on upcoming congressional events related to the environment and the energy industry. It includes a schedule of hearings, historical background information on scheduled actions, a list of bills and resolutions introduced, reports files, measures passed, laws enacted, and Congressional Record references.

#### Congressional Record Abstracts

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National Standards Association, Inc. (NSA)  
1200 Quince Orchard Blvd.  
Gaithersburg, MD 20878  
301-590-2300

Updated weekly. Available on-line via DIALOG Information Services, Inc.

Congressional Record Abstracts summarizes the legislative and policy proceedings reported in the Congressional Record, the official journal of proceedings of the United States Congress.

#### Electronic Legislative Search System (ELSS)

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Commerce Clearing House, Inc. (CCH)  
4025 W. Peterson Ave.  
Chicago, IL 60646  
312-583-8500

Updated daily. Available on-line via GE Information Services.

CCH provides a complete, up-to-date history of all legislative activity in current sessions of all state legislatures and the U.S. Congress.

For information on connect services, search the Tech Info Library under "DataTimes," "DIALOG," "LEGI-SLATE," and "GE."

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Tech Info Library Article Number:4800



# Tech Info Library

## Cisco Systems, Inc.

Revised: 4/4/97  
Security: Everyone

Cisco Systems, Inc.

=====

Article Created: 12/06/89  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Cisco Systems, Inc.

-----

1525 O'Brien Dr.  
Menlo Park, CA 94025

800-553-NETS (6387)

415-326-1941

415-326-1989 Fax

Company Profile:  
Networking, specializing in routers.

Article Change History: 07/07/93 Name Correction

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Tech Info Library Article Number:4802



# Tech Info Library

## GSC Associates, Inc.

Revised: 4/4/97  
Security: Everyone

GSC Associates, Inc.

=====

Article Created: 12/06/89  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

GSC Associates, Inc.

-----

13254 Jefferson Ave.\Hawthorne, CA 90250

310-379-2113

310-379-1649 Fax

Company Profile:  
Software, specializing in graphics transfers.

Article Change History: 07/12/93 Address changed

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4804



# Tech Info Library

## School Office Software Systems

Revised: 4/9/92  
Security: Everyone

School Office Software Systems

=====

Article Created: 6 December 1989  
Article Last Reviewed: 9 April 1992  
Article Last Updated:

School Office Software Systems, hardware and software, specializing in  
phone-dialing products for the Apple II family.

School Office Software Systems  
3408 Dover Road  
Durham, NC 27707  
919-493-3366  
800-368-4162

Copyright 1989, 1991, Apple Computer, Inc.

Tech Info Library Article Number:4806



# Tech Info Library

## **RFB (Recording For the Blind) (Computerized Books for the Blind)**

Revised: 7/16/93  
Security: Everyone

RFB (Recording For the Blind) (Computerized Books for the Blind)

=====

Article Created: 6 December 1989  
Article Reviewed/Updated: 16 July 1993

RFB (Recording For the Blind)

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20 Roszel Rd.  
Princeton, NJ 08540

609-452-0606

### Company Profile:

Formerly Computerized Books for the Blind, specializes in converting computer books into ASCII format for adaptive computer use by the visually impaired. Works with material from both hardware and software vendors. For information on specific titles available, call or write the company.

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Tech Info Library Article Number:4807



# Tech Info Library

## Macintosh: How To Call ExitToShell Trap from ROM Debugger (9/94)

Revised: 9/6/94  
Security: Everyone

Macintosh: How To Call ExitToShell Trap from ROM Debugger (9/94)

Article Created: 26 October 1989  
Article Reviewed/Updated: 06 September 1994

TOPIC -----

What is the A ("ExitToShell") trap or address to call for "Resume OS" from the ROM debugger on a Macintosh?

DISCUSSION -----

The most efficient way to call the "ExitToShell" trap with any Macintosh with the ROM debugger is documented below. To use this method, the interrupt switch must first be depressed to generate the debugger window.

At the ">" ROM debugger prompt, type the following lines, pressing Return after each:

```
SM 0 A9F4  
G 0
```

In the first line, the "SM" stands for "Set Memory", the "0" signifies memory location "0", and the "A9F4" is the trap number for the "ExitToShell" trap. This line puts "A9F4" at memory location "0". In the second line, the "G" stands for "Go" and the "0" stands for memory location "0". This line tells the computer to execute the instructions starting at memory location "0". Since "A9F4" is at memory location "0", the "ExitToShell" trap is executed.

Barring other memory corruption, your Macintosh should exit back to the Finder. It is recommended that all other work in progress be saved and that the machine be restarted to completely clear and reset memory.

Article Change History:  
06 Sep 1994 - Reviewed for technical accuracy, removed reference to specific Macintosh models.

Support Information Services

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Tech Info Library Article Number:4808





# Tech Info Library

## Macintosh II: Old and New Video Card Part Numbers, Etc.

Revised: 12/6/89  
Security: Everyone

Macintosh II: Old and New Video Card Part Numbers, Etc.

=====

This article last reviewed: 26 October 1989

TOPIC -----

The Macintosh II Video Card specifications seem to have changed since August 15th. After looking in the Finished Goods Price List, the part numbers have actually been replaced. The cards use to be M0213 and M0322. We need to know the changes that have occurred because the video output on their projection monitors now is blurred.

DISCUSSION -----

Actually, Apple part number M0213 is the Macintosh II Video Card 4-Bit Expansion Kit and Apple part number M0322 is the new Macintosh II 4-Bit Video Card. The Macintosh II 8-Bit Video Card is part number M0324. The old 4-Bit Video Card's part number is M0211, and the old 8-Bit Video Card's part number is M5640.

The new video cards (M0322 and M0324) use pin 4 to detect the type of monitor attached to the card, and this feature is probably the cause of the problem. For more information on the new video cards, check the Tech Info Library article, "Macintosh II High-Resolution Video Card: New Features."

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Tech Info Library Article Number:4809



# Tech Info Library

## AppleShare PC 2.0: Token Ring Card Memory Location Solution

Revised: 12/6/89  
Security: Everyone

AppleShare PC 2.0: Token Ring Card Memory Location Solution

=====

This article last reviewed: 1 November 1989

TOPIC -----

Problem:

I tried installing AppleShare PC 2.0 on a PS 2 Model 60. The model 60 has 5MB RAM with a 40MB hard drive. Slots 1 and 2 are empty, slot 3 has an extended memory card, slot 4 has a MicroChannel Adapter A Token Ring card (16/4), slot 5 is empty, and slot 6 has an IRMA board.

The problem is that we are getting the "Mem 2 not matching board" error. We have tried many different memory configurations, and the results are always the same. I cannot get a match. What's the problem?

DISCUSSION -----

This error message, along with the description of the system, suggests that you may not have configured the Token Ring card. Configure the card using the IBM Reference Disk, prior to installing AppleShare PC.

Check to see if the files on other disks that may have shipped with the Token Ring card are already contained on the Reference Disk. If not, copy them to the Reference Disk. Make a note of the parameter settings for the card, particularly the memory locations you assigned. You'll need these later, when you install the AppleShare PC software. Start up your PC with the Reference Disk and install and configure the Token Ring card.

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Tech Info Library Article Number:4810



# Tech Info Library

## GS/OS 5.0: Slow Startup Time on Network

Revised: 12/6/89  
Security: Everyone

GS/OS 5.0: Slow Startup Time on Network

=====

This article last reviewed: 1 November 1989

TOPIC -----

I am unhappy with the performance of GS/OS 5.0 (not 5.0.2) when starting up 16 Apple IIGS systems over a network. It seems that the startup time has increased by about 10 minutes.

Additionally, there are problems with the workstations losing their Chooser settings. It seems to happen at least hourly.

DISCUSSION -----

The additional time required to start up is caused by the increased size of GS/OS 5.0. Roughly speaking, the increased time works out to about 30 second per Apple IIGS (not that long, considering the amount of data being moved).

The problem of lost Chooser settings has been fixed in version 5.0.2.

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Tech Info Library Article Number:4813



# Tech Info Library

## Macintosh: Scan Rates for Monitors (2/95)

Revised: 2/21/95  
Security: Everyone

Macintosh: Scan Rates for Monitors (2/95)

Article Created: 25 November 1989  
Article Last Reviewed/Updated: 21 February 1995

TOPIC -----

This article contains a list of scan rates of Macintosh monitors. Here are two terms you need to understand when reading the tables:

### Scan Rates -----

The scan rate is the time it takes a monitor's electron gun to move across one line of the screen or repeat one entire screen. These values are known as the horizontal and vertical scan rates, respectively. The monitor scan rate is the number of times a screen is redrawn each second. Computer display scan rates differ from standard video scan rates.

### Interlaced versus Non-Interlaced Scans -----

Apple monitors use a non-interlaced, or progressive, scan. Interlacing is a technique used on character-based displays to create solid character text. It is also used on home television sets (the dominant standard in the United States being NTSC). Using alternate scan lines, the monitor performs high-speed retraces to create the illusion that the monitor has twice as many lines as it does. A major drawback of interlaced displays is their tendency to noticeably flicker thin horizontal lines, lines that are frequently used on the Macintosh interface.

The non-interlaced format used on Apple Macintosh monitors means that the horizontal and vertical scan rates are timed to cause the display electron guns to produce even progressively horizontal scans. The non-interlaced scan format helps prevent the flickering that you can see on some types of monitors.

### DISCUSSION -----

Scan rates for Macintosh monitors:

| . | Vertical | Horizontal |
|---|----------|------------|
|---|----------|------------|

|                           | (Hz)  | (KHz) |
|---------------------------|-------|-------|
|                           | ----- | ----- |
| Built-in monitors:        |       |       |
| . Macintosh 128K          | 60.15 | 22.25 |
| . Macintosh 512K          | "     | "     |
| . Macintosh 512Ke         | "     | "     |
| . Macintosh Plus          | "     | "     |
| . Macintosh SE            | "     | "     |
| . Macintosh SE/30         | "     | "     |
| . Macintosh Classic       | "     | "     |
| . Macintosh Classic II    | "     | "     |
| . Macintosh Color Classic | "     | 24.48 |
| . Macintosh LC 520        | 66.7  | 35    |

Apple and Macintosh Monitors:

|                                    |       |      |
|------------------------------------|-------|------|
| . Apple 21-in. Color Display       | 75    | 68.7 |
| . Apple Two-Page Monitor           | 75    | 68.7 |
| . Apple 16-in. Color Display       | 75    | 50.0 |
| . Apple Portrait Display           | 75    | 68.9 |
| . Apple AudioVision 14 Display     | 66.7  | 35   |
| . Macintosh (14-in.) Color Display | 66.7  | 35   |
| . Basic (14-in.) Color Monitor     | 59.94 | 31.5 |
| . Performa Plus Display            | 66.7  | 35   |
| . Performa Display                 | 66.7  | 35   |
| . 13-in. AppleColor High-Res       | 66.7  | 35   |
| . RGB Monitor                      |       |      |
| . 12-in. Apple High-Res            | 66.7  | 35   |
| . Monochrome Monitor               |       |      |

Multiple Scan Monitors:

Apple Macintosh multiple scan monitors let users customize and adjust the size and position of the displayed image.

|                                  |            |          |            |  |
|----------------------------------|------------|----------|------------|--|
| . Apple Multiple Scan 15 display |            |          |            |  |
| . Mode                           | Resolution | Vertical | Horizontal |  |
| . ----                           | -----      | -----    | -----      |  |
| . VGA                            | 640x480    | 60.0     | 31.77      |  |
| . Macintosh                      | 640x480    | 66.7     | 35.0       |  |
| . SVGA                           | 800x600    | 72.0     | 48.1       |  |
| . SVGA                           | 800x600    | 60.0     | 37.9       |  |
| . Macintosh                      | 832x624    | 75.0     | 49.7       |  |
| . 1024x768                       | 1024x768   | 70.0     | 56.5       |  |

|                                  |            |          |            |  |
|----------------------------------|------------|----------|------------|--|
| . Apple Multiple Scan 17 display |            |          |            |  |
| . Mode                           | Resolution | Vertical | Horizontal |  |
| . ----                           | -----      | -----    | -----      |  |
| . VGA                            | 640x480    | 59.95    | 31.47      |  |
| . Macintosh                      | 640x480    | 66.7     | 35.0       |  |
| . VESA                           | 640x480    | 75.0     | 37.5       |  |
| . VESA                           | 800x600    | 75.0     | 46.9       |  |
| . SVGA                           | 800x600    | 55.98    | 35.16      |  |
| . 800x600                        | 800x600    | 60.0     | 37.8       |  |

|                                  |           |            |          |            |
|----------------------------------|-----------|------------|----------|------------|
| .                                | Macintosh | 832x624    | 75.0     | 49.73      |
| .                                | Macintosh | 1024x768   | 75.0     | 60.2       |
| .                                | 1024x768  | 1024x768   | 60.0     | 48.3       |
| . Apple Multiple Scan 20 display |           |            |          |            |
| .                                | Mode      | Resolution | Vertical | Horizontal |
| .                                | ----      | -----      | -----    | -----      |
| .                                | VGA       | 640x480    | 59.95    | 31.47      |
| .                                | Macintosh | 640x480    | 66.7     | 35.0       |
| .                                | VESA      | 640x480    | 75.0     | 37.5       |
| .                                | VESA      | 800x600    | 75.0     | 46.9       |
| .                                | Macintosh | 832x624    | 75.0     | 49.73      |
| .                                | Macintosh | 1024x768   | 74.93    | 60.24      |
| .                                | VESA      | 1024x768   | 75.0     | 60.02      |
| .                                | Macintosh | 1152x870   | 75.0     | 68.7       |
| .                                | VESA      | 1280x1024  | 75.0     | 79.98      |

In some cases, it may be necessary to reset the display settings of a multiple scan monitor to their factory defaults.

To reset these monitors, hold down Control button (which has the circle symbol above it), while pressing the Reset button (which has the triangle symbol).

Most of the time, just pressing the Reset button resets the display settings. However, pressing Control-Reset resets the CPU inside the Multiple Scan 17 Display and Multiple Scan 20 Display.

#### Article Change History

21 Feb 1995 - Added keyword; added additional information.  
23 Nov 1994 - Added Multiple Scan 15 and 17 Displays.  
31 Mar 1994 - Added information on new products.

Support Information Services

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Tech Info Library Article Number:4815



# Tech Info Library

## Apple Products Meet the CISPR 22 Standard

Revised: 12/13/89  
Security: Everyone

Apple Products Meet the CISPR 22 Standard

=====  
This article last reviewed: 25 November 1989

TOPIC -----

Does the Macintosh family of computers meet the "CISPR 22" standard? Are there any stickers for "CISPR 22" approval on the back of Macintosh computers that are sold in France or any other European countries?

DISCUSSION -----

Apple products DO meet the CISPR Publication No. 22 requirements.

The international committee on RFI (Radio Frequency Interference) -- known as CISPR -- proposed an RFI standard applicable to all Information Technology Equipment (ITE). This proposal was agreed upon by many nations, including -- but not limited to -- Australia, Austria, Belgium, Bulgaria, Canada, Denmark, Egypt, France, Ireland, Italy, Japan, Netherlands, Poland, Romania, South Africa, Spain, Sweden, Turkey, United Kingdom, U.S.A., and U.S.S.R.

As mentioned before, our products meet the CISPR Publication No. 22 requirements.-- which (as of November, 1989) aren't legally required or policed by any of the countries to which we sell products. Neither is any sort of mark or symbol that indicates a product passes the CISPR standards presently required. Labels WILL be required, but probably not until 1992. The CISPR mark will include the letters "EC" for European Conformity.

The European Computer Manufacturers' Association (ECMA) published a CISPR look-alike specification so that its members could prepare themselves in advance of when the CISPR document was published in August 1985. Therefore, you may hear that standard referred to as:

|                      |                                                                                  |
|----------------------|----------------------------------------------------------------------------------|
| ECMA 95 (March 1985) | Information Technology Equipment Limits of interference and measurement methods. |
|----------------------|----------------------------------------------------------------------------------|

Apple Manufacturing in Cork will add FTZ numbers to product labels for those

countries requiring VDE testing; otherwise, there are no special "RFI" marks or symbols on Apple products sold in Europe. Canada, though supporting CISPR, had already aligned its RFI standard to that of the FCC in the U.S.A., and uses a mark that looks like the characters "SA" encircled by a letter "C":



Products destined for sale in the U.S.A. have an FCC approval number.

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Tech Info Library Article Number:4817





# Tech Info Library

## Broderbund Software: Problems with Apple IIGS 1MB Systems

Revised: 12/13/89  
Security: Everyone

Broderbund Software: Problems with Apple IIGS 1MB Systems

=====

This article last reviewed: 25 November 1989

TOPIC -----

I'm having various software compatibility problems with the new Apple IIGS 1MB system. Specifically, there are problems with Broderbund's Print Shop GS. Can you tell me anything about this?

DISCUSSION -----

Broderbund Software is aware of the Print Shop GS compatibility issue and they have an update available. Contact Broderbund for more information on the updating procedure.

Broderbund also said that the Apple IIGS-specific versions of the "Carmen Sandiego" series might encounter difficulties with System 5.0x and the 1MB Apple IIGS computer. Tool 032 is required by these applications, and may be missing after an installation of System 5.0x.

To resolve this issue, locate a disk with Tool 032 and copy that tool into the Tools folder of the system disk to be used with the Carmen Sandiego.

For more information, search under: "Broderbund"

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Tech Info Library Article Number:4818



# Tech Info Library

## Limits On Call Of Programming Resources

Revised: 12/13/89  
Security: Everyone

Limits On Call Of Programming Resources

=====

This article last reviewed: 25 November 1989

TOPIC -----

I am trying to write an application. Is there a limit on the number of resources a program can call? (A resource here would be a memory block that is periodically filled with incoming data and then called from an application.)

DISCUSSION -----

The theoretical limit on the number of resources an application can open at one time greatly exceeds the practical limits of a program.

If you are not using "owned" resources, such as resources for desk accessories, you can have up to 32767 of a single resource type. If each of those resources held 1Kb of data, you would be accessing on the order of 30MB. In other words, the limit on the number of resources you can have open at one time is not a real limit in the way that the limit on the number of open files is.

If you are considering having thousands of resources open at one time, we suspect that you need to take a hard look at the way you are doing things and develop an alternative method for accessing data.

(NOTE: Tech Note #141 states that the maximum number of resources you can have in a single file is 2727. Also, be aware that the size of a resource fork of a single file is limited to 16MB. This probably isn't an issue, but it has been brought to our attention at least once.)

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Tech Info Library Article Number:4819



# Tech Info Library

## AppleShare: Documentataion On Desktop Calls

Revised: 12/13/89  
Security: Everyone

AppleShare: Documentataion On Desktop Calls

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This article last reviewed: 25 November 1989

TOPIC -----

Where are the new desktop calls (OpenDB, AddIcon, AddComment, and so on) documented? I've noticed that our AppleShare servers support the "new" Desktop Manager, but I haven't been able to find any documentation on it. Can you help?

DISCUSSION -----

The desktop calls such as FPAAddIcon are documented in two places: Inside AppleTalk and the AppleTalk Filing Protocol (AFP) Engineering Technical Notes. Both of these are available from APDA. For programming purposes, we recommend the Technical Notes; we suggest Inside AppleTalk for a theoretical understanding of the internals of AppleTalk.

(NOTE: These calls are currently available only for AppleShare. They are not supported for local volumes.)

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Tech Info Library Article Number:4821



# Tech Info Library

## Macintosh II High-Resolution Video Card: Monitor Sensing

Revised: 12/13/89  
Security: Everyone

Macintosh II High-Resolution Video Card: Monitor Sensing

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TOPIC -----

This article lists the pin configurations to use with the Macintosh II High-Resolution Video Card, so that its monitor-sensing function will work properly.

DISCUSSION -----

The Macintosh II High-Resolution Video card is the replacement card for Macintosh II Video card. One new feature with this card which may present a problem is the automatic monitor sensing.

This feature, which has been incorporated into the video card for the Portrait and Two-Page display, allows the video card to determine if a monitor is attached to the card at boot time. This is accomplished by sensing either a low (ground) or high (no connect) signal on the connector.

For DB-15 connectors, these sense lines are on pin 4, 7 and 10. The Macintosh II High-Resolution Video card is a special case and only senses pin 4 of the DB-15 connector.

In order for the card to work correctly with the monitors listed below, the following is the minimum configuration of pins that must be connected:

| Pin | Video Card Signal  | Mac       |   | Mac      |          |
|-----|--------------------|-----------|---|----------|----------|
|     |                    | Hi-Res    |   | Hi-Res   |          |
|     |                    | Mono Pins |   | RGB Pins |          |
|     |                    |           |   |          | A II     |
|     |                    |           |   |          | RGB Pins |
| 1   | Red video ground   | ->        |   | 1        | 1        |
| 2   | Analog red video   | ->        |   | 2        | 2        |
| 3   | TTL composite sync | ->        | 3 | 3        | 3        |
| 4   | Sense 0            | ->        | 4 | 4        |          |

|       |                                   |    |       |       |       |
|-------|-----------------------------------|----|-------|-------|-------|
| 5     | Analog grn video w/composite sync | -> | 5     | 5     | 5     |
| 6     | Green video ground                | -> | 6     | 6     | 6     |
| 7     | Sense 1 (not used)                |    |       |       |       |
| 8     | NC                                |    |       |       |       |
| 9     | Analog blue video                 | -> |       | 9     | 9     |
| 10    | Sense 2 (not used)                |    |       |       |       |
| 11    | Ground                            |    |       |       |       |
| 12    | Analog grn video w/composite sync |    |       |       |       |
| 13    | Blue video ground                 | -> |       | 13    | 13    |
| 14    | Ground                            |    |       |       |       |
| 15    | NC                                |    |       |       |       |
| Shell | Earth ground                      | -> | Shell | Shell | Shell |

When Sense 0 (pin 4) is grounded, the card will generate a RS-343 video signal compatible with the Macintosh High-Resolution Monochrome and High-Resolution RGB monitor:

Horizontal Scanning = 35.000 KHz  
Dot Clock = 30.24 MHz  
Vertical Scanning = 66.67 Hz

When Sense 0 (pin 4) is not connected, the card will generate a RS-170 video signal compatible with the Apple II AppleColor RGB monitor:

Horizontal Scanning = 15.734 KHz  
Dot Clock = 12.27 Mhz  
Vertical Scanning = 60.0 Hz

In addition, the frame buffer size is reduced to fit the display area of the AppleColor RGB monitor.

(NOTE: This automatic sensing mechanism of the Apple High-Resolution Video card is similar to the Apple Portrait and Two-Page display cards, but does not have a shutdown mode -- that is, it does not show up in Control Panel -- when a monitor is not attached.

This feature is useful when you have two video cards installed, but only use one at a time. With the shutdown capability, the system software will recognize only the card with a monitor attached. Thus if a card is assigned the bootup monitor and the monitor is removed, the system will not send the startup video to a non-existent monitor.)

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Tech Info Library Article Number:4823



# Tech Info Library

## MacTCP: Where To Get Single-User And Site Licenses (9/95)

Revised: 9/18/95  
Security: Everyone

MacTCP: Where To Get Single-User And Site Licenses (9/95)

=====

Article Created: 25 November 1989  
Article Reviewed/Updated: 18 September 1995

TOPIC -----

I am interested in MacTCP. Does Apple offer any type of site licensing agreements, or is it sold on a cost-per-individual user basis?

DISCUSSION -----

MacTCP is available as a single-user and a site-licensed product. The single-use product is available with System 7.5, or if you do not have System 7.5, call 512-919-2645.

Customers interested in the site-licensed product need to contact Apple Computer Software Licensing. For more information, contact:

Apple Computer Software Licensing  
1 Infinity Loop, M/S 38-I  
Cupertino, CA 95014  
408-974-4536

Article Change History:  
18 Sep 1995 - Updated contact information.

Support Information Services

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Tech Info Library Article Number:4824



# Tech Info Library

## EtherPort II 2.5: Compatible with AppleTalk Phase 2

Revised: 7/2/92  
Security: Everyone

EtherPort II 2.5: Compatible with AppleTalk Phase 2

=====

Article Created: 25 November 1989  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

Will the Kinetics EtherPort II card work in a Macintosh II running the AppleTalk Internet Router? If yes, what release of the drivers is required?

DISCUSSION -----

Yes, the Kinetics EtherPort II card does work in a Macintosh II running the AppleTalk Internet Router.

Version 2.5 of the EtherPort II software, which is AppleTalk Phase 2-compatible, is required.

The EtherPort II cards are now supported by Dayna Communications; for more information, search under "Dayna".

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Tech Info Library Article Number:4825



# Tech Info Library

## A/UX and X Windows: Frequently Asked Questions (12/95)

Revised: 12/1/95  
Security: Everyone

A/UX and X Windows: Frequently Asked Questions (12/95)

=====

Article Created: 26 November 1989  
Article Reviewed/Updated: 1 December 1995

TOPIC -----

This article contains frequently asked questions (FAQ) about A/UX and the X Window System.

DISCUSSION -----

Question: Does Apple provide a Motif Window Manager (mwm) to run under X Window System? Is there such manager available from a third-party? Are there any other window managers available under X Window System besides "twm", "uwm", and "wm"?

Answer: The Motif Window Manager (mwm) developed by OSF is available from Integrated Computer Solutions Inc.

There are also ports of OpenLook Window Manager "olwm" and Tom's Virtual twm "tvtwm" along with several others that run under A/UX.

Question: Is C++ available under A/UX yet? I thought I saw this recently, but I have not been able to find anything.

Answer: C++ is not available in A/UX; however, it is available through A/UX developer's tools from APDA. Also, the third-party product called "Designer C++" from Oasys, Inc. might have a solution for A/UX.

Question: Since Apple has announced MacX, will client applications written on the Macintosh OS be available as clients through MacX to other servers on an Ethernet? Can client applications be displayed on other X servers using MacX?

Answer: Currently, MacX acts as an X server that supports only X clients running on other machines, such as A/UX. No Macintosh client application can be run through MacX to other servers.



Question: How do you set the default for a color monitor when displaying the X Window System server? This can be done each time you run X by entering `-screen` and `-depth`, but is there a way to set the default to do this without entering these parameters?

Answer: Here are a couple of ways to do what you're looking to do:

- Create `.X11` file in users \$Home Directory, the file should contain a line reading:

```
/usr/bin/X11/X -screen 0 -depth 8
```

- You can create an alias in the `.login` or `.cshrc` file for this. For example:

```
alias Xcolor X /usr/bin/X11/X -screen 0 -depth 8
```

For more information, search under: "Integrated Computer Solutions" and "Oasys, Inc."

#### Article Change History:

01 Dec 1995 - Changed title and added keyword.  
22 Sep 1994 - Reviewed.  
15 Jan 1993 - Corrected to show latest information.

Support Information Services

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Tech Info Library Article Number:4827



# Tech Info Library

## SMB File Transfer: Using With OS/2 LAN Server

Revised: 12/13/89  
Security: Everyone

SMB File Transfer: Using With OS/2 LAN Server

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This article last reviewed: 25 November 1989

TOPIC -----

I have a large installation running PC LAN servers, and I want to connect via Apple's TokenTalk NB Card and use SMB File Transfer.

When I tried this , I got locked out because the installation had recently been upgraded to OS/2, which has additional privileges required by the OS/2 LAN server (LAN Manager).

I could see the directory on the server, but it wouldn't show any files. Can you give me any information on how to set privileges under an OS/2 LAN server that will allow the use of the TokenTalk NB Card and SMB File Transfer?

DISCUSSION -----

First off, when adding SMB File Transfer Utility users to the OS/2 server, remember to identify them as DOS users.

If no files or folders appear in the AFE window for any directory on an SMB server, there are three possible explanations:

- You have no access privileges for that directory.
- There are no files or folders for that directory.
- SMB File Transfer cannot determine your access privileges for the directory volume. If this is the case, SMB File Transfer assumes that you have no access privileges for this directory.

To determine access privileges when communicating with the OS/2 LAN server, SMB File Transfer requires that you have all privileges (A) for the directory to which you connect or, at least, one file exists in that directory.

If you do not have the required privileges, the network administrator must create at least one file in the directory to which users connect. This file will give SMB File Transfer the information it needs to determine your access privileges.

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Tech Info Library Article Number:4828



# Tech Info Library

## Inter•Poll: Why Hop Count Fluctuates

Revised: 3/1/93  
Security: Everyone

Inter•Poll: Why Hop Count Fluctuates

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This article last reviewed: 25 November 1989

TOPIC -----

I am using Inter•Poll on my network. The network is all Macintosh systems connected with Farallon's PhoneNET.

I did an echo test and sent out 200 packets at an interval of 0. The hop count fluctuated between 2 and 3. Why?

DISCUSSION -----

The hop count tells you how many routers the packet had to go through to get to the destination node.

All routers maintain complete routing tables that allow them to determine how to forward a datagram (packet) on the basis of its destination network number. RTMP (Routing Table Maintenance Protocol) allows routers to exchange their routing tables periodically. In this process, a router receiving the routing table of another router compares and updates its own table to record the shortest path for each destination network. This exchange process allows the routers to respond to changes in the connectivity of the Internet (for example, when a router goes down or a router is installed).

During this process of exchange, routers sometimes lose track of the shortest path to a particular network, and the packet may go through one or more additional routers to reach its destination. This is not uncommon and is not normally anything to be concerned about.

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Tech Info Library Article Number:4829



# Tech Info Library

## Laser Discs: Production Questions and Answers (11/95)

Revised: 11/21/95  
Security: Everyone

Laser Discs: Production Questions and Answers (11/95)

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 21 November 1995

TOPIC -----

This article contains some questions and answers about laser disc production.

DISCUSSION -----

Question: I have seen the "ABC News Presidential Election" laser disc. This particular disc has the single image (freeze frame) and runtime movie (video clips). I know about two methods of recording: CAV (still image) and CLV. Which method was used for this disc? Can you combine both methods of recording on one disc (one side with CAV and the other side with CLV)?

Answer: Constant Angular Velocity (CAV) is capable of providing both freeze-frame and full-motion video. Constant Linear Velocity can provide only the full motion video. Therefore, if both freeze frame and full motion are desired, then CAV is the technique to use when creating the laser disc.

The disadvantage of the CAV method concerns the amount of video that can be placed on the laser disc. This is 30 minutes per side. CAV plays only one frame in one revolution of the laser disc. This is where CLV has the advantage; it is capable of placing more video on the same disk, namely, 60 minutes per side. However, there are varying number of frames played during a revolution. This is why the freeze-frame feature is not available in the CLV format.

Technically, it would be feasible to use CAV on one side of a disc and CLV on the other side. Typically, this is not a method used in the laser disc industry since the CAV method provides both freeze frame and full motion.

Question: I would like to print my laser disc. I have all the materials on video tape. Can it be done?

Answer: Laser disc production houses have specifications that vary. Generally,

these production companies want the master video tape in the 1-inch broadcast tape format; some may accept 3/4-inch broadcast tape. There are precise specifications for the layout of information on these master video tapes. Different production companies may require slightly different layouts.

If material has been transferred from motion picture film to video tape, there are special considerations for freeze-frame images. The method of transfer from the film to the tape is very important. When transferring 24 frames a second (the film standard) to 30 frames a second (the NTSC video standard), the method used to compensate for the differing frame rates must be precisely controlled.

If the original material was shot on video tape, the frame-rate issue is not a concern. However, freeze-frame images still need special attention so there will not be image flicker during the laser disc freeze-frame display. Two methods are available: frame-accurate edits or multiple-frame recording.

- Frame-accurate edits allow just one frame of video to be recorded on the laser disc for the freeze-frame image. This is the preferred technique.

- Multiple-frame recording allows freeze frames without the need to have frame-accurate edits. Three frames are recorded on the laser disc, and the middle frame is used for the freeze frame. This uses space on the disc quickly; three times the space that is used for frame-accurate edits. Someone using a disc recorded with this method cannot step through the freeze frames, frame by frame, without seeing the same image three times.

Question: If I want my laser disc in NTSC format, what should I do?

- Will PAL-formatted video tapes work?
- Do I need high-band (broadcasting) or low-band (normal/home use) video tape?

Answer: It is possible to move from one format to the other, but there are issues that need to be addressed when using the CAV method. These are related to how the conversion takes place. A laser disc production company can explain the details of these issues.

Most disc production companies require the master video tape to be on 1-inch video tape or 3/4-inch video cassettes.

Question: How long does it take to do the pressing?

Answer: The usual turnaround -- from the time a production company receives the master video tape until the duplicated discs are ready -- is 10 days. If faster turnaround is required, turnaround time as short as same day is often available. However, any turnaround less than the typical 10 days will cost extra. The faster the turnaround, the more the cost.

In summary, using the CAV method requires a specifically formatted master video tape in 1-inch or 3/4-inch format. Freeze-frame images require very close attention to avoid image flicker. Film-to-video tape transfer is a very precise process that must be monitored very closely. Many laser disc

production companies provide books, at no cost, that detail the many specific issues that must be addressed to produce a quality video disc.

Articel Change History:

21 Nov 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:4830



# Tech Info Library

## Inter•Poll 1.0.1: Compatible with Macintosh IIci

Revised: 3/1/93  
Security: Everyone

Inter•Poll 1.0.1: Compatible with Macintosh IIci

=====

This article last reviewed: 26 November 1989

TOPIC -----

Does the Macintosh IIci require an updated version of Inter•Poll?

DISCUSSION -----

There is no updated version of Inter•Poll. Inter•Poll 1.0.1 is the latest version, and it does work properly with the Macintosh IIci.

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Tech Info Library Article Number:4831





# Tech Info Library

## Macintosh IIci: Using Cache Memory Card (5/94)

Revised: 5/23/94  
Security: Everyone

Macintosh IIci: Using Cache Memory Card (5/94)

=====

Article Created: 26 November 1989  
Article Reviewed/Updated: 23 May 1994

TOPIC -----

What is the maximum cache memory I can install in the Macintosh IIci?

DISCUSSION -----

The size of the Apple cache card for the Macintosh IIci is 32K. There is no real limit on the amount of memory a cache card designer can put on a cache card. The designer could cache the entire RAM address space of the computer, but beyond 32K, the improvement in performance per each 1K of cache memory diminishes greatly.

Performance tests indicate that the extremely marginal increase in speed gained by using 64K of cache memory is not worth the doubled static RAM cost. Beyond 64K, the speed improvement becomes almost nil.

The Macintosh IIci Cache Card part numbers are:

M0326LL/A - Discontinued  
M0326LL/B

Article Change History:  
23 May 1994 - Added part numbers.

Support Information Services

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Tech Info Library Article Number:4832



# Tech Info Library

## Macintosh Portable: Number of Wait States

Revised: 7/27/92  
Security: Everyone

Macintosh Portable: Number of Wait States

=====

Article Created: 26 November 1989  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

How many wait states does the Macintosh Portable use?

DISCUSSION -----

The Macintosh Portable uses one wait state when accessing RAM and two wait states when accessing ROM.

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Tech Info Library Article Number:4833



# Tech Info Library

## SMB File Transfer: Extended Services & the NET SHARE Command

Revised: 12/13/89  
Security: Everyone

SMB File Transfer: Extended Services & the NET SHARE Command

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This article last reviewed: 2 November 1989

TOPIC -----

I have a small problem with the SMB File Transfer Utility using PC LAN 1.3 Extended Services.

Extended Services does not issue explicit NET SHARE commands when starting the LAN program. Instead, it does this within one of the .exe modules. When I try to connect to the SMB server, I get an "access denied" dialog (even though my user ID doesn't require a password). If I then issue a NET SHARE command on the PC to look at shared devices, I can see the devices that I defined as shared in Ext. Services Config. At this stage, I issue a NET SHARE command to reshare one of the devices, and I can access this without any problem. Why do I have to reshare a volume that my PC can already see?

DISCUSSION -----

We think you're making a fairly common mistake. The IBM manual describes a procedure for sharing filesets in such a way that the user may think it does the same function as NET SHARE. But this is not true! If you start Extended Services and then make the following menu choices: Administrator Services/PCLP/Adminsrv/Manage/filesets, you will be prompted to give information about the filesets that are to be shared. Doing a NET SHARE then shows a list of directories available to network users.

The procedure described above is unnecessary and can be eliminated. To work properly, the SMB file transfer software requires the NET SHARE command in the format: NET SHARE netName = DOSPathName

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Tech Info Library Article Number:4834



# Tech Info Library

## Canon Color Laser 500: Driver Needed

Revised: 12/13/89  
Security: Everyone

Canon Color Laser 500: Driver Needed

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This article last reviewed: 2 November 1989

TOPIC -----

I heard that someone is developing a driver for Canon's Color Laser 500, which functions as a 400-dpi, 256-color scanner, hardcopy output device, and copier. Do you know of anyone who has a driver for it. (The interface is GPIB.)

DISCUSSION -----

As of September, 1989, neither we or Canon knew of any Macintosh printer or scanner drivers for the Canon Color Laser 500.

The General Purpose Interface Bus (GPIB) interface is defined by ANSI/IEEE Standard 488-1978. It is often referred to as the IEEE-488 bus, which is also synonymous with HP-IB. The GPIB is an 8-bit, parallel, digital bus with full handshake and interface management capabilities. It has been widely used for interfacing programmable instruments with computers.

You have many GPIB interfaces available to choose from for the Macintosh, whether it be for a Macintosh Plus, Macintosh IICx, and so on. Refer to any of the Macintosh buyer's guides for a listing of your options.

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Tech Info Library Article Number:4836



# Tech Info Library

## Macintosh: Integrated Services Digital Networks (ISDN)

Revised: 7/23/92  
Security: Everyone

Macintosh: Integrated Services Digital Networks (ISDN)

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Article Created: 3 November 1989  
Article Last Reviewed: 10 August 1992  
Article Last Updated: 22 June 1992

TOPIC -----

Do you have information on Macintosh connectivity via Integrated Services Digital Networks (ISDN)?

DISCUSSION -----

Here is an introduction to ISDN and some interface possibilities.

ISDN

----

Integrated Services Digital Networks (ISDN) is a network architecture that uses digital technology to support integrated voice, data, and image services. It works through standard interfaces over standard twisted-pair telephone wire. The ISDN concept also includes some services not yet available, non-communications services, and services yet to be invented. Current work on ISDN standards is the responsibility of a number of study groups within the CCITT.

There are two types of ISDN channels: transparent and nontransparent. Transparent channels may carry whatever the user chooses--voice or high-speed data, for example--all independent of protocol. Non-transparent channels have been assigned specific protocols for specific functions on the network. The specified channels are:

B- (Bearer) A transparent digital channel of 64Kb, carrying circuit-mode or packet-mode user information (like voice, data, facsimile, and user-multiplexed information streams).

D- A non-transparent digital channel of 16 or 64Kb, used for signaling in association with one or more B-channels. This is also used for telemetry and

for low-speed packet-switched data.

H- (high-speed) Transparent digital channels, roughly equivalent to current T-carrier channels, for carrying circuit-mode or packet-mode user information--like multiplexed data, data and voice, or facsimile--at rates of millions of bits per second. Although H-channels have not been fully defined, an H0 channel operates at 384Kb; an H1 channel operates at 1536Kb (H11), or 1920Kb (H12). A H4 broadband version has been proposed that would operate at 135Mb.

Two other channels were once proposed, the A- and C-channels. These channels were intended to accommodate analog connections and related signaling. CCITT committees view such channels as obsolete. Nevertheless, analog-link interfaces are defined by CCITT, so during the duration that analog lines exist and continue to be used, they can interface to ISDN networks.

Although ISDNs are generally not yet a "tariff" service in most states (they are not priced by the California or equivalent Public Utilities Commissions), ISDN lines are readily available and acquired via contracts from the (in the US) Regional Bell Operating Company or AT&T. Most ISDN links are a combination of B-channels in association with a single D-channel for signaling. Signaling includes call establishment, call progress monitoring, call termination, and enhanced telephone features. The heaviest users may require one or more H-channels. Two standard service plans are expected to be offered:

- BRI: A Basic Rate Interface provides two transparent 64Kb B-channels and one nontransparent 16Kb D-channel per interface (2B+D). BRI provides two voice or data connections, or one voice and one data connection over the B-channels along with one or more low-speed, low-priority, packet-switched data or telemetry exchanges over the D-channel. The total data rate is 192Kb, with 144Kb available to users.
- PRI: A Primary Rate Interface provides 23 64Kb B-channels and one 64Kb D-channel (23B+D). This service is based on the U.S. T1 specification of 1.544Mb. The European PRI equivalent is based upon the CEPT specification of 2.048Mb, providing 30 B-channels and 1 D-channel (30B+D).

ISDN circuits are usable with Macintosh products. Generally speaking, there is FUNCTIONALLY no advantage to using ISDN over other links in today's analog or digital worlds (other than two circuit-switched devices per line, as opposed to one with analog). Therefore, when trying to decide whether ISN or ISDN solutions are best, consider what services you require.

AT&T and other manufacturers supply terminal adapters and CSU/DSUs that (with the proper hardware and software) let the Macintosh connect to ISDN circuits. Because terminal adapters and CSU/DSUs support certain switches, protocols, and interfaces, you need to ensure that the interfaces you plan to use are compatible with the ISDN circuit.

Among the various ways to interface a Macintosh to an ISDN network are:

- Using a Hayes-compatible terminal adapter (like Universal Data Systems TA100, Infotron Passport ISDN Terminal Adapters) with the software (like MacTerminal).
- Using the recently announced Solana H-server or other bridge (TeleBridge, R-Server, Ethernet bridges, and so on) with the appropriate CSU/DSU. These would provide a range of data rates, asynchronous or synchronous, 19.2 to 64Kb, or higher.

You can have terminal emulation with the first solution, whereas the second lets you create an AppleTalk or Ethernet Internet. Other solutions exist or will in the future.

#### DSU and CSU Units

-----

DSU stands for Data Service Unit, which is an interface to digital links. It is somewhat analogous to a "digital" modem. The DSUs translate the computer's unipolar serial data to baseband bipolar signals. The DSU uses a DCE interface to communicate with the terminal and then transmits the data in a special format over the link.

CSU (Channel Service Unit) is sometimes required at the end of some links. The trend today is to incorporate the CSU into the DSU.

For more information on manufacturers, check the Tech Info Library, under "Telebridge," "Universal Data," and "Infotron."

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

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Tech Info Library Article Number:4837



# Tech Info Library

## A/UX: Compatible Ethernet Card for Macintosh SE/30

Revised: 9/25/92  
Security: Everyone

A/UX: Compatible Ethernet Card for Macintosh SE/30

Article Created: 08 November 1989

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

Is there an A/UX-compatible Ethernet card for the Macintosh SE/30?

### DISCUSSION -----

Asante Technologies claims that the "MacCon SE 30/E" Ethernet card is compatible with the Apple EtherTalk NB Card at the register level. For information on how to contact them, search the Tech Info Library under "Asante"

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Tech Info Library Article Number:4840





# Tech Info Library

## GS/OS: How To See OS Info at Startup

Revised: 12/13/89  
Security: Everyone

GS/OS: How To See OS Info at Startup

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This article last reviewed: 3 November 1989

TOPIC -----

I have a lab of 16 Apple IIGS systems, running AppleShare 2.0.1 and the GS/OS 5.0 software with the Apple II setup from the GS/OS 5.0 disks. They are exhibiting some strange behavior when starting up over the network. When about half of the systems are started up, they get a list-type screen that says:

Welcome to the World of the Apple IIGS

and then a list of the network program segments that are loading. They get this instead of the Welcome to the Apple IIGS GRAPHIC SCREEN and the "thermometer".

DISCUSSION -----

The purpose of this screen is to provide operating system information to the operator. A list of installed GS/OS drivers is displayed as they are loaded.

This alternate screen is normal and is generated by pressing the space bar as GS/OS begins to load--whether starting up from a local disk or over the network. The screen will not appear unless someone presses the space bar sometime during the initial stages of booting the Apple IIGS.

If an Apple IIGS displays the alternate screen even when the space bar hasn't been pressed, there may be a hardware malfunction, and the unit should be serviced.

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Tech Info Library Article Number:4842



# Tech Info Library

## A/UX: Updated GKS/PHIGS Info

Revised: 9/14/92  
Security: Everyone

A/UX: Updated GKS/PHIGS Info

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Article Created: 6 February 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

This article gives sources for GKS (Graphic Kernel Systems) and PHIGS for A/UX.

### DISCUSSION -----

In the U.S., two companies have GKS and PHIGS: Prior Data Sciences and Advanced Technology Center.

Prior's GKS/C is a full implementation of the ANSI and ISO Graphical Kernel System (GKS) standard. It is a level 2c implementation, providing all graphic subroutine library output calls and request, sample, and event input. It is based on X11 as the screen/input handler with support for PostScript and other output devices. Prior has a GKS/PHIGS solution for A/UX.

Advanced Technology Center has GRAFPAK-GKS. GRAFPAK-GKS is a graphics subroutine library that conforms to the ANSI/ISO Graphical Kernel System (GKS). It provides comprehensive functions for developing graphics applications and includes the entire GKS functionality and extensions to the standard. Key features include levels 2b/2c implementation, distributed architecture, machine and device independence, Fortran and C language bindings (future support for ADA and Pascal), and extension to the Standard, Custom extension and porting is available.

In France, G5G has both GKS and PHIGS. SLX offers S GKS, an implementation

of the GKS standard for A/UX under X Window System.

For more details, search the Tech Info Library under "Prior Data," "Advanced Technology," "G5G," or "SLX."

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Tech Info Library Article Number:4843



# Tech Info Library

## TSSnet 1.3.2: Incompatible with Macintosh IICI

Revised: 12/15/89  
Security: Everyone

TSSnet 1.3.2: Incompatible with Macintosh IICI

=====

This article last reviewed: 4 November 1989

TOPIC -----

I am running TokenTalk, EtherTalk, TSSnet, QuickMail 2.01 Server, and Apple Internet Router 2.0 all on the same machine (a Macintosh IICI). Despite my best efforts, TSSnet doesn't seem able to establish a communication channel with the VAX. Instead, it can see only the nearest DECnet router. However, it cannot speak to it (by terminal emulation, mail, file transfer, or otherwise).

DISCUSSION -----

We have isolated the problem. Do not run Alisa System's TSSnet 1.3.2 (or earlier) on the Macintosh IICI. Apparently, there seems to be some unknown problems in communication that can be duplicated in our office on our own VAX. We have successfully run TSSnet on a Macintosh II, Macintosh IIX, Macintosh IICX, and Macintosh II with a DayStar 33MHz accelerator card.

However, TSSnet on the Macintosh IICI does not operate, and will, in time, completely freeze the machine. As of October, 1989, Alisa Systems (and, consequently, Thursby Software, the authors of TSSnet) have been alerted, although a timetable for a fix is uncertain.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4844



# Tech Info Library

## 32-Bit QuickDraw: Where To Get Documentation (11/94)

Revised: 11/7/94  
Security: Everyone

32-Bit QuickDraw: Where To Get Documentation (11/94)

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

How do I get programmer's documentation for 32-Bit QuickDraw?

DISCUSSION -----

The 32-Bit QuickDraw information you are looking for is available through APDA. The part number is M0572LL/A. For APDA contact information, search the Tech Info Library under "APDA."

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1989-94 Apple Computer, Inc.

Tech Info Library Article Number:4847



# Tech Info Library

## AppleFax Modem 1.2: Upgrade and Compatibility Information 5/96

Revised: 5/30/96  
Security: Everyone

AppleFax Modem 1.2: Upgrade and Compatibility Information 5/96

=====

Article Created: 1 November 1989  
Article Reviewed/Updated: 30 May 1996

TOPIC -----

This article describes the AppleFax Modem Version 1.2 upgrade and how to get it. It covers the following topics:

- Upgrades: what you get
- How to get the upgrade
- Compatibility
- Tested products

DISCUSSION -----

Upgrades: What You Get

=====

The AppleFax Modem Version 1.2 upgrade consists of:

- 1) AppleFax software version 1.2 diskette, including:
  - AppleFax resource
  - AppleFax application
  - New "read me" file

Note: This software is incompatible with System 7 and higher and should not be used if you are using System 7 or higher.

- 2) AppleFax firmware version 1.2, a single ROM chip

All AppleFax Modems shipped after February 13, 1989 contain Version 1.2 of firmware ROMs and Version 1.2 of software.

## How to Get the Upgrade

=====

A no-charge upgrade for owners of previous AppleFax versions is available through the following channels:

### Firmware ROMs

-----

Version 1.2 of the firmware ROM (Apple part number 342-0387) has been available through AppleFax dealers as a no-charge service upgrade since November, 1988. AppleFax owners who have upgraded the firmware in their modems since November 1988 do not need to bring their modems in again.

This firmware ROM should be installed by an authorized Apple Servicing Dealer. We recommend against owners installing the ROM themselves.

### AppleFax Software

-----

Version 1.2 of AppleFax software is available to all authorized Apple Servicing Dealers. Dealers are free to distribute this software to their customers. The software is available on AppleLink and on other major, electronic-information services. Here is the path to find the software on AppleLink:

### Support

- Problem Resolution

- Tools & Utilities

- Apple Software Archives

- Peripheral Software

After obtaining the new software, a user should copy the new AppleFax resource into the System folder (replacing the previous version) and then copy the new AppleFax application program into the folder containing the previous version of the application (replacing it also). In addition, the "Read Me" file has been updated with new information on application and system compatibility.

### Compatibility

=====

The AppleFax Modem conforms to published CCITT Group 3 facsimile standards. In addition to adhering to these specifications, Apple has tested over 40 Group 3 facsimile machines from the major manufacturers of these devices over varying phone-line conditions.

While no significant problems remained during testing, Apple does not guarantee that AppleFax will always work with each fax machine due to phone line and equipment variations.

### Tested Products

=====

The following products have been tested with the AppleFax Modem:

- ALCATEL 3533
- CANON 220
- CANON 230
- CANON 320E
- CANON 510
- CANON FX 84
- DEX 370
- DEX 4200
- FOTOREX FAX 2000
- HARRIS/3M 2110
- HARRIS/3M 2127
- HARRIS/3M EMT 9140
- HARRIS/3M EMT 9145
- HARRIS/3M 9165
- HITACHI HIFAX 46
- HITACHI HF490
- INTERSCAN 7000
- KONIKA FAX 300
- MURATA F30
- MURATA F50
- MURATA IMAGE MATE
- NEC BIT 3
- NEC SYSTEM PF-1
- OKIFAX OF-10
- PANAFAX PX 100
- PANAFAX PX100A
- PANAFAX 400 AD
- PANAFAX UF 640
- PITNEY BOWES 8000
- PITNEY BOWES 8100
- PITNEY BOWES 8200
- RICOH RAPICOM 60
- RICOH RAPICOM 120
- RICOH RAPICOM 205
- RICOH RAPICOM 230
- RICOH RAPICOM 530
- RICOH RAPICOM 3300
- RICOH RAPICOM 5000
- SHARP FO-200
- SHARP FO-700
- SHARP FO-3100
- XEROX TELECOPIER 295

Article Change History:

30 May 1996 - Corrected minor typographical error.

28 Jun 1993 - Included AppleLink path. Noted software incompatibility with System 7 and higher.

Copyright 1989-96 Apple Computer, Inc.

Tech Info Library Article Number:4853





# Tech Info Library

## Macintosh: Calling Resources, MultiFinder, and Desktop Calls

Revised: 12/13/89  
Security: Everyone

Macintosh: Calling Resources, MultiFinder, and Desktop Calls

=====

This article last reviewed: 9 November 1989

TOPIC -----

I am programming in the Trader Workstation application. For my current project, I need to know if there is there a limit on the number of resources a program can call?

DISCUSSION -----

The theoretical limit on the number of resources an application can open at one time greatly exceeds the practical limits of a program. If you are not using "owned" resources, such as resources for desk accessories, you can have up to 32,767 of a single resource type. If each of those resources held 1Kb of data, you would be accessing on the order of 30MB. In other words, the limit on the number of resources you can have open at one time is not a real limit in the way that the limit on the number of open files is. If you are truly looking at having thousands of resources open at one time, you need to take a hard look at the way you are doing things and develop an alternative method for accessing data.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4856



# Tech Info Library

## System 6.0.2: Sound Manager Versus Sound Driver

Revised: 12/13/89  
Security: Everyone

System 6.0.2: Sound Manager Versus Sound Driver

=====

This article last reviewed: 9 November 1989

TOPIC -----

I need to find out about the Wave Table Synthesizer under the new Sound Manager. The Apple technical document states that the "synth" resource for the Wave Table Synthesizer in System 6.0.2 doesn't work with the Macintosh SE or Macintosh Plus. This is a big problem; I need to know when it will be fixed or a workaround that will be upwardly compatible--the beep generator just doesn't cut it, and I need four voices.

DISCUSSION -----

The fact that the Wave Table Synthesizer does not function on a Macintosh Plus or a Macintosh SE is a known limitation of the Sound Manager. This means that if you want a four-tone sound, you have to use the Sound Driver as opposed to the Sound Manager. Be aware that you cannot use both the Sound Driver and the Sound Manager at the same time, and, because SysBeep is owned by the Sound Manager, you cannot receive SysBeeps while using the Sound Driver.

A further note of caution: if you are going to use the Sound Driver this way, be sure to use System 6.0.4 or later. It solves a problem directly related to SysBeeps to prevent crashes caused by SysBeeps when you are using the Sound Driver.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4858



# Tech Info Library

## Empower: How to Decrypt Files

Revised: 12/13/89  
Security: Everyone

Empower: How to Decrypt Files

=====

This article last reviewed: 9 November 1989

TOPIC -----

I have been having problems with various HyperCard stacks giving me an "Old format" dialog while using Empower security software from Magna. I'd been having unusual system problems, so I trashed my System Folder, reinstalled new system software and reinstalled drivers and INITs. I did NOT reinstall the Empower INIT. Everything worked as though I'd never had Empower until I tried getting into those HyperCard stacks.

DISCUSSION -----

Using file encryption programs requires users to be careful: getting locked out is a common mistake. Denying access privileges to a folder causes Empower to encrypt files within it, and without Empower, they cannot be decrypted. This is what happened to the HyperCard files. If you compare a new stack with a problem stack under FEdit, you'll see the difference. If you check a few other files you had protected (including some non-HyperCard files), you'll find that they, too, still encrypted.

The fix is to restart with the Empower INIT installed, remove any volume protection (and all privileges) to decrypt any encrypted files, then remove Empower, and restart. After all security has been removed and files are no longer encrypted, all is normal.

Empower provides good security using a familiar interface, but can cause problems with careless use.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4859



# Tech Info Library

## Advanced Technology Center

Revised: 7/2/93  
Security: Everyone

Advanced Technology Center

=====

Article Created: 12/13/89  
Article Reviewed: 07/02/93  
Article Updated: 11/19/92

Advanced Technology Center

-----

22982 Mill Creek Dr.  
Laguna Hills, CA 92653

800-999-5711

714-583-9119

714-583-9213 Fax

Company Profile:  
Software, specializing in UNIX products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4862



# Tech Info Library

## Prior Data Sciences

Revised: 7/15/93  
Security: Everyone

Prior Data Sciences

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 15 July 1993

Prior Data Sciences

-----

240 Michael Cowpland Dr.  
Kanata, Ontario K2M 1P6  
CANADA

800-267-2626 (Customer Service)

613-591-7235

613-591-0343 Fax

Telex: 053-3356

Company Profile:  
Software, specializing in A/UX and UNIX products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4863



# Tech Info Library

## DataTimes Corporation

Revised: 7/7/93  
Security: Everyone

DataTimes Corporation

=====

Article Created: 12/13/89  
Article Reviewed: 07/07/93  
Article Updated:

DataTimes Corporation

-----

14000 Quail Springs Parkway  
Suite 450  
Oklahoma City, OK 73134

800-642-2525 (Customer Support)

405-751-6400

405-755-8028 Fax

Company Profile:

DataTimes Corporation, datacomm, specializing in access to data services.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4866



# Tech Info Library

## DIALOG Information Services, Inc.

Revised: 7/8/93  
Security: Everyone

DIALOG Information Services, Inc.

=====

Article Created: 12/13/89  
Article Reviewed: 07/08/93  
Article Updated:

DIALOG Information Services, Inc.

-----

3460 Hillview Ave.  
Palo Alto, CA 94304

800-334-2564

415-858-2700  
415-858-3785 (Cust. Service)

415-858-7069 Fax

Company Profile:  
Datacomm, specializing in on-line information.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4867



# Tech Info Library

## LEGI-SLATE, Inc.

Revised: 7/12/93  
Security: Everyone

LEGI-SLATE, Inc.

=====  
Article Created: 12/13/89  
Article Reviewed: 07/12/93  
Article Updated: 11/19/92

LEGI-SLATE, Inc.  
-----

777 N. Capitol St.  
Suite 900  
Washington, DC 20002

202-898-2300

202-842-4748 Fax

Company Profile:  
Software, specializing in data communications with access to data services.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4869





# Tech Info Library

## NewsNet, Inc.

Revised: 7/14/93  
Security: Everyone

NewsNet, Inc.

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 14 July 1993

NewsNet, Inc.

-----

945 Haverford Road  
Bryn Mawr, PA 19010

800-345-1301

215-527-8030

215-527-0338 Fax

Company Profile:  
Datacomm, specializing in access to data services.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4870



# Tech Info Library

## IDEAssociates, Inc

Revised: 4/4/97  
Security: Everyone

IDEAssociates, Inc

=====  
Article Created: 12/13/89  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

IDEAssociates, Inc.  
-----

29 Dunham Rd.  
Billerica, MA 01821

508-663-6878

508-663-8851 Fax

Company Profile:  
Hardware and software, specializing in connectivity solutions for midrange and mainframe computers.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4873



# Tech Info Library

## Johnathon Freeman Technologies

Revised: 4/4/97  
Security: Everyone

Johnathon Freeman Technologies

=====

Article Created: 10/13/89  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Johnathon Freeman Technologies

-----

Hunter's Point  
Navel Shipyard Bldg. 110  
San Francisco, CA 94135

Mailing address:

P.O. Box 880114  
San Francisco, CA 94188-0114

415-822-8451

Fax: 415-822-8611

Company Profile:

Hardware and software, specializing in printer interfaces for the Macintosh and hardware for AppleTalk.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4874



# Tech Info Library

## Pacific Rim Connections

Revised: 7/15/93  
Security: Everyone

Pacific Rim Connections

=====

Article Created: 13 December 1992  
Article Reviewed/Updated: 15 July 1993

Pacific Rim Connections

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1838 El Camino Real  
Suite 109  
Burlingame, CA 94010

800-745-0911

415-697-0911

415-697-9439 Fax

Company Profile:  
Software, specializing in Asian language applications.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4877



# Tech Info Library

## Palomar Software

Revised: 4/4/97  
Security: Everyone

Palomar Software

=====

Article Created: 12 December 1989  
Article Reviewed/Updated: 4 April 1997

Palomar Software

-----

2964 Oceanside Blvd.  
Suite D  
Oceanside, CA 92054

619-721-7000

619-721-4758 Fax

Company Profile:  
Software, specializing in a Chooser-selectable driver that permits background plotting under MultiFinder.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4878



# Tech Info Library

## The AND Group Inc.

Revised: 4/4/97  
Security: Everyone

The AND Group Inc.

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

The AND Group Inc.

-----

940 6th Ave. S.W.  
11th Floor  
Calgary, Alberta T2P 3T1  
CANADA

403-232-6211

Fax: 403-232-6425

MacNet: ANDgroup

The AND Group Inc., software, specializing in data encryption and access control and CD-ROM

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4881



# Tech Info Library

## Visual Business Systems

Revised: 4/4/97  
Security: Everyone

Visual Business Systems

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

Visual Business Systems

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380 Interstate North Pkwy.  
Suite 190  
Atlanta, GA 30339

404-956-0325  
404-953-1613 (Bulletin Board)

Fax: 404-988-0009

Company Profile:  
Software, specializing in business applications.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4882



# Tech Info Library

## Messenger Software, Inc.

Revised: 4/4/97  
Security: Everyone

Messenger Software, Inc.

=====

Article Created: 18 February 1991  
Article Last Reviewed/Updated: 4 April 1997

Messenger Software, Inc.

-----

3925 Lake Run Blvd.  
Stow, OH 44224

216-688-0696

### Company Profile:

Messenger Software, Inc., software, specializing in programs that transfer files between Macintosh, DOS computers, and CP/M computers.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4897





# Tech Info Library

## MacTech (formerly MacTutor)

Revised: 4/4/97  
Security: Everyone

MacTech (formerly MacTutor)

=====

Article Created: 12/13/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

MacTech  
-----

P.O. Box 250055  
Los Angeles, CA 90025-250055

310-575-4343

310-575-0925 Fax

Company Profile:  
Magazine, published by Xplain Corp.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4903



# Tech Info Library

## MacUser

Revised: 7/13/93  
Security: Everyone

MacUser

=====

Article Created: 12/13/89  
Article Reviewed: 07/13/93  
Article Updated:

Mac User  
-----

Ziff-Davis Publishing Co.  
One Park Ave.  
New York, NY 10016

Editorial Offices:  
950 Tower Lane  
18th Floor  
Foster City, CA 94404

415-378-5600

Fax: 415-378-5675

Dennis Publishing Ltd. (European Distributor)  
-----

14 Rathbone Place  
London, W1P 1DE  
ENGLAND

33-01-631-1433

Company Profile:  
Magazine, published by Ziff-Davis Publishing Company in the U.S. and Dennis Publishing Ltd. in the U.K. for Europe.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4904



# Tech Info Library

## MacWEEK

Revised: 4/4/97  
Security: Everyone

MacWEEK

=====

Article Created: 12/13/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

MacWEEK

-----

Ziff-Davis Publishing Company  
301 Howard St., 15th Floor  
San Francisco, CA 94105

800-926-4248

415-243-3500

415-243-3650 Fax

Company Profile:  
Magazine, published by Ziff-Davis Publishing Company.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4905



# Tech Info Library

## MacWorld

Revised: 4/4/97  
Security: Everyone

MacWorld

=====

Article Created: 12/13/89  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

MacWorld

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IDG MacWorld Communications, Inc.  
501 Second St.  
5th Floor  
San Francisco, CA 94107

415-243-0505

Fax: 415-442-0766

Company Profile:

Merged with International Data Group (IDG): Magazine, published by IDG  
MacWorld Communications, Inc.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4906



# Tech Info Library

## Mind Craft Publishing

Revised: 4/4/97  
Security: Everyone

Mind Craft Publishing

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

Mind Craft Publishing

-----

P.O. Box 256  
Lincoln, MA 01773

617-259-0448

617-259-8482 Fax

Company Profile:  
Publisher, specializing in magazines for Macintosh users.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4907



# Tech Info Library

## American Printing House for the Blind

Revised: 7/2/93  
Security: Everyone

American Printing House for the Blind

=====

Article Created: 12/13/89  
Article Reviewed: 07/02/93  
Article Updated: 07/02/93

American Printing House for the Blind

-----

1839 Frankfort Ave.  
P.O. Box 6085  
Louisville, KY 40206-0085

502-895-2405

502-895-1509 Fax

Company Profile:  
Specializing in publishing Braille, large print, and talking books on computer technology. They also publish educational aids.

Article Change History: 07/02/93 Address information added

Copyright 1989-93 , Apple Computer, Inc.

Tech Info Library Article Number:4911



# Tech Info Library

## DECUS (Digital Equipment Computer Users Society)

Revised: 7/7/93  
Security: Everyone

DECUS (Digital Equipment Computer Users Society)

=====

Article Created: 12/13/89  
Article Reviewed: 07/07/93  
Article Updated: 07/07/93

DECUS (Digital Equipment Computer Users Society)

-----

333 South St.  
Shrews Berry, MA 01545

508-841-3389

508-841-3357 Fax

### Company Profile:

DECUS (Digital Equipment Computer Users Society), software,  
specializing in networking and connectivity, including a public-domain  
Kermit utility, seminars, library

Article Change History: 07/07/93 New Product Information Added, Address  
Information Added

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4913



# Tech Info Library

## Augmentx (formerly Interpreter, Inc.)

Revised: 7/12/93  
Security: Everyone

Augmentx (formerly Interpreter, Inc.)

=====

Article Created: 12/13/89  
Article Reviewed: 07/09/93  
Article Updated: 07/09/93

Augmentx  
-----

9351 Grant St.  
2nd Floor  
Thorton, CO 80229

303-431-8991

800-232-4687

Fax: 303-451-1908

Company Profile:  
Hardware, specializing in portable backup utilities, i.e. portable harddrives, tapedrives, etc., and networking.

Article Change History: 07/09/93 Name changed, phone number changed, address changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4914





# Tech Info Library

## Kensington Microware, Ltd.

Revised: 4/4/97  
Security: Everyone

Kensington Microware, Ltd.

=====

Article Created: 02/18/91  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Kensington Microware, Ltd.

-----

2855 Campus Dr.  
San Mateo, CA 94403

800-535-4242

415-572-2700

415-572-9675 Fax

Company Profile:

Hardware, specializing in accessories: screen filters, fans, mouse pads, and so on.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4915



# Tech Info Library

## LBMS (acquired Meta Systems, Ltd.)

Revised: 7/14/93  
Security: Everyone

LBMS (acquired Meta Systems, Ltd.)

=====

Article Created: 12/13/89  
Article Reviewed: 07/12/93  
Article Updated: 07/12/93

LBMS Corp.  
-----

3025 Boardwalk Dr.  
Suite 140  
Ann Arbor, MI 48108

800-395-2856

313-663-6027

313-663-6119 Fax

Company Profile:  
Software, specializing in A/UX C.A.S.E. (Computer-Aided Software Engineering)  
tools.

Article Change History: 07/12/93 Telex number removed.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4916



# Tech Info Library

## **Rodime Systems, Inc. (a division of Profit Technology Group)**

Revised: 7/15/93  
Security: Everyone

Rodime Systems, Inc. (a division of Profit Technology Group)

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 15 July 1993

Rodime Systems, Inc.

-----

301 Yamato Rd.  
Suite 1200  
Bocaraton, FL 33431

407-997-5867

407-997-5813 Fax

### Company Profile:

Hardware, specializing in disk drives (int. and ext.), cartridges, and finished products for the Macintosh.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4919



# Tech Info Library

## SAS Institute Inc.

Revised: 4/4/97  
Security: Everyone

SAS Institute Inc.

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

SAS Institute Inc.

-----

SAS Campus Dr.  
Cary, NC 27513

919-677-8000  
919-677-8008 (Tech. Support)

Fax: 919-677-8123

Company Profile:  
Software, specializing in a statistical analysis package for the Macintosh.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4920



# Tech Info Library

## Ungermann-Bass

Revised: 4/4/97  
Security: Everyone

Ungermann-Bass

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

Ungermann-Bass

-----

3990 Freedom Circle  
Santa Clara, CA 95054-1263

408-496-0111

800-873-6381 (U-B Direct Sales only)

Fax: 408-970-7300

Company Profile:  
Hardware and software, specializing in networking, i.e. servers and  
information transfers.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4921



# Tech Info Library

## Universal Video

Revised: 7/20/93  
Security: Everyone

Universal Video

=====

Article created: 13 December 1989  
Article Reviewed/Updated: 20 July 1993

Universal Video

-----

195 Bonhomme St.  
P.O. Box 488  
Hackensack, NJ 07602

201-487-6340

800-631-0867

Fax: 201-487-1930

Local Office:  
1431 Kansas Ave.  
Modesta, CA 95351

800-341-1441

Fax: 209-529-7355

Company Profile:  
Hardware, specializing in video equipment.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4922



# Tech Info Library

## The Vermont Software Co., Inc.

Revised: 4/4/97  
Security: Everyone

The Vermont Software Co., Inc.

=====

Article Created: 18 February 1991  
Article Reviewed/Updated: 4 April 1997

The Vermont Software Co., Inc.

-----

P.O. Box 233  
Groton, VT 05046

802-584-4020

Fax: 802-584-3971

Company Profile:  
Software, Macintosh emulating and programming

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4923



# Tech Info Library

## Adaptec (Formerly Adaptec, Inc.)

Revised: 4/4/97  
Security: Everyone

Adaptec (Formerly Adaptec, Inc.)

=====

Article Created: 12/13/89  
Article Reviewed: 07/02/93  
Article Updated: 04/04/97

Adaptec  
-----

691 S. Milpitas Blvd.  
Milpitas, CA 95035

408-945-8600  
408-945-2550 (Tech. Support)

408-262-2533 (Main) Fax  
408-945-0711 (Building 3) Fax

Company Profile:  
Networking, specializing in interfaces.

Article Change History: 07/02/93 Name changed

Copyright 198-97, Apple Computer, Inc.

Tech Info Library Article Number:4924





# Tech Info Library

## Allen-Bradley Company, Inc.

Revised: 7/2/93  
Security: Everyone

Allen-Bradley Company, Inc.

=====

Article Created: 12/13/89  
Article Reviewed: 07/02/93  
Article Updated: 07/02/93

Allen-Bradley Company

-----

555 Briarwood Circle  
Ann Arbor, MI 48108

313-998-2000

313-668-2922 Fax

747 Alpha Dr.  
Highland Heights, OH 44143

Fax: 216-646-3075

Company Profile:  
Hardware, specializing in networking products for implementing Ethernet over  
broadband cable.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4930



# Tech Info Library

## 3Com Corp.

Revised: 4/4/97  
Security: Everyone

3Com Corp.

=====  
Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997  
3Com Corp.  
-----

5400 Bay Front Plaza  
Santa Clara, CA 95052-8145

408-764-5000

800-NET-3COM (638-3266)

Fax: 408-764-5001

Company Profile:  
Hardware, specializing in a wide range of data networking systems and  
multivendor connectivity that spans organizations worldwide.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4931



# Tech Info Library

## Emulex Corporation

Revised: 4/4/97  
Security: Everyone

Emulex Corporation

=====  
Article Created: 12/13/89  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97  
Emulex Corporation  
-----

3535 Harbor Blvd.  
P.O. Box 6725  
Costa Mesa, CA 92628

800-854-7112

714-662-5600

714-241-0792 Fax

Company Profile:  
Networking, specializing in disk storage, disk/tape

Article Change History: 07/08/93 Address Information Corrected

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4932



# Tech Info Library

## Imagine That, Inc.

Revised: 4/4/97  
Security: Everyone

Imagine That, Inc.

=====

Article Created: 12/13/89  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

Imagine That, Inc.

-----

6830 Via Del Oro  
Suite 230  
San Jose, CA 95119

408-365-0305

408-629-1251 Fax

### Company Profile:

Software, specializing in simulation programs that support continuous and discrete behavioral simulations.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4934



# Tech Info Library

## Nutmeg Systems

Revised: 4/4/97  
Security: Everyone

Nutmeg Systems

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Article Created: 13 December 1989  
Article Reviewed/Updated: 4 April 1997

Nutmeg Systems

-----

25 South Ave.  
New Canaan, CT 06840

203-966-3226

800-777-8439

Fax: 203-966-7972

Company Profile:  
Hardware, specializing in video products, monitors, and boards.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4936



# Tech Info Library

## Legent Corporation

Revised: 8/1/95  
Security: Everyone

Legent Corporation

=====

Article Created: 13 December 1989  
Article Reviewed/Updated: 1 August 1995

Legent Corporation  
-----

575 Herndon Parkway  
Herndon, Virginia 22070

703-708-3000 -- Main corporate number

412-494-2500 -- Pittsburg, Pennsylvania Customer Support Offices

800-276-5468 -- Technical Support

Company Profile:  
Software, specializing in XCOM 6.2, which sits on top of MacAPPC and permits  
file transfers to an IBM mainframe with a HyperCard front end.

Article Change History:  
01 Aug 1995 - Updated address and phone information.

Support Information Services

Copyright 1989-95, Apple Computer, Inc.

Tech Info Library Article Number:4937



# Tech Info Library

## Texas Instruments

Revised: 7/20/93  
Security: Everyone

Texas Instruments

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Article Created: 13 December 1989  
Article Reviewed/Updated: 20 July 1993

Texas Instruments

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P.O. Box 202230  
Austin, TX 78720-2230

800-527-3500 (Marketing)

Fax: 512-345-9509

AppleLink: TISALES

P.O. Box 149149  
Austin, TX 78714-9149

800-336-5236 (Main)

Company Profile:  
Hardware, offering Macintosh compatible laser printers among many other IBM PC  
and UNIX compatible products.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4938



# Tech Info Library

## EtherTalk and PacerLink: How They Can Delay Screen Echo

Revised: 12/13/89  
Security: Everyone

EtherTalk and PacerLink: How They Can Delay Screen Echo

=====

This article last reviewed: 15 November 1989

TOPIC -----

When using the following elements, I notice delays in screen echo:

- Apple EtherTalk card in a Macintosh II (2MB RAM)
- PacerLink (on Macintosh)
- Pacer (running on a DEC/VMS system)

For example, when typing data, I am forced to wait for the screen to show what was typed. The problem seems to be consistent, regardless of the number of users on the network or VAX. Likewise, the problem is consistent across all 23 Macintosh IIs.

However, the problem does NOT exist when using the Kinetics FastPath. The screen echo is consistent with the interactive mode the user expects. What's the problem?

DISCUSSION -----

We suspect that you are running into packet routing problems being caused by a remote AppleTalk bridge somewhere on the Ethernet. If there is a slower-speed link somewhere in the Ethernet (perhaps a 9600-baud link between remote sites), and, if that remote site has an AppleTalk bridge anywhere on it, you can get the situation you describe.

The problem arises because AppleTalk is treating the Ethernet as a single AppleTalk network, even though the Ethernet may consist of many networks in a complex setup. Because of this, the Macintoshes directly connected to the Ethernet use whichever bridge on this network was the last one to send an RTMP (Routing Table Maintenance Protocol) packet. Even though the VAX running Pacer software and the Macintoshes are on the same physical cable, a Macintosh cannot send its keystroke packets via that remote bridge, because it has no way of deciding which bridge is "closest" in terms of actual transmission time.



This does not happen when you put a Kinetics FastPath between the Macintoshes and the Ethernet, because the only bridge the Macintoshes get RTMP packets from is the FastPath, and it knows enough about the Ethernet to properly route the keystroke packets directly to the VAX.

One possible solution is to have the Ethernet bridges on the local side of the network refuse to transmit AppleTalk packets. If this is done, then the VAX running the Pacer Software once again begins acting as its own bridge for the Macintoshes directly connected to the Ethernet. The two packet types that you want the bridges to exclude are RTMP (Ethernet type 809b) and AARP (Ethernet type 80f3). You need to consult the documentation for your bridges for instructions on how the bridge excludes packet types from retransmission.

Be aware that stopping these packets from being transmitted over a bridge keeps you from using AppleTalk over the remote link.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4939



# Tech Info Library

## 4th Dimension 2.0.8: Needed for Macintosh IIci Compat. 12/89

Revised: 3/15/93  
Security: Everyone

4th Dimension 2.0.8: Needed for Macintosh IIci Compat. 12/89

=====

Article Created: 22 December 1989

TOPIC -----

This article discusses the incompatibility of early versions of 4th Dimension with the Macintosh IIci.

DISCUSSION -----

The international releases of 4th Dimension version 1.0.8 and earlier DO NOT run on a Macintosh IIci. The incompatibility stems from the copy protection method used in 4th Dimension's international releases.

4th Dimension v2.0.8 is the Macintosh IIci-compatible international release.

(NOTE: The United States releases of 4th Dimension all work properly on a Macintosh IIci.)

For information on how to upgrade to a new international Macintosh IIci-compatible version, contact the distributor of 4th Dimension in your country.

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Tech Info Library Article Number:4940



# Tech Info Library

## FastPath 4: Problem and Fix

Revised: 12/22/89  
Security: Everyone

FastPath 4: Problem and Fix

=====

This article last reviewed: 12 December 1989

TOPIC -----

This article discusses a potential problem with Kinetics FastPath 4.

DISCUSSION -----

Here is a problem that may occur with Kinetics FastPath 4:

Symptoms:

- Affected FastPaths may reset at irregular intervals, resulting in a loss of network configuration and zones (i.e. the indicator lights on the front panel cycle continuously).
- On power up, the unit may not pass self-verification (i.e. all front panel indicator lights are on continuously).

Problem Description/Fix:

The DC power cable harness that connects the power supply to the main PRINTED CIRCUIT BOARD assembly may become loose, causing interference with the voltage regulation circuitry. To insure a consistent supply of voltage to the PRINTED CIRCUIT BOARD, the cable should be soldered to the power supply and PRINTED CIRCUIT BOARD.

All units manufactured since 1 October 1989 have this fix incorporated. The ECN (Engineering Change Notice) level has changed to #2446, Rev. N, which is stamped on the outside of the shipping box.

(NOTE: "Rev. J" still appears on the UNDERSIDE of the corrected FastPath unit.)

Solutions for units in the field:

## ..TIL04941-FastPath\_4-Problem\_and\_Fix\_(TA40721).pdf

Warranty rework is provided for FastPath 4s displaying the above symptoms.  
Please contact Novell Customer Service for help.

For more information, search under: "Novell"

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Tech Info Library Article Number:4941



# Tech Info Library

## Macintosh Portable: Can Use Square Wave Power Source

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Can Use Square Wave Power Source

=====

Article Created: 12 December 1989  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

I want to use a Macintosh Portable on a boat. The boat generates a power source with a square wave as opposed to a sine wave.

Is it okay to use the Macintosh Portable on a square wave power supply?

DISCUSSION -----

The Macintosh Portable power adapter can be used in most voltage ranges and can accept a square wave from a generator. The power adapter has the following characteristics:

Input voltage: 85 to 270 VAC; 120/240 nominal  
Frequency: 48 to 62 Hz; 50/60 nominal  
Output current: 0.005 to 1.5 Amp maximum  
Output voltage: 7.5 +/- 0.1 VDC  
Operating temperature: 0 to 40 degrees centigrade (external temperature  
Weight: Less than one pound (varies depending on the unit)

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4942



# Tech Info Library

## X Window: Colors (Bit Planes) Allowed

Revised: 2/11/93  
Security: Everyone

X Window: Colors (Bit Planes) Allowed

=====

Article Created: 12 December 1989

### Article Change History

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01/15/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How many colors (bit planes) does the X Window specification allow? How many bit planes are supported by the MacX product?

### DISCUSSION -----

The X Window version X11 specification does not specify a maximum number of bit planes supported. The specification does say: "The number of bits in a pixel, and how a value translates into color, depends on the hardware."

The maximum number of bit planes that we have seen supported is 24. The MacX product supports 1- or 8-bit planes. The same applies to Apple's current X11 product under A/UX.

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Tech Info Library Article Number:4943



# Tech Info Library

## TOPS: Using with IBM's MicroChannel

Revised: 12/22/89  
Security: Everyone

TOPS: Using with IBM's MicroChannel

=====

This article last reviewed: 12 December 1989

TOPIC -----

I would like to connect my Macintosh systems and IBM PS/2 series machines to LocalTalk (with TOPS).

The trouble is that the PS/2 Model 70 uses the MicroChannel bus and I can't find any cards for it. What should I do?

DISCUSSION -----

Daystar Digital sells a MicroChannel LocalTalk card that works with TOPS.

For more information, search under: "Daystar" and "TOPS"

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Tech Info Library Article Number:4944



# Tech Info Library

## GS/OS 5.0: No Finder Printing Fix

Revised: 12/22/89  
Security: Everyone

GS/OS 5.0: "No Finder" Printing Fix

=====

This article last reviewed: 12 December 1989

TOPIC -----

This article discusses a workaround for the problem of a GS/OS 5.0 startup disk without Finder, and its inability to retain default printer information.

DISCUSSION -----

The GS/OS 5.0 AppleShare startup disk without Finder is not capable of retaining default printer information. The startup printer selection made in the Apple II menu of AppleShare Administration is not used. Thus, if the disk is created as described in the manuals, the user must run the Chooser each time they restart the system to set a default printer.

Here is a workaround for this problem:

- 1) Copy the entire Chooser folder from the Apple IIGS workstation disk (or from the server) onto the startup disk. The file IWEM is not required if you are not printing to a LaserWriter.
- 2) Copy the file called ATINIT from the server onto the startup disk.
- 3) Set the Control Panel to either Scan or Startup Slot 5, then restart using this new disk.
- 4) Go into BASIC on the server, launch Chooser.II, and set the default printer settings. That printer will remain "selected" until someone runs Chooser.II to change it.
- 5) If you want the Chooser to be accessed from Aristotle, create an application that accesses the floppy disk copy of the Chooser, rather than the server-based version. The floppy disks must have a common volume name as well as pathname if this method is to be used.



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Tech Info Library Article Number:4945



# Tech Info Library

## System 6: Sound Manager Issues

Revised: 12/22/89  
Security: Everyone

System 6: Sound Manager Issues

=====

This article last reviewed: 12 December 1989

TOPIC -----

The Macintosh II can handle "snd" and "snth" resources. System 6 notes suggest that the Macintosh Plus and Macintosh SE can do this too. Apart from the Macintosh II being stereo, what are the differences in sound play capabilities between the Macintosh SE and Macintosh II?

DISCUSSION -----

The question might be better stated: "What machines can use the Sound Manager?", since "snd" and "snth" resources are used by the Sound Manager.

Starting with the Macintosh Plus and continuing through the latest Macintosh, all can use the Sound Manager. However, the Macintosh Plus and the Macintosh SE have known difficulties with the Wave Table Synthesizer of the Sound Manager because of anomalies in the System Software. Basic Note Commands and Sampled Sound Synthesizer can be used from the Plus and the Macintosh SE.

The Macintosh II and later machines can use the Wave Table Synthesizer, the Basic Note Commands, and the Sampled Sound Synthesizer.

For more in-depth discussion of these issues, see the Inside Macintosh replacement chapter on the Sound Manager. This replacement chapter is posted on AppleLink. Follow this path to locate the document:

Developer Services:Macintosh Developer Technical Support:  
Interim Technical Documents:Sound Manager (Microsoft Word)

It's a Word 3.02 document which discusses the use of the Sound Manager in Macintosh Plus systems and later.

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Tech Info Library Article Number:4946



# Tech Info Library

## KanjiTalk 6.0.2.4: Macintosh SE/30 and IICx Compatibility

Revised: 6/29/90  
Security: Everyone

KanjiTalk 6.0.2.4: Macintosh SE/30 and IICx Compatibility

=====

This article last reviewed: 12 December 1989

TOPIC -----

Does KanjiTalk work on a Macintosh IICx?

DISCUSSION -----

Yes, KanjiTalk does work on the Macintosh IICx. However, the correct version of KanjiTalk is required.

The version required for use with the Macintosh IICx and Macintosh SE/30 is 6.0.2.4. This version is now available from APDA.

For more information, search under: "APDA"

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Tech Info Library Article Number:4947



# Tech Info Library

## TokenTalk NB Card: Incompatible with IBM ECF

Revised: 12/22/89  
Security: Everyone

TokenTalk NB Card: Incompatible with IBM ECF

=====

This article last reviewed: 12 December 1989

TOPIC -----

Does Apple's Token Ring card and MacDFT participate in what customers call IBM ECF (Enhanced Connectivity Facility)?

DISCUSSION -----

None of the software that Apple provides for the TokenTalk NB card supports ECF. ECF was one of the intermediate steps that IBM took towards SAA (Systems Application Architecture), and is no longer in the mainstream of architectures promoted by IBM except as a building block of SAA.

MacDFT uses our own proprietary API for communication with a host, and MacAPPC is fully compliant with IBM's LU 6.2 protocol specification (including the APPC verb set). Thus, Apple does not support the limited verb set specified by ECF (which is rarely used anyway).

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Tech Info Library Article Number:4948



# Tech Info Library

## MPW 3.0: How To Build Header Files and Libraries

Revised: 12/22/89  
Security: Everyone

MPW 3.0: How To Build Header Files and Libraries

=====  
This article last reviewed: 12 December 1989

TOPIC -----

When converting from MPW C 2.0 to MPW C 3.0, I ran into the following problem.  
It seems the linker can't find some routines.

Have these been renamed or replaced? If so, the compiler accepted my calls  
since they appear in the #include files. I tried relinking with every library  
that shipped with MPW 3.0 and always got the same error.

Following is my link command and its output:

```
Link -w -t APPL -c Kran -sym on -mf C Option-D
... /* a bunch of my filenames */ Option-D
"{CLibraries}"CRuntime.o Option-D
"{Libraries}"Interface.o Option-D
"{Libraries}"DRVRRuntime.o Option-D
"{CLibraries}"StdCLib.o Option-D
"{CLibraries}"CSANELib.o Option-D
"{CLibraries}"Math.o Option-D
"{CLibraries}"CInterface.o Option-D
-o klink
setfile -a B klink
```

```
### Link: Error: Undefined entry, name: (Error 28) "KillIO"
Referenced from: setupSerComm in file: INIT.c.o
### Link: Error: Undefined entry, name: (Error 28) "OpenDriver"
Referenced from: setupSerComm in file: INIT.c.o
### Link: Error: Undefined entry, name: (Error 28) "RAMSDOpen"
Referenced from: setupSerComm in file: INIT.c.o
### Link: Error: Undefined entry, name: (Error 28) "FlushEvents"
Referenced from: main in file: main.c.o
### Link: Errors prevented normal completion.
### MPW Shell - Execution of input terminated.
```

DISCUSSION -----

We were able to successfully link a short C program that made all of these calls. We suspect that not all of the necessary files had been "included", which would definitely affect the way the linker operates. The following are the steps you can use to determine what header files and libraries are necessary for a complete build of your program:

- 1) With your directory set to the {MPW}Interfaces:CIncludes: folder, use the search command to search all of the header files for the routine you want to call. For example, we used the command:

```
search killio Option-X
```

where Option-X is the keystroke that generates the MPW wildcard character for filenames. This returned:

```
File "Devices.h"; Line 112 # Pascal OSErr KillIO(short refNum);
File "Devices.h"; Line 115 # Pascal OSErr PBKillIO(ParmBlkPtr
paramBlock, Boolean asynchronous);
File "Errors.h"; Line 32 # #define abortErr -27
                                /*IO call aborted by KillIO*/
File "Traps.h"; Line 597 # #define _KillIO
                                0xA006
```

Therefore, the header file that must be included is Devices.h.

- 2) Create a simple program that artificially calls the routines you want to use. In this case, we used:

```
#include <Types.h>
#include <OSEvents.h>
#include <Devices.h>
#include <Serial.h>
main()
{
    OSErr theResult;
    short *bogusRefNum;

    FlushEvents(0,0);
    theResult = KillIO(0);
    theResult = OpenDriver("\pbogus driver name",bogusRefNum);
    theResult = RamSDOpen(sPortA);
}
```

- 3) Use the Create Build Commands menu item from the Build menu to create a make file for your artificial program, and build the program to verify that it links properly.

(NOTE: Be sure you do not actually run the program since it is unlikely to run properly and, as in the case of our code, will crash.)

- 4) Open the make file generated, and you will have the necessary link command for the routines you wish to use. The make file generated for us follows:

```
# File:      testflush.make
# Target:    testflush
# Sources:   testflush.c
# Created:   Monday, November 13, 1989 3:20:14 PM
```

```
testflush.c.o Option-F testflush.make testflush.c
C testflush.c
```

```
SOURCES = testflush.c
OBJECTS = testflush.c.o
```

```
testflush Option-F testflush.make {OBJECTS}
Link -w -t APPL -c '????' Option-D
{OBJECTS} Option-D
"{CLibraries}"CRuntime.o Option-D
"{Libraries}"Interface.o Option-D
"{CLibraries}"StdCLib.o Option-D
"{CLibraries}"CSANELib.o Option-D
"{CLibraries}"Math.o Option-D
"{CLibraries}"CInterface.o Option-D
-o testflush
```

Our C file was "testflush.c", and the generated make file was "testflush.make".

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Tech Info Library Article Number:4949



# Tech Info Library

## Apple IIGS: Duplicate BASIC.SYSTEM Files

Revised: 12/22/89  
Security: Everyone

Apple IIGS: Duplicate BASIC.SYSTEM Files

=====

This article last reviewed: 12 December 1989

TOPIC -----

When using Apple IIGS System Installer 5.0 it appears to put the following files into the "Root" directory: BASIC.LAUNCHER, BASIC.SYSTEM, and ICONS.

The same file BASIC.SYSTEM is also in the folder called system. Do we need both? Are they there for Apple IIGS's diskless "boot up"?

DISCUSSION -----

Because you mentioned diskless booting, we assume you are talking about installing Apple IIGS/OS 5.0 on the Macintosh AppleShare File Server.

The only copies of BASIC.SYSTEM and BASIC.LAUNCHER that are installed by the Server Network Startup script are those installed at the root directory. The copy of BASIC.SYSTEM in the Macintosh System Folder is installed by the Apple II Setup installer when the server is set up for use by Apple IIs. A copy is put in the System Folder so that the server will have a default startup application for all Apple II users.

It is perfectly acceptable to remove the copy of BASIC.SYSTEM in the System Folder, so long as you remember to set a startup application for each Apple II user. You should not remove those copies of BASIC.SYSTEM and BASIC.LAUNCHER located at the root directory unless there is no need for Applesoft BASIC.

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Tech Info Library Article Number:4950





# Tech Info Library

## AppleShare: How To Keep Apple II & Macintosh Software Separate

Revised: 12/22/89  
Security: Everyone

AppleShare: How To Keep Apple II & Macintosh Software Separate

=====

This article last reviewed: 12 December 1989

TOPIC -----

I want to use a utility (that is: Disk Tools, DiskTop or ResEdit) to make Apple II folders (that is: Aristotle, system, and users) invisible to Macintosh users. I want to prevent the users from going into a folder and trashing its contents. I could "lock" them, but if they don't know they are out there it works better in the long run.

Is this process safe?

DISCUSSION -----

The problem with making those files invisible to Macintosh users is that they will also be invisible to Apple IIGS users -- the Apple IIGS users will have no convenient way to launch Applesoft BASIC.

We recommend locking them. This prevents those without adequate AppleShare privileges from removing, renaming, or replacing them.

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Tech Info Library Article Number:4951



# Tech Info Library

## HyperCard: Can't Simulate Mouse-Down In Other Applications

Revised: 6/24/90  
Security: Everyone

HyperCard: Can't Simulate Mouse-Down In Other Applications

=====

This article last reviewed: 14 December 1989

TOPIC -----

I use the following command in HyperCard with MultiFinder running:

```
open "filename1" with "Microsoft Word"
```

Microsoft Word launches and opens the document "filename1". I click on the HyperCard window to go back to HyperCard, then execute the following command:

```
open "filename2" with "Microsoft Word"
```

This time I go back to Microsoft Word, but it doesn't open the new file "filename2".

Can you explain this, and do you know if there is a workaround?

DISCUSSION -----

When running under MultiFinder, the HyperCard command:

```
open "filename" with "application"
```

behaves in one of two ways:

- 1) If the application is not open, HyperCard launches the application and passes the Finder the information needed to open the document "filename" to the application. This mechanism is documented on pages 55 and 56 of Inside Macintosh Volume II (included in master edition of Volumes I, II, and III, ISBN #0-201-17737-4).
- 2) If the application is already open, HyperCard brings the application window to the front. Since the application is already open, HyperCard

has no way to tell the application to open the document.

In System 6.0 and later, MultiFinder adds the ability to open documents from the Finder even though the application is already open. For example, if Microsoft Word is open with a document titled "filename1", and you switch to the Finder and double-click on a Microsoft Word document called "filename2", Microsoft Word opens this document. This happens because MultiFinder tricks Microsoft Word into opening the document by simulating a mouse-down event in the Microsoft Word menu item for opening files.

(NOTE: For a more complete description of this process, see the fourth paragraph on page 2 of Macintosh Technical Note #205.)

There is no workaround for the situation you describe. HyperCard, unlike MultiFinder, is unable simulate the mouse-down events in other applications.

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Tech Info Library Article Number:4952



# Tech Info Library

## LaserWriter IINTX: Downloading PC Fonts To Hard Disk

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: Downloading PC Fonts To Hard Disk

=====

This article last reviewed: 14 December 1989

TOPIC -----

I have several PCs and one LaserWriter IINTX. I will be using PostScript software on the PC.

How do I download PC fonts to a SCSI hard disk connected to the LaserWriter IINTX? Is there a special driver required? Does AppleShare PC include this option?

DISCUSSION -----

Adobe Systems provides software with their font library for the IBM PC and compatible computers that will download Type 1 PostScript fonts to the LaserWriter IINTX hard disk.

This is the only software we know of that will download Type 1 PostScript fonts to the LaserWriter IINTX hard disk. There is no way to download non-Type 1 PostScript fonts to the LaserWriter IINTX. An example of a non-Type 1 font would be any font created using third-party (not Adobe) font creation programs. We suggest you contact Adobe Systems, Inc. for more specific information.

For more information, search under: "Adobe"

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Tech Info Library Article Number:4953



# Tech Info Library

## Macintosh Portable: How Battery Charge Affects Activity Status

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: How Battery Charge Affects Activity Status

=====

Article Created: 14 December 1989  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

If my portable is running from battery, and the system sleep time is set at 20 minutes (just for example), and I walk away with 15 minutes to go until the "reserve power" dialog appears, what will happen?

In 15 minutes, the dialog sleep warning appears. But, when a modal dialog such as the reserve power dialog is on the screen, when 5 more minutes have elapsed does a system sleep even occur, or will the machine actually drain all battery supplies if not attended?

What if my portable is running from battery and attached to an AppleTalk network? When the machine goes into a sleep voluntarily (set by me in the CDEV), the "I'm trying to sleep but I'm connected to a network" dialog appears and the machine never actually sleeps.

Aren't these potential battery-drain situations?

DISCUSSION -----

Here is a chart that shows what the Macintosh Portable is doing at various battery charge levels:

| Battery Voltage | Macintosh Portable Status                  |
|-----------------|--------------------------------------------|
| -----           | -----                                      |
| 7.2             | Charging with adapter                      |
| 6.4 - 6.0       | Battery without adapter (normal operation) |
| 5.9             | 1st software warning                       |
| 5.86            | 2nd software warning                       |
| 5.8             | 3rd software warning                       |
| 5.76            | 10 second warning                          |

|      |                   |
|------|-------------------|
| 5.72 | Software shutdown |
| 5.65 | Hardware shutdown |
| 5.4  | Battery sulfation |

Once the Macintosh Portable's battery reaches a voltage level 5.72 volts, the machine goes into software shutdown mode. This will occur regardless of the activity of the machine, even when connected to AppleTalk networks. This mode is equivalent to sleep mode except that the Macintosh Portable will not come out of software shutdown mode until the battery charger is plugged in or a battery with more than 5.8 volts is installed. Once in software shutdown mode, the Macintosh Portable will keep the contents of memory intact for about five days.

When the Macintosh Portable's battery reaches a voltage level 5.65 volts, the machine goes into hardware shutdown mode. This mode removes power from the entire system except for the Power Manager chip. All memory contents are lost. The Macintosh Portable will not come out of hardware shutdown mode until the battery charger is plugged in or a battery with more than 5.8 volts is installed.

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Tech Info Library Article Number:4954



# Tech Info Library

## LaserWriter IINTX: Lots of Fonts on Hard Disk Slows Printing

Revised: 12/22/89  
Security: Everyone

LaserWriter IINTX: Lots of Fonts on Hard Disk Slows Printing

=====

This article last reviewed: 14 December 1989

TOPIC -----

I tried to set up my LaserWriter IINTX and a spare HD80 SC as a font cache. I've downloaded more than 400 PostScript fonts onto the HD80 SC.

Instead of getting an increase in the system throughput, I'm now experiencing delays approximately 5 to 6 times longer than before the hard disk was commissioned.

The utilities are current, and I'm using LaserWriter Driver 5.2, running under System 6.0.3. Do you have any suggestions as to why this problem has occurred?

DISCUSSION -----

According to the Addison-Wesley LaserWriter Reference Manual (ISBN #0-201-19258-6), Chapter 2, page 46:

"When the PostScript interpreter encounters the input /Palatino findfont, it first searches the FontDirectory (in memory), then searches the disk file system for the file named fonts/Palatino. If that search succeeds, PostScript executes the file, thereby loading it into virtual memory and registering the name Palatino in the FontDirectory."

Therefore, whenever the LaserWriter must find a font to use, it must search ALL available fonts -- starting from its own memory, then going to any attached hard disks -- to locate the proper font. It then must download it, as if from the system, for it to be available for use. With a directory of over 400 fonts, the search and download take a great deal of extra time.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4960



# Tech Info Library

## EtherTalk: How To Install Drivers

Revised: 12/22/89  
Security: Everyone

EtherTalk: How To Install Drivers

=====

This article last reviewed: 14 December 1989

TOPIC -----

As I understand it, Apple delivers EtherTalk 2.0 together with the EtherTalk NB Card.

Since EtherTalk 2.0 uses AppleTalk Phase 2, and not every networking and communication product can use AppleTalk Phase 2 -- GatorBox can't, for example -- what should I do if I still need to use EtherTalk 1.2 with the EtherTalk NB Card?

DISCUSSION -----

Apple now ships EtherTalk 2.0 software with all EtherTalk NB Cards. It is possible to install BOTH the EtherTalk 1.2 and EtherTalk 2.0 drivers on a Macintosh II, using the EtherTalk 2.0 Installer and a file on the EtherTalk 2.0 Installer Disk.

To install the EtherTalk 1.2 and EtherTalk 2.0 drivers, follow the installation sequence below:

- 1) Use the Installer on the EtherTalk 2.0 Installer Disk to install EtherTalk 2.0 on the destination Macintosh.
- 2) Open the folder called "Previous Version" on the EtherTalk 2.0 Installer Disk.
- 3) Copy the file "EtherTalk" to the System Folder of the destination Macintosh. This file is the EtherTalk 1.2 driver.

The System Folder of the destination Macintosh now contains both EtherTalk 1.2 and EtherTalk 2.0 drivers. Either one of these drivers may be selected via the "Network" CDEV. The EtherTalk 1.2 driver icon has a single arrow pointing to the left and right; the EtherTalk 2.0



driver has double arrows pointing to the left and right.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4962



# Tech Info Library

## Macintosh IIX: Lockup Caused By MIDI And SCC Chip Registers

Revised: 7/20/92  
Security: Everyone

Macintosh IIX: Lockup Caused By MIDI And SCC Chip Registers

Article Created: 19 December 1989  
Article Last Reviewed: 20 July 1992  
Article Last Updated:

TOPIC -----

System Configuration

-----  
Macintosh IIX  
Opcode Studio 3+ (MIDI interface)  
Opcode Vision (MIDI sequencer software)  
Digidesign SoundTools,  
System Software 6.0.3.

My Macintosh IIX sends a constant stream of data from the serial port.  
This affects the MIDI setup and creates a jam causing the MIDI devices and  
software to crash.

My first Macintosh IIX worked for a couple of days, then everything  
locked up. I returned it to the dealer and have the dealer's Macintosh IIX  
as a loaner, but that computer has the same problem.

DISCUSSION -----

This issue centers on the SCC chip power-on configuration and the fact  
that MIDI developers have had to bypass the Toolbox to write directly to  
the SCC chip. With MIDI Management Tools, Apple has provided the  
developers a MIDI toolbox to communicate to the serial ports without  
directly addressing the SCC chip. Since the MIDI Management Tools are a  
recent development, most existing MIDI programs still talk to the hardware  
directly.

Prior to Macintosh computers using the 68030, the contents of a  
particular register of the SCC chip had a power-on default of zero.

(NOTE: This one register will be the only one discussed, but there are other registers in the SCC.)

Starting with the Macintosh IIX, the register's power-on state may be set to something other than zero. This appears to be a random event. The Opcode utility (provided as a startup document, also known as an INIT) assures that the setting of the Macintosh SCC register is set to zero.

Some known sequences of events that reset the register of the SCC are:

- The Opcode INIT correctly sets the register's value at startup; printing takes place via a serial port; printing resets SCC register to something other than zero; SCC chip sends random data stream out the serial port; MIDI attempts to interpret the data stream as MIDI packets; everything connected to MIDI becomes confused (for example, locks up or crashes). Alternatively, nothing is sent out the serial port.
- AppleTalk, when it is turned on, changes the setting of the SCC register and sends AppleTalk packets; MIDI attempts to use those packets; this confuses all devices listening to the packets (for example, locks up or crashes). It is reported that Font/DA Juggler and Master Juggler are known to occasionally turn on AppleTalk.

To be sure that all works correctly, the following items need to be watched. These items assume that the Opcode INIT is in the System Folder of the startup disk.

- If any printing takes places after powering on and before a MIDI application is used, the SCC register may be in an incorrect setting for MIDI. Not printing prior to launching a MIDI program assures that the SCC's register configuration is proper.
- If AppleTalk is turned on before MIDI is used, the SCC registers are likely to change and, thus, may cause lockups to occur in MIDI devices. This includes: AppleTalk off at startup, turned on, turned off; or AppleTalk on at startup, then turned off. Restarting with AppleTalk inactive, and not activating AppleTalk prior to MIDI usage, should allow the MIDI session to run smoothly.
- (This is not verified but has some logical merit, so it may provide a workaround.) Launching MacTerminal and quitting has been reported to clear the lockups experienced on MIDI devices. This apparently sets the SCC's register to zero, which is the setting MIDI wants. One user with Southworth Music System's Jambox, a MIDI interface, uses the Jambox DA to clear the lockups. Both of these solutions seem to work due to their interaction with the SCC's register.
- It is also possible that a faulty SCC chip is on the logic board of the computer; however, with the situation appearing on two separate Macintosh IIX computers, it is unlikely that you are experiencing faulty hardware.

Tech Info Library Article Number:4963



# Tech Info Library

## System 6: Maximum Addressable RAM (9/93)

Revised: 9/2/93  
Security: Everyone

System 6: Maximum Addressable RAM (9/93)

Article Created: 22 December 1989  
Article Reviewed/Updated: 2 September 1993

TOPIC -----

What is the maximum addressable RAM for a Macintosh under System 6.0.7? We have a IIsi with 17MB of RAM installed (1MB on the main logic board plus four 4MB SIMMs), and the "About the Finder" shows 7MB available with the System using 10MB of RAM.

DISCUSSION -----

Macintosh system software version 6.0.x is currently unable to address any RAM above 8MB that is installed in the logic board SIMM sockets. The IIsi can detect and report the presence of a greater amount of RAM, but the operating system won't use it. The computer will behave as if it has 8MB of RAM. All the memory is available under A/UX or System 7.0.

System 6, when starting up, switches to 24-bit addressing mode and maps the installed RAM into an 8MB address space. Any RAM above 8MB is useless without a different operating system, A/UX being an example. The Macintosh knows that more RAM is installed but is unable to use it. You can verify that the RAM is recognized by selecting "About the Finder" from the Apple menu. It shows any RAM above 8MB as being added to the system memory.

Connectix Corporation has several products that take advantage of extra RAM under System 6:

- Optima makes System 6 32-bit clean and puts a Macintosh IIsi into 32-bit mode. This makes all of the physical RAM addressable by System 6. You can have one application open at a time.
- Maxima makes it possible to use up to 14MB of the RAM installed in a System 6-based system as RAM, with the excess RAM to be used as

a RAM Disk. You can have more than one application open at a time.

- Virtual 2.0 uses NuBus address ranges to add virtual memory above the 8MB boundary (up to 14MB). It uses the NuBus slot address ranges to extend the 8MB limit by mapping this larger space onto an equal-sized disk image. It then uses the Paged Memory Management Unit (PMMU) function of the 68030 (or 68020 with 68851 PMMU) to manage the swapping of required sections of this new, larger memory map to and from disk.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

2 September 1993 - Added application usage information about Optima and Maxima.

Copyright 1989-1993, Apple Computer, Inc.

Tech Info Library Article Number:4965



# Tech Info Library

## Macintosh: 286-Compatible Emulation Software Needed

Revised: 12/22/89  
Security: Everyone

Macintosh: 286-Compatible Emulation Software Needed

=====

This article last reviewed: 14 December 1989

TOPIC -----

I really need to be able to run an MS-DOS-based administration package inexpensively on my Macintosh.

The package is Dataflex v2.3 and although SoftPC will "sort of" run the installation section of the package, the package itself won't run at all. I assume that this is because SoftPC is an XT-compatible emulation. (It runs perfectly on the AST286 system.)

Are there any AT-compatible PC emulation packages that may get around the problem? I am trying to find a software solution to run on a Macintosh SE and to keep the cost to a minimum.

DISCUSSION -----

Apple Tech Comm is not aware of any PC emulation software other than SoftPC. The only 286-compatible solutions we know of are hardware-based solutions and the Mac286 product from Orange Micro (formerly from AST), which requires two NuBus slots.

It is possible to add a third-party NuBus expansion chassis to a Macintosh SE, but the cost is quite high. The combined price of an expansion chassis for the Macintosh SE and the Mac286 product makes this an unrealistic solution for a cost-conscious customer.

We recommend that you contact the vendor of the administration package to determine if they have an 8088-, 8086- or Macintosh-compatible version of their software.

For more information, search under: "Orange Micro" and "Insignia Solutions"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4966





# Tech Info Library

## MacroMind Director 1.0.1: Use with Macintosh Portable & IICI

Revised: 12/22/89  
Security: Everyone

MacroMind Director 1.0.1: Use with Macintosh Portable & IICI

=====

This article last reviewed: 14 December 1989

TOPIC -----

Can MacroMind Director be used on the Macintosh Portable to run animation that was created on a Macintosh IICx?

DISCUSSION -----

Yes, MacroMind Director 1.0.1 is capable of running animation that was created on a Macintosh IICx.

MacroMind Director 1.0 is not fully compatible with the Macintosh Portable or Macintosh IICI. A free upgrade is available from MacroMind.

For more information, search under: "MacroMind"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4967



# Tech Info Library

## AppleFax Modem: Distribution List Capacity (9/93)

Revised: 9/2/93  
Security: Everyone

AppleFax Modem: Distribution List Capacity (9/93)

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 2 September 1993

TOPIC -----

I want to send a single Fax through the AppleFax Modem to 300 different locations. What is the maximum number of addresses that the AppleFax software can send to in one batch?

DISCUSSION -----

The mechanism within the AppleFax application to send an envelope containing a document or documents to multiple addresses is called a Distribution List. The Distribution List has a theoretical limit of an integer, or approximately 32K names; however, you will run out of memory (and patience) long before that.

We have successfully sent over 100 addresses in a single Distribution List. We don't have any experience with larger quantities or the testing resources to check this, but we don't know of any reason why it wouldn't work with the proper amount of memory.

You might create many smaller Distribution Lists, or try one list and monitor memory consumption and add memory as appropriate.

Article Change History:  
2 September 1993 - Removed BackFax information because Solutions, Inc. is out of business.

Copyright 1989-1993, Apple Computer, Inc.

Tech Info Library Article Number:4969



# Tech Info Library

## MacDraw II: Scaling Discrepancy with LaserWriter Printing

Revised: 12/22/89  
Security: Everyone

MacDraw II: Scaling Discrepancy with LaserWriter Printing

=====

This article last reviewed: 19 December 1989

TOPIC -----

I have a problem using MacDraw II and a LaserWriter IISC (Printer Driver 1.1). When I try to print a line with a width of 0.5mm or smaller, lines with widths 0.5mm, 0.3mm, and 0.1mm print the same size.

The MacDraw II Reference Manual says that if your printer is a LaserWriter, for example, lines can be as small as 1/300 inch. Can you tell me what's causing my problem?

DISCUSSION -----

We tested MacDraw 1.0 and the latest release, MacDraw 1.1v2, on a LaserWriter IISC, LaserWriter IINTX, and LaserWriter Plus. Driver versions used included LaserWriter 5.2 and LaserWriter IISC 1.1. We used a Macintosh II and a Macintosh Plus running KanjiTalk 6.0.2.

We were able to scale a line to at least 0.1mm. Choosing anything smaller had no effect on the output. Though we could print all sizes to 0.1mm (for example, 0.5, 0.4, 0.3, 0.2, and 0.1) successfully, we were not able to print to 1/300 inch (0.083mm) as the MacDraw manual states.

CLARIS is aware of this scaling discrepancy in the LaserWriters output, and though they have a utility (available from CLARIS upon request) for improving the resolution of ImageWriter output, they have no solution for your problem as of December, 1989.

If you need the additional 0.017mm resolution, you should consider using another graphics program.

For more information, search under: "CLARIS"

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4971



# Tech Info Library

## A/UX: Porting Applications from UNIX (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX: Porting Applications from UNIX (8/94)

Article Created: 19 December 1989  
Article Reviewed/Updated: 23 August 1994

### TOPIC -----

I am a UNIX developer. I want to port one of my applications over to A/UX. Here are some questions:

- 1) Does A/UX use "TERMCAP" or "TERMINFO"?
- 2) The package compiles successfully on Convergent Technology's 68020 machine. Does this mean that there should be few problems on the A/UX?

### DISCUSSION -----

- 1) Both TERMCAP and TERMINFO (different formats of) terminal databases and libraries are supported by A/UX. The database file for the TERMCAP is the /etc/termcap file, and the database files for the TERMINFO are under the /usr/lib/terminfo directory.
- 2) A/UX is based on AT&T System V.2.2 UNIX with Berkeley software signals support. This allows most portable C code written on other UNIX machine, Convergent Technology's UNIX machine in this case, to be easily ported to A/UX without major modifications.

For A/UX third-party product information, search under the following AppleLink path:

Third Parties  
Redgate Macintosh Registry  
A/UX

Article Change History:

# ..TIL04972-A-UX-Porting\_Applications\_from\_UNIX\_8-94\_(TA40747).pdf

23 Aug 1994 - Reviewed and updated.

27 Aug 1992 - REVIEWED for technical accuracy. Removed obsolete info.

Support Information Services

Copyright 1989-94 Apple Computer, Inc.

Tech Info Library Article Number:4972



# Tech Info Library

## AppleShare PC 2.0: How To Access AppleTalk

Revised: 12/22/89  
Security: Everyone

AppleShare PC 2.0: How To Access AppleTalk

=====

This article last reviewed: 19 December 1989

TOPIC -----

How do I access from an MS-DOS machine the AppleTalk stack provided by AppleShare PC 2.0?

DISCUSSION -----

Use the same interface method as specified for AppleShare PC 1.2. This is documented in the APDA documentation for both AppleShare PC and the LocalTalk PC Card.

The reason the LocalTalk PC Card developer notes are relevant is that even though AppleShare PC 2.0 runs over multiple physical media, the API remains the same.

There is one important additional step that must be taken. Included with AppleShare PC 2.0 is a program called COMPAT.COM that installs a TSR (Terminate and Stay Resident) process. This process ensures compatibility between programs using the AppleShare PC 1.2 interface and AppleShare PC 2.0, and the program should be run at system startup.

Copyright 1989 Apple Computer, Inc.

Tech Info Library Article Number:4973



# Tech Info Library

## Opcode Systems

Revised: 4/4/97  
Security: Everyone

Opcode Systems

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 4 April 1997

Opcode Systems

-----

3750 Favian Way  
Suite 100  
Palo Alto, CA 94303

415-856-3333  
415-856-3331

415-856-3332 Fax

Internet: <http://www.opcode.com>

Company Profile:  
Software, specializing in MIDI sequencing programs.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4976





# Tech Info Library

## Sayett Technology, Inc.

Revised: 4/4/97  
Security: Everyone

Sayett Technology, Inc.

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 4 April 1997

Sayett Technology, Inc.

-----

17 Tobey Village Office Park  
Pittsford, NY 14534

716-264-9250

800-678-7469

Fax: 716-264-9265

Company Profile:

Hardware, specializing in LCD projection pads for the Macintosh family of computers and IBM PCs.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4977



# Tech Info Library

## Wavetech Instruments(acquired Beckman Industrial)

Revised: 7/20/93  
Security: Everyone

Wavetech Instruments(acquired Beckman Industrial)

=====  
Article Created: 22 December 1989  
Article Reviewed/Updated: 20 July 1993

Wavetech Instruments  
-----

9145 Balboa Ave.  
P.O. Box 85434  
San Diego, CA 92138

800-854-2708 (Outside CA)  
800-227-9781 (CA)

619-279-2200

Fax: 619-565-9204 (Administrative Assistance)  
Fax: 619-268-0172

Telex: 249031

Company Profile:  
Acquired Beckman Industrial, hardware, specializing in automated  
testers for thick wire, thin wire, or twisted pair networks.

Article Change History: 07/06/93 Phone number changed and added, Address  
changed

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4978



# Tech Info Library

## **XES (formerly Versatec)**

Revised: 7/20/93  
Security: Everyone

XES (formerly Versatec)

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 20 July 1993

XES (Xerox Engineering Systems)

-----

5853 Rue Ferrari  
San Jose, CA 95138

800-538-6468

Fax: 408-229-3612

Company Profile:  
Hardware, specializing in printers and plotters.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4980



# Tech Info Library

## Agfa Division of Miles (Formerly Agfa Compugraphic Division)

Revised: 4/4/97  
Security: Everyone

Agfa Division of Miles (Formerly Agfa Compugraphic Division)

=====

Article Created: 12/22/89  
Article Reviewed: 07/02/93  
Article Updated: 04/04/97

Agfa Division of Miles

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200 Ballardvale Street (Headquarters)  
Wilmington, MA 01887

800-424-TYPE (8973)

508-658-5600

508-988-9130 Fax

Company Profile:  
Hardware, specializing in Postscript printers and typesetting equipment.

Article Change History: 07/02/93 Name changed

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4981



# Tech Info Library

## Attachmate Corporation

Revised: 7/1/93  
Security: Everyone

Attachmate Corporation

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Article Created: 12/22/89  
Article Reviewed: 07/01/93  
Article Updated: 11/11/92

Attachmate Corporation

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3617 131st Ave S.E.  
Bellevue, WA 98006

800-426-6283

206-644-4010

206-747-9924 Fax

### Company Profile:

Hardware and software, specializing in 3270 emulation and micro to mainframe connectivity.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4983



# Tech Info Library

## NASA Ames Research Center

Revised: 4/4/97  
Security: Everyone

NASA Ames Research Center

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Article Created: 22 December 1989  
Article Reviewed/Updated: 4 April 1997

NASA Ames Research Center

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Information Services Group  
Moffet Field, CA 94035-1000

415-604-5000

415-604-4003 Fax  
415-604-4004 Fax

Company Profile:  
Hardware, specializing in controlling Puma robots with Macintoshes.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4986



# Tech Info Library

## Focus Enhancements, Inc. (1/97)

Revised: 1/24/97  
Security: Everyone

Focus Enhancements, Inc. (1/97)

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Article Created: 22 December 1989  
Article Reviewed/Updated: 24 January 1997

Focus Enhancements, Inc.

-----  
(merged with Lapis Technologies, Inc.)

142 North Road  
Sudbury, MA 01776

508-371-2000 (Main Number)  
800-699-3972  
800-538-8866 (Sales)  
508-371-8500 (Technical Support)

800-538-8862 [Customer Service & Product Warranty Service for service of  
Focus products, including the L•TV Portable Pro which is  
included in the Apple Presentation System (M2895LL/A)]

617-938-7741 Fax

AppleLink FOCUS  
AOL FOCUS TECH  
CompuServe 71075,1262  
WEB: <http://www.focusinfo.com/>  
FTP: <ftp://ftp.shore.net/members/focus/>

### Company Profile:

Hardware, specializing in TurboStar, among other, network hubs, internal and external network cards, and other Macintosh enhancements, cartridge and fixed drives, scanners, fax modems.

**\*\*IMPORTANT NOTE\*\*** Focus provides servicing and support for some products that shipped with several Apple Macintosh computer models. The products Focus supports are the Apple Presentation System and Apple Video System. These products shipped with the Macintosh Quadra/LC/Performa 630 series of computers.

Article Change History:

24 Jan 1997 - Updated phone number.

05 Jun 1996 - Updated for technical accuracy.

20 Feb 1996 - Added new 800 number.

Copyright 1989-97, Apple Computer, Inc.

Tech Info Library Article Number:4987





# Tech Info Library

## Rainbow Technologies

Revised: 7/19/93  
Security: Everyone

Rainbow Technologies

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 14 July 1993

Rainbow Technologies

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9292 Jeronimo Rd.  
Irvine, CA 92718

800-852-8569

714-454-2100

714-454-8557 Fax

AppleLink: D3058

Company Profile:  
Hardware, specializing in security systems.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4989



# Tech Info Library

## Varityper

Revised: 7/20/93  
Security: Everyone

Varityper

=====

Article Created: 22 December 1989  
Article Reviewed/Updated: 20 July 1993

Varityper  
-----

11 Mt. Pleasant Ave.  
East Hanover, NJ 07936

800-631-8134

201-887-8000

Fax: 201-884-6311 (Marketing)

Company Profile:  
Hardware, specializing in typesetting, imagesetting, and Postscript printers.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4992



# Tech Info Library

## AEG Automation Systems Corp.

Revised: 7/2/93  
Security: Everyone

AEG Automation Systems Corp.

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Article Created: 12/22/89  
Article Reviewed: 07/02/93  
Article Updated: 11/11/92

AEG Automation Systems Corp.

-----

P.O. Box 490  
Pittsburgh, PA 15230

412-747-7100

412-747-7180 Fax

### Company Profile:

Hardware and software, specializing robotics, integration systems and automation.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4993



# Tech Info Library

## Software AG of North America

Revised: 7/19/93  
Security: Everyone

Software AG of North America

=====

Article created: 22 December 1992  
Article Reviewed/Updated: 19 July 1993

Software AG of North America

-----

11190 Sunrise Valley Dr.  
Reston, VA 22091

703-860-5050

800-843-9534 (Product Information)

Fax: 703-391-6975

Company Profile:  
Software, develop and market application and development tools.

Copyright 1989-93, Apple Computer, Inc.

Tech Info Library Article Number:4994



# Tech Info Library

## A/UX: How To Use With Apple Modem 2400

Revised: 9/24/92  
Security: Everyone

A/UX: How To Use With Apple Modem 2400

Article Created: 18 January 1990

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

While testing the new prerelease Apple Modem 2400 with A/UX, I was unable to get it to function properly by using "getty" in the /etc/inittab. The modem answered the phone but never produced a tone. The phone hung up.

When I changed /etc/inittab to use "apm\_getty", the modem answered the phone and presented a tone, but it would connect at 1200 only -- not at 2400. Changing the apm\_getty parm to "at\_2400" did not solve the problem. This is the /etc/inittab entry that I am using:

```
00:2:respawn:/etc/apm_getty tty0 at_2400
```

Can you suggest something that would work with our new Apple Modem 2400 and allow it to operate at 300, 1200, or 2400 as determined by the speed of the incoming modem?

### DISCUSSION -----

We configured the Apple Modem 2400 for dial-in use with the standard getty. The apm\_getty operates only at 1200 baud. It is intended for use only with the 1200-baud Apple Personal Modem, which can't remember settings between resets.

Here are the steps we followed:

- 1) Connect the Apple Modem 2400 to the Macintosh modem port with cable (M0197, 590-0552). Turn on the modem.

2) Edit the file /usr/lib/uucp/L-devices to add this line:

```
DIR      tty0      tty0      2400
```

3) Open a connection to the modem using cu:

```
#cu -l tty0 -s2400      <- typed by you
Connected              <- returned by cu
```

4) Recall factory settings, change for dial-in use, and save the new settings:

```
AT&F                  <- typed by you
OK                   <- returned by modem
AT E0 Q1 &C0 &D2 S0=1 &W <- typed by you (0 is a zero)
                        <- nothing is returned because of our settings
```

5) Edit the file /etc/inittab to respawn a getty on tty0:

```
00:2:respawn:/etc/getty tty0 mo_2400
```

6) Edit /etc/gettydefs to limit rollover between 2400 and 300. Edit the mo\_2400 line to end with mo\_2400 instead of mo\_9600.

7) Start the getty process with INIT:

```
#INIT q
```

8) Dial in from another modem.

(NOTE: This configuration does not allow A/UX to sense a loss of the Carrier Detect signal -- that is, an accidental disconnection can result in the next caller getting the disconnected caller's login. Enabling this requires a different cable that connects the GPi line (pin 7) from the modem to the HSKi line (pin 2) of the Macintosh modem port. It also would require modifying the modem setup string (in step 4) to set &C1 instead of &C0.)

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:4995



# Tech Info Library

## Macintosh II Family: Internal Speaker Plays Left Channel Only

Revised: 7/2/92  
Security: Everyone

Macintosh II Family: Internal Speaker Plays Left Channel Only

=====

Article Created: 18 January 1990  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

It seems that when a device is recorded in stereo (for example, from Farallon's MacRecorder), and you replay the sound through the built-in speaker on the Macintosh II, the computer combines both channels. On a Macintosh IICx, you hear only the left channel through the built-in speaker, even though the stereo port on both computers works correctly.

DISCUSSION -----

According to schematics, all Macintosh II products (Macintosh II, Macintosh IIX, Macintosh IICx, and Macintosh IICI) have only the left sound channel connected to the internal speaker.

(The Macintosh SE/30 has both sound channels connected to the internal speaker.)

If any users ARE actually getting stereo from any Macintosh II system, it has to do with software and not hardware. In all cases though, both channels are connected to the external speaker jack, so external speakers will produce correct stereo sound.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:4996



# Tech Info Library

## Apple Software: Where to Get Permission to Distribute (4/95)

Revised: 4/14/95  
Security: Everyone

Apple Software: Where to Get Permission to Distribute (4/95)

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Article Created: 18 January 1990  
Article Reviewed/Updated: 14 April 1995

TOPIC -----

I am developing a Macintosh tutorial to be distributed on a CD-ROM. I want to know include the section of the Macintosh IIci and Macintosh SE/30 tour that has the user click on some numbers that turn into pigeons and fly off the screen.

Do I need Apple approval or copyright releases to distribute this? Is the tour engine Apple's, or is it licensed from a third party? Since I have purchased a copy with each Macintosh, can I load it onto a hard disk or other device (basically unaltered)?

DISCUSSION -----

Apple approval and licensing is required to distribute ANYTHING originally distributed on an Apple disk. This includes the tour engine you mentioned here, which is a heavily modified version of Interactive VideoWorks from MacroMind.

Send a letter to Apple Software Licensing explaining what you want to do and why. Software Licensing will evaluate the request. Apple's Software Licensing department licenses Apple software to independent software vendors for inclusion with their products.

For example, a vendor who publishes a word processing program with QuickTime capabilities may wish to include the QuickTime extension with the word processor. They would license QuickTime from Apple through this department.

Contact Information

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Software Licensing  
Apple Computer Inc.  
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1-512-919-2645

1-512-919-2120 (fax)

#### Article Change History

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14 Apr 1995 - Updated address.

16 May 1994 - Updated with current phone number

19 Aug 1990 - Reviewed for accuracy. Title modified.

#### Support Information Services

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Tech Info Library Article Number:4998



# Tech Info Library

## AppleTalk: Using Within a Token Ring Source Routing Environment

Revised: 3/4/90  
Security: Everyone

AppleTalk: Using Within a Token Ring Source Routing Environment

=====

This article last reviewed: 18 January 1990

TOPIC -----

Does the AppleTalk protocol running on the Token Ring board modify the optional source routing field within a Token Ring frame? If not, how does it resolve paths and routing to non-local networks?

Where can I get detailed information about the functions of AppleTalk within a Token Ring Source Routing environment?

DISCUSSION -----

Token Ring  
-----

The AppleTalk protocol layer does not directly modify the optional source routing fields in the 802.5 frame. Source routing in an 802.5 environment is handled by the LLC (Logical Link Control) layer within the TokenTalk NB Card (Macintoshes) in cooperation with source routing bridges. In the 802.5 world, the end nodes (Macintoshes) are responsible for determining how to route a packet to its destination and for caching and expiring that information for later use in route resolution. Each time a station needs to connect to an unknown host, it has to go through a route discovery process.

The discovery process involves sending a special packet (Discovery Packet) with an empty source routing field to all interconnected rings. This packet is sent across all source routing bridges to all nodes in the current ring environment. The first bridge encountered adds two network ID numbers, one for each of its connected networks, to the source routing field and forwards it on to the next ring. Each of following bridges adds one network ID to the source routing field up to a maximum of 7 networks. This is the maximum number of hops any one data packet can travel across. The node with the matching node ID responds to the discovery packet using the path contained within the discovery packet. This packet now provides the source station with the path to the remote node,

and also provides the remote node with the path to the source node. The discovery process is handled within the LLC and Macintosh layers of the TI TMS380 chip set. Support for source routing bridges is provided within the LLC and Macintosh layers of the TI TMS380 chip set. Support for source routing is provided for, but it's not automatic at the LLC layer. It's important to understand that the TI Token Ring chip set (the TMS380 family) fully implements the Macintosh and LLC layer services for the TokenTalk NB Card.

The TokenTalk NB Card also implements the SNAP (SubNetwork Access Protocol) for use with various protocol multiplexing and de-multiplexing functions. The AppleTalk protocol suite takes advantage of the SNAP protocol's implementation of automatic source routing support. The SNAP protocol allows support for building other layered protocols, which operate transparently in a source routing bridge environment.

Since we're using Token Ring, which provides its own 48-bit hardware address, we need to provide a mapping between the 802.5 address and the 8-bit AppleTalk node ID. The Macintosh uses the AppleTalk AARP protocol to accomplish this mapping. More information about AARP can be found in "Inside AppleTalk" (Addison Wesley, ISBN #0-201-19257-8).

#### Example

-----

A user on a Macintosh named "Pluto" (node ID 10) wants to mount a volume from an AppleShare File Server named "Bozo" (node ID 20) located on the other side of an IBM source routing bridge.

```
Ring 1          Ring 2
      Pluto%-----source routing bridge-----%Bozo
```

User pulls down the Chooser to locate the "Bozo" file server.

An NBP lookup is generated from Pluto, asking for all of the network-visible entities of type "AFPserver".

```
NBP(=:AFPserver:*)
```

This request is passed to the AppleTalk DDP layer as a broadcast to all AppleTalk nodes (address FF). The DDP layer uses AARP to determine that the AppleTalk address FF translates to the Token Ring address FFFFFFFF, the Token Ring broadcast address. Now that we have an 802.5 address, we can pass the address and data to the SNAP interface, which then passes it on to the LLC layer and finally out to the ring.

Each AppleShare File Server on all of the interconnected rings within the current zone would respond to the NBP lookup. The route to the file server would then be cached by the LLC layer; this allows us to resolve the node ID without the discovery process the next time we need to access this host. Now that we know the AppleTalk network number and node ID of the server, we can use them for any requests for services to the server.

As you can see, the AppleTalk protocols have no direct intervention with the source routing fields of the 802.5 frame. Source routing support is completely

handled from the LLC and Macintosh layers, and operates transparently to AppleTalk or any other protocol that uses the SNAP protocol interface.

More information about AARP can be found in "Inside AppleTalk" (Addison Wesley, ISBN #0-201-19257-8).

More information can be obtained about Token Ring (802.5) and source routing bridges in these materials:

TokenTalk NB Programmers Guide

Kian-Bon, K. Sy, Daniel Avery Pitt, and Robert A. Donnon. "Source Routing for Local Area Networks." IBM Corp., 1985

Texas Instruments TMS380 Adapter Chip Set User's Guide

Texas Instruments TMS380 Adapter Chip Set User's Guide Supplement

Texas Instruments Manual Update, Revision F

IBM Token Ring Network Architecture Reference, P.N. SCC30-3374

IEEE 802.2 Standard

IEEE 802.5 Standard

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Tech Info Library Article Number:5000



# Tech Info Library

## AppleShare: Limiting Users From Launching Applications

Revised: 3/4/90  
Security: Everyone

AppleShare: Limiting Users From Launching Applications

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This article last reviewed: 18 January 1990

TOPIC -----

I want to limit the number of users that can simultaneously launch applications on an AppleShare File Server. I am currently doing this on an IBM network.

- 1) Does the AppleTalk network system support the ability to limit the number of users who can simultaneously launch an application on a file server?
- 2) If this is possible, does it depend on the application software or the file server software?
- 3) If it depends on the application software, do you know of any applications that take advantage of this capability (particularly, productivity software, such as word processors and spreadsheets)?

DISCUSSION -----

AppleTalk Filing Protocol (AFP) does not directly support the ability to limit the number of users launching an application. This is something the developer of the application must provide within their code. AFP does provide methods to allow a developer to accomplish this type of limiting. For a more detailed discussion of multilaunch applications, review "Software Applications in a Shared Environment", available from APDA, part number A7Z0014.

Microsoft Technical Support indicates that Microsoft Word, versions 3.0.x and 4.0; Microsoft Excel, versions 1.5 and 2.2; Microsoft File 2.0 and PowerPoint, versions 1.0 and 2.0 are all multilaunch applications. Each has some limited multi-user capabilities as well.

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Tech Info Library Article Number:5002



# Tech Info Library

## Macintosh IIcx: Slot Addresses

Revised: 7/14/92  
Security: Everyone

Macintosh IIcx: Slot Addresses

=====

Article Created: 29 January 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

What are the slot addresses for the Macintosh IIcx?

DISCUSSION -----

The Macintosh IIcx slots and their 24-bit addresses are the same as slots \$9, \$A, and \$B and their addresses in the Macintosh II:

| Slot | 24-Bit Addresses    |
|------|---------------------|
| ---- | -----               |
| \$9  | \$90 0000-\$9F FFFF |
| \$A  | \$A0 0000-\$AF FFFF |
| \$B  | \$B0 0000-\$BF FFFF |

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Tech Info Library Article Number:5004



# Tech Info Library

## Apple Internet Router: Timbuktu & Macintosh II Incompatibility

Revised: 3/4/90  
Security: Everyone

Apple Internet Router: Timbuktu & Macintosh II Incompatibility

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This article last reviewed: 29 January 1990

TOPIC -----

This article discusses a compatibility problem between the Apple Internet Router, Timbuktu 3.x, and members of the Macintosh II family running with more than 1-bit color

DISCUSSION -----

There is a compatibility problem between the Apple Internet Router, Timbuktu 3.x, and members of the Macintosh II family running with more than 1-bit color.

To reproduce the problem, put an Apple Internet Router on a Macintosh II and set the Monitors CDEV to anything other than two-color black and white. When Timbuktu makes a connection with the router system, the screen on both the router system and the observing system become mangled. The text in the Port Statistics window changes size and moves to a different place on the screen. In the Network Information window, a dark black line appears on the top third of the screen.

The workaround is to set the router system to 1-bit color. It is possible to adjust the router system without restarting or breaking the Timbuktu connection.

Farallon, manufacturer of Timbuktu, says that Timbuktu should be used only in two-color, black and white mode.

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Tech Info Library Article Number:5005



# Tech Info Library

## National Institute of Standards and Technology (NIST)

Revised: 7/14/93  
Security: Everyone

National Institute of Standards and Technology (NIST)

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Article Created: 4 March 1990  
Article Reviewed/Updated: 14 July 1993

National Institute of Standards and Technology (NIST)

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Company Profile:  
Federal agency specializing in industrial and scientific standards.

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Tech Info Library Article Number:5009





# Tech Info Library

## Apple IIGS: Don't Use DuoDisk on SmartPort

Revised: 3/4/90  
Security: Everyone

Apple IIGS: Don't Use DuoDisk on SmartPort

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This article last reviewed: 5 February 1990

TOPIC -----

I am experiencing a problem using DuoDisk with the Apple IIGS.

Equipment  
-----

"Blockbuster" Apple IIGS with Rev. 3.0 ROM, DuoDisk, Profile or SCSI HDA in slot 7 (optional)

Reproducing the Problem  
-----

Plug the DuoDisk into the disk port on the Apple IIGS main logic board. Install the ProFile in slot 7, and set the Control Panel to "your card." Leave both DuoDisk drives empty and power on the system. Set startup to "Scan."

The DuoDisk LED for drive #1 should turn on, but the system will not start. Why did the Apple IIGS skip the ProFile in slot 7? Now, power down the Apple IIGS and put a non-write-protected disk in the DuoDisk drive. It still doesn't start.

Power down the Apple IIGS and place a write-protected disk in the drive. Power on the system. The system starts up as expected, following the "Control Panel".

If the system appears to be "hung" following any of the above steps, momentarily triggering the write-protect switch by inserting anything into the drive allows the system to start up.

There appears to be a compatibility problem with the new Apple IIGS main logic board and the DuoDisk. Performing the "DuoDisk/Apple IIGS fix" that is posted on AppleLink has no effect since the problem appears to be hardware (firmware)

based.

I'm stumped. What's going on?

DISCUSSION -----

Tech Comm was able to reproduce this problem exactly as you describe.

There IS a compatibility problem with the DuoDisk and the Rev 3 Apple IIGS main logic board.

A check with Engineering provided us with the only workaround. Do NOT use the DuoDisk on the SmartPort. There is some code in the ROM that does not handle the interface to a DuoDisk properly. As of February, 1990, the only workaround is to use the DuoDisk on an interface card.

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Tech Info Library Article Number:5010



# Tech Info Library

## No-hands Input Devices for the Handicapped

Revised: 3/4/90  
Security: Everyone

No-hands Input Devices for the Handicapped

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This article last reviewed: 5 February 1990

TOPIC -----

This article discusses "no-hands" input devices for profoundly handicapped computer users.

DISCUSSION -----

A popular device for profoundly handicapped users is the Headmaster by Personics Corp., which mounts on the head with a headband. Depending on head position, the position of the cursor can be controlled on the screen, and the equivalent of a mouse click is generated using one of several other devices.

The package also includes a special DA that puts a soft keyboard on the screen that runs concurrently with other applications, such as Microsoft Word. By selecting letters on the keyboard and generating a mouse click, characters are entered into the application. (Selecting commands from the pull-down menus is straightforward when using the Headmaster to control the cursor and the mouse-click device.)

The Headmaster unit has also been tested with the Macintosh Portable, and it works fine.

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Tech Info Library Article Number:5013



# Tech Info Library

## InitCdev 2.0: Using with Virus Detectors May Cause Problems

Revised: 3/4/90  
Security: Everyone

InitCdev 2.0: Using with Virus Detectors May Cause Problems

=====

This article last reviewed: 5 February 1990

TOPIC -----

I've been using InitCdev 2.0, a freeware INIT management utility. Today, I installed the AppleComm Toolbox on my system.

When I invoke InitCdev, it crashes with ID=17 (package 0 not present--list manager). Can you explain?

DISCUSSION -----

Your problem may be the order in which your INITS are loaded.

We tested the InitCdev with the Toolbox. After moving a couple of virus detectors around, so that SAM Intercept loads BEFORE the InitCdev, and Vaccine loads AFTER InitCdev, the Apple Communication Toolbox worked great.

Some virus detectors don't respond well to the way this INIT manipulates them.

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Tech Info Library Article Number:5014



# Tech Info Library

## HyperCard: Card Name Limitation

Revised: 3/4/90  
Security: Everyone

HyperCard: Card Name Limitation

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Article Created: 5 February 1990  
Article Last Reviewed: 27 July 1992  
Article Last Updated: 27 July 1992

TOPIC -----

While working on a HyperCard stack, I entered a card name that contained 29 characters. From any card, I could type "go to [card name]" in the message box or from a script, and go to that card. If I changed the name of that card to a 34-character name and made the appropriate changes in my script or the message box, I get a message "String too long."

I can type much more than 29 characters in the name of that card, but is there a HyperCard limit on the card name length?

DISCUSSION -----

Official HyperCard documentation states that HyperCard (up through version 2.1) will read up to 31 characters as a valid parameter when you use the GO HyperTalk command or a script to address a card by name. This is the theoretical limit, though tests show that HyperCard accepts 33-character names as a valid practical limit. Bigger and more complex stacks could pull the practical limit more in line with the theoretical. In tests, entering a card name of 34 or longer gives the message "String too long."

The 31 character limit concerns accessing the card, not simply naming it. You can type as many characters as you want into the Card Name area of the Card Info dialog box, but for obvious reasons this is not advised. You would not be able to access the card directly with a name over the maximum valid number above.

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Tech Info Library Article Number:5016



# Tech Info Library

## HyperCard 1.2.5: Disks Are Mislabelled as 1.2.3

Revised: 3/4/90  
Security: Everyone

HyperCard 1.2.5: Disks Are Mislabelled as "1.2.3"

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This article last reviewed: 5 February 1990

TOPIC -----

This article contains information about HyperCard version 1.2.5, which has been mis-labeled in some situations as v1.2.3.

DISCUSSION -----

Some users are buying Macintoshes and getting disks labeled HyperCard version 1.2.3 -- although the "About" box shows version 1.2.5.

HyperCard version 1.2.3 was an internal testing version and never distributed to the general public as a product.

Despite what may be listed in some publications, the CORRECT HyperCard version for use with the Macintosh Portable and Macintosh IIci, under System Software 6.0.4, is HyperCard version 1.2.5.

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Tech Info Library Article Number:5017



# Tech Info Library

## AppleShare: How To Correctly Shut Down Remotely

Revised: 3/4/90  
Security: Everyone

AppleShare: How To Correctly Shut Down Remotely

=====

This article last reviewed: 5 February 1990

TOPIC -----

What happens when a foreground application (or possibly a DA) issues a Shutdown command to the Macintosh while it is running the AppleShare File Server software? Will any damage be done to open files, or does the Shutdown process force AppleShare to clean all of its active and idle open file services before shutting down?

I want to perform a remote restart of the system to activate some system updates that take place only at startup. I am concerned about what that might do to the file server operation, since I'm not using the Shutdown option under on the AppleShare menu.

DISCUSSION -----

The only correct way to shut down the AppleShare File Server software is by using the Shutdown option under the AppleShare menu. Choosing Shutdown from the Special menu or executing a shutdown trap does not guarantee that anything currently in the AppleShare's buffers will be written to disk before the shutdown occurs.

The only way we know of to control AppleShare remotely is by using Timbuktu/Remote from Farallon Computing, Inc.

For more information, search under: "Farallon"

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Tech Info Library Article Number:5018



# Tech Info Library

## LaserWriter Driver 6.0: Palatino Bold Print Size Problem

Revised: 11/5/91  
Security: Everyone

LaserWriter Driver 6.0: Palatino Bold Print Size Problem

=====

Article Created: 4 March 1990  
Article Last Reviewed: 5 November 1991  
Article Last Updated: 5 November 1991

TOPIC -----

I am using PageMaker 3.02 and LaserWriter Driver 6.0.

When printing Palatino Bold, the printed character appears to print one point smaller: a line of 9-point Plain text looks a little bigger than 9-point Bold text in Palatino. It's really noticeable when printing numbers.

This happens whether you use the Apple driver or the Aldus driver. I tried this in Microsoft Word 4.0, and it happens there as well. Can you explain?

DISCUSSION -----

We were able to duplicate the problem you describe and found that Palatino Bold prints about one dot (not point size), or about 1/300 inch, smaller than the Plain text Palatino. This is the result of the PostScript definition of the font and is independent of application or driver.

This can be fixed only with a change to the ROM.

The only solution with this combination of PageMaker and the LaserWriter Driver, is to use a different font family.

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Tech Info Library Article Number:5019





# Tech Info Library

## Internet Router: Compatible with LatticeNet Products

Revised: 3/4/90  
Security: Everyone

Internet Router: Compatible with LatticeNet Products

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This article last reviewed: 5 February 1990

TOPIC -----

Can LatticeNet be used with the AppleTalk Internet Router? Are there any support issue to be considered?

DISCUSSION -----

Apple has been using the Synoptics LatticeNet products with the Apple EtherTalk Interface Card and the AppleTalk Internet Router with no problems.

We can think of no unique support issues that the AppleTalk Internet Router would add to a LatticeNet network.

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Tech Info Library Article Number:5020



# Tech Info Library

## Apple IIe: Network Printing Problem

Revised: 3/4/90  
Security: Everyone

Apple IIe: Network Printing Problem

=====

This article last reviewed: 5 February 1990

TOPIC -----

I am working with a school which has a lab of 14 Apple IIe systems sharing two network ImageWriters with no file server.

They have been unable to get the Apple IIe systems to print from any application, so I was brought into the situation. I moved the Workstation Card to slot 1, used Chooser.II, and was able to get all their software to print over the network.

The interesting thing is that the printer would work only by placing the LocalTalk connector in the serial printer port rather than LocalTalk port on the Workstation Card. The Chooser finds the printer as a network printer.

Can you explain?

DISCUSSION -----

It sounds as though the cables from the adapter box have been reversed during installation.

The top cable (LocalTalk) from the adapter box needs to be attached to the top connector pins on the Workstation Card. The bottom cable (printer port) from the adapter box needs to be attached to the bottom connector pins. If the cables from the adapter box to the Workstation Card have been reversed, the situation you describe would occur.

Once you were able to see the network from slot 1, did you try using slot 7 again? Were you able to see the network (even with the LocalTalk connector in the printer port)? Were you able to print from the applications?

Since you were able to see the network (that is, with Chooser.II), yet could not print, our first suggestion would be to check the printer slot assignment

in the application. The application needs to be set to print to slot 7 if the Workstation Card is in slot 7.

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Tech Info Library Article Number:5021



# Tech Info Library

## TokenTalk 2.0 Installer: Problem and Fix

Revised: 3/4/90  
Security: Everyone

TokenTalk 2.0 Installer: Problem and Fix

=====

This article last reviewed: 5 February 1990

TOPIC -----

This article discusses how to spot and fix incorrect TokenTalk 2.0 Installer disks.

DISCUSSION -----

I was installing some Macintosh IIs on a Token Ring network and discovered a problem with the TokenTalk 2.0 Installer disks that are shipping with the TokenTalk NB Card.

The TokenTalk 2.0 disk (Apple Part #690-5435-A) included with the cards is not configured properly for the System 6.0.4 Network Products Installer disk.

The released disk is named "Token Talk Installer" (there is a space between 'Token' and 'Talk') instead of "TokenTalk Installer", and this prevents the MultiDisk Installer from recognizing this disk. In addition, all of the files on the released disk are inside a folder called "TokenTalk Installer" (which should be the name of the disk). The proper files/folders are within this folder -- that is, Installer, Installer Scripts, and System Folder.

To recap: the hierarchy of the released disk:

Disk Name: "Token Talk Installer"  
1st Window contains: "TokenTalk Installer" folder  
This folder contains: "Installer"  
                          "Installer Scripts"  
                          "System Folder"

Valid disks have this hierarchy:

Disk Name: "TokenTalk Installer"  
1st Window contains: "Installer"

"Installer Scripts"

"System Folder"

Renaming the released disk to the proper name (that is, removing the space) and then moving the Installer, Scripts, and System Folder to the main/root window makes this disk usable with the MultiDisk Installer.

(NOTE: As of February, 1990, Apple Manufacturing is aware of the mistake and has corrected it, so there shouldn't be many more of these disks sent out.)

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Tech Info Library Article Number:5022



# Tech Info Library

## Line Printers for LocalTalk-Based Network

Revised: 7/23/92  
Security: Everyone

Line Printers for LocalTalk-Based Network

=====  
Article Created: 4 March 1990  
Article Last Reviewed: 7 February 1990  
Article Last Updated: 22 June 1992

TOPIC -----

I need a high-speed line printer that can connect to a Macintosh network (LocalTalk-based) for times when PostScript isn't necessary. I currently have an IBM 3262 and IBM 5262 printer that I would like to use, but I'm willing to buy another model or brand, if necessary.

Can IrmaPrint handle these models?

DISCUSSION -----

The IBM 3262 printer can be directly attached to the 5360 System Unit as the system printer. This means that it is a System 36 printer -- and, because it can be directly attached, it is most likely a Twinax connection. There is no method for connecting this printer to a LocalTalk-based network.

The IBM 5262 printer is a freestanding line printer also associated with the System 36. It may have RS-232 interconnection available. If so, the following scenario would be applicable.

(NOTE: A Check with DCA revealed that neither of the mentioned printers is supported by IrmaPrint.)

At Tech Comm we have used a Printronix Model 300XG line printer with a Centronics parallel interface. We connected it to a Macintosh II via a Tigertronics Model 770 serial-to-parallel converter. The Typewriter driver from the Microsoft Word 1.05 disk was moved into the System Folder, selected from the Chooser, and set up for 9600-baud and 10-pitch. A 23-page document was created and successfully printed via the Typewriter driver to the Printronix.

One current method of connecting this type of printer to the network is from Orange Micro, called Orange Port. It looks like a Solana R-Server and allows connection of serial devices to an AppleTalk network.

Solana Electronics also markets devices that are designed to connect non-networkable printers to AppleTalk networks. If the printers are serial, either the R-Server, the X810.1, or X810.2 could be used. If the printer is parallel, then the X810.2 is necessary. The X8120 devices can be set up with up to 2MB of memory to be used as data buffer, store and forward messages, and so on.

While we know this scenario functions properly, any serial-to-parallel converter should work, and if the printer in question already has a serial connection, only network-to-serial conversion would be necessary.

For more information, search under: "Orange Micro"

Editor's Note 22 June 199: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

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Tech Info Library Article Number:5024



# Tech Info Library

## LaserWriter: Setting Manual Feed Through PostScript (2/95)

Revised: 2/22/95  
Security: Everyone

LaserWriter: Setting Manual Feed Through PostScript (2/95)

Article Created: 7 February 1990  
Article Reviewed/Updated: 22 February 1995

TOPIC -----

I have a DayStar Digital board and need the PostScript code necessary to set up the LaserWriter for Manual Feed.

DISCUSSION -----

According to the PostScript Language Reference Manual (ISBN #0-201-10174-2), Appendix D, Page 303:

"statusdict contains two operators (setjobtimeout and jobtimeout) with immediate effects that do not persist from one job to the next. The remaining statusdict entries are not operators but ordinary data values such as Boolean, integers, and strings. They may be read and written in the usual way by PostScript dictionary operators, such as get and put. There are no restrictions on changing these parameters; the effects of changes persist only until the end of the current job.

There are several additional statusdict entries that are not documented. They have to do with the operation of the server and are not intended for execution by users programs."

The statusdict entry is "manualfeed", which is a Boolean that controls whether the paper is to be fed manually (true) or from the paper tray (false)."

The syntax is basically the same as the AppleTalk-type changes you have seen previously.

Caution:  
-----

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.



```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
currentdict manualfeed true put
end
%
% Begin PostScript Code
%=====
```

Remember, these "volatile parameters" persist only until the end of the current job. Any volatile parameter(s) changed must be set to their desired values prior to printing and will revert to their default values after the print job is completed. Setting these parameters is accomplished by prepending the above short program to any text file sent to the LaserWriter, or by sending the program before sending any other PostScript file.

#### Article Change History:

22 Feb 1995 - Added PostScript caution and reformatted article.

Support Information Services

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Tech Info Library Article Number:5025



# Tech Info Library

## Macintosh II: Baud Rate Settings

Revised: 12/17/91  
Security: Everyone

Macintosh II: Baud Rate Settings

=====  
Article Created: 7 February 1990  
Article Last Reviewed: 10 August 1992  
Article Last Updated:

TOPIC -----

My Macintosh II systems interface to Opto-22 digital and analog I/O modules via the modem port. The Opto-22 is capable of serial communications at speeds up to 38.4 kilobaud. At this time, I'm using 19.2 kilobaud, but I would very much like to communicate over the modem port at 38.4 kilobaud. According to "Inside Macintosh Vol II," this baud rate is unsupported. Can you explain?

I heard that a baud rate code of 1, 2, or 3 might allow talking at 38.4 kilobaud. Is this true?

DISCUSSION -----

"Inside Macintosh, Volume II" (Addison Wesley, ISBN #0-201-17737-4) does NOT state that 38.4K is not supported in hardware. It DOES show that a predefined constant has not been created for the speed.

In other words, the constant "baud38400 = 1" is not part of the serial driver's implementation. This is not indicative of the serial driver's capabilities. By setting a serConfig to the correct value and using the SerReset function, the serial driver is able to use the 38.4K speed. Developer Support indicates that the correct value for 38.4K speed is 1.

The values of the various speeds are derived from the way bits are set in the serConfig variable of the SerReset function (discussed on page II-250 of Inside Macintosh). A table representing these variables looks like this:

| Bits: |    |    |    |   |   |   |   | Actual | Baud | Constant |
|-------|----|----|----|---|---|---|---|--------|------|----------|
|       | 64 | 32 | 16 | 8 | 4 | 2 | 1 | Value  | Rate | Name     |

| -- | -- | -- | -- | -- | -- | -- | ----- | -----   | -----     |
|----|----|----|----|----|----|----|-------|---------|-----------|
| 0  | 0  | 0  | 0  | 0  | 0  | 0  | = 0   | = 57600 | baud57600 |
| 0  | 0  | 0  | 0  | 0  | 0  | 1  | = 1   | = 38400 |           |
| 0  | 0  | 0  | 0  | 1  | 0  | 0  | = 4   | = 19200 | baud19200 |
| 0  | 0  | 0  | 1  | 0  | 1  | 0  | = 10  | = 9600  | baud9600  |
| 0  | 0  | 0  | 1  | 1  | 1  | 0  | = 14  | = 7200  | baud7200  |
| 0  | 0  | 1  | 0  | 1  | 1  | 0  | = 22  | = 4800  | baud4800  |
| 0  | 0  | 1  | 1  | 1  | 1  | 0  | = 30  | = 3600  | baud3600  |
| 0  | 1  | 0  | 1  | 1  | 1  | 0  | = 46  | = 2400  | baud2400  |
| 0  | 1  | 1  | 1  | 1  | 1  | 0  | = 62  | = 1800  | baud1800  |
| 1  | 0  | 1  | 1  | 1  | 1  | 0  | = 94  | = 1200  | baud1200  |

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Tech Info Library Article Number:5027



# Tech Info Library

## Macintosh: International System Software Differences

Revised: 5/16/91  
Security: Everyone

Macintosh: International System Software Differences

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This article last reviewed: 7 February 1990

TOPIC -----

What are the differences between the U.S. and International versions of System Software 6.0.3?

I'm doing a 12-country rollout of an application I wrote, and may be running international versions of the System Software at those sites (for instance, using B 6.0.3 in London).

Are there any differences that may affect the application I have written in Think C?

DISCUSSION -----

Keyboard layouts, sort orders, paper size, and unit defaults are among the things that might be different between System Software versions.

Inside Macintosh, Volume I, Chapter 19, and Volume 5, Chapter 16 (available in omnibus edition from Addison Wesley, ISBN #0-201-17737-4) discusses the International Utilities Package that allows software developers to make their software country-independent.

Everything you need to know about localization should be contained in these documents.

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Tech Info Library Article Number:5029



# Tech Info Library

## WDEF Virus: May Cause AppleShare Performance Problems

Revised: 3/4/90  
Security: Everyone

WDEF Virus: May Cause AppleShare Performance Problems

=====

This article last reviewed: 7 February 1990

TOPIC -----

Over the past 2 weeks, some of my AppleShare workstations are sporadically slowing down.

When a server volume is mounted and the mouse is moved, the pointer changes to a watch, and the AppleTalk arrows activate. Trashing the server volume makes the problem go away.

These workstations are Macintosh II and Macintosh Plus Systems running System Software 6.0.2 and using AppleShare 2.0.1.

I also have a question regarding a network problem.

I have a six-system network on PhoneNET cabling, with one Macintosh SE/30 as an AppleShare server. After using the one Macintosh IICx for about a minute, it freezes, and the server activity bar just bounces back and forth for several minutes. I connected only the Macintosh IICx to the Macintosh SE/30 to lessen the problem, but it is still there. I've replaced the connectors on both machines.

The hardware passes all diagnostics. The Macintosh SE/30 has an HD80 SC, and the Macintosh IICx has an HD40 SC.

Can you explain why these things are happening?

DISCUSSION -----

There are two likely causes for these problems.

The first would be poor network connections or wiring that causes excessive packet loss and retries, resulting in poor performance. The second possibility is that the AppleShare File Server client stations are infected with the WDEF

virus.

Since you are reporting multiple occurrences of what seems to be the same problem, a cable or connector malfunction seems unlikely. We would suspect that the WDEF virus has spread at your sites.

While the WDEF virus does not appear to cause malicious damage (other than propagating), it does have bugs and side effects that are very annoying at best. It is spread via the Desktop file of Macintosh disks, and is activated when the Finder opens this file as part of its normal disk-mounting process. Once activated, WDEF copies itself to the Desktop files of other mounted volumes.

This virus effects server performance because it tries to infect the Desktop file of mounted server volumes as well as locally mounted disks. It first tests the target Desktop file to see if it's already infected, and if not, copies itself there. With network volumes, this activity requires many AFP (AppleTalk Filing Protocol) requests and is noticeably time-consuming on a LocalTalk- or PhoneNET-based network. This would be the effect you are noticing.

Fortunately, this virus is easy to detect and eliminate. One way is to scan your disks with a recent version of an anti-virus utility that has been updated to recognize the WDEF virus. Disinfectant 1.5, which is known to detect current strains of the WDEF virus as well as many other viruses, is one such utility. We recommend using it to scan all floppies and hard disks that may have been used recently.

Disinfectant 1.5 is also available under the AppleLink Developer Services icon by following this path:

- Developer Services
  - Macintosh Developer Technical Support
    - Tools
      - Virus Tools
        - Disinfectant 1.5

Disinfectant is capable of detecting and removing WDEF, but WDEF is also simple to remove by simply rebuilding the Desktop file of an infected disk. Hold down the Command and Option keys while the Macintosh is loading the Finder. Confirm the dialogs asking if you really want to rebuild the Desktop file on each mounted volume. The new Desktop file will be free of WDEF. Remember to restart the Macintosh after disinfecting volumes. This is necessary to remove any copies of WDEF that may be currently executing.

Another means of WDEF detection and removal is to use ResEdit. It allows you to view all the resources in a file, and can, therefore, be used as a primitive means of detection. If there are any WDEF resources present in a Desktop file, delete them. A normal Desktop file will not contain any WDEF resources.

To remove WDEF from server volumes, mount the volumes on a client Macintosh and use ResEdit to delete the server volume Desktop files. A Desktop file is not necessary on an AppleShare File Server volume, and by removing it you reduce

the risk of a future WDEF outbreak affecting server performance. Do not try to remove the files Desktop DB and Desktop DF. These are the files used by AppleShare instead of a Desktop file. They are not infected by WDEF, but are needed by AppleShare.

Other anti-virus software is available, both commercially and non-commercially, to detect viruses and to prevent future infections. SAM is a commercial package from Symantec Corp. that contains a detection and repair program from Symantec Corp. with similar functionality to Disinfectant. It also contains an INIT that alerts the user to, and prevents, infection attempts by known viruses.

There is also a public domain INIT, Eradicator!, that prevents infections of the WDEF virus, and removes any occurrences it detects.

We strongly recommend the installation of this or some similar type of program to help prevent infection.

For more information, search under: "Symantec" or "WDEF" or "Viruses".

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Tech Info Library Article Number:5030



# Tech Info Library

## Apple Scanner: Unable To Be Recognized Problem

Revised: 3/4/90  
Security: Everyone

Apple Scanner: Unable To Be Recognized Problem

=====

This article last reviewed: 9 January 1990

TOPIC -----

I have had several problems with a Macintoshes SE/30 and my Apple Scanner.

When the Macintosh SE/30 is connected to the Apple Scanner, it doesn't recognize the scanner. The scanner does, however, work with a Macintosh IIX using the same cables and terminator.

I was finally able to make the connection between the Macintosh SE/30 and the scanner by putting a new hard drive in the SE/30, but I still don't know what the problem is.

DISCUSSION -----

You have a problem with impedance matching.

This is a known problem with the Apple Scanner. The situation occurs when the impedance created by a combination of devices and terminators on the SCSI chain causes one device to be "lost" on the chain.

There is no official service procedure. A workaround is to change the impedance of the SCSI chain by adding one or more terminators, SCSI devices, or an additional SCSI extender cable. The device in question should reappear.

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Tech Info Library Article Number:5031





# Tech Info Library

## EtherTalk 2.0 and 802.3 Framing

Revised: 6/29/90  
Security: Everyone

EtherTalk 2.0 and 802.3 Framing

=====

This article last reviewed: 9 January 1990

TOPIC -----

Using a Macintosh II with the Apple EtherTalk Card, I hooked up and ran concurrently:

- 1) VersaTerm-Pro and Exodus X windows using a TSSnet transport providing login and X server capability to a DEC VAX running VMS and DECwindows.
- 2) NCSA Telnet and Exodus X windows using a Macintosh TCP/IP transport providing login and X server capability to a DEC VAX running Ultrix with X11 clients.
- 3) AppleShare Workstation using an AppleTalk transport to a DEC VAX running AlisaShare file server.

These three protocol stacks ran with Apple EtherTalk Phase 1 drivers, which use Ethernet framing, and ran concurrently without interference.

Would the above scenario work with Apple's EtherTalk Phase 2 drivers, which use 802.3 framing?

DISCUSSION -----

The IEEE divides the OSI Data Link Layer into the Logical Link Control (LLC) layer and the Medium Access Control (MAC) layer. It also developed the SubNetwork Address Protocol (SNAP) standard to accommodate the large number of protocols.

With EtherTalk Phase 1, AppleTalk data was transmitted in the data field of an Ethernet packet. With EtherTalk Phase 2, AppleTalk data is encapsulated in a SNAP packet, which is encapsulated in an LLC packet and transmitted in a CSMA/CD 802.3 packet.

Though EtherTalk Phase 2 uses the SNAP interface, higher-level protocols can go directly to the LLC layer without using SNAP. SNAP allows for connectionless communication services only.

1 and 2)

These higher protocols go directly to the LLC layer and use the Ethernet driver for the EtherTalk Card instead of using our higher-level EtherTalk 2.0 software. They should work fine.

3) This should work fine when Phase 2 support for AppleTalk for VMS is released.

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Tech Info Library Article Number:5032



# Tech Info Library

## DAL Developer's Toolkit: Callable Libraries

Revised: 7/15/92  
Security: Everyone

DAL Developer's Toolkit: Callable Libraries

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Article Created: 4 March 1990  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

Is it possible to use LightSpeed C 3.02 to call the XCMDs (external commands) for Data Access Language (DAL, formerly known as "CL/1")? I currently have the externals for HyperCard.

DISCUSSION -----

The DAL Developer's Toolkit for Macintosh includes callable libraries for:

- LightSpeed C
- MPW C
- MPW Pascal

in addition to HyperCard XCMDs.

Most of the commercial developers who have already developed products on top of DAL (ClearAccess, Omnis 5, 4th Dimension, MacDBC) have used Lightspeed C or MPW Pascal libraries.

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Tech Info Library Article Number:5033



# Tech Info Library

## Macintosh IIci: No Way To Disable 32-Bit QuickDraw

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: No Way To Disable 32-Bit QuickDraw

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Article Created: 9 January 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

Is there any way to disable 32-Bit QuickDraw on the Macintosh IIci?

DISCUSSION -----

There is no current method to disable 32-Bit QuickDraw on the Macintosh IIci.

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Tech Info Library Article Number:5034



# Tech Info Library

## Macintosh OS C Compiler and Draft ANSI Standard

Revised: 3/4/90  
Security: Everyone

Macintosh OS C Compiler and Draft ANSI Standard

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This article last reviewed: 9 January 1990

TOPIC -----

Do the Macintosh OS and A/UX C compilers meet the ANSI standard X3J11 draft X3.259? I need to include that information in a proposal.

DISCUSSION -----

The C compiler that comes with A/UX is NOT compatible with the draft ANSI standard for C. (The A/UX C compiler is the standard System 5.2.2 release compiler.)

Under the Macintosh OS, the MPW 3.0 C compiler was written to move towards the ANSI draft standard, but since the standard is at a draft stage, engineering has a moving target.

However, if you read Appendix D of the MPW 3.0 C reference manual (APDA #M0022LL/A) you will see that the majority of the changes to the C compiler were implemented for ANSI compatibility.

Both Appendix D and the Release Notes have sections pertinent to ANSI compatibility. Read them for further information.

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Tech Info Library Article Number:5035



# Tech Info Library

## Monitors Control Panel: Special Gamma Function Explained 1/93

Revised: 1/21/93  
Security: Everyone

Monitors Control Panel: "Special Gamma" Function Explained 1/93

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Article Created: 9 January 1990

### Article Change History

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09/14/92 - REVISED

- To provide additional information.

01/21/93 - REVISED

- To add more detailed instructions for changing Gamma settings.

### TOPIC -----

Can you provide any information on the Special Gamma function in the Monitors control panel?

### DISCUSSION -----

#### How to Change the Gamma Setting

-----

Special Gamma allows different gamma tables to be selected. You access it through the Monitors control panel:

- By holding down the Option key while clicking the "Options..." button  
or
- By holding down the Option key while double clicking the happy Mac face that appears in the monitor window.

Now you get a dialog box where you can change the setting:

1) Check the "Use Special Gamma" checkbox.

2) Highlight the "Mac HiRes Std Gamma" or "Uncorrected Gamma" in the scroll box.

3) Restart the computer.

#### An Example of Special Gamma Table Use

-----

A company has a video card that supports the two different displays that they sell. Unfortunately, these two displays show colors differently on the screen. Being able to select the gamma table allows the company to make both displays generate comparable colors to the viewer's eye.

The following information is on page 9-16 of "Designing Cards and Drivers for the Macintosh II and Macintosh SE" (Addison Wesley, ISBN #0-201-19256-X):

"The gamma table compensates for nonlinearities in a display's color response by providing either a function or a look-up value that associates each displayed color with an absolute RGB value. It is used to modify a video card's color look-up table. The gamma table is described in the chapter 'Graphic Devices' of Inside Macintosh Volume V (Addison Wesley, ISBN #0-2-1-17719-6)."

Displays that don't use gamma-table correction tend to look over-saturated and dark. Although determining the correct values for a gamma table can be difficult without special tools, the table's contribution to image quality can be striking.

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Tech Info Library Article Number:5037



# Tech Info Library

## Macintosh IICI: Two-Page Monitors Need NuBus Video Card

Revised: 7/9/92  
Security: Everyone

Macintosh IICI: Two-Page Monitors Need NuBus Video Card

=====

Article Created: 9 January 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated: 8 July 1992

### TOPIC -----

Does the Macintosh IICI support the Apple Portrait Display and Apple 2-page Monochrome Monitor? I've heard that it doesn't.

### DISCUSSION -----

The Macintosh IICI has the equivalent of a video card built into the main logic board. Other video cards can be added to any one of the three NuBus slots.

The built-in video circuitry supports:

- Apple Macintosh 12" RGB Display (@ 2, 4, 16, and 256 colors or levels of gray)
- Apple High-Resolution Monochrome Monitor (@ 2, 4, 16, and 266 levels of gray)
- AppleColor High-Resolution RGB Monitor (@ 2, 4, 16 and 256 colors or levels of gray)
- Apple Macintosh Portrait Display (@ 2, 4, and 16 levels of gray)

Therefore, the Two-Page Monochrome Monitor does not work if simply connected to the built-in video circuitry, but WILL if used with its respective NuBus video card.

All the other monitors mentioned will also work if connected to the Macintosh IICI through compatible NuBus cards.



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Tech Info Library Article Number:5039



# Tech Info Library

## Icons: Bibliography on Design

Revised: 7/27/93  
Security: Everyone

Icons: Bibliography on Design

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Article Created: 4 March 1990  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

Does Apple have international icons? I want to create a database and use it in different countries by displaying icons in a universal way.

DISCUSSION -----

We strongly recommend that you obtain one or more of the numerous symbols dictionaries or dictionaries of icons, often available from graphic-arts, graphic-design, and technically oriented bookstores. Some of these reference dictionaries are listed at the end of this document. These dictionaries are helpful when creating and implementing icons.

We request and obtain design patterns for many of the icons created at Apple, after which Apple Legal is generally open to them being used by developers -- but for their designed purpose only, such as being used in Macintosh software that runs on the Macintosh, not for porting to other platforms.

Though Apple has no list of icons that are distributed, the icons Apple developed can be found in many locations, including user and technical manuals, the Icon Stack in HyperCard, advertisements, and so on. They are also visible in the system software.

Among the many programs that allow you to create and edit icons are ResEdit from APDA and Icon-It! from Tactic Software.

Also, Icon Factory from HyperPress Publishing Corporation contains more than 2,000 icons that can be used to customize HyperCard stacks.

-----

Signs, Icons, and Symbols Bibliographic References

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-----

To locate a vendor's address and phone numbers, use vendor name as a search string.

(NOTE: "Tactics International", also listed in the TIL, is a different company)

#### Article Change History:

26 July 1993 - Company title changed from Dover to DOVatron International.

9 January 1990 - Updated for technical accuracy.

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Tech Info Library Article Number:5040



# Tech Info Library

## Macintosh Portable: Connecting External SCSI Devices

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: Connecting External SCSI Devices

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Article Created: 9 January 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

I've had numerous problems connecting external SCSI devices to Macintosh Portables. I've tried three Portables with several external SCSI drives and printers.

When I tried to start up the Macintosh Portable with an external SCSI drive attached, I received the question mark icon. After I disconnected the SCSI system cable from the Portable, the internal hard immediately kicked in and started up the machine.

Once the machine started up, I connected the drive and tried to mount it with a SCSI CDEV utility. I was able to do so once, but in every other instance, the utility was unable to identify the SCSI address of the external drive or mount it. In fact, SCSI address 0 disappeared when the external drive was connected, and nothing requiring internal hard disk access could be done until the external drive was disconnected. This corresponded with the symptoms while starting up; apparently the entire SCSI bus was disrupted. However, SCSI address 7 remained intact.

Can you explain what's going on? Any ideas?

DISCUSSION -----

We have, on different occasions, connected numerous types of external hard drives to the Macintosh Portable. In all cases, the drives and the Macintosh Portable functioned properly.

Make sure you're using:

- Proper termination and good terminators

- Good cables
- The SCSI number on the peripheral is something other than 7 (reserved for the CPU) and 0 (if you have an internal hard disk).
- The external drive is not damaged. (If it is damaged, it may not be providing proper termination power.)
- The external drive is connected and powered on before you start up the Macintosh Portable.

We suspect that your problem may be caused by the last variable.

The Macintosh Portable does not provide termination power, so any external SCSI devices connected to the Macintosh Portable must be turned on and ready. Termination power is required for the terminator to terminate the SCSI bus. Until external SCSI devices are powered on and ready, the Macintosh Portable will not start up. The external SCSI devices must remain on while using the Macintosh Portable, or the system will hang. If you erroneously turn off an external device and the Macintosh Portable hangs, you can sometimes resume by turning the SCSI device back on.

The proper and safest way to add SCSI devices to the Macintosh Portable is to first turn off the Macintosh Portable using the Shut Down function. Also make sure the external SCSI devices are turned off. Your external SCSI devices can then be plugged in without damaging the Macintosh Portable.

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Tech Info Library Article Number:5041



# Tech Info Library

## Using Macintoshes on Token Ring Network

Revised: 3/4/90  
Security: Everyone

Using Macintoshes on Token Ring Network

=====

This article last reviewed: 9 January 1990

TOPIC -----

I want to implement the following:

- 1) Macintosh IIcx connection direct on 16MB Token Ring.
- 2) Macintosh IIcx connection from a 4MB Token Ring to a 16MB Token Ring via some router or gateway and then onto an Ethernet backbone (Cabletron twisted-pair).

I currently have 180 +/- 15 systems on the network during peak periods. IBM will be putting in Model 80s supposedly with Office Vision in March. If they cannot make the deadline, they will use OS/2 and Windows-PM. Connectivity between the IBM and Apple systems would be very helpful.

There are some programs that may need to work in both residential areas (one session in the IBM camp, the next in the Apple camp). I cannot rewire the other buildings once the IBM wire is in place, so I need to connect to the 16MB Token Ring somehow.

DISCUSSION -----

The TokenTalk NB Card does not support 16MB Token Rings, and we are not aware of a product for the Macintosh that will connect directly to a 16MB Token Ring. Therefore, we are not able to suggest a solution for option #1.

For option #2, there is a possibility. IBM has software for a PC that provides source-level routing between two Token Ring networks (including routing between a 4MB and a 16MB network). Since TokenTalk supports source-level routing, the TokenTalk packets would be routed by this bridge. The name of this IBM software product is "Token Ring Bridge Program".

One possible configuration for the network you described is:

Put the Macintoshes on a 4MB ring. This 4MB ring would be connected to the 16MB ring via a PC with two Token Ring cards (one 4MB and one 16MB).

Routing to the Ethernet will be somewhat trickier. You could have another PC running the bridge program as described above. Connected to the 4MB side of this machine would be a Macintosh with a TokenTalk NB Card and an EtherTalk Card running the Apple Internet Router.

This configuration will route only AppleTalk packets onto the Ethernet. Some other device would have to be responsible for routing other protocols onto the Ethernet.

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Tech Info Library Article Number:5042



# Tech Info Library

## Macintosh Portable: Battery Rating

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Battery Rating

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Article Created: 9 January 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

An Australian customs tariff for Macintosh Portable batteries states that the following requirement must be met:

"Accumulators, lead acid, including gel and lead calcium types, permanently sealed, rechargeable, capacity NOT exceeding 11 amp-hours at the 20-hour rate."

What is meant by the 20-hour rate, and do our Portable batteries fall within this rate?

DISCUSSION -----

The 20-hour rate is an indicator of battery capacity, a measure of how much current is required to drain the battery over a 20-hour period. Macintosh Portable batteries carry a rating of 5.4 amp-hours at 20 hours, so they fall within this guideline.

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Tech Info Library Article Number:5043





# Tech Info Library

## Apple Portrait Display: Video Card Pinouts

Revised: 10/22/90  
Security: Everyone

Apple Portrait Display: Video Card Pinouts

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This article last reviewed: 9 January 1990

TOPIC -----

I need the pinouts for the new Portrait Display Video Card that uses the DB-15 connector. I also need the pinouts of the cable that connects the new DB-15 card to the WD-13 on the Portrait Display.

DISCUSSION -----

The pinouts for the new version of the Portrait Display Video Card are identical to those of the Macintosh IIci built-in video connector.

| Pin   | Signal      |                      |
|-------|-------------|----------------------|
| ---   | -----       |                      |
| 01    | RED.GND     | Red Video Ground     |
| 02    | RED.VID     | Red Video            |
| 03    | CSYNC       | Composite Sync.      |
| 04    | MON.ID1     | Monitor ID, Bit 1    |
| 05    | GRN.VID     | Green Video          |
| 06    | GRN.GND     | Green Video Ground   |
| 07    | MON.ID2     | Monitor ID, Bit 2    |
| 08    | nc          | (No Connection)      |
| 09    | BLU.VID     | Blue Video           |
| 10    | MON.ID3     | Monitor ID, Bit 3    |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground |
| 12    | VSYNC       | Vertical Sync.       |
| 13    | BLU.GND     | Blue Ground          |
| 14    | HSYNC.GND   | HSYNC Ground         |
| 15    | HSYNC       | Horizontal Sync.     |
| Shell | CHASSIS.GND | Chassis Ground       |

The finished-goods part number for this cable is #590-0615.

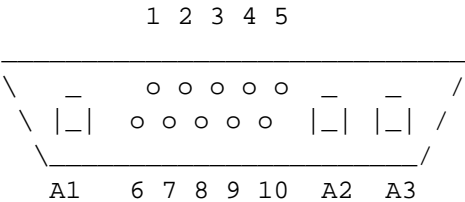
The pin requirements for a cable between a new version of the Portrait Display

Video Card (or a Macintosh IIci) and a Portrait Display are as follows:

| DB-15<br>(On Card) | Signal      | D Series-Size 3<br>(On Display) |
|--------------------|-------------|---------------------------------|
| -----              | -----       | -----                           |
| 1                  | RED.GND     | A3 (Outer)                      |
| 2                  | RED.VID     | A3 (Center)                     |
| 3                  | CSYNC       | 5                               |
| 4                  | MON.ID1     | 9                               |
| 5                  | GRN.VID     | A2 (Center)                     |
| 6                  | GRN.GND     | A2 (Outer)                      |
| 7                  | MON.ID2     | 8                               |
| 8                  | nc          |                                 |
| 9                  | BLU.VID     | A1 (Center)                     |
| 10                 | MON.ID3     | 3                               |
| 11                 | C&VSYNC.GND | 4,7,10                          |
| 12                 | VSYNC       | 2                               |
| 13                 | BLU.GND     | A1 (Outer)                      |
| 14                 | HSYNC.GND   | 1                               |
| 15                 | HSYNC       | 6                               |
| Shell              | CHASSIS.GND | Shell                           |

Following are the signal assignments for the Portrait Display D-series size 3 connector, shown from the back of the monitor.

| Pin   | Signal Name             |
|-------|-------------------------|
| ---   | -----                   |
| A1    | Monochrome video        |
| A2    | 75-ohm                  |
| A3    | 75-ohm                  |
| 1     | Hsync return            |
| 2     | Vsync                   |
| 3     | Sense #3                |
| 4     | Sense ground            |
| 5     | Csync (not used)        |
| 6     | Hsync                   |
| 7     | Vsync return            |
| 8     | Sense #2                |
| 9     | Sense #1                |
| 10    | Csync return (not used) |
| Shell | Shell ground            |



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Tech Info Library Article Number:5044



# Tech Info Library

## AppleShare PC And Lotus Printing Problem: Use Freelance Plus

Revised: 3/4/90  
Security: Everyone

AppleShare PC And Lotus Printing Problem: Use Freelance Plus

=====

This article last reviewed: 9 January 1990

TOPIC -----

Configuration  
-----

- Lotus version 2.0.1 (with the Lotus Value Pack, which provides PostScript printer support. Before this, PostScript was not supported.)
- DOS versions 4.0 and 3.2 and Compaq 3.3. The problem is the same with all versions.
- AppleShare PC 2.0 with LocalTalk
- LaserWriter Driver 6.0 on LaserWriter IINTX
- Impress, which allows Lotus users to combine text and graphics on the same page. It has its own printer drivers.

Problem  
-----

When I am sending jobs to the printer, there is some communication going on between the PC and the LaserWriter. The PC is flashing the wait message, and the green light on the LaserWriter is flashing, but eventually the PC displays a "system error" and needs to be restarted.

DISCUSSION -----

We tested the problem you described and also got an error when trying to print to the LaserWriter IINTX. Using a LocalTalk packet Peek program, we could not find any PostScript code in the packets sent to the printer. We double-checked our installation of the PostScript drivers, and still got no PostScript code output from Lotus.

While verifying the installation, we found something that describes the above behavior: the Lotus Value Pack uses CONFIG.SYS to support PostScript. To use the PostScript drivers, you must install the DOS device driver, LOTUSPS.SYS, in the CONFIG.SYS file. To do this, Lotus has to intercept interrupt 17, which is used by MS-DOS for printing.

Since AppleShare PC is loaded after CONFIG.SYS, and it also intercept interrupt 17 to direct printing traffic over the AppleTalk network, AppleShare PC claims ownership of interrupt 17. Therefore, when you print from Lotus, AppleShare PC gets the data and sends it over the network to the printer because it assumes the data is in PostScript, and the Lotus device driver in CONFIG.SYS does not have a chance to convert it to PostScript.

The new version of Freelance Plus from Lotus -- which is smaller memory-wise and runs on all of the machines -- comes with a PostScript driver that not only works across the AppleTalk network, but can open and print the Lotus Printgraph files.

As you know, you can also use a Lotus "add-on" package, such as Allways or Impress, as a workaround.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5045



# Tech Info Library

## AppleShare PC & InterLAN Ethernet Card Compatibility

Revised: 8/28/90  
Security: Everyone

AppleShare PC & InterLAN Ethernet Card Compatibility

=====

This article last reviewed: 9 January 1990

TOPIC -----

I work with a company that thousands of PCs. We are now buying into Macintosh technology in a big way but are concerned with PC use.

We are very big UNIX users and rely totally on NFS to supply us with our file server needs. On the PC side, we are using PC NFS, which allows them to use an Ethernet card from InterLAN.

We would like to use AppleShare PC, but only if we don't have to replace all our Ethernet cards. Has AppleShare PC has been tested with the InterLAN card?

DISCUSSION -----

AppleShare PC 2.0 has not been tested with InterLAN's Ethernet card. Since Apple and Novell published the Open Datalink Interface (ODI), the third-party vendors are responsible for providing drivers to ensure compatibility.

ODI allows a separation between the network protocol stacks and the device driver. These drivers are specific to a particular network media, such as LocalTalk, Ethernet, or Token Ring. AppleShare PC 2.0 includes drivers for:

- 3COM's EtherLink II and EtherLink/MC (MicroChannel)
- Three IBM 802.2 Token Ring cards
- Apple's LocalTalk PC Card
- DayStar Digital's MCA LocalTalk Card (MicroChannel)

The best way to find out if this will work is to contact InterLAN to see if they support the Novell/Apple ODI specification -- or, if possible, to run a test with an InterLAN Ethernet card.

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Tech Info Library Article Number:5046



# Tech Info Library

## Macintosh Finder: fPRT Resource Not a Virus

Revised: 7/19/91  
Security: Everyone

Macintosh Finder: fPRT Resource Not a Virus

=====

Article Created: 18 January 1990  
Article Last Reviewed: 2 February 1991  
Article Last Updated:

### TOPIC -----

Is there an fPRT virus? Something appears to have added 144 bytes to the System 6.0.3 Finder and a new fPRT resource.

Is there anything strange about an fPRT resource being added to the Finder?

### DISCUSSION -----

The existence of the fPRT resource in the Finder is not an indication of a virus. Although there is no fPRT resource in the Finder as it is shipped on System Software disks, it is a resource belonging to the Finder. When you choose Page Setup from the Finder's File menu, the Finder stores the settings you have chosen in an fPRT resource for future reference.

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Tech Info Library Article Number:5047



# Tech Info Library

## WDEF Virus: Information

Revised: 3/4/90  
Security: Everyone

"WDEF" Virus: Information

=====

This article last reviewed: 18 January 1990

TOPIC -----

This article contains information on spotting and neutralizing a new virus (sometimes called the "WDEF virus")

DISCUSSION -----

There is a Macintosh virus (sometimes called the "WDEF virus") that uses a different method to transfer itself between machines. Because this virus attaches itself to the Desktop file of a disk, it infects a hard disk when the infected floppy disk is inserted into the Macintosh.

If you want to check a disk for infection, follow these steps:

- 1) Start your machine in Finder, NOT MultiFinder.
- 2) Run ResEdit.
- 3) Insert the suspect floppy disk.
- 4) Open the Desktop file.
- 5) If it contains a WDEF resource with ID=0, it is infected.

If you insert an infected floppy disk when running MultiFinder, the Desktop file is automatically opened, and your system will be infected.

There is a way to keep this virus from infecting your system:

- 1) Your current application must be the Finder. If you are running MultiFinder, you should have the Finder's menus in the menu bar.
- 2) Hold down both the Command and Option keys.



- 3) With these keys held down, insert the unlocked floppy disk.
- 4) You will be asked if you want to rebuild the Desktop file.
- 5) Choose "Yes". If you choose "Cancel" at this point, and the floppy is infected, you will infect your system.

Rebuilding the Desktop removes the virus.

As of February 1990, Apple is aware of several virus tools that can automatically detect this virus:

- SAM v1.5
- AntiToxin v1.3
- Virex v2.3
- Disinfectant v1.6
- Eridicator (Public Domain)
- Kill WDEF (Public Domain)

For more information, search on the above product names in the Tech Info Library.

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Tech Info Library Article Number:5048



# Tech Info Library

## Macintosh Portable: Battery DA Doesn't Exactly Measure Charge

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Battery DA Doesn't Exactly Measure Charge

=====

Article Created: 18 January 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated: 8 July 1991

TOPIC -----

I am evaluating 10 Macintosh Portables.

Eight were removed from their shipping materials and charged for 4 to 5 hours. They were then left untouched for 4 hours, and as soon as they were activated, the battery DA indicated that there was only a 3/4 charge.

After examining the documentation, it was apparent that the battery should be charged for at least 10 hours. Macintosh Portables number 9 and 10 were then charged (for the first time) for 12 and 24 hours, respectively.

From this point on, all systems were treated and behaved in essentially the same ways. When one system was tested, the "battery-low" warning appeared after only 3 hours of non-continuous use. On some occasions, after charging, the battery DA would say 3/4 full, then, although the machine had not been used, it would indicate almost completely full 2 hours later. On other occasions, one could actually watch the battery power level go down.

Is this kind of activity to be expected from the Portable Battery?

DISCUSSION -----

The Battery DA is not an exact representation of battery state.

It indicates battery-low conditions by comparing the current battery state to the power curve of a "typical" Macintosh Portable battery. Since the actual curve for all batteries is not the same (some start higher and decay slower), the output of the DA cannot be considered exact.

A perception problem may also exist in regards to the portable battery DA. When the hard drive wakes up or the back lighting is turned on and off the battery DA fluctuates a significant amount. Many customers interpret this a 1 to 1 voltage drain on the battery and think their battery has suddenly lost most of it's voltage. Because of the increased load of the back-lighting the battery DA will fluctuate even more than it did on the original non-backlit portable. It is important that the customer understand that the batter DA is only a "rough" estimate of the battery voltage level and will vary significantly according the current load on the system.

(NOTE: Even after the first warning is received, the user should have about an hour before hardware shutdown occurs.)

There are many possible explanations for the situation you report: namely, the DA indicating a higher charge after the Macintosh sits inactive for a while.

First, a warm battery indicates a higher charge than a cold one. If the first reading was taken immediately after bringing the Macintosh Portable indoors, the DA would show a higher charge after the system reached room temperature. The same could hold true with the system operating.

The estimated time before the battery needs recharging depends on how the system is being used. For example, the charge life of a hard disk-equipped Macintosh Portable would be closer to 6 hours, while the same system using a RAM disk would last closer to 12 hours. The how-long-until-sleep setting in the Macintosh Portable CDEV also changes battery life. Also, floppy disk-intensive applications require more power than those that use the more efficient hard disk.

As far as the low-power warning appearing after only 3 hours, it's unclear whether that system was one of the original eight that were undercharged to begin with. It's important to remember that the Macintosh Portable battery is lead-acid and not ni-cad. Ni-cad batteries benefit if they are charged completely and then fully drained each time. Lead-acid batteries are just the opposite; the more charged you keep the battery, the longer it holds a charge.

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Tech Info Library Article Number:5049



# Tech Info Library

## Macintosh IIci: How To Disable Built-In Video

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: How To Disable Built-In Video

=====

Article Created: 18 January 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

Is it possible to disable the Macintosh IIci system's built-in video?

If so, does this mean that I can improve the Macintosh IIci computer's performance by adding a video card to the NuBus slot?

DISCUSSION -----

Yes, it is possible to disable the built-in video of the Macintosh IIci:

- 1) Leave the RAM SIMM bank A empty.
- 2) Don't connect a monitor to the built-in video connector.

The built-in video circuitry disables itself if there is no RAM in bank A or if it fails to recognize a compatible monitor attached to the connector. The Macintosh IIci and the new version of the Macintosh II Video Card identify monitors by checking the states of three ID lines in the cable between the computer and the monitor. If no monitor is connected, it disables itself.

Using a NuBus video card can increase or decrease "performance", depending on what work is being done on the Macintosh IIci. The effect of built-in video's cycle-stealing on RAM bank A can reduce the speed of anything that accesses data in that bank by 6 to 51%, depending on the monitor and bit depth being used. On the other hand, moving large amounts of video data to the built-in video is faster than moving it over NuBus to a video card because there is no 10MHz NuBus limitation with built-in video.

What all this means is that a low-computation, high-graphic program tends to run faster on the built-in video, while a high-computation, low-graphic program tends to run faster with a NuBus video card. Optimal system configuration depends on what the Macintosh IIfx is used for.

DayStar Digital's FastCache Card can help offset the cycle-stealing performance penalty.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5050



# Tech Info Library

## Multiple Sessions Possible On VAX Systems

Revised: 3/4/90  
Security: Everyone

Multiple Sessions Possible On VAX Systems

=====

This article last reviewed: 18 January 1990

TOPIC -----

I'm using the White Pine Mac241 product as a terminal emulator for my two VAX systems, and I want to do multiple sessions on the VAX systems -- a session on each at the same time over LocalTalk. Does the LAT protocol needs to be supported to do this?

I think multiple VAX sessions are possible, but I do not know if the White Pines product supports it. Can you help?

DISCUSSION -----

Digital's Local Area Transport (LAT) architecture is a set of protocols used by terminal servers to communicate with host computer systems over a high-bandwidth, high-reliability communications channel.

Multiple VAX sessions are currently supported by White Pine Mac240 and Mac241 using Digital's CTERM Network Protocols implemented in Alisa TSSnet. Any terminal emulators using the WPIO interface (as defined by White Pine Software) are supported. Contact Alisa for more particular information on the interface.

For more information, search under: "Alisa Systems" and "White Pine"

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Tech Info Library Article Number:5051



# Tech Info Library

## Macintosh IICx: Purpose of Jumper W3

Revised: 7/14/92  
Security: Everyone

Macintosh IICx: Purpose of Jumper W3

=====

Article Created: 18 January 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

What is the purpose of jumper W3 on a Macintosh IICx logic board?

DISCUSSION -----

The W3 jumpers are put in place after the testing phase of Macintosh IICx production is completed. When removed, the test equipment can arbitrate directly with the MC68030 microprocessor. They should never be removed unless the logic board is being serviced by factory technicians.

Though the jumpers shouldn't be removed, the logic board will function properly without them -- as long as there is no bus master card, such as an accelerator, in any of the NuBus slots.

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Tech Info Library Article Number:5052



# Tech Info Library

## AppleShare PC: Selecting a Printer From Microsoft Windows

Revised: 3/4/90  
Security: Everyone

AppleShare PC: Selecting a Printer From Microsoft Windows

=====

This article last reviewed: 18 January 1990

TOPIC -----

When I try to print to a LaserWriter from PageMaker on a DOS machine (using AppleShare PC 1.1), nothing happens.

Other than during installation of Microsoft Windows and in PageMaker (where you can choose from the printers that are defined in WIN.INI) is there any other place to define what kind of printer you are going to use?

DISCUSSION -----

When you first set up Microsoft Windows, you select the printer you'll use with your system. To change this selection, use the Add New Printer and Delete Printer commands from the Installation Menu in the Control Panel (run CONTROL.EXE from the MS-DOS Executive window).

Also, from the Setup Menu in the Control Panel, you can use the Printer command to specify a system default printer and set its output modes.

The system default printer is the printer that applications designed for Microsoft Windows will use. Printer output modes are printer-specific settings, such as Portrait versus Landscape, or color for plotters.

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Tech Info Library Article Number:5053





# Tech Info Library

## TokenTalk: Source-Level Routing

Revised: 3/4/90  
Security: Everyone

TokenTalk: Source-Level Routing

=====

This article last reviewed: 18 January 1990

TOPIC -----

Does you know what bridges/routers were used to test the IBM Source Routing capability of the Apple TokenTalk NB Card? Were there any incompatibilities with the AppleTalk Internet Router running in AppleTalk Phase 2 mode or with the Upgrade Utility? Is there a version of Peek that supports the AppleTalk Phase 2 and/or Token Ring LAP?

DISCUSSION -----

The source-level routing that was used to test the TokenTalk NB Card and TokenTalk software was IBM's Token Ring Bridge Program running on a PC. However, any product that provides source-level routing should work with TokenTalk. There should be no compatibility problem with the Internet Router and the Upgrade Utility.

LocalTalk Peek can be used with both AppleTalk Phase 1 and Phase 2 networks. We are not aware of any TokenTalk Peek.

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Tech Info Library Article Number:5054



# Tech Info Library

## AppleTalk Phase 2: Network Nodes Store Recent Network Info

Revised: 3/4/90  
Security: Everyone

AppleTalk Phase 2: Network Nodes Store "Recent" Network Info

=====

This article last reviewed: 18 January 1990

TOPIC -----

On an AppleTalk Phase 2 network that has multiple levels of routers, does the workstation retain information about the local router or about all routers that exist on the network?

DISCUSSION -----

EtherTalk 2.0 and TokenTalk 2.0 nodes store information about "recently heard from" networks and routers. The node does not store information about all routers on the Internet.

The first two paragraphs below are from the AppleTalk Phase 2 specification:

"The following information applies to AppleTalk Phase 2 nodes only. It is desirable for nonrouting nodes to send each packet to the router yielding the shortest route to the packet's destination network--the "best" router. Although the current specification does not require this, an optional strategy follows for implementing a "best routing" DDP algorithm in nonrouting nodes.

"When a packet arrives from an off-network node, DDP reads the data-link-level source. This is the address of the last router on the route from the originating network. This router should generally be the optimal "next router" -- in terms of hops -- in the route back to that network. DDP maintains a cache of "best routers" for "recently heard from" networks, and sends packets to those routers for forwarding to those networks. If there is no cache entry for a network, DDP sends the packet to any router, expecting that a response packet will provide the information necessary to make an entry into the cache."

The algorithm in the preceding paragraph is used by EtherTalk 2.0 and TokenTalk 2.0 nodes. The phrase "recently heard from" networks means, in Apple's implementation, networks that the node has heard from in the last 40 seconds or so. After that, the cache is cleared of the network entry.

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Tech Info Library Article Number:5055



# Tech Info Library

## AppleTalk: Where to Find Encryption Algorithm Information

Revised: 4/30/90  
Security: Everyone

AppleTalk: Where to Find Encryption Algorithm Information

=====

This article last reviewed: 3 April 1990

TOPIC -----

I am putting together a file server on a mainframe and need information on the password encryption algorithm Apple uses.

Does Apple publish that information?

DISCUSSION -----

Inside AppleTalk (Addison Wesley, ISBN #0-201-19257-8), pages 13-28 to 13-30, discusses user authentication methods. Pages 13-29 and 13-30 discuss the AFP random exchange authentication method, which uses the NBS DES (National Institute of Standards and Technology Data Encryption Standard) algorithm.

For more specific answers about this algorithm -- or to get the algorithm itself -- contact the National Institute of Standards and Technology.

We also found a DES encryption program written in C starting on page 262 of a book called "UNIX System Security". The book, written by Patrick H. Wood and Stephen G. Kochan, is published by Hayden Books (ISBN #0-8104-6267-2).

For more information, search under: "National Institute of Standards and Technology"

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Tech Info Library Article Number:5056



# Tech Info Library

## Mathematica: Using Macintosh as a NeXT Front End

Revised: 3/4/90  
Security: Everyone

Mathematica: Using Macintosh as a NeXT Front End

=====

This article last reviewed: 18 January 1990

TOPIC -----

I want to use my Macintosh as a front end for Mathematica running on my NeXT computer. Is this possible?

DISCUSSION -----

According to Wolfram Research Technical Support, the Macintosh CAN be used as a front end for Mathematica running on the NeXT computer.

To do this, you need Mathematica for the Macintosh and the NeXT. Wolfram has a document called "Macintosh TCP/IP Installation Guide" -- free to registered owners of Mathematica -- that describes how to use MacTCP and Mathematica to connect to the NeXT computer and how to use the Mathematica kernel on the NeXT computer. To get this document, contact Wolfram Research Technical Support.

For more information, search under: "Wolfram Research"

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Tech Info Library Article Number:5057



# Tech Info Library

## National Software Testing Laboratory

Revised: 7/14/93  
Security: Everyone

National Software Testing Laboratory

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Article Created: 4 March 1990  
Article Reviewed/Updated: 14 July 1993

National Software Testing Laboratory

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### Company Profile:

Hardware and software, specializing in contract testing of hardware and software. NSTL also offers three publications.

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Tech Info Library Article Number:5059



# Tech Info Library

## System 6.0.4: ColorSnap and Macromind Director Compatibilty

Revised: 3/4/90  
Security: Everyone

System 6.0.4: ColorSnap and Macromind Director Compatibilty

=====

This article last reviewed: 29 January 1990

TOPIC -----

Is ColorSnap 32 by Computer Friends and Macromind Director by Macromind compatible with System Software 6.0.4?

DISCUSSION -----

Computer Friends Tech Support states that ColorSnap 32 works fine with System Software 6.0.4. Since their new systems haven't arrived, they haven't tested ColorSnap 32 with a Macintosh Portable or Macintosh IIfx.

MacroMind released MacroMind Director 1.0.1 the same day that the Macintosh Portable and Macintosh IIfx were announced. Though MacroMind Director 1.0.1 is compatible with these new systems and System Software 6.0.4, earlier versions of Director are not. For a free upgrade, contact Macromind.

For more addresses and phone numbers, search the Technical Info library under "Computer Friends" and "Macromind."

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Tech Info Library Article Number:5060



# Tech Info Library

## Macintosh: How To Determine Pantone Color Wheel Equivalents

Revised: 3/4/90  
Security: Everyone

Macintosh: How To Determine Pantone Color Wheel Equivalents

=====

This article last reviewed: 23 January 1990

TOPIC -----

I need documentation on the color wheel. I would prefer a chart that provides color information that can be typed into a color-wheel dialogue box. For example:

Forest green is composed of:

Hue: #####  
Saturation:#####  
Brightness:#####  
Red:#####  
Green:#####  
Blue:#####

DISCUSSION -----

Apple doesn't have a chart correlating the color wheel entries with the Pantone color chart. Although there are third-party products that display (dithered) Pantone colors on the screen and create color separations for output to a PostScript typesetter, these programs usually don't offer a formula or prescribed way to input values to obtain a specific output.

Many of those products can be located by searching on "Pantone" in the buyer's guides (Menu and Redgate libraries) on AppleLink. The only way we know of to achieve "Pantone" input values is to conduct a color analysis, entering then logging values on a match with a desired output. You can find to the color wheel and related managers, procedures, and so on in the "Inside Macintosh Cross-Reference."

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Tech Info Library Article Number:5062





# Tech Info Library

## Macintosh: Connecting to an IBM 3090 with a ITT Courier 9440

Revised: 3/4/90  
Security: Everyone

Macintosh: Connecting to an IBM 3090 with a ITT Courier 9440

=====

This article last reviewed: 23 January 1990

TOPIC -----

At work, they are replacing an ITT Courier 9212 terminal (connected with coax cable) with the Macintosh using a channel-attached ITT Courier 9440 "Local Controller" (some kind of cluster controller).

Do you have any idea what this ITT Courier 9440 is? Is it a direct replacement for a 3274 cluster controller? Does the ITT Courier 9212 emulate a 3270 terminal? Is this going to work with the Macintosh?

DISCUSSION -----

The ITT Courier 9440 is a 3274-A/41-A channel-attached controller. The ITT Courier 9212 does emulate a 3270 terminal. Therefore, you can substitute the Courier 9212 with a Macintosh running MacTerminal and an IrmaLine from DCA. For more details, search the Technical Info library under "DCA".

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Tech Info Library Article Number:5063



# Tech Info Library

## Netware for Macintosh 1.1: Enhancements and Fixes

Revised: 3/4/90  
Security: Everyone

Netware for Macintosh 1.1: Enhancements and Fixes

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This article last reviewed: 23 January 1990

TOPIC -----

Here's information on enhancements and fixes for Netware version 1.1 for Macintosh. Note that Netware 2.1.5 revision C must be used.

DISCUSSION -----

Enhancements:

- The NL/2 board is now supported.
- The Netware Control Center (an application that lets you view and modify network information) has been enhanced.
- System administrative functions (adding and deleting users and groups ONLY) can be done from the Macintosh workstation.

Problems that Have Been Fixed:

- IBM Token Ring Adapter (16K buffer)/shared memory address problem
- Losing connections with the file server
- Print queue losing connections with the file server
- File server not displayed in Chooser window
- File server could not read settings file for AQS and APS print VAPs

To obtain these updates, send Novell the following:

- Your name, address, and phone number

- If you are ordering the Netware update, designate disk size: either 3.5 or 5.25)
- Proof of Purchase (copy of invoice)
- A list of desired items.

You can Fax or mail your order to Novell. the information to 801-377-6743 or mail the data to:

Novell, Inc.  
Attn: NSSG-ADMIN  
122 East 1700 South  
Provo, UT 84601

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Tech Info Library Article Number:5064



# Tech Info Library

## Macintosh: Converter Is Necessary for V.35 Support

Revised: 6/18/92  
Security: Everyone

Macintosh: Converter Is Necessary for V.35 Support

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Article Created: 23 January 1990  
Article Last Reviewed: 18 June 1992  
Article Last Updated:

TOPIC -----

How should a Macintosh DIN-8 port be connected for V.35 cabling specifications? The clocking for the signal will be from an external device like a DSU.

DISCUSSION -----

Although the built-in serial ports cannot directly support V.35 (due to the multiple timing/clocking elements the port must support), third-party converters are available to convert RS-232 or RS-422 to and from V.35. Such converters are available from Black Box and others. Additionally, depending on the application or functionality desired, the Serial NuBus card also supports V.35.

To locate a vendor's address and phone numbers, use the vendor name as a search string

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Tech Info Library Article Number:5065



# Tech Info Library

## Xerox 6085 Data: Converting it to Macintosh Format

Revised: 3/4/90  
Security: Everyone

Xerox 6085 Data: Converting it to Macintosh Format

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This article last reviewed: 29 January 1990

TOPIC -----

I have decided to change my office's Xerox desktop publishing systems (Documentor 6085) to Macintoshes. What do you recommend in the way of a document-conversion utility to convert the Documentor 6085 text and graphic documents to Macintosh formats.

DISCUSSION -----

We don't know of any commercial conversion utilities that convert Xerox 6085 graphic files into a format recognized by the Macintosh. However, there are numerous ways to convert text.

You can find some Xerox 6085-to-Macintosh file conversion tips are in the Tech Info Library document "Macintosh-to-Xerox 6085 Connectivity" and in the Xerox Technical Bulletin "Xerox 6085 Interface to Macintosh". Additionally, conversion services like Pivar, Inc. will convert Xerox 6085 files to Macintosh.

The Tech Info Library article references Interpreter, Inc. For address details, search the Tech Info Library on "Pivar" and "Interpreter, Inc".

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Tech Info Library Article Number:5066



# Tech Info Library

## AcuCOBOL, Inc.

Revised: 7/2/93  
Security: Everyone

AcuCOBOL, Inc.

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Article Created: 03/04/90  
Article Reviewed: 07/02/93  
Article Updated:

AcuCOBOL, Inc.

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Company Profile:  
Software, specializing in compilers.

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Tech Info Library Article Number:5067



# Tech Info Library

## Macintosh: Alternatives to Using a Mouse

Revised: 3/4/90  
Security: Everyone

Macintosh: Alternatives to Using a Mouse

=====

This article last reviewed: 29 January 1990

TOPIC -----

I have little feeling in my hands, so I cannot sense where the button is. This means I cannot use the new-style ADB mouse, because of the angle of the mouse and because the mouse button is recessed.

On the old-style mouse, the angle of the mouse was such that my arms could bend properly, and I could tell when my hand was on the raised mouse button. What can I do to use the newer Macintoshes?

DISCUSSION -----

Because of mechanical and electrical design differences between the old-style mouse and the ADB mouse, you cannot modify an old-style mouse for use with ADB. However, there are a number of different vendors producing alternative input devices for use with the ADB interface. Listed below is information about several of these third-party products. You may also want to check the trade journals for other types of ADB input devices.

A+ Mouse and A+ Mouse ADB from Mouse Systems Corp.

-----

A+ Mouse is an entirely electronic and consists of no moving parts. It uses its own mirror-like pad to reflect a tiny beam of light to track movement. It has exceptional digital cursor control for greater speed, accuracy, and reliability.

QuickStick and QuickStick ADB from Kraft Systems, Inc.

-----

QuickStick combines the cursor response of a mouse with the speed and convenience of a joystick. As such, it is a dual-purpose device allowing cursor control with joystick design and functions.

Trackball ADB from Kraft Systems, Inc.

-----  
The Trackball ADB connects to any Apple Desktop Bus port and works with all "mouseable" software. Sensitivity is adjustable to match a user's individual preference. The Trackball includes drag and double-click buttons. An optional foot pedal provides total one-handed control.

Turbo Mouse Plus and Turbo Mouse ADB from Kensington Microware, Ltd.

-----  
Turbo Mouse is an input device that puts the mouse ball on the top rather than on the bottom like a standard mouse. The heart of the Turbo Mouse is a patented technology called "optical leveraging". This opti-mechanical technology eliminates virtually all moving parts with the exception of the bearings required to support the trackball. This increases the precision of the Turbo Mouse and Turbo Mouse ADB to 200 counts per inch, as well as increases their reliability.

The Turbo Mouse has an automatic acceleration feature that senses the speed at which a user is working and moves the cursor further as the mouse ball is moved faster.

Two buttons are included, which allow for either right- or left-handed use. One button serves as a regular click button; the other is a click lock. A user controls which is which by setting a DIP switch hidden in the back of the unit.

Turbo Mouse ADB also offers a unique "chording" feature that is activated by pressing both buttons simultaneously. By adjusting the DIP switch on the back of the Turbo Mouse ADB, a user can have it do one of seven functions: New, Open, Close, Save, Print, Quit, or Undo.

Turbo Mouse Plus is compatible with a Macintosh and Macintosh Plus. Turbo Mouse ADB is compatible with a Macintosh SE and Macintosh II.

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Tech Info Library Article Number:5069





# Tech Info Library

## System 6.0.4 Installer: How to Access the Remove Button

Revised: 3/4/90  
Security: Everyone

System 6.0.4 Installer: How to Access the "Remove" Button

=====

This article last reviewed: 29 January 1990

TOPIC -----

The new Installer is great, but it appears to be missing the ability to remove previously installed resources. Will this be fixed?

DISCUSSION -----

That is a great idea and, fortunately, that feature is already part of the "new" Installer, version 3.0 which ships with System Software 6.0.4.

To invoke it, either hold down the Option key while launching the Installer, or after launching the Installer, press Customize, then hold down the Option key. Note that holding down the Option key changes the "Install" button to a "Remove" button. Releasing the button key changes to button back to Install.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5071



# Tech Info Library

## LaserWriter IINTX: Compatible Hard Drives

Revised: 3/4/90  
Security: Everyone

LaserWriter IINTX: Compatible Hard Drives

=====

This article last reviewed: 29 January 1990

TOPIC -----

I am trying to connect a DataFrame XP to a LaserWriter IINTX. It's not working. I noticed that the "Winter Solstice" manual states that some third-party drive won't work if they cannot state their size. Is the DataFrame one of these drives?

DISCUSSION -----

SuperMac Technology reports that the newer DataFrame 20 and XP-30, -60, and -100, all work on the LaserWriter IINTX. These drives have been shipping since March 1, 1989 and have built-in fans and no vents on the top of the housing. Earlier drives don't work, because they don't have embedded SCSI controllers that are able to pass all the parameters from the HDA to the LaserWriter IINTX, which the LaserWriter IINTX requires.

Additionally, Adobe has tested and confirmed that the following drives work with the LaserWriter IINTX:

Seagate ST225N  
Rodime 650 series (R0651, R0652, R0751, R0752)  
Quantum Q200 series (Q250, Q280)  
MiniScribe 8425-SCSI  
MiniScribe 80515

Generally, we have found that only drives using embedded SCSI controllers are compatible. For more information on this topic, see the November 15, 1988, issue of "MacWeek."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5072



# Tech Info Library

## VideoWorks Accelerator: Macintosh IICI Incompatibility

Revised: 3/4/90  
Security: Everyone

VideoWorks Accelerator: Macintosh IICI Incompatibility

=====

This article last reviewed: 30 January 1990

TOPIC -----

I have a Macintosh IICI with System Software 6.0.4, a MacroMind accelerator, and PhotoMac. I get the error message, "System needs the Jackson Pollock software patch or system may not start up". Have you heard of this error?

DISCUSSION -----

Receiving the error message, "System needs the Jackson Pollock software patch or system may not start up", indicates that the application isn't calling 32-Bit QuickDraw properly. Alternatives include not using 32-Bit QuickDraw or obtaining an update from the software manufacturer that corrects this incompatibility.

Some versions of VideoWorks Accelerator aren't compatible with 32-Bit QuickDraw nor with the Macintosh IICI. Running it under these configurations results in the above error message. A revision of Accelerator that fixes this problem is now available. It is free of charge to Accelerator owners on a request basis only.

PhotoMac is reportedly compatible with the Macintosh IICI and 32-Bit QuickDraw.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5073



# Tech Info Library

## A/UX: Shared Memory Error Message (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: Shared Memory Error Message (9/94)

Article Created: 30 January 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

I am an A/UX developer porting an HP X Window System application using the "Big C" C compiler on a Macintosh IIci with 8MB RAM. The issue is the use of the memory with swapping of shared memory.

I modified the kernel for use of shared memory with:

```
SHMMAX 2097152
SHMSEG 12
```

During the creation of the fifth partition of shared memory, the following message appears:

```
shmget: Not enough space (errno:12)
```

Other information:

```
RAM: 8MB
Swap Space: 49352 blocks.
Size of the segments of shared memory:
```

- 1) 2020 bytes
- 2) 1004664 bytes
- 3) 381536 bytes
- 4) 386536 bytes

Why am I getting this error message? Does A/UX keep the shared memory in RAM?  
Can it not be swapped to disk?

DISCUSSION -----

The key is the "shmget: Not enough space (errno:12)" error message that occurred

during the creation of the fifth segment of shared memory. It means that the available, system-wide, total, shared memory space (in pages) is not large enough to accommodate the shared memory segment to be created. The default maximum system-wide total shared memory size is 512 pages defined in the "shminfo" data structure (shminfo.shmall). The total size of your four shared memory segments is about 433.3 pages.

You may change the default size of "shmall" in the same way you modified for the "shmmax" and "shmseg" using "adb".

Generally, A/UX keeps the shared memory in its virtual address space after doing the "shmget" and "shmat" system calls. The "shmget" system call with the IPC\_CREAT flag creates a new shared memory region, and the kernel verifies the size and allocates a region data structure. Then the kernel saves a pointer to the region table entry in the shared memory table and sets a flag to indicate that no memory is associated with the region. The kernel allocates memory for the region only when a process attaches the region to its address space via the "shmat" system call.

For the shared memory segment not to be swapped to disk, two commands (SHM\_LOCK and SHM\_UNLOCK) can be used in the "shmctl" system call (the shared memory control system call) to lock or unlock the specified shared memory segment into the physical memory. The SHM\_LOCK and SHM\_UNLOCK are defined in the /usr/include/sys/shm.h file.

For information on the shared memory, refer to the shmget(2), shmat(2), shmctl(2), ipcs(1), and ipcrm(1) manual pages.

#### Article Change History:

21 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5074



# Tech Info Library

## Mac VAP 1.1 from Novell Is Available

Revised: 3/4/90  
Security: Everyone

Mac VAP 1.1 from Novell Is Available

=====

This article last reviewed: 30 January 1990

TOPIC -----

Who can I contact at Novell to get the new Mac VAP?

DISCUSSION -----

The newest 1.1 Mac VAP is available. Novell sent it automatically to all customers who sent in their registration cards. If there is a problem, contact Novell's tech support group. For more details, search the Technical Info library under "Novell."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5076



# Tech Info Library

## Digital Access Corporation

Revised: 9/3/93  
Security: Everyone

Digital Access Corporation

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 11 November 1992

Digital Access Corporation

-----  
11501 Sunset Hills Rd.  
Suite 200  
Reston, VA 22090

800-666-2325

703-471-5010

703-471-4848 Fax

AppleLink: D1889

Company Profile:  
Networking, specializing in high-speed communications devices.

Copyright 1990, 1992, Apple Computer, Inc.

Tech Info Library Article Number:5078



# Tech Info Library

## Software Architects, Inc.

Revised: 7/19/93  
Security: Everyone

Software Architects, Inc.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 19 July 1993

Software Architects, Inc.

-----

19102 North Creek Parkway  
Suite 101  
Bothell, WA 98011

206-487-0122

Fax: 206-487-0467

AppleLink: SOFTARCH

Company Profile:  
Hardware and software, device drivers and related support applications for  
Macintosh peripherals.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5080





# Tech Info Library

## Racal Datacom/InterLAN

Revised: 7/16/93  
Security: Everyone

Racal Datacom/InterLAN

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 16 July 1993

Racal InterLAN

-----

155 Swanson Rd.  
Boxborough, NA 01719

508-263-9929

800-LAN-TALK (526-8255) (Sales)  
800-RACAL-55 (Modems , Multiplexers, etc.)

Fax: 508-263-8655

Company Profile:  
Hardware, many networking products, and modems, including A/UX-compatible models.

Racal Datacom

-----

1708 McCarthy Blvd.  
Milpitas, CA 95035

408-432-8008

800-RACAL-55 (Modems , Multiplexers, etc.)

Fax: 408-432-8311

Company Profile:  
Software, specializing in Ethernet cards for the Macintosh,

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5082



# Tech Info Library

## Western Digital Corp.

Revised: 7/20/93  
Security: Everyone

Western Digital Corp.

=====

Article created: 4 March 1990  
Article Reviewed/Updated: 20 July 1993

Western Digital Corp.

-----

8105 Irvine Center Dr.  
Irvine, CA 92718

714-932-5000

800-832-4778 (Tech Support)  
800-854-7525 (Canada)

Fax: 714-932-6294

Company Profile:  
Hardware, specializing in hard disk drives, video products, and chipsets.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5083



# Tech Info Library

## HEI, Inc.

Revised: 7/9/93  
Security: Everyone

HEI, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/09/93  
Article Updated:

HEI, Inc.

-----

1495 Steiger Lake Lane  
Victoria, MN 55386

612-443-2500

Fax: 612-443-2668

Company Profile:  
Software, specializing in educational products.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5085



# Tech Info Library

## Integrated Computer Solutions Inc.

Revised: 7/9/93  
Security: Everyone

Integrated Computer Solutions Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/09/93  
Article Updated: 07/09/93

Integrated Computer Solutions Inc.

-----

201 Broadway  
Cambridge, MA 02139

617-621-0060

Fax: 617-621-9555

AppleLink: ICS

E-Mail: info@

Company Profile:  
Software, specializing in consulting, training, and product development for  
open software.

Article Change History: 07/09/93 E-Mail Active

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5086



# Tech Info Library

## Asante Technologies, Inc. (Formerly h-three Systems, Corp.)

Revised: 6/7/95  
Security: Everyone

Asante Technologies, Inc. (Formerly h-three Systems, Corp.)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 6 June 1995

Asante Technologies, Inc.  
-----

821 Fox Lane  
San Jose, CA 95131

800-662-9686  
800-MAC-RING (622-7464) (Tech. Support)

408-435-8388

408-432-7511 Sales Fax

Company Profile:  
Hardware and networking products, specializing in PCI (Peripheral Component Interconnect) and Token Ring cards; also network and systems consulting.

Article Change History:  
06 Jun 1995 - Added information about PCI cards.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:5087



# Tech Info Library

## AppleTalk: WangNet Gateway Not Yet Available

Revised: 3/4/90  
Security: Everyone

AppleTalk: WangNet Gateway Not Yet Available

=====

This article last reviewed: 17 February 1990

TOPIC -----

I want to connect a LaserWriter directly to a Wang VS system. I also want to maintain Macintosh access to the LaserWriter while doing this.

Is there some way to connect a LaserWriter directly to a Wang VS? If yes, is there some way that Macintosh output can still be directed to the Wang system?

I also have made extensive use of Wang PCs with WangNet in another office, and, consequently, have very few ADCs or EADCs. I want to have access to the Wang systems from the Macintoshes over a network without having to buy dozens of Shiva NetSerials and Wang ADCs (our current solution). Is there anyway to replace the Wang terminals with Macintoshes having a window into the VS world.

Do you know of a WangNet/AppleTalk gateway? Do you have any other suggestions for connecting Macintoshes to a Wang VS without having to purchase ADCs?

DISCUSSION -----

WangNet uses a dual-cable topology and has divided the cable's bandwidth among a number of services: Wang Systems (also called Wang Band) dedicated interconnect services (now Multivendor Services) Utility Band (Utility Service) and the Peripheral Attachment Service. Each WangNet service uses its own set of transmission techniques, each with its own form of access control, its own data transmission rates, and its own place on the network's frequency spectrum. Each also uses its own interfacing hardware.

Though Multivendor Services is an 802.3 service, accessible to Macintoshes with Ethernet cards via their MAUs, as of December, 1989, there was no gateway between the Wang Systems and Multivendor Services. Similarly, there was no WangNet/AppleTalk gateway.

You might consider alternatives like serial connections for file transfers or

terminal emulation. These techniques that are well-documented in the Tech Info Library and in the Apple Multivendor Network Solutions Guide.

One mail gateway is SNADS Gateway/MSMail from SoftSwitch, Inc. This product lets Microsoft Mail 2.0 users exchange files with users of Wang Office, DISOSS, PROFS, ALL-IN-1, and Hewlett-Packard Desk.

For more details, search the Tech Info library under "SNADS."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5089





# Tech Info Library

## Macintosh: Data Aquisition, Analysis, and Display

Revised: 3/4/90  
Security: Everyone

Macintosh: Data Aquisition, Analysis, and Display

=====

This article last reviewed: 17 February 1990

TOPIC -----

I want a package that can pull information directly from an oscilloscope and graph it so that the chart can later be integrated into a Macintosh word processing document. I know of National Instruments' products, but they aren't appropriate for my application. Do you have any alternatives?

DISCUSSION -----

We searched the Macintosh Buyer's Guide on AppleLink and found two companies that may be able to help.

Ansan Industries, Ltd's MacScope

-----  
MacScope from Ansan Industries, Ltd. is a turnkey data-acquisition system that combines the measurement capability of Gould's model 1425 Digital Storage Oscilloscope with the high-resolution graphics and user interface of the Macintosh. Desktop engineering and desktop publishing are combined in a system that can handle data acquisition and presentation tasks. MacScope can do in-depth computation and analysis and generate presentation graphics or technical documents. Data is captured at two samples to two megasamples per second for one-shot events. Repetitive waveforms can be stored with a 20MHz bandwidth in the equivalent time mode.

Spectral Innovations' MacDSP24MC and MacDSP16K

-----  
Spectral Innovations' MacDSPSW-002 is an interactive signal-processing package that offers real-time spectral and time analysis, filtering, modulation, and other signal processing techniques at a mouse click. This lets you see effects on processed data immediately.

Analog and digital signals are sampled at up to 1MHz using Spectral

Innovations' data-acquisition expansion cards. Sampled signals are instantly processed by the MacDSP signal processing card with screen updates 20 times per second. Real-time color displays include oscilloscope, spectrum analyzer, waterfall, spectrogram, and three-dimensional contour graphs.

For more details, search the Tech Info library under "Ansan Industries" and "Spectral Innovations."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5091



# Tech Info Library

## HyperCard: Fix for DateBook Stack

Revised: 6/24/90  
Security: Everyone

HyperCard: Fix for DateBook Stack

=====

This article last reviewed: 17 February 1990

TOPIC -----

I found a problem in HyperCard's DateBook stack. The DateBook stack updates itself from January to June with the new dates for 1990. Then, when I click on the first week of January, it asks if I want to update the weekly calendar, and I answered yes. After finishing this, I went to the Home card and clicked on the Calendar icon again and then on the first week. At this point, nothing happened. If I click on week 2, it works perfectly, and I get the weekly calendar for the second week. Can you explain?

DISCUSSION -----

There are the two minor changes you need to make to avoid this problem, part of which has to do with backgrounds. Note to long-term users: This problem will occur again in 2001 and 2018 and every 11 and 16 years afterward:

In the DateBook's stack script, change the "goweekly" handler from this:

```
set lockScreen to true
find startOfWeek(myDate) in bkgnd field "WeekSecs"
```

To this:

```
set lockScreen to true
go bg "Weekly"
find startOfWeek(myDate) in bkgnd field "WeekSecs"
```

Also, in the stack script, change the GoSixMonthly handler from this:

```
visual effect zoom open
find thisHalfYear(myDate) in bkgnd field "MySecs"
```

To this:

```
visual effect zoom open  
go bg 1  
find thisHalfYear(myDate) in bkgnd field "MySecs"
```

These changes will solve both the problem of not going anywhere when you click on the first week in January and the "can't understand bracketweek" message.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5092



# Tech Info Library

## Macintosh IICI: Use Rev D.2 of NB-GPIB Card

Revised: 7/9/92  
Security: Everyone

Macintosh IICI: Use Rev D.2 of NB-GPIB Card

Article Created: 17 February 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

### TOPIC -----

National Instruments' NB-GPIB card is slot-dependent and needs to be stationed in slot 3. The card works fine in a Macintosh IICx, but on the Macintosh IICI, the slot appears to be slot 6 to the application software. Is there any way around this?

### DISCUSSION -----

According to National Instruments, the NB-GPIB card is not slot-dependent and works without any problem in the Macintosh IICI. However, an early revision of this card (Rev D.1) had a compatibility problem with some systems. The problem was with one noise logic chip on the card, the AS02 at card location U19. The Rev D.2 NB-GPIB cards have an LS02 at location U19.

You can exchange the Rev D.1 card with National Instruments for a card that have the LS02 installed. Or, you can upgrade a Rev D.1 NB-GPIB card to Rev D.2, by changing the IC at U19 from the AS02 to an LS02. However, users who change the chip will void the warranty on the NB-GPIB card.

Note: when running the NB-GPIB card test utility, the card may show a failure, depending on the version of the software used. Below is a listing of the software revisions.

### Software

-----

Release 3.0

PIO: Pass  
DMA: Pass  
ibconf: Pass

Release 2.3

PIO: Pass  
DMA: Fail  
ibconf: Pass

Release 2.2

PIO: Pass  
DMA: Fail  
ibconf: Fail

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5093



# Tech Info Library

## Ansan Industries, Ltd.

Revised: 7/2/93  
Security: Everyone

Ansan Industries, Ltd.

=====

Article Created: 03/04/90  
Article Reviewed: 07/02/93  
Article Updated:

Ansan Industries, Ltd.

-----

4704 American Rd.  
Rockford, IL 61109

815-874-3541

815-874-6885 Fax

AppleLink: D3940

Company Profile:  
Hardware, specializing in data acquisition systems.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5095



# Tech Info Library

## Grade Busters Corp.

Revised: 7/9/93  
Security: Everyone

Grade Busters Corp.

=====

Article Created: 02/18/91  
Article Reviewed: 07/08/93  
Article Updated: 08/21/91

Grade Busters Corp.

-----

1695 Summit Point Court  
Colorado Springs, CO 80919

719-591-9815

719-528-6030 Fax

AppleLink: GRADEBUSTERS

### Company Profile:

Educational software, specializing in a grade and attendance recording and reporting program for teachers.

Copyright 1990-93 , Apple Computer, Inc.

Tech Info Library Article Number:5097





# Tech Info Library

## Icom Simulations, Inc.

Revised: 4/2/97  
Security: Everyone

Icom Simulations, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/12/93  
Article Updated: 04/02/97

Icom Simulations, Inc.

-----

648 S. Wheeling Rd.  
Wheeling, IL 60090

800-877-4266

708-520-4440

708-459-3418 Fax

### Company Profile:

Software, specializing in debuggers, integrators, utilities, and games.

### Article Change History:

02 April 1997 - Removed expired eMail address

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5098



# Tech Info Library

## InterGraph Corporation

Revised: 4/4/97  
Security: Everyone

InterGraph Corporation

=====  
Article Created: 03/04/90  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

InterGraph Corporation  
-----

Huntsville, AL 35894-0001

205-730-2000

800-826-3515  
800-345-4856 (Micro Station Dept.)

Fax: 205-730-2461

Company Profile:  
Hardware, specializing in workstation products, interactive computer graphic systems

Article Change History:  
02 April 1997 - Removed expired eMail address  
07/09/93 New product information added

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5099



# Tech Info Library

## Interlink Computer Sciences, Inc.

Revised: 7/12/93  
Security: Everyone

Interlink Computer Sciences, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/09/93  
Article Updated:

Interlink Computer Sciences, Inc.

-----

47370 Fremont Blvd.  
Fremont, CA 94538

510-657-9800

Fax: 510-659-6381

Company Profile:  
Software, specializing in connectivity.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5100



# Tech Info Library

## Telematics International

Revised: 7/20/93  
Security: Everyone

Telematics International

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 20 July 1993

Telematics International

-----

1201 Cypress Creek Rd.  
Ft. Lauderdale, FL 33309

305-772-3070

800-328-7858 (Sales and Service)

Fax: 305-351-4406 (Customer Service)

Local Office:

26630 Agoura Rd.  
Calabasas, CA 91302-1988

818-880-4900

Fax: 818-880-4726

Company Profile:  
Hardware, specializing in LAN and WAN networking.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5102



# Tech Info Library

## AppleCD SC: Fix for Use with Macintosh IIci

Revised: 3/4/90  
Security: Everyone

AppleCD SC: Fix for Use with Macintosh IIci

=====

This article last reviewed: 17 February 1990

TOPIC -----

Dealers and customers are upset because Apple currently do not support Foreign File Access when using the AppleCD SC with the Macintosh IIci. Apple has told dealers that an update is on the way.

What is the status of the update?

DISCUSSION -----

The update to the software became available in late January, 1990 and is on AppleLink. There is a Read Me file and package to download. Here is the path:

Developer Services  
Macintosh Developer Technical Support  
Tool  
CD-ROM

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5103



# Tech Info Library

## AppleShare PC: Memory Solution

Revised: 3/4/90  
Security: Everyone

AppleShare PC: Memory Solution

=====

This article last reviewed: 17 February 1990

TOPIC -----

Can you recommend a memory expansion card for MS-DOS machines that makes memory available after AppleShare PC 2.0 loads?

DISCUSSION -----

The HiCard from RYBS Electronics is a PC/XT/AT/386 memory card and software that lets MS-DOS machines have more memory available after AppleShare PC 2.0 is loaded. In fact, it leaves as much as 546K on XTs and more on ATs). It is called the HiCard from RYBS Electronics.

There is a HiCard memory cards for PC, XT, AT, 386, and MicroChannel DOS computers. It extends memory but not in the usual fashion. Most memory cards add Extended Memory or Expanded Memory (LIMM), but problems exist, because many DOS applications cannot make use of these types of memory. HiCard adds additional conventional memory, which can be used by most DOS applications, device drivers, and RAM-resident utilities. Software comes with the card to load the device drivers that make the extra memory work. In addition, you can also add AMS (HiMem) memory and Expanded memory.

The product works by taking advantage of the available address space between 640K and 1MB in MS-DOS computers. They state that this area in RAM is usually reserved for ROM BIOS, video adapters, and network cards, and that the RAM space is never completely used. Thus, they can extend usable memory to 736K (total DOS) on a PC, with an additional 256K for AMS memory. RAM-resident utilities and device drivers can be loaded into memory above 736K (AMS memory), thus freeing conventional memory for applications. According to RYBS, you can put BUFFERS, FILES, LASTDRIVE, and other DOS device drivers and TSRs into high memory as well.

Our system consisted of a 640K XT-compatible from CompuAdd and the HiCard board containing 256K RAM running MS-DOS 4.0 and AppleShare PC 2.0.

We loaded AppleShare PC with the desk accessory RAM resident. One AppleShare File Server volume was automatically mounted as the D: drive on the PC. With 640K total RAM, the CHKDSK program showed 655K total memory, and 313K remaining (one other unrelated RAM-resident utility was loaded at startup).

I tried to mount another AppleShare File Server as the E: drive. The Chooser interrupted with the error message, "Not enough memory" and the second volume would not mount.

I installed the HiCard. After running the configuration program, setting DIP switches, and installing the card, a CHKDSK showed 720K available, with 626K free.

I was then able to mount a second file server volume as drive E:, and a third as F: with no problems.

Here's a chart outlining memory use before and after the HiCard was installed:

- Before HiCard:

|                                           |                             |
|-------------------------------------------|-----------------------------|
| Normal DOS boot                           | 561K RAM remained available |
| Boot with AppleShare and the DA<br>in RAM | 313K RAM remained available |

- After installing HiCard and software:

|                                                                                      |                             |
|--------------------------------------------------------------------------------------|-----------------------------|
| DOS boot                                                                             | 626K RAM remained available |
| Boot with AppleShare PC, DA in RAM,<br>and as much as possible in High Memory        | 546K RAM remained available |
| Boot with AppleShare PC, DA NOT in<br>RAM, and as much as possible in<br>High Memory | 599K RAM remained available |

Presumably, this extra memory also could have been used for application space, so I tested it by running Lotus 1-2-3, exiting to the DOS shell, and running WordPerfect. Exiting to the DOS shell left 192K available, and WordPerfect launched fine in this memory.

The manufacturer also claims that their card and software work with Banyan, StarLAN, 3COM, DCA 10Net, IrmaLAN, PCSA, Novell, PC-NFS, TOPS, Token Ring, and other networking cards. We were unable to test the card in these scenarios.

The CompuAdd PC we used for testing did have a few minor compatibility issues. However, the excellent technical support from RYBS helped us to work around the problems.

Here are the hardware and software switches that worked on the CompuAdd PC:

DIP Switches:

All ON except: 1 OFF 5 OFF 7 OFF 8 OFF

Autoexec.bat: (Note: The Moremem line is particular to each machine and configuration):

```
\AMS\MOREMEM -B000 D000-F000
PATH C:\ASPC2;C:\DOS;C:\MAIL;C:\AMS;
\AMS\DEVICE /H C:\DOS\ANSI.SYS /X
@ECHO OFF
SET COMSPEC=C:\DOS\COMMAND.COM
VERIFY OFF
APPEND /E
APPEND C:\DOS
C:\DOS\GRAPHICS
C:\DOS\GRAFTABL 437
VER
KEYB US,,C:\DOS\KEYBOARD.SYS
```

Startup AppleShare PC with DA in memory:

```
cd \aspc2
C:\ASPC2\lsl.COM
\ASPC2\ltalkp /NAME=LTALK$
C:\AMS\LOADHIGH C:\ASPC2\atalk.COM
C:\AMS\LOADHIGH C:\ASPC2\asp_ws.COM
C:\AMS\LOADHIGH C:\ASPC2\pap_ws.COM
C:\AMS\LOADHIGH C:\ASPC2\compat.COM
C:\ASPC2\aprint
c:\AMS\LOADHIGH C:\ASPC2\ashare.COM
\ASPC2\minses.EXE
\ASPC2\redir /S:4
\ASPC2\anet.EXE auto
set path=c:\pm;c:\dos;c:\123;c:\mail;c:\aspc2;
set basspec=c:\dos\basica.com
set pmdir=c:\pm
C:\AMS\LOADHIGH c:\aspc2\da.EXE /r
cd \
```

Startup AppleShare PC without DA in memory:

```
cd \aspc2
C:\ASPC2\lsl.COM
\ASPC2\ltalkp /NAME=LTALK$
C:\AMS\LOADHIGH C:\ASPC2\atalk.COM
C:\AMS\LOADHIGH C:\ASPC2\asp_ws.COM
C:\AMS\LOADHIGH C:\ASPC2\pap_ws.COM
C:\AMS\LOADHIGH C:\ASPC2\compat.COM
C:\AMS\LOADHIGH C:\ASPC2\aprint.COM
c:\AMS\LOADHIGH C:\ASPC2\ashare.COM
\ASPC2\minses.EXE
c:\AMS\LOADHIGH C:\ASPC2\redir.EXE /S:4
```



```
\ASPC2\anet.EXE auto  
set path=c:\pm;c:\dos;c:\123;c:\mail;c:\aspc2;
```

```
set basspec=c:\dos\basica.com  
set pmdir=c:\pm  
C:\AMS\LOADHIGH c:\aspc2\da.EXE
```

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5104



# Tech Info Library

## System 6.0.4: Installer Problem with Duplicated Disks

Revised: 3/4/90  
Security: Everyone

System 6.0.4: Installer Problem with Duplicated Disks

=====

This article last reviewed: 17 February 1990

TOPIC -----

I copied all of System 6.0.4 files from the original disks to a server. I then copied all the appropriate files back to blank disks, so that they mirrored the original disks. However, when I tried to use the Installer with these new disks, the Installer did not work. I did a disk-to-disk copy of the original disks to the blank disks, and the Installer did work. Can you explain?

DISCUSSION -----

We were able to use the Installer successfully from a set of disks created in the manner you describe. The steps we used to copy each disk are:

- 1) Copy the Installer disk to the server volume by dragging its icon to the server volume's icon or window. Confirm the "The two disks are different types..." dialog by clicking OK. A new folder is created on the server volume with the Installer disk's name and files.
- 2) Open the newly created folder.
- 3) Insert a blank 800K disk and name it exactly the same as the original. This should be the same name as the folder you opened in the previous step.
- 4) Copy all items from the opened folder (in step 2) to the new disk by dragging them to the disk's icon or opened window. Do not copy the entire folder--only the files and folders within it.

The Installer can become confused and not recognize a seemingly valid Installer disk if you move files between folders or remove files or folders. It is important to make nearly exact duplicates of the Installer disks, with no changes in disk, folder, or filenames. As you experienced, a disk-to-disk copy is a reliable way to make duplicates.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5105



# Tech Info Library

## Eastman Kodak Company

Revised: 7/8/93  
Security: Everyone

Eastman Kodak Company

=====  
Article Created: 03/04/90  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Eastman Kodak Company  
-----

343 State St. (Corporate Headquarters)  
Rochester, NY 14650

800-242-2424 (Product and Technical Information)

716-724-4000

716-724-1754 Fax

Company Profile:  
Hardware, specializing in photography and imaging devices, film

Article Change History: 07/08/93 Phone Number Information Added

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5110



# Tech Info Library

## The Disc Company (formerly Helgerson Associates Inc.)

Revised: 8/5/93  
Security: Everyone

The Disc Company (formerly Helgerson Associates Inc.)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 7 July 1993

The Disc Company

-----

6609 Rose Cropt Place.  
Falls Church, VA 22043

703-237-0682

703-532-5447 Fax

Company Profile:

Specializing in publications about CD-ROMs, including "CD-ROM EndUser" and  
"CD-ROM Data Report."

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5111



# Tech Info Library

## Digit Software, Inc.

Revised: 4/4/97  
Security: Everyone

Digit Software, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Digit Software, Inc.

-----

P.O. Box 1425  
712 Kersey Rd.  
Silver Spring, MD 20915

301-593-8952

301-593-2201 Fax

Company Profile:  
Software, specializing in EDI (Electronic Data  
Interchange) management systems for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5112



# Tech Info Library

## Piedmont Systems, Inc.

Revised: 7/16/93  
Security: Everyone

Piedmont Systems, Inc.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 15 July 1993

Piedmont Systems, Inc.

-----

4400 Silas Creek Parkway  
Suite 300  
Winston-Salem, NC 27104

919-760-3620

919-760-2852 Fax

### Company Profile:

Software, developing an EDI (Electronics Data Interchange) package that translates documents back and forth between the EDI standard and file formats used by common PC applications.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5113



# Tech Info Library

## Metric Tools: Phillips Heads

Revised: 3/4/90  
Security: Everyone

Metric Tools: Phillips Heads

=====

This article last reviewed: 27 December 1989

Eiki, a major manufacturer of school projectors is an excellent source for metric tools and screws, including Phillips heads. Most Apple equipment manufactured overseas (like the LaserWriter II engine) uses metric screws. The standard American Phillips drivers tend to strip out the heads of metric Phillips screws.

Eiki has a neat little tool kit that includes a #1 and #2 Metric Phillips for a suggested retail price of \$13.00. The part number is AC-85311

They have a dealer distribution network and you can find the nearest Eiki dealer by calling (714) 831-2511

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5114





# Tech Info Library

## A/UX: Big C Compiler Error Message--too many defines

Revised: 9/15/92  
Security: Everyone

A/UX: Big C Compiler Error Message--"too many defines"

=====

Article Created: 27 December 1989

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

My Big C compiler who gives the "too many defines" error message. How can I raise the number of usable arguments/functions?

### DISCUSSION -----

The error message "too many defines" that occurred while compiling with the Big C compiler indicates that too many #define directive statements were defined in the C source program. This error message was detected by the "cpp", the C PreProcessor, while compiling the C source file. Currently, the maximum number of the #define directives defined by the Big cpp in A/UX 1.1 is around 2000. These numbers are used for the #define variable memory allocation.

We have tested a simple C program (with about 1985 #define directives) compiled under the Big C compiler of an 8MB A/UX 1.1, and the Big cpp complained with the same "too many defines" message.

To prevent this problem, reduce the number of #define directives in each C source file.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5115



# Tech Info Library

## A/UX: Apple Outline Fonts and the toolboxdaemon (8/95)

Revised: 8/7/95  
Security: Everyone

A/UX: Apple Outline Fonts and the toolboxdaemon (8/95)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 7 August 1995

TOPIC -----

Can I use Apple Outline Fonts in A/UX 1.1 without the toolboxdaemon running?  
That is, can I put the routines in libraries?

DISCUSSION -----

Support for any of the Macintosh Toolbox features under A/UX requires the use of the toolboxdaemon. Essentially, the toolboxdaemon provides the equivalent of the libraries you are referring to. Without the complete Macintosh environment available, none of the Macintosh calls would function.

Furthermore, A/UX 1.1 and A/UX 1.1.1 do not support Outline Fonts or any of the new technology target areas as specified in the documentation that has been released about the new Macintosh System Software directions. This means that the underlying Font Manager necessary to use Outline Fonts is not available even if the toolboxdaemon is running.

A/UX 2.0.1 supports the Adobe Type Manager.  
A/UX 3.0 fully supports System 7 TrueType outline fonts.

Article Change History:  
07 Aug 1995 - Reviewed, reformatted, made minor corrections.  
21 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:5116



# Tech Info Library

## IBM TCP/IP for VM and MVS and the InterLink NFS Server

Revised: 4/30/90  
Security: Everyone

IBM TCP/IP for VM and MVS and the InterLink NFS Server

=====

This article last reviewed: 27 December 1989

TOPIC -----

This article describes IBM TCP/IP for VM, IBM TCP/IP FOR MVS, and InterLink's products.

DISCUSSION -----

### 1) IBM TCP/IP for VM:

IBM TCP/IP for VM is a program that operates on a 9370, 43XX, or 30XX to provide the VM user with the capability of participating in a network that uses the TCP/IP protocol. This participation includes the ability to transfer files, send mail, and log on to a network-connected system or host.

TCP/IP for VM uses an S/370 channel to attach to a variety of controllers for connection to the selected network. It supports these network controllers:

- a) LAN Channel Station (8232)
- b) Series/1 with Real Time Programming System

### Highlights

-----

IBM TCP/IP for VM includes

- File transfer using FTP (File Transfer Protocol).
- Access to IBM 3270 applications from workstations using Telnet 3270 protocols.
- Remote terminal access using the Telnet protocol to access multivendor hosts.
- Compatibility with IBM Token Ring, IBM PC, Ethernet, ProNet, or X.25 networks.

#### Additional Features

-----

IBM TCP/IP for VM also has

- Network File System Feature (Server). NFS enables the VM system to act as a file server for vendor systems that have the NFS 3.2 client function installed. Does not include the NFS Client function. This NFS feature also includes Remote Procedure Call (RPC). Both the NFS and RPC protocols adhere to the External Data Representation (XDR) specification so that protocols can be independent of internal machine formats.
- 9370 Integrated X.25 Subsystem (driver)
- CMS X Window System (client) (Version X.11)
- Remote Execution Daemon (server)
- SNA Network Link
- HYPERchannel support (driver)

### 2) IBM TCP/IP FOR MVS:

As with TCP/IP for VM, this program operates on a 9370, 43XX, or 30XX to provide the MVS user with the capability of participating in a network that uses the TCP/IP protocol.

In addition to the network controllers supported by TCP/IP for VM, this program also supports the 37x5 Communications Controller (X.25).

#### Highlights

-----

IBM TCP/IP FOR MVS has the same features as TCP/IP for VM, plus:

- Electronic mail to remote terminals using a TSO user interface to the Simple Mail Transfer Protocol.
- C and Pascal subroutine interface to TCP and UDP.

As with TCP/IP for VM, this program also supports:

- Network File System (NFS) Feature (Server)
- Network connections via SNA or X.25 (including DDN)
- X Window System client function

### 3) InterLink

InterLink implements DECnet as an application under the IBM MVS and VM operating systems. The IBM host becomes a peer node in the DECnet environment allowing transparent communications between IBM and DECnet networks. InterLink's evolving product line includes support for multiple protocol (SNA, DECnet, TCP/IP) connectivity applications.

InterLink and Sun Microsystems jointly developed MVS-based NFS services for the UNIX networking environment. InterLink NFS/Connect software coupled with Sun's specialized IBM channel-connected workstation offer record-level data access to data stored on IBM MVS

operating environments.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5117



# Tech Info Library

## AppleShare PC 2.0: 3COM EtherLink MC Card Name Identifier

Revised: 3/4/90  
Security: Everyone

AppleShare PC 2.0: 3COM EtherLink MC Card Name Identifier

=====

This article last reviewed: 15 January 1990

TOPIC -----

Does the 3COM EtherLink MC (MicroChannel) card have an identifier for AppleShare PC 2.0?

DISCUSSION -----

When trying to identify Ethernet boards for AppleShare PC 2.0 use, the 3COM EtherLink MC (MicroChannel) card is also known as the 3COM 523 card.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5118



# Tech Info Library

## Kraft Systems, Inc.

Revised: 7/12/93  
Security: Everyone

Kraft Systems, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/12/93  
Article Updated:

Kraft Systems, Inc.

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450 W. California Ave.  
Vista, CA 92083

619-724-7146

619-941-1770 Fax

Company Profile:  
Hardware, specializing in input devices.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5119



# Tech Info Library

## Mouse Systems Corp.

Revised: 4/4/97  
Security: Everyone

Mouse Systems Corp.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Mouse Systems Corp.

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47505 Seabridge Dr.  
Fremont, CA 94538

510-656-1117

Fax: 510-770-1924

Company Profile:  
Hardware, specializing in optical mouse products and scanners.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5120





# Tech Info Library

## SoftSwitch, Inc.

Revised: 7/19/93  
Security: Everyone

SoftSwitch, Inc.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 19 July 1993

SoftSwitch, Inc.

-----

640 Lee Road  
Suite 200  
Wayne, PA 19087

215-640-9600

Fax: 215-640-7550

Company Profile:  
Software and hardware, networking, specializing in SNADS Gateway/MS Mail.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5121



# Tech Info Library

## Connectix Corporation (04/97)

Revised: 4/4/97  
Security: Everyone

Connectix Corporation (04/97)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Connectix Corporation

-----

2600 Campus Drive  
San Mateo, CA 94403

(800) 950-5880 (Sales, Technical Support)  
(415) 571-5100  
(415) 571-5195 (fax)

internet:  
connectix@aol.com  
<http://www.connectix.com>

Compuserve:  
75300,1546  
Go MACAVEN, select Section 8

America OnLine:  
Command K (keyword), Connectix

Company Profile:  
Software, specializing in general utilities for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5122



# Tech Info Library

## GMS Development

Revised: 4/4/97  
Security: Everyone

GMS Development

=====

Article Created: 03/04/90  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

GMS Development

-----  
33 Eliot Hill Rd.  
South Natick, MA 01760

508-651-3618 Phone and Fax

Company Profile:

Software, specializing in connectivity. Lets the Macintosh directly replace a standard MAI Basic Four (MBF) terminal.

Article Change History: 07/12/93 Phone number information corrected

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5123



# Tech Info Library

## VAMP, Inc.

Revised: 7/20/93  
Security: Everyone

VAMP, Inc.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 20 July 1993

VAMP, Inc.

-----

6753 Selma Ave.  
Los Angeles, CA 90028

213-466-5533

Fax: 213-466-8564

Company Profile:  
Software, specializing in plotter drivers and other Macintosh software.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5124



# Tech Info Library

## Insight Development Corp.

Revised: 4/4/97  
Security: Everyone

Insight Development Corp.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Insight Development Corp.

-----

2200 Powell St.  
Suite 500  
Emeryville, CA 94608

510-652-4115

800-825-4115

Fax: 510-652-9857

Company Profile:  
Software, specializing in printer drivers.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5125



# Tech Info Library

## Spectral Innovations

Revised: 4/4/97  
Security: Everyone

Spectral Innovations

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Spectral Innovations

-----

1885 Lundy Ave.  
Suite 208  
San Jose, CA 95131

408-955-0366

Fax: 408-955-0370

Company Profile:  
Hardware, specializing in signal processing boards for the Macintosh family.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5130



# Tech Info Library

## Virginia Tech

Revised: 4/4/97  
Security: Everyone

Virginia Tech

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Virginia Tech  
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Dept. of Computer Science  
562 McBryde Hall  
Blacksburg, VA 24061-0106

703-231-6931 (CS Office)  
703-231-6102

Internet: jpb@vtopus.cs.vt.edu

Company Profile:  
Software, specializing in an ANSI standard Pascal compiler for A/UX.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5131



# Tech Info Library

## A/UX: Drive Corrupted when Copying Disk (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Drive Corrupted when Copying Disk (8/94)

Article Reviewed/Updated: 24 August 1994

TOPIC -----

I just copied an external HD80 SC (SCSI ID=2) loaded with A/UX onto an internal HD80 SC on a Macintosh IIX with the following command:

```
dd if=/dev/rdisk/c2d0s31 of=/dev/rdisk/c0d0s31 bs=24576
```

After approximately 15 minutes, the prompt returned with a message giving the number of blocks transferred. When I tried to restart the machine, I found the internal drive is corrupted. All I get on startup is the disk with the flashing question mark.

I tried to clear the internal drive with both HD Setup and Disk First Aid, and none worked. The returned messages are "Unable to read the required table from the selected", or "Fail to read the table".

If I start up the machine using the external A/UX drive, I'm able to mount the internal A/UX partition (SCSI-0) using the following command:

```
mount -v /dev/dsk/c0s0s31 /tmp
```

Can you help me fix the corrupted table on my internal A/UX drive?

DISCUSSION -----

To ensure disk integrity when copying from one disk to another, we suggest the following:

1) Do a "fsck" on the source disk to make sure the original disk file system is good.

2) Use bs= multiple of k (1024 bytes) or b (512 bytes block) rather than the number of bytes on the "dd" command. The bs=24576 is actually bs=24k or bs=48b, which is fine because it is a multiple of 512 bytes.



Are you sure you gave this number? If the number is not a multiple of 512, it could create a corrupted A/UX disk, because the A/UX file system requires a 512-byte block or 1024-byte boundary.

3) Do a "fsck" on the newly-created disk to ensure that the target disk file system is good.

We don't think that there is a way you can correct the corrupted file system, if the created or "dd" file system's block size was not a multiple of 512 bytes.

It is not clear how the error messages "Unable to read the required table from the selected" or "Fail to read the table" was generated. Which step of HD Setup ("Initialization", "Update", or "Partition") encountered these messages?

It is unusual to mount the entire disk /dev/dsk/cXd0s31 on a directory. If you do a "mount -v /dev/dsk/c0d0s31 /tmp", you will get the error message:

```
mount: /dev/dsk/c0d0s31 on /tmp: Invalid file system
```

Just a reminder, by default:

```
/dev/[r]dsk/cXd0s0   is for Root&Utr file system
/dev/[r]dsk/cXd0s1   is for Swap file system
/dev/[r]dsk/cXd0s2   is for Utr file system
/dev/[r]dsk/cXd0s31  is for entire disk
```

We don't mount Swap file system and entire disk.

Can you see the internal disk partition map using "dp" under A/UX?

Last, we suggest that you use HD Setup to "Initialize" the internal hard disk, and follow the above suggestions to clone the disk.

Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:5132



# Tech Info Library

## The Apple Merchandising Program

Revised: 4/4/97  
Security: Everyone

The Apple Merchandising Program

=====

Article Created: 3/4/90  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

The Apple Merchandising Program

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1400 N. Price Rd.  
St. Louis, MO 63132-2308

800-HERMANN (437-6266)

314-432-1800

Fax: 314-432-1818

Company Profile:

Catalog specializing in a variety of consumer or computer-related products  
(also videos) that bear the Apple logo.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5135



# Tech Info Library

## ADB Keyboard: Problem with Function Keys When Emulating VT240

Revised: 8/23/91  
Security: Everyone

ADB Keyboard: Problem with Function Keys When Emulating VT240

=====

Article Created: 4 March 1990  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

I am having problems using VT240 terminal emulators with Macintosh SEs with Apple SuperDrives (formerly Apple FDHD) and extended keyboards. The problem is that I can't use some function keys (PF2, PF3, and PF4), like the six keys above the arrow keys on the extended keyboard.

It seems to be a CPU-related problem, because I have tried all the possible combinations between the old and the new extended keyboard, reinstalled system software 6.0.3, and used the latest revisions of the two emulators (VersaTerm Pro and Mac240). I have problems only when using the Macintosh SEs with SuperDrives. Everything works fine with older CPUs.

What's going on?

DISCUSSION -----

We tested Mac240 on our Macintosh SE with a SuperDrive, and the function keys are working exactly the same as on the Macintosh SE with 800K drive.

According to page 82 in Appendix A of the Mac240 manual, DEC keyboard keys F1-F5 are not present on the ADB keyboard. These keys perform local functions on a VT240 terminal (Hold Screen, Print Screen, Setup, DataTalk, and Break). Equivalent operations are available in Mac240 menus. DEC keyboard F6 and up are mapped to ADB keys F1 and up as follows:

| DEC Keyboard | ADB Keyboard |
|--------------|--------------|
| -----        | -----        |
| F1-F5        | Not Present  |
| F6           | F1           |

|      |     |
|------|-----|
| F7   | F2  |
| F8   | F3  |
| F9   | F4  |
| F10  | F5  |
| F11  | F6  |
| F12  | F7  |
| F13  | F8  |
| F14  | F9  |
| Help | F10 |
| Do   | F11 |
| F17  | F12 |
| F18  | F13 |
| F19  | F14 |
| F20  | F15 |

Pressing the F1 key on the ADB keyboard is equivalent to pressing the F6 key on the VT240, which happens to be Control-C, the CANCEL key. Pressing F10 and F11 on the ADB keyboard is like pressing the Help and Do keys on the DEC keyboard. This was verified using DEC Edit/TPU program.

The six keys above the arrow keys on the ADB keyboard also worked correctly for us on the Macintosh SE with the SuperDrive and with the 800K drive. Keep in mind that they do not have the same meanings as their labels. They work like the DEC keyboard labels:

| DEC keyboard | ADB keyboard |
|--------------|--------------|
| -----        | -----        |
| Find         | help         |
| Insert Here  | home         |
| Remove       | page up      |
| Select       | del          |
| Prev Screen  | end          |
| Next Screen  | page down    |

One other thing to check is to make sure that the terminal is set correctly on the host machine as VT200 series. On VAX/VMS, use the command:

```
$ SET TERMINAL/DEVICE=VT200
```

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5136



# Tech Info Library

## Macintosh IIcx & IIci: 5.25-Inch Internal Hard Disk Installation

Revised: 6/18/92  
Security: Everyone

Macintosh IIcx & IIci: 5.25-Inch Internal Hard Disk Installation

=====

Article Created: 19 February 1990  
Article Last Reviewed: 18 June 1992  
Article Last Updated:

TOPIC -----

I want to purchase third-party (MicroNet) 5.25-inch hard disks with special mounting brackets for my Macintosh IIcx and Macintosh IIci systems.

- 1) What is Apple's position about using 5.25-inch drives in the Macintosh IIcx or Macintosh IIci?
- 2) Will these drives draw too much power?

DISCUSSION -----

- 1) Apple's position is that the installation and use of an internal 5.25-inch hard disk in a Macintosh IIcx or Macintosh IIci voids the warranty of the computer.
- 2) An internal hard disk may draw 1 amp (5 watts) on the +5V line and .5 amps (6 watts) on the +12V line. On startup, a surge of 1.5 amps (18 watts) for 15 seconds is allowable on the +12V line. No surge is allowed on the +5V line.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5139



# Tech Info Library

## Macintosh IIci: ROMs Are for IIci Only

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: ROMs Are for IIci Only

=====

Article Created: 19 February 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

I heard that the Macintosh IIci ROMs can be put into a Macintosh IICx or Macintosh SE/30 to improve performance. Is there any truth to this?

DISCUSSION -----

The Macintosh IIci ROMs have been tested only in the Macintosh IIci. They may work properly in the Macintosh IICx or Macintosh SE/30, but there would be no perceptible improvement in performance. Using the Macintosh IIci ROMs would not cause the Macintosh IICx or Macintosh SE/30 to support the "burst mode" abilities of the MC68030 microprocessor. The Macintosh IIci and the Macintosh IIfx are the only Macintosh computers that have the hardware to support the "burst mode". We do not support using the Macintosh IIci ROMs in a Macintosh IICx or Macintosh SE/30.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5140



# Tech Info Library

## Macintosh SE: Correcting Hierarchical Menu Delay

Revised: 8/7/92  
Security: Everyone

Macintosh SE: Correcting Hierarchical Menu Delay

=====

Article Created: 4 March 1990  
Article Last Reviewed: 6 August 1992  
Article Last Updated: 23 August 1991

TOPIC -----

I have a Macintosh SE with a 20MB hard disk, the Apple SuperDrive (formerly Apple FDHD), and 1MB of memory. I have the basic fonts and DAS that come with the system. When I select a menu item that has a hierarchical menu attached, the hierarchical menu takes about 4 to 6 seconds to appear. I've tried:

- Programming on another Macintosh, and it worked fine.
- I used an application on the hard drive and then tried using the same program from a floppy disk. It still had the same problem.
- Reinstalling system software 6.0.3; the delay remained.
- Reformatting the hard drive and reinstalling everything--same result.
- Running SAM. No viruses were found.
- Removing nonstandard INITs from my System Folder.
- Setting up 64K and 96K RAM caches--neither had any effect on the delay.
- A technician ran Apple diagnostics tests on the computer, and it passed without a problem.

Can you help?

DISCUSSION -----

There is a parameter in extended PRAM that controls how long a menu item

must be selected before the hierarchical menu for that menu item appears. We suggest zapping extended PRAM by holding down the Shift, Option, and Command keys while opening the Control Panel. Restart the computer when the procedure is done. This resets the delay to the default value, and the hierarchical menu delay problem should disappear.

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5141





# Tech Info Library

## PostScript: Macintosh and Sun Codes Are Different

Revised: 3/4/90  
Security: Everyone

PostScript: Macintosh and Sun Codes Are Different

=====

This article last reviewed: 19 February 1990

TOPIC -----

Does Sun use the same version of PostScript as the Macintosh for printing? If yes, is there a way to use Sun documents on a Macintosh?

DISCUSSION -----

There are differences between the actual PostScript code generated on the two different computers.

On the Macintosh, the PostScript code created relies on the Laser Prep dictionary. This means that there are many short codes in a Macintosh PostScript file that relate the Laser Prep dictionary. On the Sun machines, PostScript is generated as complete (sometimes called "raw") PostScript.

However, it is possible to move an EPS (Encapsulated PostScript) file from the Sun environment to the Macintosh environment. The ability to create and read an EPS file is application-dependent. An EPS file created in a Sun application can be moved to a Macintosh and read by a Macintosh application supporting the EPS file format.

Generally, a Sun EPS file will not display on the Macintosh screen but will print fine on PostScript printers. Most Macintosh applications present such a screen display as an empty area with a border. However, Macintosh application, like LaserTalk, can display the image defined by PostScript because the image is only a screen representation of PostScript code.

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Tech Info Library Article Number:5144



# Tech Info Library

## MOD-TAP

Revised: 7/13/93  
Security: Everyone

MOD-TAP

=====

Article Created: 03/04/90  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

MOD-TAP

-----  
P.O. Box 706  
285 Ayer Rd.  
Harvard, MA 01451-0706

508-772-5630

508-772-2011 Fax

Company Profile:  
Hardware, specializing in modular wiring devices capable of handling  
multivendor equipment for voice and data communications.

Article Change History: 07/13/93 Name information corrected

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5150



# Tech Info Library

## The WELL

Revised: 7/20/93  
Security: Everyone

The WELL

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 20 July 1993

The WELL

-----

27 Gate 5 Road  
Sausalito, CA 94965

415-332-4335  
415-332-6106 (On-line signup)

Internet: well.sf.ca.us

Company Profile:  
Datacomm, specializing computer references in UNIX operating system accesses  
reached on internet

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5151



# Tech Info Library

## Aura Systems (6/96)

Revised: 4/4/97  
Security: Everyone

Aura Systems (6/96)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

Aura Systems  
-----

6150 Yarrow Dr.  
Suite A  
Carlsbad, CA 92009

800-241-2872

619-438-7730

619-438-7758 Fax

Company Profile:  
Hardware, specializing in video products.

Article Change History:  
05 Jun 1996 - Added 800 number.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5152



# Tech Info Library

## AppleFax Modem: FaxGate Allows Some Networking Capability

Revised: 3/4/90  
Security: Everyone

AppleFax Modem: FaxGate Allows Some Networking Capability

=====

This article last reviewed: 15 January 1990

QUESTION -----

Does anyone have any suggestions for a "networkable" AppleFax Modem?

RESPONSE -----

The AppleFax Modem and AppleFax software was not designed for use in a Fax server environment. You might take a look at Solutions International's FaxGate. It lets a Macintosh send a message to a second Macintosh with a locally-connected AppleFax Modem via QuickMail or Microsoft Mail. The sending Macintosh, running FaxGate in the background, transmits the message over the AppleFax Modem. Note that this product is for transmitting Fax messages, not receiving them.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5153



# Tech Info Library

## A/UX: lint Problems (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: lint Problems (9/94)

=====

Article Created: 27 December 1989  
Article Last Reviewed: 21 September 1994

TOPIC -----

I have found four problems with lint:

1) The -o option generates the following error:

```
/usr/lib/lint1: illegal option -- o
```

2) The manual does not explain how to create the "llib-lx.ln" file in the "-lx" option.

3) In this line, the -Dlint does not get defined:

```
cc -E -C -Dlint llib-lx | /usr/lib/lint1
```

4) There is no way to tell lint where to look for Lint libraries.

DISCUSSION -----

A couple of lint problems have been found and reported in the A/UX Engineering SPR database. These include that

1) The -o option is not implemented in A/UX 1.1. However, it is implemented in 2.0, 2.0.1, and 3.0.

2) The commands below described in the -lx option of lint(1) to generate the llib-lx.ln from the llib-lx were not correct; "cc" expects a C source file.

```
cc -C -C -Dlint llib-lx | \  
/usr/lib/lint1 -vx -H/tmp/lint$$ > llib-lx.ln  
rm -f /tmp/lint$$
```

The purpose of the -lx option is to include an additional lint library, (named llib-lx.ln) in the /usr/lib directory to be searched. For example, the -lm for additional search on the mathematical lint library, /usr/lib/llib-lm.ln. There is a naming error on the /usr/lib/llib-port.ln; it should be named /usr/lib/llib-lport.ln for the portable C lint library.

Support Information Services

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Tech Info Library Article Number:5155



# Tech Info Library

## A/UX: Sorting Large Indexes (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Sorting Large Indexes (9/94)

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

Is there any known A/UX-based software for sorting large indexes (20-40MB)?

DISCUSSION -----

We aren't sure what you mean by "large indexes". A/UX includes the standard "sort" command, which is able to sort lines from one or more files. The maximum number of lines it can sort is limited only by disk space. If your needs go beyond sorting lines, you should investigate a database manager of some sort. Check with Oracle Corporation and Informix Software for information on their products (For more details, search the Tech Info Library under "Oracle" and "Informix.")

Article Change History:  
22 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5156





# Tech Info Library

## A/UX: Using Northern Telecom Memorybank

Revised: 9/29/92  
Security: Everyone

A/UX: Using Northern Telecom Memorybank

=====

Article Created: 15 January 1990

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Will A/UX run on the Northern Telecom Memorybank? Can it access the  
Memorybank's tape drive?

### DISCUSSION -----

Yes, the Northern Telecom Memorybank works with A/UX. Northern Telecom provides configuration software to prepare their drive for use with the Macintosh OS, A/UX, or both. They also provide backup software that can do fully-automated backups to tape under the Macintosh OS and an advanced A/UX driver for their tape drive for traditional file backups under A/UX. For more information, search the Technical Info library under "Northern Telecom".

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Tech Info Library Article Number:5157



# Tech Info Library

## CD-ROM: Premastering Equipment

Revised: 3/4/90  
Security: Everyone

CD-ROM: Premastering Equipment

=====

This article last reviewed: 15 January 1990

TOPIC -----

Is there any A/UX-based software that does premastering of CD-ROMs?

DISCUSSION -----

As of October, 1989, two companies produce CD-ROM premastering equipment and software for Macintosh computers. These are Meridian Data, Inc. and Optical Media International. As of that date, they do not support A/UX. However, we recommend that you contact them for information about their future plans. For more details, search the Technical Info library under "Meridian Data" and "Optical Media International".

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Tech Info Library Article Number:5158



# Tech Info Library

## TokenTalk: Sniffer MisReads AARP

Revised: 3/4/90  
Security: Everyone

TokenTalk: Sniffer MisReads AARP

=====

This article last reviewed: 4 January 1990

TOPIC -----

Why does Sniffer see AppleTalk as a standard IBM Token Ring hardware and then as an Ethernet type=80F3? During the time I ran my tests, one of my PC LAN servers crashed in a big way, and I wonder if the TokenTalk card and software might have contributed to its demise.

DISCUSSION -----

The Sniffer is displaying the AppleTalk Address Resolution Protocol (AARP). AARP performs three basic functions:

- It initially determines the unique protocol address of an AppleTalk node for a given protocol set (like the AppleTalk protocols).
- It maps between two address sets.
- It filters packets within a given protocol set.

In AppleTalk Phase 2, AARP packets are encapsulated in IEEE 802.2 format on data links that support this standard. To accommodate the large number of protocols, IEEE developed the SubNetwork Address Protocol (SNAP) standard. The SNAP allows multiple protocols to be used in one data link. It defines a 5-byte field to identify the protocol that is using the data link. It ensures that protocol identifiers from different vendors do not conflict. The SNAP protocol discriminator for AARP packets is \$00000080F3; the Sniffer mistakenly reported this as Ethernet.

Nevertheless, these packets should not cause the LAN server to crash. We connected a Sniffer to a Token Ring LAN in our office and also saw these SNAP packets reported incorrectly, but the server and the network are operating normally.

We strongly suggest that you upgrade to the latest version of software. You must use the new 1.1.2 version of Apple File Exchange with SMB and TokenTalk 2.0 final.

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Tech Info Library Article Number:5159



# Tech Info Library

## GS/OS 5.0.2: Solves No Finder Printing Problem

Revised: 3/4/90  
Security: Everyone

GS/OS 5.0.2: Solves "No Finder" Printing Problem

=====

This article last reviewed: 4 January 1990

TOPIC -----

I have a problem on my Apple IIGS lab (LocalTalk and GS/OS 5.0 with the current version of Aristotle) when I start from Aristotle on disk, bypassing the Finder. I log on and run Chooser.II from Aristotle to choose an ImageWriter. When I try to print from AppleWorks or various MECC applications nothing happens.

For the lab to function in an orderly manner, students need to start from disk and be able to choose a printer. Do you have a workaround? Also, just what file is it that holds the name of the chosen printer?

DISCUSSION -----

Upgrading to GS/OS 5.0.2 resolves this issue. This version of GS/OS, when used with the "No Finder" startup disk, defaults to the user's assigned printer set in the AppleShare Admin program.

When using GS/OS 5.0.2, you needn't use Chooser.II to make network printer choices. If you use a Finder startup disk, the Control Panel provides the printer choice via the various printer Control Panel devices. With a "No Finder" startup disk, the printer choice is made in AppleShare Admin's Apple II menu. When starting up across the network, the printer choice is also made in the AppleShare Admin program.

However, if students must dynamically change the printer they use, Chooser.II is required in the "No Finder" and network startup procedures. When running Chooser.II from the server, the printer selection is stored in the ATINIT file located in "USERS/(user's logon name)/ATINIT" on the server. This overrides the choice in the AppleShare Admin setup during this signon. After the user signs off and back on in these two startup procedures, the default printer will be the one set in the AppleShare Admin setup.

Should the desired results be "one student assigned to one printer," then GS/OS 5.0.2 smoothly handles this situation by using the AppleShare Admin setup during a "No Finder" startup.

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Tech Info Library Article Number:5160



# Tech Info Library

## GS/OS 5.0.2 Solves No Finder Problem

Revised: 3/4/90  
Security: Everyone

GS/OS 5.0.2 Solves "No Finder" Problem

=====

This article last reviewed: 15 January 1990

TOPIC -----

I just updated my server to GS/OS 5.0.1 and created startup disks with no Finder to speed startup. The workstations started up and ran applications, but they don't print. Is there a fix for this problem?

DISCUSSION -----

Installing GS/OS 5.0.2 will resolve the problem encountered with the "No Finder" startup disk.

Note: GS/OS version 5.0.1 is NOT a released version of GS/OS. Copies were sent to the Apple SEs, but it has never been officially released. GS/OS 5.0.2 is the official release of the operating system for the Apple IIGS.

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Tech Info Library Article Number:5161



# Tech Info Library

## A/UX: Find, Dump & Print an 8-Bit Window w/ X Windows (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Find, Dump & Print an 8-Bit Window w/ X Windows (9/94)

=====

Article Created: 27 December 1989  
Article Reviewed/Updated: 9 September 1994

TOPIC -----

I have been trying under X Windows to find and dump an 8-bit window as described in the "README" file under usr/lib/X11. If you set the window plane to the normal white and dump it, the xpr routine seems to work fine. However, if you set the background to a color (like solid blue with yellow text), and you bring back the window with the xwd routine and print it with xpr, you get a blank page.

I assumed that I had not found the proper plane, but I tried many parameters and could not get it to print. Can you give me an example to show how it works?

DISCUSSION -----

We successfully used xwd, xwd and xpr to print both 1-bit and 8-bit windows on a LaserWriter. We also used the plane option of xwd to specify bit planes of xy format dump files. Here are the steps we followed:

- 1) On our 8-bit screen, we created an xterm window with a blue background and a yellow foreground (text), cursor, and pointer.

```
xterm -bg blue -fg yellow -cr yellow -ms yellow &
```

- 2) We dumped the xterm window to the file dump.xy with the xwd command.

- 3) We used the xy option to print to our non-color LaserWriter in the next step.

```
xwd -xy -out dump.xy
```

- 4) To print the dumped image, we used the xpr command with the output piped to our LaserWriter. The "device ps" option dumps the image in a PostScript bitmap. We added the rv (swap foreground and background



colors) option to prevent a white on black image.

```
xpr -device ps -rv dump.xy | atprint
```

- 5) To display the dumped file on screen, we used the `xwud` command. The `raw` option greatly speeds up the display operation.

```
xwud -in dump.xy -raw
```

- 6) To display a specific plane of the file, we used `xwud` with the `plane` option, and a second monitor set to 1 bit. The `plane` option accepts a value in the range of 0 to 7.

```
xwud -in dump.xy -plane 0 -display :0.1
```

#### Article Change History:

09 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

#### Support Information Services

Copyright 1989, 1994 Apple Computer, Inc.

Tech Info Library Article Number:5162



# Tech Info Library

## Token-Ring: Macintosh SE Adapter Available

Revised: 2/10/93  
Security: Everyone

Token-Ring: Macintosh SE Adapter Available

=====

This article last reviewed: 15 January 1990

TOPIC -----

Do you know if there is a third-party Token Ring adapter available for the Macintosh SE or Macintosh SE/30?

DISCUSSION -----

Asante Technologies, Inc. has a Token Ring card for the Macintosh SE. The card supports the AppleTalk Internet Router but does not support Apple's SMB software.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1990, 1993, Apple Computer, Inc.

Tech Info Library Article Number:5163



# Tech Info Library

## AppleFax-to-AppleFax Communication

Revised: 3/4/90  
Security: Everyone

AppleFax-to-AppleFax Communication

=====

This article last reviewed: 4 January 1990

TOPIC -----

I have tried file transfers between two AppleFax Modems using communications software at 9600 baud. I tried Microphone II to Microphone II and MacTerminal 2.3 to Microphone II. In all cases, I was given error messages or found the system hung. Why is this happening?

DISCUSSION -----

After some extensive testing, we concluded is that you are better off using the AppleFax application for file transfers instead of using third-party terminal software. Third-party software does work, but it is much slower.

The AppleFax Modem has built-in error correction, rendering the error correction performed by MicroPhone, Red Ryder, MacTerminal, and so on redundant. Furthermore, adding those additional layers of protocols and error correction on top of the built-in error correction slows your transmissions down and potentially subjects you to timeout errors (which is probably what you are encountering), compounded by any noise on the lines.

For example, transmitting a .5MB file with the AppleFax application required approximately 14 minutes. Transmitting that same file using MicroPhone II 2.0 using their YMODEM/MacBinary Protocol Transfer Setting was stated by the program's status screen to require over 400 minutes! (Transmitting the same file using YMODEM-G would take approximately 3 hours.)

We didn't wait the nearly 7 hours to verify that it would take that long, because that status screen has been relatively accurate in the past. We did, however, monitor the file transfer for 20 minutes and multiplied the remaining number of bytes to be transferred by the transfer rate. We observed the extremely slow transfer rate and are convinced it would take a very long time. During the 20 minutes we monitored the file transfer, there were no errors reported, nor were there any errors reported with the numerous other small

files we transferred using many of the other MicroPhone transfer settings. Though the files transferred successfully, the file transfers took much longer than when using the AppleFax software.

If you want to continue using MicroPhone or MacTerminal, we recommend using YMODEM-G or MacBinary, respectively, as they do error correction less often than the other options and don't use the other additional error correction options, like CRC.

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Tech Info Library Article Number:5164



# Tech Info Library

## CD-ROM: Pre-Press Considerations

Revised: 3/4/90  
Security: Everyone

CD-ROM: Pre-Press Considerations

=====

This article last reviewed: 15 January 1990

TOPIC -----

What can you tell me about storing text information on CD-ROM in High Sierra format and having retrieval engines that will allow access to the data from both MS-DOS and Macintosh platforms.

How does one go about mastering a disc like this? What are the pressing criteria? In what format does the data need to be supplied? How does one maintain Finder file attributes for applications/files in High Sierra? What quirks are there with this process and what information and tools do local pressing agents need?

DISCUSSION -----

First a note about High Sierra and ISO 9660 CD-ROM formats. High Sierra was established first. Initially, the format was presented in a working document. Several CD-ROMs were published from this "not quite" final document. These CD-ROMs may not be readable by all "High Sierra" drivers.

Next, International Standards Organization (ISO) used the High Sierra document as the basis for their standard ISO 9660 CD-ROM format. Most developers of CD-ROMs for multiple platform products now use the ISO 9660 standard. The ISO 9660 format is supported by the Apple II and Macintosh CD drivers and by MS-DOS Extensions Version 2.0 and up. As a result, you may want to use the ISO 9660 standard.

For a High Sierra/ISO 9660-type format, a decision must be made about what will be placed on the disc. This is especially important when the information will be used on a variety of different computer systems. The files that will be placed on the CD-ROM should be readable by all types of computers that are expected to read the data. The ASCII text file is one type of file that is universal to most computer systems.

Applications may not be the best thing to place on a disc that will be used in different computers. Generally, an application that runs on one type of computer will not run on another type. However, Meridian Data, Inc. has a CD-ROM which contains both Macintosh and MS-DOS applications in a ISO 9660 format while maintaining Macintosh file integrity. They have apparently worked out a method to accomplish this hybrid disc.

If the information will be read by a search and display application of the developer's design, then the type of file to be used can be designed to function as needed by the developers. This will require the developer to write individual search and display applications for each of the different computers using the CD-ROM.

Different mastering/pressing facilities request differing formats for the source materials. For ISO 9660, some facilities require that the source material be in ANSI files on a 1/2-inch, 9-track tape with 6250 bytes per inch, while others will accept ANSI image, ANSI files, IBM image, unlabeled image formats on a .5-inch, 9-track tape. Other formats and media include TK70 image or TK70 files on cartridge tape or on an AFA WORM formatted optical disc. Thus, to determine what format the data needs to be in, contact your mastering facility to find out what format they want for the source material.

Once the CD-ROM developer has agreed with the mastering/pressing facility on the format and medium, the source material is sent to the facility. Often a test pressing is provided for the developer to verify that all is correct with the transfer from source material to CD-ROM. On approval of the test pressing, the facility then presses the requested number of CD-ROM discs.

To determine when a CD-ROM pressing becomes feasible, compare the cost of alternate methods of distribution to the cost of CD-ROM distribution. People often consider the breakeven point to be 100 copies at 10-20MB per copy.

A more sophisticated method involves the use of the premastering facility. A premastering facility provides an intermediary service between the developer and the mastering/pressing plant. The service can consult with you about creating a successfully-designed CD-ROM and properly format all data destined for the CD-ROM.

Mastering and pressing facilities include 3M Optical Recording Department, Discovery Systems, and Digital Audio Disc Corporation. For premastering, contact Optical Media International and Meridian Data. For more details, search the Technical Info library under the appropriate company name.

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Tech Info Library Article Number:5166



# Tech Info Library

## A/UX: Optimizing X Window Performance (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Optimizing X Window Performance (9/94)

Article Created: 28 December 1989  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

I am working on a port of an HP X Window System application, using a Macintosh IIci with 8MB of internal memory. The issue is X-Window display performance.

The display of the X Window System application is faster when the X-server part is used over the network on an HP Model 340, than when the X-display is used on the Macintosh IIci itself!

The kernel has been modified with kconfig as is described in the "X Windows System User's Guide," page 2-6.

Can I get additional optimization by modifying other parameters or in future versions of Apple's X Windows product.

DISCUSSION -----

This is normal behavior for an X environment. Overall performance depends on the combined performance of the host running the X server and the host running the X clients. Network speed is also important, but assuming Ethernet speeds, not so much as computing performance. If both the client and server are running on the same computer, then the combined load will predictably degrade performance.

Because your customer is running the server on the Macintosh IIci, you should make sure they understand the implications of using NuBus versus built-in video with anything other than 1-bit displays. Using built-in video in 8-bit mode could severely impact performance.

Optimizing an X system is similar to optimizing any A/UX networking system. You can improve performance by optimizing the following:

- Available RAM. Install 5MB or more, 8MB if running both server and

clients. In A/UX 3.0, at least 8MB of RAM is recommended.

- Kernel parameters like NBUF and NMBUFS. At least 600 block I/O buffers (NBUF) and 200 network buffers (NMBUFS) is recommended.
- Speed and location of swap space. This can be faster if swap space is located on a second drive.

Support Information Services

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Tech Info Library Article Number:5169





# Tech Info Library

## Using an IBM Mainframe as a Virtual Disks

Revised: 3/4/90  
Security: Everyone

Using an IBM Mainframe as a Virtual Disks

=====

This article last reviewed: 4 January 1990

TOPIC -----

Is there any way to use an IBM 370 series mainframe as a file server?

DISCUSSION -----

Sun's NFS (Network File System) runs on IBM 370 series mainframe. This means that with a Cayman GatorBox the mainframe will work as a virtual disk. In fact, a customer in Australia is using an IBM 3090 model 600e as a file server for 400 Macintoshes.

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Tech Info Library Article Number:5170



# Tech Info Library

## Calculus, Inc.

Revised: 7/8/93  
Security: Everyone

Calculus, Inc.

=====

Article Created: 03/04/90  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Calculus, Inc.

-----

1050A Independence Ave.  
Mountain View, CA 94043

415-390-8771

415-390-9588 Fax

### Company Profile:

Hardware and software, specializing in modems, including A/UX-compatible models and Fax modems.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5171



# Tech Info Library

## NEC Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

NEC Technologies, Inc.

=====

Article Created: 4 March 1990  
Article Reviewed/Updated: 4 April 1997

NEC Technologies, Inc.

-----

1414 Massachusetts Ave.  
Boxborough, MA 01719

800-388-8888

Local Office:  
1411 W. 190 St.  
Suite 700  
Gardena, CA 90248

310-719-2540 (PC Support)

Fax: 310-719-2404

19220 Normandie Ave  
Torrance, CA 90502

310-323-0674 (Service Center)  
312-622-7427 (NEC adapters for monitors)

Company Profile:  
Hardware, specializing in printers, monitors, and computers.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5176



# Tech Info Library

## Macintosh SE: Kodak Data Show's White Wire Connection

Revised: 3/4/90  
Security: Everyone

Macintosh SE: Kodak Data Show's White Wire Connection

=====

This article last reviewed: 15 February 1990

TOPIC -----

I was upgrading the memory of a Macintosh SE that had a Kodak Data Show card installed. The clip on the white wire that connects the Kodak card to a chip on the Main Logic Board came off. I have two questions: which chip was it connected to and which pin on that chip?

DISCUSSION -----

The white wire connects to the GLU chip at D9 pin #19. If you are looking at that chip laying horizontally with the notch on the left, #19 is the second pin from the left on the top row.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5177



# Tech Info Library

## Quantum Disk Drives: Lubricant Effects on Head Seeks

Revised: 3/4/90  
Security: Everyone

Quantum Disk Drives: Lubricant Effects on Head Seeks

=====

This article last reviewed: 4 January 1990

TOPIC -----

I know that the new Quantum ROMs do occasional seeks to overcome the lubricant problem on their hard disks. I thought that these seeks would take only a few seconds, but we're getting reports that the seeks go on for five minutes, usually just after a save. Is this correct?

DISCUSSION -----

It's possible for this to happen, especially if the save resulted in a number of writes in a very small area. This would result in puddles of lubricant forming outside this "save" area. When the head tries to move elsewhere, it encounters the puddle and loops through a move sequence until it breaks through the puddle. Your customers should not be overly concerned, because it's not a major problem, but the Quality group is looking into the issue.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5178



# Tech Info Library

## HyperCard: XCMD To Restart & Shutdown Macintosh

Revised: 6/10/91  
Security: Everyone

HyperCard: XCMD To Restart & Shutdown Macintosh

=====

Article Created: 4 March 1990  
Article Last Reviewed: 29 March 1991  
Article Last Updated: 29 March 1991

TOPIC -----

Do you know of a HyperCard XCMD that can restart the Macintosh?

DISCUSSION -----

There are several XCMDs and XFCNs capable of restarting or shutting down a Macintosh. One, named "doRestart," restarts the Macintosh without any further notice. The other, named "ShutDown," does a normal shutdown as if you had selected Shut Down from the Finder's Special menu. The "Shutdown" XCMD eventually corrupts any stack it's used in. It's just a matter of time before the user shuts the system down without HyperCard having done its housekeeping chores. The shareware "SafeShutDown" by Christopher Watson seems to be safe (there have been no reports of corrupted stacks with it). None of these is an Apple-supported solution.

Caution should be used when executing these, especially while MultiFinder is running. It is possible that other applications may not be able to clean up properly before the system restarts or shuts down.

An easier, faster and safer way to do this is to create a QuickKey sequence for HyperCard to execute.

The HyperTalk script might look like:

```
on doMenu which
  if which = "Quit" then
    type "Q" with Command key and Option key
  ...
  ...
```

where Command Option Q calls a quickKey sequence that quits HyperCard and then does a Finder shutdown.

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5179



# Tech Info Library

## Macintosh IIci: Internal Video Circuitry Versus Video Card

Revised: 7/8/92  
Security: Everyone

Macintosh IIci: Internal Video Circuitry Versus Video Card

=====

Article Created: 4 January 1990  
Article Last Reviewed: 7 July 1992  
Article Last Updated:

TOPIC -----

North American Philips Electronics makes a color RGB monitor that works well (with appropriate cable) with the Macintosh 8-Bit Color Video Card. However, when attached to the Macintosh IIci built-in video port, the monitor displays a blank screen.

They have tested their monitor with the Macintosh IIci in combination with the 8-Bit Video Card, and it works OK. Can you provide a specific list of differences (pinouts, voltages, signal characteristics) between the RBV port and the 8-bit card port?

DISCUSSION -----

The most likely cause of the problem is that the cable or monitor being used does not ground pin 4. This is required for the built-in video circuitry to identify a monitor as an AppleColor High-Resolution RGB Monitor or equivalent. If none of the Monitor ID pins are grounded, the built-in video assumes no monitor is attached.

The following portion of text from the Macintosh IIci Technical Tour stack should clarify why the internal video circuitry of the Macintosh IIci behaves differently than the Macintosh II High-Resolution Video Card. Here is the text:

The Macintosh IIci has the equivalent of a video card built into the main logic board. This means that Macintosh IIci owners do not have to purchase a separate video card to use an Apple monitor with the unit. This also means that all three NuBus slots remain available for other NuBus cards. Other video cards can be added to any one of the three NuBus slots.



The built-in video circuitry supports the following monitors:

Apple High-Resolution Monochrome (@ 2, 4, 16, and 256 colors/grays)  
AppleColor High-Resolution RGB (@ 2, 4, 16, and 256 colors/grays)  
Apple Macintosh Portrait Display (@ 2, 4, and 16 colors/grays)

The pinouts for this port are as follows:

|       |             |                      |
|-------|-------------|----------------------|
| 01    | RED.GND     | Red Video Ground     |
| 02    | RED.VID     | Red Video            |
| 03    | CSYNC       | Composite Sync.      |
| 04    | MON.ID1     | Monitor ID, Bit 1    |
| 05    | GRN.VID     | Green Video          |
| 06    | GRN.GND     | Green Video Ground   |
| 07    | MON.ID2     | Monitor ID, Bit 2    |
| 08    | nc          | (No Connection)      |
| 09    | BLU.VID     | Blue Video           |
| 10    | MON.ID3     | Monitor ID, Bit 3    |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground |
| 12    | VSYNC       | Vertical Sync.       |
| 13    | BLU.GND     | Blue Ground          |
| 14    | HSYNC.GND   | HSYNC Ground         |
| 15    | HSYNC       | Horizontal Sync.     |
| Shell | CHASSIS.GND | Chassis Ground       |

The pin requirements for making a cable for a Macintosh IIfx to a Portrait display are as follows:

| DB-15 (Macintosh IIfx) | DB-25 (Portrait) |
|------------------------|------------------|
| 03                     | 05               |
| 07                     | 08               |
| 08                     | 04               |
| 10                     | 03               |
| 11                     | 07,10            |
| 12                     | 02               |
| 14                     | 01               |
| 15                     | 06               |
| Shell                  | Shell            |

There is an issue with some third-party video cables and third-party video cable extenders. Some of those cables included just the necessary pins to support the Apple High-Resolution Monochrome Monitor or the AppleColor High-Resolution RGB Monitor with the Macintosh II High-Resolution Video Card.

One problem with some of these cables is that pins 4, 7, and 10 are used to identify the monitor that is connected. With the Macintosh II High-Resolution Video Card, pin 4 was a ground line, but pins 7 and 10 were not used. With the color and monochrome monitors, the problem is that some of those cables leave out pin 4, and tie to another ground. In these cases, the built-in video fails to detect and identify the monitor.

This causes built-in video to be disabled. However, if the cable or cable extender connects pin 4, the cable should allow the Macintosh IIci to correctly identify the Apple High-Resolution Monochrome and the AppleColor High-Resolution RGB Monitors. Most cables support the other signals required for these two monitors.

A second problem is that, given the fact that the new Macintosh IIci-to-Portrait Display cable has a 15-pin connector on one end, it can be connected to third-party video cable extenders. However, all of the lines that were unused by the Macintosh II High-Resolution Video Card are now used to support the Macintosh Portrait Display. As a result, any video cable extender that does not include these lines will not support the Portrait Display. In this case, the Macintosh IIci may not be able to identify the monitor because lines 7 and 10 probably will not be connected and the required video signal lines will not be there either.

SPECIAL NOTE: To meet FCC part 15 requirements, the Apple-supplied cables have to be used.

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Tech Info Library Article Number:5180



# Tech Info Library

## Macintosh: Korean-Language Word Processors

Revised: 3/4/90  
Security: Everyone

Macintosh: Korean-Language Word Processors

=====

This article last reviewed: 4 January 1990

TOPIC -----

Do you know of a Korean-language word processor?

DISCUSSION -----

The Apple distributor in Korea, Elex Computer, has developed the HangulTalk 6.0.2 with Apple Far East. It has full Korean-language support and Hangul PostScript printing.

For word processing, Elex Computer has worked with Paragon Concepts to localize the Nisus word processor. The Korean version has full script-manager support plus in-line Hangul input. Besides Nisus, a Korean version of Quark XPress is also available.

Please contact Elex Computer for details. For more details, search the Tech Info Library under "Elex."

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Tech Info Library Article Number:5181



# Tech Info Library

## LocalTalk: High-Speed LAN Bridging at Speeds up to 57.6K BPS

Revised: 3/4/90  
Security: Everyone

LocalTalk: High-Speed LAN Bridging at Speeds up to 57.6K BPS

=====

This article last reviewed: 5 January 1990

TOPIC -----

I need a high-speed LAN bridge to link buildings on a business "campus." Can you help me?

DISCUSSION -----

High-speed LAN bridging is possible with the Digital Access A-115 Asynchronous Line Driver and the Shiva TeleBridge. With these products, two LocalTalk LANs as far apart as 3.5 miles can be bridged at speeds up to 57.6K bps. All connections are over twisted-pair copper wiring. Installation is simple, and, because all connections are over existing wiring, there is no high installation cost. For more information, search the Tech Info Library under "Digital Access Corporation".

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Tech Info Library Article Number:5182



# Tech Info Library

## LocalTalk PC Card: Accessing a Host Running TCP/IP

Revised: 3/4/90  
Security: Everyone

LocalTalk PC Card: Accessing a Host Running TCP/IP

=====

This article last reviewed: 5 January 1990

TOPIC -----

Is there a product for DOS that can be configured to use the Apple LocalTalk PC Card to open a connection to a host system running TCP/IP?

DISCUSSION -----

Yes. The product is NCSA Telnet for DOS. Like the version for the Macintosh, the DOS version is available from the Supercomputer Research Center at the University of Illinois. Judging from comments on USENET, setting up the required configuration file is not for the faint-hearted.

For more details, search the Tech Info Library under "NCSA Telnet."

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Tech Info Library Article Number:5183



# Tech Info Library

## A/UX: Internet Router Printing Problem (8/94)

Revised: 8/23/94  
Security: Everyone

A/UX: Internet Router Printing Problem (8/94)

Article Created: 5 January 1990  
Article Reviewed/Updated: 19 August 1994

TOPIC -----

I have a problem printing from AppleTalk for A/UX (Ethernet) through the AppleTalk Internet Router. I am running A/UX and have three printers--a LaserWriter IINTX and two AppleTalk ImageWriters on LocalTalk.

On the A/UX machine, I can launch a Macintosh OS application and print through Ethernet to the Internet Router and on to the LaserWriter with no problems. The Chooser works fine and shows all zones and printers.

However, when I try to print through A/UX, none of the three printers prints with lp, lpr, or atprint. The Printers and Zones show up and are chosen with the at\_cho\_prn script. Do you have any suggestions?

DISCUSSION -----

Because you don't have a printing problem via a Macintosh OS application, the problem seems to be on the A/UX printer spooler setup.

We have a couple of A/UX machines here configured with AppleTalk for A/UX printing via EtherTalk and the AppleTalk Internet Router without any problem when using the "lp" command or printing directly from the Macintosh OS application.

Here are some questions and suggestions:

- Is the /usr/lib/lpsched running? It usually starts up from the /etc/inittab.
- If the printing interface is via EtherTalk, the following two lines must be included in the /etc/appletalkrc file:

```
interface = ethertalk0
```

Ethernet = ae0

- Did you run the "ADD\_AT servicename" command when you set up the printer spooler? (Note that servicename is just a printer queue name. You can give any name you want.)
- Try the "lpstat -t" command to display the current status information of your printer system. Make sure that the system default destination is the one you want to print to. Are the printer queue and the Class AppleTalk both accepting requests? Is the printer queue enabled?
- Make sure you have the Internet Router set to route the AppleTalk Phase 2 packets.

Article Change History:

19 Aug 1994 - Changed title

31 Aug 1992 - REVIEWED For technical accuracy.

Support Information Services

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Tech Info Library Article Number:5184



# Tech Info Library

## A/UX: vt220 termcap

Revised: 9/25/92  
Security: Everyone

A/UX: vt220 termcap

Article Created: 5 January 1990

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I am looking for a UNIX platform to transport accounting applications. The main problem to transport is termcap. I need a vt220 entry.

### DISCUSSION -----

Here is a copy of the vt220 termcap entry adopted from a 4.3BSD UNIX machine. We don't have any VT220 terminal to test these entries though.

We've checked this and some contain the same entry as in A/UX 1.1, so you may need to change them to different entry names. Here is the entry:

```
d1|vt200|vt220|vt200-js|vt220-js|dec vt200 series with jump scroll:\
:im=\E[4h:ei=\E[4l:mi:DC=\E[P:dm=:ed=:al=\E[L:dl=\E[M:\
:cs=\E[%i%d;%dr:sf=\ED:sr=\EM:sb=\EM:\
:ce=\E[K:cl=\E[H\E[J:CD=\E[J:cm=\E[%i%d;%dH:nd=\E[C:up=\E[A:\
:so=\E[7m:SE=\E[27m:us=\E[4m:ue=\E[24m:\
:md=\E[1m:mr=\E[7m:MB=\E[5m:me=\E[m:\
:is=\E>\E[?31\E[?41\E[?51\E[?7h\E[?8h\E[1;24r\E[24;1H:\
:rs=\E>\E[?31\E[?41\E[?51\E[?7h\E[?8h:\
:tc=vt100:
d0|vt100|vt100-am|vt100am|dec vt100:\
:do=^J:co#80:li#24:cl=50\E[;H\E[2J:sf=5\ED:\
:le=^H:bs:am:cm=5\E[%i%d;%dH:nd=2\E[C:up=2\E[A:\
:ce=3\E[K:CD=50\E[J:so=2\E[7m:SE=2\E[m:us=2\E[4m:ue=2\E[m:\
:md=2\E[1m:mr=2\E[7m:MB=2\E[5m:me=2\E[m:is=\E[1;24r\E[24;1H:\
```



```
:rf=/usr/lib/tabset/VT100:\
:rs=\E>\E[?31\E[?41\E[?51\E[?7h\E[?8h:ks=\E[?1h\E=:ke=\E[?11\E>:\
:ku=\EOA:kd=\EOB:kr=\EOC:kl=\EOD:KB=^H:\
:ho=\E[H:kl=\EOP:k2=\EOQ:k3=\EOR:k4=\EOS:pt:sr=5\EM:vt#3:xn:\
:SC=\E7:rc=\E8:cs=\E[%i%d;%dr:
#
# From: Bracy H. Elton <elton@l11-crg>
dm|vt200-ss|vt220-ss|dec vt200 series with smooth scroll:\
:is=\E>\E[?31\E[?4h\E[?51\E[?7h\E[?8h\E[1;24r\E[24;1H:\
:rs=\E>\E[?31\E[?4h\E[?51\E[?7h\E[?8h:\
:tc=vt200:
dn|vt200-w|vt220-w|vt200-wj|vt220-wj|dec vt200 series; 132 col.; jump scroll:\
:is=\E>\E[?3h\E[?41\E[?51\E[?7h\E[?8h\E[1;24r\E[24;1H:\
:rs=\E>\E[?3h\E[?41\E[?51\E[?7h\E[?8h:\
:co#132:tc=vt200:
do|vt200-ws|vt220-ws|DEC vt200 series; 132 col.; smooth scroll:\
:is=\E>\E[?3h\E[?4h\E[?51\E[?7h\E[?8h\E[1;24r\E[24;1H:\
:rs=\E>\E[?3h\E[?4h\E[?51\E[?7h\E[?8h:\
:co#132:tc=vt200:
```

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Tech Info Library Article Number:5186



# Tech Info Library

## AppleTalk: Macintosh ROM Version Numbers (4/93)

Revised: 4/15/93  
Security: Everyone

AppleTalk: Macintosh ROM Version Numbers (4/93)

Article Created: 5 January 1990

### Article Change History

04/06/93 - UPDATED

- To include new computer models, and the effect of System 7.x and AppleTalk version in Macintosh ROM. Article retitled.

### TOPIC -----

What is the version of AppleTalk found in the Macintosh ROMs?

### DISCUSSION -----

The ROM version of AppleTalk is irrelevant today. Starting with System 7, AppleTalk is included with System Software. In most cases, the version of AppleTalk that is included in the version of System 7.x is newer than what is built-in to ROM.

For Macintosh systems that can use System 6, we recommend using the latest Network Software Installer to install AppleTalk software. This is a good idea for System 7.x users as well. This ensures that the customer is using the most up-to-date AppleTalk software with their systems. In almost all cases, this will provide AppleTalk software that is newer than what is available in ROM.

Below is a list of the AppleTalk versions in the ROM of various Macintosh systems:

| System          | ROM AppleTalk Version |
|-----------------|-----------------------|
| -----           | -----                 |
| Macintosh 512Ke | 19                    |
| Macintosh Plus  | 19                    |

|                         |                                                                                                                       |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Macintosh SE            | 48                                                                                                                    |
| Macintosh II            | 49                                                                                                                    |
| Macintosh IIX           | 49                                                                                                                    |
| Macintosh SE/30         | 49                                                                                                                    |
| Macintosh IICx          | 49                                                                                                                    |
| Macintosh Portable      | 52                                                                                                                    |
| Macintosh IICi          | 52                                                                                                                    |
| Macintosh IISI          | 54                                                                                                                    |
| Macintosh IIfx          | 54                                                                                                                    |
| Macintosh IIVx          | 54                                                                                                                    |
| Macintosh Classic       | 46                                                                                                                    |
| Macintosh Classic II    | 56.0.1                                                                                                                |
| Macintosh Color Classic | 57.0.4                                                                                                                |
| Macintosh LC            | 54                                                                                                                    |
| Macintosh LC II         | 54                                                                                                                    |
| Macintosh LC III        | 57.0.4                                                                                                                |
| Macintosh Quadra 700    | 56.0.2                                                                                                                |
| Macintosh Quadra 900    | 56.0.2                                                                                                                |
| Macintosh Quadra 800    | 57.0.4                                                                                                                |
| Macintosh Quadra 950    | 56.0.2                                                                                                                |
| Macintosh Centris 610   | 57.0.4                                                                                                                |
| Macintosh Centris 650   | 57.0.4                                                                                                                |
| Macintosh PowerBook     | Require System 7.x and will<br>load AppleTalk version 56<br>(System 7.0 and 7.0.1), or<br>version 57.0.4 (System 7.1) |

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Tech Info Library Article Number:5187



# Tech Info Library

## Macintosh Finder: Changing the Maximum for Open Windows

Revised: 7/19/91  
Security: Everyone

Macintosh Finder: Changing the Maximum for Open Windows

=====

Article Created: 5 January 1990  
Article Last Reviewed: 2 February 1991  
Article Last Updated:

TOPIC -----

What is the maximum number of windows that I can open at once under the Finder and MultiFinder? Can I increase this?

DISCUSSION -----

Finder 6.x allows a maximum of 13 windows open at once. You can use ResEdit to change this value. Here are the steps:

- 1) Work only on a COPY of your Finder.
- 2) Start ResEdit.
- 3) Open the Finder file from ResEdit.
- 4) Open the LAYO resource named ID=128. (It's probably the only one of that type.)
- 5) Scroll until you find the layout default called "Max # of windows". It's at the bottom of the list.
- 6) Change this to the desired value.
- 7) Quit ResEdit and answer Yes to "Save 'Finder' before closing?"

Changing this value to a higher number causes the Finder to use more memory. You may have to allocate more memory for the Finder, if you are running MultiFinder.

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# Tech Info Library

## Macintosh to IBM AS/400 Connectivity (7/93)

Revised: 7/19/93  
Security: Everyone

Macintosh to IBM AS/400 Connectivity (7/93)

=====

Article Created: 5 January 1990  
Article Reviewed/Updated: 16 July 1993

TOPIC -----

How do you connect the Macintosh to IBM AS/400s. Are there other ways to connect local Macintoshes to AS/400 without using a KMW box?

DISCUSSION -----

You can to connect Macintosh into the IBM AS/400 with both Apple and third-party products. You may use either Apple's SNA•ps 5250 stand alone product, or SNA•ps 5250 GC with one of the SNA•ps Gateway products. Two third-party companies, IDEAssociates and Andrew Corporation, provide terminal emulators for connecting a Macintosh computer to an IBM AS/400.

The IBM AS/400 uses System 3x architecture. The recommended connection is the 5250 family of devices.

The AS/400 will also support 3270 devices in pass-thru mode to locate mainframes using LU 6.2. This support is for IBM's SAA.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:  
07/16/93 - Included SNA•ps 5250 product family.  
02/16/93 - KMW now Andrew Corporation.

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Tech Info Library Article Number:5192



# Tech Info Library

## Interleaf: How To Display Output on a Macintosh

Revised: 3/4/90  
Security: Everyone

Interleaf: How To Display Output on a Macintosh

=====

This article last reviewed: 5 January 1990

TOPIC -----

Can you give me in any tips about displaying Interleaf output files on the Macintosh?

DISCUSSION -----

Some of the challenges inherent in this situation included incompatible versions of the software on the Macintosh and the Interleaf environment. Here is a list of the current Interleaf software offerings.

- Interleaf Publisher - Macintosh II, desktop publishing application combines word processing, drawing and painting, charting and graphing, long document management, page layout, and workgroup publishing tools.
- Technical Publishing Software - Provides PostScript output on the Sun, DEC, Apollo, or IBM RT PC machines.
- IBM Interleaf Publisher - Provides PostScript output for the IBM 386 PC.
- PC ViewStation - IBM PCs and compatibles, WYSIWYG document viewing program that lets users display and annotate Interleaf documents.

This product runs on a PC-XT or compatible. SoftPC, from Insigna Solutions, provides PC-XT emulation. Using SoftPC on the Macintosh, we were able to view the Printerleaf file as output from the Technical Publishing Software. Therefore, the software incompatibility issue became a moot point. Just to recap, using SoftPC running the PCViewstation software, you can view and annotate the Interleaf output files.

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Tech Info Library Article Number:5193



# Tech Info Library

## Macintosh Portable: Displaying Color

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: Displaying Color

=====

Article Created: 21 February 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

I would like to make my Macintosh Portable generate color output to a color monitor. Is this possible?

DISCUSSION -----

Aura Systems has a box that plugs into the SCSI port of a Macintosh 512Ke, Macintosh Plus, Macintosh SE, and Macintosh Portable.

ScuzzyGraph II produces high-resolution, color graphics. ScuzzyGraph II can ouytput 16 colors and is QuickDraw-compatible. It gives users screen sizes up to 650 percent larger than the built-in Macintosh SE screen with resolution up to 1,280x1,024 pixels. You can print color on the ImageWriter II or ImageWriter LQ with a color ribbon in place or on an HP PaintJet printer.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5194





# Tech Info Library

## TokenTalk NB Confidence Test: Incompatible with System 6.0.4

Revised: 5/27/92  
Security: Everyone

TokenTalk NB Confidence Test: Incompatible with System 6.0.4

=====

Article Created: 5 January 1990  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

Why can't I run the TokenTalk NB Card User Confidence Test on my Macintosh IIci?

DISCUSSION -----

The TokenTalk NB Card User Confidence Test cannot run on any Macintosh that requires system software version 6.0.4 or later because of a code conflict problem. The Confidence Test ships with version 6.0.3 and was designed to start up as a diagnostic.

If you copy the test to a startup disk or a Macintosh hard drive running version 6.0.4 or later, the system software loads the test code incorrectly into system RAM. The upshot of this is that the test either fails the card or hangs the Macintosh in the process of running the test.

Users should run the test only on a Macintosh that can start up the test disk. There is no other workaround.

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Tech Info Library Article Number:5195



# Tech Info Library

## A/UX: NFS Record Delimiters and VAX RMS Formats (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS Record Delimiters and VAX RMS Formats (9/94)

=====

Article Created: 5 January 1990  
Article Reviewed/Updated: 6 September 1994

### TOPIC -----

My VAX systems use four file formats: LF, CR/LF, Fortran, and Variable Length. However, the VMS systems use LF, and the Ultrix systems use CR/LF. Both must go through a conversion process to use the files across VAX platforms. Which file format does Apple's NFS and Cayman's NFS support to avoid having to support a third file format.

### DISCUSSION -----

NFS on A/UX uses LF, and the Macintosh OS uses CR for record delimiters. The Cayman GatorBox automatically converts files from one format to another.

The items you mentioned are not file formats. Rather, LF and CR/LF are variations of the Stream record format. Variable Length is a record format, and FORTRAN carriage control is a record Carriage-Control attribute. CARRIAGE\_RETURN attribute is the default and specifies that each record is preceded by a line feed and is followed by a carriage return when the record is written to a carriage-control device, like a line printer or a terminal. FORTRAN attribute specifies that the first byte (byte 0) of each record contains a FORTRAN carriage-control character. A space in this byte means single-space, a 0 (zero) means double-space, a 1 means Page Eject, and so on.

Here is a description of the file and record formats supported by VAX RMS. VAX Record Management Services (RMS)--the file and record access subsystem of the VAX/VMS operating system--supports three file organizations. These are sequential, relative, and indexed. It also supports four record formats:

- Fixed length: all records in a file are the same length.
- Variable length: each record is only as long as the data within it requires.
- Variable length with fixed-length record (VFC): similar to

variable-length records except that a fixed-length control field is prefixed to the variable-length data portion.

- Stream: records are delimited by special characters or character sequences called terminators, which are part of the record they delimit.

Within the Stream record format, there are three variations:

- STREAM\_CR: each record is terminated using a carriage return character.
- STREAM\_LF: each record is terminated using a line feed character.
- STREAM: you have the option of specifying the terminating character from a limited set of special characters, including the carriage return character (CR), the carriage return/line feed character (CR/LF) pair, the form feed (FF) character, or the escape (ESC) character.

#### Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:5196



# Tech Info Library

## A/UX: Available Third-Party Optical Drives

Revised: 9/27/91  
Security: Everyone

A/UX: Available Third-Party Optical Drives

=====

Article Created: 8 January 1990  
Article Last Reviewed: 27 September 1991  
Article Last Updated: 27 September 1991

TOPIC -----

Can you give me a list of optical drives for A/UX?

DISCUSSION -----

This article includes information on tape drives from:

- Conversion Dynamics, Inc
- Macsetra Technologies International, Inc. (Canada)
- Peripheral Land, Inc.
- Racet Computers, Ltd.
- Ricoh Corp. (Peripheral Products Division)
- Software Architects, Inc.
- Storage Dimensions
- Summus Computer Systems
- Sumo Systems

All the listings below were valid as of December, 1989. For further manufacturer information, search the Tech Info Library under the manufacturer's name.

Conversion Dynamics, Inc.  
-----

Conversion Dynamics's Optirase is an external SCSI, 5.25-inch, erasable optical-disk subsystem. It has a total capacity of 600MB for storage and provides a convenient way to back up or offload data from any mountable volume and distributes the information from one system to another.

Macsetra Technologies International, Inc. (Canada)  
-----

Macsetra's Genesis 6000 is a rewritable 600MB optical drive using fully-removable 5.25-inch cartridges. It is a fully bootable device and makes use of Macintosh icons, system utilities, backup routines, and ejectability. Its own proprietary software includes automatic bad-block management and sophisticated memory caching to increase all-around speed and performance.

Peripheral Land, Inc.

Peripheral Land's Infinity Optical is a fully rewritable, magneto-optical drive that has a formatted capacity of 573MB. It features sustained data transfer rates of 7.4 megabits per second and an average access time of 75ms. It has the option of 512K or 1024K sectors. The double-sided, 5.25-inch cartridges can be formatted to be compatible with Macintosh OS, MS-DOS 3.0, or A/UX. It comes bundled with backup software, laser printer spooler, RAM-based disk drive accelerator, disk optimizer, defragmentation software, and security software.

Racet Computers, Ltd.

Racet's Stand-Alone Series Cosmos 600 is a magneto-optical erasable drive and has a formatted capacity of just under 300MB per side on two-sided media. It provides regular archive backups and has full-featured, system-level software. Access times are 70ms average, with a burst transfer rate from 128K on-board cache of 1.2MB per second.

Ricoh Corp. (Peripheral Products Division)

Ricoh's RO-5030E is a rewritable, optical drive that provides speedy data access in only 71ms. It offers 594MB of fully rewritable storage on a removable, two-sided, magneto-optical disk. The transfer rate at the unit's SCSI interface is up to 1.4MB per second. Its mean time between failures is rated at more than 20,000 hours of operation.

Software Architects, Inc.

Software Architects, Inc. have an optical disk drive (both Sony and Ricoh) product called Formatter II for A/UX. It is a read/write magneto-optical disk drive with a capacity of about 610MB (about 300MB on each side). This product comes with the driver, utility, and scripts for A/UX. The utility lets you initialize and partition very much as the Macintosh HD Setup program does. The shell scripts allow manipulating the operation of optical disk in A/UX (for example, ejecting the cartridge).

Storage Dimensions

Storage Dimensions's LaserStor Erasable is an erasable optical disk drive, featuring a SCSI interface and one 1GB (1,000MB) erasable media cartridge. ANSI standard cartridges are also available in capacities of 650MB. MacinStor Installer software, featuring device driver, partitioning, password-protected partitioning, drive diagnostics, and automatic reallocation of bad blocks, is included. It provides an average seek time of 35ms and data transfer rates of 10Mbps.

Summus Computer Systems

-----  
LightDisk-512 is a rewritable, magneto-optical disk drive with a capacity of 600MB per optical disk. It provides the convenience of removable media with performance approaching that of fixed drives (an average seek time of 90ms with a data transfer rate of 680Kbps).

Sumo Systems

-----  
RSSM600 is a rewritable optical disk subsystem that includes a 600MB optical disk in an enclosure with power supply, SCSI cable, and INIT-installation software package. It has a fast access time of 50ms and can be used as the boot device. The software has advanced features, like automatic on-line formatting, automatic defect management, automatic cartridge change control, and intelligent SCSI interface providing a high data-transfer rate.

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Tech Info Library Article Number:5198



# Tech Info Library

## A/UX: Available Debugging Tools (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: Available Debugging Tools (9/94)

Article Created: 4 March 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

What tools are available under A/UX for debugging Macintosh OS applications, particularly, Macintosh OS applications developed using MPW?

DISCUSSION -----

The "sdb" and "adb" are two debugging tools currently available and supported by A/UX.

However, using "sdb" or "adb" to debug Macintosh applications on the console creates a problem; that is, once it is started, all input is grabbed by the toolbox interface, making it impossible to use the keyboard to communicate with "sdb" or "adb". A workaround to this was posted previously, and has been incorporated here for your convenience:

"There is a simple way to debug toolbox applications under A/UX. Log on from another terminal (connected over a serial line or network; that is, via 'telnet' or 'rlogin'), and start up the toolbox application with 'sdb'. The toolbox ALWAYS takes over the console (keyboard, screen, and mouse), so when started from 'sdb', it will run as expected. When you give an interrupt from the terminal you logged on with or for some other reason to get back, 'sdb' will be responding on the terminal you logged on with again.

"This is, in fact, a very useful feature: the console screen will not be disturbed by the debugging output."

You can get a third-party debugger called "CDB" for A/UX from Third Eye Software. This program was also available from APDA (Apple Programmers and Developers Association), but may not be any longer. It is an extremely powerful source-level debugger. Features include breakpoint, assertions, formatted structure dumps, full signal handling, command record and playback, alternate source directories, initialization files, statement- and instruction-level

single-stepping, and more. For more information on "CDB" please contact Third Eye Software.

Article Change History:

21 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5200





# Tech Info Library

## Token Ring: Macintosh SE Card Available in Scandanavia

Revised: 7/27/93  
Security: Everyone

Token Ring: Macintosh SE Card Available in Scandanavia

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Article Created: 4 March 1990  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

Is anyone marketing a Token Ring board for the Macintosh SE in Scandanavia?

DISCUSSION -----

EuroComm, Inc. has the international marketing rights for MacRing SE from Asante Technologies, Inc. (formerly h-three) in North Carolina and uses Nova International as the Scandinavian distributor. MacRing SE is used for:

### 1) Macintosh SE to Macintosh over a Token Ring link

Shipped with each board is a completely TokenTalk-compatible driver allowing full access to AppleTalk over a Token Ring link at 4Mbps. Thus, any software designed to run over AppleTalk can be used, and the Token Ring link becomes transparent. It has been tested with Microsoft Mail, Word, Excel, TOPS 2.1, and Timbuktu.

### 2) IBM PC Access to AppleShare File Server

An IBM PC can access a Macintosh set up as an AppleShare File Server with AppleShare PC 2.0.

### 3) Macintosh Access to IBM File Servers

Miramar Systems' MacLAN lets the MacRing SE user access any IBM file server, like Novell, PCLAN, and 3COM.

### 4) 3270 support so that a MacRing SE user can access IBM mainframes using the same Token Ring-to-mainframe connections as PCs (for example, IBM 3174, IBM 37X5 T1C, and other Token Ring gateways).

To locate a vendor's address and phone numbers, use the vendor name as a search string.

#### Article Change History

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9 February 1993 - Updated, h-three Systems, Corp. acquired by Asante  
Technologies, Inc.

15 February 1990 - Reviewed, for technical accuracy.

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Tech Info Library Article Number:5201



# Tech Info Library

## A/UX: U.S. and International Encryption Differences (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: U.S. and International Encryption Differences (9/94)

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Article Created: 4 March 1990  
Article Reviewed/Updated: 20 September 1994

### TOPIC -----

The international version of A/UX contains only password encryption, while the U.S. version contains file encryption. Is this the only difference between them?

How does the file encryption works? Is there any command to encrypt the file or environmental setting for file encryption?

### DISCUSSION -----

Yes, the only difference between the U.S. and international versions of A/UX is the inclusion of encryption software. The U.S. version of A/UX includes file encryption software that is not included in the international version. This software is based on the National Institute of Standards and Technology DES (Data Encryption Standard) algorithm, and cannot be exported outside of the United States and Canada. The encryption software includes "crypt" and new versions of ed, ex, and vi.

There are no special environmental settings used by "crypt." It reads standard input and writes to standard output. It lets you enter the key on the command line, and prompts for one if none is supplied. Unencrypting works in much the same way, with "crypt" prompting for the key if none is supplied.

Article Change History:  
20 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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# Tech Info Library

## Macintosh Display Cards Overview (2 of 3)

Revised: 7/16/90  
Security: Everyone

Macintosh Display Cards Overview (2 of 3)

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This article last reviewed: 19 March 1990

(This is a continuation of, "Macintosh Display Cards Overview (1 of 3)")

### - Convolution

The 8/24 Macintosh video cards address interlaced display flicker by running every pixel through a formula that averages the pixel with its individual neighboring pixels above and below. This technique is called convolution and it is part of the function of the CLUT/DAC chip. Convolution causes an averaging effect between scan lines so that a horizontal line includes at least a portion of the scan lines above and below its own scan line. A portion of the horizontal line remains visible during display of both the odd and even fields to avoid flicker. The convolution formula follows a 1:2:1 ratio where the current pixel value is given twice the weight of its neighbors above and below.

The 4/8 does not support convolution; the 8/24 supports convolution at up to 8-bits per pixel automatically turning it on where appropriate. If a Display Card 8/24 is driving an interlace display in 24-bit mode, convolution is disabled. If the card is driving an interlace display in 8-bit, or a lesser pixel depth, convolution is enabled.

### - Underscan and Overscan

The full 640 x 480 active video display is visible on an interlaced monitor if the monitor operates in underscan mode. (Underscan means that the monitor screen is larger than the active video display.)

Many monitors do not show the full active video display area much because the picture extends beyond the edges of the screen. This mode is called overscan because the scanned image is larger than the display area. (Television sets use overscan.)

To guarantee that the whole image is visible on an overscan monitor, all three

new display cards can be switched to overscan mode, which produces a smaller display with only 512 x 384 pixels.

The new display cards can support both overscan and underscan monitors.

- Memory Organization

The frame buffer controller is a custom gate array that serves as the controller for the 4/8 and 8/24 display cards. The frame buffer implements an address translation scheme that allows the cards to use only 1MB to support 24-bit graphics even though a 640 x 480 monitor displaying 24-bit graphics would normally require 1.2MB of VRAM. The 8 bits of data in each pixel that do not convey any color (or gray-scale) information are ignored. Such compaction allows 24-bit data for a 640 x 480 monitor to fit in just over 900K of VRAM. The eight bits that are ignored are defined as the alpha channel and, when maintained, can be used for special effects.

#### Macintosh Display Card 8/24 GC

The Macintosh Display Card 8/24 GC has the entire feature set of the Display Card 8/24, with rapid drawing of 24-bit images. Display Card 8/24 GC is a stand-alone display card that extends the 8/24 to include dramatic performance acceleration. Unaccelerated 24-bit imaging can be slow, but Macintosh Display Card 8/24 GC uses several methods to provide a thorough and integrated solution. Macintosh Display Card 8/24 GC accelerates the drawing of images by 5 to 30 times, with greatest acceleration when drawing very complex images. (Users of applications that circumvent QuickDraw will see very little acceleration.)

The 8/24 GC supports convolution for interlaced displays at up to 8 bits per pixel. 8/24 GC resident video RAM is not compressed the way it is on the 4/8 and 8/24 cards, which means the the extra alpha channel byte is maintained.

- Accelerating Graphics

One effective method for accelerating graphic imaging is the use of a co-processor dedicated to drawing images. This frees the 680x0 to continue program execution without having to wait for the time-consuming imaging of 8 to 24-bit pixel images. The Macintosh Display Card 8/24 GC card uses the Am29000 RISC-based microprocessor to relieve the 680x0 of the imaging process. The AM29000 was chosen instead of a graphics processor because specialized graphics processors are inadequate for Display Card 8/24 GC; they are unable to handle complex QuickDraw operations and setup code.

- Inter-Process Communication

Display Card 8/24 GC uses a unique Inter-Process Communication (IPC), streamlined for low overhead and fast response time. The Display Card 8/24 GC resident IPC intercepts QuickDraw calls on the Macintosh and passes them and their parameters to the special version of 32-bit QuickDraw that resides on Macintosh Display Card 8/24 GC. The IPC also makes it possible for the customized Macintosh Display Card 8/24 GC QuickDraw to call specific routines running on the Macintosh.

- NuBus Data Transfer

Transferring large and deep bitmaps across the NuBus is the slowest part of the drawing process. Typical reads and writes, from the Macintosh to the display cards, are performed in 1000 and 500 nanoseconds respectively. NuBus data transfer time is affected by the need to re-arbitrate for control of the bus after each 32-bit word is transferred.

The Display Card 8/24 GC optimizes NuBus data transfer by reading only QuickDraw variables and small portions of data structures across NuBus. The bit maps are then created locally in the Macintosh Display Card 8/24 GC's VRAM. The Display Card 8/24 GC reads and writes to its frame buffer memory at a rate of 66 to 132 nanoseconds, and up to 2MB of DRAM on the card holds offscreen bitmaps.

- 32-bit QuickDraw Optimized For the Am29000

The Display Card 8/24 GC 32-bit QuickDraw produces the same graphic output as standard 32-bit QuickDraw. However, several algorithms have been modified, and internal organization has been altered to fit into the graphics accelerator architecture.

Macintosh Display Card 8/24 GC provides transparent acceleration of any Macintosh application. No extra work need be done by an application to take advantage of Macintosh Display Card 8/24 GC optimized 32-bit QuickDraw.

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Tech Info Library Article Number:5205



# Tech Info Library

## A/UX 2.0: Overview

Revised: 1/6/93  
Security: Everyone

A/UX 2.0: Overview

Article Created: 16 July 1990

### Article Change History

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01/05/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

This article gives an overview of the A/UX 2.0. This overview includes

- New features
- New Hardware Support
- Software Enhancements
- Connectivity Enhancements
- Programming Features
- Standards

### DISCUSSION -----

#### A/UX 2.0 New Features

-----  
The Apple A/UX operating system Version 2.0 provides access to the Macintosh desktop within the UNIX environment. Users can run multiple Macintosh productivity applications, UNIX applications, and X Window System applications simultaneously.

The Macintosh Finder is hosted by A/UX Version 2.0 and is the default user environment. From the Finder a user can launch Macintosh binary files, UNIX Toolbox applications, "vanilla" UNIX applications in terminal windows, and X Window System applications. Both A/UX and Macintosh file systems appear on the desktop with point and click access to all available files (eliminating the need for the HFX utility).



A/UX Version 2.0 supports multiple, concurrent, Macintosh-Toolbox applications, in addition to concurrent UNIX and X applications in the Macintosh desktop environment. A/UX 2.0 implements the Macintosh Layer Manager and the MultiFinder interface.

Menu-driven commands provide easy startup, login, logout, and shutdown. The user no longer needs to know the technical details of the environment.

Macintosh applications that adhere to the specifications for the Macintosh 32-bit environment (referred to as "32-bit clean") run in the A/UX environment without change. A/UX 2.0 also supports Macintosh applications that are not yet 32-bit clean. At login, you specify creation of a 24-bit, 32-bit, or console emulator environment. To switch between environments, you log out and then log back in without restarting.

The A/UX Version 2.0 Commando interface for all UNIX commands provides dialog-based interfaces for all UNIX utilities that have command-line arguments. You have the choice of typing command line arguments in the conventional way, or running Commando.

UNIX shell windows are now accessible from the Apple menu on the desktop, and a Macintosh, mouse-driven editor eliminates the need to learn a text editor like vi. (The standard editing and processing utilities, including vi, ex, ed, ditroff, nroff, tbl, eqn, and pic are available as alternatives.)

A/UX Version 2.0 supports Callbacks, simulating Macintosh asynchronous I/O by associating a completion routine with a toolbox asynchronous I/O request. When the I/O request is completed, control dispatches to the established completion routine.

The Macintosh Sound Manager provides continuous sampled sound plus note and wavetable synthesizing with calls for both synchronous and asynchronous operations (with callbacks). The A/UX Sound Manager is compatible in all ways with its System 6.0.x counterpart. One notable difference, a result of A/UX virtual memory, is that the A/UX Sound Manager can play sound resources that are larger than physical memory. However, A/UX doesn't implement the MIDI interfaces.

A/UX 2.0 also supports Macintosh applications that require access to the toolbox slot manager and the serial driver providing support for direct-connect printer/plotter devices accessed by toolbox (non-UNIX) calls and for applications like AppleLink and MacTerminal.

A/UX Version 2.0 implements Gestalt (replacing SysEnvirons), providing a cleaner, more efficient method for applications to request information about the current hardware and software operating environment. Gestalt provides the ability to determine information about a large number of system dependent features, like these:

- Type of machine the application is running on
- Version of the System file, AppleTalk driver, and QuickDraw currently running
- Type of CPU, MMU, FPU, and keyboard

- Amount of available RAM, VM, and size of logical pages
- Whether A/UX is running or not

#### New Hardware Support

-----  
A/UX Version 2.0 runs on all Macintosh II systems and on the Macintosh SE/30. Macintosh IIfx support includes the new SCSI DMA, Floppy/ADB PIC (Peripheral Interface Controller) chip, and the SCC PIC chip.

Version 2.0 supports HFS-, A/UX-, and DOS-formatted floppies with capacities of 400K, 720K, 800K, and 1.44M capacities. The AppleCD SC drive can be used as a read-only UNIX file system of up to 500 megabytes, giving information systems providers an inexpensive distribution medium.

#### Software Enhancements

-----  
A/UX Version 2.0 includes the following software enhancements:

- There is now only one Eschatology partition. A new default partitioning scheme accommodates MultiFinder. Version 2.0.1 of HD setup software includes an option to partition a 160-megabyte hard disk.
- The newunix and autoconfig scripts have been augmented by a new script, newconfig. Newconfig uses the same command line arguments as newunix. As an example, to configure a new kernel with NFS and sound, you enter "newconfig nfs snd".
- Processes using the same library routines can share a single copy of the library's object code.
- The user address space, virtual memory maps, and page table management have all been enhanced.
- Accomodation of 32-bit clean ROMs results in smaller patch files.
- The data encryption code is included in the A/UX file system.
- The SASH has been made more Macintosh-like; UFS, System VFS, and A/UX floppies are now accessible through the SASH.

#### Connectivity Enhancements

-----  
A/UX Version 2.0 provides the following enhancements to connectivity:

- A/UX 2.0 supports both X11 (Versions X11R3 and X11R4) and MacX (Version X11R3). (These products are bundled together and sold separately from A/UX 2.0.)
- AppleTalk 2.0 for A/UX is rolled into the 2.0 release.
- A/UX 2.0 supports the MacTCP programmer interface.

- A/UX 2.0 offers access to AppleShare volumes from the Finder Desktop.

#### Programming Features

-----

A/UX 2.0 offers an assembler, a C Compiler, debuggers, the Source Code Control System (SCCS), and related tools to assist in developing new applications or porting existing software to A/UX. Version 2.0 also includes a set of UNIX libraries that let C programs access the functionality of the Macintosh Toolbox. A/UX applications can thus present the Macintosh graphics-based user interface and the traditional UNIX appearance.

#### Standards

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The A/UX operating system is source-licensed from AT&T and meets System V Interface Definition (SVID) specifications. Extensions from Berkeley Software Distribution (BSD) Release 4.3 are included in A/UX 2.0, and the release is the IEEE POSIX 1003.1 1988 Full-Use Standard (FUS) and ISO 9945-1.

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Tech Info Library Article Number:5208



# Tech Info Library

## Macintosh IIfx: Burst-Mode Access and Page Mode Writes

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: Burst-Mode Access and Page Mode Writes

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Article Created: 14 June 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

This articles describes burst-mode memory access and Page Mode Writes as implemented on the Macintosh IIfx.

DISCUSSION -----

### Burst-mode Memory Access

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The Macintosh IIfx, like the Macintosh IIfx, supports burst-mode memory access. However, the Macintosh IIfx support burst access for reads and Page Mode Writes, while the IIfx only supported burst reads. The FMC gives the Macintosh IIfx the ability to support burst-mode access. This enables the CPU to read and write groups of data in fewer clock cycles.

On the Macintosh IIfx, burst-mode reads are only done when the data is not located in the internal 256 byte and 32K Static RAM Cache. When the Macintosh IIfx reads from memory, the first access takes 6 clock cycles. The next 3 reads are performed at 3 clock cycles each. This is referred to as "6 3 3 3 burst reads."

Burst-mode access must be supported by the RAM as well as the memory controller. When memory is accessed, we use RAS (Row Address Selection) before CAS (Column Address Selection) to address the chip. We select the row of data we wish to access with a RAS, then assert the CAS lines to select the correct data column. It takes about 3 clock cycles for the chip to select RAS and 3 more cycles to address CAS before the data is ready to read or write.

When burst-mode is enabled, the RAS lines are held high until the burst cycle is over. The memory controller only has to change the column

address (CAS) line to access the next bit of data in that row. It continues to change the CAS line until the burst cycle is over. Because the system does not have to readdress the RAS line, 3 cycles each read/write, it saves 9 clock cycles.

#### Page Mode Write

-----  
A Page Mode Write is similar to a burst-mode read. When data is written out, the system uses Latch Writes for the first write. If the instruction is also a write and the address is within the same page of memory as the previous write, Page Mode Write is used. Page Mode Writes keep the RAS line held high in the save "page" of memory.

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Tech Info Library Article Number:5209



# Tech Info Library

## Macintosh Display Cards Overview (1 of 3)

Revised: 7/16/90  
Security: Everyone

Macintosh Display Cards Overview (1 of 3)

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This article last reviewed: 19 March 1990

The Apple Macintosh Display Cards 4/8, 8/24, and 8/24 GC greatly extend the performance and flexibility of the Macintosh video card product line. The Display Card 4/8 and the Display Card 8/24 provide the Macintosh II family with a single interface to all Apple displays, and a broad range of graphics capabilities. The Display Card 8/24 GC augments the features of the Display Card 8/24 with the power of a dedicated graphics coprocessor to provide sophisticated graphics capabilities at significantly faster drawing speeds.

The Macintosh Display Card 4/8 provides support for up to 256 colors or grays on the Apple High-Resolution Monochrome and AppleColor High-Resolution RGB Monitors. It also provides up to 16 grays on the Apple Macintosh Portrait Display and Apple Two-Page Monochrome Monitor.

The Macintosh Display Card 8/24 and 8/24 GC support all Apple displays to the maximum of their capabilities, including full 256-level "true grayscale" on all Apple displays. The cards also support full 24-bit "true color" capability on the AppleColor High-Resolution RGB Monitor, which allows users to display any of 16.7 million colors simultaneously. The combination of true grayscale and true color capabilities let you display and work with photographic quality images as well as lifelike simulations, animations, and visual effects.

The Macintosh Display Card 8/24 GC contains an Am29000 RISC-based microprocessor that runs a version of QuickDraw that has been optimized for a coprocessing environment. The Am29000 and the Macintosh CPU work together to speed the QuickDraw environment from five to 30 times depending on the application. As a result, graphics-intensive applications work faster and more smoothly, especially when using full 24-bit color.

All three cards support RS-170 standard timing for compatibility with numerous interlaced video devices. The Macintosh Display Card 8/24 and 8/24 GC provide highest possible quality interlaced video through the use of Apple Convolution.

Macintosh Display Cards 4/8 and 8/24

Macintosh Display Cards 4/8 and 8/24 offer 24-bit color at an affordable price. The following paragraphs discuss the advantages of 24-bit color and features of the 4/8 and 8/24 display cards.

- CLUT and 8-bit Color Images

With the earlier 8-bit Macintosh II video card, each pixel is represented by an 8-bit color value. The 8-bit value is used as an index into a "color look up table" (CLUT), where a 24-bit value is derived from the table of 256 pre-selected colors. The 24-bit value represents the nearest color to the one indicated by the 8-bit pixel value. The 24-bit color value consists of 8-bit values for red, green, and blue; each is then sent through one of the three 8-bit digital to analog converters (DACs) for conversion to analog color signals.

An 8-bit image is drawn by taking each 24-bit pixel value and, using the Color Manager, finding the closest approximation of that color within the CLUT. The 8-bit index of the closest approximate color is then placed in the frame buffer and represents that pixel's value.

Graphic imaging with 8-bit color video is reasonably accurate if the CLUT is set up with colors that are appropriate for the color mix of the image being drawn, and if the image does not require a large number of colors. Very complex colored images tend to lose much of their detail and shading because they tend to be drawn with a high ratio of "best approximation" colors. A color printed copy of a complex color image scanned at 8-bit per pixel could look quite different from the original.

One drawback of 8-bit color is an effect known as "blocking," which refers to the result of several slight variations of a single color being CLUT represented by the same color. This effect makes it difficult to represent subtle shading and leads to a loss of detail. For instance, a very gradual lightening of the color red across an image may be completely represented by single red.

A similarly problematic side-effect of 8-bit color is known as "banding." Banding can be seen in an 8-bit representation of an image made of only a few different colors, but an almost infinite number of shades of those colors. A 256 color CLUT doesn't have enough colors to handle such an image, and it loses subtlety. Areas where one color gradually blends into the other eventually look like bands of one color blending into bands of the other, with each band of color being the CLUT's closest approximation of several marginally different colors.

Dithering is an effect that may allow a closer approximation to the original image. Dithered colors rely upon grouping a number of pixels in a certain pattern to give the effect of a color not found in the CLUT. Since pixels are so small and so close together, a grouping of blue and yellow pixels gives a similar effect to seeing green pixels. While dithering can improve the rendering of a complex image, the result is still an approximation.

- 24-bit Direct Color

24-bit color, also known as Direct Color, avoids the color approximation issues of 8-bit color by allowing 8 bits for each color. 24-bit color delivers an impressive 16,777,216 red green and blue combinations all the color shades discernable by the human eye.

With 24-bit color, color approximation and the CLUT are no longer necessary. 24-bit color is directly interpreted by the video card firmware as each 8-bit red, green, and blue color definition is fed to the appropriate digital to analog converter for output to the monitor. Images that are problematic for 8-bit color video cards can be drawn with all their brilliant nuances by Direct Color. The Display Card 8/24 supports 24-bit color on the Macintosh RGB 13" monitor.

- True Grays

The 256 shades of gray are accomplished by using 8-bits each of red, green, and blue of equal saturation. The 4/8 card supports true grays on all but the Portrait and Two-Page displays, where 16 grays are supported. The 8/24 card supports true grays on the Portrait and Two-Page displays. When driving the two larger monochrome displays, the 8/24 cards use only the blue signal in all its 256 saturation levels to accomplish the full gray spectrum.

- Monitor Support

A programmable pixel clock chip and a 100 MHz oscillator on the new display cards makes it possible to support all current Macintosh monitors. The pixel depth supportable on each monitor is a function of the amount of VRAM installed on the display card. Display Card 4/8 has 512K of VRAM and Display Card 8/24 has 1 megabyte. The 100 MHz oscillator provides support for the Macintosh Two-Page Display.

(This article continued in, "Macintosh Display Cards Overview (2 of 3)")

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Tech Info Library Article Number:5210





# Tech Info Library

## Macintosh IIfx: Latched Writes

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: Latched Writes

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Article Created: 15 June 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

This article describes Macintosh IIfx latched writes.

DISCUSSION -----

The Macintosh IIfx supports zero wait-state writes to memory by using 64-pin SIMM strips and the new memory-controller technique of latched writes. When the processor issues a write, the memory controller saves the data in a temporary location (the latch, hence the name latched write) and tells the CPU the write has finished (even though it isn't. It lies). The CPU is then free to execute the next instruction. The memory controller then takes data and does a normal write operation. If more data is written out in the next cycle, Page Mode Access is used to write the remaining data.

There are three phases of a latched write. These phases are:

- 1) The processor writes out the data.
- 2) The FMC (Fast Memory Controller) stores the data in the latch and tells the processor the write was completed successfully. The 68030 is now free to execute the next instruction.
- 3) The FMC then writes the data from the latch into system DRAM.

On a normal SIMM strip, the "D In" lines and the "Q Out" lines are tied together. Using 64-pin SIMMs, these lines can be separated and you can have data going in, while using the output bus of the SIMM at the same time. This lets the memory controller implement latched writes and provide zero wait-state writes.

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Tech Info Library Article Number:5211



# Tech Info Library

## Macintosh IIfx: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Macintosh IIfx: Specifications (Discontinued)

Article Created: 19 March 1990  
Article Reviewed/Updated: 13 July 1992

TOPIC -----

This article provides specifications for the Macintosh IIfx computer.

DISCUSSION -----

### CENTRAL PROCESSING UNIT (CPU)

- Microprocessor : 40 MHz MC68030 CPU
- Address Bus : 32-bit
- Registers (32-bit) : 16 general purpose data and address, two 32-bit Supervisor stack pointers, ten special purpose control registers
- Addressing Modes : 18
- 256-byte instruction cache and 256-byte data cache
- Built-in Paged Memory Management Unit (PMMU)

### COPROCESSOR

- MC68882 40 MHz floating-point unit (follows IEEE standards)

### OPERATING SYSTEM

- Macintosh System Software 6.0.5 or later
- A/UX 2.0 (Apple UNIX) or later

### MEMORY

- 4 or 8 MB RAM (Random Access Memory), up to 128 MB using third-party RAM 80ns, 64-pin SIMM
- 4 or 8 MB Parity RAM 60ns, 64-pin SIMM
- Built-in 32K Static RAM Cache, zero wait state operation
- 512K of ROM (Read-Only Memory)
- 256 bytes of parameter memory with built-in battery backup
- Optional Parity Support
- Supports overlapping reads and writes to DRAM

### I/O PROCESSORS

- IOP: Two dedicated I/O processors manage low-level I/O tasks for the serial ports, floppy disk drive(s), and Apple Desktop Bus, providing higher levels of overall system performance.

#### MOUSE

- Apple Desktop Bus Mouse (ADB) mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch (3.94 +/- 0.39 pulse per mm) of travel

#### DISK DRIVE

- One 1.4 MB high-density (Apple SuperDrive) internal drive. Two internal floppy drives are supported. The unit ships with the SuperDrive, but the logic board also supports an 800K drive

#### HARD DISK DRIVE

- A 3.5" 80MB or 5.25" 160MB hard drive is available

#### INTERFACES

- Two Apple Desktop Bus (ADB) connectors for keyboard, mouse, and low-speed input devices
- Six NuBus Slots supporting full 32-bit address and data lines through a 96-pin EuroDIN connector
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally)
- SCSI interface
- Stereo sound port for external audio amplifier

#### SOUND GENERATION

- Apple's custom digital sound chip provides 8-bit stereo sampling at 44.1 kilohertz, and includes four-voice wave-table synthesis- capable of driving stereo headphones or other stereo equipment through the sound jack.

#### ELECTRICAL REQUIREMENTS

- Line voltage: 100 to 240 volts AC, RMS automatically configured
- Line frequency: 48 to 62 hertz single phase
- Maximum power consumption: 230 watts maximum (not including monitor power)

#### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 TO 104 degrees F (10 TO 40 C)
- Storage temperature: -40 TO 116.6 degrees F
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)

#### SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 478 Electronic Data Processing Equipment
- CSA (Canadian Standards Assn.) 220 Information Processing and Business Equipment

#### SIZE AND WEIGHT

- Main Unit

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- Height: 5.5 inches (140 mm)
  - Width: 18.7 inches (474 mm)
  - Depth: 14.4 inches (365 mm)
  - Weight: 24 lbs. (10.9 kg) not including hard drive
- Apple Mouse (ADB)
- Height: 1.1 inches (27.9 mm)
  - Width: 2.1 inches (53.3 mm)
  - Depth: 3.8 inches (96.5 mm)
  - Weight: 6 oz. (.175 kg)

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Tech Info Library Article Number:5212



# Tech Info Library

## Macintosh IIfx: Input/Output Processors (IOP) Chips

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: Input/Output Processors (IOP) Chips

=====

Article Created: 15 June 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

This article describes the Macintosh IIfx's Input/Output Processors (IOP) Chips.

DISCUSSION -----

The I/O Processor (IOP) is an Apple custom IC designed to provide intelligent support for I/O controllers. There are two of these IOP chips in the Macintosh IIfx computer: one for the SWIM and ADB and one for the SCC. The IOP sits between the main processor and the I/O controllers. The features of the IOP include:

- A built-in microprocessor (6502 running at 2 MHz)
- A 17-bit timer
- Two DMA controllers: one for each serial I/O channel (only used in the Serial IOP)
- Address and data busses for RAM used by the IOP and host processor
- Two digital I/O ports for controlling the ADB (on the SWIM-ADB IOP)
- 32K of external memory of IOP code and data storage

The 68030 communicates with the IOP through a set of control registers in the IOP that are mapped into the main processors' I/O space. The main processor can interrupt the IOP using a bit in one of the control registers, whereas the IOP can interrupt the 68030 by using an interrupt line.

Each IOP has 32K of external RAM that holds the driver and acts as a buffer for the data processed by the processor. The IOP contains a 16-bit auto-incrementing address register and an 8-bit data port that the host processor uses for access to the shared RAM.

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Tech Info Library Article Number:5213



# Tech Info Library

## Apple Extended Keyboard II: Specifications (10/94)

Revised: 10/10/94  
Security: Everyone

Apple Extended Keyboard II: Specifications (10/94)

Article Created: 15 June 1990  
Article Reviewed/Updated: 10 October 1994

TOPIC -----

This article provides specifications for the Apple Extended Keyboard II.

DISCUSSION -----

### Description

-----  
The "Apple Extended Keyboard II" is the replacement for the existing Apple Extended Keyboard (M0115). In addition to the features of the existing keyboard, the Apple Extended Keyboard II provides a foot to adjust the height of the keyboard and a double-sided template to label the function keys.

### Packing List (M0312)

-----  
Apple Extended Keyboard II  
1.0 m (3 ft.) ADB cable  
Double-sided overlay to identify function keys  
Owner's guide  
Warranty statement

### System Requirements

-----  
Any Apple personal computer with an Apple Desktop Bus interface

### Technical Specifications

-----  
Total 105 keys, including:

- 18-key numeric pad
- 15 function keys



- Four arrow cursor-control keys in inverted T-style layout
- Six cursor-control keys (Home, Page Up, Page Down, Forward Delete, End, and Help)

#### Size and Weight

-----

|                 |                                     |
|-----------------|-------------------------------------|
| Front Height:   | 0.75 in. (19 mm)                    |
| Rear Height:    | 1.6 in. (41 mm)                     |
| Keyboard angle: | 14 degree maximum, 6 degree minimum |
| Width:          | 18.7 in. (475 mm)                   |
| Depth:          | 7.7 in. (195 mm)                    |
| Weight:         | 4.8 lbs (1.8 kg)                    |

#### Product Details

-----

The keyboard has 15 function keys (F1-F15) and 6 cursor-control keys (home, Page Up, Page Down, Forward Delete, End, and Help).

F1-F4 are labeled on the overlay as follows; F1=undo, F2=cut, F3=copy, and F4=paste. These are not predefined default values; however, developers are being encouraged to use these definitions as appropriate. The remaining 11 function keys can also be defined by the user. An overlay is provided for users to mark the key's function.

The remapping facility is available for a specific application or globally for all applications.

The function keys are operative by using a macro-utility program or by using an MS-DOS application with the appropriate coprocessor card.

The Caps Lock LED is operative in the Macintosh environment. The Num Lock and Scroll Lock are operative in some Macintosh applications. Developers are being encouraged to support these LED's in their applications.

The keyboard has an adjustable foot in the rear of the keyboard. The height of the keyboard is adjusted with a lever in the rear of the keyboard. It can be adjusted with a tilt from the unextended 6 degree to a maximum of 14 degrees from horizontal.

#### Article Change History:

10 Oct 1994 - Clarified LED functionality within the Macintosh environment.

#### Support Information Services

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Tech Info Library Article Number:5214



# Tech Info Library

## Macintosh IIfx: Overview

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: Overview

=====

Article Created: 15 June 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

This article gives an overview of the Macintosh IIfx.

DISCUSSION -----

The Macintosh IIfx is an extremely high-speed and elegantly-engineered personal computer that has been designed for people who need the ultimate in Macintosh responsiveness and new Macintosh capabilities.

To provide maximum Macintosh performance and responsiveness, the Macintosh IIfx incorporates a high-speed, 40-megahertz 68030 CPU, a 32K Static RAM Cache memory subsystem, and a 68882 floating-point coprocessor for high-speed program execution and calculations.

The Macintosh IIfx also introduces dedicated I/O processors to the Macintosh family. These custom-designed ASICs (Application Specific Integrated Circuits) boost system efficiency by managing all of the low-level I/O tasks for the Apple Desktop Bus, floppy disk drives, and serial ports. Previously, the 68030 processor had to handle these tasks.

In addition, the Macintosh IIfx contains a dedicated, SCSI, DMA controller that improved SCSI performance.

The Macintosh IIfx supports Macintosh System Software 6.0.5 or higher and A/UX 2.0 (Apple UNIX).

Users who need maximum system expandability will especially appreciate the versatility of the Macintosh IIfx. First, system memory can be expanded from 4 to 8 megabytes with Apple RAM, up to 128 MB with third-party RAM, for high-performance applications that demand superior,

system responsiveness.

Second, the Macintosh IIfx includes six NuBus expansion slots that can accommodate a wide range of Apple and third-party expansion cards, like additional network interfaces and graphics cards. A new Processor Direct Slot (PDS) provides a high-speed interface for third-party hardware options. And six external interface ports accommodate peripherals like hard disks and printers, LocalTalk network connections, and color and gray-scale graphics systems.

For floppy-disk storage, the Macintosh IIfx uses the 1.4-megabyte Apple SuperDrive, which lets users read and write to 3.5-inch Macintosh floppy disks and 3.5-inch disks used in a variety of other personal computers. The Macintosh IIfx also can be configured with up to 160 megabytes of internal hard disk storage. It will also accommodate a second SuperDrive.

Best of all, the Macintosh IIfx is a Macintosh. This means that it still offers all of the benefits of earlier Macintosh systems: access to more than 3,000 of the most powerful, graphics-based applications available; ease of learning and ease of use through a consistent, graphics-based interface; choice without confusion in hardware and software; the convenience of "plug and play" compatibility; and the assurance that all Macintosh components work together smoothly.

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Tech Info Library Article Number:5215



# Tech Info Library

## AppleShare File Server v.2.0.x: Concurrent Applications (9/94)

Revised: 9/9/94  
Security: Everyone

AppleShare File Server v.2.0.x: Concurrent Applications (9/94)

=====

Article Created: 27 February 1990  
Article Reviewed/Updated: 9 September 1994

TOPIC -----

How many applications can run concurrently on an AppleShare File Server version 2.0.x?

DISCUSSION -----

The AppleShare File Server v.2.0.x software allows for one foreground application to be active at any one time. Examples of foreground applications include the AppleShare Admin program and the AppleShare Print Server. The AppleShare File Server v.2.0.x software has no knowledge of background applications, like Microsoft Mail, InBox, QuickMail, and the AppleTalk Internet Router. Therefore, it cannot place any limit on the number of applications running at a given time.

It is possible to set up an AppleShare File Server v.2.0.x with the AppleShare Print Server running in the foreground and several other applications running in the background. It is important to note that more memory may be required on a file server that has several applications running in the background. If you are going to have several background applications, it is important to test them together on a file server to verify that they do not conflict with each other or cause random system crashes. Also, each application running in the background takes up CPU time and will affect the overall performance of the file server. If many background applications are running, one or more of them may fail due to lack of CPU time.

Article Change History:  
09 Sep 1994 - Added notation of version 2.0.x of AppleShare File Server.

Support Information Services

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Tech Info Library Article Number:5218



# Tech Info Library

## HyperCard: Where To Get AppleTalk XCMD Programming Help

Revised: 6/24/90  
Security: Everyone

HyperCard: Where To Get AppleTalk XCMD Programming Help

=====

This article last reviewed: 27 February 1990

TOPIC -----

I want to write an XCMD to find all of the available nodes on a network. I read in "Inside AppleTalk" about GetZoneList and ReceiveZoneList, but I'm not sure how to access these calls in my program. Can you help?

DISCUSSION -----

On AppleLink, there is sample source code, in Pascal, that demonstrates how to use the ZIP command "GetZoneList". Here is the path (available to all AppleLink subscribers):

Developer Services  
Macintosh Developer Technical Support  
Sample Code  
SC.011.GetZoneList

Also, APDA sells a product called "HyperCard AppleTalk Toolkit v. 2.5" that includes XCMDs, XFCNs, and source code (in C) for accessing AppleTalk networks. However, none of these XCMDs or XFCNs implements ZIP (Zone Information Protocol). For more details, search the Technical Info library under "APDA."

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Tech Info Library Article Number:5220



# Tech Info Library

## Macintosh: IBM Host File Transfer and EIS (8/94)

Revised: 8/30/94  
Security: Everyone

Macintosh: IBM Host File Transfer and EIS (8/94)

Article Created: 27 March 1990  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

I have both an AS/400 and 3090. I want to extract information from a database on the AS/400 and download it to the Macintosh, importing it into 4th Dimension.

- 1) Do IBM mid-range machines support IND\$FILE?
- 2) What is the "standard" way to download data from an AS/400? Does KMW (or any other vendor) support this method? How can data be downloaded to the Macintosh?
- 3) What types of 5250 terminals are there?
- 4) When the site has ASCII-attached terminals to the AS/400, are they still doing 5250 emulation, or is it just TTY?
- 5) Are applications written for the Twinax-attached 5250 terminal compatible with the ASCII-attached terminals?
- 6) I am also interested in using a Macintosh as an EIS, emulating a 3270-type terminal to front-end their 3090. Does Avatar have HyperCard XCMDs to work with their API to handle 3270 sessions? What is the extent of services offered by these XCMDs? Can they be used to completely bypass the terminal emulation software. That is, can they log on to the host, choose host menus, extract data, and so on, through HyperCard?

DISCUSSION -----

- 1) The AS/400 doesn't support IND\$FILE.
- 2) The standard way for an IBM PC or PC-clone to download files is via the program PC Support, which offers LU62 connectivity for PCs.

Because there isn't a Macintosh equivalent offering a virtual disk attachment, the typical way one transfers files is by using the IDEAssociates, KMW (now Andrew Corp.), or Wall Data terminal emulators. Each has its own proprietary file transfer capabilities. Some manipulation of the file delimiters may be desired before downloading and importing into 4th Dimension. Such a report typically would be set up by the AS/400 system programmer.

3) The terminal types are Models 2-4, color, but, in general, these 5250 terminal types are being replaced by the newer 319x types, referenced in articles in the Tech Info Library.

4) ASCII-attached terminals are probably still considered a 5250-type terminal while running a VT100 emulator.

5) The mainframe applications usually don't care whether you have a Twinax- or serial-connected terminal.

6) A number of terminal emulation manufacturers offer HyperCard-based API toolkits for 3090s, including Avatar (now DCA), Tri-Data (now DCA), and DCA, which would be ideal for an EIS (Executive Information System). All have the log on feature or are capable of logging on to hosts and providing the other features you request. Because they are HyperCard-based, they are more easily customized and extended to incorporate any specific features required.

Here are some general observations on KMW (now Andrew Corp.), IDEAssociates, PCI, and Wall Data.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Andrew Corp. provides products consisting of hardware and software to connect to both the AS/400 and System 3x computers. They call their system "Series II Twinax."

IDEAssociates provides connections between the AS/400 computers and the System 3x computers. IDEAcomm Mac is the name of the package from IDEAssociates.

PCI makes SmartLink 5250/MacCom, a hardware protocol converter (Twinax or remote) and software to connect Macintoshes to AS/400 and System 3x computers.

Wall Data provides products consisting of software to connect to both IBM midrange and mainframe computers. The SNA•ps product family provides both terminal and print emulators.

#### Article Change History:

30 Aug 1994 - Updated article to include Wall Data product line.

12 Feb 1993 - Updated KMW now Andrew Corporation.

Support Information Services

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Tech Info Library Article Number:5221



# Tech Info Library

## HyperCard: Telephone Interface and Auto-Dialing Packages

Revised: 6/24/90  
Security: Everyone

HyperCard: Telephone Interface and Auto-Dialing Packages

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This article last reviewed: 27 February 1990

TOPIC -----

I want to use a Macintosh to keep telephone directories of people and click on a button to dial their phone numbers.

My office (in a school) has a AT&T Merlin telephone system. Is there any hardware (other than HyperDialer) that can do this? Will it support multiple lines?

Other than HyperDialer or using a modem to do the dialing, what other kinds of products exist to do dialing from the Macintosh?

DISCUSSION -----

There are a few other hardware phone interface products, but none with built-in support to connect and arbitrate among multiple lines. However, none is prevented from using different lines if used with the appropriate interfacing module. Being able to choose multiple lines is usually a function of the telephone system and the handsets or interfacing modules connected to it.

The only interfacing module available for the Merlin System to connect modems, facsimiles, autodialers, or answering machine-type devices is the General Purpose Adapter sold by AT&T. (AT&T also sells expansion modules for creating modem pools.)

You could use one of the HyperDialer-type products to connect to the General Purpose Adapter. When combined with a HyperCard stack or database of your own design or one of the commercial programs available, you could do what you describe.

Some programs and products are listed below, but many other programs, including high-end and sophisticated products (these telemarketing products can cost thousands of dollars), are listed in the various buyers guides and on AppleLink



(in the electronic buyer's guides).

Here are some products worth looking into:

School Administrator's Assistant from Chancery Software, Ltd.

-----  
The School Administrator's Assistant is a HyperCard stack that helps a user manage routine tasks.

The School Administrator's Assistant maintains staff information (including job descriptions, certification, objectives, and appraisals); prints a variety of reports; documents pupil behavior incidents and streamlines suspension paperwork; plans daily, weekly, and monthly activities with a reminder system; maintains an address and telephone directory; dials telephone numbers and keeps a record of calls; links information to word processing applications via mail-merge capabilities; searches and browses through data maintained in the stack; maintains memos and notes; sets password access to sensitive information; maintains a pool of pupil information; searches, sorts, organizes, and prints transportation information; and launches frequently-used programs and documents from within the stack.

HyperCable from Caseys' Page Mill

-----  
HyperCable is an audio connector that lets you dial a telephone from a Macintosh. It plugs into the audio output jack on the rear of a Macintosh and into the telephone jack. HyperCable works with HyperCard.

HyperDialer from DataDesk International

-----  
HyperDialer is an automatic telephone dialing device that autodials any telephone number from HyperCard or from HyperCard stackware. It connects to the audio port on any Macintosh and can be connected to any telephone, including multi-line business phones, in less than a minute. HyperDialer eliminates the need for a modem or dedicated phone line for automatic dialing.

The BTM HyperCard Hands-Free Phone Dialer System from Business Technology Manufacturing, Inc.

-----  
Directly connects the "real world" of telephones and telemarketing to the Macintosh and programs, like HyperCard, FocalPoint, Microsoft Excel, and Microsoft Works; used with a telephone or headset. The system has two modes of operation: Hands-Free and HeadSet. It comes with all hardware and stackware needed.

In the Hands-Free mode, users simply touch the telephone icon, and they will hear the dialtone, the touch-tones as they are dialed out, and the ringing or busy signal--all without picking up the handset. When contact with the dialed party is established, picking up the handset automatically disconnects the dialer from the line and normal operation of the phone continues.

The addition of an operator-type headset turns the dialer into a complete telephone. In this mode, complete control of the dialer is from the Macintosh screen with many added features, such as Mute, Hold, Flash, Auto Redial,

Dialer-On and Dialer-Off.

The dialer connects directly to the phone line using a standard RJ-11C phone jack, which is provided with the unit. Multi-line pushbutton and ComKey adapters are available as an option.

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Tech Info Library Article Number:5223



# Tech Info Library

## AppleShare Print Server: Using a Macintosh 512Ke as a Server

Revised: 6/24/90  
Security: Everyone

AppleShare Print Server: Using a Macintosh 512Ke as a Server

=====

This article last reviewed: 27 February 1990

TOPIC -----

Will a Macintosh 512Ke with 1MB RAM support five printers as an AppleShare Print Server? If not five, how many will it support? The manual refers only to Macintosh 512K configurations.

DISCUSSION -----

A Macintosh system with 1MB RAM can capture up to five printers or two if an AppleShare File Server is running on the same machine.

A 1MB Macintosh 512Ke is not mentioned in the AppleShare Print Server manual, because Apple did not make or sell 1MB Macintosh 512Ke systems.

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Tech Info Library Article Number:5231



# Tech Info Library

## Macintosh II: Math Coprocessor Can Be Upgraded to MC68882

Revised: 7/20/92  
Security: Everyone

Macintosh II: Math Coprocessor Can Be Upgraded to MC68882

=====

Article Created: 27 February 1990  
Article Last Reviewed: 20 July 1992  
Article Last Updated:

TOPIC -----

A third-party supplier told me that I can improve performance of my Macintosh II by upgrading the MC68881 math coprocessor to a MC68882. Is this correct?

Isn't the MC68881 optimized for use with the MC68020 in the Macintosh II? Would using a MC68882 with a MC68020 produce compatibility problems with some software expecting a MC68881? Is an upgrade advisable?

Likewise, can a MC68881 be used with the MC68030, or should the MC68882 always be used? What are the performance issues related to cross-matching CPUs and math coprocessors?

DISCUSSION -----

The MC68882 Floating Point Unit (FPU) is a superset of the MC68881 and is software- and hardware-compatible with the MC68881 FPU. Generally, the MC68882 is 1.5 to 2 times faster than the MC68881.

The December 1987 issue of "Byte" has a two-page article (pages 120 and 121) testing the Motorola MC68882 math coprocessor chip. The tests show that with the MC68882 installed in a Macintosh II, benchmarks execute from 4 to 22% faster than with the MC68881. Installation in the Macintosh II is done by swapping chips.

The MC68881 can be used with the MC68030. The only concern here is that some software may be written to take advantage of the new features that the MC68882 provides. We can see no reason why you would have a Macintosh system with this combination, so no problems should arise.

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Tech Info Library Article Number:5232



# Tech Info Library

## LaserWriter IINT: -8132 Error Is Manual TimeOut Error

Revised: 6/24/90  
Security: Everyone

LaserWriter IINT: -8132 Error Is Manual TimeOut Error

=====

This article last reviewed: 27 February 1990

TOPIC -----

What is a -8132 error? I get it once in a while when I'm doing a large (200) envelope print merge to a LaserWriter IINT using Microsoft Works 2.0. When an envelope misfeeds and jams the printer (which happens with great frequency), by the time I pull out the paper tray, remove the jammed envelope, and open and shut the top to clear the error, one of two things happens:

- The print merge (which doesn't create a temp file) drops several envelopes.
- The print job aborts, displaying a dialog box with the message "Printing error -8132."

I've looked at the error codes sections in "Inside Macintosh", "Inside AppleTalk", and called Microsoft. They claim it is a network error, but I didn't find it in "Inside AppleTalk".

DISCUSSION -----

The error -8132 means "manual timeout error", which, applied to your situation, fits perfectly. Once you manage to keep the LaserWriter from jamming on the envelopes, you should no longer experience this error.

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Tech Info Library Article Number:5234



# Tech Info Library

## Full Impact: Steps to Recover a Corrupted File

Revised: 6/24/90  
Security: Everyone

Full Impact: Steps to Recover a Corrupted File

=====

This article last reviewed: 27 February 1990

TOPIC -----

I am having a problem when editing a Full Impact 1.1. file. The file is a weekly report, which is a spreadsheet containing data, formulas, paragraphs, and charts. I update the information weekly to generate a new weekly report. Updating includes changing the date, data, and charts and recalculating the formulas. For several weeks, I had been doing the updating without any problem. However, today, the system froze when I tried to change the date.

Specifically:

- 1) I opened the file.
- 2) I clicked on the cell containing the date information.
- 3) I edited the date.
- 4) I pressed the Return key.

Normally after pressing the Return key, the active cell is the cell below the Date cell. However, this time the screen froze and stopped at the same Date cell. The arrow pointer was still working. That is, it was free to move around the screen. I typed Command-period, but nothing happened. The only way to clear the screen was to restart the system.

I also tried this on other cells, and the same thing happened.

Do you have any idea what caused this problem?

DISCUSSION -----

We suspect that the file has become corrupted, but before throwing it away, you may want to try these steps:

- 1) Open the damaged file, save a copy under a different name, and try to use the copy.
- 2) Re-install the System Software.
- 3) Repair the volume the file is stored on using Disk First Aid or a similar program.
- 4) Since the system crashed, try rebuilding the Desktop file by holding down the Option and Command keys while restarting.

If these steps don't help, you may be able to copy the information from the old spreadsheet, and paste it into a new one. If you have to recreate the spreadsheet, you might want to print copies of the spreadsheet, both the values and the formulas (this is possible with Microsoft Excel and other spreadsheets, and we assume it is possible to print formulas with Full Impact, too).

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Tech Info Library Article Number:5236





# Tech Info Library

## FileMaker II: Multi-user Crash Recovery

Revised: 6/16/92  
Security: Everyone

FileMaker II: Multi-user Crash Recovery

=====

Article Created: 28 February 1990  
Article Last Reviewed: 27 May 1992  
Article Last Updated: 27 May 1992

### TOPIC -----

A database was set up using FileMaker II 1.1.2 for multi-user access. A Macintosh Plus logged on to the database as a guest. In the process of printing some reports with this database, this system bombed (with the dialog box requesting a "Restart"). At this point, the address of this system was still registered as being connected to the database as a guest. As a result, it was not possible for the host of this database to log off because it requires all the guests to log off from the database before the host can quit.

After the system was restarted and logged on to the database again, the number of systems logged on to that database increased by one. That is, the previous address ID of this system still remained.

How can I remove the address of the Macintosh Plus that bombed? Is there a better way of using multi-user access so that this problem won't happen again?

### DISCUSSION -----

When you log onto FileMaker II again as a guest and then quit, your current entry, and the original, will be removed, allowing the host to shut down. However, until the guest logs on and quits, there are no options within the program allowing the host to quit FileMaker II. Resetting the host's system, or terminating the process with a debugger, if it is running MultiFinder, are poor but effective alternatives.

For more information about this issue, contact Claris directly. Meanwhile, you may want to investigate why the guest's system is crashing to minimize the impact it has running FileMaker II.

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# Tech Info Library

## Macintosh IIci: Launching Microsoft Word 4.0 Causes Bomb

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: Launching Microsoft Word 4.0 Causes Bomb

=====

Article Created: 27 March 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated: 28 March 1991

TOPIC -----

A customer has a Macintosh IIci with System Software 6.0.4 on a network using a 3COM card running AppleTalk Phase 2. Occasionally, when launching Microsoft Word 4.0, his system locks. This happens approximately 50% of the time. The exact same setup on his Macintosh IICx does not produce the problem.

RESPONSE -----

Microsoft Word, version 4.00b or later fixes the compatibility problem with the Macintosh IIci. All Macintosh IIci users should upgrade their copy of Microsoft Word to version 4.00b (or later). Apple also recommends that Macintosh IIfx, Macintosh LC, Macintosh Classic, and Macintosh IIsi users upgrade to version 4.00b (or later). This upgrade is available by calling Microsoft Customer Service. To locate a vendor's address and phone numbers, use the vendor name as a search string.

The problem details are:

Microsoft uses a synthetic handle (a "fake" rgnHandle) when doing certain operations involving drawing icons in the menu bar. The new, 24-/32-Bit Memory Manager in the Macintosh IIci does additional error and validity checks on all handles that it operates on. Due to Microsoft Word's placement in memory, this may cause a variety of apparently random crashes.

Often fake handles, built on the stack, point into I/O space if these handles have been incorrectly translated by the Memory Manager. The read access made to validate its zone header is probably what's causing the crashes. The Memory Manager does load a bus error handler on unused NuBus

slots, so when the machine crashes, it is probably because the fake region is pointing at his 3COM card.

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Tech Info Library Article Number:5239



# Tech Info Library

## Macintosh IIfx/Portable: Crash May Be Caused by WDEF Virus

Revised: 6/24/90  
Security: Everyone

Macintosh IIfx/Portable: Crash May Be Caused by WDEF Virus

=====

This article last reviewed: 28 February 1990

TOPIC -----

Is there any history of floppy-disk errors occurring under System 6.0.4 that take the system down?

I been experiencing random system crashes (ID=0) when inserting or ejecting floppy disks. The disks are readable on systems running System 6.0.3, and the problem seems to appear only on the Macintosh IIfx and Macintosh Portable.

I've rebuilt the desktops of the hard drive and the floppy disks, but the problem continues.

Is this problem characteristic of the WDEF virus? Is it likely that they are reinfecting their systems? Or is there another reason why this problem seems to be confined to the new machines?

DISCUSSION -----

There isn't a history of disk errors that cause any system to bomb. However, as you mentioned, the symptoms are characteristic of a WDEF virus infection on a Macintosh IIfx or Macintosh Portable. It is possible you are reinfecting your own systems. Perhaps if you are reinfecting your systems, you should acquire a virus interception program and run a virus detection program routinely.

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Tech Info Library Article Number:5240



# Tech Info Library

## AppleShare: Updating From Version 1.1 to 2.0

Revised: 6/24/90  
Security: Everyone

AppleShare: Updating From Version 1.1 to 2.0

=====

This article last reviewed: 28 February 1990

TOPIC -----

If an AppleShare volume has been prepared using an earlier version of AppleShare (pre-2.0), will AppleShare 2.0 be able to recognize that volume, or will it prompt the user with the "Do you want to prepare this volume for use with AppleShare" message? If so, and the user selects "OK", does the existing users/groups file get replaced by a new one, or simply get updated to work with the new version of AppleShare?

DISCUSSION -----

Complete information about updating an AppleShare File Server from version 1.1 to 2.0 is outlined in chapter 5 of the AppleShare File Server Administrators Guide shipped with AppleShare 2.0.

In answer to your specific questions:

- 1) Yes, the administrator will be prompted to prepare the volume(s) for use with AppleShare.
- 2) No, the users/groups file will not be replaced and, therefore, will not affect any folder access privileges.

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Tech Info Library Article Number:5241



# Tech Info Library

## LaserTalk PostScript Development Environment

Revised: 6/24/90  
Security: Everyone

LaserTalk PostScript Development Environment

=====

This article last reviewed: 23 March 1990

TOPIC -----

Do you know of an application or Desk Accessory for viewing PostScript formats (not EPSF) and/or converting them to PICT formats? I tried using "CuratorDA", but it doesn't seem to work.

DISCUSSION -----

We are aware of a product that allows viewing full PostScript files is LaserTalk from Emerald City Software.

LaserTalk is an integrated PostScript development environment for the Macintosh. Features include: interactive access to the PostScript executive, real-time display of PostScript stacks and variables, on-screen viewing of PostScript images, integrated editor/debugger without the 32K limit, program tracing and breakpoints, dictionary browser, and on-line access to Addison-Wesley's "PostScript Language Reference Manual."

For more details, search the Technical Info library under "Emerald City Software."

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Tech Info Library Article Number:5242



# Tech Info Library

## Macintosh-to-AT&T 3B2 Solutions (9/94)

Revised: 9/13/94  
Security: Everyone

Macintosh-to-AT&T 3B2 Solutions (9/94)

=====

Article Reviewed/Updated: 12 September 1994

TOPIC -----

A customer wants to connect Macintoshes to an AT&T 3B2 multi-user, UNIX-based machine. The customer wants terminal emulation, file transfer, and E-mail compatibility. Apparently, terminals are now connected with coax. I am still trying to get the actual name and version of the E-mail package they are using. Do you know of any solutions in this environment? The MultiVendor Solution Guide does not list AT&T equipment, and I did not find the information in the Tech Info Library. Any help will be greatly appreciated.

DISCUSSION -----

The AT&T 3B2 is an AT&T System V-based, multi-user UNIX machine, and our A/UX is an AT&T System V.2.2 multi-user UNIX machine. Since UNIX is a general-purpose time-sharing system, it contains a full scope of capabilities, like:

- Multi-user, multitasking ability
- A wide variety of software development
- Device-independent input and output
- Inter-Process Communication (IPC)
- Network protocols (TCP, IP, UDP, ICMP, SMTP, and so on)
- File transfer and remote login (FTP, Telnet, RLOGIN, and so on)
- NFS (Network File System)

On the UNIX side, A/UX can satisfy the customer's need for terminal emulation, file transfer, and E-mail. Terminal emulation lets you log on to a UNIX machine from different types of terminal--like VT100, VT52, ANSI, and so on. The file transfer methods include "ftp", "rcp", "nfs", and "uucp", for example. The



popular E-mail mechanism is "sendmail", using SMTP protocol.

On the Macintosh side (Macintosh OS), there are many ways to connect a Macintosh to an AT&T 3B2 (or, virtually, any UNIX machine), while providing terminal emulation, file transfer, and E-mail.

For terminal emulation and file transfer, the new version of NCSA Telnet ("ftp" and "telnet") along with MacTCP can be used via Ethernet. If the 3B2 supports X Window System and a client application, like "xterm", MacX (an X server) can be used for remote login sessions. If no Ethernet or LocalTalk is involved, the terminal emulation can be done using any popular terminal emulation program--like MacTerminal, MacPhone, and others--via the modem serial port (hard-wired or modem/phone line).

For E-mail capability between a Macintosh and a 3B2 UNIX machine, QuickMail for the Macintosh probably can send and receive both UNIX mail and QuickMail from a Macintosh or a UNIX machine. QuickMail is a product of CE Software. For more details, search the Technical Info library under "CE Software."

#### Article Change History:

12 Sep 1994 - Reviewed.

28 February 1990 -Reviewed.

Support Information Services

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Tech Info Library Article Number:5244



# Tech Info Library

## Apple IIf Plus: Use Revised IIf Technical Reference Manual

Revised: 6/24/90  
Security: Everyone

Apple IIf Plus: Use Revised IIf Technical Reference Manual

=====

This article last reviewed: 28 February 1990

TOPIC -----

A customer needs technical information on the Apple IIf Plus. Is there an "Apple IIf Plus Technical Reference" available or will one be published soon? Are there any other technical publications for this particular system?

DISCUSSION -----

The "Apple IIf Technical Reference Manual, Second Edition" from Apple Computer is available from APDA. This publication includes sections specific to the Apple IIf Plus, unlike the original Addison-Wesley edition. The part number is A2G0052/A; the "/A" indicates the second edition. For more details, search the Technical Info library under "APDA."

We don't know of any other technical publications specifically for the Apple IIf Plus.

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Tech Info Library Article Number:5245



# Tech Info Library

## Macintosh: Information on Array Processors

Revised: 6/24/90  
Security: Everyone

Macintosh: Information on Array Processors

=====

This article last reviewed: 28 February 1990

TOPIC -----

I need some information about array processors.

- 1) What are their primary functions?
- 2) Who makes them?
- 3) Does the Macintosh interface with them?
- 4) Do you have any pricing information?

DISCUSSION -----

- 1) Array processors are used to process math arrays. This is particularly helpful when working with three-dimensional objects. Three-dimensional objects are described in arrays and manipulated with matrix multiplication. Array processors are designed to expedite these array transformations.
- 2) Mini and mainframe manufacturers and related third-party companies manufacture array processors.
- 3) We don't know of any array processors for the Macintosh.
- 4) We have been unable to locate prices for these minicomputer and mainframe products.

The only products that come close are generic accelerators for the Macintosh. These are not the same type of product as the array processors, but increasing the speed of computation, in general, appears to be the only possibility for increasing the array processing desired.

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Tech Info Library Article Number:5246



# Tech Info Library

## Serial NB Card: Use with Multiple Modems (5/96)

Revised: 5/31/96  
Security: Everyone

Serial NB Card: Use with Multiple Modems (5/96)

Article Created: 24 April 1990  
Article Reviewed/Updated: 30 May 1996

TOPIC -----

I want to connect multiple modems to my Macintosh. I know that I can do this with the Serial NB Card, but is there software to support it?

DISCUSSION -----

Apple Remote Access Multiport Server uses the Serial NB card to connect 4 modems for Remote Access connections. The Multiport Server software can support additional Serial NB cards expanding the modem ports even further. The limit will depend on the number of NuBus slots in your Macintosh.

For a non-ARA solution, Apple has software for the Serial NB Card, however, most often its the applications that do not support multiple modems. They use only one port of the card.

You could use any telecommunications application that can operate in the background under MultiFinder. MicroPhone II version 3.0 lets several copies run under MultiFinder. The three issues involved are:

- Background operation
- The ability to work with NuBus-based serial ports
- Each copy is using a separate serial port

The publisher of MicroPhone II, Software Ventures, suggests checking with their technical support group when trying to use NuBus serial cards. This is a good suggestion for any telecommunications application that may be used in this situation--not every application currently provides support for NuBus serial cards.

Article Change History:  
30 May 1996 - Corrected minor typographical errors.  
23 Mar 1994 - Added ARA MP information

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Tech Info Library Article Number:5247



# Tech Info Library

## Macintosh Portable: System 6.0.5 Fixes Excessive Battery Drain

Revised: 2/1/91  
Security: Everyone

Macintosh Portable: System 6.0.5 Fixes Excessive Battery Drain

=====

This article last reviewed: 8 January 1991

TOPIC -----

A problem has been discovered with the Macintosh Portable that relates to reduced battery power.

When the Macintosh Portable has AppleTalk active (in the Chooser) and you select the "Shut Down" command, the SCC chip continues to draw excess current from the battery. If the machine is not used for 4 or more days, the battery will be drained and need a recharge. (Normally, the Macintosh Portable's charge will last about 4 weeks when stored in the shutdown condition).

This problem does NOT occur when AppleTalk is active and the "Sleep" command is selected instead of "Shut Down." This problem also does NOT occur if AppleTalk is inactive and "Shut Down" is selected.

DISCUSSION -----

This problem was corrected with System Software 6.0.5. We recommend that you upgrade to System Software 6.0.5 or later.

Copyright 1990, 1991, Apple Computer, Inc.

Tech Info Library Article Number:5248



# Tech Info Library

## EtherTalk 2.0.1: Improves Copy Performance

Revised: 6/29/90  
Security: Everyone

EtherTalk 2.0.1: Improves Copy Performance

=====

This article last reviewed: 2 March 1990

TOPIC -----

I'm having a problem when performing a Finder copy to an AppleShare File Server on an EtherTalk network. If you narrow the network down to a 2-node EtherTalk 2.0 network, you get these following results:

Copying a 3.3MB folder to a Macintosh II varies between server with an internal HD160 SC, the copy time 113 seconds to 700+ seconds using the same drive on different Macintosh II computers. The time varies on a single machine and across machines. Using the same drive in a Macintosh IIX, the same copy process consistently takes 48 seconds. When an internal 40MB drive was used on the offending machines, these problems were not observed.

- 1) Why does the time vary?
- 2) Why is the time for the HD160 SC so much slower than those we saw on the HD40 SC?
- 3) Why isn't the Macintosh IIX demonstrating the same problems?

DISCUSSION -----

We were able to duplicate this problem with some interesting twists. In our case, the slower machines were the Macintosh IIX systems with a particular Macintosh II performing as you would expect. Furthermore, HD80 SC drives also exhibited these symptoms.

In our tests, we found that the results varied from machine to machine and hard drive to hard drive, so we have concluded that the problem is not with particular hardware.

The problem can be resolved by upgrading to EtherTalk 2.0.1. When we did this, all drives on all machines functioned as expected. We recommend that all



machines (workstations and servers) be upgraded to EtherTalk 2.0.1.

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Tech Info Library Article Number:5250



# Tech Info Library

## LaserWriter: Print Manager Calls for Selecting Print Driver

Revised: 7/16/90  
Security: Everyone

LaserWriter: Print Manager Calls for Selecting Print Driver

=====

This article last reviewed: 2 March 1990

TOPIC -----

I am writing code in MacApp and have a question on the Print Manager. I have figured out how to use the value of a variable to determine if the printer chosen by the user is a LaserWriter or ImageWriter. However, I can't tell if it is a PostScript LaserWriter, a LaserWriter IINT, LaserWriter IINTX, or a LaserWriter IISC. What I need are the calls to determine if the chosen printer is a PostScript printer or not. The reason they need this information is that in their program they are printing encapsulated PostScript files. They want to display a dialog box warning users if they are going to a non-PostScript LaserWriter, they will not be able to print that image.

DISCUSSION -----

You can get the information on what printer driver has been selected by inspecting the value of the fLastPrinterName field of the TStdPrintHandler object belonging to the view you are trying to print. The fLastPrinterName field is changed to reflect the printer driver most currently selected in the Chooser when a Print or Page Setup command is issued. For the LaserWriter IISC print driver, the value of this field is "LaserWriter IISC." If a network-based printer is chosen using the LaserWriter driver, the field contains "LaserWriter."

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Tech Info Library Article Number:5251



# Tech Info Library

## MS-DOS Word/Works: Printing Problem and Fix

Revised: 11/14/90  
Security: Everyone

MS-DOS Word/Works: Printing Problem and Fix

=====

This article last reviewed: 12 November 1990

TOPIC -----

Microsoft and Apple have worked to resolve the problems of printing from Microsoft Word 5.0 for the PC to an AppleTalk LaserWriter or Print Server. (Users of Microsoft Works 2.0 for the PC may encounter the same problem and take advantage of the same solution outlined below.)

Microsoft will support these changes and plans to complete and distribute a new driver in the future.

### The Problem

-----

When using a spooler, users can't print (in PostScript mode) from within AppleShare PC. If a spooler is not involved, a user can print once without turning the LaserWriter off and then on.

This is because Microsoft sends two print jobs at one time--the first is the initialization file; the second is the user's print job. They are separated by a Control-D, the PostScript end-of-file character. The first part loads a permanent dictionary into the LaserWriter's memory. It works fine the first time. The second time a user prints, the LaserWriter sends a message to AppleShare PC saying that the print job is aborted (because the dictionary is already loaded). AppleShare PC then quits, and the second half (the user's file) of the job doesn't print.

DISCUSSION -----

The solution is to modify Microsoft's POSTSCR.PRD and POSTSCR.INI files.

In order to print Microsoft Word 5.00 documents to an Apple LaserWriter through the AppleShare Print Server's spooler, you must modify Word 5.00's POSTSCR.PRD print driver and POSTSCR.INI initialization file.

Modifications to POSTSCR.PRD:

You must first convert this binary file into a text file by running the MAKEPRD.EXE conversion utility provided with Word 5.00. For more information on running MAKEPRD.EXE, consult Chapter 6, Using the MAKEPRD Program, in the "Printer Information for Microsoft Word" manual.

1. Use MAKEPRD to convert POSTSCR.PRD from a binary file into a text file.
2. Start Word and load the text file created by MAKEPRD.
3. Use the Search command to locate the text string "byte:0". The cursor will now be located on a line that reads:

```
byte:0 mod:0 "%!PS-Adobe-2.0 ^M^JPSp"
```

Remove the "%!PS-Adobe-2.0" header so the line reads:

```
byte:0 mod:0 "^M^JPSp"
```

4. Save the file as a text-only file, then quit Word.
5. Convert the modified textg file back into a binary file with MAKEPRD.

Modifications to POSTSCR.INI:

1. Start Word and load POSTSCR.INI.
2. Remove line 1. This line reads: %!PS-Adobe-2.0 ExitServer]
3. Remove lines 8 through 15, which look like the following:

```
%%BeginExitServer:0
userdict/msinifile known
{msinifile (POSTSCR) eq {stop} if} if
serverdict begin 0 exitserver
userdict/msorigstate know {msorigstate restore} if
save/msorigstate exch def
/msinifile (POSTSCR) def
%%EndExitServer
```

4. Modify the /PSI definition (line 21) by adding the PostScript command "Initmatrix" after the capital E and before the "90" so the line reads:

```
def fonttable 1 get fontset E initmatrix 90 rotate 0-612 translate
```

5. Modify the /PSP definition (line 25) by adding the PostScript command "Initmatrix" after the capital E and before the "save" command so the line reads:

```
def fonttable 1 get fontset E initmatrix save statusdict begin
```

6. Use the Search command to locate the text string "/PSe". Remove the command "currentfile closefile" from the line so it reads:

```
/PSe {restore end} bind def
```

7. Move to the end of the file by pressing CTRL-PGDN. Delete the first CTRL-D (diamond shaped) character.

8. Save the file as a text-only file.

The POSTSCRIP.PRD and POSTSCRIP.INI files should now be compatible with the Appleshare Print Server.

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Tech Info Library Article Number:5252



# Tech Info Library

## Third-Party Scanners: Macintosh Compatible

Revised: 6/24/90  
Security: Everyone

Third-Party Scanners: Macintosh Compatible

=====

This article last reviewed: 2 March 1990

TOPIC -----

Is there a Macintosh-compatible scanner that scans 11 x 17 ink documents (like floor plans)?

DISCUSSION -----

You might look into the following products:

Houston Instrument's DMP-60 Series are professional, drafting-pen plotters that have a resolution of 0.0005 inches, accuracy of +/- 0.010 inches, and support HPGL and DM/PL. The DMP-61 plots at 32 inches per second axial speed and handles media from ANSI A to D sizes. The DMP-62 plots at 24 inches per second axial and handles media from ANSI A to E sizes. Both models accept the following options: MP-80 eight- pen changer, the Scan-CAD optical scanner accessory, a Kanji character set board and a 1MB expanded internal buffer.

Sharp Electronics's JX-450 Professional Color Scanner can scan images up to 11 by 17 inches in 24-bit color, 256 gray scales and monochrome. The scanning resolution of 300 dpi is adjustable from 30 to 300 in increments of one. An optional mirror unit lets users scan 35mm slides and transparencies up to 8.5 by 11 inches. The JX-450 uses a GPIB (IEEE 488) interface.

Howtek's Scanmaster is a flatbed scanner that provides an effective way of converting hard copy color images into data that can be entered into an image-capturing computer. It allows a user to store, modify, and enhance color images. Input copy can be in the form of line art, text, continuous tone, or halftone documents.

The Scanmaster scans continuous-tone and half-tone images up to 11 by 17-inches and film transparencies up to 8 by 10-inches.

The Scanmaster employs a single CCD sensor and an all electronic Red-Green-Blue

(RGB) color separation method. It digitizes full-color or black and white images or color transparencies at 30 to 300 dpi and transmits the data over a GPIB interface.

Application software is also provided. A menu-driven package, Scan-It, provides immediate access to all of the scanner's features. Using a pull-down menu, a user can select an area to scan, zoom, crop, and size the image. A contrast and color correction menu lets an operator adjust the gamma correction (contrast) in the scanner to match a specific output display device and to color correct an image by modifying the scanner's internal color look-up tables (LUTs).

You can output color-corrected and sized images to one of three file formats: PICT II, RIFF (Raster Image File Format), and Howtek's SIM (Scanned Imaged file format).

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Tech Info Library Article Number:5253



# Tech Info Library

## AppleShare PC: Bitmapped Graphics With Epson LQ2500

Revised: 6/24/90  
Security: Everyone

AppleShare PC: Bitmapped Graphics With Epson LQ2500

=====

This article last reviewed: 2 March 1990

TOPIC -----

I have migrated from TOPS to AppleShare. I have a program written in BASIC that prints a form with half-graphic characters on MS-DOS.

This works fine with TOPS Netprint. However, I couldn't get this form to print with AppleShare. The half-graphic characters are converted. AppleShare PC has the Epson LQ2500 command set, and Netprint has the Epson FX80 command set. What exactly are the differences?

DISCUSSION -----

The Epson LQ2500 command set is a superset of the command sets belonging to the Epson LQ1000, LQ800, LQ1500, EX series, FX series, LX series, RX series, MX series, Epson printer, Standard printer, and Draft printer. Your problem is not due to a command set difference; it is with the IBM graphics character definitions and those of the ASCII character set defined by AppleShare PC.

You are using IBM graphic text characters, which are not a part of the LaserWriter's PostScript or the U.S. Standard ASCII character sets. Unfortunately, the characters defined for use by AppleShare PC stop at ASCII value 176. The graphic characters of the IBM character set begin at a higher value within the ASCII range.

Page 104 of the "AppleShare PC 2.0 User's Guide," shows the characters available from the Epson LQ2500 AppleShare PC option. Printing Epson graphics while using AppleShare PC Epson option does work. A program printing through AppleShare PC must use bitmapped graphics to generate lines or other graphics when using the Epson LQ2500 option.

There are a couple of possible workarounds that the TOPS Netprint program may have used to avoid this situation. The optional symbol set within the LaserWriter does include some horizontal and vertical line symbols. These may



have been mapped into the same characters used by your customer's program. You can also create new character definitions within PostScript, and the IBM characters may have been recreated and defined as part of the LaserWriters ASCII character set.

AppleShare PC does not include either of these options for printing IBM graphic characters. We can only suggest that you use a program that prints bitmapped graphics for its form design or use TOPS Netprint.

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Tech Info Library Article Number:5255



# Tech Info Library

## A/UX: sleep and Flow Control Settings

Revised: 9/24/92  
Security: Everyone

A/UX: "sleep" and Flow Control Settings

=====

Article Created: 5 March 1990

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

A colleague told me that I needed to use the "sleep" command with the "stty" command when doing modem settings. He said that the purpose of "sleep 3600" is to force the tty to stay open, so that the later "cu" command can take effect with changed settings.

However, I was under the impression that flow control settings are maintained across last close (unlike the standard SVID termio settings) and therefore, don't need "sleep". Who's right?

### DISCUSSION -----

You don't have to issue the sleep command to keep the tty open. You are right as far as you go; the flow control settings are maintained across last close, unlike the standard SVID termio settings.

All tty flow control characteristics, like "modem", "-modem", "dtrflow", "-dtrflow", and so on, are maintained across last close. This means the flow control settings are "remembered" when a tty device is closed and reopened. However, all other termio characteristics, like speed (50, 75, 1200, and so on), parity (parenb, parodd), input modes (ignbrk, brkint), and so on, are set to the default settings when the tty line is closed.

Therefore, a statement like "sleep 3600" in a modem setting is not required, but for other settings, like the speed change, it is necessary.

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Tech Info Library Article Number:5257



# Tech Info Library

## A/UX: Connecting to TCP/IP and NFS Network (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: Connecting to TCP/IP and NFS Network (9/94)

=====

Article Created: 2 March 1990  
Article Last Reviewed: 31 August 1992

TOPIC -----

I am taking A/UX into an environment that consists of many Sun workstations and IBM systems with AIX. I want to evaluate A/UX with regard to the following:

- Connecting to NFS
- TCP/IP
- X Window System

What is required to make the A/UX ready to connect to the NFS network, and what do I have to do to make the A/UX ready to connect to TCP/IP?

DISCUSSION -----

To connect A/UX 2.0 and 3.0 to a network with TCP/IP and NFS:

- 1) Prepare Ethernet hardware (EtherTalk Card, Coax Ethernet cable, and terminators) and Internet information (Host name, Domain name, IP address, Broadcast address, and netmask), which will be asked for later.
- 2) Bring A/UX 2.0 or 3.0 up in single-user mode.
- 3) Create an NFS kernel with both client and server capabilities. To do this type the command:

```
# /etc/newconfig nfs
```

The "/etc/newconfig nfs" command automatically adds the appropriate modules to the kernel for using NFS.

While newconfig is running, the Internet information mentioned in step 1

will be asked for.

4) Restart A/UX, by selecting Restart from the Special menu:

5) If A/UX is to be a NFS server, the exported file system(s) must be listed in the /etc/exports file. For instance, the entire root file system exported to a host named "sun1", the file should contain:

```
/          sun1
```

6) Update the /etc/hosts file to include all hosts that A/UX communicates with, and update the /etc/hosts.equiv file to include your trusted hosts. Also, let other hosts, like Sun or AIX, know about your A/UX hostname and IP address.

7) Modify the /etc/fstab file to mount your local and remote NFS file systems.

8) Bring A/UX to multi-user mode. To do this, boot to single user mode and then type the command:

```
# init 2
```

9) All TCP/IP and NFS network services, like "rlogin", "ftp", "rcp", "telnet", "showmount", "netstat", "nfsstat", "mount", "ping" and so on, are now ready to perform. "ping" is a nice tool to use to see if your A/UX and/or other hosts are talking to each other.

This process is described in more detail in the "A/UX Network System Administration" manual.

Article Change History:

1 Sept 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5258



# Tech Info Library

## Aristotle Setup: AppleTalk Slot Assignments (4/97)

Revised: 4/2/97  
Security: Everyone

Aristotle Setup: AppleTalk Slot Assignments (4/97)

=====

Article Created: 27 March 1990  
Article Reviewed/Updated: 02 April 1997

TOPIC -----

The Aristotle Display progrma may generate the error message "AppleTalk must be installed to run this program" when launched. This article describes a possible solution to this problem.

DISCUSSION -----

This error message can occur when the slot assignments are not correctly set. In particular, slot 7 needs to be set to "AppleTalk" when running the Aristotle Display program.

For network startup and general network operations to work correctly, the slot assignments must set as:

Slot 1 (or Slot 2) = AppleTalk  
Slot 7 = AppleTalk  
Startup = AppleTalk

Note: Network startup can take place, most applications can be launched, programming can take place in Applesoft BASIC and files can be saved on any available volumes, even though slot 7 is set to "Your Card".

Article Change History:  
02 Apr 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:5261



# Tech Info Library

## Apple IIGS: Displaying in Monochrome Mode

Revised: 6/24/90  
Security: Everyone

Apple IIGS: Displaying in Monochrome Mode

=====

This article last reviewed: 6 March 1990

TOPIC -----

Some of my group's Apple II software applications run in color on the Apple IIGS and look terrible. (Most of the programs with the problem are written in BASIC.) Is there a routine or call for putting the Apple IIGS into monochrome mode?

DISCUSSION -----

What monitor are you using? The AppleColor Composite Monitor (A2M6020) or the AppleColor RGB Monitor (A2M6014)?

AppleColor Composite Monitor

-----

There is a switch behind the front access door that turns the Composite Monitor to a green character on black background display. This will help the displayed image to appear more clearly.

Additionally, the Apple IIGS Control Panel has the Monitor CDEV for selecting color or monochrome monitor. This may help if you're using the Composite Monitor in the single-color mode. This setting affects only the composite output of the Apple IIGS. This is the only method we know for setting the Apple IIGS to monochrome mode.

AppleColor RGB Monitor

-----

There are certain issues that affect the display on the RGB Monitor's graphics page. If the graphic images are not placed on even nibble boundaries, there will be color bleed that many consider unacceptable. On the RGB Monitor, the only solution is to rewrite the programs, with the even nibble boundary issue in mind.

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# Tech Info Library

## 3COM EtherLink/NB Card: EtherTalk Incompatibility Problem

Revised: 4/18/91  
Security: Everyone

3COM EtherLink/NB Card: EtherTalk Incompatibility Problem

=====

This article last reviewed: 6 March 1990

TOPIC -----

My office is having trouble with system bombs while using EtherTalk. Can you help?

### Problem Description

-----

Macintosh IIX and Macintosh IICx systems equipped with the 3COM EtherLink/NB card (ASSY 4042- 031 REV A or B) running EtherTalk 1.2 intermittently experience system bombs. Not all Macintoshes display the problem. For instance, given two identical workstations on the same Ethernet segment, only one may experience the problem.

Usually, the system bomb appears in the form of a blank rectangular box in the middle of the screen with no error code or message. However, a couple of users have noticed the System Error 12 appear then disappear. (System Error 12 means that an unimplemented trap was executed.)

We have been working with 3COM for the last two months on this and have determined that our LAN configuration is sound and that all our hardware and firmware is up to specifications. The problem seems to point to the EtherTalk driver, which was written by Apple.

### Correlations

-----

The problem seems to be correlated to the amount of Ethernet traffic on our LAN. During an experiment, I placed an Ethernet bridge between an entire floor that was experiencing the problem, effectively reducing traffic and eliminating the system bombs. Also, during extremely high traffic periods, we noticed that the Macintoshes were experiencing the bombs more frequently.

A Macintosh connected to our network via AppleTalk to a Kinetics FastPath does not experience the system bombs. However, as soon as I connect it to the

Ethernet and activate the EtherTalk driver in the Control Panel, the Macintosh begins to experience the system bombs.

DISCUSSION -----

This is a known problem that tends to surface on networks with high traffic levels. It is due to an incompatibility between the revision A and revision B 3COM EtherLink/NB cards and EtherTalk 1.2 or newer. Just as Apple has released revisions to the EtherTalk NB Card, 3COM has released revisions to their EtherLink/NB cards. The most current is revision L, which works with EtherTalk drivers through version 2.0.1. Contact 3COM for details on their EtherLink/NB card upgrade program.

Something else to note is that the latest version of 3+Share is 1.5. 3COM technical support stated that version 1.3.1 shouldn't be causing any problems in your installation, but that there are enhancements in version 1.5 worth looking into.

For more details, search the Technical Info library under "3COM."

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Tech Info Library Article Number:5265



# Tech Info Library

## DAL: dialup and dialvax Problem

Revised: 7/27/93  
Security: Everyone

DAL: "dialup" and "dialvax" Problem

Article Created: 27 March 1990  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

Could you confirm that the following "hosts.cl1" file contains the correct dial-in information to conduct Data Access Language (DAL, formerly known as "CL/1") demos. In question is the "dialup" and "dialvax" routines. All I receive when running these options is a carrier detect and then the line is dropped. Everything has been verified on my side. Do either of these options support line speeds greater than 1200 baud?

Here is the file content:

```
rem::          BE AWARE THAT THIS IS AN EXAMPLE FILE ONLY!!
rem::          You should get your systems administrator to modify it according
rem::          to your site's configuration
rem::          Hosts.cl1 connection names are CASE-SENSITIVE

rem::  This is the DAL config file  hosts.cl1, version 1.0

rem::  Refer to the "Guide to DAL Developer's Toolkit" for documentation.

rem::  This is an example of how to handle the standard (default) login
sequence.
rem::  Use it as a model to build your own custom async login sequence.
rem::  It should work for both VAX/VMS & A/UX.
std:login:3tries:\sexit\r\slo\r:600:2000:\r\^y\^d\w3:\r:\M
\w2\u\r\P\Msword\p\r\P\m$

rem::  a direct 9600 serial line with no login script
direct:async:com1:9600:Noparity:8databits:2stopbits:Bothxonxoff:128:Nodem
direct1200:async:com1:1200:Noparity:8databits:2stopbits:Bothxonxoff:128:Nodem

rem::  same as above (with no login script)
async:async:com1:9600:Noparity:8databits:2stopbits:Bothxonxoff:128:Nodem
```

## ..TIL05267-DAL-dialup\_and\_dialvax\_Problem.pdf

```
rem::  same as above except it uses the com2 serial port
com2:async:com2:9600:Noparity:8databits:2stopbits:Bothxonxoff:128:Nomodem

rem::  1200 baud modem dial up  (with no login script)
dialup:async:com1:1200:Noparity:8databits:2stopbits:Boxonxoff:128:Modem:Tone:9,
,14082539402:32secs:1attempt
dialvax:async:com1:1200:Noparity:8databits:2stopbits:Boxonxoff:128:Modem:Tone:9
,,14082576888:32secs:1attempt

rem::  appletalk (ADSP) connections
rem::  format =>    <<Host Name>>:atalk:<<Decnet Node>>.<<Appletalk Zone>>
nivax:atalk:NIVAX.Network Innovations
nidev:atalk:NIDEV.Network Innovations
nisup:atalk:SUPPORT.Network Innovations

rem:: This is a custom vms async login sequence.
vax:async:com1:9600:Noparity:8databits:2stopbits:Boxonxoff:128:Nomodem
vax:login:3tries:lo:600:2000:\r\^y\w2:\r\Msename\u\r\P\Massword\r\r\P\m$

rem:: This is a custom unix async login sequence.
unix:async:com1:9600:Noparity:8databits:2stopbits:Boxonxoff:128:Nomodem
unix:login:3tries:exit:600:2000:\r\^d\w3:\r\saaa\r:\sbbb\r\Mogin\w2\u\r\P\Massw
ord\r\r\P\m$

rem:: End of Hosts.cl1 (Note: Last line must have a return at the end of the
line.)
```

### DISCUSSION -----

Regarding the two dial-up format examples below:

```
rem::  1200 baud modem dial up  (with no login script)
dialup:async:com1:1200:Noparity:8databits:2stopbits:Boxonxoff:128:Modem:Tone:9,
,14082539402:32secs:1attempt
dialvax:async:com1:1200:Noparity:8databits:2stopbits:Boxonxoff:128:Modem:Tone:9
,,14082576888:32secs:1attempt
```

- 1) These are both good examples of how to program a dial-up connection. To use the dial-up options, you need a valid phone number. You could connect a modem to your local DAL server (VAX or A/UX) and use its phone number, or you could use the services provided by Clear Access Corp. (formerly Fairfield Software Inc.) as describe in the DAL distribution package sent to your office during late December 1989 (see the bottom of page 2 of the "CL/1!" letter included in the mailing).
- 2) All standard RS-232-D speeds are valid with DAL: (Partial list: 75, 110, 300, 600, 1200, 2000, 2400, 3600, 4800, 7200, 9600).

Please note the declaration at the top of the host.cl1 file:

```
rem::          BE AWARE THAT THIS IS AN EXAMPLE FILE ONLY!!
rem::          You should get your systems administrator to modify it according
```

# ..TIL05267-DAL-dialup\_and\_dialvax\_Problem.pdf

```
rem::      to your site's configuration
rem::      Hosts.cll connection names are CASE-SENSITIVE
```

## Article Change History:

23 July 1993 - Company title changed from Fairfield Software, Inc. to Clear  
Access Corp.

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Tech Info Library Article Number:5267



# Tech Info Library

## Apple Software: Where To Get Replacement Disks (3/95)

Revised: 3/16/95  
Security: Everyone

Apple Software: Where To Get Replacement Disks (3/95)

Article Created: 6 March 1990  
Article Reviewed/Updated: 16 March 1995

TOPIC -----

I have Apple software on diskette or CD-ROM. The original floppy or CD-ROM is bad, and I need a replacement. How do I get replacement copies?

DISCUSSION -----

Replacement copies of most Apple software and manuals are available at no charge through the Media Exchange program. You must fill out a media exchange card before returning the defective disks. This card is available from your Authorized Apple Service Provider, or by calling 800-SOS-APPL, who will send you the exchange card.

The disk and exchange card are then sent to:

Apple Computer, Inc.  
Media Exchange Program  
P.O. Box 149112  
Austin, TX 78714-9112

Replacement software is then sent to you once your disk(s) and exchange card are received.

Article Change History:  
16 Mar 1995 - Made minor corrections.  
06 Jan 1995 - Reviewed for accuracy and retitled.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:5272



# Tech Info Library

## A/UX 1.0: f77 Compiler Problems and Solution

Revised: 9/15/92  
Security: Everyone

A/UX 1.0: f77 Compiler Problems and Solution

=====

Article Created: 6 March 1990

### Article Change History

-----

08/31/92 - REVIEWED

### TOPIC -----

I am having problems with the f77 compiler for A/UX. Here are some significant faults:

```
C
C new program:
C
      INTEGER*2 I2
      INTEGER*4 I4

      I2=2
      I4=4
      I2=I4
C this line ends in >>>> Termination code 139
      I2=I4-2
C this line ends in >>>> "", line 7: compiler error: can't deal with op NAM

      STOP
      END
C
C new program:
C
      SUBROUTINE test(NAME,NAMLEN)
      INTEGER*2 NAME(1),NAMLEN,
&              I00000

      DATA I00000 /0/
```

```
C this line ends in >>>> Assembler: test.f
C                >>>> AppleLine 9      : invalid instruction name
C                >>>> AppleLine 9      : syntax error
C                >>>> Compiler error in file test.o: assembler error

    NAMLEN=10
    RETURN
    END
```

Due to program volume constraints, there is no practical way to change INTEGER\*2 to INTEGER\*4 as one of the verified f77 problems. Would you recommend a version of this compiler for A/UX? What about the Greenhills Optimizing Fortran compiler or any other known compiler?

#### DISCUSSION -----

We have verified the problem with the above f77 code. It is an A/UX f77 problem; it compiled OK using Greenhills Optimizing Fortran compiler (gf77) under A/UX.

The "Termination code 139" and the subsequent error message have to do with the use of the result INTEGER\*2 variable being assigned by the INTEGER\*4 variable; the conversion between the "int" (4-byte long integer) and the "short" (2-byte long integer) doesn't seem to work.

The "Assembler: ..." and the subsequent error messages were caused by the "DATA" initialization statement; the "f77" seems to expect that the integer variable specified in the DATA statement to be a 4-byte long integer.

As a solution, we suggest that you use Greenhills Optimizing Fortran compiler (available from Unisoft). For more details, search the Technical Info library under "UniSoft."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5273





# Tech Info Library

## Apple II Setup and GS/OS: Compatible Versions

Revised: 6/24/90  
Security: Everyone

Apple II Setup and GS/OS: Compatible Versions

=====

This article last reviewed: 6 March 1990

TOPIC -----

I installed the software from the Apple II Setup 2.1.1 disk (680-5060-B) on top of Apple II Setup 2.0.1. I did the other setup steps and tried to start up an Apple IIGS from the server. A GS/OS-specific file could not be found, and I got an error \$0046.

I went back to Apple II Setup 2.0.1, and all was well.

Can you explain?

DISCUSSION -----

The \$0046 error is a "file not found" error. This error normally occurs because part of GS/OS is not on the startup disk--in this case, the server. For the server to have a working GS/OS system to start up the Apple IIGS, the GS/OS Installer needs to be run from an Apple IIGS that is logged on to the server. Then you install the desired GS/OS configuration on the server volume. We believe that this is what is meant by "did the other setup steps".

If we are correct, it is most likely that an older version of the 16-bit operating system is on the server. The 2.1.1 version was a release specifically for version 5.0.2 of GS/OS. If version 2.1.1 was installed while ProDOS 16 (System Disk 3.2 or earlier) is used on the server, there will be a problem with versions being matched correctly. Version 2.0.1 was designed to work with ProDOS 16, the predecessor to GS/OS. The files used on version 2.0.1 are quite different from the files used with 2.1.1.

We suggest that you use version 2.1.1 of the Apple II Setup Installer with a server having GS/OS 5.0.2 installed. Use version 2.0.1 on servers providing the earlier ProDOS 16 system files, which are found on System Disk 3.2 and earlier.

Also note that GS/OS 5.0 provided a version of Apple II Setup labelled "2.1."  
This version should be used only with GS/OS 5.0. However, the best solution is  
to use GS/OS 5.0.2 and Apple II Setup 2.1.1.

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Tech Info Library Article Number:5278



# Tech Info Library

## Apple IIGS: ROM Upgrade Information

Revised: 6/24/90  
Security: Everyone

Apple IIGS: ROM Upgrade Information

=====

This article last reviewed: 6 March 1990

TOPIC -----

I have a question about the ROM Upgrades sent to the field for the new Apple IIGS logic board.

The ROM sent to us by Support Engineering looks like two of the ROM chips on the main logic board. There were no instructions on which chip to replace. Should we have received two chips? If not, which chip is the one to be replaced?

DISCUSSION -----

The ROM that was sent goes in the socket labeled UJ9 (FFEF). The new ROM has 28 pins. If your board has a 32-pin socket at UJ9, put pin 1 of the ROM into hole 3 of the socket. With the notched end of the chip towards the front of the Apple IIGS, there should be two holes exposed on each side of the socket. If the socket has only 28 holes, pin 1 goes to hole 1.

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Tech Info Library Article Number:5279



# Tech Info Library

## MacLANConnect Gateway: Information

Revised: 6/24/90  
Security: Everyone

MacLANConnect Gateway: Information

=====

This article last reviewed: 6 March 1990

TOPIC -----

Do you know anyone who has used Miramar System's MacLANConnect Gateway against OS/2 LAN Server EE 1.1? What kind of results are they getting?

DISCUSSION -----

MacLANConnect is a useful product for selling into environments, like OS/2 LAN Server EE and Banyan, where there is no AFP support at this time. We also suspect this product will work in the IBM's mid-range family, although we have not seen it work. They just released version 1.1, in January, which now supports AppleTalk Phase II and works with AppleShare PC 2.0.1.

The basic concept is that you can take an IBM AT/XT/386 and use it as a gateway from AFP to NetBIOS. The NetBIOS side is simply whatever software the server offers. In the case of IBM, it would be the DOS requester of the PC/LAN support software.

The network topology we saw was a single Token Ring network with:

- 1 Macintosh IIX, TokenTalk NB Card, System 6.0.3, AppleShare Client
- 1 PS/2 60, IBM 16/4MB Token Ring Card MCA, As MacLANConnect Gateway
- 1 PS/2 80, IBM 16/4MB Token Ring Card MCA, OS/2 EE 1.1, OS/2 LAN Server 1.1 EE
- 1 PS/2 60, IBM 16/4MB Token Ring Card MCA, PC cc:Mail Client

What we did:

- 1) We loaded the MacLANConnect Gateway with the IBM LAN support 1.11 software.

- 2) We loaded AppleShare PC 2.0.1 on to the MacLANConnect Gateway as instructed in AppleShare documentation.
- 3) We used the PC/LAN Support's DOS requester software to log on to the OS/2 LAN Server and mounted several network drives; that is, V: Y: N:.
- 4) We loaded MacLANConnect software, configured the software through panels similar to AppleShare PC and started the sever process.
- 5) On the Macintosh side, we selected the Chooser and the MacLANConnect Server appeared. We logged on to the server and mounted all published volumes as Macintosh HFS volumes, similar to Novell's.

We were able to use cc:Mail on the Macintosh, access the post office residing on the OS/2 LAN Server, and exchange mail with the PC on the ring loaded with cc:Mail PC. We discovered when loading the protocol stacks that AppleTalk stacks need to be loaded before NetBIOS.

Also, we found that MacLANConnect runs out of memory rather quickly,. We had to adjust the maximum number of open files to accommodate this. We may need to investigate moving the drivers to a higher memory location through a third-party DOS extender.

For more details, search the Technical Info library under "Miramar Systems."

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Tech Info Library Article Number:5280



# Tech Info Library

## Macintosh: Displays Greater Than 72 dpi Not Yet Available

Revised: 6/24/90  
Security: Everyone

Macintosh: Displays Greater Than 72 dpi Not Yet Available

=====

This article last reviewed: 6 March 1990

TOPIC -----

I want to implement scanned documents in conjunction with electronic mail. The scanned documents look good when printed but not as nice when viewed on the screen at 72 dpi. I need video cards and monitors that work at 100 or 150 dpi, but I cannot find anything other than 72 or 75 dpi. I don't want to change scale, just resolution.

Can you help?

DISCUSSION -----

As of February, 1990, we don't know of any display system for the Macintosh that provides a resolution higher than 72 dpi without decreasing the size of the displayed image in direct proportion to the increase in resolution. In other words, the higher the screen resolution, the smaller the displayed image.

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Tech Info Library Article Number:5281



# Tech Info Library

## Nine-Inch Color Monitor for Macintosh

Revised: 6/24/90  
Security: Everyone

Nine-Inch Color Monitor for Macintosh

=====

This article last reviewed: 6 March 1990

TOPIC -----

I am using a Macintosh as the front end to a new product that will be used in an automobile. I need a 9-inch color monitor with the Macintosh and have located a unit from DisplayTek that has a vertical scan rate of 60Hz or 70Hz (selectable to one or the other only, not adjustable in a range) and a horizontal scan rate of 31.5KHz.

The horizontal can work +/- 0.5KHz from nominal. Is there a video board that works with these specifications? I have been told that an early version of the SuperMac video card might be able to work. As an alternative, is there another 9-inch monitor that I can suggest to them?

DISCUSSION -----

Princeton Graphics makes a 9-inch multisync monitor on a special-order basis only. This monitor should work properly with the Macintosh II video card. For more details, search the Technical Info library under "Princeton Graphic."

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Tech Info Library Article Number:5282



# Tech Info Library

## Distributing Apple Fonts Requires License (4/97)

Revised: 4/2/97  
Security: Everyone

Distributing Apple Fonts Requires License (4/97)

=====

Article Created: 6 March 1990  
Article Reviewed/Updated: 02 April 1997

TOPIC -----

What is the policy for distribution of the fonts found in the System Software?  
I want to distribute a HyperCard Stack, and he need to install the New York  
font in it. I also would like to use other fonts, but need to know if it's  
okay to distribute them like this.

DISCUSSION -----

If you are going to distribute a HyperCard stack containing any of the  
following fonts, you will need to get a license from Apple Software Licensing  
to distribute Apple System Software:

|               |           |          |
|---------------|-----------|----------|
| Athens        | Cairo     | Courier  |
| Geneva        | Helvetica | London   |
| Los Angeles   | Mobile    | New York |
| San Francisco | Symbol    | Times    |
|               | Venice    |          |

For information on using the fonts distributed with the LaserWriter family of  
printers or other information licensing Apple products, contact Apple Software  
Licensing at 408-974-4667 or eMail them at [SW.LICENSE@apple.com](mailto:SW.LICENSE@apple.com)

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Tech Info Library Article Number:5283





# Tech Info Library

## Font Manager and Printer Driver: How They Relate

Revised: 9/10/92  
Security: Everyone

Font Manager and Printer Driver: How They Relate

=====

Article Created: 6 March 1990

### Article Change History

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08/20/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Could you give me a brief description of the relationship between the FOND resource, the Font Manager, and the printer driver?

### DISCUSSION -----

The FOND's style mapping and name tables contain the information for matching a PostScript font to a bitmapped font. The style mapping table is used by the LaserWriter driver and contains the font class and character encoding information plus a mechanism for getting the name of the PostScript printer font. When you request to print a particular font and style, the driver checks the "FOND" for a style mapping table. If the table is present, it then looks up the PostScript name of the style to print.

The name table is actually a table within the style mapping table that contains an array of indices that help build the font name suffix for each possible style in the font family. The name table has the following format:

```
NameTable = record
    stringCount : integer;
    baseFontName : str255;
    {strings : array [ 2..stringcount ] of String; }
end;
```

The name table contains the number of strings followed by the base font name (the string count includes the base font name). The base font name is followed by strings containing suffixes or numbers specifying what suffixes to put together to get the real PostScript font name. Here's an example:

```
|_____Helvetica-BoldOblique
```

The "|\_\_\_\_\_" prefix is added by the driver (a vertical slash with six underline characters). The base font name is "Helvetica". The suffix to get the right font name to get the bold and italic style is "-BoldOblique", and the index in the index array for style \$03 (BoldItalic) contains four. For our example, the string list for this font would have the following entries:

```
1 Helvetica
2 9 10
3 9 11
4 9 10 11
5 9 12
6 9 12 9 10
7 9 12 9 11
8 9 12 9 10 11
9 -
10 Bold
11 Oblique
12 Narrow
```

If you take a look at string 4, it has 9, 10, and 11 as entries. If you put these suffixes together you get "-BoldOblique". When the driver gets a name, it checks to see if the printer already contains it. If it does not, the driver checks the System file for a file with the name "HelveBolObl". If it finds one, it dumps the contents of the file to the printer and uses the font. Otherwise, it dumps a QuickDraw bitmap, which gets scaled to the right size.

The printer font filename (in our example HelveBolObl) is derived from the PostScript name using a simple algorithm. The filename is found by dissecting the PostScript name, contained the name table, into pieces based on capital letters and hyphens. The first five letters of the first piece followed by the first three letters of any subsequent components. The maximum number of letters that can compose a filename is 31 characters. This is a restriction of HFS. For example, given the following PostScript names, here are the equivalent printer font file names:

```
Palatino-Italic = PalatIta
Courier-Bold = CouriBol
Times-Roman = TimesRom
```

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Tech Info Library Article Number:5284



# Tech Info Library

## PrintMonitor Error -36: Corrupted Volume or WDEF Virus (11/94)

Revised: 11/14/94  
Security: Everyone

PrintMonitor Error -36: Corrupted Volume or WDEF Virus (11/94)

=====

Article Created: 6 March 1990  
Article Reviewed/Updated: 14 November 1994

TOPIC -----

I am getting an interesting error:

Print Monitor found an internal problem:

where = 80  
why = -36

The system configuration is:

Macintosh IICx  
System Software 6.0.3  
Background Printing: On

The problem occurs with different applications.

DISCUSSION -----

This error indicates that Print Monitor encountered an I/O error while trying to open/create the "Spool Folder" or creating the "Spool File". This usually means that the disk that Print Monitor is trying to write to is somehow corrupted. The solution is to back up the disk and reformat it. It is also possible that a virus, such as WDEF, is causing the problem.

Article Change History:  
14 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5285



# Tech Info Library

## SANE: Accuracy and Performance Information

Revised: 6/24/90  
Security: Everyone

SANE: Accuracy and Performance Information

=====

This article last reviewed: 6 March 1990

TOPIC -----

I am interested in the accuracy of SANE when working with numbers that take SANE to its maximum accuracy potential. Also, what is the performance difference when using the most accurate SANE number format compared to using less accurate formats?

DISCUSSION -----

Though different in detail, the MC68881 and SANE packages are both implementations of the IEEE Standard 754. Following are the range and precision of the data types supported by SANE:

|                           | Single   | Double    | Comp    | Extended   |
|---------------------------|----------|-----------|---------|------------|
|                           | -----    | -----     | ----    | -----      |
| Size (bytes:bits)         | 4:32     | 8:64      | 8:64    | 10:80      |
| Range of binary exponents |          |           |         |            |
| Minimum                   | -126     | -1022     | -       | -16383     |
| Maximum                   | 127      | 1023      | -       | 16383      |
| Significand precision     |          |           |         |            |
| Bits                      | 24       | 53        | 63      | 64         |
| Decimal digits            | 7-8      | 15-16     | 18-19   | 19-20      |
| Decimal range approximate |          |           |         |            |
| Maximum positive          | 3.4E+38  | 1.7E+308  | 9.2E18  | 1.1E+4932  |
| Minimum positive norm     | 1.2E-38  | 2.3E+308  |         | 1.7E-4932  |
| Minimum positive denorm   | 1.5E-45  | 5.0E-324  |         | 1.9E-4951  |
| Maximum negative denorm   | -1.5E-45 | -5.0E-324 |         | -1.9E-4951 |
| Maximum negative norm     | -1.2E-38 | -2.3E-308 |         | -1.7E-4932 |
| Minimum negative          | -3.4E+38 | -1.7E+308 | -9.2E18 | -1.1E+4932 |

If the compiler is making direct calls to the MC68881, accuracy may suffer in some situations. For elemental functions, both SANE and the MC68881 have errors in the least-significant bits of the fraction part of extended-format results, but SANE's errors rarely exceed the last bit, whereas the MC68881 errors may extend to as many as the last five bits. The MC68881 is much more likely to return an error in a double-precision result than SANE is.

Due to the architecture of the Macintosh, and how SANE is implemented on the Macintosh, the extended-precision number format not only provides the most accuracy, but also provides better performance than the computational or double-number formats. The Macintosh converts double and computational numbers into extended number before using them, and thus takes more time than just using the extended-number format.

Single precision provides the most speed, but is hardly ever used because most high-level language compilers today generate code using the extended number format. You can use the single number format, but the code probably would have to be written in assembly language.

For more complete and detailed information, we suggest the "Apple Numerics Manual, Second Edition" from Addison-Wesley.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5286



# Tech Info Library

## Macintosh Portable: Printing to a LaserWriter IISC

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Printing to a LaserWriter IISC

=====

Article Created: 7 March 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

I have a Macintosh Portable with 2MB RAM, and no INITs. I connected a LaserWriter IISC and am printing an Excel 2.2 spreadsheet. The spreadsheet is approximately 12 or 14 columns and about one page. I use landscape mode, reduce it to 75%, and print gridlines. This process takes five minutes to print. Is this print time typical, or is there something wrong?

DISCUSSION -----

This is an issue that is inherent to applications such as Excel, Microsoft Word, MacDraw II, and other programs that don't display a watch or animated cursor while processing a print job.

The problem is that applications like Excel do not put up an animated or watch cursor while processing a print job. Since no other activity is taking place (like typing, moving the mouse, and so on), the Macintosh Portable falls into "Rest" mode. This is where 64 wait states are inserted so that the effective processor speed is slowed to 1MHz (this is done to reduce power consumption when no activity is taking place). If application manufacturers follow HIG and put up an animated or watch cursor, the CPU does not Idle and will finish the print job slightly faster than an Macintosh SE.

A suggested workaround is to deactivate "Rest", one of the power-saving features of the Macintosh Portable. This is done by opening the Portable CDEV and "Option-Clicking" on the words "Minutes until Automatic Sleep". A dialog box appears describing "Rest" and gives you the opportunity to turn "Rest" off. You can also prevent idle (aka "Rest") by performing actions such as moving the mouse, typing on the keyboard, and so on.

Using a document similar to the one described above, these were our findings:

Macintosh Portable

-----

5 minutes 8 seconds with idle ON

2 minutes 55 seconds with idle OFF

Macintosh SE

-----

3 minutes 8 seconds

In summary, this is an Excel compatibility problem that occurs on the Macintosh Portable when printing to any printer, not just the LaserWriter IISC. In addition, a user should have the 4X fonts installed for maximum performance when printing text in portrait. The fonts are bitmapped and can be printed directly from the Macintosh screen to the LaserWriter IISC. Printing is a little faster, too, when they are present. When printing horizontally or from graphics packages that use regions instead of polygons or bitmaps, performance suffers.

Copyright 1990, 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:5289





# Tech Info Library

## Apple 410 Plotter: Compatible Plotter Drivers

Revised: 6/24/90  
Security: Everyone

Apple 410 Plotter: Compatible Plotter Drivers

=====

This article last reviewed: 7 March 1990

TOPIC -----

I have an Apple 410 plotter. I have the pinouts for connecting it to an IBM PC. Because most of my applications won't have drivers for my plotter (Harvard Business Graphics, in particular), what other drivers can you suggest?

What other plotters is the Apple plotter compatible with?

DISCUSSION -----

The Apple Plotter is based on the Yokogawa Electric Works (YEW) PL-1000. You should be able to use any plotter driver for the PL-1000 with the Apple Color Plotter.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5292



# Tech Info Library

## Two-Page Monochrome Monitor Bandwidth

Revised: 10/22/90  
Security: Everyone

Two-Page Monochrome Monitor Bandwidth

=====

This article last reviewed: 7 March 1990

TOPIC -----

What is the bandwidth of the 21-inch Two-Page Monochrome Monitor?

DISCUSSION -----

The video bandwidth is 100MHz +/-3dB.

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Tech Info Library Article Number:5293



# Tech Info Library

## A/UX: Sources for BSD Extensions (8/94)

Revised: 8/23/94  
Security: Everyone

A/UX: Sources for BSD Extensions (8/94)

Article Created: 7 March 1990  
Article Reviewed/Updated: 19 August 1994

TOPIC -----

Can you give me a source for BSD 4.3 extensions offered with A/UX, like signals and streams, or point me to a list of these items?

DISCUSSION -----

Currently, there is no document that lists and describes all 4.[23] extensions offered by A/UX. Lists are scattered and explained among various A/UX documents. It is difficult to list them individually. However, this should provide some of the Berkeley BSD 4.[23] features supported by A/UX:

- TCP/IP Berkeley-Style network support. It is called B-Net in A/UX. The supported protocols include:

- IP (Internet Protocol, RFC791)
- UDP (User Datagram Protocol, RFC768)
- TCP (Transmission Control Protocol, RFC793)
- ICMP (Internet Control Message Protocol, RFC792)
- ARP (Address Resolution Protocol, RFC826)
- Telnet (RFC854)
- SUBNET (RFC950)
- FTP (File Transfer Protocol, RFC959)
- SMTP (Simple Mail Transfer Protocol, RFC821)
- BIND (Berkeley Internet Name Domain)

All servers and service programs are in the /etc/servers and /etc/services files. The programming interface routines are in A/UX Programming Reference manual, sections 2N and 3N, like accept(2N), bind(2N), connect(2N), getsocketname(2N), getsocketopt(2N), listen(2N), recv(2N), select(2N), send(2N), socket(2N), and so on.

- Berkeley-Style 4.[23] signals and system calls, like sigblock(2),

sigpause(2), sigsetmask(2), sigstack(2), sigvec(2), killpg(2), and so on.

- Berkeley 4.[23] utility programs are in the /usr/ucb directory.
- C shell
- Berkeley-Style dump.BSD, rdump, restore, rrestore utilities.
- Termcap database and text editors, like vi and ex.
- Other utilities, like symbolic link, symbolic debugger, printenv, and so on.

Note that STREAMS is not Berkeley; it belongs to System V.3.

Article Change History:

19 Aug 1994 - Reviewed.

31 Aug 1992 - REVIEWED For technical accuracy

Support Information Services

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Tech Info Library Article Number:5296



# Tech Info Library

## A/UX: Where to a Find List of Applications

Revised: 9/14/92  
Security: Everyone

A/UX: Where to a Find List of Applications

=====

Article Created: 27 March 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

Where could I find an UPDATED list of applications ready to run under A/UX  
and/or could you list the applications?

### DISCUSSION -----

To find the list, use the following AppleLink  
path:

3rd Party Connection  
Third Party Products/New Features  
A/UX

Check that place often to get an updated list.

Copyright 1990, 1992 Apple Computer, Inc.

Tech Info Library Article Number:5299



# Tech Info Library

## ProFile: Disk Full Possible Causes and Fixes

Revised: 6/29/90  
Security: Everyone

ProFile: "Disk Full" Possible Causes and Fixes

=====

This article last reviewed: 7 March 1990

TOPIC -----

An enhanced Apple IIe and ProFile 5MB hard disk is getting consistent Disk Full errors in an Applesoft BASIC program under ProDOS 8 1.8 and BASIC.SYSTEM 1.4. The errors have been increasing in frequency such that they happen two and three times per day. (They happened two or three times per year previously.) The hard disk is only 15% full, and two ProDOS volume checker programs (Mr. Fixit by Glen Bredon, and BagOfTricks2 by Quality Software) report no errors on the volume. The interface card has the new ROM, part number 341-0299.

### System Configuration

-----

AuxSlot: Apple Extended 80-Column Card  
Slot 1: empty  
Slot 2: Apple Super Serial Card  
Slot 3: empty  
Slot 4: empty  
Slot 5: Applied Engineering TimeMaster II H.O. (clock card)  
Slot 6: Apple DuoDisk Controller  
Slot 7: Apple ProFile Interface

The program lines that generate the error are always PRINT statements that are printing data to an open ProDOS sequential text file. There is nothing unusual about the method used; that is, OPEN, WRITE, PRINT, CLOSE.

Can you pinpoint the probable cause of this problem? Could it be a problem in BASIC.SYSTEM 1.4, or a ProFile or controller hardware problem, or something in the 341-0299 ROM?

DISCUSSION -----

We doubt that there is a problem with the hardware. It seems to be related to the way things are handled on the ProFile disk under ProDOS 8. Here are some

possible causes:

- Even though the error message deals with disk space, it actually may be that the directory is full; that is, there is no space for additional file entries in the disk directory. This would be especially true in a system that stores many small files.
- ProFiles "spare out" any bad blocks found by its startup procedure. If all of the available blocks have been spared out and another block needs a spare, an error stating that the disk is full might be reported. In this instance, all spare blocks have been used and no more are available, creating a form of disk full. The ProFile has only 32 spare blocks for use. Once used, the ProFile does not allocate any additional spare blocks.
- With many small files being written and rewritten to the ProFile, fragmentation can occur more quickly than if a few large files are used. With a heavily-fragmented disk, a "Disk Full" message might occur.

Some possible solutions have been suggested:

- If you have the Pascal "Crunch" utility, run this utility against the ProFile to resolve possible fragmentation of the drive.
- Use more subdirectories inside subdirectories to help slow the filling of directory entries.
- Do a file-by-file backup of the ProFile. Then reformat and restore the files to the ProFile.

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Tech Info Library Article Number:5303



# Tech Info Library

## GS/OS 5.0.2: File Not Found Error

Revised: 6/29/90  
Security: Everyone

GS/OS 5.0.2: "File Not Found" Error

=====

This article last reviewed: 7 March 1990

TOPIC -----

I work at an Apple IIGS (1MB RAM) that is on a network with Macintosh SE/30 with 4MB RAM and HD80 SC File Server.

After updating the GS/OS system files on the server via the Apple IIGS Installer, updating Aristotle likewise, and reinstalling the Apple II Setup disk, I received the following error message:

Sorry, system error \$0046 occurred while loading the start FST file.

I checked all access privileges, and they are not a problem. Can you help?

DISCUSSION -----

The \$0046 error is a "file not found" error. There are two ways this can happen when starting up from the network.

- 1) The Icons folder and the System folder need privileges set to the Bulletin Board item found in the GS/OS Icon Info menu item. If these folders are set otherwise, GS/OS cannot "find" the files inside these two folders.
- 2) There is a file missing or misplaced on the server volume that the Apple IIGS requires for startup. Usually reinstalling GS/OS onto the server resolves the problem.

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Tech Info Library Article Number:5305





# Tech Info Library

## ProDos GS/OS, and Instant Pascal: Launching and Quitting

Revised: 3/27/90  
Security: Everyone

ProDos GS/OS, and Instant Pascal: Launching and Quitting

=====

This article last reviewed: 7 March 1990

TOPIC -----

We have an AppleTalk network system and have discovered some strange behavior with certain applications on the Apple II.

Using current software, there are three shell programs (besides BASIC) available for AppleTalk network system users. They are Aristotle, the Finder, and Let's Share. We have found that some applications work perfectly when launched from one of the shells, but not when launched from another. Also, when quitting, some return to the shell from which they were launched, while others return directly to the File Server Log-On screen.

Here are some examples:

- Mavis Beacon Teaches Typing (Software Toolworks) works fine when launched from Aristotle or the Finder, but not from Let's Share.
- Medley (Milliken) always returns the user to the Log-On screen on quitting.

Some applications seem to return the user to the shell from which they were launched, while others return the user to the server-defined startup application. (I have no concrete examples of this, but here's an illustration)

- The user logs on and goes to Aristotle, his startup application. He launches the Finder from Aristotle and from there launches "Application X". On quitting Application X, he is returned to the Finder, and on quitting the Finder (Special Menu, Shut Down, Return to Launching Application), he is returned to Aristotle.
- The user repeats the above process to get to the Finder, but this time launches "Application Y". On quitting Application Y, he is returned directly to Aristotle, even though he launched Application Y from the Finder.

Do you have any clues about these differences? Do some of these shells leave memory in a different state than others when they launch applications? Are there any standards for this sort of thing? Is Let's Share a known offender, or does it follow whatever rules there are? Is there a standard GS/OS or ProDOS 16 Quit call? Is everyone not implementing it correctly?

Here's a related question:

I have tried putting ProDOS applications that reside on floppy disks into Aristotle menus. If I put the disk in the drive and choose the menu item, the application launches properly and, on quitting, seems to return the user to Aristotle without a hitch. However, a colleague reports that when doing this with Instant Pascal, the server connection is dropped somewhere, so quitting fails. Do some applications disable network listeners or trash the memory where network files resides? Is there any way to tell what might work in this fashion and what might not?

#### DISCUSSION -----

The behavior is determined by which operating system the application is written under: GS/OS or ProDOS 8.

The ProDOS 8 quit command is quite simple and does not have the ability to put the name of the application to return to on the return stack. ProDOS applications "quit to" the program named Start in the GS/OS volume. As shipped, this is the Finder. However, if the startup program has been set in the AppleShare Admin application, the Finder may not be the "start" program any longer. Whatever is set in Admin is the application to which the ProDOS 8 programs return.

GS/OS applications have the ability to put the name of the program to which one returns onto the return stack. If properly written, quitting a GS/OS application returns the user to the same application that launched the GS/OS program just quit.

For your examples:

- We defer to Russ Systems about all Let's Share issues.
- We are still trying to work a variety of issues out with Medley. We will add this one to the list to investigate.
- With Aristotle (ProDOS 8) as the Admin set startup application, launching the Finder (GS/OS), then launching "Application X" (apparently, a GS/OS application from the behavior described), and quitting "Application X", it would be correct to finish at the Finder, if "Application X" is, indeed, a GS/OS application. Quitting the Finder (GS/OS) would then return to the application that launched it, Aristotle.
- In the next example, instead of launching "Application X", the user launches "Application Y" (apparently, a ProDOS 8 application from the behavior described), then quits "Application Y", and finishes in Aristotle. This would be the correct behavior for a ProDOS 8 "Application Y".

Instant Pascal has several issues associated with it. The primary issue is that it is neither a ProDOS nor a GS/OS application. Instant Pascal has its own operating system with its own input/output routines. These I/O routines know nothing about the network. It is, thus, totally logical that Instant Pascal disregards all network activities. The only solution is to rewrite the Instant Pascal operating system. It is unlikely that this solution will ever be considered.

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Tech Info Library Article Number:5308



# Tech Info Library

## Business Technology Manufacturing, Inc.

Revised: 7/6/93  
Security: Everyone

Business Technology Manufacturing, Inc.

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Article Created: 03/27/90  
Article Reviewed: 07/06/93  
Article Updated: 11/09/92

Business Technology Manufacturing, Inc.

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42-20 235th St.  
Douglaston, NY 11363

718-229-8080

### Company Profile:

Hardware, specializing in a hands-free phone dialer system that directly connects the "real world" of telephones and telemarketing to the Macintosh and programs used with a telephone or headset. Enlarging monitors for Mac Classic (B&W) and Apple II (color), custom videowork, rack mount cases for all machines

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Tech Info Library Article Number:5310



# Tech Info Library

## Caseys' Page Mill

Revised: 4/4/97  
Security: Everyone

Caseys' Page Mill

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Article Created: 03/27/90  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Caseys' Page Mill

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6528 S. Oneida Ct.  
Englewood, CO 80111

800-544-5620

303-220-1463

303-220-1477 Fax

Company Profile:  
Software, specializing in programs for the screen print industry and training  
software on CD.

Article Change History: 07/07/93 AppleLink Address Changed

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Tech Info Library Article Number:5311



# Tech Info Library

## Chancery Software, Ltd (4/97)

Revised: 4/2/97  
Security: Everyone

Chancery Software, Ltd (4/97)

=====  
Article Created: 03/27/90  
Article Reviewed: 04/02/97

Chancery Software, Ltd.  
-----

4170 Still Creek Dr., Suite 450  
Burnaby, B.C. V5C 6C6  
CANADA

800-999-9931 (Orders only)

604-294-1233

604-294-2225 Fax

### Company Profile:

Software, specializing in software designed for school administrators at school and district levels.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5312



# Tech Info Library

## DataDesk International (Division of Prometheus Products, Inc.)

Revised: 7/8/93  
Security: Everyone

DataDesk International (Division of Prometheus Products, Inc.)

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Article Created: 03/27/90  
Article Reviewed: 07/08/93  
Article Updated:

DataDesk International (Division of Prometheus Products, Inc.)

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9524 SW Tualatin Sherwood Rd.  
Tualatin, OR 97062

800-477-3473 (Sales Only)

503-692-9600

503-691-1101 Fax

Company Profile:  
Software and hardware, specializing in keyboards and software, including  
HyperCard adjuncts.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5313



# Tech Info Library

## Summagraphics Houston Instrument, Inc.

Revised: 7/16/93  
Security: Everyone

Summagraphics Houston Instrument, Inc.

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Article Created: 27 March 1989  
Article Reviewed/Updated: 16 July 1993

Summagraphics Houston Instrument, Inc.

-----

8500 Cameron Rd.  
Austin, TX 78754

512-835-0900

800-444-3425

Fax: 512-835-1916

Company Profile:  
Hardware, specializing in plotters.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5316





# Tech Info Library

## **Roger Wagner Publishing, Inc.**

Revised: 2/26/96  
Security: Everyone

Roger Wagner Publishing, Inc.

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Article Created: 27 March 1990  
Article Reviewed/Updated: 26 February 1996

Roger Wagner Publishing, Inc.

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1050 Pioneer Way  
Suite P  
El Cajon, CA 92020

Technical Support: 619-442-0522  
Sales & General Information: 800-HYPERSTUDIO

Fax: 619-442-0525

Internet Address: RWAGNERINC@AOL.COM

Special Information for Schools: 800-448-4797

Company Profile:  
Software, specializing in Apple II family products and hypermedia.

Copyright 1990-96, Apple Computer, Inc.

Tech Info Library Article Number:5317



# Tech Info Library

## Ultrascience (Division of Gibbs Laboratories)

Revised: 4/4/97  
Security: Everyone

Ultrascience (Division of Gibbs Laboratories)

=====

Article Created: 27 March 1990  
Article Reviewed/Updated: 4 April 1997

Ultrascience  
-----

Division of Gibbs Laboratories  
49 E. Hintz Rd.  
P.O. Box 847  
Wheeling, IL 60090-0847

708-808-9060

Fax: 708-808-9061

Company Profile:  
Division of Gibbs Laboratories, software, specializing in  
porting product systems to Macintosh computers.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5318



# Tech Info Library

## EtherTalk NB Revision K card: Problem with Macintosh IICI

Revised: 1/6/93  
Security: Everyone

EtherTalk NB Revision K card: Problem with Macintosh IICI

=====

Article Created: 21 March, 1990

### Article Change History

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01/05/93 - REVIEWED  
•For technical accuracy

### TOPIC -----

Apple engineering has discovered a performance problem using an EtherTalk NB Revision K card and EtherTalk 2.0.1 or 2.0.2 software on a Macintosh IICI that is using on-board video and 4 or more colors (in 2-bit or greater mode). Ethernet performance is degraded in this situation.

### DISCUSSION -----

To avoid Ethernet performance degradation on a Macintosh IICI, try any of these three alternatives:

- Use an EtherTalk NB Revision L card, or
- Do not use on-board video (i.e. use a video card), or
- Use only black and white video (1-bit video)

If you're using EtherTalk software, the Ethernet performance can be improved somewhat by starting the Macintosh IICI in 1-bit video and later switching to 2-bit or more video. We have found this workaround to be effective when using EtherTalk software (AppleTalk), but not MacTCP software (for example, MacX.)

The Ethernet performance can also be improved somewhat, if you start the Macintosh IICI in LocalTalk and then switch to EtherTalk. This wouldn't help in the MacTCP case either, unless you are running MacTCP over EtherTalk, rather

than standard Ethernet.

To ensure that you avoid the Ethernet performance problems, use an EtherTalk NB Revision L card, or use a video card, or use only black and white video. Note that the Revision L EtherTalk NB card has been shipping since December of 1989.

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Tech Info Library Article Number:5320



# Tech Info Library

## System 38 Files: How to Convert for Use on a Macintosh (8/94)

Revised: 8/30/94  
Security: Everyone

System 38 Files: How to Convert for Use on a Macintosh (8/94)

=====

Article Created: 8 March 1990  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Is there a product that interprets IBM System 38 EBCDIC files with all character formatting (that is, Bold Type, Type Sizes, Underline, and so on) into a Quark Xpress document for page layout?

DISCUSSION -----

Before a translation can take place, the files need to be moved from the System 38 to the Macintosh. This can be accomplished with Andrew Corp., IDEAssociates, or Wall Data products which are a combination of hardware and software that lets the Macintosh become a window in the System 38. These product provides file transfer methods to move the files from the System 38 to the Macintosh.

If the System 38 files are in an RFT/DCA file format, there are translation applications that convert to a MacWrite or Microsoft Word file format. Quark XPress can then open the MacWrite or Microsoft Word file for placement in the page layout.

Apple File Exchange provides one method of translation with the supplied documents. This is a basic RFT/DCA translator. Another method is to use Microsoft Word; it has its own mechanism for reading RFT/DCA files. Again, this is a basic translator. Also, DataViz publishes MacLink Plus/Translators that translates RFT/DCA files. Use of the DataViz AFE translators is probably the most comprehensive translation available.

If the System 38 files are not in an RFT/DCA format, it is not likely that the files can be transferred and translated while maintaining text style and formatting. A plain text file normally is all that is available if the RFT/DCA format is not used on the System 38.

In summary, first transfer the file from the System 38 to the Macintosh via the one of the terminal emulator products. Next, use one of the translation

products to convert the transferred file into a MacWrite or Microsoft Word file format. Finally, open the translated file with Quark XPress and place the contents of the file in the layout.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

30 Aug 1994 - Updated list of terminal emulator vendors.

12 Feb 1993 - Updated KMW now Andrew Corporation.

Support Information Services

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Tech Info Library Article Number:5321



# Tech Info Library

## Needed: Teleprompting Software for the Macintosh

Revised: 6/29/90  
Security: Everyone

Needed: Teleprompting Software for the Macintosh

=====

This article last reviewed: 8 March 1990

TOPIC -----

Do you know of any Macintosh-based software for teleprompting?

DISCUSSION -----

We don't know of a software-only solution for teleprompting. However, Listec makes the A-5000, a complete hardware system available from Listec. The A-5000 is a black box that connects to the printer port of a Macintosh. Any application that prints via a Chooser device can be used to supply the words for prompting. A print driver that outputs ASCII is needed--most daisy-wheel printer drivers provide ASCII output from the Macintosh. The A-5000 requires its input to be in ASCII text form.

The output of A-5000 needs to go to a teleprompting display device. Listec makes a variety of display devices, including the transparent glass prompters used by podium speakers and the video screens mounted on studio video cameras.

For more details, search the Tech Info library under "Listec."

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Tech Info Library Article Number:5322



# Tech Info Library

## LocalTalk PC Card: How to Run TOPS on It

Revised: 6/29/90  
Security: Everyone

LocalTalk PC Card: How to Run TOPS on It

=====

This article last reviewed: 8 March 1990

TOPIC -----

I have a problem with TOPS on my LocalTalk PC Card; I can't get it to start. I have talked with TOPS, and they told me to load Apple's driver in CONFIG.SYS. I am using TOPS 2.1 and AppleShare PC 1.2. What driver should I load in the CONFIG.SYS file to run TOPS on my LocalTalk PC Card?

DISCUSSION -----

We believe that the file you are talking about is the ATALK.EXE file. This program is installed when you run the AppleShare PC Installer program, and when run, loads the LocalTalk PC Card driver into memory. We suggest that the best way to get all of the files installed in the right order and place is to run the Installer program. It places a line in the AUTOEXEC.BAT file that loads the LocalTalk PC Card driver at startup. Complete instructions on how to install all of the AppleShare PC program are in the "AppleShare PC User's Guide" on pages 7 through 14.

If you want to modify the AUTOEXEC.BAT file to load the ATALK.EXE file, it is important to get the order in which you execute the AppleShare PC installation files correct. The order of the six basic files is:

- 1) ATALK
- 2) ASHARE
- 3) MINSES
- 4) REDIR
- 5) ANET AUTO
- 6) DA/R

Instructions for this are on pages 184 and 185 of the "AppleShare PC User's Guide."

You also might have to change the "Lastdrive" command in CONFIG.SYS. This



command specifies the maximum number of drives that DOS recognizes. The default highest drive is E. To specify a greater number of drives, give the highest drive a letter you are likely to use. For example, "LASTDRIVE = F" gives you six possible drives. This is the only change that you may need to make to the CONFIG.SYS file.

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Tech Info Library Article Number:5323



# Tech Info Library

## Think C Provides Cursor-Positioning and Inverse Video

Revised: 6/29/90  
Security: Everyone

Think C Provides Cursor-Positioning and Inverse Video

=====

This article last reviewed: 8 March 1990

TOPIC -----

I want to port an in-house application to the Macintosh. I want to have a true Macintosh interface on this application eventually. However, to service the people that already have Macintoshes, I first want a quick, direct port to the platform with the same DOS interface they have been using.

The program is written in C and uses basic screen positioning and reverse video calls to interact with the user. I am looking for a C compiler that has a "tty library" (or something similar) that they can link into their program to create a tty window on the Macintosh screen automatically and then be able to make calls to position the cursor within that tty window. I wouldn't mind if I lost the reverse-video capability, but I definitely need the cursor-positioning capability.

I would like to write the Macintosh interface port of the application in MPW C, but I haven't seen a "tty library" in MPW that can do the job on the "quick-and-dirty" port. Does MPW or any other C compiler have such a library?

DISCUSSION -----

Think C, from Symantec, offers an ANSI console package with cursor-positioning and inverse video capabilities. As of January, 1990, MPW C did not offer these functions. For more details, search the Tech Info library under "Symantec."

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Tech Info Library Article Number:5328



# Tech Info Library

## AppleTalk for VMS 2.1: Contact Software Licensing (4/97)

Revised: 4/2/97  
Security: Everyone

AppleTalk for VMS 2.1: Contact Software Licensing (4/97)

=====

Article Created: 8 March 1990  
Article Reviewed/Updated: 02 April 1997

TOPIC -----

Is AppleTalk for VMS Phase 2 currently shipping? Where do you get it?

DISCUSSION -----

AppleTalk for VMS 2.1, the functionally complete Phase 2 version of AppleTalk for VMS, has gone Golden Master.

It will not be available through APDA or on the price list. Licenses for customer internal development or redistribution can be obtained through Apple Software Licensing. You can eMail them at [SW.LICENSE@apple.com](mailto:SW.LICENSE@apple.com)

Article Change History:  
02 April 1997 - Update eMail address

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Tech Info Library Article Number:5329



# Tech Info Library

## DAL: No Support for Oracle Long Data Type

Revised: 7/13/92  
Security: Everyone

DAL: No Support for Oracle Long Data Type

=====

Article Created: 3 April 1990  
Article Last Reviewed: 6 July 1992  
Article Last Updated: 6 July 1992

TOPIC -----

Does Data Access Language (DAL, formerly known as "CL/1") support Oracle's long data types?

DISCUSSION -----

If by long data types you are referring to LONGCHART (their data type that goes to 1 gigabyte), then no -- DAL does not yet (as of release 1.3.6) support it. The maximum size that will be supported in a future DAL release that extends size support is as yet unknown.

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Tech Info Library Article Number:5330



# Tech Info Library

## Macintosh: Remote 3278 Connection

Revised: 6/29/90  
Security: Everyone

Macintosh: Remote 3278 Connection

=====

This article last reviewed: 8 March 1990

TOPIC -----

I need information on a bisynchronous modem and software to dial into the company mail system from my Macintosh SE at home. I need to emulate a 3278 and run SDLC at 2400 baud.

DISCUSSION -----

First, there is no such thing as a bisynchronous modem. We think you're probably thinking of a synchronous modem in this case.

- MacMainFrame DX allows the option of remote connectivity over asynchronous modems and is a possible solution.
- A second solution is to run IBM 3278 emulation using MacTerminal on the Macintosh and dial into DCA IrmaLine (AppleLine) through a pair of Hayes-compatible, asynchronous modems. The IrmaLine is, in turn, connected to a cluster controller via coax. The cluster controller connects to the Front-End Processor (FEP) using synchronous modems.
- A third solution is SimWare's Mac3270, which supports remote mainframe access via asynchronous modems. Sim3278 software has to be installed on the host.

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Tech Info Library Article Number:5333



# Tech Info Library

## Macintosh IIci Video: Supported Resolutions and Scan Rates

Revised: 7/9/92  
Security: Everyone

Macintosh IIci Video: Supported Resolutions and Scan Rates

Article Created: 12 March 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

I want to use a Zenith VGA monitor with the Macintosh IIci. The horizontal scan rate for the monitor is 31.49, and the hertz rate is 60-70. Can I adjust the scan rate on the Macintosh IIci, so that it will work with this monitor?

DISCUSSION -----

The Macintosh IIci RBV (RAM-Based Video) supports the following resolutions and scan rates:

| ID1 | ID2 | ID3 | Monitor type                       | Format  | Vert.  | Horiz.   |
|-----|-----|-----|------------------------------------|---------|--------|----------|
| --- | --- | --- | -----                              | -----   | -----  | -----    |
| 0   | 0   | 0   | Unsupported monitor (video halted) |         |        |          |
| 0   | 0   | 1   | Unsupported monitor (video halted) |         |        |          |
| 0   | 1   | 0   | Reserved for future use            |         |        |          |
| 0   | 1   | 1   | Apple High-Resolution Monochrome   | 640x480 | 66.7Hz | 35KHz    |
| 0   | 1   | 1   | AppleColor High-Resolution RGB     | 640x480 | 66.7Hz | 35KHz    |
| 1   | 0   | 0   | 15-Inch Portrait Display           | 640x870 | 75Hz   | 68.86KHz |
| 1   | 0   | 1   | Reserved for future use            |         |        |          |
| 1   | 1   | 0   | Unsupported monitor (video halted) |         |        |          |
| 1   | 1   | 1   | No external monitor (video halted) |         |        |          |

1=no connection; 0=grounded

For an analog RGB monitor to work on the Macintosh IIci, it needs to meet one of the above specifications.

Here are the pinouts for the Macintosh IIci RBV connector:

|       |             |                      |
|-------|-------------|----------------------|
| 01    | RED.GND     | Red Video Ground     |
| 02    | RED.VID     | Red Video            |
| 03    | CSYNC       | Composite Sync.      |
| 04    | MON.ID1     | Monitor ID, Bit 1    |
| 05    | GRN.VID     | Green Video          |
| 06    | GRN.GND     | Green Video Ground   |
| 07    | MON.ID2     | Monitor ID, Bit 2    |
| 08    | nc          | (No Connection)      |
| 09    | BLU.VID     | Blue Video           |
| 10    | MON.ID3     | Monitor ID, Bit 3    |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground |
| 12    | VSYNC       | Vertical Sync.       |
| 13    | BLU.GND     | Blue Ground          |
| 14    | HSYNC.GND   | HSYNC Ground         |
| 15    | HSYNC       | Horizontal Sync.     |
| Shell | CHASSIS.GND | Chassis Ground       |

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Tech Info Library Article Number:5336



# Tech Info Library

## System and Finder Versions List

Revised: 6/29/90  
Security: Everyone

### System and Finder Versions List

=====

This article last reviewed: 12 March 1990

TOPIC -----

Is there a listing anywhere System Software disks that shows what versions of the System and Finder are on each set of disks?

DISCUSSION -----

We used the Copy Center disk images on the Information Source to put together this list:

| Disk Set Name         | System Version | Finder Version |
|-----------------------|----------------|----------------|
| -----                 | -----          | -----          |
| System Software 1.0   | System 3.2     | Finder 5.3     |
| System Software 1.1   | System 3.2     | Finder 5.3     |
| System Software 2.0   | System 4.1     | Finder 5.5     |
| System Software 2.0.1 | System 4.1     | Finder 5.5     |
| System Software 5.0   | System 4.2     | Finder 6.0     |
| System Software 5.1   | System 4.3     | Finder 6.0     |
| System Software 6.0   | System 6.0     | Finder 6.1     |
| System Software 6.0.2 | System 6.0.2   | Finder 6.1     |
| System Software 6.0.3 | System 6.0.3   | Finder 6.1     |
| System Software 6.0.4 | System 6.0.4   | Finder 6.1.4   |

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Tech Info Library Article Number:5337





# Tech Info Library

## Peek, LTPeek, and Poke: Unsupported Internal Network Utilities

Revised: 6/29/90  
Security: Everyone

Peek, LTPeek, and Poke: Unsupported Internal Network Utilities

=====

This article last reviewed: 12 March 1990

TOPIC -----

Is there any documentation available for the "LTPeek" and "Poke" programs? I am using the software to learn more about supporting AppleTalk Internets and was wondering if there is any documentation available.

Also, what are the most up-to-date versions of these programs? Is there an "LTPeek" that supports AppleTalk Phase 2 networks yet?

DISCUSSION -----

There is no official documentation available for Peek or Poke. These programs have never been sold by Apple and were created as internal network utilities. At one time, they may have been distributed to developers, but they have never been supported for end users. Internally, LTPeek is the name of an Alpha 4.28 version of the Peek software. LTPeek and a similar utility used internally called EPeek or EtherTalk Peek are not public domain products and should not be made available to customers. They have been developed for our own testing and development purposes.

As far as we know, there are no LocalTalk Peek versions that specifically support AppleTalk Phase 2 networks. Peek captures the entire packet from the LLAP header down, so you should not have a problem using it from a LocalTalk cable.

We do not think that Peek and Poke are proper tools for learning to about supporting AppleTalk Internets. (This is analagous to learning to support UNIX by learning to use a debugger.)

A more informative approach for learning to support Internets would be to start with TrafficWatch, CheckNet, LAN Ranger, or other third-party "available and supported" products.

LocalTalk Peek only records and displays network data. If you want to read this data, you must first read "Inside AppleTalk." Poke is very similar. You must have a full understanding of the desired packets before they can be created. Poke requires the actual packet data to be typed into the data window by the user. It provides minimal help in creating a header. It is not designed as an end-user tool; it is a development tool.

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Tech Info Library Article Number:5341



# Tech Info Library

## HyperCard: 1.2.5 with System 6.0.4 & Portable, IIci

Revised: 6/29/90  
Security: Everyone

HyperCard: 1.2.5 with System 6.0.4 & Portable, IIci

=====

Article Created: 12 March 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated: 10 July 1992

TOPIC -----

What are the functional differences between HyperCard 1.2.2 and 1.2.5? Is there a custom procedure for installing a minimum System 6.0.4 configuration, which is necessary to run HyperCard 1.2.5?

I use HyperCard quite extensively and need to know how much of my installed base to upgrade to System 6.0.4. HyperCard 1.2.5 apparently has some new features that I want to use.

DISCUSSION -----

There is an engineering document that describes the changes, but there is no release document that describes the programming code added to ensure compatibility with System 6.0.4. This is because the changes made were not additions to nor enhancements to any of HyperCard's functions. Changes were made to ensure compatibility with the Macintosh Portable and Sound Manager changes found in System 6.0.4.

The changes were:

- The method HyperCard uses to center a card on the display. This was changed so that it did a better job of centering on the Macintosh Portable display.
- Changes to the Sound Manager required changes to the HyperCard Dial command. Those changes are compatible only with System 6.0.4.

Any differences you may see within version 1.2.5 were probably added in version 1.2.2, and you're just now noticing these changes.

You do not need to run HyperCard 1.2.5, unless you are using a Macintosh

Portable or Macintosh IIci. However, there is at least one advantage to installing System 6.0.4 and HyperCard 1.2.5 on all systems. You get the benefit of a fix to the 800K drive eject code. The code increases the reliability of the drive by moving the drive head away from the disk when it ejects. Installing a minimal 6.0.4 System for running HyperCard is not a problem.

If you want to upgrade your system, there are no special installation procedures other than running the System Installer for System 6.0.4. Installing HyperCard 1.2.5 means copying the file on to the customer's disk.

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Tech Info Library Article Number:5342



# Tech Info Library

## A/UX: Partitioning Hard Drives (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: Partitioning Hard Drives (9/94)

=====

Article Created: 12 March 1990  
Article Reviewed/Updated: 20 September 1994

TOPIC -----

My current system is a Macintosh IIfx with 5MB of memory and three 80MB hard drives. The first 80MB drive is partitioned for Macintosh OS only. The second has a 2MB Macintosh OS partition, and the rest is the factory-installed A/UX. The third drive is not formatted or partitioned. On it, I want to create a 20MB Macintosh OS partition and a 60MB A/UX partition and file system.

Although creating the partition with HD SC Setup seems straightforward, what partition type should I assign to each? (Before, I used "Misc A/UX" and Macintosh OS.)

When I tried to use "mkfs" and "mount," I was able to create a file system and mount it. However, whenever I restarted the machine, I got an error tone, and the screen went blank. I had to restart the system and turn off the third hard drive. It then started up correctly.

What are the correct parameters or prototype file needed for mkfs for an Apple HD80 SC with the above configuration? If I do not use parameter files, what do I call the partition to mount it?

DISCUSSION -----

It seems that you don't have problems creating partitions using the HD SC Setup program. We think that the partition types you chose for Macintosh OS (20MB) and Misc A/UX (60MB) are correct. You may also choose "UNIX Usrc" or "Free UNIX Slice x" for A/UX partition type. If you choose "Usrc" partition type, A/UX will assign slice number 2 (/dev/[r]dsk/cXd0s2) as the default.

Generally, the partition type "Misc UNIX" is best avoided, simply because of the inconvenience of using dp. Do not use the Autorecovery partition for personal files. You should never need to associate the Autorecovery partition with a slice because the autorecovery utilities will do this when necessary.

Note that if you chose the "Misc A/UX" partition type in HD Setup, you have to "pname" this partition to a slice before you can "mkfs" on that partition in A/UX. Here is an example to make a new file system on the "Misc A/UX" partition with SCSI ID #5 and slice 3:

```
Login as root
# pname -c5 -s3 "Misc A/UX"
==> /dev/dsk/c5d0s3
```

```
Using the "dp" command to display the "Misc A/UX" partition map
information, write down the total number of blocks in the partition.
This number will be used in the "mkfs" command.
# dp /dev/rdisk/c5d0s31
==> Command?
```

```
Make the file system on that partition with disk interleave factor 1 1
# mkfs /dev/dsk/c5d0s3 total-number-of-blocks-from-dp 1 1
```

```
It is always good practice to do a "fsck" after "mkfs"
# fsck /dev/rdisk/c5d0s3
```

```
Mount the "Misc A/UX" file system on a mount point, say "misc".
Create a "misc" directory from root, if it has not been created.
# mount /dev/dsk/c5d0s3 /misc
```

```
Make a lost+found directory for "fsck" purposes.
# cd /misc
# mklost+found
```

This completes the task of making a new file system.

If you want to have an automatic "fsck" when A/UX is booting, insert this line in the /etc/fstab file:

```
/dev/dsk/c5d0s3    /misc    5.2    rw    1    2
```

Note that because /misc is a non-root file system, the pass # (the last field) should be greater than or equal to 2, so that it will be checked in /etc/rc automatically.

To pname automatically, insert this line in the /etc/ptab file:

```
Misc A/UX::5:0:3:Misc partition
```

or include the -a option in the above "pname" command. You also may want to add the -a option to pname. This creates a new entry in /etc/ptab for the partition. For example:

```
# pname -a -c5 -s3 "Misc A/UX"
```

For more information on preparing a hard disk for A/UX, refer to the A/UX Local System Administration manual.

Article Change History:

20 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5346



# Tech Info Library

## Needed: Kanji-to-English Translator

Revised: 1/5/93  
Security: Everyone

Needed: Kanji-to-English Translator

=====

Article Created: 3 April 1990

### Article Change History

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01/05/93 - UPDATED

- To include information on a program called "The Translator".

09/16/92 - REVIEWED

- For information accuracy.

### TOPIC -----

I need a Kanji-to-English (and vice versa) translator for the Macintosh. I have the Kanji software for the Macintosh. Do you know of any product that does this? Could something be developed to do this?

### DISCUSSION -----

We don't know of any product that can do this type of translation. If anyone is aware of a product that does this, please send an AppleLink to the TECH.DB address and we'll post the information here.

We are aware of a product called "The Translator" that is capable of doing an English to Japanese translation. It is produced by Qualitas Trading Company.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5348





# Tech Info Library

## AppleShare PC: GatorBox Directory Display Problem

Revised: 6/29/90  
Security: Everyone

AppleShare PC: GatorBox Directory Display Problem

=====

This article last reviewed: 12 March 1990

TOPIC -----

I am using the LocalTalk PC Card and AppleShare PC am trying to mount a VAX running Ultrix as an AppleShare volume through a GatorBox. The system knows that they are there because it shows in the Chooser. They have also been successfully attached to the VAX as the D: drive. However, when I do a D:DIR, it shows that there are 10 files and 2 directories (which is the case) but but fails to give a list of the names of the files or the directories. If they know the filename and directory, they can use the file.

The Macintoshes and PC are on LocalTalk, and the VAX is on Ethernet. They are running Ultrix 3.1. The PC is a Compaq DeskPro running the Compaq version of DOS. The IP address of the VAX was downloaded to the GatorBox. The GatorBox is publishing the AFP volume. NFS is running on the VAX.

Do you have any suggestions?

DISCUSSION -----

We ran some tests on our network and were able to duplicate your problem easily. Our test configuration consisted of a Macintosh running A/UX, a GatorBox, and AppleShare PC 2.0 running on an IBM AT.

In our test, we could not see any files or directories on the mounted drive. We could not type any files or change directories (using CD command), even when we knew their filenames. In fact, when we tried to change the directory, the GatorBox crashed, and all zones on the network disappeared from the Chooser.

We contacted Cayman Systems, and they confirmed that this is a known problem with the GatorBox. A fix is being tested and should be sent automatically to all users in a new version. This new version will also support AppleTalk Phase 2. Users with this problem should contact Cayman Systems for a release date.

For more details, search the Technical Info library under "Cayman Systems."

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Tech Info Library Article Number:5350



# Tech Info Library

## AppleTalk-to-AS/400 Gateway (8/94)

Revised: 8/30/94  
Security: Everyone

AppleTalk-to-AS/400 Gateway (8/94)

Article Created: 3 April 1990  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Does anyone sell a AppleTalk and AS/400 gateway?

DISCUSSION -----

There are two third-party vendors who sell products that use AppleTalk networks and Gateways for connecting to an IBM AS/400, Andrew Corp. and Wall Data.

Andrew Corporation

-----  
Has an AppleTalk and AS/400 gateway. Net Axxess consists of a half-sized NuBus card for a Macintosh II and Net Axxess software. The gateway permits existing LocalTalk, EtherTalk, or TokenTalk cabling to connect the gateway and the users' Macintosh computers. Each Net Axxess card can connect as many as seven Macintosh computers on the network connect to the host.

Token Axxess client is designed for sharing IBM workstation sessions among Macintosh computers on an AppleTalk network (LocalTalk, EtherTalk, or TokenTalk) through Token Ring. Token Axxess uses LU6.2 services provided by the SNA•ps Gateway.

Wall Data

-----  
Has SNA•ps 5250 is a full-function 5250 display terminal emulation program that allows Macintosh computers to communicate with IBM AS/400 systems. This application provides multiple session windows that can be individually configured with different color settings, font sizes, connection paths, and host languages.

The SNA•ps 5250 application software works with the Apple Token Ring 4/16 NB Card or Apple Serial NB Card installed in any Macintosh II or Macintosh Quadra (NuBus capable) computer and supports directly connected or AppleTalk

distributed 5250 sessions.

In an AppleTalk network with an SNA•ps Gateway installed, SNA•ps 5250 users can access AS/400 services from the Macintosh Plus and later systems. In addition, users can access multiple gateways for concurrent access to multiple AS/400 systems.

SNA•ps Print allows a Macintosh computer to receive print data from an IBM AS/400 system and print the data on any printer in the AppleTalk network.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

#### Article Change History:

30 Aug 1994 - Updated article for other third-party vendors.

12 Feb 1993 - Updated KMW now Andrew Corporation.

Support Information Services

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Tech Info Library Article Number:5351



# Tech Info Library

## ImageWriter II/L: Specifications and Notes (9/94)

Revised: 9/1/94  
Security: Everyone

ImageWriter II/L: Specifications and Notes (9/94)

Article Created: 12 March 1990  
Article Reviewed/Updated: 1 September 1994

TOPIC -----

In late February, 1990, a revised ImageWriter II rolled into distribution. This revised printer incorporates a new enclosure, different color adjustment assembly, and a new layout of the electronics including a changeover to a switching power supply. The ImageWriter II/L's electronic interface, DIP switch definitions, plus the paper handling mechanism have not changed.

Note: In future articles that deal specifically to the new ImageWriter II, we will use the term "ImageWriter II/L." The "L" follows the service designation.

This article describes changes for the new printer.

DISCUSSION -----

### Change List

-----  
These are the major changes to the ImageWriter II:

- The bottom housing is now a single molded piece of plastic. The metal pan at the bottom no longer exists. Both legs are now an integral part of the enclosure and are not removable. The power and serial connectors have been moved to the sides of the printer. Access to all parts in the ImageWriter II is now from the top.
- The color adjustment assembly has changed. The adjustment procedure is documented in the Service Manual.
- The driver circuitry has been combined with the main logic board and that separate circuit board has been eliminated.
- The new power supply is now a switching type. This lowers the unit's weight

and overall power consumption. The universal power supply option has been eliminated; there are only 100 V or 200 V supplies.

- The on-board RAM buffer has been increased to 24K bytes. The old 32K byte memory-option card has no effect with this new printer.

#### Specification Changes

These changes result in the following difference in specifications:

|                      | Old ImageWriter II                                | New Imagewriter II    |
|----------------------|---------------------------------------------------|-----------------------|
|                      | -----                                             | -----                 |
| Weight               | 25 pounds (11.36 kg)                              | 15 pounds (6.7 kg)    |
| Power Supply Options |                                                   |                       |
| 100 V                | 108-132 VAC, 60 Hz                                | 90-132 VAC, 50/60 Hz  |
| 200 V                | 90-264 VAC, 50/60 Hz                              | 180-264 VAC, 50/60 Hz |
| Power Consumption    |                                                   |                       |
| Operating            | 180 watts maximum                                 | 77 watts maximum      |
| Standby              | 20 watts maximum                                  | 16 watts maximum      |
| Input Buffer Size    | 2K bytes,<br>32K bytes with<br>memory option card | 24K bytes             |

Otherwise all other specification remain the same as with the previous ImageWriter II.

These changes reduce the weight and power consumption of the printer. However, the operation and usage of the revised ImageWriter II have not changed from the previous design.

#### Identification

Although the new ImageWriter II retains the old name, the marketing model number has changed to C0090LL/A. The serial number starts with the prefix TJ945100.

The new unit can be identified easily. Notice that the power and serial connectors do not plug into the leg, but to the rear side of the printer.

#### Service

The new enclosure design greatly simplifies the servicing of the unit. For additional information on take-apart, refer to the ImageWriter II/L ("L" is a Service only designation) s0/on in Volume II of the "Apple Service Technical Procedures Cross Family Peripheral Guide."

#### Technical Specifications

##### Printing Specifications:

Method: Impact dot matrix, logic seek (line by line)

Maximum Speed (characters per second at characters per inch):

- Draft mode: 250 cps @ 10 cpi
- Correspondence mode: 180 cps @ 10 cpi
- Near Letter Quality mode: 45 cps @ 10 cpi

Maximum Line Length: 8 inches

Paper Feed Direction: Forward and reverse

Maximum Line Feed Speed: 24 lps @ 6 lpi

Paper Feed Method:

- friction
- friction/pin-feed

Ribbon:

- Black ribbon
  - continuous fabric
  - 13 by 13000mm
  - Capacity: 2 million characters
- Color ribbon
  - Four colors: magenta, cyan, yellow, black
  - continuous
  - 21 by 18000mm

Character Specifications:

Dot Matrices for each Character Format:

|                      | dots wide | dots high |
|----------------------|-----------|-----------|
| Standard:            | 7         | 8         |
| Draft:               | 12        | 8         |
| Near Letter Quality: | 16        | 16        |
| Custom:              | 16 max.   | 8 max.    |

-- Custom fonts are user-programmable and loaded down to the ImageWriter II.

Standard Character Sets:

- ASCII (alphanumeric and symbols): 96
- European language characters: 28
- Mouse Text characters: 32

Vertical Dot Spacing: 1/72 of an inch

Horizontal Pitches and Graphic Densities:

| Characters<br>per inch | Characters<br>per line | Dots<br>per inch (approx) |
|------------------------|------------------------|---------------------------|
| 17                     | 136                    | 136                       |
| 15                     | 120                    | 120                       |
| 13.4                   | 107                    | 107                       |
| 12                     | 96                     | 96                        |

|                |          |     |
|----------------|----------|-----|
| 10             | 80       | 80  |
| 9              | 72       | 72  |
| Proportional-1 | variable | 160 |
| Proportional-2 | variable | 144 |

Line Spacing:

- 1/144 to 99/144 of an inch
- selectable in increments of 1/144 of an inch

Paper Specifications

Width:

- 3.5 to 9.5 inches (88.9 to 241.3 millimeters) pin to pin (pin feed)
- 10 inches maximum

Thickness:

- 0.002 - 0.011 inch (0.05 - 0.28 millimeters)
- Original plus 3 copies maximum

Types:

- Single sheets
- Pin-feed paper
  - 4.0 to 9.5 inches between hole centers

Power Specifications:

Options:

- Low-range: 90-132 VAC, 50/60 Hz;
- High-range: 180-264 VAC, 50/60 Hz;

Consumption:

- Operating: 77 watts maximum
- Standby: 16 watts maximum

Interface Specifications:

Data Input Form: RS-232 8-bit asynchronous serial

- 1 start bit
- 8 data bits
- 1 stop bit (no parity)

Data Input Codes:

- Characters: ASCII, 8- or 7-bit
- Graphics: 8-bit binary

Transmission speeds: 300, 1200, 2400, or 9600 baud

Input Buffer Size: 24K bytes

Connections: Mini-circular connector, 8-pin socket or equivalent

Cable Connector: Mini-circular connector, 8-pin plug or equivalent



Physical Dimensions:

Weight: 15 pounds (6.7 kilograms)

|         | inches | millimeters |
|---------|--------|-------------|
| Width:  | 17.0   | 431.8       |
| Height: | 12.0   | 304.8       |
| Depth:  | 5.0    | 127.0       |

Environmental Specifications:

Ambient Temperature:

|            | Degrees     |           |
|------------|-------------|-----------|
|            | Fahrenheit  | Celsius   |
| Operating: | 50 to 104   | 10 to 40  |
| Storage:   | -40 to +116 | -40 to 47 |

Humidity:

Operating: 20% to 95% relative humidity, noncondensing

Storage: 10% to 95% relative humidity, noncondensing

Acoustics, Operating:

55 dBa maximum sound pressure at by-stander position (as defined in American National Standard document ANSI S1.29-1979)

Article Change History:

1 Sep 1994 - Reviewed and combined information.

Support Information Services

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Tech Info Library Article Number:5353



# Tech Info Library

## AppleShare: Restricting User Space and Hard Disk Partitioning

Revised: 6/29/90  
Security: Everyone

AppleShare: Restricting User Space and Hard Disk Partitioning

=====

This article last reviewed: 12 March 1990

TOPIC -----

- 1) Is there any software that lets an administrator of an AppleShare file server limit the amount of space a specific user or folder can use?
- 2) Is there software that lets the administrator partition the hard drive in two or more Macintosh partitions that appear to the server as separate volumes?

DISCUSSION -----

- 1) We don't know any software that limits the amount of disk space that a user or folder can occupy
- 2) Any software that creates true partitions on a hard disk should work properly with the AppleShare File Server software. Silverlining, from La Cie, is an example of software that creates true partitions on a hard disk that work with the AppleShare File Server software. Software that creates a file on the hard disk instead of a true partition may not work. SUM Partition software, from Symantec, creates an invisible file on the hard disk and makes it appear as a separate volume to the Macintosh file system. AppleShare recognizes this as a separate volume.

Other software may also work. Please check with the manufacturer or distributor of disk partitioning software for compatibility with the AppleShare File Server software. For more details, search the Technical Info library under "LaCie" and "Symantec."

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Tech Info Library Article Number:5355



# Tech Info Library

## System Software: Configs for Mac 128K, XL, 512, & 512KE (7/94)

Revised: 8/3/94  
Security: Everyone

System Software: Configs for Mac 128K, XL, 512, & 512KE (7/94)

Article Created: 3 April 1990  
Article Reviewed/Updated: 26 July 1994

TOPIC -----

What System Software (System, Finder, and AppleShare) versions can be used on the Macintosh 128K, Macintosh XL, Macintosh 512, and Macintosh 512KE?

DISCUSSION -----

### Macintosh 128K

-----  
Currently ships with: Product no longer available.  
Supports: System 2.0 and Finder 4.1.  
Recommended: System 2.0 and Finder 4.1.  
For AppleShare, use: Can not be used as an AppleShare file server or workstation.

### Macintosh XL

-----  
Currently ships with: Product no longer available.  
Supports: System Software 1.0 and System Software 1.1.  
Recommended: System Software 1.1.  
For AppleShare, use: Can not be used as an AppleShare file server or workstation.

### Macintosh 512K

-----  
Currently ships with: Product no longer available  
Supports: System Software 1.0 and System Software 1.1  
Recommended: System Software 1.1.  
For AppleShare, use: The Macintosh 512K cannot use the AppleShare 2.0 workstation software. You can still use the AppleShare workstation software version 1.1 with a file server that uses AppleShare File Server 2.0, although you will not be able to take advantage of

the new features of AppleShare File Server 2.0.  
System 3.3 and Finder 5.5 are installed by the  
AppleShare 1.1 Work Station Installer disk.

#### Macintosh 512KE

-----

Currently ships with: Product no longer available

Supports: System Software 1.0, System Software 1.1, System Software  
2.0, and System Software 2.0.1.

Recommended: System Software 2.0.1.

For AppleShare, use: System 3.3 and Finder 5.5 are installed by the  
AppleShare 1.1 Work Station Installer disk; System  
3.4 and Finder 6.1 are installed by the AppleShare  
2.0 Macintosh 512KE Work Station Installer disk. This  
machine can not be used as an AppleShare file server.

\*\*For information on Macintosh computers newer than the models listed in this  
article, search for articles containing System Software Version and Enabler  
Matrix information.

#### Article Change History:

26 Jul 1994 - Revised article to only include early model Macintoshes.

#### Support Information Services

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Tech Info Library Article Number:5356



# Tech Info Library

## AppleTalk: File Server Open File Limitations

Revised: 6/29/90  
Security: Everyone

AppleTalk: File Server Open File Limitations

=====

This article last reviewed: 12 March 1990

TOPIC -----

A retailer asked if there is any limitations on the number of files you can have open on one server and if the limit is in AppleTalk.

He is going to have a database on a Novell server, and when they open a session to the database, they open a lot (close to 255) of files. If many users use the server at the same time, there will be a lot of files open at the same time. Are there any such limits in AppleTalk?

DISCUSSION -----

Actually, AppleTalk (typically) would not be the limiting factor in a scenario of this nature. Under the Macintosh OS, there is a default limit to the number of files that you can have open at one time. If you have less than 1MB of memory, this default is 10; if you have 1MB or more, the default is 40. This limit applies to local volumes as well as network-based volumes. Most databases that are network-aware use AppleTalk Filing Protocol (AFP) calls to access the files on a server. Files opened via AFP calls, just like files opened via the native filing interface, are counted in the operating system limit.

You can modify the limit of the number of open files by modifying the boot blocks on your startup volume, but this is not recommended and is (typically) not necessary. For example, 4th Dimension opens a number of files from a server when it is running in multi-user mode, but you still have plenty of "room" to operate within the open file limit.

If you are concerned by the number of files that are open on the server and not the workstation, remember that one file opened by multiple workstations counts as only one open file on the server. On a server with 2MB of memory or more, the maximum number of files that can be opened at one time is 160. If you have 1MB of memory, the maximum number of opened files is 60.

The number of files that can be opened on other servers (like a Novell server) depends on that manufacturer's implementation of an AFP-based server, because there is no specific limit in AFP.

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Tech Info Library Article Number:5367



# Tech Info Library

## CD-ROM Developer Info in AppleCD SC Developer's Guide

Revised: 6/29/90  
Security: Everyone

CD-ROM Developer Info in AppleCD SC Developer's Guide

=====

This article last reviewed: 13 March 1990

TOPIC -----

I have been a couple of questions about CD-ROM development.

- Is there any lookup advantage to Apple CD-ROM format versus ISO 9660 or High Sierra format?
- What are the ramifications of creating an ISO 9660 disc for access by the Macintosh? Will you have to write specialized code to access parts of the disc, or will File Manager calls suffice?

DISCUSSION -----

CDs using ISO-9660 and High Sierra formats provide faster file location than those implementing HFS. However, HFS ROMs are easier to create.

Foreign File Access handles the conversion of File Manager calls to ISO 9660 and High Sierra discs.

Both of these questions are highly situation-specific, and the responses above are intentionally brief. In-depth information on developing CD-ROMs is available in the "AppleCD SC Developer's Guide" available from APDA (part #A7G0023/A). Chapter 3 deals with the questions you and your customers have raised.

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Tech Info Library Article Number:5369



# Tech Info Library

## LaserWriter: Laser Specifications

Revised: 6/29/90  
Security: Everyone

LaserWriter: Laser Specifications

=====

This article last reviewed: 13 March 1990

TOPIC -----

I need information about the laser used in the LaserWriter family of printers. I am being asked to identify this information for safety reasons:

- Laser Type
- Class
- Power
- Wavelength

Can you help?

DISCUSSION -----

The LaserWriter uses a semiconductor laser that meets the Bureau of Radiation Hazards class I specifications. Its wavelength falls between 750 and 850nm (nanometers) and is rated at 5mW (milliwatts).

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Tech Info Library Article Number:5370





# Tech Info Library

## Omnis 3plus: Problem Using National Fields with Macintosh IICI

Revised: 6/29/90  
Security: Everyone

Omnis 3plus: Problem Using National Fields with Macintosh IICI

=====

This article last reviewed: 13 March 1990

TOPIC -----

In Omnis 3plus on a Macintosh IICI fields set up as "National" appear as garbled text. On the other hand, a Macintosh IICx with System 6.0.4 works as fine.

Is there something in the Macintosh IICI ROMs (like international utilities or packages) that could cause this?

DISCUSSION -----

A Tech Support Engineer at Blythe Software told us that their Omnis 3plus software had a problem running on the Macintosh IICI. As a temporary solution, they suggested that the customer reinstall System Software 6.0.3 and change the National fields to character fields. This process will not result in an identical sort, but it is functional.

As of February 1990, Blythe was preparing a fix. For details on how to contact them, search the Technical Info library under "Blythe Software."

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Tech Info Library Article Number:5371



# Tech Info Library

## System 6.0.4: Problems Installing on CD Installer Disk

Revised: 6/29/90  
Security: Everyone

System 6.0.4: Problems Installing on CD Installer Disk

=====

This article last reviewed: 13 March 1990

TOPIC -----

I tried to upgrade our AppleCD SC Installer disk to System Software 6.0.4. I selected "Minimum System Software for any Macintosh" and clicked Install. I got an error message saying, "There is not enough room on the disk. 52K available, 53K needed." I removed a couple of System documents and tried again. I got the same message, except this time it said, "83K available, 84K needed".

I removed more files from the System Folder on the CD Installer disk. This time the installation proceeded without giving the error message.

Also, during the disk-swapping process (I was working on a single-floppy system), there were two dialog boxes showing at the same time--one said to insert the "CD Installer Disk"; the other said to insert the "System Tools" disk.

I was able to complete the installation, but I'm curious about the problems I encountered.

Can you explain?

DISCUSSION -----

We were unable to duplicate the situation you describe. However, the latest version of the AppleCD SC software does not require the Installer. The installation software is on AppleLink. Use this path:

Developer Services  
Macintosh Developer Technical Support  
Tools  
CD-ROM

A Read Me file is also in the folder detailing changes in this release and instructions for installation.

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Tech Info Library Article Number:5372



# Tech Info Library

## HyperCard: Hey, I Can Print Substitutes for Reports!

Revised: 6/29/90  
Security: Everyone

HyperCard: "Hey, I Can Print" Substitutes for "Reports!"

=====

This article last reviewed: 13 March 1990

TOPIC -----

The popular "Reports!" software for HyperCard is no longer being sold; the company has gone out of business. Is there any other software available that performs similar functions?

DISCUSSION -----

"Hey, I Can Print" from R & B Software offers functionality similar to the now discontinued "Reports!". For more details, search the Technical Info library under "R & B Software."

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Tech Info Library Article Number:5374



# Tech Info Library

## AppleCD SC: With Macintosh IIci & Portable Use version 3.0.1

Revised: 8/21/91  
Security: Everyone

AppleCD SC: With Macintosh IIci & Portable Use version 3.0.1

=====

Article Created: 13 March 1990  
Article Last Reviewed: 20 August 1991  
Article Last Updated: 20 August 1991

TOPIC -----

When will the Foreign File Access problems with the Macintosh IIci be corrected?

DISCUSSION -----

Version 3.0.1 or later of the AppleCD SC software is fully compatible with the Macintosh IIci, Portable, and previous Macintosh models. Version 3.2 is now available for use under System 6.0.7, 6.0.8, or 7.0 with all current Macintosh models.

Below is a table of the CD Setup files and their version numbers for the latest release, version 3.2.

|                         |       |
|-------------------------|-------|
| AppleCD SC Setup Files  | 3.2   |
| -----                   | ----  |
| Apple CD-ROM            | 2.0   |
| CD Remote INIT          | 1.1   |
| CD Remote DA            | 1.1   |
| Foreign File Access     | 1.0.1 |
| Audio CD Access         | 1.1   |
| High Sierra File Access | 1.0   |
| ISO 9660 File Access    | 1.0   |

AppleCD SC Setup software is available via AppleLink. To locate it, use the BB Pathfinder in the AppleLink Information icon and search on "CD SC Setup".

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Tech Info Library Article Number:5375



# Tech Info Library

## VAX/VMS and TCP/IP Questions and Answers

Revised: 6/29/90  
Security: Everyone

VAX/VMS and TCP/IP Questions and Answers

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This article last reviewed: 13 March 1990

TOPIC -----

- 1) Can someone running Telnet and using MacTCP or Telnet's the built-in communications on a LocalTalk Macintosh, communicate with a host on Ethernet through an AppleTalk Internet Router?
- 2) Can someone on a Macintosh using Telnet (with or without MacTCP) communicate with a VAX running VMS? Do you need other software on the VAX so that it can "speak" TCP?

DISCUSSION -----

- 1) The user will not be able to communicate with the host without a DDP/IP gateway for this reason:

A DDP/IP gateway is a device that takes the AppleTalk-encapsulated IP packets from LocalTalk and decapsulates them. This device (such as the FastPath) then broadcasts them onto Ethernet as IP packets. The AppleTalk Internet Router is not a DDP/IP gateway and is not capable of this.

It is important to note that MacTCP 1.0 will not work across a router, AppleTalk Internet Router included, if class C IP addressing is being used. Class A and class B addressing work properly. If the user needs to use Class C addressing, please contact us for a temporary fix.

- 2) If the Macintosh is on LocalTalk, the user will need a DDP/IP gateway as explained above. If it is on Ethernet, the DDP/IP gateway is not needed. The VAX running VMS needs to run a communications package that supports TCP/IP. Digital Equipment Corporation distributes Network Research Corporation FUSION TCP/IP and the Wollongong Group's WIN/TCP and WIN/TCP-DDN through the Digital Distributed Software (DDS) program. Another example is the TCP/IP software for VAX/VMS by Process Software.

## ..TIL05377-VAX-VMS\_and\_TCP-IP\_Questions\_and\_Answers\_(TA41121).pdf

You may want to contact DEC's DECdirect Prepurchase Technical Assistance or Process Software departments directly. For more details, search the Technical Info library under "Digital Equipment Corporation."

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Tech Info Library Article Number:5377



# Tech Info Library

## File Server: Dial-Back Access and Security

Revised: 6/29/90  
Security: Everyone

File Server: Dial-Back Access and Security

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This article last reviewed: 19 March 1990

TOPIC -----

Do you know of a dial-back verification system for dialing into an AppleTalk network? I want remote access to a file server and as much security as possible for this type of access. I know of Liaison and Shiva NetModems, but I'm not sure what is available for dial-back security and user verification.

DISCUSSION -----

Both Liaison and Shiva NetModems offer dial-back network access as a part of the software. For address information, check the Tech Info library under "Liaison" and "Shiva NetModem."

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Tech Info Library Article Number:5378





# Tech Info Library

## System 6: Installing Fonts Into a Locked System File (11/94)

Revised: 11/17/94  
Security: Everyone

System 6: Installing Fonts Into a Locked System File (11/94)

Article Created: 19 March 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

A customer was able to install fonts in a System file that had been locked from the desktop. He said that the installation appeared normal until he quit and entered an application to use the new font. The font was not there, so he quit and tried to restart his machine. It simply gave him the "?" icon and refused to start up. The failed installation apparently resulted in a seriously corrupt System file, and he had to reinstall the System Software. He had no indication of a problem during the installation.

Does the Font/DA Mover check for a locked System file? Is there any way that a user can install fonts or DAs in a locked System file?

DISCUSSION -----

We tried to install a font and DA in a locked (via the "Get Info" dialog) System file and received an ID= -61 error. This error number indicates a write-permission error and that the Font/DA Mover attempted to write to a file that was locked. The Font/DA Mover does not check for a locked System file but does check for an error when attempting to write to a file.

With System 6, it is best to check that the System file is unlocked before installing any fonts or desk accessories.

Article Change History:  
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5381



# Tech Info Library

## Burst Mode: Motorola Term for Fast Access to RAM (11/94)

Revised: 11/17/94  
Security: Everyone

Burst Mode: Motorola Term for Fast Access to RAM (11/94)

=====

Article Created: 19 March 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

Is there another name for "Burst Mode RAM access"?

DISCUSSION -----

The Motorola MC68030 Enhanced 32-Bit Microprocessor User's Manual uses the term burst mode for its fast access to RAM process. There is no other terminology used for this process.

Burst mode is described in section 7, pages 49 through 51, and section 12, pages 13, 16, and 17 of the manual.

Article Change History:  
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5383



# Tech Info Library

## Apple IIGS: Moire Pattern Appears at Startup (11/94)

Revised: 11/17/94  
Security: Everyone

Apple IIGS: Moire Pattern Appears at Startup (11/94)

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Article Created: 19 March 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

My Apple IIGS is showing a moire pattern on the desktop during startup. This occurs on a current model Apple IIGS and not on earlier versions. The VGC chip on the troublesome model is 344S0046-4. The effect fades if the brightness is turned to maximum. It is more obvious if the brightness is set low. Have you noticed this problem?

DISCUSSION -----

This moire pattern appears to be an interaction between the frequency of the dithering process being used to create the desktop color and the horizontal scanning frequency.

As you noticed, if you increase either the brightness or the contrast, the visibility of the pattern is reduced. Also, if you adjust the vertical size of the display, the pattern becomes harder to see.

Although this may be bothersome, it will not affect productivity nor is it indicative of an impending failure.

Article Change History:  
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5385



# Tech Info Library

## Macintosh IIci: PageMaker and Video Card ROM Problem/Solution

Revised: 12/12/90  
Security: Everyone

Macintosh IIci: PageMaker and Video Card ROM Problem/Solution

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This article last reviewed: 11 December 1990

TOPIC -----

PageMaker users using the Macintosh IIci with a Portrait Display Video Card or Two-Page Monochrome Monitor Video Card have been reporting display problems: incorrect character and word spacing, incorrect registration of line breaks between the screen and printed output, and reduced performance. Certain versions of the video card ROMs exhibit the problem while other versions don't. As a result, switching between a "good" card and the built-in video on a Macintosh IIci yields different results on the screen.

DISCUSSION -----

Here's the solution of the Aldus PageMaker/video card problem. The problem relates to the configuration information carried in the video card ROM (and the video portion of the Macintosh IIci CPU ROM) and the way QuickDraw and PageMaker use this information. Each display in a Macintosh II carries a fixed-point representation of the horizontal and vertical pixel resolution in dots-per-inch. Because QuickDraw is an integer-based drawing system, it does not attempt to scale its object rendering to match this reported screen resolution. Instead, it assumes 72.0 dpi, which is the nominal resolution for the classic Macintosh and the 12-inch, high-resolution monitors.

The video software specifications (which also apply to third-party developers) have been updated to recommend that video configuration ROMs reflect the true screen resolution of the displays it supports. Although 32-Bit QuickDraw continues to ignore the resolution fields, all video hardware released since 32-Bit QuickDraw introduction includes appropriate resolution information; specifically, 80.0 dpi for the Portrait Display and 77 dpi for the Two-Page Monochrome Monitor. This applies to a post-introduction revision of the Portrait Display and Two-Page Monochrome Monitor Video Cards and to the Macintosh IIci built-in video software.

The problem is that PageMaker uses these resolution fields to scale font width

tables for screen display based on a traditional low-memory global. This global is updated by the QuickDraw setup code to reflect the screen resolution of the main screen (the screen with the menu bar). The line-spacing problems happen because PageMaker scales the font widths, while QuickDraw and the Font Manager do not. The problems are not directly related to the video hardware or the CPU ROMs.

#### Solution

-----  
Upgrade to PageMaker 4.0, which takes into account QuickDraw's behavior with screen fonts. The problem described in this article applies only to PageMaker versions earlier than 4.0.

#### Other Notes

-----  
Many applications that run on both Color QuickDraw and Classic QuickDraw machines look at a collection of low-memory globals to determine system configuration. Although every effort has been made to keep these low-memory globals compatible with their original intent, many of them have become obsolete in a multiscreen/multidepth world. It is likely that other applications may display similar problems, particularly those programs with highly customized code for printing or other device-independent imaging.

#### Affected Revisions

-----  
All 68000-based Macintoshes (Plus, SE, and Portable) always report 72.0 dpi resolution and should not exhibit any problems.

Macintosh II Video Card: always reports 72.0 dpi

Macintosh II High-Resolution Video Card: always reports 72.0 dpi

Macintosh Monochrome Video Card: always reports 72.0 dpi

Macintosh SE/30 Built-In Video: always reports 72.0 dpi

Macintosh II Portrait Display Card:

- ROM Part 341-0699: reports 72.0 dpi on the Portrait Display and Two-Page Monochrome Monitor
- ROM Part 341-0732 (current): reports 80.0 dpi on the Portrait Display, 77.0 dpi on the Two-Page Monochrome Monitor

Macintosh II Two-Page Monochrome Monitor Card:

- ROM Part 341-#### (all previous versions): reports 72.0 dpi on the Portrait Display and Two-Page Monochrome Monitor
- ROM Part 341-0727 (current): reports 80.0 dpi on the Portrait Display, 77.0 dpi on the Two-Page Monochrome Monitor

Macintosh IIci Built-In Video: reports 80.0 dpi on the Portrait Display,

72.0 dpi on all other displays.

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Tech Info Library Article Number:5386



# Tech Info Library

## PS/2 to LaserWriter: Problem Printing From LaserWriter IINT

Revised: 6/29/90  
Security: Everyone

PS/2 to LaserWriter: Problem Printing From LaserWriter IINT

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This article last reviewed: 19 March 1990

TOPIC -----

I am having problems printing from my IBM PS/2 Model 30 over a LocalTalk PC Card to a LaserWriter IINT. I also have a Macintosh on the network, and it is not experiencing any printing problems.

Software includes DOS 3.3, AppleTalk PC Protocol Stack 2.0, AppleShare PC Card 2.0, Microsoft Word 5.0 (using PostScript), and DisplayWrite 4 (using Epson emulation).

The problem initially was that I couldn't print from Microsoft Word, but I fixed that. Now, I can print from either program, but when I switch from one program to the other, I have to go into the Chooser and change the printer designation. My understanding was that I should be able to set up both printer configurations (PostScript and Epson emulation) through the AppleTalk PC software, then indicate through the application which driver to use.

Am I misunderstanding the functionality of the software, or have I set up something incorrectly?

DISCUSSION -----

It sounds like you are not switching between Epson emulation and PostScript mode within the AppleShare PC Chooser. You set the DisplayWrite 4 to use its Epson driver, and AppleShare PC is set to convert the Epson Print Code from the DisplayWriter driver to PostScript code. This is called Epson emulation. You also use Microsoft Word 5.0, printing with its PostScript driver, and AppleShare PC is set to pass all printer code directly to the selected printer (PostScript mode). You cannot do both of these through the same LPT port.

Because the two applications require different LPT port modes, you need to switch the LPT port's mode from the AppleShare Chooser or with ANET commands within a batch file.

Another method would be to have all Microsoft Word print jobs go to LPT1, and all DisplayWrite jobs go to LPT2. The applications provide for designating the LPT port within their printer options. The same LaserWriter can be assigned to both LPT ports. The difference is that LPT1 has been set from within the AppleShare Chooser to PostScript mode and LPT2 has been set to Epson emulation. This can be done even though both LPT1 and LPT2 are connected to the same LaserWriter.

Alternatively, you can use a single LPT port set to Epson emulation and print using an Epson driver from both word processors.

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Tech Info Library Article Number:5390





# Tech Info Library

## A/UX: MaxStream Tape Drive

Revised: 9/29/92  
Security: Everyone

A/UX: MaxStream Tape Drive

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Article Created: 19 March 1990

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Are you familiar with MaxStream from Archive? Can it be used to back up files only and not partitions from A/UX?

### DISCUSSION -----

According to Archive's technical engineering people, the MaxStream backup subsystem provides 60MB and 150MB storage-capacity drives and MaxStream backup software for both Macintosh OS and A/UX. The backup software for both the Macintosh OS and A/UX allows file-by-file and/or partition backups and restoration. The tape medium is the 5.25-inch standard, high-density DC600 tape cartridge. It has backup and restore speeds of up to 6MB per minute.

For more contact information, search the Technical Info library under "Archive Corporation."

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Tech Info Library Article Number:5394



# Tech Info Library

## A/UX: TTY Flow Control Settings

Revised: 9/24/92  
Security: Everyone

A/UX: TTY Flow Control Settings

Article Created: 19 March 1990

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I tried to change the default settings of /dev/tty0 (and /dev/modem) to connect an additional printer. Except for setting "modem" to "-modem" and some other options, the settings did not work for "-hupcl" to "hupcl", "istrip" to "-istrip", "echo" to "-echo", "echok" to "-echok".

Can you explain?

### DISCUSSION -----

All tty flow control settings, like "-modem", "dtrflow", "-dtrflow", and so on, are maintained across last close. This means that the flow control settings are "remembered" when a tty device is closed and reopened. However, all other termio characteristics, like speed (50, 75, 1200, and so on), parity (parenb, parodd, and so on), input modes (ignbrk, brkint, istrip, and so on), and local modes (echo, echok, and so on), are set to the default settings when the tty line is closed.

To put the "stty" settings into effect and still keep the tty port open, put a sleep statement ("sleep 99999", for example) after the "stty" command.

In your case, you can use this:

```
(stty hupcl -istrip -echo -echok; sleep 99999) < /dev/tty0 &
```

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# Tech Info Library

## Request for OS/2 Driver for DayStar's AppleTalk Card

Revised: 6/29/90  
Security: Everyone

Request for OS/2 Driver for DayStar's AppleTalk Card

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This article last reviewed: 19 March 1990

TOPIC -----

I linked DayStar Digital the following question:

Are you planning a driver to allow your MCA AppleTalk card to run in OS/2?

DISCUSSION -----

DayStar Digital responded:

As the demand continues to increase, I believe that an OS/2 driver has got to be in our future; however, it will not be the near future. We may have had 20 calls in 1989 for the driver, so we have been waiting for demand to pick up. If the last month or so is any indication, it is time for us to get to work. Regrettably, even if we find someone to do the driver now, it will probably be 6 to 8 months before its release.

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Tech Info Library Article Number:5398



# Tech Info Library

## Fast Page DRAM: A Description

Revised: 7/21/92  
Security: Everyone

Fast Page DRAM: A Description

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Article Created: 19 March 1990  
Article Last Reviewed: 21 July 1992  
Article Last Updated:

TOPIC -----

This article describes fast page DRAM and compares it with ordinary DRAM.

DISCUSSION -----

A dynamic random access memory (DRAM) chip consists of one-bit memory cells organized in rows and columns. Each memory cell is a capacitor. This capacitor is either charged or discharged to represent a high or low state, respectively. The design's advantage is it allows very high-density memories by requiring only one transistor per bit.

However, this design has a timing bottleneck. Since the amount of stored charge is very small, it must to be amplified before being placed on the data bus. This results in a 80 to 120 nS access cycle time. However, there are methods to minimize the affect of this overhead.

With a basic DRAM design, two signal lines are alternatively strobed back and forth to access the data within the DRAM, because the address lines are shared. These signal lines are Column Address Strobe (CAS) and Row Address Strobe (RAS). The access sequence is as follows: put the row address on the bus, assert RAS, put the column address on the bus, assert CAS and then get the data.

Page DRAM has a timing sequence that eliminates the need for multiple RAS strobes when accessing data within the same row. When the chip sees one RAS strobe, multiple address and CAS strobes access the data in the same row. This type of memory access is beneficial for burst mode accesses. The first read takes the usual overhead, because one set of RAS and CAS strobes must be initiated. However, subsequent reads are shorter because the RAS line does not have to be asserted again for each data request.

Basically, fast page mode DRAM is a page DRAM with slightly different logic that allows for an even faster access time. Transparent latches are used for immediate access to the data. These latches make the data available even before the latch locks in the data. It is this additional speed that allows the "5-2-2-2" cache burst mode on the Macintosh IIci to work.

This burst mode allows the use of cost-effective DRAMs, while providing high performance. The 68030 has a four long word cache (16 bytes), which is quickly filled by the "5-2-2-2" cycle. The processor accesses data from the cache subsequently until a cache miss. Then another "5-2-2-2" cycle is done.

Fast page mode DRAM has a little more logic than a basic DRAM chip, but permits fast access to sequential data within a column at speeds required for the Macintosh IIci.

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Tech Info Library Article Number:5399



# Tech Info Library

## AppleTalk Phase 2: Split Horizon RTMP

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2: Split Horizon RTMP

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This article last reviewed: 19 March 1990

TOPIC -----

We have a large Internet distributed over five major hubs arranged in a star pattern. The main hub network (Network A) has a Hayes InterBridge half-bridge (using Hayes V9600 modems) to each of four other sites (Network B, Network C, Network D, and Network E). In addition to the main connection to Network A, Network D has a Hayes InterBridge half-bridge (with V9600 modems) to Network B and another to Network C. These redundant links have been working fine under AppleTalk Phase 1, and we expect them to work under AppleTalk Phase 2.

### Questions

-----

- 1) With these redundant links, will we see the benefit of the split horizon RTMP on the routers that make up this redundant link? If we highlighted the circular route that exists through the redundant links, would the routers on this path show a reduction in the size of the RTMP tables that are sent from each port of the InterBridge?
- 2) On the link to Network E, where there is no redundant link, will the size of the RTMP packets sent over the modem link be reduced versus the size of the packets under AppleTalk Phase 1? An example, assuming that there are five network numbers at Network E and 95 network numbers elsewhere in the network, AppleTalk Phase 1 would imply that there are 100 network entries in the RTMP packets sent from each end of the modem link. Would this number decrease to 95 from Network A to Network C and only five from Network C to Network A, which would, in effect, yield a reduction in overhead of 50% on this slow link?

DISCUSSION -----

- 1) Split horizon reduces the number of redundant routing table entries exchanged by routers. The split horizon algorithm is: all entries whose forwarding port in the routing table is equal to the port out that the entry

is being sent are omitted from the RTMP data packet. In other words, Router A will not include network numbers in RTMP packets broadcast on Network X when Network X is the path (forwarding port) for Router A to reach these other networks. The forwarding port is the shortest distance, in hops, from the sending router.

If there is more than one route from Network A to Network X, the router in Network A stores in its routing table the shortest distance, in hops, to Network X. If more than one of these routes is the same distance, in hops, and is the shortest distance, the router's routing table will be modified each time an RTMP packet is received from Network X via this route.

The split horizon algorithm reduces the amount of RTMP data broadcast onto the Internet. The RTMP data would be less if there were no redundant links. From what you have told us of the customer's Internet, the redundant links do not eliminate the benefits of the split horizon algorithm.

- 2) You are correct, an AppleTalk Phase 1 router would broadcast an RTMP packet that contained 100 network tuples to Network A and Network E networks. An AppleTalk Phase 2 router will broadcast an RTMP packet containing 95 network tuples on the TriCounty network and only five network tuples on Network A.

Note: Hayes has recently released a ROM upgrade for the Hayes InterBridge that is necessary for AppleTalk Phase 2 compatibility.

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Tech Info Library Article Number:5401





# Tech Info Library

## LaserWriter 6.0.1: Problem Saving PostScript Files to Disk

Revised: 11/2/92  
Security: Everyone

LaserWriter 6.0.1: Problem Saving PostScript Files to Disk

Article Created: 20 March 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

I want to send a file for printing to the terminal server's print queue, but I can't get the Command-K or Command-F function to work using LaserWriter 6.0.1 and System 6.0.4.

When I select the print function and press Command-K, my Macintosh beeps for as long as I press the keys. Can you tell me if this function still works with the LaserWriter 6.0.1 drivers? Do these commands no longer work in these applications? Is there another way to accomplish this?

DISCUSSION -----

This feature is still present in the LaserWriter 6.0.1 drivers, but background printing must be turned off for it to work. (Note however that this feature is no longer available in System 7. Instead, there is an option in the Print dialog for generating a Postscript file to disk.)

It is also possible in this case that the Control K is being intercepted by an INIT or cdev like QuicKeys or MacroMaker.

There is an undocumented feature of the LaserWriter version 6.0.1 driver that allows saving a PostScript file to disk without resorting to the Command-F or -K method. Here is the procedure to reveal a check box in the Print dialog that saves the PostScript file to disk. You need ResEdit and a copy of the LaserWriter file. (Never use ResEdit on the original copy of a file.)

- 1) Open "LaserWriter" with ResEdit.
- 2) Open the "DITL" resource picker.
- 3) Open the DITL that has the print dialog (-8191).
- 4) From the DITL menu, select "Select dialog item".

- 5) Type "22" and click OK.
- 6) From the File menu, select "Open as dialog item".
- 7) You'll see the item has 0,0,0,0 as its rect. Set it to something like 80, 357, 100, 439 and close the window.
- 8) You'll see the "Disk File" checkbox. Resize it appropriately and move it to a convenient location.
- 9) Save changes and quit ResEdit.

Be sure to turn off Background Printing in the Chooser before printing. When you select print with the "Disk File" checkbox highlighted, you'll get a PostScript file when you click OK. This checkbox provides the same functionality as the Command-F method, which generates a PostScript file without the Laser Prep file. Remember to work with ResEdit only on a copy of the LaserWriter file.

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Tech Info Library Article Number:5403



# Tech Info Library

## Kodak DataShow and Macintosh II Hi-Res Video Card

Revised: 6/29/90  
Security: Everyone

Kodak DataShow and Macintosh II Hi-Res Video Card

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This article last reviewed: 20 March 1990

TOPIC -----

The Kodak DataShow 480 projection pad does not work with the new video card, Macintosh II High-Resolution Video Card (661-0533). It works only with the 661-0492 card. How can I get it to work with the 661-0533 card?

DISCUSSION -----

The Macintosh II High-Resolution Video Card requires pin 4 of its video connector to be grounded. It is likely that pin 4 is not used or connected to ground in the Kodak DataShow or its cable. A simple solution is to have a new cable made that grounds pin 4. This cable can replace the current cable or be attached to the current cable as an extension.

The Macintosh II High-Resolution Video Card can switch between two video modes. Grounding pin 4 selects the standard mode. The optional video mode is an interlaced video signal and is not compatible with the Apple High-Resolution Monitors or devices like the Kodak DataShow, that are designed for the card's standard video signal output.

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Tech Info Library Article Number:5404



# Tech Info Library

## Printing to Network LaserWriter: The Process

Revised: 6/29/90  
Security: Everyone

Printing to Network LaserWriter: The Process

=====

This article last reviewed: 20 March 1990

TOPIC -----

What is the process taking place when a user prints to an AppleShare Print Server (from the user to the server and from the server to the LaserWriter)?

Where does the QuickDraw-to-PostScript process taking place?

DISCUSSION -----

I will be addressing your question as a single process. The process you are asking for is the printing of graphics and text (the same thing on the Macintosh) to a PostScript printer using a network and print spooler, like the AppleShare Print Server.

The first step takes place when the user selects the Print option provided from within an application. The application has been programmed by its developer to print its documents to a PostScript printer. It provides this by using the Macintosh Print Manager Routines, which are a standard part of the Macintosh Operating System.

The application uses QuickDraw and Font Manager calls to draw to a GrafPort (display data structure). These calls create QuickDraw opcodes, which are stored in the GrafPort and converted to actual pixel information through QuickDraw low-level routines. Typically, the GrafPort controls an image displayed on a screen. The Print Manager uses a special form of GrafPort called the TPPrPort.

The TPPrPort is essentially a GrafPort that includes special data structures and drawing routines for a print driver, like the Apple LaserWriter PostScript driver. This enables QuickDraw to draw to a printer rather than a display device. QuickDraw high-level draw commands generated from the application now pass data to the selected driver. This is handled by the new low-level drawing routines, which route the data to a print driver and is generally transparent

to the application programmer and the high-level QuickDraw commands being used to draw to the TPPrPort.

The application, having been directed by the user to print a document, redraws the selected document to a TPPrPort. The Print Manager, once directed to print the document, activates the currently-selected print driver. The print driver, previously selected through the Chooser, has its name stored in Parameter RAM and an access identifier stored in the Device Manager's unit table. The Print Manager uses the Device Manager to load the chosen print driver.

After the print driver loading process is completed, the driver tries to use the AppleTalk Manager to contact the LaserWriter. In the case of an AppleShare Print Server, where the desired LaserWriter has been "captured", the print server answers back to the driver that it is ready.

When the Macintosh Print Server bypass option is selected, the real LaserWriter does not appear as an option in the Chooser because during the capture phase of the print server, the LaserWriter device type has been changed to answer only to a special name. Essentially, the LaserWriter doesn't know it's a LaserWriter and calls itself something else. When searching for LaserWriters, the Chooser displays the names of network entities that answer back, when it searches for network devices of the type "LaserWriter." A print server with a captured LaserWriter answers the Chooser's AppleTalk lookup with the name of the captured LaserWriter.

The print driver within the user's Macintosh receives an answer from the print server that it is the selected LaserWriter and is ready to receive a print job. The print driver passes this information to the Print Manager, which passes on this information as a "No Error" to the application. After receiving a "No Error", the application creates the document for printing. The application draws each page to the printer document using QuickDraw commands.

The print driver receives each of the pages as QuickDraw-generated opcodes and converts these opcodes to PostScript language commands and passes the data to the driver. The driver passes the information through its Printer Access Protocol routines to the AppleTalk Manager, which, in turn, delivers the data across whatever physical AppleTalk network is connected to the user's Macintosh to the print server.

The print server receives the PostScript commands through the AppleTalk Manager and the governing Printer Access Protocols. The PostScript commands are stored to disk, and the document is placed in a print queue. The print driver in the System Folder of the print server is accessed through the Print Manager routines on the print server.

The print server acts as an application that directly passes the PostScript code received from the user's Macintosh to the driver. The driver contacts the "real" LaserWriter and sends the PostScript data through the AppleTalk Manager, adding a set of its own Special PostScript routines prior to printing the job. These special routines let the print server keep track of the document name, number of pages, and any errors generated by the LaserWriter.

This is an overview of the process involved when printing to a print server and

captured LaserWriter. Of course, the AppleTalk phase itself can be greatly complicated when routers are involved, and many parts of the process have been simplified here.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5406



# Tech Info Library

## Macintosh: How To Access DOS EIS Application

Revised: 6/29/90  
Security: Everyone

Macintosh: How To Access DOS EIS Application

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This article last reviewed: 21 March 1990

TOPIC -----

I want to run a DOS application from a Novell server. The application is an Executive Information System (EIS), which exists on a Novell server on Token Ring. It requires EGA graphics.

I plan to put a LocalTalk PC Card into a 386-based DOS machine. This machine already has a Token Ring card to connect it to a Novell server. I would like to run the Novell drivers and the necessary parts of the AppleShare PC package, along with PCAnywhere from Digital Microprocessor Associates on the DOS machine. On the Macintoshes, I want to run PCMacTerm (also from Digital Microprocessor Associates), which lets the Macintoshes act as terminals to the DOS machine.

Can we run the Novell drivers, the appropriate AppleShare drivers, the Token Ring card, and the LocalTalk PC Card in the DOS machine and still have enough memory left to run the application? Can we run the Token Ring and LocalTalk PC Cards together in the DOS machine and access both services?

DISCUSSION -----

Basically, it sounds like you want a Macintosh to gain access to a DOS EIS application running on a Novell Server, via a "PC Gateway". Conceptually, this sounds feasible. However, it would be prudent to test this configuration.

From a memory standpoint, you should be okay. The AppleShare PC software can be pared to 50K or so. The Novell software requires a little more room, perhaps as much as 80K or 90K. Those memory requirements combined with DOS (roughly 100K) still leaves 400K (640-50-90-100=400) for the application.

Even if you do run short of memory, third-party cards and programs may help you work around the limitation. Two such products are HiCard and MOVE'EM (information on each is in the Tech Info Library).

The minimum AppleShare PC drivers needed are LSL.COM, LTALKP.COM, ATALK.COM, and COMPAT.COM.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5410





# Tech Info Library

## Listec Video Corporation

Revised: 7/12/93  
Security: Everyone

Listec Video Corporation

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Article Created: 04/03/90  
Article Reviewed: 07/12/93  
Article Updated: 11/09/92

Listec Video Corporation

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40-3 Oser Avenue  
Hauppauge, NY 11788

516-273-3020

516-435-4544 Fax

### Company Profile:

Hardware and software, specializing in a Macintosh-to-teleprompter interface and teleprompter display devices.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5411



# Tech Info Library

## Audio Source

Revised: 7/1/93  
Security: Everyone

Audio Source

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Article Created: 04/03/90  
Article Reviewed: 07/01/93  
Article Updated:

Audio Source

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1327 N. Carolan Ave.  
Burlingame, CA 94010

800-227-5087 (Outside CA)

415-348-8114

415-348-8083 Fax

Company Profile:  
Hardware, specializing in home electronics and disk-cleaning products  
(including CD-ROMs).

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5412



# Tech Info Library

## Digital Equipment Corporation (DEC)

Revised: 7/7/93  
Security: Everyone

Digital Equipment Corporation (DEC)

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Article Created: 03/13/90  
Article Reviewed: 07/07/93  
Article Updated: 07/07/93

Digital Equipment Corporation (DEC)

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146 Main Street  
Maynard, MA 01754

800-354-9000 Digital Atlanta Support (CSC)  
800-344-4825 DECdirect Customer Info  
800-343-4040 DECdirect Tech Consulting Ctr.  
800-722-7770 Process Software

508-493-8780 Fax  
800-234-2298 Fax (Order Dept.)

Company Profile:  
Digital Equipment Corporation, specializing in VAX minicomputers, PCs,  
and related services. For PATHWORKS support, call Digital Atlanta  
Support (CSC).

Article Change History: 07/07/93 Fax Information Added

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5413



# Tech Info Library

## Graphisoft

Revised: 4/4/97  
Security: Everyone

Graphisoft

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Article Created: 3 April 1990  
Article Reviewed/Updated: 4 April 1997

Graphisoft

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400 Oyster Point Blvd.  
Suite 429  
South San Francisco, CA 94080

800-344-3468

415-737-8665

415-871-5481 Fax

Company Profile:  
Software, specializing in CAD programs (ArchiCAD and TopCAD)

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5414



# Tech Info Library

## **Pivar Computing Services, Inc.**

Revised: 7/15/93  
Security: Everyone

Pivar Computing Services, Inc.

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Article Created: 3 April 1990  
Article Reviewed/Updated: 15 July 1993

Pivar Computing Services, Inc.

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165 Arlington Heights Rd.  
Buffalo Grove, IL 60089

800-CONVERT (266-8378)

708-459-6010

708-459-6095 Fax

Company Profile:  
Datacomm, specializing in file conversions.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5415



# Tech Info Library

## **Greenspring Computers**

Revised: 4/4/97  
Security: Everyone

Greenspring Computers

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Article Created: 04/03/90  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Greenspring Computers

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1204 O'Brien Dr.  
Menlo Park, CA 94025

415-327-1200

415-327-3808 Fax

Company Profile:

Hardware, specializing in Macintosh II computers that have been ruggedized for industrial, real-time, or I/O-intensive applications.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5418



# Tech Info Library

## Ioline Corp.

Revised: 7/9/93  
Security: Everyone

Ioline Corp.

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Article Created: 04/03/90  
Article Last Reviewed: 07/09/93  
Article Last Updated: 07/09/93

Ioline Corp.

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12020 113th Ave. N.E.  
Kirkland, WA 98034

206-821-2140

Fax: 206-823-8898

Company Profile:  
Hardware and software, specializing in plotters.

Article Change History: 07/09/93 Name information corrected

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5419



# Tech Info Library

## TMS Inc.

Revised: 7/20/93  
Security: Everyone

TMS Inc.

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Article Created: 3 April 1990  
Article Reviewed/Updated: 20 July 1993

TMS Inc.

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110 W. 3rd. St.  
P.O. Box 1358  
Stillwater, OK 74076

405-377-0880

Fax: 405-372-9288

Ammex: 377-0038 (Imaging Dept.)

Company Profile:  
Specializing in full text storage and retrieval on CD-ROM. Also involved in  
compression and decompression of CCITT images (groups 3 and 4).

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5421





# Tech Info Library

## Display Card 4/8 and 8/24 Specifications (Discontinued)

Revised: 6/20/94  
Security: Everyone

Display Card 4/8 and 8/24 Specifications (Discontinued)

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TOPIC -----

This article gives specifications for the Display Card 4/8 and 8/24.

DISCUSSION -----

### System Requirements

-----

To use the Macintosh Display Card 4/8 or Macintosh Display Card 8/24, you'll need a personal computer in the Macintosh II family with an available NuBus slot and System Software Version 6.0.5 or later. For Macintosh II, IIX, and IICX, you'll need 32-bit QuickDraw software to run 24-bit color applications. To take advantage of full 24-bit color, Apple recommends a minimum of 2 megabytes of RAM.

### Technical Specifications

-----

#### Interface

- NuBus; plugs into any Macintosh II slot
- NuBus slave block transfer modes supported

#### Connector

15-pin D-style

#### Display modes

- 1, 2, 4, 8, or 24 bits per pixel (2, 4, 16, 256, or 16.7 million colors)
- Software-selectable

#### Display resolution

- Up to 1,152 pixels horizontally by 870 pixels vertically, depending on the resolution of the display
- Auto-configuring

#### Apple Convolution

# ..TIL05422-Display\_Card\_4-8\_and\_8-24\_Specifications\_Discontinued.pdf

- Convolution available for RS-170 interlaced video to up to 8 bits per pixel (256 colors) on the Macintosh Display Card 8/24

## Color lookup table

- In 24-bit mode, provides direct access to 16.7 million colors, driving 8-bit DACs (digital-analog converters) for each of the three RGB channels
- In other modes, provides a palette of up to 256 colors out of 16.7 million

## Output signals

- Modes: RGB (analog) and gray scale
- Video: RS-343 standard. Supports RS-170 timing standard for interlaced video with overscan and underscan modes.
- Sync: Separate or composite depending on display resolution; negative-going; TTL

## Raster rates

- Variable raster rates under software control
- Vertical refresh: 66.7 or 75 hertz depending on display resolution
- Dot clock: 12.2727, 30.24, 57.2832, or 100 megahertz depending on display resolution

## Power consumption

7 watts

## DISPLAY MODES SUPPORTED

| Display<br>-----                            | Macintosh Display Card 4/8<br>-----              |
|---------------------------------------------|--------------------------------------------------|
| Apple High-Resolution<br>Monochrome Monitor | 640 x 480 pixels<br>2, 4, 16, or 256 gray levels |
| AppleColor High-Resolution<br>RGB Monitor   | 640 x 480 pixels<br>2, 4, 16, or 256 colors      |
| Apple Macintosh Portrait<br>Display         | 640 x 870 pixels<br>2, 4, or 16 gray levels      |
| Apple Two-Page Monochrome<br>Monitor        | 1,152 x 870 pixels<br>2, 4, or 16 gray levels    |
| Interlaced video devices                    | 640 x 480 pixels<br>2, 4, 16, or 256 colors      |

| Display<br>-----                            | Macintosh Display Card 8/24<br>-----             |
|---------------------------------------------|--------------------------------------------------|
| Apple High-Resolution<br>Monochrome Monitor | 640 x 480 pixels<br>2, 4, 16, or 256 gray levels |
| AppleColor High-Resolution                  | 640 x 480 pixels                                 |

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|                                   |                                                                                                           |
|-----------------------------------|-----------------------------------------------------------------------------------------------------------|
| RGB Monitor                       | 2, 4, 16, 256, or 16.7 million colors                                                                     |
| Apple Macintosh Portrait Display  | 640 x 870 pixels<br>2, 4, 16, or 256 gray levels                                                          |
| Apple Two-Page Monochrome Monitor | 1,152 x 870 pixels<br>2, 4, 16, or 256 gray levels                                                        |
| Interlaced video devices          | 640 x 480 pixels<br>2, 4, 16, 256, or 16.7 million colors<br>(Apple Convolution enabled up to 256 colors) |
| Apple Color Display (14")         | 640 x 480 pixels<br>2, 4, 16, or 256 colors                                                               |
| Macintosh 16-inch Color Display   | 832 x 624 pixels<br>2, 4, 16, or 256 colors                                                               |
| Macintosh 21-inch Color Display   | 1,152 x 870 pixels<br>2, 4, 16, or 256 colors                                                             |

## Article Change History

06/28/93 - Revised to include 14", 16", and 21" Color Displays

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Tech Info Library Article Number:5422



# Tech Info Library

## Display Card 8•24 GC: Specifications (Discontinued)

Revised: 9/14/93  
Security: Everyone

Display Card 8•24 GC: Specifications (Discontinued)

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This article last reviewed: 21 March 1990

TOPIC -----

This article give specifications for the Display Card 8/24 GC.

DISCUSSION -----

Display Card 8/24 GC Specifications

System Requirements

-----  
To use the Macintosh Display Card 8/24 GC, you'll need a personal computer in the Macintosh II family with an available NuBus slot, System Software Version 6.0.5 or later, and a minimum of 2 megabytes of memory. For the Macintosh II, IIX, and IICX, you need the 32-bit QuickDraw software to run 24-bit color applications.

Technical Specifications

-----  
Graphics coprocessor

Advanced Micro Devices Am29000 RISC-based processor running at 30 megahertz.

On-board memory

2 megabytes of VRAM used as display frame buffer and processor instruction memory, which can be expanded via SIMM sockets with the Macintosh Display Card DRAM Expansion Kit to hold an additional 2 megabytes of DRAM, for processing of large off-screen graphics. You can expand memory up to 8 megabytes via third-party SIMMs. 64 kilobytes of SRAM used as processor instruction cache.

Display modes

1, 2, 4, 8, or 24 bits per pixel (2, 4, 16, 256, or 16.7 million colors), software-selectable.

Display resolution

Up to 1,152 pixels horizontally by 870 pixels vertically, depending on display

resolution, auto-configuring.

#### Apple Convolution

Convolution available for RS-170 interlaced video to up to 8 bits per pixel (256 colors).

#### Interface

NuBus; plugs into any Macintosh II slot with NuBus master and slave block transfer modes supported.

#### Connector

15-pin D-style

#### Color lookup table

- In 24-bit mode, provides direct access to 16.7 million colors, driving 8-bit DACs (digital-analog converters) for each of the three RGB channels
- In other modes, provides a palette of up to 256 colors out of 16.7 million

#### Output signals

- Modes: RGB (analog) and gray scale
- Video: RS-343 standard. Supports RS-170 timing standard for interlaced video with overscan and underscan modes.
- Sync: Separate or composite depending on display resolution; negative-going; TTL

#### Raster rates

- Variable raster rates under software control
- Vertical refresh: 66.7 or 75 hertz depending on display resolution
- Dot clock: 12.2727, 30.24, 57.2832, or 100 megahertz depending on display resolution

#### Power consumption

20 watts (In systems with all NuBus slots utilized, the power requirements of all cards installed should be added together to ensure that the NuBus power draw is not exceeded. For more information, see the Macintosh owner's guide.)

#### DISPLAY MODES SUPPORTED

| Display                                  | Macintosh Display Card 8/24 GC                            |
|------------------------------------------|-----------------------------------------------------------|
| Apple High-Resolution Monochrome Monitor | 640 x 480 pixels<br>2, 4, 16, or 256 gray levels          |
| AppleColor High-Resolution RGB Monitor   | 640 x 480 pixels<br>2, 4, 16, 256, or 16.7 million colors |
| Apple Macintosh Portrait Display         | 640 x 870 pixels<br>2, 4, 16, or 256 gray levels          |
| Apple Two-Page Monochrome Monitor        | 1,152 x 870 pixels<br>2, 4, 16, or 256 gray levels        |

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|                          |                                              |
|--------------------------|----------------------------------------------|
| Interlaced video devices | 640 x 480 pixels                             |
|                          | 2, 4, 16, 256, or 16.7 million colors        |
|                          | (Apple Convolution enabled up to 256 colors) |

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Tech Info Library Article Number:5423



# Tech Info Library

## A/UX 2.0 Specifications (Discontinued)

Revised: 6/20/94  
Security: Everyone

A/UX 2.0 Specifications (Discontinued)

Article Created: 3 April 1990

TOPIC -----

This article gives specifactions for A/UX 2.0.

DISCUSSION -----

### System Requirements

-----  
To use the Apple A/UX operating system Version 2.0, you'll need:

- One of the following personal computers-
  - Macintosh SE/30
  - Macintosh II with an Apple Paged Memory Management Unit (PMMU)
  - Macintosh IIX
  - Macintosh IICX
  - Macintosh IIci
  - Macintosh IIfx
- A minimum of 4 megabytes of RAM.
- An Apple hard disk (minimum 80 megabytes) or the equivalent.
- An Apple monitor (or equivalent) that is compatible with A/UX Version 2.0.
- For Ethernet compatibility, the Apple EtherTalk NB Card or the equivalent.

Optional Equipment includes additional memory and the AppleCD SC drive.

### Technical Specifications

#### ----- Portability standard

- AT&T UNIX System V, Release 2, Version 2.
- Compliant with the System V Interface Definition (SVID); passes the System V Verification Suite (SVVS).

## ..TIL05424-A-UX\_2-0\_Specifications\_Discontinued.pdf

- BSD 4.3 extensions, including signals, job control, groups, sockets, Berkeley Networking Services, subnets, and Berkeley File System.
- Compliant with FIPS #151.
- Compliant with IEEE POSIX 1003.11988 FUS.

### Applications supported

- Macintosh applications that adhere to Inside Macintosh specifications.
- AT&T and BSD UNIX applications.
- X Window System applications (with add-on package).
- Hybrid applications (UNIX applications using the Macintosh Toolbox).

### Macintosh Look and Feel

- Macintosh MultiFinder environment.
- Macintosh-style startup and shutdown.
- Support for 32-bit Color QuickDraw.

### UNIX integration

- UNIX command builder.
- UNIX shell windows.
- Mouse-driven editing.
- X Window System support (add-on).
- Cut-and-paste text editing.
- Printer and AppleShare file server selection through the Chooser.

### UNIX command-line interpreters for UNIX shell windows

- Bourne Shell.
- Korn Shell.
- C Shell.

### Development tools

- Editing and processing utilities (Macintosh mouse editor, vi, ex, ed, ditroff, nroff, tbl, eqn, and pic).
- Assembler and C compiler.
- Shared libraries.
- Lint, lex, yacc.
- Debuggers (abd, sdb, MacsBug).
- Linker (ld).
- Source control (SCCS, make, and other UNIX tools).

### Communications

- TCP/IP over Ethernet or over serial connection (SL/IP).
- AppleTalk printing and file sharing client services via LocalTalk or EtherTalk.
- Transparent file sharing over Ethernet or serial lines using NFS Version 3.2.
- Remote log-in and execution, resource sharing, file transfer, and electronic mail with Berkeley Networking Services (from BSD 4.3).
- Domains and subnets.
- X Window System for A/UX (add-on).

### Highlights of Hardware Supported

- All Macintosh II personal computers and the Macintosh SE/30.
- Apple 20-, 40-, 80-, and 160-megabyte hard disk drives.



# ..TIL05424-A-UX\_2-0\_Specifications\_Discontinued.pdf

- Apple 400K, 800K, and 1.44-megabyte floppy disk drives.
- AppleCD SC drive.
- LaserWriter IINT, LaserWriter IINTX, and LaserWriter Plus printers;  
ImageWriter  
II and ImageWriter LQ printers.
- All Macintosh monitors and compatible third-party monitors.
- All domestic Macintosh keyboards and nonextended European Macintosh keyboards  
(function keys not supported).

## System administration

- Autorecovery.
- Autoconfiguration.
- Scripts for system administration functions.

## Article Change History

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08/31/92 - Reviewed for technical accuracy.

Copyright 1990, Apple Computer, Inc.

Tech Info Library Article Number:5424



# Tech Info Library

## Apple II High-Speed SCSI Card: Description (2/97)

Revised: 3/3/97  
Security: Everyone

Apple II High-Speed SCSI Card: Description (2/97)

=====

Article Created: 03 April 90  
Article Reviewed/Updated: 28 Feb 1997

TOPIC -----

This article describes the Apple II High Speed SCSI Card.

DISCUSSION -----

The new Apple II High-Speed SCSI Card provides faster data transfer primarily because of a new feature called "direct memory access" (DMA) data transfer. Data is transferred directly between the computer's memory and the SCSI peripheral, with minimal interaction from the computer's microprocessor. The result is improved, data-transfer performance. With the new high-speed card, data transfers at a rate of up to 1MB per second on the Apple IIGS computer, and up to .5MB per second on the Apple IIe computer. In addition to DMA, the SCSI manager and firmware have been improved and also contribute to the increased performance.

Compatible with all SCSI peripherals, the Apple II High-Speed SCSI Card requires only that device-specific applications and drivers be installed on the system. The card ships with drivers and applications for hard disk and CD-ROM drives, so that users can take advantage of these devices immediately. Device drivers for the tape backup drive and scanner will be made available to developers. Users will be able to take advantage of these devices as applications are developed. In addition, the new card enables users to connect as many as seven SCSI peripherals to their computer.

Another feature of the card is an on-board terminator, which simplifies setup when connecting SCSI peripherals to the computer. Previously, the Apple II SCSI Card required users to understand rules regarding placement and quantity of terminators between SCSI devices. With the new card, you place one terminator at the end of the chain of SCSI devices.

The Apple II High-Speed SCSI Card also includes improved, hard-disk utilities. These utilities make it easy to handle hard-disk management tasks, like data

backup, disk partitioning and disk verification. The partition and verify utilities take advantage of the improved firmware commands for hard disk drives. The backup utility can now handle the resource forks that are part of the IIGS files. Because these are ProDOS utilities, they can be used by both Apple IIe and Apple IIGS users.

As far as system requirements, the Apple II High-Speed SCSI Card works on an Apple IIGS computer or an Apple IIe computer with a 65C02 microprocessor. The Apple IIGS requires a 3.5-inch disk drive, while the Apple IIe requires either a 5.25- or a 3.5-inch disk drive. Both require a device with a SCSI port, appropriate SCSI cabling and one SCSI terminator.

Article Change History:

28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1990-97 Apple Computer, Inc.

Tech Info Library Article Number:5425



# Tech Info Library

## Mesa Graphics, Inc.

Revised: 4/4/97  
Security: Everyone

Mesa Graphics, Inc.

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Article Created: 02/18/91  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Mesa Graphics, Inc.

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411 Cheryl Ave.  
P.O. Box 600  
Los Alamos, NM 87544

505-672-1998

### Company Profile:

Software, specializing in communications and plotter packages. Also involved in consulting, primarily Macintosh software.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5427



# Tech Info Library

## System 6.0.5: Technical Information

Revised: 6/29/90  
Security: Everyone

System 6.0.5: Technical Information

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This article last reviewed: 24 April 1990

### DETAILS OF SYSTEM 6.0.5

This document provides technical information on System 6.0.5. This information is intended for technically knowledgeable users; it is not needed to operate the Macintosh.

System 6.0.5 is required when using any of the following products: Macintosh IIfx, Macintosh Display Cards 8/24 and 8/24 GC, and third party software or hardware products that require System 6.0.5 (these third party products carry the label requires 6.0.5 or later on the outside of their packaging). In addition, Apple recommends using System 6.0.5 with any of the following products: Macintosh Portable, Macintosh IIfx, and 32 Bit QuickDraw.

The recommended version of HyperCard for use with System 6.0.5 is HyperCard 1.2.5.

### IMPROVEMENTS FOR ALL MACINTOSH MODELS

- Floppy disk initialization is more reliable during LocalTalk or hard disk activity.
- Communications applications no longer drop characters when changing monitor settings.
- The following improvements were made to MacroMaker: playback now works properly with more applications; switch-launching works; and problems pulling down menus no longer occur.
- Creating a screen shot works properly when using a color video card that requires 32-Bit QuickDraw.
- Apple HD SC Setup now erases all data when initializing (or erasing) any Apple hard disk.

#### IMPROVEMENTS FOR MACINTOSH PORTABLE

- Excessive drain on battery life caused by LocalTalk activity is eliminated.
- Occasional problems communicating with an AppleShare server are corrected.
- Devices connected to the modem or printer port work properly after coming out of system sleep.
- High speed (57.6K baud) communications with the modem port work during floppy disk activity.
- International and nonstandard U.S. keyboards no longer revert to the standard U.S. keyboard layout after coming out of system sleep.

#### IMPROVEMENTS FOR MACINTOSH IIfx

- Communications applications perform properly when transmitting or receiving the Break signal or when hardware handshaking flow control is used.
- International and music font characters are drawn correctly.
- Screen dimmers work properly with color video cards that require 32-Bit QuickDraw.

#### IMPROVEMENTS TO 32-BIT QUICKDRAW 1.2

- You can automatically upgrade 32-Bit QuickDraw to version 1.2 (only if a previous version of 32-Bit QuickDraw is present) by selecting "Easy Install".
- 32-Bit QuickDraw 1.2 does not work with system software versions previous to 6.0.5.
- The 32-Bit QuickDraw icon does not appear in color on the Macintosh IIfx or Macintosh IIfx. These models have 32-Bit QuickDraw in ROM, and System 6.0.5 contains patches that make the ROM version equivalent to 32-Bit QuickDraw 1.2.
- Performance is improved for many drawing operations.
- The contents of color windows that span multiple monitors are drawn better.
- Color icons now draw properly on all monitors.
- 32-Bit QuickDraw works with more third party printers.
- Some third party screen shot utilities work better with 32-Bit QuickDraw.
- The lasso and paint bucket tools from some paint applications now work properly on monitors set for "Thousands" of colors.

#### IMPROVEMENTS FOR MACINTOSH SE

- Apple File Exchange works properly with one megabyte of RAM and two floppy disk drives.

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Tech Info Library Article Number:5428



# Tech Info Library

## Macintosh IIci: The Price of Progress

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: The Price of Progress

=====

Article Created: 30 March 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

### TOPIC -----

The Macintosh IIci represented one of the most significant steps forward in the evolution of the Macintosh architecture since the introduction of the original Macintosh II. Whenever a product with as many significant architectural enhancements as the Macintosh IIci is introduced, incompatibilities are bound to be revealed.

### DISCUSSION -----

The Macintosh IIci was not only the first Macintosh with a higher clockspeed and built-in video, it was also the first system with 32 bit QuickDraw in ROM and the first system to utilize non-contiguous memory and the PMMU for memory addressing. These were all significant internal modifications, intended to strengthen the Macintosh architecture and provide even greater flexibility for future hardware and software developments.

The majority of the modifications that third-party developers had to make to support the Macintosh IIci were changes that were necessary to support future CPUs and future versions of the Macintosh operating system.

- Addressing changes necessary to support non-contiguous memory and the utilization of the PMMU were changes that would be required to run correctly with VM in System 7.0.
- 32-bit QuickDraw will be built into all future ROM's which offer color support.
- The Built-in video monitor identification scheme will be built into future CPUs and is also part of our new video cards.

- Changes to the ADB manager and the video configuration (i.e. gamma correction table) will both be included in future systems.
- And, the fact that Apple will design systems that run at greater than 16Mhz is obvious.

For more information, see the four-part article on Macintosh IIcx compatibility problems.

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Tech Info Library Article Number:5429





# Tech Info Library

## Macintosh IIci: Causes for IIci Incompatibilities (Part 1 of 4)

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: Causes for IIci Incompatibilities (Part 1 of 4)

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Article Created: 30 March 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

This is part one of a four part article detailing the changes which caused the compatibility problems the Macintosh IIci faced. A significant number of Macintosh IIci compatibility problems were related to the improvements outlined below. Keep in mind that the majority of applications were not affected by these changes and that most of those that were have been updated.

DISCUSSION -----

Leading Causes for Macintosh IIci Incompatibilities

### 1) Non-contiguous memory

On all Macintosh systems prior to the Macintosh IIci physical memory is represented as one "contiguous" range of addresses. Despite the fact that memory is typically located in two separate banks with separate physical address ranges, these two ranges are presented as one "contiguous" range. The knitting together of bank A and bank B is taken care of by the memory controller. During startup the memory controller determines the amount of memory in bank A (i.e. 1MB or 4MB in case of Macintosh II) and then maps the starting address of the bank B range on top of the final address of the bank A range, which makes the two physical address ranges contiguous.

Making memory's physical addresses contiguous allows the contiguous logical memory map which is presented to software to be identical to the physical memory map. All Macintosh systems up to the Macintosh IIci utilized this 1:1 translation which means that starting at address 0, all logical and physical addresses are the same and an application knows where in physical memory an address is located.

On the Macintosh IIci the lowest physical address of bank B is fixed at physical address \$0400 0000, regardless of where the highest physical address of bank A is located. This leaves a gap between the top of bank A and the bottom of bank B which is a condition referred to as non-contiguous.

The move to non-contiguous physical memory on the Macintosh IIci was made to reduce the clock cycles associated with address translation and provide greater flexibility when configuring the system. By making physical memory non contiguous you may have as many banks of memory as you like and you can put whatever density RAM in whichever bank you like.

Non-contiguous memory requires the use of the PMMU on the 68030. The PMMU performs a translation of logical to physical addresses which permits the two to be different. And, in fact on the Macintosh IIci they are different. The address ranges of the two RAM banks are made logically contiguous even though the physical address ranges of the two banks are not contiguous. The PMMU plays the role of a dispatcher. On the one side it is accepting logical address requests made by software. On the other side it is mapping these logical address requests to physical locations in RAM.

This means that the operating system must keep track of the physical location it assigns a particular logical address. It also means that an application no longer knows where a given logical address is located in physical memory. While this change did not have an impact on most developers, it did have an impact on Nubus master card developers.

A Nubus master card is any Nubus card which possesses the intelligence necessary to take over either Nubus or the CPU bus. Examples of Nubus master cards include communications co-processor cards (i.e. Apple's MCP card), high-end video overlay and graphics cards, and intelligent I/O cards (i.e. DSP or SCSI DMA). One of the standard operations a Nubus master card performs is the reading and writing of data stored in the CPU's main memory.

When a Nubus master card wants to utilize main memory it must create a buffer within main memory, which it requests from the memory manager. This request specifies not only the size of the buffer but also that it be contiguous, non-cacheable and non-relocatable. In all Macintosh II systems before the Macintosh IIci, after the memory manager returned a logical address range that met these criteria the Nubus master card could immediately begin directly addressing physical memory. This was possible because in all designs up to the Macintosh IIci a given logical address range had an identical physical address range, which meant that a Nubus Master card could determine the location of the physical addresses by virtue of the logical address range it was provided.

With the Macintosh IIci design a Nubus master card must take some additional steps before it can begin accessing physical memory. The first step is the same, the card requests a contiguous, non-cacheable and non-relocatable chunk of memory from the memory manager, and in turn the

memory manager will return a logical address range. However on a Macintosh IIci, because the logical addresses are not the same as the physical addresses the master must make two additional requests. First, it must request that in addition to the logical address range being contiguous, the physical address range must also be contiguous. Second, it must request the location of the physical address range. Only after these requests are returned may the Nubus master begin to access physical memory directly. These two additional steps meant that all Nubus master card developers were forced to re-write their drivers to work with the Macintosh IIci.

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Tech Info Library Article Number:5430



# Tech Info Library

## Macintosh IIci: Causes for IIci Incompatibilities (Part 2 of 4)

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: Causes for IIci Incompatibilities (Part 2 of 4)

=====

Article Created: 30 March 1990  
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TOPIC -----

This is part two of a four part article detailing the changes which caused the compatibility problems the Macintosh IIci faced. A significant number of Macintosh IIci compatibility problems were related to the improvements outlined below. Keep in mind that the majority of applications were not affected by these changes and that most of those that were have been updated.

DISCUSSION -----

Leading Causes for Macintosh IIci Incompatibilities (Con't)

### 2) Utilization of the PMMU - No invalid addresses

Another change related to the utilization of the PMMU in the Macintosh IIci memory addressing architecture is the rejection of invalid addresses. This is perhaps the most prevalent cause for software compatibility problems on the Macintosh IIci. As described above the PMMU plays a critical role in interfacing between logical and physical memory. As part of the process of translating logical to physical, the PMMU also evaluates the "validity" of the logical address requests it receives. An address is considered valid if it falls within the valid address range and the valid address range is determined by how much physical memory is available. A 2MB configuration has a 2MB valid address range and a 5Mb configuration has a 5MB valid address range. This is determined at startup, and the PMMU tables are set accordingly. If an application requests access to an address that lies outside of this range, the PMMU generates a bus error. That all sounds logical. So why should this cause a problem?

Because on previous systems invalid addresses were not identified. When

an application requested access to an address it would go straight to RAM, which would decode whatever bits within the address it could and ignore the rest. For instance if you had 1MB of RAM installed, your valid address range would theoretically include all addresses up to 20 bits wide (2 to the 20th is 1024K), which means that memory would only be capable of decoding up to 20 bits of address information. Now let's say an application requests access to a 21 bit address that is beyond your 1 MB address range. On all systems up to the Macintosh IIci, RAM decodes the lowest 20 bits (ignoring the 21st bit) and grants access to an address within the valid address range. The fact that a bad address had been written was concealed. There is the potential for problems with this model if an application overwrites data stored in a particular address or it reads in bad data, but often the problem is never revealed.

In the case of a Macintosh IIci this errant behavior is always revealed and therefore a number of applications, CDEVs, INITs, and drivers that worked fine up until the Macintosh IIci suddenly broke. Embarrassingly enough, this change revealed problems with two internally developed Apple products, version 3.0 of the CD-ROM driver and version 2.3 of MacTerminal.

The majority of developers who have encountered this problem are aware of it and have either already made the corrections or are in the process of making corrections necessary to make their applications Macintosh IIci compatible. However this problem, which is difficult to diagnose, took many developers by surprise.

IMPORTANT NOTE: It is important to understand that both the move to non-contiguous memory and the utilization of the PMMU to capture invalid addresses presaged changes that were required for compatibility with System 7.0 and virtual memory.

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Tech Info Library Article Number:5431



# Tech Info Library

## Macintosh IIci: Causes for IIci Incompatibilities (Part 3 of 4)

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: Causes for IIci Incompatibilities (Part 3 of 4)

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Article Created: 30 March 1990  
Article Last Reviewed: 8 July 1992  
Article Last Updated:

TOPIC -----

This is part three of a four part article detailing the changes which caused the compatibility problems the Macintosh IIci faced. A significant number of Macintosh IIci compatibility problems were related to the improvements outlined below. Keep in mind that the majority of applications were not affected by these changes and that most of those that were have been updated.

DISCUSSION -----

Leading Causes for Macintosh IIci Incompatibilities (Con't)

### 3) 32 bit QuickDraw in ROM

The Macintosh IIci is the first CPU to incorporate 32-bit QuickDraw in ROM. With previous systems users had the option of installing 32-bit QuickDraw in RAM through the addition of an INIT file to their system folder. Although 32-bit QuickDraw was engineered for high compatibility with the original QuickDraw and Color QuickDraw programmer's interfaces, certain programming practices could lead to problems with this new software. Users of the 32-bit QuickDraw INIT could optionally deactivate the software if there proved to be a compatibility problem. Because 32-bit QuickDraw is in ROM on the Macintosh IIci, it cannot be defeated.

- Video card problems

Generally, existing video cards have no compatibility problems with 32-bit QuickDraw. However, newer cards designed to take advantage of 32-bit QuickDraw's features such as 16 and 32-bit direct color pixels and large frame buffers need to follow a special initialization sequence at startup

to allow the card's special features to be activated after the 32-bit QuickDraw INIT has been loaded. On the Macintosh IIci, 32-bit QuickDraw (and the new Slot Manager) are in ROM, so a simpler, but different, startup sequence needs to be executed. Some third-party developers unaware of this alternate sequence were incompatible with the Macintosh IIci when it was first introduced.

- Software Problem

One major change in 32-bit QuickDraw is that the frame buffer memory is always accessed in 32-bit addressing mode rather than the 24-bit addressing mode used by previous versions of QuickDraw. This allows the applications to access frame buffers up to 16MB in length, as opposed to 1MB with non-32-bit versions of color QuickDraw. This additional frame buffer address space is becoming increasingly important as the use of 24-bit color becomes more prevalent.

For a user to benefit from this 32-bit addressing mode they must install a video card capable of taking advantage of it. In turn, a video card possessing these capabilities must test the system to determine if 32-bit QuickDraw is present or not. If it is present then 32-bit QuickDraw capabilities of the card will be enabled, which means, among other things, the card will expect to be accessed in a 32-bit addressing mode. If 32-bit QD is not present most cards will default to the 24-bit addressing mode. In this way, a new card possesses the flexibility to adjust to whichever QuickDraw environment it finds itself in.

In a system where 32-bit QuickDraw is present and there is a 32-bit QuickDraw capable card installed, there is the potential for incompatibilities with certain applications that directly address, (i.e. bypassing QuickDraw) the video frame buffer. A number of paint applications fall into this category. Previously, these applications could directly access all frame buffers in 24-bit addressing mode and know that they would work. However if an application is running on a system with 32-bit QD installed and a 32-bit QuickDraw capable video card is also installed and the application attempts to directly address the frame buffer a problem occurs. The application is attempting to access a 24-bit address in 32-bit addressing environment. In this case, the address request will be redirected to the 24-bit alias of the 32-bit buffer and you end up with garbled screen data or a system that hangs.

Keep in mind this situation can occur on any machine with 32-bit Quickdraw and a 32-bit QuickDraw capable card installed. The difference is that on a machine with 32-bit QuickDraw as an INIT in RAM, the INIT can be deactivated and the system will revert to 24-bit addressing for the frame buffer (although it will lose new features). Because on a Macintosh IIci, 32-Bit QuickDraw is in ROM, it cannot be defeated, so these applications will not work correctly, and require revision. Once again, this problem occurs only with new video cards that expect 32-bit QuickDraw.

IMPORTANT NOTE: The revision to HyperCard from 1.2.2 to 1.2.5 was required to address this issue.

#### 4) Built-in video

One of the features of the Macintosh IIci's built-in video design is the fact that it is self configuring, which means that all the user has to do is plug the monitor into the video port and the system automatically recognizes what monitor is attached and configures itself accordingly. Offering this feature required that there be some type of monitor identification scheme included in the design. The scheme used in the Macintosh IIci is to designate three of the 15 pins within the video connector for monitor identification. This gives the system a 3 bit value (3 pins pulled high or low, where high = 1 and low = 0) for identifying up to 8 different conditions, (7 different monitors + 1 no-monitor condition).

It is significant to note that this scheme originated with the introduction of the revised 4•8 bit video card introduced in the spring of 1989. It is also important to note that it is utilized on both the 8•24 and 8•24GC cards, and in the future it will be utilized in all future systems which incorporate built-in video and in all future video card designs from Apple.

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Tech Info Library Article Number:5432





# Tech Info Library

## Macintosh IIci: Causes for IIci Incompatibilities (Part 4 of 4)

Revised: 7/9/92  
Security: Everyone

Macintosh IIci: Causes for IIci Incompatibilities (Part 4 of 4)

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Article Created: 30 March 1990  
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TOPIC -----

This is part four of a four part article detailing the changes which caused the compatibility problems the Macintosh IIci faced. A significant number of Macintosh IIci compatibility problems were related to the improvements outlined below. Keep in mind that the majority of applications were not affected by these changes and that most of those that were have been updated.

DISCUSSION -----

Leading Causes for Macintosh IIci Incompatibilities (Con't)

### 5) ADB manager

In an effort to reinforce the ADB standard, protocols surrounding the polling of ADB devices were more explicitly defined. Clarifying the rules surrounding the polling process revealed the fact that certain developers had made false assumptions. This especially affected developers using an ADB hardware lock for copy protection. As it turns out there was really only one third-party vendor affected by this change. However the impact was magnified because this one developer sold their lock to a number of third-party software developers who include the ADB lock as a standard part of their application. Once the problem was diagnosed, Apple worked with the developer of the ADB lock on a solution.

### 6) 25Mhz Clock Speed - "Too fast"

Certain applications were designed around the assumption that a call to a particular chip or location in memory would be returned within a given interval of time. Those developers who made this assumption ensured that

their product would break when Apple introduced a higher clock speed system. The Macintosh IIci turned out to be that higher speed system. This change affected only a small number of developers who had instituted timing-dependent copy protection schemes and developers who designed timing-dependent games.

#### 7) Gamma correction

Since its introduction, all Macintosh II systems perform color correction, commonly called "gamma correction", on video displays to compensate for non-linearity in the monitor's phosphor response. The effect of a proper gamma table is to make a monitor appear brighter and colors more vivid. Theoretically each brand of monitor has its own unique phosphor composition and therefore each monitor should have its own "device specific" gamma table.

The fact is that most third-party vendors do not provide a gamma correction table data with their monitor, so machines released prior to the Macintosh IIci set all displays to the gamma correction designed for the Macintosh Hi-Res RGB Display. While this was not really correct, it nonetheless ensured that all displays had at least some form of gamma correction.

In order to encourage third parties to offer their own gamma correction information, the new video card architecture (incorporated into the Macintosh IIci ROM) supports improved methods of carrying this device-specific data with each card. As a result of this change the Macintosh IIci scans for gamma table data in each video card and sets each card with its own customized gamma tables. In many cases, third-party cards do not properly initialize their own hardware, expecting to be set with the Hi-Res RGB gamma table. As a result, displays connected to these cards are left uncorrected, which means that they tend to look significantly darker when connected to the Macintosh IIci.

As an aid to improving the appearance of old cards on the Macintosh IIci, Developer Technical Support made available source code to an INIT that allowed developers to load the appropriate gamma table information.

#### 8) Problems related to bugs in the Macintosh IIci ROM

In addition to those problems that we were aware of, there were a number of unanticipated problems that were discovered in the Macintosh IIci ROM. These changes have been corrected through bug fixes incorporated into the 6.0.5 release of system software.

##### - Palette Manager

There was a patch file for the Palette Manager which failed to be included in the final Macintosh IIci ROM. This patch file helps to correct a minor problem in the 32-bit color QuickDraw code built into the Macintosh IIci ROM, which determines the color palette for an application when it is opened. By not including this patch, certain paint and image processing applications ended up displaying colors incorrectly.

- Zero-width Characters

This is a bug which was inadvertently introduced in the Macintosh IIci ROM. It causes zero-width characters to not be drawn. Zero-width characters include characters used for musical notation, foreign languages (i.e. Kanji and Arabic) and mathematical notation. This caused particular problems for developers doing musical typesetting and some mathematics programs.

- Serial Driver

Due to an anomaly in the serial driver code, when a Macintosh IIci is being used with a modem and a break character is returned during a communications session, the system will crash or hang. This does not occur frequently, but does occasionally occur when a user is engaged in a session with one of the remote information services.

- TextEdit

There were a handful of bugs in TextEdit which were incorporated in the Macintosh IIci ROM. The majority of these problems are cosmetic and do not cause the system to fail. TextEdit is used by a number of applications including AppleLink and HyperCard. In addition, TextEdit is used in all dialog boxes that appear on your screen.

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Tech Info Library Article Number:5433



# Tech Info Library

## Apple IIGS: Use DuoDisk on Interface Card, NOT on SmartPort

Revised: 6/29/90  
Security: Everyone

Apple IIGS: Use DuoDisk on Interface Card, NOT on SmartPort

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This article last reviewed: 2 April 1990

TOPIC -----

I have a "Blockbuster" Apple IIGS with Rev. 3.0 ROM, a DuoDisk, and Profile in slot 7.

I plugged the DuoDisk into the disk port on the Apple IIGS main logic board, installed the ProFile in slot 7, and set the Control Panel to "your card." Leave both DuoDisk drives empty and power on the system. Then I set startup to "Scan."

The DuoDisk LED for drive #1 should turn on, but the system will not start. Why did the Apple IIGS skip the ProFile in slot 7? Then, when I power down the Apple IIGS and put a non-write-protected disk in the DuoDisk drive, it still doesn't start.

If I power down the Apple IIGS and place a write-protected disk in the drive, then power on the system. The system starts up as expected, following the "Control Panel".

If the system appears to be "hung" following any of the above steps, momentarily triggering the write-protect switch by inserting anything into the drive allows the system to start up.

There appears to be compatibility problems with the new Apple IIGS main logic board and the DuoDisk. Performing the "DuoDisk/Apple IIGS fix" that is posted on AppleLink has no effect since the problem appears to be hardware (firmware) based.

What can I do?

DISCUSSION -----

There IS a compatibility problem with the DuoDisk and the Rev 3 Apple IIGS main

logic board. Do not use the DuoDisk on the SmartPort: there is some code in the ROM that does not handle the interface to a DuoDisk properly.

As of April, 1990, the only workaround is to use the DuoDisk on an interface card.

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Tech Info Library Article Number:5434



# Tech Info Library

## InitCdev and Virus Detectors May Conflict

Revised: 6/29/90  
Security: Everyone

InitCdev and Virus Detectors May Conflict

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This article last reviewed: 2 April 1990

TOPIC -----

I've been using InitCdev 2.0, a freeware INIT management utility. With the AppleComm Toolbox on my system, when I invoke InitCdev, it crashes with ID=17 (package 0 not present--list manager).

Can you explain?

DISCUSSION -----

Try moving a couple of virus detectors around, so that SAM Intercept loads before the InitCdev, and Vaccine loads after InitCdev, then the Apple Communication Toolbox should work fine.

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Tech Info Library Article Number:5437



# Tech Info Library

## AppleShare File Server and Viruses, Continued

Revised: 6/29/90  
Security: Everyone

AppleShare File Server and Viruses, Continued

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This article last reviewed: 2 April 1990

TOPIC -----

Since an AppleShare file server can be infected with WDEF, can the existence of WDEF on the server affect its performance? Also, since the server uses a different format of the Desktop file, which file gets infected?

DISCUSSION -----

The WDEF virus causes a significant performance lag on the file server during the time the Desktop file on the server is being written to. After the initial infection, there won't be a performance problem.

The file called "Desktop" is the file that is infected. Remember, this is the file at the root level of the volume. The "Desktop DF" and "Desktop DB" files created by the Desktop Manager INIT are in the Server Folder, and are not bothered by the WDEF virus for two reasons:

- 1) The Server Folder is not accessible by any program on a workstation.
- 2) WDEF looks for a file called "Desktop" to infect, not "Desktop DF" or "Desktop DB".

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Tech Info Library Article Number:5440



# Tech Info Library

## Ethernet Backbone and Seed Routers

Revised: 6/29/90  
Security: Everyone

Ethernet Backbone and Seed Routers

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This article last reviewed: 2 April 1990

Information -----

Here are some questions and answers about supporting AppleTalk on a corporate Ethernet backbone -- specifically, a group-managed, Macintosh-based Internet router which would be the sole seed router for the Ethernet.

- Q) Can all third-party routers that support the AppleTalk Phase 2 protocol accept seeding from the AppleTalk Internet Router?
- A) All third-party routers that Apple Tech Comm is aware of can receive their network information from the AppleTalk Internet Router. It is best to confirm this information with the manufacturer of the routers that your account plans to use. Remember, there must be a seed router on every physical cable.
- Q) What is the effect on the network if the seed router goes down for 24 hours or more?
- A) Nothing, other than losing the ability to route packets to the networks on the other side of the seed router. If a router that depends on the seed router goes down, when it attempts to come back up it will not get a network number for the physical cable common to both routers and will not route.
- Q) What is the effect if a user brings up a non-seed router with different network numbers and zone names?
- A) All the routers of which Apple Tech Comm is aware will report that there is a network number and/or zone name conflict and will not come up. If a router did allow you to enter with an incorrect zone or network number information, many problems would occur. Network devices may not appear, or they may appear in different zones. Packets will be lost and many network



errors will be generated.

Q) If I need to expand the seed routers network range and zone list, must I bring the other routers down for the update?

A) Yes, the seed router will attempt to run and notice that the network number range and/or zone name is different and report an error regarding the conflict. This necessitates bringing down the other routers on the same physical cable that get their network information from the seed router. As usual, the seed router must be up and running before the other routers are brought up.

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Tech Info Library Article Number:5441



# Tech Info Library

## HyperCard and Microsoft Mail Conflict and Fix

Revised: 6/29/90  
Security: Everyone

HyperCard and Microsoft Mail Conflict and Fix

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This article last reviewed: 2 April 1990

TOPIC -----

I am experiencing problems using System Software 6.0.4, Microsoft Mail 2.0, and HyperCard 1.2.5.

While using HyperCard, I receive a Microsoft Mail message. At that point, my machine produces a high-pitch tone. (This tone cannot be stopped unless I quit HyperCard or initiate a beep tone from my Macintosh within HyperCard.

What's going on here? Is there a fix?

DISCUSSION -----

HyperCard also has a similar conflict with some versions of InBox.

As of April, 1990, the only workaround is to turn off the notifying chime until the problem is resolved.

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Tech Info Library Article Number:5442



# Tech Info Library

## Making a Hard Drive Read-Only

Revised: 6/29/90  
Security: Everyone

Making a Hard Drive Read-Only

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This article last reviewed: 2 April 1990

TOPIC -----

I want my internal disk drives to have a jumper that allows me to set the drive for read-only access. Can I do this? If so, which one and how do you set it?

DISCUSSION -----

There is no jumper or switch on Apple hard drives that make them read-only. However, there are ways to do this via software.

The first method requires that the hard drive be formatted by Apple HD SC Setup 2.0:

- 1) Start up from a floppy disk and run HD SC Setup 2.0 from that disk.
- 2) Select the hard disk that you want to make read only.
- 3) Click the "Partition" button.
- 4) A new dialog appears; click the "Custom" button.
- 5) Click on the Macintosh partition (the hard disk name appears in the partition).
- 6) A new dialog appears; click the "Lock" button.
- 7) Click the "Done" button.
- 8) Quit HD SC Setup.

The Macintosh partition of the selected hard disk is now write protected.

You can also use a disk editor, such as FEdit (this method works with hard

disks formatted by earlier versions of HD SC Setup):

- 1) Open the hex representation of the volume that you want to lock.
- 2) Go to sector number 2. (This should be the third sector on the disk, with each sector having a length of 512 bytes.)
- 3) The sector should look something like this:

```
          ****
4244 9FAE F13C 9FAF 228B 0000 0010 0003
0000 063A 0000 0200 0000 0800 0004 0000
0020 0488 0855 6E74 6974 6C65 6400 0000
..... and so on,
```

where the 4244 begins at the zero byte of the sector.

- 4) The key location is where you see the word with the "\*\*\*\*\*" over it. It should be located at the tenth byte and be \$0000.
- 5) If the 8000 is at the tenth byte, change it to \$8000 and write the sector to disk.
- 6) Restart the system to have the change take effect. (This information is usually stored in memory and won't be updated until you restart.)

Running software from a locked disk is not advised unless the locked device is NOT the startup disk. Many applications create scratch files in the System Folder of the startup disk. If it's locked, the software probably won't run. Some software even expects its home disk to be unlocked. If the locked device is not the startup disk, and the user is only going to read from it, then everything should be okay.

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Tech Info Library Article Number:5443



# Tech Info Library

## AppleShare File Server and Virus Protection

Revised: 6/29/90  
Security: Everyone

AppleShare File Server and Virus Protection

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This article last reviewed: 2 April 1990

TOPIC -----

What are your recommendations on virus protection for file servers?

Also, can a server be infected with the WDEF virus? If so, since WDEF is spread by a machine coming in contact with an infected disk's Desktop file, how is it spread? Does a server access a workstation's Desktop file?

DISCUSSION -----

Apple Tech Comm does not recommend using INITs that offer virus protection on file servers. A server will freeze if a dialog appears alerting the nonexistent user about an infection attempt. We suggest that instead you use a program that scans the AppleShare File Server for viruses on a regular basis.

The AppleShare Server Folder itself is quite secure when the server is running. Is it not accessible by any system call, whether high-level or low-level. A virus can attack only folders and files for which the user of the infected program has write access privileges. It is not necessary or recommended to install Vaccine in the Server Folder on the AppleShare File Server. If the server is running at the Finder level, it is just as susceptible to viruses as any system.

An AppleShare file CAN become infected with the WDEF virus. When any new volume is mounted, the WDEF virus looks for a file called "Desktop" at the root level and copies itself into it. Once the file server is infected with the WDEF virus, the virus is dormant because the Desktop file is not accessed by workstations and is not used by the file server.

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Tech Info Library Article Number:5444



# Tech Info Library

## EtherTalk 2.0: Needs AppleTalk Driver v53

Revised: 6/29/90  
Security: Everyone

EtherTalk 2.0: Needs AppleTalk Driver v53

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This article last reviewed: 2 April 1990

INFORMATION -----

You may discover a compatibility problem with some networks (usually demonstration networks where many different types of software have been used).

The problem occurs when a server has first had EtherTalk 2.0, installed, then later has had EtherTalk 1.0 or 1.2 installed. AppleTalk driver version 53 -- which is installed with EtherTalk 2.0 -- does not work with earlier versions of the EtherTalk driver.

When switching from EtherTalk 2.0 to EtherTalk 1.0 or 1.2, AppleTalk driver v53 must be removed from the System Folder and replaced with AppleTalk driver version 52, which works with EtherTalk 1.0 and 1.2.

The removal must be done manually, by dragging the AppleTalk driver icon from the folder. Installing the new version can be done either with a Finder copy, or through the EtherTalk 1.0 Installer.

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Tech Info Library Article Number:5445



# Tech Info Library

## AppleShare PC: Printing to ImageWriters

Revised: 6/29/90  
Security: Everyone

AppleShare PC: Printing to ImageWriters

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This article last reviewed: 12 April 1990

TOPIC -----

Can you print to an AppleTalk ImageWriter from a PC using a LocalTalk PC Card and AppleShare PC 2.0? Also, does the current version of AppleShare PC include the drivers that allow printing to this device?

I have heard that AppleShare PC prints to both the ImageWriter II and the ImageWriter LQ printers.

DISCUSSION -----

The AppleShare PC Desk Accessory does provide a network choice for the ImageWriter II and ImageWriter LQ printers.

AppleShare PC has included AppleTalk Printer Drivers for the ImageWriter II and ImageWriter LQ since version 1.1. This was not available in AppleShare PC 1.0. Anyone using a version of AppleShare PC that does not have the ImageWriter drivers as a desk accessory option should upgrade to the latest version of AppleShare PC version 2.01.

About ImageWriter printing:

AppleShare PC first requires the PC application to choose its own Epson driver or ImageWriter driver. If the application has an ImageWriter driver, AppleShare PC will manage only the AppleTalk connection. If the application supports only Epson printing, AppleShare PC will handle the AppleTalk connection to the ImageWriter and convert the application's Epson commands to ImageWriter commands. This requires the user to configure the AppleShare PC connection to the ImageWriter with the Epson print option.

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Tech Info Library Article Number:5446



# Tech Info Library

## LaserWriter as a Serial Printer

Revised: 6/29/90  
Security: Everyone

LaserWriter as a Serial Printer

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This article last reviewed: 12 April 1990

TOPIC -----

I've been doing some work with the Asynch LaserWriter drivers, testing a mixed DOS/Macintosh environment.

- 1) When the LaserWriter is used as a serial printer, does it respond to ASCII codes with the 8th bit set the same as codes with the 8th bit not set? For example: Is 83h = 03h, 84h = 04h, 93h = 13h, 91h = 11h?
- 2) Does the LaserWriter respond to the above control codes when in AppleTalk mode as well as when in serial mode?

DISCUSSION -----

These questions are interrelated, and the answers may be easier to follow if we answer #2 first.

- 2) A control code is used by a printer for a specific printer function. When the printer is in AppleTalk mode, the PostScript program language is used, and uses words to activate or invoke printer functions, not control codes. However, the printer uses control codes if it is in Diablo or LaserJet (if available) emulation mode.
- 1) If the printer is in Diablo or LaserJet mode, the above is correct if it is set for 7-bit data with no parity check, as the 8th bit is dropped -- but if the printer is in 8-bit mode, the mapping is not equivalent.

(NOTE: Part of the printer configuration requires you to select whether 7- or 8-bit communication and parity is used, so question 1 may be moot.)

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Tech Info Library Article Number:5447





# Tech Info Library

## EPROM Burners for Macintosh

Revised: 6/29/90  
Security: Everyone

EPROM Burners for Macintosh

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This article last reviewed: 12 April 1990

TOPIC -----

Is there an EPROM programmer device or software that can be connected to the Macintosh ?

DISCUSSION -----

You have quite a few options. If you search the Redgate Buyer's Guide or MENU/Software Library on the keywords EPROM and Macintosh, you'll get a list of many software applications. Many of these programs generate object files in Motorola S, Intel Hex, and TEK-Hex (Tektronics format) record formats, used by a majority of PROM burners. Some programs have their own built-in communication emulation package, while others require you to use a terminal emulation program, such as MicroPhone or MacTerminal, to download to an emulator or EPROM programmer connected to the Macintosh modem or printer port.

We have also seen various PROM burners advertised in the Macintosh magazines. A check of back issues should help you develop a list of names.

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Tech Info Library Article Number:5448



# Tech Info Library

## Hewlett-Packard 3000 Connectivity Update

Revised: 6/29/90  
Security: Everyone

Hewlett-Packard 3000 Connectivity Update

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This article last reviewed: 12 April 1990

INFORMATION -----

Tymlabs, Inc., publishers of the Sessions series of terminal emulators for the HP 3000 series, now includes (HP-style) Ethernet support to each of their packages. (Previously, each of the packages supported serial connections only.)

Incidentally, the packages are also available for PC and Macintosh from the HP price list as "Advance-Link".

For more information, search under: "Tymlabs"

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Tech Info Library Article Number:5449



# Tech Info Library

## LaserWriter IINTX-J Printing Problems

Revised: 9/29/92  
Security: Everyone

LaserWriter IINTX-J Printing Problems

Article Created: 12 April 1990

Article Change History:

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09/29/92 - REVIEWED  
• For technical accuracy.

TOPIC -----

I'm having printing problems with a Kanji LaserWriter. I need to print both Japanese and English documents on the same LaserWriter IINTX-J. Can you answer these questions?

- 1) LaserWriter 5.2 works, but very slowly. In fact, a page in Osaka prints faster on a LaserWriter IINTX (bitmapped output) than on a LaserWriter IINTX-J.
- 2) LaserWriter 5.3 works OK in Kanji on the LaserWriter IINTX-J but does not support printing in Roman characters. We cannot print a page of plain text in Times or Helvetica. Can you explain?
- 3) Does Apple have a Kanji PrintMonitor/Laser Prep/LaserWriter 6.0 Driver?

DISCUSSION -----

- 1) This is an interesting problem and will be obvious once explained. There are variables that need confirmation and reconciliation, however.

Osaka is a bitmapped font and has no PostScript equivalent; therefore, the optimal print times will be the same if everything is equal (actually, a bitmap print job is a little faster on a LaserWriter IINTX-J because the printer ROM version is newer, and the LaserWriter IINTX-J is usually configured with more RAM than a stock LaserWriter IINTX).

In your case, print jobs are probably slower on the LaserWriter IINTX-J because Font Substitution is most likely selected, causing the driver to perform additional searching (it attempts to locate and use a "double-wide" Kanji font on the printer) prior to printing. (The question to ask that will help verify the problem is whether both outputs are bitmapped, or if the LaserWriter IINTX-J substitutes a built-in PostScript font.) If it is printing a bitmapped font, even though Font Substitution is selected, the wrong version of "Kanji" fonts are being used or the font is damaged. We recommend that you always install the version of "Kanji" fonts that comes with the drivers and OS, and don't mix and match older fonts with newer drivers, for instance.

(NOTE: The above suggested workarounds are, of course, negated if you are using a program like MacPaint, which outputs a bitmap. This answer assumes that you are using a word processing or other type of application.)

- 2) This is very peculiar, and should work! We suspect the wrong versions of fonts are being used with the wrong version of driver. Less likely is that the application, drivers, or OS is damaged. Again, it is best to replace old Kanji fonts with the new ones that accompany the drivers and OS when updating the drivers. To investigate this further, we would need more details. Eventually, you may want to upgrade the account to the latest version of the driver, when you obtain it.
- 3) You can obtain the J1-5.3 driver from the Technical Support Information Source CD on the Utilities 2 disk.

#### Performance Tips

-----

- For optimal appearance of the output and throughput, you might want to use a built-in PostScript Kanji font, Gothic or Saimin, particularly if you are doing any scaling.
- If you are using both Kanji and Roman fonts in your document, for optimal printing speed, don't use a font menu to select between the fonts. Instead, use the Roman fonts built in to the Kanji font. You can change back and forth between the Kanji characters and Roman characters, say in Kyoto, by pressing Command-space. This minimizes the number of font bitmaps the printer must build when printing a job, which can decrease the amount of time required to print.

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Tech Info Library Article Number:5450



# Tech Info Library

## System 6.0.4: Problem with Two-Floppy Macintosh SE and AFE

Revised: 8/23/91  
Security: Everyone

System 6.0.4: Problem with Two-Floppy Macintosh SE and AFE

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Article Created: 1 May 1990  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

When trying to run Apple File Exchange on a Macintosh SE configured with two Apple SuperDrives (formerly Apple FDHD), running under System v6.0.4, I get an "ID=02" bomb. I also experienced the problem when starting up from the v6.0.3 System Tools disk; however, when I started up with a startup disk created from the System v6.0.3 Installer, I could get AFE to run.

I have tried several combinations of drives. The bomb occurs any time a SuperDrive is plugged into the drive slot marked "Upper" on the main logic board. Apparently the same problem occurs when starting from an external hard disk (until the upper drive is disconnected).

What's going on?

DISCUSSION -----

This is a little-known incompatibility with dual-floppy Macintosh SEs, those having either SuperDrives or 800K drives. As of April, 1990, there is no fix available for system software v6.0.4.

If you need to get the configuration working, however, one of the following workarounds may do the trick:

- Disconnect one of the floppies and connect an internal or external hard disk.
- Configure a disk using earlier versions of AFE (say 1.1.1 with system software 6.0.3) as you described above.

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# Tech Info Library

## Multi-User Relational DBMS for Both Macintosh and PC

Revised: 1/18/93  
Security: Everyone

Multi-User Relational DBMS for Both Macintosh and PC

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Article Created: 1 May 1990

### Article Change History

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1/15/93 - UPDATED  
• Changed vendor name.

### TOPIC -----

I need a set of database programs that run on both the Macintosh and PC and can use a common set of relational database files on a server (multi-user type).

I know that some Macintosh products can read and run dBASE, but do they work on a network?

### DISCUSSION -----

Omnis 5 from Blyth Software and FoxBASE+ (used with FoxBASE+/LAN) from Microsoft both allow data files to be shared in a combined PC and Macintosh network environment.

FoxBASE+ includes tools that allow simple entry/retrieval forms to be drawn, and these tools can generate the code to handle the simple forms. FoxBASE+ also can directly use dBASE code from Borland International's dBASE.

We are not aware of a multi-user relational database that works on both platforms on a network and does not use a programming language.

To locate a vendor's address and phone numbers, use the vendor's name as a search string.

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Tech Info Library Article Number:5454



# Tech Info Library

## Apple IIGS: Choosing Networked ImageWriter

Revised: 6/29/90  
Security: Everyone

Apple IIGS: Choosing Networked ImageWriter

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This article last reviewed: 12 April 1990

TOPIC -----

I have two networks at two different schools. The first network has approximately 30 Apple IIGS systems, one Macintosh SE (acting as an AppleShare File Server), a Macintosh SE with HD20 SC, and four ImageWriter II printers with LocalTalk Option Cards. The network is connected with PhoneNET cabling and the machines are placed in no particular order around the network.

When the last LocalTalk ImageWriter II is added to end of the network, the LocalTalk ImageWriter II printers drop from the Chooser and become invisible to the Apple IIGS systems. The Macintosh SE can still see and print to the ImageWriters, however. If the LocalTalk ImageWriter II is moved to another location on the network with PhoneNET cable and connector box and another LocalTalk ImageWriter II is put in its place, the same thing happens. If the ImageWriter II is removed from the network, the Apple IIGS systems can see the other printers.

The second network uses a StarController and PhoneNET. One channel of the StarController has a Macintosh SE/30 AppleShare File Server; the second channel has 12 Apple IIGS systems, one Macintosh SE, and one LocalTalk ImageWriter II; the third channel has 15 Macintosh SE systems and three LocalTalk ImageWriter II printers. At some point, when enough machines are added, the same thing as above happens -- that is, the Apple IIGS systems can't see the ImageWriters, but the Macintosh systems can.

I ran Inter-Poll on one of these networks after the failure occurred. All Apple IIGS systems and all ImageWriter II printers were visible.

Note that in both cases the Apple IIGS systems start up from the network. What might cause this? Can you recommend any steps to cure this problem?

DISCUSSION -----



NOTE: We are assuming that when you speak of using the Chooser, you're talking about the network ImageWriter CDEV found in the GS/OS Control Panel.

The GS/OS Control Panel network ImageWriter CDEV cannot handle more than three networked ImageWriters. When the fourth ImageWriter is added to the network, all networked ImageWriters disappear. There is no way to change the CDEV's performance.

When using GS/OS applications, the only workaround is to switch off ImageWriters until only three are active on the network; make the printer selection via the CDEV; then power on the remaining printers. Once the selection process is complete the printing process will work properly. Even though the CDEV cannot locate a printer, the GS/OS Print Manager can.

When using ProDOS 8 applications, using Chooser.II allows all available network ImageWriters to appear. Using Chooser.II does not work with GS/OS applications because Chooser.II stores its choices in the ATINIT file associated with that user. GS/OS applications look to the CDEV choices for printing operations.

In summary:

- For ProDOS applications, use Chooser.II.
- For GS/OS applications, use the Control Panel's network ImageWriter CDEV.

When using GS/OS with more than three ImageWriters on the network, perform printer choices when only three ImageWriters are powered on. Once chosen, all printers can be powered on and used normally.

Other than these workarounds, as of April, 1990, there is no solution to the GS/OS Control Panel CDEV problem.

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Tech Info Library Article Number:5455



# Tech Info Library

## HyperCard: Don't Refer to Cards by ID in Non-Static Stacks

Revised: 6/29/90  
Security: Everyone

HyperCard: Don't Refer to Cards by ID in Non-Static Stacks

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This article last reviewed: 12 April 1990

TOPIC -----

I'm working on a HyperCard application that makes extensive use of card ID numbers while also doing a lot of copying/cutting and pasting of cards for various reasons. The problem is that ID numbers occasionally change after cards are cut and/or pasted. As a result, functions that rely on the old ID numbers are upset.

Is there a way around this? When are card ID numbers changed; when are they not? Is there a way to force the ID number to remain the same or to change the ID number of an existing card?

My current solution is to check the ID number before and after copying, and if changed, laboriously replace all instances of the old ID number string with the new in all scripts (unsatisfactory, but better than nothing). In particular, I am working with two separate stacks, copying cards from one stack and placing them in another with the hope that the ID number will be the same on the new stack. There doesn't seem to be a pattern to when the ID number changes and when it doesn't.

DISCUSSION -----

Referring to cards by their ID number is a great idea in static stacks. ID numbers are guaranteed to be unique, so the user can be sure no conflicts result. When working in a constantly changing stack, it's best to reference the card by name. When a card is created, we suggest that the user use something like:

set the name of this card to "C" & the ID of this card

to name the card. That way, names are reasonably unique (conflicts will be extremely rare) and cutting and pasting won't change the item referenced. The letter in quotes (in this case "C") can be any character, although it's

safer to use letters. The purpose of the leading letter is to keep HyperCard from referencing card NUMBER "xxx" instead of card NAME "xxx".

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Tech Info Library Article Number:5456



# Tech Info Library

## AFE: Problem May Be Faulty Cable or Missing SMB Server

Revised: 6/29/90  
Security: Everyone

AFE: Problem May Be Faulty Cable or Missing SMB Server

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This article last reviewed: 12 April 1990

TOPIC -----

I received this message when launching AFE to do SMB file transfer:

"The Token Ring interface driver could not be opened."

The Apple File Exchange then launches without file transfer capability.

I'm running a Macintosh IICx with System 6.0.4, EtherTalk NB Card, video card, and TokenTalk NB Card.

Can you explain?

DISCUSSION -----

This error message appears when there are problems with cable connections or when the SMB File Transfer Utility cannot find an SMB server on the ring.

Make sure that the cable is fully connected to the TokenTalk NB Card and the MAU, and ensure that the SMB file server is still running on that ring.

If that does not correct the problem, you might try a different TokenTalk NB Card, or try a different cable and connect it to a different port on the MAU.

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Tech Info Library Article Number:5457



# Tech Info Library

## VersaTerm Pro 3.1: Needed for Macintosh Portable

Revised: 6/29/90  
Security: Everyone

VersaTerm Pro 3.1: Needed for Macintosh Portable

=====

This article last reviewed: 12 April 1990

TOPIC -----

When running VersaTerm Pro 3.0.1 on a Macintosh Portable with the keypad option installed, the system does not map the PF2 and PF3 keys properly.

Is this a known problem?

DISCUSSION -----

VersaTerm Pro version 3.0.1 is NOT compatible with the Macintosh Portable keyboard. VersaTerm Pro version 3.1 is the correct version to use on the Macintosh Portable. For upgrades, please contact Peripherals Computers & Supplies, Inc.

For more information, search under: "Peripherals Computers & Supplies"

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Tech Info Library Article Number:5458



# Tech Info Library

## LaserWriter: Problem Printing Multiple Copies

Revised: 6/29/90  
Security: Everyone

LaserWriter: Problem Printing Multiple Copies

=====

This article last reviewed: 12 April 1990

TOPIC -----

I'm having a problem printing multiple copies of a document with a LaserWriter IINT through the AppleShare Printer Server. If the number of copies to print is greater than 6, the LaserWriter IINT doesn't stop when it reaches that number.

I increased the timeout delay on the printer (using SENDPS application) to send PostScript code to the printer, and installed LaserWriter Driver 6.0.1 and Laser Prep. Neither of these measures corrected the problem.

Can you help?

DISCUSSION -----

This is a known problem with the LaserWriter family of printers that is particularly noticeable when printing to a LaserWriter via a LaserShare or an AppleShare Print Server. Macintosh Technical Note #123 describes the problem.

If a user prints more than 15 copies of a document, a timeout condition may occur, causing the print job to abort. With LaserShare or AppleShare Print Server, this problem can happen with as few as nine copies. This problem is a result of the LaserWriter not sending packets at the proper times to maintain the connection to the device sending the print job. Because of this, the connection times out after about 2 minutes. The AppleShare Print Server then sends the job to the LaserWriter again causing a duplicate set of printouts. This happens only when the LaserWriter is extremely busy.

The LaserWriter IINTX seems least affected by this problem.

As of April, 1990, we know of no solution.

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Tech Info Library Article Number:5459



# Tech Info Library

## AppleShare Print Server: Problems Using with Macintosh IIfx

Revised: 6/29/90  
Security: Everyone

AppleShare Print Server: Problems Using with Macintosh IIfx

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This article last reviewed: 10 May 1989

There are some bugs in the AppleShare Print Server that only show up when the print server is run on a Macintosh IIfx machine. The bugs will be fixed in the AppleShare Print Server software in a future release that will ship subsequently to the release of the Macintosh IIfx machine.

NOTE: These bugs only occur under heavy load, for example when the server has captured 3-4 printers and all those printers are in use.

The bugs and the recovery mechanisms are described below:

Bug: While the spooler is running under heavy load, sometimes it puts up a dialog box with an error message saying something like "A fatal error happened so the print server attempted to clean up before releasing the printer. Error code -1104" or -91". When you click OK, the spooler closes the connection with the affected printer (stops spooling for that printer). Spooling on other captured printers goes on as usual.

Recovery: Re-capture the printer you just lost. Things should return to normal at that point.

Bug: While the spooler is running under heavy load, if you try to capture and release printers several times, sometimes the spooler crashes (with bus error) while trying to release a printer.

Recovery: Reboot the machine and restart the spooler.

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Tech Info Library Article Number:5460





# Tech Info Library

## ImageWriter LQ: Temperature Sensor Prevents Overheating

Revised: 6/29/90  
Security: Everyone

ImageWriter LQ: Temperature Sensor Prevents Overheating

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This article last reviewed: 1 May 1990

TOPIC -----

I have a problem with my ImageWriter LQ. Every month I do a payroll run, printing continuously for 2 to 3 hours. Often, at some stage, the printer just stops.

Is it overheating? If so, how long can an ImageWriter LQ print before it overheats?

DISCUSSION -----

Yes, it is very likely that the ImageWriter LQ is overheating. There is a temperature sensor in the printhead that causes the printer to stop printing when the printhead temperature reaches approximately 190 degrees Fahrenheit. The ImageWriter LQ printhead reaches this temperature after printing pure black for about 1 hour. Depending on the text being printed, the printhead may overheat after approximately 2 to 6 hours of continuous printing.

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Tech Info Library Article Number:5461



# Tech Info Library

## Macintosh Family: Serial Port Cable Length Specifications

Revised: 11/19/92  
Security: Everyone

Macintosh Family: Serial Port Cable Length Specifications

Article Created: 1 May 1990  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

The Macintosh Portable serial ports don't seem to have the same capacity as other Macintosh systems.

My Macintosh Portable won't establish an asynchronous session to a mainframe using VT240 emulation from White Pine, version 3.0.1, through the serial ports. I've tried three different Macintosh Portables with no luck. When using the same line with a Macintosh SE, all is well; sessions run without any problem. The cable, connected to Ethernet and to the VAX, is approximately 20 meters long.

White Pine Tech Support told me that version 3.01 works okay on the Macintosh Portable; they are running that configuration, but they use a "limited distance" modem with serial port.

DISCUSSION -----

The first and most obvious problem is the cable length. Twenty meters is nearly 60 feet (over 31 percent) longer than the EIA RS-232-C specification of 50 feet. This could cause the communications difficulties. The Macintosh Portable is designed to the RS-422 specification with the ability to meet the RS-423 specification.

This means it can be used to communicate with most RS-232-C devices over distances up to approximately 50 feet. Shortening the cable to within specification or adding the "limited distance" modem (known as a "short-haul modem" in the U.S.) should resolve the connection problem.

Occasionally, computers can go beyond the RS-232 specification; however, if a machine works at lengths greater than 50 feet, it is considered the

exception.

The output power of all Macintosh models, including the Macintosh Portable, is completely within the EIA RS-423 specification. The RS-423 specification is designed to accommodate RS-232-C devices in a RS-422 environment. The RS-422 design is the Macintosh standard for serial ports and was chosen for its ability to carry serial signals over greater distances than the RS-232-C design. The RS-423 specification also encompasses the RS-232-C specification. This means that a device that conforms to RS-423 also conforms to RS-232-C.

The output power of most serial devices is determined by the line driver integrated circuits. The Macintosh systems in question all use the 23LS30 line driver IC, which is designed to meet the RS-422, RS-423, and RS-232-C specifications.

The RS-232-C specification states that a line driver output value more positive than +3 volts is considered ON (or SPACE or 0). The Macintosh serial ports provide a positive voltage level of +3.6 volts. The specification states that a line driver output level value more negative than -3 volts is considered OFF (or MARK or 1). The Macintosh serial ports provide a negative voltage of -3.6 volts. The output impedance specification is stated as greater than 300 ohms; the Macintosh serial ports provide 450 ohms.

Why does a Macintosh SE work when the Macintosh Portable doesn't? Because 65.62 feet (20 meters) falls outside the maximum distance stated in the RS-232-C specification of 50 feet (15.14 meters), performance will be erratic and unpredictable. Because of slight design differences, part variances, and environmental changes, one model of Macintosh (or even different units of the same model, or even the same unit at different times) may work at distances greater than 50 feet, while another may not. Once the specification has been exceeded, these results most likely will be inconsistent.

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Tech Info Library Article Number:5463



# Tech Info Library

## GOSIP (Government OSI Profile) Information

Revised: 6/29/90  
Security: Everyone

GOSIP (Government OSI Profile) Information

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This article last reviewed: 1 May 1990

TOPIC -----

What is GOSIP? How close is it to being a standard?

DISCUSSION -----

The Federal Information Processing Standard has already adopted the Government Open Systems Interconnection Profile (GOSIP).

GOSIP defines a common set of data communication protocols that let systems developed by different vendors interoperate and lets the users of different applications on these systems exchange information. These Open Systems Interconnection (OSI) protocols were developed by international standards organizations, primarily the International Organization for Standardization (ISO) and the Consultative Committee on International Telephone and Telegraph (CCITT). GOSIP is based on agreements reached by vendors and users of computer networks participating in the National Bureau of Standards (NBS) Workshop for Implementors of Open Systems Interconnection.

GOSIP shall be used by Federal Government agencies when acquiring computer network products and services and communications systems or services that provide equivalent functionality to the protocols defined in the GOSIP documents. Currently, GOSIP supports the Message Handling Systems and File Transfer, Access, and Management applications. GOSIP also supports interconnection of these network technologies: CCITT Recommendation X.25, Carrier Sense Multiple Access with Collision Detection (IEEE 802.3), Token Bus (IEEE 802.4), and Token Ring (IEEE 802.5). Additional applications and network technologies will be added to later versions of the GOSIP document.

This standard became effective February 15, 1989. For a period of 18 months after the effective date, agencies are permitted to acquire alternative protocols that provide equivalent functionality of the GOSIP protocols.

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Tech Info Library Article Number:5465



# Tech Info Library

## LaserWriter Family: How To Print Test Page w/o Resetting Printer

Revised: 10/15/91  
Security: Everyone

LaserWriter Family: How To Print Test Page w/o Resetting Printer

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Article Created: 1 May 1990  
Article Last Reviewed: 15 October 1991  
Article Last Updated: 15 October 1991

TOPIC -----

What is the PostScript code for resetting the LaserWriter test page?

The code below does perform a reset on all PostScript LaserWriter models produced as of this writing. This includes the LaserWriter, LaserWriter Plus, LaserWriter IINT, IINTX (both ROM versions), IIif, IIg, and Personal LaserWriter NT.

DISCUSSION -----

The following code completely resets the LaserWriter to power-on condition, which is the same as turning the power off and on. This is the only way to get a startup page without turning the printer off and on.

```
serverdict begin 0 exitserver
systemdict begin quit end
```

Note that this behavior of the quit operator outside of the server loop isn't specifically defined by Adobe. It may change in later revisions of PostScript, so it shouldn't be relied on to restart future LaserWriter models.

The following PostScript program prints a page that gives you the current page count (including the page itself) without resetting the LaserWriter (the comments aren't necessary):

```
/Times-Roman findfont %Lookup font in fontdict and push it on stack
15 scalefont setfont %Push size, scale it, and make it the current font.
72 700 moveto %One inch over, and 700 72nds up.
statusdict begin %We'll be using two operators from statusdict.
32 string %Push an empty string of 32 length on stack.
```

|                      |                                                        |
|----------------------|--------------------------------------------------------|
| printername          | %Puts the LaserWriter name in the string on the stack. |
| show                 | %Show the topmost string from the stack at 72 700.     |
| ( has printed ) show | %Push another string and show it.                      |
| pagecount 12 string  | %Push the pagecount and a 12 length string onto stack. |
| cvs show             | %Convert the pagecount into the string and show it.    |
| ( pages.) show       | %Push the final string and show it.                    |
| showpage             | %Draw the image and spit out the page.                 |

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Tech Info Library Article Number:5468



# Tech Info Library

## Apple II-to-IBM Host File Transfer

Revised: 6/29/90  
Security: Everyone

Apple II-to-IBM Host File Transfer

=====

This article last reviewed: 1 May 1990

TOPIC -----

How can I transfer an ASCII file from an Apple IIe to an IBM mainframe?

I haven't been able to find any 3270 Apple II solutions. Assuming there isn't a Macintosh available, we could send the ASCII file from the Apple IIe over CompuServe or some other network to a Macintosh (or even an MS-DOS PC) connected to a mainframe. Then, we could make the ASCII-to-EBCDIC conversion and store it on the mainframe.

Are there any other solutions?

DISCUSSION -----

There are two other options. All options, including the one you mentioned, are based on file transfer from the ASCII environment to the EBCDIC environment (microcomputer to mainframe host). This file transfer is where the conversion will take place.

The first option depends on the services available from the mainframe. This method requires a mainframe-attached protocol converter that uses the XModem protocol, plus a communications package on the Apple IIe that also supports XModem. This setup should allow the Apple IIe to dial directly into the protocol converter and upload the file to the mainframe.

The second option is to dial the Macintosh or MS-DOS PC directly instead of paying for a commercial communications service. Since both computers require modems to access the commercial service, and most likely use XModem for the transfer, there should be no difficulties connecting directly to one another with their communications software and using XModem for the transfer. Once transferred from the Apple IIe to the Macintosh or PC attached to the mainframe, the file can be uploaded from the Macintosh or PC using the host's file transfer method.



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Tech Info Library Article Number:5470



# Tech Info Library

## Hard Drive SCSI Termination Power

Revised: 6/29/90  
Security: Everyone

Hard Drive SCSI Termination Power

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This article last reviewed: 1 May 1990

TOPIC -----

I'm experiencing a startup problem with Mass Microsystem's DataPak attached to my Macintosh. Sometimes I could start up fine with or without the DataPak turned on. Other times, the system hung until the DataPak was turned on.

What's going on?

DISCUSSION -----

The SCSI bus requires termination power on the bus to provide clean, quality SCSI signals. Mass Microsystems' DataPak supplies its own termination power to the SCSI bus. (This characteristic is also common to early SuperMac DataFrames.) Other SCSI devices that we checked use the termination power provided by the Macintosh.

When a SCSI device provides its own termination power, the SCSI bus signals may be corrupted when that device is powered down because it leaves the SCSI bus unterminated. An unterminated SCSI bus can cause startup problems because of noise on the bus.

Sometimes when a SCSI device that supplies its own termination power is powered down, the Macintosh will still start up because the SCSI bus signal is clean enough for the startup process to take place. However, there is no assurance that the bus signals will stay clean and uncorrupted since the SCSI bus is not properly terminated in this situation.

SCSI devices that use the termination power provided by the Macintosh do not have to be powered on for the SCSI bus to be properly terminated. The termination power from the Macintosh provides the correct termination to the SCSI bus.

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# Tech Info Library

## HyperCard 1.2.2: Can't Print More Than 127 Pages

Revised: 6/29/90  
Security: Everyone

HyperCard 1.2.2: Can't Print More Than 127 Pages

=====

This article last reviewed: 1 May 1990

TOPIC -----

I am having a problem printing from HyperCard v1.2.2. Specifically, it seems to be the "printing more than 127 pages" problem that others have noticed in earlier versions of HyperCard.

The "Now preparing page x..." counts up to 167 and down, printing pages 167 through 39, and then it terminates as if completed ( $167 - 39 = 128$ ). I compacted the stack before printing, and I tried MultiFinder as well as Finder.

DISCUSSION -----

This is caused by a problem in HyperCard 1.2.2. As of May, 1990, there is no solution to this problem.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5473



# Tech Info Library

## SCSI: Cable Specifications

Revised: 2/10/93  
Security: Everyone

SCSI: Cable Specifications

=====

Article Created: 1 May 1990

2/10/93 - REVISED

- To include complete cable specifications

TOPIC -----

I need SCSI cable specifications, including the wire type, gauge, and required shielding.

DISCUSSION -----

Here they are:

SCSI Cable  
-----

Cable Construction  
-----

38 conductors (19 twisted pairs) cable together. Each Pair shall consist of 2 single - 26 AWG insulated conductors twisted together with 4-8 twists/foot.

DC Resistance  
-----

29 ohms per 1000ft. @ 20 degrees C (each conductor).

Voltage Rating  
-----

30 VRMS

Dielectric Withstanding Voltage Between Shields  
-----

500 Volts DC for 3 seconds

Capacitance (@ 1 KHz)

# ..TIL05475-SCSI-Cable\_Specifications.pdf

-----

- Between conductors of the same pair - 16 pf/ft Max.
- Between 1 conductor and all others tied to shield - 60 pf/ft

## Attenuation

-----

6 db per 1000 ft Max @ 1.5 MHz

## Characteristic Impedance

-----

105 ohms at 1.5 MHz

## Shielding

-----

Braid - 36 AWG copper with 90% min. coverage with 40-degree braid angle

Foil - Aluminum/Mylar 0.0254/0.00889mm, spirally wrapped with

25% overlap

## SCSI Terminator

-----

The following information describes the connections inside the SCSI terminator, Apple part number 590-0348.

Each of the pins listed is connected straight through the connector (for example, 1 to 1, 2 to 2, and so on). In addition, each of the signal pins is connected through a resistor network to terminator power.

### Example:

Pin 26 (DB0) is connected to pin 26. It is also connected to pin 1 (DB0 GND, its corresponding ground) through a 330-ohm resistor and to a common line, which terminates in pin 38 (terminator power), through a 220-ohm resistor. Similar connections occur for each signal pin.

Pin 38 (TERMPWR) is connected to the common line proceeding from the 220-ohm resistors. Pin 11 (DIFFSENS) is connected straight through only.

Here are the connections used in the SCSI terminator:

- Connect the following pins straight through to the same pin at the other end of the connector:

1 through 9, 11, 16, 18 through 34, 38, 41, 43 through 50

- Connect the first pin of each of the following pairs to a 330-ohm resistor, then to the second pin of the pair, then to a 220-ohm resistor, then to the terminator line (TERMPWR) as shown below.

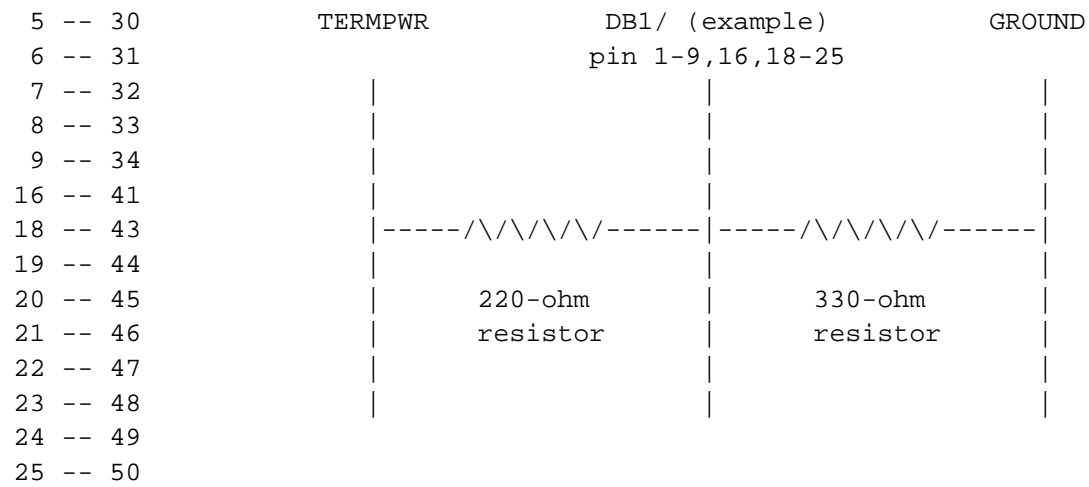
1 -- 26

2 -- 27

3 -- 28

4 -- 29

# ..TIL05475-SCSI-Cable\_Specifications.pdf



- Connect pin 38 to the common terminator line (TERMPWR).

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Tech Info Library Article Number:5475



# Tech Info Library

## Macintosh Display Card 8/24GC and Raster Ops Monitors

Revised: 7/16/90  
Security: Everyone

Macintosh Display Card 8/24GC and Raster Ops Monitors

=====  
This article last reviewed: 3 May 1990

TOPIC -----

I have a RasterOps Colorboard 108 plus video card and a RasterOps 19-inch Trinitron monitor. I also have two questions:

- 1) Does the Macintosh Display Card 8/24GC support the RasterOps 19-inch Trinitron monitor?
- 2) If I install the Macintosh Display Card 8/24GC but don't connect a monitor to it, will it accelerate the display on the RasterOps monitor?

DISCUSSION -----

- 1) The Macintosh Display Card 8/24GC supports any display that meets one of the following specifications:

| Sense pins |   |   | Display                              | Hor x Vert<br>Pixels | Dot<br>Clock | Vert<br>Refrsh | Horiz<br>Refrsh |
|------------|---|---|--------------------------------------|----------------------|--------------|----------------|-----------------|
| 10         | 7 | 4 |                                      |                      |              |                |                 |
| 0          | 0 | 1 | Apple Portrait Display               | 640 x 870            | 57.2832      | 75             | 68.9            |
| 0          | 1 | 1 | Apple Two-Page<br>Monochrome Monitor | 1152 x 870           | 100          | 75             | 68.7            |
| 1          | 1 | 0 | 12-Inch Apple<br>Monochrome Monitor  | 640 x 480            | 30.24        | 66.7           | 35.0            |
| 1          | 1 | 0 | 13-Inch AppleColor<br>RGB Monitor    | 640 x 480            | 30.24        | 66.7           | 35.0            |

0 - Grounded 1 - Not Connected

Note that sense pins 4, 7, and 10 are referred to as SENSE0, SENSE1, and SENSE2 in pinout tables for the video connectors.

None of the RasterOps 19-inch Trinitron displays meets the above



specifications. One of their 19-inch Trinitron displays has a vertical refresh of 75Hz and a horizontal refresh of 60.241KHz. We do not think that this will work properly, but you can try it in the "Apple Two-Page Monochrome Monitor" mode.

Here are the pinouts for the Macintosh Display Card 8/24GC:

| Pin   | Description                             |
|-------|-----------------------------------------|
| ---   | -----                                   |
| 1     | Red Video Ground                        |
| 2     | Red Video                               |
| 3     | Composite Sync                          |
| 4     | SENSE0                                  |
| 5     | Green Video                             |
| 6     | Green Video Ground                      |
| 7     | SENSE1                                  |
| 8     | Not Connected                           |
| 9     | Blue Video                              |
| 10    | SENSE2                                  |
| 11    | Composite Sync and Vertical Sync Ground |
| 12    | Vertical Sync                           |
| 13    | Blue Video Ground                       |
| 14    | Horizontal Sync Ground                  |
| 15    | Horizontal Sync                         |
| Shell | Chassis Ground                          |

- 2) If no monitor is connected to the Macintosh Display Card 8/24GC, the card will, in effect, turn itself off and not accelerate the RasterOps display system. You can trick the card into thinking that a monitor is attached by grounding pin 4. This will cause the card to accelerate other displays in the system.

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Tech Info Library Article Number:5477



# Tech Info Library

## Macintosh IIfx: DMA Access Support

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: DMA Access Support

=====

Article Created: 3 May 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

Is DMA access supported to or from NuBus memory space on the Macintosh IIfx?

Which drives will benefit from DMA on the Macintosh IIfx? Is it only internal drives? Also, is it the same for both the A/UX and Macintosh OS?

DISCUSSION -----

DMA access is supported to and from main memory -- but not to or from NuBus memory space. (The only way to access NuBus memory is through the NuBus controller chip, which is controlled by the 68030 CPU. This makes it impossible to do SCSI DMA involving NuBus memory on the Macintosh IIfx.)

Currently, only A/UX 2.0 supports the SCSI DMA capabilities of the Macintosh IIfx. SCSI DMA is possible on all SCSI devices, not just the internal SCSI device. The internal and external SCSI connectors support the same signals.

When running A/UX 2.0 on a Macintosh IIfx, any SCSI device (internal and external) will benefit from the SCSI DMA capabilities of the Macintosh IIfx.

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Tech Info Library Article Number:5478



# Tech Info Library

## Macintosh: How To Get Serial Driver GPi Signal Access

Revised: 7/17/92  
Security: Everyone

Macintosh: How To Get Serial Driver GPi Signal Access

=====

Article Created: 3 May 1990  
Article Last Reviewed: 10 June 1992  
Article Last Updated: 19 July 1991

TOPIC -----

As far as I know, the Macintosh serial driver supports checking the status of the HSKi (CTS) input line but does not support the GPi (DCD) input.

With the Macintosh IIIfx, developers are encouraged not to deal directly with the serial port hardware, since the IOP is in the way. In the past, this was the only way to use the GPi signal.

Has the serial driver been extended to support the GPi signal? Support for it is necessary to properly handle high-speed modems.

DISCUSSION -----

The GPi signal is still not supported by the Macintosh serial driver.

To access the GPi line on a Macintosh IIIfx, it is necessary to turn off the IOP, as developers have done in the past on other Macintosh systems. This can be done using a control panel, called the "Macintosh IIIfx Serial Switch" cdev, available from Software Licensing. Please contact Software Licensing at (408) 974-4667 for licensing information.

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Tech Info Library Article Number:5479



# Tech Info Library

## AppleTalk: Zones and Multicast Addressing Questions & Answers

Revised: 6/29/90  
Security: Everyone

AppleTalk: Zones and Multicast Addressing Questions & Answers

=====

Article Created: 3 May 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

Here are some questions and answers about AppleTalk zones and multicast addressing.

DISCUSSION -----

- Q) How do machines that reside in the same zone know how to communicate with other machines?
- A) Macintosh-to-Macintosh communication, such as transferring a file from a workstation to a file server, does not have anything to do with zones. The workstation knows the network number and node address of the file server and can send packets directly or through a router to the file server and vice versa.
- Q) I've heard about a name table that is used with zone multicasting. Where does that table reside, and who maintains it? Does the router or the workstation maintain it?
- A) Extended AppleTalk Phase 2 networks (EtherTalk 2.0 and TokenTalk 2.0) can have several zones defined for a single physical cable. When a user selects the zone that he wants his machine associated with, a multicast address for that zone is added to the hash table of multicast addresses that the Macintosh accepts. The hash table is maintained on the network adapter NuBus card.
- Q) Who assigns the zone multicast address, and where is it done?

- A) The multicast address for a particular zone is extrapolated from the zone name itself and is done by an AppleTalk Phase 2-compatible router on the extended AppleTalk Phase 2 network. A checksum algorithm is used by ZIP (Zone Information Protocol) to convert the zone name into a multicast address and is returned to nodes, with the multicast address for the zone that the node has selected, on the Internet through a GetNetInfo reply packet by the router.
- Q) If I have two machines on Ethernet that are in the same logical zone and one is near the router and one is 300 meters away from the router, how do these nodes interact and not cause excessive traffic on the network? What happens if the two machines are on different networks (for example, Token Ring and Ethernet)?
- A) See the first answer above. No extra packet traffic is generated.

#### Additional Information

-----

A zone on an extended AppleTalk Phase 2 Internet is an arbitrary subset of the AppleTalk nodes on the Internet. A particular network can contain nodes belonging to any number of zones. The zone list and network number range for a particular extended AppleTalk Phase 2 network (physical cable) is maintained by routers. Nodes choose their zone from a list of zones available for their network.

The only time zone multicasting comes into play is when an NBP call is made.

For example, your Macintosh is on network 1, an EtherTalk 2.0 network, and has selected zone "Campbell 2" as the zone to which it belongs. There are five other Macintosh systems on network 1; one is an AppleShare File Server and has selected the zone "Campbell 2" to belong to. The other four have all chosen "Soup 1" as their zone. Now, you open the Chooser and select the AppleShare icon. Your Macintosh sends out an NBP lookup for all AppleShare File Servers in the "Campbell 2" zone. This NBP lookup is encapsulated in an Ethernet packet with a multicast address that matches only two nodes on network 1: your node and the AppleShare File Server.

Only the AppleShare File Server node will process the packet. The others will ignore the packet because the multicast address does not match any address in their multicast address hash table. On an EtherTalk 1.0 network, every node on the network or same physical cable would have processed the packet.

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Tech Info Library Article Number:5480



# Tech Info Library

## Macintosh Portable: How the Sleep State Works

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: How the Sleep State Works

=====  
Article Created: 3 May 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

### TOPIC -----

Is there any way to make the Macintosh Portable wake up from sleep just by presenting information on the serial ports? Also, can you put the screen and the disk to sleep and still have full access to the logic card?

### DISCUSSION -----

The Macintosh Portable will wake up for various reasons but not by sensing information on the serial ports.

In sleep mode, the Macintosh Portable has all system power turned down except for the keyboard processor and the modem card ring-detector circuitry, if one is installed.

Three possible conditions will end the sleep state:

- If a key is pressed on the keyboard.
- If the wake-up timer is enabled and matches the real-time clock.
- If the Macintosh Portable internal modem is installed and set up to watch for "ring detection".

You cannot selectively put some Macintosh Portable components to sleep, except for the hard disk drive via the Portable CDEV.

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Tech Info Library Article Number:5484



# Tech Info Library

## Changing Created Date on System File May Be Virus-Caused

Revised: 6/29/90  
Security: Everyone

Changing "Created Date" on System File May Be Virus-Caused

=====

This article last reviewed: 3 May 1990

TOPIC -----

Is the "Created Date" of the System file supposed to change? I have experienced this with System H1-6.0.3.

The Created Date of the System file on the original H1-6.0.3 System disk shows:  
Created: Fri, Dec 9, 1988, 12:00 PM. The Modified Date is: Tue, Jan 3, 1989, 13:05 PM. If I install the System on a formatted disk, the Created Date changes to today's date and time. The Modified Date also changes to today's date and time.

This is an intermittent problem, because sometimes the Created Date stays the same and sometimes changes. My localizer says that the Created Date is never supposed to change.

Can you explain?

DISCUSSION -----

No, it is not normal for the Created Date to change. One of the recent viruses has been known to change the Created Date of the System file. Since your customer is experiencing random crashes, we strongly suggest that the system be checked for viruses. We also suggest that the System file and the contents of the System Folder be reinstalled from known-good software. (It's probably a good idea to format the drive in the process.)

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Tech Info Library Article Number:5487



# Tech Info Library

## AppleCD SC: Recognizes Four Formats

Revised: 10/29/90  
Security: Everyone

AppleCD SC: Recognizes Four Formats

=====

This article last reviewed: 22 October 1990

TOPIC -----

I want to use my AppleCD SC while running PC software on a Mac286 card. Is there any way to do this? The CDs I want to read are not available for the Macintosh yet.

DISCUSSION -----

The only CD-ROMs accessible by the AppleCD SC are those that conform to one of its recognized standards. The available AppleCD SC drivers allow the Macintosh to read CD-ROMs in these formats:

HFS  
High Sierra  
ISO 9660  
Audio

Mac286 can read any of these formats, but only as Macintosh files since that is the way the drivers present the files to the Macintosh OS. DOS drivers, which expect a CD-ROM drive attached to a card in a slot, have no way of communicating with the AppleCD SC and cannot read the CD-ROMs.

We recommend that you contact the CD-ROM vendor to see if they have versions available in one of the above formats. This would allow you to access the files directly without using Mac286 as a fix.

NOTE: Prior to being adopted by the ISO Committee, ISO 9660 was known as High Sierra. Although some minor changes were made to High Sierra during the ISO standardizing process, Apple's driver will enable you to read CD-ROM discs pressed in either format. The two format names are often used interchangeably.

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# Tech Info Library

## EtherTalk NB Card: Can Run Both EtherTalk & TCP/IP

Revised: 7/27/93  
Security: Everyone

EtherTalk NB Card: Can Run Both EtherTalk & TCP/IP

=====

Article Created: 15 May 1990  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

Can you run EtherTalk and TCP/IP on our EtherTalk NB Card at the same time?

I need a workstation that runs MarketMax (an EtherTalk-based, client/server data feed service), has four 3270 sessions running (I'm thinking of the Netway 2000 with EtherTalk option), and has MacX for X Window System to their Sun servers (that's where TCP/IP comes in).

Will this work, and what do you think traffic will look like (MarketMax puts very little traffic on the Ethernet)? Alternative solutions might be to use a Coax/Twinax Card and MacDFT for the 3270 sessions, or use a GatorBox for the Sun sessions.

DISCUSSION -----

There should be no problem sharing the EtherTalk NB Card between EtherTalk and TCP/IP.

It is not clear whether you need many workstations or just one, and if many workstations are required, whether you need distributed sessions on those stations.

Depending on the number of workstations to be connected to the mainframe, Tri-Data Netway 2000 from Tri-Data Systems is certainly a solution; however, it might be overkill for one workstation.

Running MacDFT using the Coax/Twinax Card will work, but you will need to connect to an IBM 3X74 controller. Running MacDFT 1.1 using the Serial NB Card, you can have SNA connectivity to the host via a Front End Processor.

You can also run Avatar MacMainFrame 3.5 (from Avatar, Inc.) using Avatar SNA/SDLC card and distribute the sessions to LocalTalk, EtherTalk, or

TokenTalk.

It is difficult to predict the traffic without knowing about the network topology, the number of workstations, and the applications. Of the applications you mentioned, MacX might be the one with the most traffic, but this should be fine with one workstation.

For more information, search under: "DCA (formerly Avatar)" and "Tri-Data Systems"

Article Change History:

26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates).

3 May 1990 - Updated for technical accuracy

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Tech Info Library Article Number:5491



# Tech Info Library

## Macintosh IICx: Power Supply Connector Pinouts

Revised: 7/14/92  
Security: Everyone

Macintosh IICx: Power Supply Connector Pinouts

=====

Article Created: 15 May 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated: 24 February 1992

TOPIC -----

What are the pinouts for the Macintosh IICx power supply connector?

DISCUSSION -----

Power Supply Connector Pinouts:

| Pin | Signal   | Signal Description                  |
|-----|----------|-------------------------------------|
| 1   | +12V     | +12 volts                           |
| 2   | +5V      | +5 volts                            |
| 3   | +5V      | +5 volts                            |
| 4   | +5V      | +5 volts                            |
| 5   | GND      | Ground                              |
| 6   | GND      | Ground                              |
| 7   | GND      | Ground                              |
| 8   | -12V     | -12 volts                           |
| 9   | /PFW     | Power Fail Warning                  |
| 10  | +5V.TRKL | Supply voltage for power-on circuit |

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Tech Info Library Article Number:5493



# Tech Info Library

## Display Cards 4•8, 8•24, 8•24 GC: Monitor Video Cables (2/94)

Revised: 2/23/94  
Security: Everyone

Display Cards 4•8, 8•24, 8•24 GC: Monitor Video Cables (2/94)

=====

This article last reviewed: 23 Febuary 1994

TOPIC -----

What are the part numbers of the cables used to connect the new Display Cards 4•8, 8•24, and 8•24 GC to these monitors:

- High-Resolution Monochrome Monitor
- AppleColor High-Resolution RGB Monitor
- Portrait Display
- Two-Page Monochrome Monitor

DISCUSSION -----

The proper cable to use with the High-Resolution Monochrome Monitor and the AppleColor High-Resolution RGB Monitor is Apple Part #590-0161 (DB-15 to DB-15).

To connect the Portrait Display or Two-Page Monochrome Monitor to any of the new Display Cards or to the Macintosh IIci built-in video connector, use cable Apple Part #590-0615 (DB-15 to 13-pin mixed-contact D-connector).

Article Change History:  
23 Feburary 1994 - Corrected video cable part number

Support Information Services

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Tech Info Library Article Number:5496



# Tech Info Library

## Think C: Troubleshooting Bus Errors

Revised: 6/29/90  
Security: Everyone

Think C: Troubleshooting Bus Errors

=====

This article last reviewed: 8 May 1990

TOPIC -----

I'm programming with Think C on a Macintosh IIci. When I try to run a Menu Management program, I get a bus error.

The source debugger that comes with Think C says that it's running into a bus error at address 0x81BBAE. A bus error implies a hardware problem, since it's trying to access memory that it doesn't have, and it is not wrapping around to pick up the unused memory. The program seems to be initializing the windows OK but crashes just before it creates the menu bar.

Can you help?

DISCUSSION -----

Actually, a bus error does not mean that you are having a hardware problem.

One of the most common causes of a bus error is a word or long word instruction being executed on an odd address. Another common cause is a program accessing an address in the range of addresses belonging to NuBus. Usually, the slot owning this address will not have a card in it.

Check the calls being made to the Menu Manager -- if you suspect these calls. Specifically, passing an invalid handle to one of the calls could definitely cause this error.

Try stepping through the code using the debugger and the variable watcher. Find the exact point where the error occurs and work your way back until you find the culprit.

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Tech Info Library Article Number:5497



# Tech Info Library

## AppleTalk Phase 2: Specifications Avaialable from APDA

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2: Specifications Avaialable from APDA

=====

This article last reviewed: 8 May 1990

TOPIC -----

I saw a reference to the "AppleTalk Phase 2 Protocol Specification". Where can I get a copy of this?

DISCUSSION -----

The document "AppleTalk Phase 2 Protocol Specification: An Addendum to Inside AppleTalk" is available from APDA. The order number is C0144LL/A, and is described on page 101 of the Spring, 1990 APDAllog.

APDA also has many similar specifications and other useful documentation.

For more information, search under: "APDA"

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Tech Info Library Article Number:5498



# Tech Info Library

## Macintosh Family: Clocks Accurate to 1 Minute Per Month

Revised: 6/29/90  
Security: Everyone

Macintosh Family: Clocks Accurate to 1 Minute Per Month

=====

This article last reviewed: 8 May 1990

TOPIC -----

Can you explain why the clocks on our Macintosh systems are not keeping accurate time? (I've observed this on Macintosh II and Macintosh IIX systems.) The clocks gain as much as 2 minutes a week.

DISCUSSION -----

The real-time clock in the Macintosh family of computers is specified to be accurate to within 1 minute per month.

If the clock is gaining 8 minutes or so a month, we suspect that the clock chip may be bad. Have the computer checked by a service provider. If the problem continues, the logic board may have to be replaced.

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Tech Info Library Article Number:5499





# Tech Info Library

## LaserWriter IISC: Engine's Page Count Can't Be Determined

Revised: 6/29/90  
Security: Everyone

LaserWriter IISC: Engine's Page Count Can't Be Determined

=====

This article last reviewed: 8 May 1990

TOPIC -----

Is there any way to determine the number of pages that have been printed on a LaserWriter IISC? As far as I know, the LaserWriter IISC has no counter.

DISCUSSION -----

There is no way to determine the actual number of pages that have been printed on a LaserWriter II engine, PostScript or QuickDraw.

The LaserWriter IINT and LaserWriter IINTX controller boards store the number of pages that the controller board has printed, but not the number of pages the engine has printed.

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Tech Info Library Article Number:5500



# Tech Info Library

## ZUC.Virus: Causes Crazy Cursor Movement

Revised: 6/29/90  
Security: Everyone

ZUC.Virus: Causes "Crazy" Cursor Movement

=====

This article last reviewed: 8 May 1990

TOPIC -----

This article contains information on what is known as of May, 1990, about the ZUC.Virus.

DISCUSSION -----

A new virus called the ZUC.Virus has been discovered in Italy. It causes the cursor to "go crazy" within a few minutes after an infected application is run.

Preliminary information shows that it infects applications only by adding a 1256-byte piece of code at the end of the first executed CODE resource (much the same way the ANTI virus works).

Ninety seconds after an infected application is launched, ZUC.Virus takes over the cursor and moves it diagonally until you restart. After looking at the code, it seems harmless (though it can restart your machine if it can't get the memory it needs) but VERY infectious.

An infected application can be detected using VirusDetective 3.1.1 (or later), by adding the search string:

Resource Start & Pos -1256 & Data 082A#F1655#30832 ; For finding ZUC.Virus

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Tech Info Library Article Number:5501



# Tech Info Library

## Macintosh Portable & PowerBook: Using Abroad (3/95)

Revised: 3/23/95  
Security: Everyone

Macintosh Portable & PowerBook: Using Abroad (3/95)

=====

Article Created: 8 May 1990  
Article Reviewed/Updated: 23 March 1995

TOPIC -----

Can the Macintosh Portable and PowerBook computers operate on voltages used internationally?

Also, will there be any damage to my data by passing my PowerBook through an airport security scanner?

DISCUSSION -----

The Macintosh Portable Power Adapter has the following specifications:

Input voltage

-----

85-270 Volts AC, 120/240 nominal (The Portable itself is rated at 70-270 Volts AC)

Frequency

-----

48Hz to 62Hz, 50/60 nominal (because it converts to DC, the frequency is almost insignificant)

The Macintosh PowerBook 100 series Power Adapter has the following specifications:

Input voltage

-----

100-240 Volts AC

Frequency

-----

50Hz to 60Hz (because it converts to DC, the frequency is almost insignificant)

The PowerBook 200 series power adapter has the following specifications:

Input voltage

-----

100-240 Volts AC

Frequency

-----

50Hz to 60Hz (because it converts to DC, the frequency is almost insignificant)

The PowerBook 500 series power adapter has the following specifications:

Input voltage

-----

100-240 Volts AC

Frequency

-----

50Hz to 60Hz (because it converts to DC, the frequency is almost insignificant)

The Macintosh Portable and PowerBook computers should work fine in any country which falls within the range of specifications above. However, you may need to use an adapter for the wall outlet itself.

The Macintosh Portable and PowerBook computers are powered by the battery at all times, even when the battery is charging. If there is a power outage, you would not lose data unless the battery had insufficient charge to power the computer.

The amount of electromagnetic interference generated by airport security systems varies widely across the world. Security systems in Europe, the Middle East, and Africa have the potential to cause more problems with internal hard disks than systems in the United States. Still, there are very few reports of X-rays or other magnetic radiation damaging computer media. The hard disk in the Macintosh is no more susceptible to problems than other hard disk systems. We suggest you have the system hand-checked whenever possible to reduce the possibility of data loss.

Article Change History

-----

23 Mar 1995 - Listed power adapter ratings for all PowerBook models.

30 Apr 1993 - Rewrote and clarified, generalized for all portable Macintosh models.

Support Information Services

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Tech Info Library Article Number:5502



# Tech Info Library

## 32-Bit QuickDraw: Latest Documentation Available From APDA

Revised: 4/18/91  
Security: Everyone

32-Bit QuickDraw: Latest Documentation Available From APDA

=====

This article last reviewed: 8 May 1990

TOPIC -----

I'm preparing a report on imaging model characteristics. Where can I get the latest technical documentation available for 32-Bit QuickDraw. I've seen the chapters in "Inside Macintosh, Vol. 5", but I think there must be more recent information.

DISCUSSION -----

As of May, 1990, the most comprehensive 32-Bit QuickDraw documentation is distributed by APDA: "Macintosh System Software 32-Bit QuickDraw" -- Apple Part #M0572LL/A. It contains an updated and expanded version of the materials distributed at the May 1989 Developers' Conference.

(Note that numerous other Technical Notes discuss 32-Bit QuickDraw programming issues, but they are usually more specific to writing code.)

In general, APDA is an excellent source for such information. If you are an Apple Partner or Associate developer, you will have access to information via their monthly mailings, including such resources as Phil and Dave's Excellent CD.

For more information, search under: "APDA"

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Tech Info Library Article Number:5503



# Tech Info Library

## Macintosh-to-NEC 370 VS Connectivity

Revised: 6/29/90  
Security: Everyone

Macintosh-to-NEC 370 VS Connectivity

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This article last reviewed: 8 May 1990

TOPIC -----

I want to connect a Macintosh to a NEC 370 VS computer. The data stream is in EBCDIC.

- Does the NEC require a proprietary communication package?
- Will a terminal emulator work?

DISCUSSION -----

The NEC 370 VS is based on a proprietary system that NEC describes as having four IBM emulation options: 3470, 3780, 3278 SNA, and 3270 BSC. Contact NEC's Information System Division for more specific information.

Possible Macintosh solutions include MacDFT with the Serial NB Card, or MacNetway from Tri-Data.

For more information, search under: "NEC" and "Tri-Data"

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Tech Info Library Article Number:5504



# Tech Info Library

## A/UX: Acting As An AppleShare Server (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Acting As An AppleShare Server (9/94)

Article Created: 8 May 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

Can a Macintosh IIx running A/UX also run AppleShare File Server and Print Server for 10 other Macintosh IIx stations -- all on Ethernet? Will performance be impacted?

DISCUSSION -----

There is a public domain software package called "CAP" (Columbia AppleTalk Package) available from Columbia University that allows a UNIX host to communicate using ATP (AppleTalk Transport Protocol), ASP (AppleTalk Session Protocol), PAP (Printer Access Protocol), NBP (Name Binding Protocol), and AFP (AppleTalk Filing Protocol--the client side). This package also includes software called "AUFS" (AppleTalk Filing Protocol UNIX File Server), which is the server part of AFP.

With CAP and AUFS installed in a Macintosh IIx running A/UX, we believe you can turn a it into an AppleShare File/Print server.

A/UX 3.0 supports System 7's File Share utility, enabling the system to export both UNIX and Macintosh filesystems to AppleShare clients. It does not support Printer spooling.

The Apple Workgroup Server 95 runs AppleShare Pro and AppleShare Print Server software.

Article Change History:  
22 Sep 1994 - Reviewed. Added info on AWS 95.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5506





# Tech Info Library

## Apple IIe: Video Signal NTSC-Compatible, Not NTSC-Compliant

Revised: 6/29/90  
Security: Everyone

Apple IIe: Video Signal "NTSC-Compatible", Not "NTSC-Compliant"

=====

This article last reviewed: 8 May 1990

TOPIC -----

I bought Sharp XA305 video recorders to record the video from my Apple IIe systems: however, I am able to record only black and white pictures.

I tried the same setup with an older Sears model VCR and it worked perfectly. I tried a new camcorder and got only black and white pictures again. Sharp told me that this is because the Apple IIe has a substandard NTSC signal.

Can you help?

DISCUSSION -----

The composite video signal coming from the Apple IIe is not stated to be an NTSC-compliant signal. The signal coming from the video-out port is only considered NTSC-compatible video. "Compatible" means that generally the Apple IIe video will work with an NTSC device, although it may not work in all situations. Specifically, the Apple IIe video signal should work with all NTSC display devices.

When the Apple II was first designed, economy was of great importance. The video circuitry was built with as few parts as possible. In the design process, it was discovered that certain portions of the NTSC broadcast specification could be omitted, yet still display a color image on a standard television set. The one element that affects the described situation is color burst. The Apple IIe does not contain the color burst element of the NTSC video signal. By modulating other portions of the video signal, the Apple IIe simulates this missing information and allows an image to be produced on a television. To provide a consistent color video image for video tape, this color burst needs to be present.

In summary, the Apple IIe composite video signal was designed for display purposes, not for videotaping purposes. The Apple IIe composite signal is

close to the NTSC specification and allows the video signal to be displayed on television screens. This, however, does not indicate that the signal can be recorded. Since the signal is similar to the full NTSC specification, video sometimes records properly on videotape with certain VCRs. In other environments, the signal may not record at all. The capability to record a monochrome image falls between these extremes.

To have a true NTSC signal designed for videotaping, the Video Overlay Card is required.

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Tech Info Library Article Number:5508



# Tech Info Library

## EtherTalk: History and User's Guide (3/95)

Revised: 3/22/95  
Security: Everyone

EtherTalk: History and User's Guide (3/95)

Article Created: 21 May 1990  
Article Reviewed/Updated: 22 March 1995

TOPIC -----

This article discusses the history of the EtherTalk card, EtherTalk software, and their various revisions.

DISCUSSION -----

Apple Computer introduced the EtherTalk Interface Card (now called EtherTalk NB card) and EtherTalk 1.0 software for the Macintosh II in August of 1987. Since that time, the card and software have gone through many revisions. This article describes the revisions and shows which cards and software to use on various Macintosh computers.

HISTORY  
=====

1987  
EtherTalk card revisions A through D  
EtherTalk 1.0 and 1.1 software

March 1988  
EtherTalk card revision J

The revision J card fixed a rare data corruption problem that occurred when the EtherTalk Interface card retransmitted a packet that originally had encountered a collision. The data corruption manifested itself as changed characters in documents being printed or filed on an AppleShare server. This problem only occurred in heavily loaded networks, with large numbers of active nodes, intensive use of network resources, and dissimilar types of computer equipment.

The revision J upgrade also included a fix to an incompatibility problem with some co-processor and memory expansion NuBus cards that access memory in the

\$xxxFxxx range. This problem is very unlikely to occur since most NuBus cards have their declaration ROM in this address range.

A free upgrade program to revision J was offered from May through October 1988. Some service providers extended the upgrade program on a case-by-case basis.

(Note: Some of the pre- revision J cards that were reworked were marked with revision letters G through J in order to differentiate the original version of the card. [Revision A cards became G; revision B cards became H; etc.] Revision G through J are functionally equivalent.)

July 1988

EtherTalk 1.2 software

EtherTalk 1.2 was a software workaround for an obscure hardware problem in the EtherTalk card that caused an AppleShare server on Ethernet to crash. It also fixed an obscure bug in the software that would cause the card to send packets to a non-existent node and eventually crash.

January 1989

EtherTalk card revision K

The revision K card fixed an incompatibility between earlier EtherTalk cards and the Macintosh IIcx. The problems occurred because the capacitance of a six-slot NuBus Macintosh was factored into the timing mechanism of the EtherTalk card, and was inappropriate for a three-slot Macintosh. The problem was most likely to occur when only one card was present. (This would be the case for routers and servers where no video card was necessary because they were monitored remotely, using Timbuktu for example.)

Symptoms of the problem are intermittent and include:

- system fails to boot
- system errors
- exceedingly poor network performance

No upgrade program to revision K was offered.

June 1989

EtherTalk 2.0 software

EtherTalk 2.0 offers support for AppleTalk Phase 2, including reduced broadcast traffic, extended addressing, and better router selection. EtherTalk 2.0 packets are in the 802.3 format, while EtherTalk 1.0 packets were in the Ethernet format. EtherTalk 2.0 nodes don't see EtherTalk 1.0 nodes, unless a router is setup to run both versions of the software. (See LAN Minds training for more information.)

A customer can ask their Apple Systems Engineer for the EtherTalk 2.0 software or they can send in the form located in the Upgrade and Update Programs folder under the Apple Programs icon on AppleLink. (As of this writing, the form says

it expires on March 1, 1990, but that will be changed. Note that a customer who sends in the form after March 1990 will receive EtherTalk 2.0.2, described below.)

October 1989

EtherTalk 2.0.1 software

EtherTalk 2.0.1 software offers better performance, especially on the Macintosh IIcx and IIci. The EtherTalk 2.0.1 software includes additional NOPs (no operations) in the .ENET driver in the System File, in order to synchronize the timing of the card with the timing of the faster Macintosh IIcx and IIci. The EtherTalk2.0 file that a user sees in the System Folder was not changed.

(Note: It is difficult for a customer to make sure she is using the correct version of EtherTalk software, since only the .ENET driver changed names and version number.)

December 1989

EtherTalk card Revision L

The Revision L card is a new layout of the original card (with new ROMs), removing the cuts and jumpers that were necessary for the previous upgrades. Because the card is a new layout, no upgrade program has been offered from J and K.

From the A/UX side, Rev L is required because the Macintosh IIfx is so much faster that the larger (64K) buffers are needed to keep up with the machine. Also, there were a number of NuBus interface details fixed in Rev L that the Macintosh IIfx needs. Only the A/UX drivers take advantage of the extra memory.

March 1990

EtherTalk 2.0.2 software

EtherTalk 2.0.2 software offers better performance, especially on the Macintosh IIfx. The only change to the software is that some more NOPs were added to the .ENET driver, which is installed in the System File. The EtherTalk2.0 file that a user sees in the System Folder was not changed. A customer should use the utility (mentioned above) from Technical Communications to make sure they are using the correct .ENET driver.

When a customer uses the System 6.0.5 Network Installer diskette, the new 2.0.2 .ENET driver is automatically installed, regardless of the EtherTalk installer diskette used.

Customers who upgrade to the Macintosh IIfx will be told to be sure to use the System 6.0.5 Network Installer diskette to re-install EtherTalk software.

ETHERTALK COMPATIBILITY

|          | Macintosh II or IIX                   | Macintosh IICx or IICI                               | Macintosh IIfx  |
|----------|---------------------------------------|------------------------------------------------------|-----------------|
| hardware | Rev J, K, or L                        | Rev K or L<br>(Rev L on IICI<br>with on-board video) | Rev K, L or M   |
| software | EtherTalk 2.0.1 or<br>EtherTalk 2.0.2 | EtherTalk 2.0.1 or<br>EtherTalk 2.0.2                | EtherTalk 2.0.2 |

(Note: There is a remaining bug that affects Macintosh IICI owners who use EtherTalk 2.0.1 or 2.0.2 software and the EtherTalk revision K card. Ethernet performance is adversely affected when a user starts up the Macintosh IICI in 2 bit [4 colors] or more, using on-board video. To work around this problem, the user can use a revision L card, or not use on-board video [i.e. use a video card], or use only black-and-white video.)

(Another Note: EtherTalk 2.0.x should be used in AppleTalk Phase 2 installations only. For customers who have not upgraded to Phase 2 yet, EtherTalk 1.2 is provided in a folder called Previous Version on all EtherTalk 2.x diskettes. Use the installer to install EtherTalk 2.0.x, but then drag the EtherTalk file in the Previous Version folder into the System Folder on your startup disk. This will insure that you have the correct .ENET driver in your System File, but the Phase 1 version of EtherTalk in your System Folder. See the EtherTalk NB User's Guide for details.)

#### Article Change History:

22 Mar 1995 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:5510



# Tech Info Library

## Macintosh IIfx: Termination (4/95)

Revised: 4/13/95  
Security: Everyone

Macintosh IIfx: Termination (4/95)

Article Created: 14 July 1990  
Article Reviewed/Updated: 13 April 1995

TOPIC -----

This article contains information about Macintosh IIfx termination and external terminators.

DISCUSSION -----

There have been 4 different external terminators distributed by Apple. Two are identical except for the part number.

| Part Number | Description                                                                                                                                                                                                                                                                                                                         |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -----       | -----                                                                                                                                                                                                                                                                                                                               |
| 590-0304    | The original terminator.                                                                                                                                                                                                                                                                                                            |
| 590-0695-A  | Replaces 590-0304. This is the new PLATINUM terminator                                                                                                                                                                                                                                                                              |
| 590-0695-B  |                                                                                                                                                                                                                                                                                                                                     |
| & 590-0705  | These are BLACK and are identical, except for the part number. Apple built approximately 10,000 having the part number 590-0695-B; later manufactured black terminators are numbered 590-0705. One black terminator ships with every revenue Macintosh IIfx, but can be ordered separately from Service using part number 590-0705. |
| .           |                                                                                                                                                                                                                                                                                                                                     |
| .           |                                                                                                                                                                                                                                                                                                                                     |
| .           |                                                                                                                                                                                                                                                                                                                                     |
| .           |                                                                                                                                                                                                                                                                                                                                     |
| .           |                                                                                                                                                                                                                                                                                                                                     |
| .           | Note:                                                                                                                                                                                                                                                                                                                               |
| .           | Only 1 black terminator is ever needed at a time; more details are below. These black terminators are                                                                                                                                                                                                                               |
| .           | officially called the Apple SCSI Cable Terminator II.                                                                                                                                                                                                                                                                               |

The Other Two Macintosh IIfx SCSI Bus Components

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#### Internal SCSI Termination Block

-----

The Internal SCSI Termination Block provides internal termination resistance for Macintosh IIfx systems WITHOUT INTERNAL HARD DRIVES. All Macintosh IIfx computers that shipped without internal hard drives had the Internal SCSI Termination Block installed. This component plugs into the Internal SCSI Filter and it looks like a "T", with a 50-pin female connector on the bottom.

#### Internal SCSI Filter

-----

The Internal SCSI Filter provides termination capacitance for internal Macintosh IIfx hard drives that shipped prior to March 19, 1990 or any third-party hard drives. After that date, Apple hard disk drives shipping in the Macintosh IIfx contained the proper termination capacitance. The filter has a 50-pin female connector on one end and a 50-pin male connector on the other. When connected to an internal drive the drive cable should be connected directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive. When there is no hard drive the SCSI Filter is connected to the logic board, and the Internal SCSI Termination Block is connected to the filter.

All Macintosh IIfx computers that shipped without internal hard drives had the Internal SCSI Filter and the Internal SCSI Termination Block installed. When you add a third-party drive remove the Internal SCSI Termination Block, but leave the Internal SCSI Filter connected to the logic board. Termination needs to be provided by the resistors on the internal third-party drive.

#### Determining What Terminators to Use and When

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##### No External SCSI devices Connected

-----

Termination is provided by either the internal hard disk, or by the Internal SCSI Termination Block.

##### With a Third-party Internal Drive

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The third-party drive should be internally terminated. Plug the drive cable directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive (Cable and filter order is important for this to terminate correctly). The Internal SCSI Termination Block needs to be removed (it looks like a "T"). Plug the drive cable directly into the logic board and plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive.

##### With Any External SCSI Devices Connected

-----

Use only ONE black terminator at the end of the SCSI chain. Make sure that all built-in terminators are removed from external third-party SCSI devices (Apple's external SCSI devices do not contain internal terminators).

NOTE:



A flyer in the Macintosh IIfx Finished Goods box instructs customers to return self-terminating SCSI devices to the Service Provider to disable the termination. Removing the termination can be performed by the user in some circumstances--a user should refer to the owners manual or check with the manufacturer if they are uncertain.

WARNING:

Under no circumstances should you use more than one black Apple SCSI Cable Terminator II on any external SCSI chain. This may damage the logic board or whatever device is providing termination power.

With An Internal Disk Drive And External SCSI Device

Both the internal SCSI drive and the last SCSI device in the external SCSI chain need termination, and you need to plug the Internal SCSI Filter block between the drive cable and the 50-pin connector on the hard drive.

Why Is There A New Black Terminator For The Macintosh IIfx?

One of the features of the Macintosh IIfx is a new SCSI chip that provides SCSI data transfer rates up to 3MB per second, faster than any earlier Macintosh systems. To achieve these transfer rates, components on the Macintosh IIfx logic board are smaller and faster, this makes them more susceptible to signal reflections on the cable. The new terminator adds the filter capacitors and changes the resistor values for some of the signals to reduce the reflections.

How Can Third-party Drives Take Advantage Of The Higher Scsi Throughput?

Any SCSI hard drive that can sustain transfer rates above 1.25MBps will operate faster on a Macintosh IIfx. No Apple hard drive, including the HD160 SC, takes advantage of this higher transfer rate.

What To Do With Less Common System Configurations

In some remote cases someone might remove the internal drive from a Macintosh IIfx they will not have the correct internal termination. In this situation, you should order and install a Internal SCSI Termination Block (Apple Service Part #590-4515) and Internal SCSI Filter (Apple Service Part #590-4516), and use the black terminator if you have any external drives; however, if you don't have access to an internal termination block, you can connect use the new platinum terminator (590-0695-A on the terminator) to the beginning of the SCSI chain and, as always, connect the black terminator at the end of the chain. Again, what is preferred is to order the Internal SCSI Filter from service.

Article Change History:

# ..TIL05511-Macintosh\_IIfx-Termination\_4-95\_(TA42169).pdf

13 Apr 1995 - Added information on having internal and external drives.

Support Information Services

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Tech Info Library Article Number:5511



# Tech Info Library

## NuBus Speed Benchmarks (1/96)

Revised: 1/10/96  
Security: Everyone

NuBus Speed Benchmarks (1/96)

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Article Created: 11 May 1990  
Article Reviewed/Updated: 10 January 1996

TOPIC -----

I need NuBus specifications for speed, bandwidth, throughput, and relationship to processor speed.

DISCUSSION -----

The following specifications are not TRUE benchmarks, but can be used as a primer to understand the variables influencing the "relative" throughput of NuBus.

Though the NuBus speed is designed to be processor- and architecture-independent, it varies depending on the NuBus card and Macintosh used. We don't have specific benchmarks, but in general, the NuBus "throughput" ranges from around 7MB to 37MB per second depending on the Macintosh, NuBus card, and application used. Generally, increases in NuBus throughput are influenced more by the NuBus card's design and function than by the use of a "faster" CPU.

NuBus throughput is faster on a Macintosh IIsi, Macintosh IIfx, or the Macintosh Quadra computers, because the processor clock rate is faster than the 16MHz for other Macintosh II computers. These Macintosh computers, therefore, are faster at bus arbitration on the processor side, and the processor responds faster to NuBus accesses. For example, the increase in speed with the Macintosh IIfx is approximately 20 to 30 percent when going out to NuBus or coming back.

The typical time required to go from the processor bus to the NuBus card is about 700ns, as is the time in reverse: going from the NuBus card back to the processor. The time remains constant whether moving 1 or 4 bytes of data. (These times are representative of the Macintosh II using the Macintosh II Video Card.)

Other cards, such as the Macintosh 1-Bit Video Card, support what we call "dump and run." A Macintosh II has a transfer rate of about 20MB using this card because each 4-byte write-only takes only 200ns, and the data goes right into video RAM on each cycle. This card immediately acknowledges each cycle on a write, whereas the Macintosh II Video Card could take more than one cycle for the data to move into RAM.

Cards that support the NuBus burst mode could achieve transfer rates of up to 37.5MB when going from NuBus card to NuBus card, which is the case with some graphics accelerator cards to video cards. With these cards, the first access takes 200ns, and each subsequent access up to 16 takes only 100ns.

Because of the overhead processing video, any performance increase over one of the other Macintosh II computers is negated when using a Macintosh IIfx or Macintosh IIsx with the internal video in 8-bit mode. Setting the internal video to 1-bit, or having a NuBus video card, will ensure maximum NuBus performance in these systems.

Note: For information about Macintosh computers based on the 68040 or PowerPC microprocessors, see these related articles in the Tech Info Library:

"Power Macintosh and NuBus Q&A"

"68040 CPU Architecture: NuBus Transfer Modes and Performance"

Article Change History:

10 Jan 1996 - Added reference to related articles.

Support Information Services

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Tech Info Library Article Number:5514



# Tech Info Library

## PC-LAN Baseband Network Description

Revised: 6/29/90  
Security: Everyone

PC-LAN Baseband Network Description

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This article last reviewed: 11 May 1990

TOPIC -----

This article contains a description of IBM's PC-LAN Baseband.

DISCUSSION -----

IBM has two different networking schemes that are referred to as PC-LAN: Baseband and Broadband. Baseband is their system recommendation for K-12 labs.

Using the PC Network Adapter-II in the XT bus machines, such as the original PC and PS/2-25/30, and the PC Network Adapter II/A for the MicroChannel machines, it is a 2Mbps CSMA/CD protocol run over unshielded, twisted-pair telephone wiring. The network uses the IEEE 802.2 LLC standard like AT&T StarLAN. A typical configuration is cabled in daisy-chain fashion using RJ-11 telephone jacks and telephone cabling with up to eight stations within a maximum 200-foot chain compared to a 4000-foot network limit with PhoneNET.

NetBIOS support is not provided directly on the card; it is via two software products, the PC Network Protocol Driver and the LAN Support Program. This network does not support 8022 LLC protocol or APPC/PC, which limits available application memory.

The PC-LAN Baseband network can be enlarged using the IBM 5173 PC Network Baseband Extender, which has 10 ports. The network can be extended to 10 arms of eight workstations each, and the length of the daisy-chain arm is extended to 400 feet using the Extender. This means that the radius of a PC-LAN Baseband network cannot exceed 400 feet, significantly less than LocalTalk and PhoneNET networks. The maximum network is 80 stations unless a router is used to bridge multiple networks together or to jump to another topology, such as Ethernet or Token Ring.

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Tech Info Library Article Number:5515



# Tech Info Library

## Macintosh Portable: Where To Get Power Adapter

Revised: 6/20/94  
Security: Everyone

Macintosh Portable: Where To Get Power Adapter

=====

Article Created: 11 May 1990  
Article Last Reviewed: 30 July 1992

TOPIC -----

I need an extra power cord (with transformer on one end) for my Macintosh Portable. How? Where?

DISCUSSION -----

Two ways to obtain the Power Adapter/Charger are:

- 1) Through a reseller or "service"; Apple Part number for the U.S. version is 699-0505.
- 2) Through finished goods; it is included with the Macintosh Portable Battery Recharger, Apple Part #M0275.(Discontinued)

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Tech Info Library Article Number:5516



# Tech Info Library

## HyperCard XCMD To Create Business Charts

Revised: 6/29/90  
Security: Everyone

HyperCard XCMD To Create Business Charts

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This article last reviewed: 21 May 1990

TOPIC -----

I need to make adaptable business charts that run in conjunction with HyperCard. Any suggestions?

DISCUSSION -----

A set of XCMDs called HyperGraph is available that can generate full-page business charts in color or black and white.

HyperGraph supports:

- Full-page display
- Color (256/16 million) with individual control for each object
- All fonts available in the System file
- 10 different types of graphs: pie, bar, horizontal bar, line, and point charts in color or black and white
- Three dimensional graph generation
- Auto-update between HyperCard and the graphics routines with HyperCard (When you modify a field under HyperCard, the graphic is updated automatically.)
- 32-Bit QuickDraw
- Screen generator to import text file and generate a HyperCard Card

For further information, send an AppleLink to "VANNIER.A".

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Tech Info Library Article Number:5517





# Tech Info Library

## Mac241 Prints to ImageWriter LQ Unidirectional Only

Revised: 6/29/90  
Security: Everyone

Mac241 Prints to ImageWriter LQ Unidirectional Only

=====

This article last reviewed: 11 May 1990

TOPIC -----

I print from White Pine's Mac241 to an AppleTalk ImageWriter LQ and want the printer to default to bidirectional/Draft mode instead of unidirectional/Best Quality. Mac241 gives only a Page Setup box and not a Print Options box.

Is it possible to alter the AppleTalk ImageWriter LQ driver to change the default settings?

DISCUSSION -----

If the driver was modified in this way, the software would then be unsupported.

White Pine Software confirmed that the software does not offer the user a choice of unidirectional of bidirectional.

For more information, search under: "White Pine"

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Tech Info Library Article Number:5518



# Tech Info Library

## PMMU Adds Clock Cycle to Memory Access

Revised: 7/20/92  
Security: Everyone

PMMU Adds Clock Cycle to Memory Access

=====

Article Created: 11 May 1990  
Article Last Reviewed: 20 July 1992  
Article Last Updated:

TOPIC -----

Is there any reason that a Macintosh II with 8MB of RAM would slow down with a PMMU installed? My Macintosh II seems to be slower with the PMMU.

DISCUSSION -----

Installing a Paged Memory Management Unit (PMMU) in a Macintosh II should not cause it to operate slower than a Macintosh II with the original Address Management Unit\* (AMU) installed. Each device adds a clock cycle to memory access and, therefore, requires a second wait state.

The 68030 processor used in other members of the Macintosh II family has the equivalent of a PMMU built-in, and thus does not require the extra clock cycle for memory access. This allows a 68030-based Macintosh to run approximately 8 to 10% faster than a Macintosh II.

\* Also known as the Hochsprung Memory Management Unit (HMMU), named after its designer, Ron Hochsprung.

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Tech Info Library Article Number:5520



# Tech Info Library

## Macintosh II Family: Monitor Power Receptacle Power Limit

Revised: 6/29/90  
Security: Everyone

Macintosh II Family: Monitor Power Receptacle Power Limit

=====

This article last reviewed: 11 May 1990

TOPIC -----

How much power can a monitor connected to the Macintosh II or Macintosh IIfx monitor input receptacle consume? I know how much the AppleColor RGB monitor consumes (160W), but is it possible to have a monitor connected that consumes more power?

DISCUSSION -----

Three amps at 110 volts (1.5 amps at 220 volts) is the maximum amount of power that can be drawn from any Macintosh II monitor power input receptacle. This means that 330 watts is the maximum wattage that can be pulled from the monitor power input receptacle.

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Tech Info Library Article Number:5522



# Tech Info Library

## MacDraw: Precision Bitmap Alignment

Revised: 6/29/90  
Security: Everyone

MacDraw: Precision Bitmap Alignment

=====

This article last reviewed: 21 May 1990

TOPIC -----

If a rectangle is created in MacDraw and two copies are printed to a LaserWriter, one may measure 150mm x 200mm, yet the other may measure 151mm x 201mm. There is a variation in both dimensions. Sometimes, however, they may match perfectly.

I'm using the LaserWriter in a four-layer printing process and find this inconsistency very annoying to work with.

Since the variation is in both dimensions and the age of the LaserWriter is relatively new, I believe that the paper weight (which is within specification), the paper finish, and the age of the LaserWriter are unlikely to be possible causes of the problem.

I would be satisfied if the LaserWriter fell within a specification, but since there is no specification outlining the acceptable variations, I am having problems.

Can you help?

DISCUSSION -----

The size variance described is a result of PostScript interpretation of the bitmapped image. This results from attempts to change a 72-dpi image into a 300-dpi image. This is not an exact ratio. There may be as much as a 4% variance in PostScript's interpretation. PostScript's attempts at correction may vary slightly during each pass.

To compensate for this difference, choose Page Setup from the File menu. On the right side of the Page Setup dialog box there is an Options button. Click this button, and an additional dialog box appears. The fourth checkbox is labeled Precision Bitmap Alignment (4% reduction). Be sure this checkbox is

marked. Using this option increases the printing time; however, the printouts will be consistent during each pass.

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Tech Info Library Article Number:5524



# Tech Info Library

## Using Sony Monitors With Display Card 8/24GC

Revised: 6/29/90  
Security: Everyone

Using Sony Monitors With Display Card 8/24GC

=====

This article last reviewed: 21 May 1990

TOPIC -----

I want to use the Sony MultiScan CPD-1304 monitor with the new Display Card 8/24GC. Will this work?

DISCUSSION -----

If the CPD-1304 monitor works with the Macintosh High-Resolution Video Card (the current 8-bit display card), there won't be any problem with the Display Card 8/24GC signals driving the Sony CPD-1304. (We have not been able to verify that the CPD-1304 monitor works with the Macintosh High-Resolution Video Card, but we do know that Sony's CPD-1302 monitor works with that card.) However, you will need to use a different cable to connect the two devices because the cards have different connectors.

An issue with regard to the cable concerns the sense pins, which tell the card what type of monitor is attached. For the Sony CPD-1302 monitor, the sense pins should be configured as below, where 0 = Ground and 1 = Not Ground. To ground a sense pin, tie it to the C&VSYNC.GND signal.

| Sense pins |   |   | Display                | Hor x Vert | Dot   | Vert    |
|------------|---|---|------------------------|------------|-------|---------|
| 10         | 7 | 4 |                        | Pixels     | Clock | Refresh |
| -----      |   |   | -----                  | -----      | ----- | -----   |
| 1          | 1 | 0 | 12" Monochrome Monitor | 640 x 480  | 30.24 | 66.7    |
|            |   |   | 13" Color Monitor      |            |       |         |

Here are the pinouts for the Macintosh Display Card 8/24GC:

| Pin   | Signal  | Description      |
|-------|---------|------------------|
| ----- | -----   | -----            |
| 1     | RED.GND | Red Video Ground |

|       |             |                                          |
|-------|-------------|------------------------------------------|
| 2     | RED.VID     | Red Video                                |
| 3     | CYSNC~      | Composite Sync                           |
| 4     | MON.ID1     | Monitor ID, Bit 1 (also known as SENSE0) |
| 5     | GRN.VID     | Green Video                              |
| 6     | GRN.GND     | Green Video Ground                       |
| 7     | MON.ID2     | Monitor ID, Bit 2 (also known as SENSE1) |
| 8     | nc          | (no connection)                          |
| 9     | BLU.VID     | Blue Video                               |
| 10    | MON.ID3     | Monitor ID, Bit 3 (also known as SENSE2) |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground                     |
| 12    | VSYNC~      | Vertical Sync                            |
| 13    | BLU.GND     | Blue Video Ground                        |
| 14    | HSYNC.GND   | HSYNC Ground                             |
| 15    | HSYNC~      | Horizontal Sync                          |
| Shell | CHASSIS.GND | Chassis Ground                           |

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Tech Info Library Article Number:5530



# Tech Info Library

## Rocky Mountain BASIC: No Exact Equivalent for Macintosh

Revised: 6/29/90  
Security: Everyone

Rocky Mountain BASIC: No Exact Equivalent for Macintosh

=====

This article last reviewed: 21 May 1990

TOPIC -----

I'm using Rocky Mountain BASIC on an HP. Is there a similar package for the Macintosh?

DISCUSSION -----

The only implementation of BASIC for the Macintosh that is remotely similar to "Rocky Mountain BASIC" for the HP9000 series is Microsoft QuickBASIC. There are numerous differences, however, especially considering the machine-specific details of each BASIC. Rocky Mountain BASIC uses many commands and parameters that mean nothing to computers other than HP9000 systems. Likewise, Microsoft QuickBASIC uses Macintosh-specific commands that do not exist on other computers, as well as command syntax in traditional Microsoft BASIC style -- a style much different than that of Hewlett Packard's BASIC.

They do share the important ability to use subprograms and functions, but the method of implementing these is quite different between the two languages. Microsoft QuickBASIC would give your customer a powerful BASIC, but porting anything other than the simplest programs from Rocky Mountain BASIC will not be a trivial task -- especially with programs that are I/O-intensive because these tend to be the areas where the languages differ the most.

There are some definite benefits to using Microsoft QuickBASIC over HP's BASIC, such as advanced debugging features (breakpoints and animated tracing for source-level debugging) as well as the simpler mouse interface. Users can quickly grow accustomed to the Microsoft QuickBASIC product, while Rocky Mountain BASIC has a cruder interface and takes more time to master. Of course, you are already using Rocky Mountain BASIC, so the change in programming environment will be dramatic; to what degree depends on how familiar you are with Macintosh user interface conventions.

If you need additional information on Microsoft QuickBASIC, we suggest that you



contact Microsoft directly. They should be able to provide more up-to-date information and could, perhaps, assist in deciding if their product will fit your requirements.

For more information, search under: "Microsoft"

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Tech Info Library Article Number:5532



# Tech Info Library

## LaserWriter IINTX With Hard Drive: How Fonts Are Accessed

Revised: 6/29/90  
Security: Everyone

LaserWriter IINTX With Hard Drive: How Fonts Are Accessed

=====

This article last reviewed: 23 May 1990

TOPIC -----

Can you explain how the AppleShare Print Server handles an attached hard drive on a LaserWriter IINTX? That is, if the hard drive has many fonts installed, does the print server know to get "downloadable" fonts from the hard drive, or does it go back to the Macintosh?

DISCUSSION -----

The fonts installed on the LaserWriter IINTX hard drive appear as though they were in the LaserWriter IINTX ROM. Adobe and Apple designed the hard drive option so that the LaserWriter IINTX operates transparently, and the user can access additional fonts without having to download them with utilities.

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Tech Info Library Article Number:5533



# Tech Info Library

## Macintosh Portable Power Adapter: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Macintosh Portable Power Adapter: Specifications (Discontinued)

=====

Article Created: 23 May 1990  
Article Last Reviewed: 30 July 1992

TOPIC -----

What are the specs on the Macintosh Portable Power Adapter?

DISCUSSION -----

The Macintosh Portable Power Adapter has the following specifications:

Input voltage: 85VAC to 270VAC, 120/240V nominal  
Frequency: 48Hz to 62Hz, 50/60Hz nominal

(NOTE: You may encounter problems with power plug compatibility; an adapter will probably be required.)

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Tech Info Library Article Number:5535



# Tech Info Library

## Token Ring Nodes: Physical or Logical Unit Issues

Revised: 6/29/90  
Security: Everyone

Token Ring Nodes: Physical or Logical Unit Issues

=====

This article last reviewed: 23 May 1990

TOPIC -----

Are Macintosh Token Ring workstations addressed as PUs or LUs?

DISCUSSION -----

Nodes are either a physical unit (PU) or a logical unit (LU) in an SNA environment.

A Macintosh system with a TokenTalk NB Card running MacDFT or MacAPPC is a downstream PU. A Macintosh system running TokenTalk is neither a PU nor LU -- these terms do not apply unless MacDFT or MacAPPC is being used.

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Tech Info Library Article Number:5536



# Tech Info Library

## Display Card 8•24 GC: Questions and Answers (11/94)

Revised: 11/7/94  
Security: Everyone

Display Card 8•24 GC: Questions and Answers (11/94)

Article Created: 25 May 1990  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

Here are some questions and answers about the Macintosh Display Card 8•24 GC.

DISCUSSION -----

Q) The card supports NuBus master and slave block transfer modes. I was under the impression that not all Macintosh models support block transfer mode.

- a) Does this imply that there are third-party video cards that DO support block transfer? If yes, do you know the manufacturers' names?
  - b) Will the Display Card 8•24 GC run even faster when talking to one of these video cards (faster than without block transfer, but still not as fast as the on-board video)?
- A) The Macintosh IIfx does support slave block transfer mode; the other Macintosh models do not have this support. The Display Card 8•24 GC block transfer function is primarily for use between NuBus cards with block transfer abilities.
- a) We currently do not know of any third-party cards that support block transfer. Beside the Display Card 8•24 GC, the only video card we know of that supports block transfer is the Display Card 8•24 in its 8-bit mode.
  - b) The Display Card 8•24 GC would accelerate a second card that has block transfer to a greater degree than it would accelerate a second card that does not have block transfer. The second card (with block transfer) would not run as fast as the Display Card 8•24 GC performing all operations itself. (We assume that "on-board video" means the video on the Display Card 8•24 GC as opposed to logic board video, like on the Macintosh IIfx.)

Q) It seems that the use of off-screen bitmap algorithms actually slow down the Display Card 8•24 GC.

a) Is this true?

b) How does adding DRAM to the card boost off-screen performance?

c) Do I need to rework my graphics code to use it?

A)

a) We are unsure what you are asking -- slow down the Display Card 8•24 GC compared to what? If this is in reference to moving off-screen bitmaps across NuBus compared to using the local DRAM for off-screen bitmaps, the answer is yes, moving bitmaps across NuBus is slower than using the local DRAM.

b) When DRAM is installed on the card, it is automatically used for off-screen bitmaps.

c) Since the off-screen bitmaps automatically and transparently use the DRAM, there is no need to change an application's code to take advantage of this function.

Q) More generally, do you have any information that outlines all the factors that determine the ultimate speed of any graphic operation? For example:

a) Speed of the CPU running QuickDraw routines relative to AM29000 speed. (How much faster is the AM29000 QuickDraw than the regular Macintosh version?)

b) On-screen versus off-screen algorithms.

c) On-board video versus third-party video cards.

d) Effect of various NuBus byte lane width specifications when transferring data from one board to another.

e) 1-bit versus 8-bit or more graphics.

A)

a) This depends on the action being taken; a straight line from point A to point B will not benefit to the degree that a complex polygon would. The AM29000 performance is from 5 times to 30 times faster than unaccelerated performance.

b) The creation of the on-screen image and off-screen image will be equal. Since only QuickDraw variables and small data structures are moved across NuBus, there is an improvement in this image creation compared to standard video cards. However, the biggest benefit is when the previously created off-screen image is moved onscreen.

c) We are not sure what is being asked. We do not have specifications for third party-cards. (We hope this is the information being

requested.) Typical reads and writes from the Macintosh to display cards are performed in 1000 and 500 nanoseconds, respectively. (This is what we believe you are requesting for the standard video cards.) The Display Card 8•24 GC and writes to its frame buffer (off-screen bitmaps in DRAM) at a rate of 66 reads 60 132 nanoseconds. (This is what we believe you are requesting for the on-board video specifications.)

- d) We have not been able to locate an answer for the byte lanes issue. We will do our best to provide details on this in a later response.
- e) The following applies during image movement from Macintosh memory across NuBus to standard video cards or during image movement from Display Card 8•24 GC frame buffer to Display Card 8•24 GC display:

When moving 24-bit images, you are moving 4 times as much data than moving 8-bit images and 24 times as much data than moving 1-bit images. When moving 8-bit images, you are moving 8 times as much data than moving 1-bit images.

The movement of image data from Macintosh memory to the Display Card 8•24 GC is different because only variables and small portions of data structures are being moved across NuBus--not large, deep bitmap images. There is a small increase in the amount of data sent as you move from 1-bit to 8-bit to 24-bit; however, 8-bit and 24-bit are very close. The bitmaps grow dramatically; the variables and data structures remain relatively flat.

Q) When does the Display Card 8•24 GC accelerate third-party cards?

- A) The Display Card 8•24 GC accelerates other video cards via its pseudo-block transfer. This is similar to block transfer in that it claims the bus for a 16 NuBus data word transaction, but different in that it must send an address word for each data word that it sends. The extra transfer activity makes pseudo-block transfer slower than block transfer, but it is still an improvement over normal NuBus access times.

#### Article Change History:

07 Nov 1994 - Changed 8/24 to 8•24 for consistency with other articles.

Support Information Services

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Tech Info Library Article Number:5540



# Tech Info Library

## Macintosh SE: Color QuickDraw Print Restrictions

Revised: 6/29/90  
Security: Everyone

Macintosh SE: Color QuickDraw Print Restrictions

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This article last reviewed: 23 May 1990

TOPIC -----

I created a PowerPoint document with a number of colors defined. The document printed without problems to a 35mm slidemaker from their Macintosh II, but when I printed the document from a Macintosh SE, I could print only eight colors.

- 1) Can you receive the same color printout results from a Macintosh SE or any Macintosh?
- 2) Are there restrictions when printing color from a Macintosh SE?

DISCUSSION -----

- 1) Macintosh Plus, Macintosh SE, and prior models support only the eight colors that are available in the original QuickDraw. All Macintosh II computers and the Macintosh SE/30 support Color QuickDraw, which provides 256 colors. Therefore, using original QuickDraw (Macintosh Plus, Macintosh SE, and earlier) provides eight colors; while using Color QuickDraw (Macintosh II family and Macintosh SE/30) provides 256 colors. However, please note the third-party issues below.
- 2) There is a limit of eight colors as supported by the ROMs in the Macintosh SE. However, please note the third-party issues below.

Some third parties have devised methods to work around the limits imposed by the Macintosh ROMs. Some third-party film recorders (slidemakers) do not work with the Macintosh SE/30 under Color QuickDraw, but work on the Macintosh SE/30 by assigning colors to be equal to certain black and white patterns. (This also may be supported on the Macintosh SE and Macintosh Plus.)

Other third-party products can print Macintosh II 8-bit color images from a Macintosh SE/30 without any changes. Without knowing which 35mm film



recorder is in use, we cannot tell you the limits the product imposes on the Macintosh. To understand these limits, check the film recorder documentation.

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Tech Info Library Article Number:5541



# Tech Info Library

## Macintosh: Protecting the System Folder from Tampering

Revised: 7/30/90  
Security: Everyone

Macintosh: Protecting the System Folder from Tampering

=====

This article last reviewed: 13 July 1990

TOPIC -----

I need to prevent my users from changing or removing resources from their System Folders. Do you know of a good way to do this?

I have already made the System Folders invisible with ResEdit. Are there any potential problems with this approach?

DISCUSSION -----

System Software 6.0.x will not run INITs from invisible files. Because your files are visible (but the folder is not), this should not be a problem. However, other applications may have problems with this method.

A better, but more expensive, solution would be to use a security package (such as Empower, from Magna) which supports password protection of specific folders. Another solution is Casady & Greene's Access Managed Environment (A.M.E.), an integrated security and virus program with numerous utility-like options (activities log, passwords, auto sign on/off, etc) for the individual or multiple users.

For more information, search the Technical Info library under: "Magna" and "Casady & Greene"

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Tech Info Library Article Number:5542



# Tech Info Library

## Converting Apple III Text Files to Macintosh

Revised: 6/29/90  
Security: Everyone

Converting Apple III Text Files to Macintosh

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This article last reviewed: 23 May 1990

TOPIC -----

I'm trying to transfer some text files on Apple III disks to 3.5- inch floppy disks so I can open the files on a Macintosh. What cables and software are needed for this?

DISCUSSION -----

If you still have the Apple III, the files can be transferred using Access III, MacTerminal, and either cable (Apple Part #) 590-0555 or cables 590-0169 AND 590-0550.

If using the Apple III serial card, have the card set to no modem eliminator. If using the built-in port C, make sure you're using the .RS-232 driver rather than the .PRINTER driver. You can find the .RS-232 driver for the built-in port C on the System Utilities Data disk.

Make sure both systems are set for the same baud rate, data bits, and so forth, and then simply set one system up to send a file and the other one to receive a file.

If only the disks are available, you can use this method. Because Apple III SOS and Apple II ProDOS are file-compatible, using an Apple IIe, Apple IIGS, or Apple IIC with both a 5.25-inch disk drive and a 3.5-inch disk drive, transfer the files to a 3.5-inch disk. Use AFE to transfer the files to the Macintosh disk.

Both of these options assume that the files are text-only. If they are QuickFile or Three Easy Pieces files, see the Tech Info Library for instruction on converting the files to Microsoft Works.

Another option would be to have an outside service, such as Pivar, convert the files for you.

For more information, search under: "Pivar"

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Tech Info Library Article Number:5543



# Tech Info Library

## Using an ADB Keyboard With the Macintosh Portable

Revised: 7/28/92  
Security: Everyone

Using an ADB Keyboard With the Macintosh Portable

=====

Article Created: 23 May 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

Can the Apple Extended Keyboard be used with the Macintosh Portable? I will be using the keyboard while the Macintosh Portable charger is plugged in.

DISCUSSION -----

Yes, the Apple Extended Keyboard (the original as well as the Extended Keyboard II) can be used with the Macintosh Portable, as can the Apple Standard Keyboard and other ADB devices that follow our specifications. The differences will be in key layout, battery drain, and waking up the Macintosh Portable.

The Apple Standard Keyboard draws a maximum of 100mA, and the Apple Extended Keyboard draws a maximum of 85mA. The Macintosh Portable keyboard and keypad (or trackball) together draw 75mA. From these numbers, you can see that adding the Extended Keyboard more than doubles the ADB power requirements. This decreases battery life somewhat. Since you will be using the Extended Keyboard with the charger plugged in, this shouldn't affect you.

Another point, though minor, is that the only way to manually wake up the Macintosh Portable is by pressing a key on the built-in keyboard. External ADB keyboards cannot provide this functionality. You will have to power up the Macintosh Portable by pressing a key on the built-in keyboard instead of the externally attached ADB keyboard.

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Tech Info Library Article Number:5544



# Tech Info Library

## Macintosh IIfx: UN8 PROG CELL Socket Explanation

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: UN8 PROG CELL Socket Explanation

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Article Created: 23 May 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

What is the function of the slot labeled "UN8 PROG CELL" on the Macintosh IIfx main logic board?

DISCUSSION -----

The UN8 PROG CELL socket on the Macintosh IIfx logic board is for the parity memory controller.

This is only present on those Macintosh IIfx computers that are originally ordered with the parity option. There is no way to upgrade a non-parity Macintosh IIfx to have the parity option.

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Tech Info Library Article Number:5545



# Tech Info Library

## MacDFT Support With IBM 3274 Cluster Controller

Revised: 6/29/90  
Security: Everyone

MacDFT Support With IBM 3274 Cluster Controller

=====  
This article last reviewed: 23 May 1990

TOPIC -----

I am trying to configure the 3274-51C cluster controller. The IBM people said that the cluster controller has four types of configuration, A, B, C, and D. This cluster controller has "Configuration Support A-C", and extended memory is needed for "Configuration Support D".

- 1) Can I connect the Macintosh to the 3274-51C setup with "Configuration Support A, B, or C"?
- 2) Will MacDFT run this way?

DISCUSSION -----

Twelve different models of the 3274 are available. The suffix after the model number indicates the environment in which the controller is used.

- The "A" suffix indicates a channel-attached SNA environment.
- The "B" and "D" suffix indicate a channel-attached non-SNA environment.
- The "C" suffix indicates a remotely attached environment.

Models 21, 31, and 41 support up to 32 attached devices. Model 51 supports 12 devices, and Model 61 supports 16 devices.

Most 3274 control units are capable of supporting DFT devices. Generally, the hardware does not determine whether a control unit can support DFT. Rather, the control units' microcode software supplies the additional function necessary to support DFT. However, minimum memory requirements are necessary for DFT support. In some cases, 3274 control units may require memory upgrades to have enough memory for DFT support.

Assuming you have enough memory, MacDFT will run with the above configuration if the controller microcode is 65 or higher. In remote bisynchronous, you can run MacDFT only in CUT mode.

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Tech Info Library Article Number:5546





# Tech Info Library

## Running MacDFT on a Token Ring through PS/2

Revised: 6/29/90  
Security: Everyone

Running MacDFT on a Token Ring through PS/2

=====

This article last reviewed: 23 May 1990

TOPIC -----

I'm installing Macintosh IIci systems with TokenTalk NB Cards using MacDFT software. I will be routing the packets through a PS/2 with an AppleShare PC Card installed to their front-end processor (3745) to the host. I want to be sure that I won't have any problems routing their packets through the PS/2.

DISCUSSION -----

First, we are not clear how the AppleShare PC Card is used in this situation since it is not needed for communication to the host.

We assume that the PS/2 is on the Token Ring that is attached to the front-end processor using a Token Ring Interface Coupler (TIC). MacDFT 1.1 running over the TokenTalk NB Card on the same Token Ring can communicate directly to the TIC/front-end processor without going through the PS/2.

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Tech Info Library Article Number:5547



# Tech Info Library

## EtherPort Installer Upgrade for System 6.0.4 & 6.0.5

Revised: 6/29/90  
Security: Everyone

EtherPort Installer Upgrade for System 6.0.4 & 6.0.5

=====

This article last reviewed: 23 May 1990

TOPIC -----

This article contains information on an upgrade for Novell's EtherPort installers.

DISCUSSION -----

Novell has updated their installers to work with System Software 6.0.4 and 6.0.5. You can obtain the updated installers from Novell, or install the drivers on a system running System Software 6.0.4 or 6.0.5 using this workaround:

To install Novell EtherPort drivers on systems running System Software 6.0.4 or 6.0.5:

- 1) Start up the system from a 6.0.4 or 6.0.5 System Tools disk.
- 2) Eject the Tools disk.
- 3) Insert the Novell Installer disk and execute the Installer from that disk.

Be prepared to swap the disks a few times when prompted by the Installer program. This procedure differs from the normal install procedure of starting up from the Installer disk.

To obtain the new Installer disk, contact Novell. Note that there are two different updated versions of the Installer program for the two different Novell EtherPort II cards distributed:

|                    |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Version 2.5 Rev e  | This is for the "Intel" or long EtherPort II card.                   |
| Version 3.25 Rev b | This is for the "National Semiconductor" or short EtherPort II card. |

# ..TIL05550-EtherPort\_Installer\_Upgrade\_for\_System\_6-0-4\_and\_6-0-5\_(TA42505).pdf

For more information, search under: "Novell"

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Tech Info Library Article Number:5550



# Tech Info Library

## KanjiTalk: Running U.S. Applications

Revised: 9/17/92  
Security: Everyone

KanjiTalk: Running U.S. Applications

=====

Article Created: 27 May 1990

### Article Change History

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09/16/92 - UPDATED

- To clarify how to mix English and Kanji applications.
- To make it clear that Macintosh hardware is generic.

### TOPIC -----

Can any Macintosh operating system version be mixed with any application on a Kanji Macintosh? For example, could while running U.S. System 6.0.x with Kanji fonts, could I run the English versions of MacWrite II and PageMaker and print in Kanji on a Kanji LaserWriter?

### DISCUSSION -----

Sometimes, you can successfully run a "U.S." application with KanjiTalk (and have a Kanji script appear in the data space and print in a Kanji script to a LaserWriter IINTX-J). However, if it hasn't been localized properly, you may encounter many more problems (and these of a possibly more serious nature) compared to mixing and matching applications and operating systems localized for other countries. Most English applications don't support the 2-byte character set. Exceptions exist with applications like Excel or WordPerfect.

A well-mannered U.S. application that uses the Script Manager (which makes it possible for it to support non-Roman scripts: Arabic, Hebrew, Japanese, and Chinese) may be functional (with minor incompatibilities) or usable (with somewhat minor inconveniences). Some likely incompatibilities include text-positioning problems requiring you to press the backspace key twice, incorrect date and time formats, different numerical and character delimiters, and so on. (Remember: Kanji uses a 2-byte-wide word.) With other less-compatible applications, serious system bombs may occur at any time, including when changing font parameters or printing a PostScript font.

Generally, you may have fewer problems using graphic-oriented packages than text-oriented packages.

You can use any operating system on a any Macintosh, keyboard differences aside.

Although you can usually use a non-U.S. (or other) word processor with the U.S. Macintosh OS, or vice-versa, we do not recommend using non-Kanji applications with the Kanji OS, or vice-versa.

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Tech Info Library Article Number:5552



# Tech Info Library

## A/UX: How To Partition 45MB Removable Drive

Revised: 8/28/90  
Security: Everyone

A/UX: How To Partition 45MB Removable Drive

=====

This article last reviewed: 21 May 1990

TOPIC -----

I would like to format and partition a 45MB removable cartridge for use with A/UX. Because HD SC Setup does not recognize the Mass Microsystems 45MB removable drive, can this be done? I seem to remember a command called "dformat" from prior UNIX experience with a Plexus machine.

DISCUSSION -----

According to Mass Microsystems, their 45MB removable drive does not work under A/UX at this time. It works only under Macintosh OS.

Fortunately, we found a solution by the Usenet comp.unix.aux newsgroup at Stanford University. They posted a fix for the SyQuest SQ555 44MB (and possibly other) removable hard disk drives to work under A/UX 1.1.

We tried the patch program under Macintosh OS, and it does work under A/UX 1.1. Basically, the patch program sets the Error Page Parameter correctly so that the parameters are compatible with A/UX.

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Tech Info Library Article Number:5556



# Tech Info Library

## A/UX: How to Reformat a Third-party Disk for Macintosh OS

Revised: 6/29/90  
Security: Everyone

A/UX: How to Reformat a Third-party Disk for Macintosh OS

=====

This article last reviewed: 21 May 1990

TOPIC -----

I'm working with a large number of A/UX systems with A/UX configuration on Maxtor 200MB disks. However, we need to reinitialize some of the Maxtor disks to all Macintosh OS. Of course, Apple's HD SC Setup doesn't recognize these disks. Can you suggest a disk-formatting product that would successfully reinitialize them?

DISCUSSION -----

How did you format the Maxtor 200MB disks to work under A/UX? You would have needed some type of disk formatter or partition software to format the Maxtor 200MB disks to work under A/UX.

Here are two ways to reinitialize the Maxtor 200MB disks for Macintosh OS only:

- 1) Since it is an A/UX disk, you can use "dp" under A/UX to repartition the entire disk into a single Macintosh partition. To do this, remove all of the "Apple\_UNIX\_SVR2" partition types and enlarge the Macintosh "Apple\_HFS" partition types.

Note: Do not delete the "Apple\_Partition\_map" and "Apple\_Driver" partition types.

- 2) Use the Macintosh hard-disk management software called "Silverlining" from La Cie Ltd. For more details, search the Technical Info library under "La Cie."

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Tech Info Library Article Number:5557



# Tech Info Library

## GS/OS Disk Dialog Enhancement Request

Revised: 6/29/90  
Security: Everyone

GS/OS Disk Dialog Enhancement Request

=====

This article last reviewed: 21 May 1990

TOPIC -----

A school wants to "alter" the way the Apple IIGS works with 5.25-inch disks. They have "standard" Apple IIGS systems with 3.5-inch and 5.25-inch disk drives. The students use the 5.25-inch drives for their data disks and run the applications from the 3.5-inch drives.

They start up the Apple IIGS with a 3.5-inch disk, and they get the 3.5-inch disk icon and the 5.25-inch disk drive icon. If a student puts a 5.25-inch disk in the drive and double-clicks the drive icon, the system mounts the disk and shows the 5.25-inch disk icon. If the student double-clicks the disk icon before a disk is inserted, the Apple IIGS says that the disk is unreadable (there is no disk), and asks the user to "Eject" or "Continue". The students insert their disks, because they know the system can't eject something that's not there. Then, they click "Continue". The Apple IIGS then formats (erases) their data disks.

Can you change the dialog box that asks if you want to "Eject" or "Continue" to "Stop" or "Continue" (or something to that effect)? Can the drive detect that there is no disk inserted and give a different dialog box?

DISCUSSION -----

In GS/OS 5.0.2, you get two dialog boxes when an empty 5.25-inch drive icon is double-clicked. (This also occurs when the 5.25-inch drive contains a blank or unrecognizable disk.)

The first dialog is the one you describe with the "Eject" and "Continue" buttons. The second is a dialog asking to "Cancel" or "Initialize". This is where the user has the opportunity to stop the initialization process.

Because the first dialog is dismissed only with a mouse click, the possibility of pressing the Return key too many times is eliminated. However, the second



dialog defaults to the "Initialize" button; therefore, pressing the Return key causes the disk just inserted to be erased. However, if the "Cancel" button is clicked, the initialization process is terminated. Thus, there is a two-step process to invoke the initialization operation.

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Tech Info Library Article Number:5560



# Tech Info Library

## GS/OS: //WRITE and Network Printing

Revised: 6/29/90  
Security: Everyone

GS/OS: //WRITE and Network Printing

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This article last reviewed: 22 May 1990

TOPIC -----

I have now experimented with a variety of different settings and still can only be sure of getting AppleWorks to print to a LocalTalk ImageWriter. Another major problem I found was inserting a disk with software that GS/OS doesn't recognize (specifically, //WRITE from Random House Media).

I found a "solution" with some bugs. Here it is. I use the old AppleShare GS Workstation disk. Select CHOOSER.II from the menu, select the LocalTalk printer, escape from the menu, and choose the option that lets you provide a pathname to the software you want to use (in my case, //WRITE). This is where the problems arise.

- 1) On the new ROM Apple IIGS, the keyboard seems to be remapped so that the "/" key produces a "}". The only way to get the "/" is by using the one on the numeric keypad. On an older Apple IIGS, the keyboard is normal. Why?
- 2) A second problem arises after //WRITE is launched, and I've created a document and sent it to the printer. On the new ROM Apple IIGS, it goes to the printer, prints successfully, but the screen seems to go into 40-column mode. The machine still works, but you can't read the text (letters overlap). On the older Apple IIGS, everything works the same, but the screen remains normal. Why?
- 3) Can the menu that appears on the Workstation Disk be edited to place the name of the application in it and delete options I don't want users to play with (System Utilities, Server Log-on, and so on)?

DISCUSSION -----

- 1) The only way we were able to duplicate this result was to go to the Control Panel, select the Alphabet device, and set the Keyboard item to "Spanish". In other language selections, various other characters were displayed. Only

in the "Spanish" setting did the "}" character appear.

- 2) According to the people at Random House, they discontinued their software division about two years ago. We could not find anyone at Random House who knew anything about //WRITE, which is at least two years old. Without Random House assistance with this issue, we were unable to find a workaround to the 40-column problem.
- 3) The menu items are hard-coded into the menu application. There is no way to change the items in the list. Aristotle or Let's Share are the only network menu systems that can be modified.

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Tech Info Library Article Number:5561



# Tech Info Library

## Macintosh: Making Multicolored Silk Screen Masters

Revised: 6/29/90  
Security: Everyone

Macintosh: Making Multicolored Silk Screen Masters

=====

This article last reviewed: 22 May 1990

TOPIC -----

Do you know of a way to use a Macintosh, scanner and a LaserWriter to make silicon film and, from this film, make multi-colored silk prints?

I read about something like this; I believe that the "system" was called PENTAGRAPH. The article also stated that "CAD is a newcomer to the silk print industry. ..."

Do you have any information on such a product?

DISCUSSION -----

The only process that appears to be similar to what you want is called "silk-screening". If this is what you are looking for, part of the solution is Macintosh-based, and part of it is based on traditional silk-screening techniques. Here is how silk-screening works:

Silk-screening is a photographic process. A light-sensitive emulsion is layered onto silk. This emulsion is exposed through an image on a film positive, much like creating an image on photographic print paper. Once exposed and processed with photographic-type chemicals, the silk lets ink to pass through unexposed areas and blocks the passage of the ink exposed areas. Any material placed under this processed silk screen receives the ink that passes through. This leaves an image on the material under the silk screen. This is the portion of the process that is based on traditional silk-screening methods. A graphics supply house should be able to provide all the tools and materials required for this phase of the operation.

The Macintosh can be used to create the film positive, which replaces the usual photographic film positive. Any software that prints to the LaserWriter can be used to create this image, including graphics and CAD software. Once the image is created, printing an image on transparencies

provides the equivalent of the film positive. You will, however, be limited to the size of transparencies that fit into the LaserWriter.

To create multiple colors, use one transparency for each color. This requires some type of color separation capability: either direct color separation in the application, or an application that provides several layers of images--one layer for each separate color.

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Tech Info Library Article Number:5562



# Tech Info Library

## OmniPage: Incompatible with Macintosh Portable

Revised: 6/29/90  
Security: Everyone

OmniPage: Incompatible with Macintosh Portable

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This article last reviewed: 22 May 1990

TOPIC -----

I have a Macintosh Portable and want to know if OmniPage scanning software works on the system. It wasn't listed in the compatibility list in a recent Apple mailing.

Also, will a half-page or hand-held scanner work with the Macintosh Portable? Is there a list of scanners and scanner software that work with the Macintosh Portable?

DISCUSSION -----

OmniPage requires a 68020-based system with 4MB RAM to run. With these requirements, OmniPage will not work on the Macintosh Portable. We have yet to contact CTA, publishers of TextPert, but their package is listed as running on any Macintosh with a minimum of 1MB RAM.

We don't know of a list of compatible scanners and scanner software. However, Logitech (ScanMan) and Thunderware (LightningScan) indicate that their products work fine with the Macintosh Portable.

For more details, search the Technical Info library under "CTA."

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Tech Info Library Article Number:5563



# Tech Info Library

## AppleShare Network: How to Check for ProDOS Files

Revised: 6/29/90  
Security: Everyone

AppleShare Network: How to Check for ProDOS Files

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This article last reviewed: 22 May 1990

TOPIC -----

I have Apple IIGS systems and Apple IIe systems on an AppleShare 2.0.1 network. When the Apple IIGS starts up, it shows ProDOS 1.8 and GS/OS, yet when the Apple IIe systems start up, they show ProDOS 1.4.

I have an application (MECC Communikeys) that apparently doesn't work correctly with ProDOS 1.4. (One Apple IIe works OK, but the other Apple IIe systems lock the entire network.)

Where is ProDOS 1.4 coming from? I've checked for P\* and P16 and even copied them from one folder to another.

DISCUSSION -----

When setting up an AppleShare File Server for an Apple IIe and Apple IIGS environment, two copies of P8 are installed. One copy is installed when the server is updated with the Apple II Setup Disk for the AppleShare File Server (a Macintosh disk). This copy is placed in the Server Folder. Another copy is installed when GS/OS is loaded from an Apple IIGS using the GS/OS SYSTEM.DISK and SYSTEM.TOOLS (Apple IIGS disks). This copy is at the root level of the server.

It appears that an early version of the Apple II Setup Disk was used on the server. Earlier versions of that disk contained earlier versions of P8. Reinstalling the Apple II setup should provide the current version of ProDOS. Use the Apple II Setup Disk marked:

"Version 2.1; For use with Apple IIGS System Software 5.0".

How did you check for the ProDOS files? Was the check done from an Apple IIGS? Was the check done from a Macintosh on the network? Was checking done on the server from within the Admin application? Was the server

restarted with a floppy disk and then checked for these files?

If the check was from a Apple IIGS workstation, the Server Folder is not visible. This is where one of the ProDOS files resides, and you would find only one of the ProDOS files.

If you checked from a Macintosh on the network, the result would be the same as when checking from an Apple IIGS workstation. There is no Server Folder available.

If checking was done on the server from within the Admin application, you will see the Server Folder, but you cannot open that folder and review its contents.

If the server was started up from a floppy disk and then the check was done, a second P8 file will be visible in the Server Folder.

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Tech Info Library Article Number:5564





# Tech Info Library

## DAL and VAX: Async Connection Problem

Revised: 8/28/90  
Security: Everyone

DAL and VAX: Async Connection Problem

Article Created: 27 May 1990  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am evaluating Data Access Language (DAL, formerly known as "CL/1"). I set up an asynchronous connection (through a modem) to a VAX with Red Ryder with these settings:

1200 baud  
No parity  
8 data bits  
1 stop bits  
XON/XOFF

I connect to another VAX using DECnet with a "c MIS001". This is the VAX with the DAL server running. Leaving the terminal session open and using the DAL test application, I invoke this host connection script direct1200:

```
direct1200:async:com1:1200:Noparity:8databits:1stopbits:Bothxonxoff:128:Nomodem
```

This returns a "connection failed", error 10628(0) asynch() with no message.

I tried using the asyncl host:

```
asyncl:async:com1:1200:Noparity:8databits:1stopbits:BXonxoff:128:Modem:Tone::se  
cs:attempts
```

This returns a "Connection to host async failed", error 10643(0) asynch() with no message.

Then it returns a "connection failed", error 10628(0) asynch() with no message.

I think this is because of the round-about connection to the host, but it seems

if I already made the connection, the DAL tester should piggyback on the connection. I verified that the AppleTalk connection works and can access data this way. Therefore, it does not seem to be a server-based problem.

- 1) What script should I use for this type of connection?
- 2) How easy would it be to write a host script, so I don't have make the connection through Red Ryder?

DISCUSSION -----

We talked with Network Innovations, and they stated that their asynchronous protocols work only with VAX systems directly connected to the asynchronous link (in this case, the modem). In other words, they do not support logging on to one host, connecting to a second host via DECnet, and running the DAL server from that second host. They are aware of this issue and are looking at ways to resolve it in the future, but there is no workaround at the present time.

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Tech Info Library Article Number:5566



# Tech Info Library

## HyperCard: Phone Stack and Apple 2400 Data Modem

Revised: 6/29/90  
Security: Everyone

HyperCard: Phone Stack and Apple 2400 Data Modem

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This article last reviewed: 22 May 1990

TOPIC -----

I cannot make my HyperCard Phone stack dial using an Apple 2400 Data Modem. This is the same stack that came with HyperCard with a few minor modifications. In the Phone stack, the outside access code is "\*06,". This command selects line six of our key phone system. The script behind any of the phone dial buttons dials, then waits 10 seconds, and dials again.

HyperCard selects line six and dials the appropriate number. I simply pick up the line on my handset in between these dials; the second dial is there just to get the modem to let go of the line once I pick up the handset.

I am using HyperCard 1.2.5 and the Phone stack is the one that came on that disk. This works fine with the Apple Personal Modem but will not work with the Apple 2400 Data Modem.

DISCUSSION -----

Make sure that the 10-second pause is in the "doDial" handler. Before "put empty", the last line of code in the handler, you should insert these lines:

```
-- wait 10 sec  
-- send return to HyperCard
```

This way the change takes place only once, and it's easier to follow the code at that point. The return causes the modem to drop the line, leaving the user in voice mode.

The problem with the modem and the Phone stack is that HyperCard opens the serial port for 3 seconds. It takes the modem (and many third-party devices) just under 2 seconds to go off hook. The dial string contains a comma creating a 1-second pause. This leaves a very small window in which to send the phone

number. Chances are the number is not completely transmitted, leaving you disconnected.

Our suggestion is to use the Serial XCMDs available from APDA to send data to the modem. This command set gives you complete control over the serial port, eliminating the need for the 10-second pause to get the modem to release. You will need to recreate the doDial handler to use the serial XCMDs.

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Tech Info Library Article Number:5567



# Tech Info Library

## High-Speed Printer Solutions for the Macintosh

Revised: 6/29/90  
Security: Everyone

High-Speed Printer Solutions for the Macintosh

=====

This article last reviewed: 22 May 1990

TOPIC -----

A customer needs a high-speed printer setup for a Macintosh SE or Macintosh IICx to print labels in volume. The quality of print does not matter--Draft mode and readable is all that is needed. The ImageWriter II that is being used now takes 6 to 7 hours to print the current list, and this list will quadruple next month. Are there any dot-matrix connections to high-speed printers that truly take advantage of the printer's speed? Epson's package can only go as fast as the converter.

DISCUSSION -----

The majority of high-speed printers are line printers, not dot-matrix. Support Engineering uses a Printronix Model 300XG Line Printer with a Centronics parallel interface. The product used to connect it to the Macintosh is no longer available, but searching the "Buyer's Guide" on AppleLink with "parallel and serial and printer" as criteria, we found references to a number of products to connect high-speed parallel printers.

Among the products found were:

- Grappler C/Mac/GS from Orange Micro
- ParaLink from Jonathon Freeman Technologies, Inc.
- Macintosh Port Adaptor from Cambridge Automation, Inc.

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Tech Info Library Article Number:5569



# Tech Info Library

## Macintosh Portable: Does Not Support SCSI Disk Mode (3/95)

Revised: 3/16/95  
Security: Everyone

Macintosh Portable: Does Not Support SCSI Disk Mode (3/95)

=====

Article Created: 27 May 1990  
Article Reviewed/Updated: 16 March 1995

TOPIC -----

Can I connect the Macintosh Portable to another Macintosh via the SCSI port?

DISCUSSION -----

No, the Macintosh Portable does not support SCSI Disk Mode as is supported on most PowerBook computers.

For many reasons, you should not connect two Macintosh computers via SCSI cables, with the exception of PowerBook computers which support SCSI Disk Mode. This includes all PowerBook models except for the PowerBook 140, 145, 145B, 150, and 170.

The most important reason is that you would then have two devices (the computers, and often the internal drive) on the bus with the same SCSI ID. Further, a straight-through cable would connect outputs to outputs and inputs to inputs, which would bring communications to a halt.

Article Change History:  
16 Mar 1995 - Updated list of computers which support SCSI Disk Mode.

Support Information Services

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Tech Info Library Article Number:5571



# Tech Info Library

## LocalTalk PC Card: How to Configure It for TOPS

Revised: 6/29/90  
Security: Everyone

LocalTalk PC Card: How to Configure It for TOPS

=====

This article last reviewed: 25 May 1990

TOPIC -----

TOPS documentation claims support for the LocalTalk PC Card. I want to communicate through the card from a PC using TOPS. Although TOPS claims support for the card, their technical support group could not tell us how the card must be configured. Can you help?

DISCUSSION -----

TOPS Technical Support told us how to configure their software for use with the LocalTalk PC Card. The most common problem encountered in this situation is that some required software is not included with the LocalTalk PC Card. AppleShare PC and the LocalTalk PC Card were originally shipped as a package. They are now separate items.

Users of the TOPS card should have an AUTOEXEC.BAT file that looks like this:

```
ALAP
PSTACK
TOPSTALK
TOPSKRNL
```

Users of the LocalTalk PC Card should have an AUTOEXEC.BAT file that looks like this:

```
LSL
LTALKP
ATALK
COMPAT
TOPSTALK
TOPSKRNL
```

Note that the first two files for the TOPS card user are replaced by the first

## ..TIL05573-LocalTalk\_PC\_Card-How\_to\_Configure\_It\_for\_TOPS\_(TA42667).pdf

four files shown for the LocalTalk PC Card user. The .COM files associated with the names above are included with AppleShare PC.

After starting up with the above AUTOEXEC.BAT file on disk, run TOPS menu and proceed as described in the TOPS documentation.

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Tech Info Library Article Number:5573





# Tech Info Library

## Works-to-Works: File Transfer With AppleWorks 3.0

Revised: 6/29/90  
Security: Everyone

Works-to-Works: File Transfer With AppleWorks 3.0

=====

This article last reviewed: 22 May 1990

TOPIC -----

Around the time when AppleShare for Apple IIe was introduced, I had a discussion with someone from Productivity Software about the Works-to-Works AFE file. Now, I can't find them. Can you help?

DISCUSSION -----

The phone numbers we have for Productivity Software. However, they do still have an active AppleLink account (D0002). We tried to contact them by Link recently but did not receive a response.

CLARIS Tech Support is telling their customers to save the files as ASCII text for Works-to-Works to function as expected. As long as no new features are used, AppleWorks 3.0 saves files created in older versions of the software in their original format. Once a new feature is used, the creator type is changed and is no longer readable by older software. This is intentional and is meant to avoid "confusing" the old software when trying to deal with the results of a new feature.

Again, CLARIS suggests saving the file in ASCII form for reading into previous versions or converting to Macintosh format. For further clarification, contact CLARIS Technical Support. To get the number, see a CLARIS manual or search TIL under "CLARIS."

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Tech Info Library Article Number:5575



# Tech Info Library

## AppleTalk Phase 2 and LocalTalk-Based Networks

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2 and LocalTalk-Based Networks

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This article last reviewed: 22 May 1990

TOPIC -----

I would like to clear up what appears to be some confusion about the use of AppleTalk Phase 2 on a LocalTalk-based network. This is my understanding of the situation:

- 1) AppleTalk Phase 2 does not necessarily provide any benefit on a LocalTalk-based network and, in particular, does not enhance network performance. It may, however, be useful where the number of nodes on an Internet are expected to exceed 256 (because of address lengths).
- 2) It is better to use AppleTalk Phase 2 on a LocalTalk-based network when connecting to another AppleTalk Phase 2 network (removing the overhead of the AppleTalk Phase 2 Upgrade Utility). There are also some other benefits related to zone naming and removing some old limitations on Internets. To upgrade a LocalTalk-based network to AppleTalk Phase 2, all that is necessary is to copy the AppleTalk file that comes with AppleTalk Internet Router into the System Folder of any LocalTalk machines.
- 3) All networked machines should be upgraded to AppleTalk Phase 2 as it eventually will be included in ROMs, and additionally, Apple will stop shipping the AppleTalk Phase 2 Upgrade Utility with the router (from the MacLAN documentation).
- 4) Can you tell me where devices like LaserWriters fit in? On the AppleTalk Phase 2 Upgrade Utility, when you search for network devices, Macintosh systems with the AppleTalk file are identified as AppleTalk Phase 2. Other Macintosh systems are identified as AppleTalk Phase 1 (that is, on LocalTalk), and LaserWriters are identified as unknown devices. What does this mean?
- 5) Why does the router need the upgrade utility to route between AppleTalk Phase 1 and AppleTalk Phase 1? How is it used (that is, does it convert the

address to AppleTalk Phase 2 and back again)?

Will you confirm or correct my understanding of this issue. I am aware that opinions do differ somewhat within Apple, indicating that there is some confusion in this matter.

DISCUSSION -----

- 1) AppleTalk Phase 2 routers on LocalTalk-based networks do offer better performance than AppleTalk Phase 1 routers in the following situation:

Reduced broadcast traffic: One of the key reasons for customers to upgrade from AppleTalk Phase 1 to AppleTalk Phase 2 is the split horizon RTMP enhancement. Split horizon reduces the number of redundant routing table entries exchanged by routers. The split horizon algorithm is: All entries whose forwarding port in the routing table is equal to the port out that the entry is being sent are omitted from the RTMP Data packet. In other words, Router A will not include network numbers in RTMP packets broadcast on Network X when Network X is the path (forwarding port) for Router A to reach these other networks.

This information applies to LocalTalk-based networks connected via AppleTalk Internet Routers. Note that each AppleTalk Internet Router running the AppleTalk Phase 2 Upgrade Utility broadcasts AppleTalk Phase 1 and AppleTalk Phase 2 RTMP packets on LocalTalk-based networks. This means that an AppleTalk Internet Router running the AppleTalk Phase 2 Upgrade Utility actually increases broadcast traffic on LocalTalk-based networks networks connected to it.

AppleTalk Phase 2 does not provide any benefit to LocalTalk-based networks and Internets for node addressing. Node IDs are still 8 bits (0-255), and network numbers are still 16 bits (0-65,535).

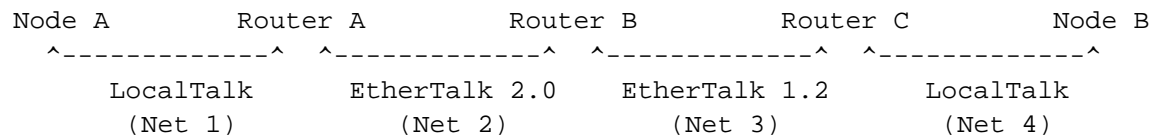
- 2) The AppleTalk file you are referring to, when installed in the System Folder, causes version 53 of AppleTalk to be used in place of the ROM version of AppleTalk. Version 53 of the AppleTalk driver gives users on LocalTalk-based networks the ability to support some of the new high-level AppleTalk calls that do not in any way change the protocols used on the LocalTalk physical medium. These new high-level AppleTalk calls are documented in Macintosh Technical Note #250 (available on AppleLink under the Developer Services icon).

It is not necessary to use the AppleTalk Phase 2 Upgrade Utility on AppleTalk Internet Routers when no AppleTalk Phase 1 routers are on the Internet. This means that an all-LocalTalk Internet using only AppleTalk Internet Routers does not require the use of the AppleTalk Phase 2 Upgrade Utility. The LocalTalk nodes do not require the use of AppleTalk version 53 in this scenario.

LocalTalk-based networks, running AppleTalk version 53 or not, do not receive "other benefits related to zone naming and removing some old limitations on Internets" as you imply. LocalTalk networks have not changed in this respect with the advent of AppleTalk Phase 2.

- 3) Yes, all non-LocalTalk AppleTalk devices should eventually upgrade to AppleTalk Phase 2 compatibility. Yes, future Macintosh systems will ship with AppleTalk version 53 or later in ROM. Eventually, the AppleTalk Phase 2 Upgrade Utility will stop being shipped with the AppleTalk Internet Router. There is no timeframe for this.
- 4) AppleTalk devices that attach to a network via LocalTalk will continue to work on AppleTalk Phase 2 Internets as they do now on AppleTalk Phase 1 Internets. Remember, LocalTalk-based networks have the same limitations running under AppleTalk Phase 2 that they had under AppleTalk Phase 1. The AppleTalk "Phase 2 Node Identifier" utility that comes on the AppleTalk Phase 2 Upgrade Utility disk declares an AppleTalk node as AppleTalk Phase 2 if the AppleTalk version is 53 or greater and the AppleTalk type is "Macintosh xxx" where "xxx" is the type of Macintosh. If the AppleTalk version is less than 53 and the AppleTalk type is "Macintosh xxx", the node is identified as AppleTalk Phase 1. Nodes with an AppleTalk type other than "Macintosh xxx" are identified as unknown devices.
- 5) The AppleTalk Internet Router does not need the AppleTalk Phase 2 Upgrade Utility when routing between two LocalTalk-based networks. The AppleTalk Phase 2 Upgrade Utility allows the AppleTalk Internet Router to broadcast and receive AppleTalk Phase 1-style RTMP packets. This is all the AppleTalk Phase 2 Upgrade Utility does. The only time the AppleTalk Internet Router needs the AppleTalk Phase 2 Upgrade Utility is when there is an AppleTalk Phase 1 router on the same physical cable as the AppleTalk Internet Router.

An example of this:



Router A is an AppleTalk Internet Router

Router B is an AppleTalk Internet Router

Router C is a Kinetics FastPath 4 - AppleTalk Phase 1 only

Since Router C, the FastPath, is an AppleTalk Phase 1 router, the AppleTalk Internet Router (Router B) must run the AppleTalk Phase 2 Upgrade Utility. The AppleTalk Phase 2 Upgrade Utility causes Router B to generate and broadcast AppleTalk Phase 1-style RTMP packets onto Net 3. Router A does not need to use the AppleTalk Phase 2 Upgrade Utility because it is not on the same physical cable as the AppleTalk Phase 1 router (the FastPath). If Router C was replaced with an AppleTalk Internet Router and Net 3 was an EtherTalk 2.0 network, the AppleTalk Phase 2 Upgrade Utility would not be needed on any of the routers.

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Tech Info Library Article Number:5577



# Tech Info Library

## A/UX: Data Structure of sa Manual Correction

Revised: 9/21/92  
Security: Everyone

A/UX: Data Structure of "sa" Manual Correction

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Article Created: 22 May 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

We've tried to use the records in the "sardd" files (directory /usr/adm/sa) to monitor some system resources and to get information about freemem, freeswap, and other dynamically changing parameters.

The customer found that the structure of the records written by "sadc" and the description of this structure in "sadc(1M)" did not match. I checked and found that the records written by "sadc" are 228 bytes on our system and the size of "sa" (System Accounting), as described, is 304 bytes.

Please send me the structure of the information contained in the records of /usr/adm/sa/sardd.

### DISCUSSION -----

We researched the data structure of "sa", and it seems that the one described in the "sadc(1M)" manual page is wrong; the "sa" data structure defined in the sa.h header file and used by the "sadc" program has the following structure:

```
struct sa {  
    struct sysinfo si; /* defined in /usr/include/sys/sysinfo.h */  
    int szinode; /* current size of inode table */  
    int szfile; /* current size of file table */  
    int sztext; /* current size of text table */  
    int szproc; /* current size of proc table */  
    int mszinode; /* maximum size of inode table */  
};
```

```
int      mszfile;      /* maximum size of file table */
int      msztext;      /* maximum size of text table */
int      mszproc;      /* maximum size of proc table */
long     inodeovf;     /* cumulative overflows of inode table since boot */
long     fileovf;      /* cumulative overflows of file table since boot */
long     textovf;      /* cumulative overflows of text table since boot */
long     procovf;      /* cumulative overflows of proc table since boot */
time_t   ts;           /* time stamp */
long     devio[NDEVSII4]; /* device unit information */

#define IO_OPS  0      /* number of I/O requests since boot */
#define IO_BCNT 1      /* number of blocks transferred since boot */
#define IO_ACT  2      /* cumulative time in ticks when drive is active */
#define IO_RESP 3 /*cumulative I/O response time in ticks since boot */
};
```

The total size of structure "sa" is 740. However, the record size of "sa" is computed as below:

```
recsz = sizeof (struct sa) - sizeof d.devio + recsz * sizeof d.devio[0];
```

The result of recsz from the above equation =  $740 - 512 + 0 = 228$

However, the first record of the data file will have the size of 232, which includes a 4-byte header at the beginning of the data file. The rest of the records have a record size of 228. If you monitor the size of data file, the size will have this order: 232, 460, 688, 916, 1144, and so on.

Concerning the record of the system accounting report file (/usr/adm/sa/sardd), the "sar" program generates different sizes of output files (from the input file "sadd" created with "sadc" program) depending on the options specified in the "sar" command line. By default, without any option, the "sar sadd-file" reports with the CPU utilization:

```
time-stamp   %user      %sys      %wio      %idle
```

If the -A option (all the options -uqbwcayvm) is used, it generates all supported information, like -b for reporting buffer activity, -y for reporting the tty device activity, and so on.

We reported the inconsistency of the "sa" data structure specified in "sadc(1M)" to A/UX Engineering.

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Tech Info Library Article Number:5581



# Tech Info Library

## DAL: RMS, VAX Rdb, and VAX DBMS Support Q&A

Revised: 7/10/92  
Security: Everyone

DAL: RMS, VAX Rdb, and VAX DBMS Support Q&A

Article Created: 27 May 1990  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I have some questions about Data Access Language (DAL, formerly known as "DAL") that I need help with:

- Is Rdb a relational database product that DEC ships free with VMS?  
Currently, DAL supports Rdb files (that is, you plug it in and play).
- Is RMS an older relational file structure supported by third-party products like DATATRIEVE. When will DAL support for RMS files be available?
- DATATRIEVE seems to be a query/script language for accessing RMS files. Does DATATRIEVE keep its own data files in RMS in such a way that DAL will be able to directly read them, or do we have to run some conversion process?

DISCUSSION -----

VAX Rdb/VMS is the DEC relational database management system. However, only Rdb Run-time is bundled with the VAX/VMS operating system. For Interactive and development use, users still have to purchase separate licenses from DEC. Please check with a Digital Sales Office for more information on this licensing.

VAX Record Management Services (VMS RMS) is not an older relational file structure, but rather it is the data management subsystem of the VMS operating system. In combination with the VMS operating system, RMS allows efficient and flexible storage, retrieval, and modification of data on disks, magnetic tapes, and other devices. Currently, RMS supports three file organizations: Sequential, Relative, and Indexed. It supports both Sequential Access and Random Access for Record Access modes. Currently, DAL does not support accessing RMS files directly.

VAX DATATRIEVE, a query and report system, provides a uniform access method for data stored by RMS, VAX Rdb, and VAX DBMS (a multi-user, general-purpose CODASYL-compliant network database management system). DATATRIEVE is also a Digital product, not a third-party product. Using DATATRIEVE, users can retrieve or modify data without considering the underlying storage method or physical location of the data. Because DATATRIEVE is only a query and report system, the storage of data is determined by the data management subsystem, like RMS, or a database management system, like VAX Rdb or VAX DBMS. If the data being used by DATATRIEVE is from VAX Rdb, DAL should be able to access it. Accessing RMS files directly is not possible with DAL as stated above. DAL will not be able to access data from VAX DBMS either.

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Tech Info Library Article Number:5583





# Tech Info Library

## LaserWriter: How to Change the Manual Timeout

Revised: 6/29/90  
Security: Everyone

LaserWriter: How to Change the Manual Timeout

=====  
This article last reviewed: 23 May 1990

TOPIC -----

I want to change the manual-feed timeout on a LaserWriter IINT. I read the Tech Info Library article "LaserWriter Timeout Specifications", which states that this can be done and refers you to the "PostScript Language: Reference Manual". Because I'm no PostScript expert, I would like to get a PostScript program that changes the manual-feed timeout to 120 seconds.

DISCUSSION -----

Changing the timeout is done with the "setdefaulttimeouts" PostScript operator. This operator establishes the default values, job, manual feed, and wait for the three timeouts. At the beginning of each job, these values are used to initialize the job, manual feed, and wait timeouts. Each parameter must be a non-negative integer denoting the length of a timeout in seconds. The value of 0 indicates that the corresponding timeout should never occur. The default values for job, manual feed, and wait are 0, 60, and 30, respectively. A PostScript program, like the one that follows, can be sent to the printer to change timeout values:

```
serverdict begin 0 exitserver
statusdict begin
# # # setdefaulttimeouts
end
```

where # # # should be replaced by the job, manual-feed, and wait-timeout values in seconds. In your case, you want to change the manual-feed timeout to 120 seconds and keep the other values the same. Your third line should look like this:

```
0 120 30 setdefaulttimeouts
```

The PostScript program then can be downloaded to the printer using a download

utility, like Widgets, that comes with the CE Software DiskTop Utility. For more details, search the Technical Info library under "CE Software, Inc.."

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Tech Info Library Article Number:5584



# Tech Info Library

## Macintosh and Distributed-Session Controllers (8/94)

Revised: 8/30/94  
Security: Everyone

Macintosh and Distributed-Session Controllers (8/94)

Article Created: 27 May 1990  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

IBM has an SDLC card that distributes 3270 series sessions over IBM's implementation of Token Ring.

- 1) Is there software for the Macintosh that lets the Macintosh get a session from the SDLC card over Token Ring?
- 2) If yes, can the Macintosh be bridged to Ethernet or LocalTalk and get a session through that topology?

DISCUSSION -----

There is no software available at this time that lets a Macintosh connect to a distributed-session controller, like a PC with an SDLC card. Essentially, the ability to accept one of the distributed sessions from an SDLC interface requires software that is not yet available on Macintosh. Our only solution is the expensive route of using a true 3174 or compatible controller, or SNA Gateway product and terminal emulation.

You can also talk to Tri-Data, DCA (formerly Avatar), and Wall Data. All of these companies can address the needs of distributed 3270 sessions (Wall Data can also use the Serial NB Card). The Macintosh SE, Macintosh SE/30 and Macintosh II systems can use distributed SDLC sessions through an Apple Network System products, like Avatar MacMainFrame, Tri Data Netway 2000, Wall Data SNA•ps, or Andrew NetAccess. Note however, that these products do not provide a true solution, because there are no Apple or third- party products that use NetBIOS distributed SDLC sessions over Token Ring as implied by the request and are limited to a set number of sessions available for distributing.

Given the use of the third-party products listed here, it is also possible to acquire sessions across different network topologies through the use of routers, as in the case of an Apple Internet Router supporting LocalTalk installed with

an Ethernet card or Token Ring card.

Article Change History:

30 Aug 1994 - Updated with additional third-party offerings.

26 Jul 1993 - Company title changed from Avatar to DCA (Digital  
Communication Associates).

23 May 1990 - Updated for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5586



# Tech Info Library

## Apple IIGS/Macintosh Versus PC-LAN Baseband Network

Revised: 6/29/90  
Security: Everyone

Apple IIGS/Macintosh Versus PC-LAN Baseband Network

=====

This article last reviewed: 23 May 1990

TOPIC -----

I just finished a competitive bid against IBM in a local school district. We were using AppleShare and Farallon PhoneNET cabling with existing in-plant wiring; IBM was bidding PC-LAN Baseband and Novell.

What can you tell me about PC-LAN Baseband, especially regarding its competitive position against Apple products?

DISCUSSION -----

IBM has two different networking schemes that are referred to as PC-LAN: Baseband and Broadband. They pitch Baseband for K-12 labs. Using the PC Network Adapter-II in the XT bus machines, like the original PC and PS/2-25/30, and the PC Network Adapter II/A for the MicroChannel machines, it is a 2Mbps CSMA/CD protocol run over unshielded, twisted-pair telephone wiring. The network uses the IEEE 802.2 LLC standard like AT&T StarLAN. A typical configuration is cabled in daisy-chain fashion using RJ-11 telephone jacks and telephone cabling with up to eight stations within a maximum 200-foot chain compared to a 4000-foot network limit with PhoneNET.

NetBIOS support is not provided directly on the card; it is via two software products, the PC Network Protocol Driver and the LAN Support Program. This network does not support 8022 LLC protocol or APPC/PC. This takes away from available, application memory. In addition, because Novell is the chosen server architecture, Windows is rumored to have difficulty--giving the Apple IIGS and Macintosh a further edge. As of March, 1990, IBM has not tried to demonstrate Windows on this configuration, lending support to this rumor.

The PC-LAN Baseband network can be enlarged using the IBM 5173 PC Network Baseband Extender, which has 10 ports. The network can be extended to 10 arms of eight workstations each, and the length of the daisy-chain arm is extended to 400 feet using the Extender. This means that the radius of a PC-LAN

Baseband network cannot exceed 400 feet, giving a significant advantage to LocalTalk and PhoneNET networks. The maximum network is 80 stations, unless a router is used to bridge multiple networks together or to jump to another topology, such as Ethernet or Token Ring.

Apple's advantage against IBM as being Apple's Strategic Network Direction--AppleTalk over twisted-pair with higher-speed backbones versus a network direction on IBM's part that was not strategic (Novell and PC-LAN Baseband as opposed to Token Ring and LAN Manager). Both the Macintosh and Apple IIGS to give a Finder interface and graphic applications have the Finder interface, whereas IBM can show only Microsoft Works as evidence of their graphics interface. Further, Apple has a strategic graphics interface and contrasted the offering from IBM, which was not robust enough to run a Windows environment. Finally, the 8086 technology is not strategic for IBM and that Windows and OS/2 are really geared for the 80286 and above technology. This leaves schools wondering about the long-term viability of PS/2-25s.

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Tech Info Library Article Number:5591



# Tech Info Library

## CTI Electronics Corp.

Revised: 7/7/93  
Security: Everyone

CTI Electronics Corp.

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Article Created: 02/18/91  
Article Reviewed: 07/07/93  
Article Updated: 07/07/93

CTI Electronics Corp.

-----

110 Old South Ave.  
Stratford, CT 06497

203-386-9779

203-378-4986 Fax

### Company Profile:

Hardware, specializing in custom packaging of keyboards and an industrial mouse devices for the Macintosh, designed for harsh environments.

Article Change History: 07/07/93 Address Changed

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Tech Info Library Article Number:5596



# Tech Info Library

## Storage Dimensions (Maxtor)

Revised: 4/4/97  
Security: Everyone

Storage Dimensions (Maxtor)

=====

Article Created: 27 May 1990  
Article Reviewed/Updated: 4 April 1997

Storage Dimensions (Maxtor)

-----

1656 McCarthy Blvd.  
Milpitas, CA 95035

408-954-0710

Fax: 408-944-1200

Company Profile:  
Hardware, specializing in mass storage products.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5597





# Tech Info Library

## Extended Systems

Revised: 7/8/93  
Security: Everyone

Extended Systems

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Article Created: 05/27/90  
Article Reviewed: 07/08/93  
Article Updated: 11/09/92

Extended Systems

-----

5777 N. Meeker Ave.  
Boise, ID 83704

800-235-7576 (Sales)

208-322-7575 (Technical Support)

208-377-1906 Fax

Company Profile:

Hardware and software, specializing in network products, esp. printer sharing connectivity.

Mailing address:

Boise, ID 83711  
P.O. Box 4937

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Tech Info Library Article Number:5598



# Tech Info Library

## LaserWriter IINTX: New ROMs Avalable May 1990

Revised: 6/29/90  
Security: Everyone

LaserWriter IINTX: New ROMs Avalable May 1990

=====

This article last reviewed: 11 June 1990

There is a new version of LaserWriter NTX ROMs being rolled into production in late May. These ROMs contain an updated version of PostScript. PostScript version 51.8 allows for the following enhancements.

- Full support of software switching between emulations and ports - It is now possible to both switch into and out of an emulation mode via software.
- Improved support of multiple SCSI disks - Up to 8 SCSI hard disk drives can now be connected to the LaserWriter NTX SCSI port. Up to 80% of the hard disk with the lowest SCSI ID is used for font caching with the remainder of that disk and all of any other connected hard disk used for downloaded fonts. Each hard disk is now formatted as a separate volume which allows a user move a disk (other than the startup disk) between systems without needing to re-format.
- Additional characters in the HP LaserJet+ emulation - Four characters have been added that had been left out of the original implementation of HP LaserJet+ emulation.
- Improved default settings for HP LaserJet+ bit map printing - Previously, bitmaps in HP LaserJet+ mode were interpreted at 7-bit thus ignoring a significant bit. The new ROMs default to 8-bit serial communications.

NOTE: These new ROMs are found in any LaserWriter NTX with a part number ending in 6004/A.

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Tech Info Library Article Number:5599



# Tech Info Library

## A/UX: comp.unix.aux Newsgroup Archives Now Available

Revised: 9/21/92  
Security: Everyone

A/UX: comp.unix.aux Newsgroup Archives Now Available

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Article Created: 7 June 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Where can I get copies of the Usenet newsgroup comp.unix.aux?

### DISCUSSION -----

An A/UX patch server was set up about 2 months ago in the A/UX Technical Response group that maintains the comp.unix.aux newsgroup.

The A/UX patch server is now available to the public using the Internet Address 130.43.6.2 and the domain host name aux.support.apple.com. It can be "ftp"ed with a login name "anonymous" and any password. The comp.unix.aux newsgroup archive is under the /usr/spool/ftp/pub directory.

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Tech Info Library Article Number:5604



# Tech Info Library

## Macintosh: Converting Vector Data to QuickDraw Data

Revised: 6/29/90  
Security: Everyone

Macintosh: Converting Vector Data to QuickDraw Data

=====

This article last reviewed: 7 June 1990

TOPIC -----

How many vectors is the Display Card 8/24 GC capable of handling?

I am interested in high-performance CAD. I assume that this number depends on whether or not the expansion kit is installed. Will you give me the data for both versions?

DISCUSSION -----

The Macintosh, like most desktop computer systems today, is a raster-based image system -- not a vector-based system. Vector data can be entered, but needs to be converted to a line drawing system based on cartesian coordinates for displaying on the screen. Specifically, for the Macintosh, this means that the vector data needs to be converted into QuickDraw data and then drawn with QuickDraw routines.

If you want to create your own CAD program, you need to understand both the vector system and the QuickDraw system, as well as do the conversion between the two methods. Your implementation of your vector system will determine the number of vectors handled.

On the other hand, if you want to use a commercial application, the vector limits are a specification of that commercial application. The application also converts the vector information into QuickDraw information for screen display. However, some commercial developers have bypassed QuickDraw and written directly to the Macintosh hardware. In these instances, the applications do not benefit from the accelerated QuickDraw of the new Display Card 8/24 GC. These applications also have a higher probability of breaking on newer models of the Macintosh.

The speed at which vectors are handled (as vectors) depends on the application's implementation and the speed of the CPU on which that application

is run. The faster the CPU, the faster the application. The speed of the conversion from vectors to QuickDraw is also application- and CPU speed-dependent. The speed with which QuickDraw is handled is a function of the Display Card 8/24 GC and the CPU speed.

Expanding the memory of the Display Card 8/24 GC allows a larger off-screen bitmapped image to be stored directly on the video card. This speeds up the movement of images larger than the screen as they move on to and off of the screen. The expanded memory acts a holding space for the off-screen bitmapped image.

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Tech Info Library Article Number:5605



# Tech Info Library

## GS/OS: How To Identify Version Numbers

Revised: 4/10/92  
Security: Everyone

GS/OS: How To Identify Version Numbers

=====

Article Created: 7 June 1990  
Article Last Reviewed: 10 April 1992  
Article Last Updated: 10 April 1992

TOPIC -----

Could you tell me if there is an easy way to determine the version of GS/OS installed on different systems?

I looked in "About the Finder", and the Control Panel DA, and I did "Get Info" on several files the in System file, but none gave me the information I need.

DISCUSSION -----

To find the version of GS/OS and associated files installed on a particular disk, hold the space bar down during startup. This presents a text screen with the version numbers displayed.

The version number displayed at the top center of this screen correlates as follows:

| On-Screen<br>Version # | Date      | GS/OS Version (as Labeled on Disk) |
|------------------------|-----------|------------------------------------|
| -----                  | -----     | -----                              |
| 4.0                    | Aug 18 88 | GS/OS 4.0                          |
| 3.00 (or lower)        | May 30 89 | GS/OS 5.0                          |
| 3.02                   | Dec 15 89 | GS/OS 5.0.2                        |
| 3.03                   | Aug 20 90 | GS/OS 5.0.4                        |
| 4.01                   | Mar 04 92 | GS/OS 6.0                          |

- On-screen version numbers lower than 3.00 indicate GS/OS 4.0
- ProDOS 16 displays a startup screen with "PRODOS 16" on it
- System Disk 3.2 indicates ProDOS 16 v1.6

- System Disk 3.1 indicates ProDOS 16 v1.3.

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Tech Info Library Article Number:5606



# Tech Info Library

## Macintosh: Serial Port Data Transmission Rate Limit

Revised: 1/7/92  
Security: Everyone

Macintosh: Serial Port Data Transmission Rate Limit

=====

Article Created: 7 June 1990  
Article Last Reviewed: 5 August 1992  
Article Last Updated: 5 August 1992

TOPIC -----

The SerReset function only lets me set the serial port speed to 57,600 baud. How can I set the serial port to support 203.4Kb?

DISCUSSION -----

The maximum nominal data transmission rate that you can select through the Macintosh Toolbox is 57,600 baud. This is the maximum rate that the Macintosh II computer can maintain for transmission of serial data, when the SCC port is operating in an asynchronous, interrupt-driven fashion, timed by the 3.672-MHz clock.

AppleTalk operates at a nominal data transmission rate of 230.4Kb. This higher rate is possible because AppleTalk communications are not interrupt-driven. During AppleTalk communications, the AppleTalk Driver has complete control of the computer. Although AppleTalk uses a synchronous communication protocol, the AppleTalk Driver runs the SCC chip in asynchronous mode, timed by the 3.672-MHz clock.

The maximum possible transmission rate for serial data ranges from approximately 500 Kbaud on the earlier Macintosh computers and the Macintosh Classic to 900 Kbaud on the modular Macintosh II family. To achieve such data transmission rates, the SCC would have to be operated in synchronous mode timed by an external clock, and the serial driver would have to have complete, uninterrupted control of the computer.

The transmit-data and receive-data lines of the Macintosh II serial interface conform to the EIA standard RS-422, which differs from the more commonly used RS-232-C standard in that, whereas an RS-232-C transmitter modulates a signal with respect to a common ground, an RS-422 transmitter



modulates the signal against an inverted copy of the same signal (to generate a differential signal).

The RS-232-C receiver senses whether the received signal is sufficiently negative with respect to ground to be a logical 1. The RS-422 receiver, on the other hand, senses which line is more negative than the other. An RS-422 signal is, therefore, more immune to noise and interference and degrades less over a distance than an RS-232-C signal.

If you ground the positive side of each RS-422 receiver and leave the positive side of each transmitter unconnected, you've converted to EIA standard RS-423. You can use this to communicate with most RS-232-C devices over distances up to approximately 50 feet.

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Tech Info Library Article Number:5609



# Tech Info Library

## Applesoft BASIC: How To Launch From Aristotle

Revised: 6/29/90  
Security: Everyone

Applesoft BASIC: How To Launch From Aristotle

=====

This article last reviewed: 7 June 1990

TOPIC -----

I need to place an option in the Aristotle menu to run an Applesoft BASIC program.

I can get Applesoft BASIC up and running, but cannot seem to get a program to load. Is there any way to start an Applesoft BASIC program from Aristotle?

DISCUSSION -----

On the server, create a folder that contains the Applesoft program and BASIC.System. Rename the Applesoft program to STARTUP:

In the Aristotle Management program, add the program to the class list. The Title of the program can be any name that is appropriate -- it is used only for the Display menu. Set the path to:

```
{servername}/{foldername}/{any other foldernames}/BASIC.SYSTEM
```

Set the Prefix to the Applesoft program's pathname. BASIC.System looks for a program with the name STARTUP in the current folder (subdirectory). If BASIC.System finds the program, it launches it.

The next issue is how to get back to Aristotle. The BYE command will not return the user to Aristotle. Since BASIC.System was the launching program, the BYE command attempts to run BASIC.System. Some method is needed to launch Aristotle again. The following method requires some programming, but does provide a way to get back to the Aristotle menu.

This example assumes that the Aristotle folder is located at the server volume root level with a pathname:

```
{servername}/ARISTOTLE/MENU.D/DISPLAY
```

The example finds the servername and places where {servername} appears in the above pathname.

```
9900 D$=CHR$(4)
9910 PRINT D$;"PREFIX"
9920 INPUT PR$
9930 FOR I = 1 TO LEN(PR$)
9940   IF MID$(PR$, 1+I,1) = "/" THEN 9990
9950     RT$=RT$+MID$(PR$1+I,1)
9960 NEXT I
9990 PRINT D$;"-/" ;RT$;"/ARISTOTLE/MENU.D/DISPLAY"
```

The following is a discussion of what takes place in the above example.

```
9900 - Set D$ to Control-D.
9910 - Request the current PREFIX.
9920 - Put the current PREFIX into PR$.
9930 - Start loop to extract the servername from the PREFIX.
9940 - Skip the first character of PREFIX (/) and look for the second slash.
      When the second slash is found, jump to 9990
9950 - Put all the characters up to the second slash into the variable RT$.
9990 - Run the Aristotle menu display program.
```

This code can be used as a stand-alone program, or the lines can be added to the Applesoft program.

- If used as a stand-alone program, place it in the same folder as the Applesoft program. After quitting the Aristotle-launched Applesoft program, the student needs to type:

```
RUN {name of program}
```

- If added to the Applesoft program, these lines need to be the very last lines that are executed in the BASIC program. Remember, the line numbers need to be appropriate for the program to which they are added.

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Tech Info Library Article Number:5610



# Tech Info Library

## HyperCard: Global/Local Variables

Revised: 6/29/90  
Security: Everyone

HyperCard: Global/Local Variables

=====

This article last reviewed: 7 June 1990

TOPIC -----

Is there a way within HyperCard to retrieve and/or set a local variable for handler "xyz" from handler "abc"?

I don't want to make everything a global variable and have them initialized as the stack is opened.

DISCUSSION -----

What you want to do is not possible. However, there are a number of ways to "fake" global-local variables.

You could create one global variable (in this example, "holdEm") containing many items.

For example:

```
put "1,5.67,fred,in,0,,rain" into holdEm
```

stores seven items in the variable named holdEm. To avoid a lot of messy initialization, the information in the variable could be saved in a field:

```
put holdEm into field storeVars
```

and restored to the variable when the stack opens:

```
put line 1 of field storeVars into holdEm
```

This is much faster than seven put statements.

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Tech Info Library Article Number:5611



# Tech Info Library

## System Software 6.0.5: ADB Problems and Workarounds

Revised: 10/29/90  
Security: Everyone

System Software 6.0.5: ADB Problems and Workarounds

=====

This article last reviewed: 25 October 1990

TOPIC -----

This article contains information about compatibility problems between System Software 6.0.5 and some ADB devices.

DISCUSSION -----

Apple made some significant changes to the code handling ADB devices in System Software 6.0.5 (see Macintosh Technical Note 206, "Space Aliens Ate My Mouse"). Because of these changes, certain ADB peripherals don't operate properly.

So far, we've seen the following:

- A+ Optical Mouse: very jerky, inconsistent movement. According to someone on Usenet, Mouse Systems has acknowledged it as a hardware bug in the mouse that did not show up in System Software releases before System Software 6.0.5.
- The Abaton trackball causes the system to freeze, either during startup or later. It may work for a while, or it may just hang the system.
- The Kensington Turbo Mouse ADB also causes the system to freeze. Kensington has released an INIT that fixes this problem. Contact Kensington for a copy of this INIT.

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Tech Info Library Article Number:5613



# Tech Info Library

## AppleTalk Phase 2: Third-party Products as of June 1990

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2: Third-party Products as of June 1990

=====

This article last reviewed: 25 May 1990

TOPIC -----

I need to know the status of the following software companies' products and their commitment to supporting AppleTalk Phase 2:

Kinetics FastPath  
Cayman GatorBox  
Hayes InterBridge  
AlisaShare  
PacerShare  
Liaison  
Shiva Products  
AppleTalk for VMS  
TOPS

DISCUSSION -----

Here is the information we have as of March, 1990:

Kinetics FastPath: currently supports AppleTalk Phase 2; contact Kinetics for the latest information on their AppleTalk Phase 2 products.

Cayman GatorBox: currently supports AppleTalk Phase 2; contact Cayman for information.

Hayes InterBridge: currently supports AppleTalk Phase 2; contact Hayes for the latest information on their AppleTalk Phase 2 products.

AlisaShare: supports AppleTalk Phase 2 when used in conjunction with AppleTalk for VMS 2.1. For more information, contact Alisa Systems.

PacerShare: Pacer is working on supporting AppleTalk Phase 2 in a future release of PacerShare. For more information, contact Pacer.

Liaison: currently supports AppleTalk Phase 2. For more information, contact Infosphere.

Shiva Products: currently supports AppleTalk Phase 2; contact Shiva for the more information.

AppleTalk for VMS: AppleTalk for VMS 2.1 support AppleTalk Phase 2 and is available now.

TOPS: TOPS is working on supporting AppleTalk Phase 2 in a future release of TOPS. For more information, contact TOPS.

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Tech Info Library Article Number:5617



# Tech Info Library

## AppleShare PC: Checking Compatibility with the TELEX 386?

Revised: 8/28/90  
Security: Everyone

AppleShare PC: Checking Compatibility with the TELEX 386?

=====

This article last reviewed:

TOPIC -----

I want to install AppleShare PC on a TELEX 386, models 1285 and 7065.  
Will the LocalTalk PC Card work in these machines?

DISCUSSION -----

We aren't familiar with the TELEX 386 (nor do we have documentation on it), and we don't know of anyone who has used AppleShare PC with it. However, you might check these articles in the Tech Info Library.

- "LocalTalk PC Card and PC-Compatibles: Compatibility Issues"
- "LocalTalk PC Cards and AppleShare PC: Compatible Systems"
- "AppleShare PC 2.0: Compatible Network Cards"

They discuss many of the compatibility issues of using the LocalTalk PC Card with IBM PC-clones. After reading the articles, it should become clear to someone familiar with the TELEX whether the two might be compatible and whether it is worth their time to test that configuration.

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Tech Info Library Article Number:5620





# Tech Info Library

## PostScript: How to Set Precision Bitmap Alignment

Revised: 6/29/90  
Security: Everyone

PostScript: How to Set Precision Bitmap Alignment

=====

This article last reviewed: 28 May 1990

TOPIC -----

If I create a rectangle in MacDraw and print two copies to a LaserWriter, one may measure 150mm x 200mm, and the other 151mm x 201mm. There is a variation in both dimensions. Sometimes, however, they may match perfectly. I am using the LaserWriter in a four-layer printing process and find this inconsistency very annoying.

Because the variation is in both dimensions and the age of the LaserWriter is relatively new, I believe the paper weight (which is within specification), the paper finish, and the age of the LaserWriter are unlikely to be possible causes of the problem. Can you help?

DISCUSSION -----

The size variance described is a result of PostScript interpretation of the bitmapped image. This results from attempts to change a 72-dpi image into a 300-dpi image. This is not an exact ratio. There may be as much as a 4-percent variance in PostScript's interpretation. PostScript's attempts at correction may vary slightly during each pass.

To compensate for this difference, choose Page Setup from the File menu. On the right side of the Page Setup dialog box, there is an Options button. Click this button, and an additional dialog box appears. The fourth checkbox is labeled Precision Bitmap Alignment (4-percent reduction). Be sure this checkbox is marked. Using this option increases the printing time. However, the printouts will be consistent during each pass.

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Tech Info Library Article Number:5623



# Tech Info Library

## Needed: Macintosh-Based COBOL Product

Revised: 6/29/90  
Security: Everyone

Needed: Macintosh-Based COBOL Product

=====

This article last reviewed: 28 May 1990

TOPIC -----

Has anyone heard of MicroFocus COBOL for the Macintosh?

DISCUSSION -----

MicroFocus removed COBOL for the Macintosh from its product line last year.  
We have not heard of another Macintosh-based COBOL.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5625



# Tech Info Library

## TokenTalk: Troubleshooting Problems

Revised: 10/5/93  
Security: Everyone

TokenTalk: Troubleshooting Problems

=====

Article Created: 28 May 1990  
Article Reviewed/Updated: 5 October 1993

TOPIC -----

I am having problems with system bombs under the following conditions:

The environment is a Token Ring network with DOS and OS/2 workstations and approximately 12 Macintoshes on the ring. I am using Excel with MacIrma and TokenTalk installed. When the system is not on the network, the Macintosh displays a system error. If the TokenTalk software is de-installed, the Macintosh works fine, and no system bombs occur.

Software

-----

System 6.0.3  
MultiFinder  
MacIrma 1.2.0  
Excel 2.2  
TokenTalk 2.0 (6/29/89)

Have you heard of any situations similar to this?

DISCUSSION -----

We contacted DCA Technical Support Group, and they have not heard of this problem. They also tried to duplicate the problem for us and could not get the system to fail.

The tests were done with both MacIrma 1.2.0 and 1.2.1, on both Macintosh IIcx and Macintosh IIX systems, and TokenTalk 2.0. Both machines passed the test with either version of MacIrma.

You might have a conflict between TokenTalk and something else other than MacIrma. You may want to start with a clean System Folder to see if the problem remains. If a clean folder solves the problem, start adding INITs

and see which one conflicts with TokenTalk.

Article Change History:

5 Oct 1993 - Reviewed for technical accuracy, and change format to current method.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5626



# Tech Info Library

## A/UX: Scheme Implementation

Revised: 11/10/92  
Security: Everyone

A/UX: Scheme Implementation

=====

Article Created: 17 June 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Do you know of any versions of scheme that might run under A/UX 2.0?

### DISCUSSION -----

There is a very good Scheme from MIT called C-Scheme. Look in  
goofy:~malcolm/bin/src/scheme.tar for the bits. There is probably a more  
recent version, and one of the README documents should tell you where to find  
it.

Also, Yale T has been ported to A/UX; it's available by anonymous FTP from  
ai.mit.edu, among other places.

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Tech Info Library Article Number:5630



# Tech Info Library

## A/UX: lint Problem With Toolbox (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: "lint" Problem With Toolbox (9/94)

Article Created: 17 June 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

I am having problems using lint with toolbox programs. If I call lint to check programs that "include" header files from /usr/include/mac (for example, files.h), lint gives this message:

```
files.h(61):  
    **** cannot recover from this error  ****
```

You can reproduce the error by going to /usr/lib/mac/examples/term and giving the command:

```
$lint -I/usr/include/mac *.c
```

The problem is not the include file "files.h". If you take it out, the same error happens with other includes. Can you explain?

DISCUSSION -----

We have verified that the "\*\*\*\* cannot recover from this error \*\*\*\*" error message generated by "lint" (the C program checker) with toolbox "term" programs happen only on C programs that include the /usr/include/mac/files.h file or the "term.h" header file in the /usr/lib/mac/examples/term directory. The "lint" source reported a fatal error on the compiler and stopped the C code checking.

In later versions of A/UX, the source to "term" is no longer included in the product. Also, the "examples" directory is now in /mac/src.

Support Information Services

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Tech Info Library Article Number:5631



# Tech Info Library

## Macintosh: No Interface to IBM WheelWriter (11/94)

Revised: 11/17/94  
Security: Everyone

Macintosh: No Interface to IBM WheelWriter (11/94)

=====

Article Created: 29 May 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

I am looking for a Macintosh interface for IBM WheelWriter V, VI, or X? Is one available?

DISCUSSION -----

We are not aware of an interface or driver for the Macintosh that supports any of the IBM WheelWriter typewriter/printers.

Article Change History:  
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5633



# Tech Info Library

## Display Card 8/24GC: Third-Party Monitor Support

Revised: 7/16/90  
Security: Everyone

Display Card 8/24GC: Third-Party Monitor Support

=====  
This article last reviewed: 29 May 1990

TOPIC -----

Will Apple's new video cards, specifically the Macintosh Display Card 8/24GC, support third-party monitors? I am particularly interested in RasterOps and SuperMac 19-inch monitors.

DISCUSSION -----

The Macintosh Display Card 8/24GC supports any display that meets one of the following specifications:

| Sense pins |   |   |                                 | Hor x Vert | Dot     | Vert   | Horiz  |
|------------|---|---|---------------------------------|------------|---------|--------|--------|
| 10         | 7 | 4 | Display                         | Pixels     | Clock   | Refrsh | Refrsh |
| -----      |   |   | -----                           | -----      | -----   | -----  | -----  |
| 0          | 0 | 1 | Apple Portrait Display          | 640 x 870  | 57.2832 | 75     | 68.9   |
| 0          | 1 | 1 | Apple Two-Page Monitor          | 1152 x 870 | 100     | 75     | 68.7   |
| 1          | 1 | 0 | 12" Apple<br>Monochrome Monitor | 640 x 480  | 30.24   | 66.7   | 35.0   |
| 1          | 1 | 0 | 13" AppleColor<br>RGB Monitor   | 640 x 480  | 30.24   | 66.7   | 35.0   |

0 - Grounded    1 - Not Connected

Note that sense pins 4, 7, and 10 are referred to as SENSE0, SENSE1, and SENSE2 in pinout tables for the video connectors.

None of the RasterOps or SuperMac 19-inch displays meets the above specifications. Based on this, we do not think that they will work properly.

Here are the pinouts for the Macintosh Display Card 8-24 GC:

| Pin | Description |
|-----|-------------|
| --- | -----       |



|       |                                         |
|-------|-----------------------------------------|
| 1     | Red Video Ground                        |
| 2     | Red Video                               |
| 3     | Composite Sync                          |
| 4     | SENSE0                                  |
| 5     | Green Video                             |
| 6     | Green Video Ground                      |
| 7     | SENSE1                                  |
| 8     | Not Connected                           |
| 9     | Blue Video                              |
| 10    | SENSE2                                  |
| 11    | Composite Sync and Vertical Sync Ground |
| 12    | Vertical Sync                           |
| 13    | Blue Video Ground                       |
| 14    | Horizontal Sync Ground                  |
| 15    | Horizontal Sync                         |
| Shell | Chassis Ground                          |

SuperMac has announced two new monitors that work with the new Apple video cards: the "Color Two-Page Display" and the "Platinum Two-Page Display."

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Tech Info Library Article Number:5634



# Tech Info Library

## SMB File Transfer: Using With PC-LAN Server

Revised: 6/29/90  
Security: Everyone

SMB File Transfer: Using With PC-LAN Server

=====

This article last reviewed: 29 May 1990

TOPIC -----

I use the PC-LAN program "extended services" on our PC-LAN server. Can the SMB File Transfer program work with a server in that mode, which I prefer for the advanced services and security, or must directories be shared with Macintoshes via "base services"?

DISCUSSION -----

The SMB File Transfer program works with:

PC-LAN Base Version 1.2, and later (1.3, 1.31)  
PC-LAN Extended Version 1.3, 1.31  
OS/2 Extended Edition 1.1  
OS/2 LAN Server 1.1

SMB File Transfer lets you use the Extended Version's read/write/create options. Use the Netshare command to configure the PC:

```
NETSHARE shortname=d:\ password|* /r/w/rw/wc/rwc
```

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Tech Info Library Article Number:5638



# Tech Info Library

## A/UX: Technical Questions & Answers (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: Technical Questions & Answers (9/94)

Article Created: 29 May 1990  
Article Reviewed/Updated: 20 September 1994

TOPIC -----

I need some additional information about A/UX support for X/Open XPG3 features like Message Queues msgctl(), Semaphores, shared memory, and so on. I need details in these areas:

- 1 - dbx (source level debugger).
- 2 - X.25 connection supported by "XTI" and libraries sockets. (What is "XTI"?)
- 3 - Support of s-bit for owner and group.
- 4 - System/library calls for disk "quota".
- 5 - Support for GF\_PATH, PF\_PATH, and IN\_PATH. (What are they in A/UX?)
- 6 - Are there public domain programs, like emacs, plot, and shar, available?
- 7 - What's the official name for the full screen standard editor in A/UX?
- 8 - Is printer spooling oriented on System V or BSD UNIX?
- 9 - Is there Multilevel security (DoD or Bell-La Padula with B-class certificate)?
- 10 - PHIGS and CGM under A/UX.
- 11 - Future support of System V version 4.
- 12 - What is the status of Oracle?

DISCUSSION -----

First, thanks to Richard Kefs (KEFS1), Apple Technical Partner Program Manager, for some of the answers that are included in this document. Here is the information you requested:

We should be fairly close to X/Open XPG3 compliance. The generic AT&T UNIX System V Inter-Process Communication facilities, which include Message Operations, Semaphores, and Shared Memory, are supported by A/UX.

- 1 - dbx is not supported. CDB, the popular, powerful, source level C debugger from Third Eye Software, was available for A/UX from APDA. It may no longer be available. We suggest contacting Third Eye Software for more information.
- 2 - We have several X.25 solutions under A/UX (Symicron, Mark Powell, (44) 1-857-55-77), but I do not know what "XTI" is.
- 3 - The set UID and GID bits are supported under A/UX.
- 4 - It seems that the disk quota control for each individual user account is not enforced in A/UX, but the BSD file system does maintain the "low-water mark" of about 5% of free file system. In other words, users may not allocate disk space if there is less than 5% of the BSD file system space remaining.
- 5 - We are unsure what the GF\_PATH, PF\_PATH, and IN\_PATH constants or environment variables referred to.
- 6 - emacs is available in the public domain.
- 7 - Both the UNIX ("vi") and the Macintosh ("Cut-and-Paste") style of editors are supported. The Macintosh cut-and-paste text editor is called "TextEditor". A/UX supports TEXT cut-and-paste between different environments (UNIX, X Window System, and Macintosh applications), and GRAPHICS cut-and-paste between Macintosh applications.
- 8 - Both System V and BSD UNIX printer spoolers are supported under A/UX 3.0.
- 9 - Regarding the secured A/UX system, AFSG (Apple Federal Systems Group) had an unreleased version of A/UX that complied with Federal Government requirements for a Class B1 level of trust on A/UX. This version was available to government customers only. You will need to contact a Federal Systems Group sales rep for further information.

According to NCSC (National Computer Security Center), the evaluation criteria define seven levels of trust called "Classes". In increasing order of trustedness, they are: D, C1, C2, B1, B2, B3, and A1. D systems are not trusted. A1 systems are extremely resistant to compromise. C1 has "Discretionary Access Control", such as AppleShare. C2 adds Security Auditing and Control Object Reuse. B1 adds Security

Labels and Mandatory Access Control. B2 adds Trusted Path, Convert Channel Control, and Modularity. B3 adds Trusted Recovery and Strict Isolation of Domains.

- 10 - If you are really looking for PHIGS and/or PEX (3D PHIGS/PHIGS+ Extension for X) type of features, a third-party called Prior Data Sciences in Canada may have the solution for A/UX.

Prior Data Sciences  
240 Michael Cowpland Drive  
Kanata, Ontario, Canada K2M 1P6  
613-591-7235  
Telex: 053-3356  
Fax: 613-591-0343

- 11 - There are currently no plans to support System V.4.

- 12 - ORACLE7 Server for A/UX is available for use with A/UX.

#### Article Change History:

20 Sep 12994 - Updated and reviewed. Reformatted questions and answers.

Support Information Services

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Tech Info Library Article Number:5639



# Tech Info Library

## Display Card 8/24GC: Using with Sony Monitors

Revised: 7/16/90  
Security: Everyone

Display Card 8/24GC: Using with Sony Monitors

=====

This article last reviewed: 29 May 1990

TOPIC -----

I want to use the Sony MultiScan CPD-1304 monitor with the new Display Card 8/24GC. Will this work?

DISCUSSION -----

If the CPD-1304 monitor works with the Macintosh High-Resolution Video Card (the current 8-bit display card), there won't be any problem with the Display Card 8/24GC signals driving the Sony CPD-1304. (We could not verify that the CPD-1304 monitor works with the Macintosh High-Resolution Video Card, but we do know that Sony's CPD-1302 monitor works with that card.) However, you will need to use a different cable to connect the two devices because the cards have different connectors.

An issue with regard to the cable concerns the sense pins, which tell the card what type of monitor is attached. For the Sony CPD-1302 monitor, the sense pins should be configured as below, where 0 = Ground and 1 = Not Ground. To ground a sense pin, tie it to the C&VSYNC.GND signal.

| Sense pins |   |   | Display                | Hor x Vert | Dot   | Vert    |
|------------|---|---|------------------------|------------|-------|---------|
| 10         | 7 | 4 |                        | Pixels     | Clock | Refresh |
| -----      |   |   | -----                  | -----      | ----- | -----   |
| 1          | 1 | 0 | 12" Monochrome Monitor | 640 x 480  | 30.24 | 66.7    |
|            |   |   | 13" Color Monitor      |            |       |         |

Here are the pinouts for the Macintosh Display Card 8/24GC:

| Pin   | Signal  | Description      |
|-------|---------|------------------|
| ----- | -----   | -----            |
| 1     | RED.GND | Red Video Ground |
| 2     | RED.VID | Red Video        |
| 3     | CYSNC~  | Composite Sync   |

|       |             |                                          |
|-------|-------------|------------------------------------------|
| 4     | MON.ID1     | Monitor ID, Bit 1 (also known as SENSE0) |
| 5     | GRN.VID     | Green Video                              |
| 6     | GRN.GND     | Green Video Ground                       |
| 7     | MON.ID2     | Monitor ID, Bit 2 (also known as SENSE1) |
| 8     | nc          | (no connection)                          |
| 9     | BLU.VID     | Blue Video                               |
| 10    | MON.ID3     | Monitor ID, Bit 3 (also known as SENSE2) |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground                     |
| 12    | VSYNC~      | Vertical Sync                            |
| 13    | BLU.GND     | Blue Video Ground                        |
| 14    | HSYNC.GND   | HSYNC Ground                             |
| 15    | HSYNC~      | Horizontal Sync                          |
| Shell | CHASSIS.GND | Chassis Ground                           |

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Tech Info Library Article Number:5645



# Tech Info Library

## Amiga Graphics: Transferring them to the Macintosh (5/94)

Revised: 5/9/94  
Security: Everyone

Amiga Graphics: Transferring them to the Macintosh (5/94)

=====

Article Created: 30 May 1990  
Article Reviewed/Updated: 9 May 1994

TOPIC -----

A customer wants to transfer DigiPaint (HAM format) and Professional Draw (some type of encapsulated PostScript) files from an Amiga 2500 series computer to the Macintosh (I don't think they care what format). Do you have any suggestions?

DISCUSSION -----

There are a few possibilities that they can investigate. The first is the encapsulated PostScript route. If they can generate these files, there are a number of applications on the Macintosh that can read these files, including Illustrator, FreeHand, and a shareware product called Vision Lab. From these, you can generate PICT files. If they want to use bitmap graphics, DeBabelizer or Adobe PhotoShop on the Macintosh can translate HAM and Amiga IFF graphic files.

On the Amiga, you can use any of programs that store files in either GIF or JPEG. A few of these Utilities are V-Lab, Image-FX, and Art Department. You could then use an application on the Macintosh, such as the shareware programs Giffer, or JPEGView to generate PICT files.

Article Change History:  
9 May 1994 - Updated article to include new utilities on both the Amiga and Macintosh.

Support Information Services

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Tech Info Library Article Number:5646





# Tech Info Library

## Macintosh: Rocky Mountain BASIC Equivalent Needed

Revised: 6/29/90  
Security: Everyone

Macintosh: Rocky Mountain BASIC Equivalent Needed

=====

This article last reviewed: 30 May 1990

TOPIC -----

I use Rocky Mountain BASIC on an HP. Is there a similar package for the Macintosh?

DISCUSSION -----

The only implementation of BASIC for the Macintosh that is remotely similar to "Rocky Mountain BASIC" for the HP9000 series is Microsoft QuickBASIC. There are numerous differences, especially considering the machine-specific details of each BASIC. Rocky Mountain BASIC uses many commands and parameters that mean nothing to computers other than HP9000 systems. Likewise, Microsoft QuickBASIC uses Macintosh-specific commands that do not exist on other computers and a command syntax in traditional Microsoft BASIC style--a style much different than that of Hewlett-Packard's BASIC.

They do share the important ability to use subprograms and functions, but the method of implementing these is quite different between the two languages. Microsoft QuickBASIC would give you a powerful BASIC. However, porting anything other than the simplest programs from Rocky Mountain BASIC will not be a trivial task. This is especially with programs that are I/O-intensive, because these tend to be the areas where the languages differ the most.

There are some definite benefits to using Microsoft QuickBASIC over HP's BASIC, like advanced debugging features (breakpoints and animated tracing for source-level debugging) and a simpler mouse interface. Users can quickly grow accustomed to the Microsoft QuickBASIC product, while Rocky Mountain BASIC has a cruder interface and takes more time to master. Of course, you are already using Rocky Mountain BASIC, so the change in programming environment will have an impact to the degree that you are familiar with Macintosh user interface conventions.

If you need additional information on Microsoft QuickBASIC, we suggest that you

contact Microsoft directly. They should be able to provide more up-to-date information and could, perhaps, assist in deciding if their product will fit your requirements. For more details, search the Technical Info library under "Microsoft Corp AND WA"

We should mention that at least one company sells what is essentially a clone of Rocky Mountain BASIC for MS-DOS computers. These products provide a command set and environment that is very similar to HP's. Unfortunately, we do not know of any plans for similar products for the Macintosh. The closest would be to use one of these BASIC clones on an MS-DOS emulator, like SoftPC or Mac286--not a very elegant solution.

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Tech Info Library Article Number:5648



# Tech Info Library

## Using Apple Display Cards With NTSC Monitors

Revised: 7/16/90  
Security: Everyone

Using Apple Display Cards With NTSC Monitors

=====

This article last reviewed: 30 May 1990

TOPIC -----

I want to use the Display Card 4/8 or 8/24 with an NTSC Monitor. Do you know of any Apple or third-party cables? Or do you have pinout information that will help?

DISCUSSION -----

The pinouts, sense-pin configuration, and data characteristics are listed below. After determining the pinouts of the monitor to which you plan to connect the video card, you can check the pinouts of Apple cables (posted on AppleLink) or third-party cables to see if one will work or if one must be made.

The Macintosh Display Card 8/24GC supports any display that meets one of the following specifications:

| Sense pins |   |   |                              | Hor x Vert | Dot     | Vert   | Horiz  |
|------------|---|---|------------------------------|------------|---------|--------|--------|
| 10         | 7 | 4 | Display                      | Pixels     | Clock   | Refrsh | Refrsh |
| -----      |   |   | -----                        | -----      | -----   | -----  | -----  |
| 0          | 0 | 1 | Apple Portrait Display       | 640 x 870  | 57.2832 | 75     | 68.9   |
| 0          | 1 | 1 | Apple Two-Page Monitor       | 1152 x 870 | 100     | 75     | 68.7   |
| 1          | 1 | 0 | 12" Apple Monochrome Monitor | 640 x 480  | 30.24   | 66.7   | 35.0   |
| 1          | 1 | 0 | 13" AppleColor RGB Monitor   | 640 x 480  | 30.24   | 66.7   | 35.0   |
| 1          | 0 | 0 | Interlaced Display           | -          | 12.2727 | -      | -      |

0 - Grounded    1 - Not Connected  
(Ground to pin 11, the Composite Sync and Vertical Sync Ground)

Note that sense pins 4, 7, and 10 are referred to as SENSE0, SENSE1, and SENSE2 in pinout tables for the video connectors.

None of the RasterOps or SuperMac 19-inch displays meets the above specifications. Based on this, we do not think that they will work properly.

Here are the pinouts for the Macintosh Display Card 8-24 GC:

| Pin   | Description                             |
|-------|-----------------------------------------|
| ---   | -----                                   |
| 1     | Red Video Ground                        |
| 2     | Red Video                               |
| 3     | Composite Sync                          |
| 4     | SENSE0                                  |
| 5     | Green Video                             |
| 6     | Green Video Ground                      |
| 7     | SENSE1                                  |
| 8     | Not Connected                           |
| 9     | Blue Video                              |
| 10    | SENSE2                                  |
| 11    | Composite Sync and Vertical Sync Ground |
| 12    | Vertical Sync                           |
| 13    | Blue Video Ground                       |
| 14    | Horizontal Sync Ground                  |
| 15    | Horizontal Sync                         |
| Shell | Chassis Ground                          |

SuperMac has announced two new monitors that work with the new Apple video cards. The first is called the "Color Two-Page Display" and the second monitor the "Platinum Two-Page Display."

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Tech Info Library Article Number:5649



# Tech Info Library

## AppleTalk Phase 2: Using LocalTalk-Based Networks

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2: Using LocalTalk-Based Networks

=====

This article last reviewed: 30 May 1990

### Article Change History

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08/20/92 - REVIEWED  
• For accuracy.

### TOPIC -----

I am beginning to implement the DataKit technology from AT&T. The DataKit follows the AppleTalk Phase 2 router-to-router communications and is completely AppleTalk Phase 2-compatible. However, we have all PhoneNET networks running AppleTalk Phase 1 routers in the form of Hayes InterBridges.

These networks go through star controllers, and the DataKit will hang off one port of the controller. The DataKit is also an AppleTalk Phase 2 router, so it will be sending AppleTalk Phase 2 packets to the LocalTalk network.

Given this background, can you answer the following questions?

- 1) It was my understanding that LocalTalk-connected Macintosh systems could not take advantage of AppleTalk Phase 2 addressing. Why is this?
- 2) What about upgrading the Hayes InterBridges?
- 3) Does this mean that only the AppleTalk Phase 1 routers need to be upgraded to AppleTalk Phase 2 (like the Hayes InterBridge) and the rest of the nodes just become AppleTalk Phase 2 by installing AppleTalk version 53 in the System Folder?
- 4) Am I supposed to run the Internet Router in conjunction with the Upgrade Utility forever? (Do I have to use the Apple product? Does Kinetics or Hayes have an upgrade utility?) Can a LocalTalk network be

AppleTalk Phase 2 by upgrading AppleTalk to override the ROMs, even though it cannot take advantage of AppleTalk Phase 2 addressing? Does the account have to upgrade all of their existing AppleTalk Phase 1 products to AppleTalk Phase 2, even though they are using only LocalTalk (inherently AppleTalk Phase 1)?

DISCUSSION -----

- 1) The AppleTalk Phase 2 extended-addressing and multiple-zones-per-physical-network features were not implemented on LocalTalk because of the limited number (32 maximum recommended) of nodes that can be attached to one physical network. This is far less than the 254 nodes that AppleTalk Phase 1 supports. EtherTalk and TokenTalk can support many more than 254 nodes per physical network and, therefore, need the extended addressing and multiple zones capabilities that AppleTalk Phase 2 provides.
- 2) If the AT&T DataKit router is AppleTalk Phase 2 only and has nothing like our AppleTalk Phase 2 Upgrade Utility for dealing with AppleTalk Phase 1 routers, it will be necessary to upgrade the Hayes InterBridges to be AppleTalk Phase 2-compatible. Contact Hayes for information on this upgrade.
- 3) LocalTalk-based networks can be attached to AppleTalk Phase 2-compatible routers with LocalTalk ports without the AppleTalk version 53 file in the System Folder. In fact, this is the most common setup. The only time you need the AppleTalk version 53 file in the System Folder is when you need to support some of the new high-level AppleTalk calls that do not in any way change the protocols used on the LocalTalk physical medium. These new high-level AppleTalk calls are documented in Macintosh Technical Note #250 (available on AppleLink under the Developer Services icon).
- 4) The AppleTalk Internet Router does not need the AppleTalk Phase 2 Upgrade Utility when routing between two LocalTalk-based networks. The AppleTalk Phase 2 Upgrade Utility allows the AppleTalk Internet Router to broadcast and receive AppleTalk Phase 1-style RTMP packets. This is all the AppleTalk Phase 2 Upgrade Utility does. The only time the AppleTalk Internet Router needs the AppleTalk Phase 2 Upgrade Utility is when there is an AppleTalk Phase 1 router on the same physical cable as the AppleTalk Internet Router.

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Tech Info Library Article Number:5655



# Tech Info Library

## EtherTalk 2.0: Networking Packet Formats and Protocols

Revised: 7/16/90  
Security: Everyone

EtherTalk 2.0: Networking Packet Formats and Protocols

=====

This article last reviewed: 30 May 1990

TOPIC -----

- 1) With AppleTalk Phase 2, how does the SNAP (SubNetwork Address Protocol) work?

If this works with the condition: DSAP=SSAP in LLC (Logical Link Control), the first 5 bytes of the LLC Information (LLC data) is the PID (Protocol Identifier). In this case, what are the DSAP and SSAP used?

- 2) Also, if the above is correct, what is the Apple OUI (Organizational Unique Identifier) in the PID header?

Notes

-----

IEEE 802.3 Frame

Preamble

|             |                 |
|-------------|-----------------|
| Dest-Addr   | (6 bytes)       |
| Source-Addr | (6 bytes)       |
| Length      | (2 bytes)       |
| LLC-DSAP    | (1 byte)        |
| LLC-SSAP    | (1 byte)        |
| LLC-control | (1 byte)        |
| LLC-data    | (43-1497 bytes) |

DISCUSSION -----

- 1) With EtherTalk 2.0, Apple is adopting standard networking packet formats as defined by the Institute of Electrical and Electronics Engineers (IEEE) 802 committee. The 802 committee defines standards for local area networking.

The IEEE divides the OSI data link layer into the Logical Link Control (LLC) layer and the Medium Access Control (MAC) layer. The IEEE LLC layer

provides error checking and reliable transfer of data. The LLC layer was defined to provide a uniform interface to the network layer, independent of the MAC and physical layers used. The LLC provides connectionless-oriented (Type 1) or connection-oriented (Type 2) services.

The MAC layer provides some of the lower-level functions of the OSI data link layer and some functions that fit into the OSI physical layer. These functions include channel (media) access, channel contention arbitration, and data formatting. The MAC layer has three variants:

- Carrier Sense Multiple Access/Collision Detect (CSMA/CD), which is similar to the Ethernet standard and is used in engineering and office automation applications.
- Token Bus, used in factory automation applications.
- Token Ring, which has been widely adopted by IBM and other companies for office automation applications.

Ethernet and 802.3 CSMA/CD are often incorrectly considered identical. Ethernet is a de facto local area network standard developed by Digital Equipment Corporation, Xerox, and Intel. It forms the basis for 802.3, but the 802.3 packet format is slightly different. Unlike the Ethernet packet, the 802.3 packet has no protocol-type field and has a data length field. Workstations using Ethernet packets do not recognize workstations using 802.3 packets, and vice versa.

The Ethernet protocol-type field is used to distinguish higher-level protocols. The protocol-type field allows for 64 different protocol identifiers. However, with the maturation of local area network technology, 64 different protocol identifiers are too few. To accommodate the large number of protocols, the IEEE developed the SubNetwork Address Protocol (SNAP) standard.

SNAP allows multiple protocols to be used with one data link. It defines a 5-byte field to identify the protocol using the data link. It ensures that protocol identifiers from different vendors do not conflict. The IEEE has assigned Apple a SNAP identifier for AppleTalk and AARP (Apple Address Resolution Protocol).

With EtherTalk 1.0, AppleTalk data was transmitted in the data field of an Ethernet packet. With EtherTalk 2.0, AppleTalk data is encapsulated in a SNAP packet, which is encapsulated in an LLC packet, and transmitted in a CSMA/CD 802.3 packet. The result is that EtherTalk 1.0 packets are not seen by EtherTalk 2.0 nodes, and EtherTalk 2.0 packets are not seen by EtherTalk 1.0 nodes.

Though EtherTalk 2.0 uses the SNAP interface, higher-level protocols can go directly to the LLC layer, and not use SNAP. SNAP allows connectionless communication services only. Software developers that need to use connection-oriented services must bypass SNAP and use the 802.2 LLC interface directly. Such developers would use Apple's Ethernet driver for our EtherTalk card, but would not use our higher-level EtherTalk 2.0



software.

EtherTalk 2.x (802.3) Frame

|                     |                                                    |
|---------------------|----------------------------------------------------|
| -----               |                                                    |
| 802.3 Destination   | 6 bytes                                            |
| 802.3 Source        | 6 bytes                                            |
| 802.2 LLC Length    | 2 bytes                                            |
| 802.2 LLC Header    |                                                    |
| 802.2 LLC DSAP      | 1 bytes (always \$AA (SNAP SAP) for EtherTalk 2.x) |
| 802.2 LLC SSAP      | 1 bytes (always \$AA (SNAP SAP) for EtherTalk 2.x) |
| 802.2 LLC Control   | 1 bytes (always \$03)                              |
| SNAP Header         | 5 bytes (always \$080007809B for EtherTalk 2.x)    |
| DDP Header          | 13 bytes                                           |
| AppleTalk Data      | ?? bytes (586 bytes maximum)                       |
| Padding (if needed) | ?? bytes                                           |
| -----               |                                                    |
|                     | 60 to 621 bytes                                    |

DSAP - Destination Service Access Point

SSAP - Source Service Access Point

The SNAP SAP is defined as \$AA.

If the 802.3 packet is less than 60 bytes padding is added to make the packet 60 bytes long.

In 802.2, DSAP and SSAP are almost always the same except in frames that are establishing an initial SNA connection.

- 2) The SNAP (SubNetwork Address Protocol) unique identifier assigned to Apple by the IEEE is \$0800070000. The first 3 bytes of the unique identifier is the vendor address. The last 2 bytes are the local administered (by Apple) identifiers. We (Apple) have defined \$809B as EtherTalk. The unique identifier for EtherTalk 2.0 is \$080007809B. This is considered to be a locally administered SNAP address.

A global SNAP address has been defined by the IEEE for AARP packets. The SNAP number is \$00000080F3.

These values are the same for TokenTalk 2.0.

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Tech Info Library Article Number:5656



# Tech Info Library

## Macintosh IIci/IIfx: How to Install AppleShare

Revised: 6/29/90  
Security: Everyone

Macintosh IIci/IIfx: How to Install AppleShare

=====

This article last reviewed: 30 May 1990

TOPIC -----

I want to convert a Macintosh IIci and Macintosh IIfx into AppleShare File Servers. However, I cannot get the Installer to run on these Macintosh systems. Can you help?

DISCUSSION -----

The AppleShare File Server Installer disk will not start up on a Macintosh IIci or Macintosh IIfx. The AppleShare File Server Installer disk is a System Software 6.0 startup disk. The Macintosh IIci will start up only from a disk containing System Software 6.0.4 or later; the Macintosh IIfx will start up only from a disk containing System Software 6.0.5 or later.

You need to use the Network Products Installer disk that comes with System Software 6.0.4 and System Software 6.0.5 to install the AppleShare File Server software. The Network Products Installer has scripts to install the following network software:

- AppleShare Apple II Support
- AppleShare File Server
- AppleShare Print Server
- AppleTalk Internet Router
- EtherTalk
- SMB File Transfer
- TokenTalk

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Tech Info Library Article Number:5657



# Tech Info Library

## LaserWriter: Recycled Paper Specifications (8/96)

Revised: 8/28/96  
Security: Everyone

LaserWriter: Recycled Paper Specifications (8/96)

Article Created: 30 May 1990  
Article Reviewed/Updated: 28 August 1996

TOPIC -----

With the use of recycled paper becoming more of an issue, has there been any testing done on its effects on the Canon LaserWriter engine? How is the paper graded, and what can we advise users to ask their suppliers for to ensure that the paper works with the LaserWriter?

DISCUSSION -----

There are a number of specialized tolerances associated with paper used in the LaserWriters. Although no specific tests have been done on recycled paper, the following specifications must be met for the paper, recycled or not, for paper to work properly:

Poundage tolerances = 16-35 lbs. with Manual Feed; 16-24 lbs. with Paper Tray.

Coating and grain are not specified individually, but the final smoothness, which includes the long-grain requirement and any coating, should fall into the range of 100-300 Sheffields.

The end result should be a paper, including any coating, that does not scorch or melt at 200 degrees C for 1/10 of a second.

Article Change History:  
28 Aug 1996 - Correct spelling.  
08 Sep 1994 - Reviewed for accuracy.

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Tech Info Library Article Number:5658



# Tech Info Library

## Serial NB Card: Multiple Serial Port Support (10/94)

Revised: 10/5/94  
Security: Everyone

Serial NB Card: Multiple Serial Port Support (10/94)

=====

Article Created: 30 May 1990  
Article Reviewed/Updated: 5 October 1994

TOPIC -----

I want to connect more than two serial devices at the same time. Can the Serial NB Card be used to add more serial ports?

DISCUSSION -----

It is true that the Serial NB Card theoretically gives you four additional serial ports. With the introduction of Apple Remote Access (ARA) MultiPort Server you can simultaneously use all four serial ports on a card.

However, there isn't any other software that uses more than one of these ports at a time. This includes MacX25, and SNA•ps, which cannot coexist on one card. You could continue using the two built-in serial ports with the one additional "external" serial NB port (in conjunction with MacX25 or SNA•ps software), so you could have a total of three serial ports available simultaneously.

Article Change History:  
05 Oct 1994 - Updated for clarity.  
10 May 1994 - Updated to include ARA MultiPort Server.

Support Information Services

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Tech Info Library Article Number:5660



# Tech Info Library

## Macintosh SE: How to Determine Different ROM Versions

Revised: 8/23/91  
Security: Everyone

Macintosh SE: How to Determine Different ROM Versions

=====

Article Created: 17 June 1990  
Article Last Reviewed: 23 August 1991  
Article Last Updated: 23 August 1991

TOPIC -----

When the Macintosh SE was introduced, I recall hearing something about the Macintosh SEs being shipped with different ROM versions. What are those differences, if any?

DISCUSSION -----

You are right; there have been two versions of ROMs shipped in the Macintosh SE. The only difference, which also makes the two systems easily distinguishable, is that the systems with Apple SuperDrives (formerly Apple FDHD) have newer ROMs that include support for that drive. Those with 800K drives have the original ROM.

Since the new code in the new ROMs is also used in the new systems, if any incompatibilities exist, they are likely to be related to the SuperDrive code and may very well affect the other Macintoshes with SuperDrives. We aren't aware of any software compatibility problems caused by these new ROMs.

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Tech Info Library Article Number:5661



# Tech Info Library

## LapLink III: Macintosh IIfx Compatibility CDEV Available

Revised: 6/29/90  
Security: Everyone

LapLink III: Macintosh IIfx Compatibility CDEV Available

=====

This article last reviewed:

TOPIC -----

LapLink III for the Macintosh does not work on the Macintosh IIfx. On launch, it crashes with an ID = 1.

DISCUSSION -----

Traveling Software has heard reports of this problem. They are currently trying to locate the cause. If they find a fix for this situation, we will post the information.

Apple provides a CDEV that turns off the IOP of the Macintosh IIfx. This CDEV is available for licensing from the Software Licensing group. Traveling Software has obtained the license for this CDEV and will be providing it to registered users of LapLink III for the Macintosh. Contact Traveling Software for this CDEV. For more details, search the Technical Info library under "Traveling Software."

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Tech Info Library Article Number:5665



# Tech Info Library

## Prototyper 2.1: Using With LightSpeed Pascal 3.0

Revised: 6/29/90  
Security: Everyone

Prototyper 2.1: Using With LightSpeed Pascal 3.0

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This article last reviewed: 12 June 1990

TOPIC -----

In a development environment, will "Prototyper" take advantage of the object-oriented programming capabilities of the latest release of LightSpeed Pascal 3.0?

DISCUSSION -----

The current version of Prototyper, version 2.1, was released before LightSpeed Pascal 3.0. The publishers, Now Software (formerly SmethersBarnes), state that Prototyper 2.1 does not support any of the object-oriented programming features of the LightSpeed Pascal product. However, the code generated by Prototyper can be compiled by LightSpeed Pascal 3.0. For more details, search the Technical Info library under "Now Software."

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Tech Info Library Article Number:5666



# Tech Info Library

## Virus Prevention: Install the System from Locked Media (4/94)

Revised: 4/1/94  
Security: Everyone

Virus Prevention: Install the System from Locked Media (4/94)

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 1 April 1994

TOPIC -----

This article describes the recommended approach when installing or upgrading software - use locked floppy disks, cartridge drives or CD-ROMs.

DISCUSSION -----

If you install system software or application software from an unlocked floppy disk or unlocked removable cartridge (often called a Syquest cartridge) which uses an Installer application onto a system infected with a virus, that unlocked disk can become infected.

From that point on, every system you use that Installer disk on becomes infected.

To prevent any viruses from spreading, you must know your master disks are clean, and you must use them only in a locked state. You can also use CD-ROMs, such as Apple's InstallMeFirst CD which are read-only disks and have been checked for viruses before production.

### Article Change History:

1 April 1994 - Added information on other locked media, as well as CD-ROM's  
25 August 1993 - Removed references to specific viruses and virus software that was outdated information.

Support Information Services

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Tech Info Library Article Number:5667





# Tech Info Library

## PICT2: Resource Fork Versus Data Fork Storage

Revised: 6/29/90  
Security: Everyone

PICT2: Resource Fork Versus Data Fork Storage

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This article last reviewed: 12 June 1990

TOPIC -----

I need some information on PICT2 data structure. I do digital photo-retouching frequently creates individual files 20MB to 30MB, or larger, especially when scanning at 4000 lines per inch.

I use film recorders, most of which are QuickDraw-based and accept PICT2 as input. I had a problem trying to create a 20MB PICT2 file from my scanning and retouching software (BarneyScan XP and PhotoShop). Is this a problem with the image software, or is it a PICT2 limitation?

We examined the PICT2 documentation in "Inside Macintosh, Volume 5." In PICT2, the picture length in the header is ignored (set to -1). Does this mean that this is variable data length?

DISCUSSION -----

The limitation that you are most likely running into is a resource size limitation rather than a PICT2 format limitation. If the application stores the pictures in the file's resource fork (as a PICT resource), it is understandable that you can't create a 20MB picture. The maximum size of a file's resource fork is 16MB. This is because a 3-byte number is used by the Resource Manager to offset into the resource map.

If your application can store the images in a format that uses the file's data fork, you should be able to create and use images larger than 16MB.

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Tech Info Library Article Number:5668



# Tech Info Library

## LaserWriter II: Printing 3x5 Labels, a Workaround

Revised: 6/29/90  
Security: Everyone

LaserWriter II: Printing 3x5 Labels, a Workaround

=====

This article last reviewed: 12 June 1990

TOPIC -----

Do you have any kind of workaround for printing 3x5 labels on the LaserWriter II?

DISCUSSION -----

We constructed a "carrier" for small forms. It is a piece of heavy paper (about the same weight paper as 3x5 stock) cut to the size of a standard envelope. It has a hole cut in it to print through and a standard piece of paper glued to the back that adequately holds the small form in place. The small form slides into place, and then we feed the carrier manually.

We do not propose this as a solution for the problem. It is much too much trouble for large quantities. It does work very well when printing single labels or small forms. We can even print individual disk labels with this method. To make it even easier, we created a MacDraw II template that shows me exactly where the window on the carrier is. We used the template to create the carrier.

If this idea could be developed into a useful solution by some industrious person, we wouldn't mind if they used it.

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Tech Info Library Article Number:5669



# Tech Info Library

## LaserWriter II: Envelope Smudging Problem

Revised: 6/29/90  
Security: Everyone

LaserWriter II: Envelope Smudging Problem

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This article last reviewed: 12 June 1990

TOPIC -----

I am having a problem printing on standard envelopes on a LaserWriter II. When I try, the envelopes are all black and smudgy.

DISCUSSION -----

Try setting the density adjustment to 1. This should eliminate the smudging.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5670



# Tech Info Library

## RasterOps 224 Card: Upgrade Available

Revised: 6/29/90  
Security: Everyone

RasterOps 224 Card: Upgrade Available

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This article last reviewed: 12 June 1990

TOPIC -----

When the RasterOps 224 card was first announced and shipped, the field offices received one for demonstration purposes.

I have found this card to be a good 24-bit solution on the AppleColor High-Resolution RGB Monitor, but the card seems to crash often. I called RasterOps and found that we have old ROMs.

The Tech Support Manager said that RasterOps would upgrade the cards sent to the field at no charge.

DISCUSSION -----

We spoke with RasterOps Tech Support and confirmed that they would upgrade the cards we shipped to the field. Contact RasterOps to get version 1.43 of the ROMs and version 1.5 of the Graphics System Software.

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Tech Info Library Article Number:5671



# Tech Info Library

## ImageWriter II: How Draft Mode Handles Fonts and Layout

Revised: 6/29/90  
Security: Everyone

ImageWriter II: How Draft Mode Handles Fonts and Layout

=====

This article last reviewed: 12 June 1990

TOPIC -----

Does the ImageWriter II have any built-in fonts? What font is used when the Draft option is selected? I printed in Draft mode from Microsoft Word 4.0, using both Palatino and Garamond, and the printouts were different. That is, the spacing between words was inconsistent.

Can you explain?

DISCUSSION -----

There are fonts built into the ImageWriter II ROMs. They are very simple character fonts with limited quality. Because these fonts are resident in the printer, they can print very quickly compared to the bitmaps sent to the ImageWriter for Faster or Best modes. With a Macintosh, the built-in fonts are used only when printing in Draft mode or when an application bypasses the Macintosh print driver.

Draft mode allows very fast printing of documents, giving a best-guess layout of characters and lines. Because this mode uses the built-in fonts, it cannot duplicate the spacing and effects visible on the Macintosh screen and is, therefore, not intended for anything other than rough drafts.

The best way to improve the print layout with Draft mode is to use a screen font that approximates the ImageWriter fonts used. The ImageWriter fonts are pica or elite in various sizes between 9 and 17 characters per inch. A list of the fonts used is on page 74 of the "ImageWriter II Owner's Manual."

Matching different screen fonts to printer fonts requires experimentation. Because Draft mode was not designed for optimal appearance, use it only for rough-draft output.

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Tech Info Library Article Number:5672



# Tech Info Library

## Macintosh Portable Data Modem: Using with Dial-Back Systems

Revised: 6/29/90  
Security: Everyone

Macintosh Portable Data Modem: Using with Dial-Back Systems

=====

This article last reviewed: 12 June 1990

TOPIC -----

I want to use the Macintosh Portable with internal modem to dial into a corporate office network. We have a "dial-back" security system called Defender that requires the modem to answer the "callback" from the corporate network in "originate" mode.

Can this be done?

DISCUSSION -----

The Macintosh Portable Data Modem 2400 doesn't have an option for answering in originate mode, but it can be tricked into doing this. It won't be quite as convenient as setting up a single register, though, and you may want to use a script to automate it, depending on the communications program you are using.

Scenario

-----

Because the goal is to make the modem answer in originate mode, and the modem doesn't have this option, we're going to dial in originate mode, instead and just not dial a number. The trick is to set the modem options to disable Dial Tone detection. If this isn't done, the modem will wait for a dial tone when the other end is sending a carrier.

Follow these steps:

1) Set the modem's active response codes with: ATX3

(Enables OK, RING, NO CARRIER, ERROR, BUSY, and CONNECT messages, but disables dial tone detection which would prevent this from working.)

2) Dial the host and do the necessary steps to generate a callback.

3) Wait for Macintosh Portable modem to generate RING.

4) Immediately force the modem off-hook with: ATD

(The Macintosh Portable modem should wait for carrier and negotiate with the host's modem for a connection.)

5) When the CONNECT message appears, the modems will be talking.

This could easily be put into a communications program script, simplifying the process.

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Tech Info Library Article Number:5673





# Tech Info Library

## Apple's Strategy Re: System Application Architecture (SAA)

Revised: 8/28/90  
Security: Everyone

Apple's Strategy Re: System Application Architecture (SAA)

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This article last reviewed: 9 August 1990

TOPIC -----

What Systems Application Architecture (SAA) standard does Apple write to? Can you help?

DISCUSSION -----

Systems Application Architecture (SAA) established a set of common standards and procedures for working with IBM systems and data. These include definitions for Common User Access, Common Communications Support, and Common Programming Interface. The following article from Networking and Communications summarizes how Apple complies with IBM's SAA:

Apple and SAA  
Networking and Communications Product Marketing  
March, 1990

A key element of Apple's networking strategy is Macintosh integration with IBM systems. The goal is to provide basic connectivity for the Macintosh, and then provide developers and customers with a set of protocols, interfaces, and tools that enable the development of consistent, integrated Macintosh applications for the IBM environments.

Apple will implement the IBM Systems Application Architecture technologies that complement the Macintosh, thereby enabling user transparent access to IBM data and services. Apple's product development will continue to focus on the core networking protocols, interfaces, and services that enable commercial developers and customers to create applications for end users. This helps to produce highly functional software in the shortest possible time by allowing developers to concentrate on the application and user interface, rather than networking.

Apple will continue to enhance the Apple-IBM product line through improvements

in functionality, performance, and usability. The commitment is to provide customers with a common Macintosh view of IBM data, services, and applications through support of Macintosh-complementary SAA technologies.

#### Common Communications Support

-----

Apple now offers a range of networking products that implement key SAA Common Communications Support (CCS) functions. The Apple TokenTalk NB, Serial NB, and Coax/Twinax Cards provide Macintosh connections to IBM SNA networks. MacDFT software provides 3270 terminal emulation with file transfer, as well as copy and paste, between the 3270 screens and Macintosh applications. MacDFT also supports the NetView alert reporting functions of SNA/MS. The Apple 3270 API serves as the 3270/SNA programming interface for MacDFT, Data Access Language (DAL, formerly known as "DAL"), MacWorkStation, and third-party applications. It is also available for the development of customized 3270 applications. MacAPPC implements the LU6.2/NT2.1 protocols, offering the basis for Macintosh integration with emerging cooperative processing applications. These products can be the basis for a wide range of applications, such as Macintosh interfaces to OfficeVision, DB2, and SQL/DS.

With the key connection and communication standards available, SAA application services, such as SNA/DS and DIA, are planned. Apple will also investigate implementations of SNA/MS, DDM, and SNA/FS as those technologies evolve.

#### Common Programming Interface

-----

The Common Programing Interface (CPI) element of SAA contains two technologies that complement the Macintosh: SQL for the Database interface and CPI-C for Communications.

DAL is Apple's host database access software and programming interface that provides the functionality of the CPI SQL interface. DAL provides consistent access to multiple database environments and multiple operating systems from Macintosh applications. Software developers will use the Apple System 7.0 Database Access Manager (DAM) to link their applications with DAL host servers for MVS or VM, providing access to DB2 and SQL/DS databases. This approach promotes network and database independence for Macintosh applications, and enables users to access data in IBM, Digital VAX, and UNIX environments from a single application.

The DAM also offers developers an interface for implementation-specific SQL dialects to complement DAL. Macintosh applications that access host data through DAL are enhanced by a range of query tools that allow users to perform ad hoc queries in intuitive, graphical ways. These third-party products take the form of Desk Accessories, HyperCard stacks, and applications.

As the customer requirement for LU6.2 products expands, CPI-C (the SAA interface to LU6.2) will be implemented as an enhancement to Apple APPC products.

Three other CPI technologies (Dialog, Query, and Presentation) specify functions that will not be directly supported by Apple because they are targeted at OS/2 and similar functionality is already integral to the

Macintosh.

#### Common User Access

-----

The Common User Access (CUA) element of SAA covers a wide range of guidelines, technologies, and products aimed at improving user interface consistency across IBM platforms. Apple does not plan to support the diverse elements of CUA since the Macintosh provides the best and the most consistent user interface to IBM systems as well as to multivendor environments.

Many organizations employ Digital VAX systems and UNIX platforms in addition to IBM. With the Macintosh, a "common user interface" that is integral to the Macintosh architecture for local and LAN-based applications is also supported on the VAX. In UNIX environments, Apple's A/UX 2.0 implementation of System V UNIX runs Macintosh applications and standard UNIX applications with full communications support based on industry standards, such as TCP/IP and NFS.

Unlike many vendors, whose personal computer, mainframe, and workstation user interfaces vary, Macintosh can provide a single-user interface, a mature application base, and rich data interchange capability across all of these systems. This advantage will be applied to SAA resources.

#### Common Applications

-----

The goal of Common Applications (CA) is to deliver functionality that spans several IBM platforms with a consistent user interface and portability. In addition to the advantages in a multivendor environment, Macintosh participates in Common Applications through support of SAA communications protocols and programming interfaces. Combined with the rich networking and toolbox facilities in the Macintosh environment, these SAA functions provide Macintosh users with a "common view" of the IBM host environments.

#### Summary

-----

Apple is committed to serving its customers by providing IBM SAA-compliant products that are integrated into the Macintosh environment. Apple has delivered the most critical networking and communications products for Macintosh interoperability in SAA environments and will continue to enhance our IBM networking and communications product line through support of accepted SAA standards that complement the Macintosh in an IBM environment.

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Tech Info Library Article Number:5674



# Tech Info Library

## AppleTalk Address Resolution Protocol (AARP): Description

Revised: 6/29/90  
Security: Everyone

AppleTalk Address Resolution Protocol (AARP): Description

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This article last reviewed: 31 May 1990

TOPIC -----

Does AppleTalk Address Resolution Protocol (AARP) play a role in address resolution for MacTCP, or is there a corresponding TCP/IP protocol that manages this mapping? What can you tell me about products such as TSSnet?

I am trying to understand where AARP sits in a Macintosh running more than one protocol on a single datalink adaptor (for the sake of argument, consider it Ethernet). Are packets handed from the hardware adapter to ELAP to AARP to the appropriate protocol stack, or do they go from ELAP to the appropriate protocol stack, and then to AARP, only if the packet type is AppleTalk?

DISCUSSION -----

AppleTalk Address Resolution Protocol (AARP) is used to map between the AppleTalk node ID and the physical address of a datalink, such as Ethernet and Token Ring. For example, node A is a Macintosh on EtherTalk. This Macintosh has an AppleTalk node ID 30 and an Ethernet physical address \$02608C02AAA3. When an AppleTalk packet is sent to AppleTalk node 30, AARP is used to determine that the AppleTalk node 30 is at Ethernet physical address \$02608C02AAA3.

TCP/IP has a similar protocol call Address Resolution Protocol (ARP) that does basically the same thing, but in TCP/IP. For example, you have a machine with an IP address 130.43.4.13 and an Ethernet physical address \$02608C02AAA3. When a TCP/IP packet is sent to the IP address 130.43.4.13, ARP is used to determine that the IP address 130.43.4.13 is at Ethernet physical address \$02608C02AAA3.

Note: MacTCP, in native TCP mode (using Ethernet and no DDP/IP gateway), would not be generating AppleTalk packets; AARP would not be used, but ARP would be.

More information on AARP is in chapter 2 of "Inside AppleTalk."

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Tech Info Library Article Number:5678



# Tech Info Library

## Apple Tape Backup 40SC: Storage Specifications (8/94)

Revised: 8/31/94  
Security: Everyone

Apple Tape Backup 40SC: Storage Specifications (8/94)

=====

Article Created: 31 May 1990  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

Is there a way to use larger capacity tapes in the Apple Tape Backup 40SC unit?  
I want to use at least an 80MB tape.

NOTE: This product has been discontinued and is no longer available.

DISCUSSION -----

The Apple Tape Backup 40SC is physically capable of storing a maximum of 38.5MB of data per tape cartridge. There is no way to change this. Here are the specifications of data capacity for the Apple Tape Backup 40SC:

Total Capacity: 38.5MB  
Encoding Method: GCR (Group Code Recording)  
Flux Density: 12,500 ftpi  
Bit Density: 10,000 bpi (GCR)  
Block Size: 8192 bytes (8320 with 128 bytes of system data appended)  
Number of Tracks: 24 serpentine  
Track Width: 8 mils (.020 mm) write  
              5 mils (.0125 mm) read  
              10 mils (.025 mm) spacing

Article Change History:  
31 Aug 1994 - Removed "Discontinued" from the title. Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:5679



# Tech Info Library

## Ethernet: Terminator Specifications

Revised: 6/29/90  
Security: Everyone

Ethernet: Terminator Specifications

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This article last reviewed: 1 June 1990

TOPIC -----

What are the usual specifications for the terminators used on thin Ethernet cable?

DISCUSSION -----

Terminating resistors must be 50 ohms; 75-ohm terminators would drastically alter the performance of an Ethernet network. The resistors should be around .25 watts.

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Tech Info Library Article Number:5681



# Tech Info Library

## Using ImageWriters Overseas

Revised: 6/29/90  
Security: Everyone

Using ImageWriters Overseas

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This article last reviewed: 31 May 1990

TOPIC -----

How do I adapt an ImageWriter I or II for European power 220V 50Hz?

DISCUSSION -----

The ImageWriter I printer requires a grounded, step-down, isolation transformer when used with a 220V power source. Using the ImageWriter I printers on a 50Hz source can noticeably affect spacing between characters.

There are already several articles in the Tech Info Library that discuss the ImageWriter II:

- "Part Available For Using ImageWriter II And ImageWriter LQ Overseas"
- "Electrical Specifications of Most Apple Hardware"
- "Using Apple Equipment Overseas"
- "Traveling with an Apple" contain more information.

Use the search criterion of "Overseas".

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Tech Info Library Article Number:5683





# Tech Info Library

## Macintosh Portable: How To Disable Rest Mode (11/94)

Revised: 11/17/94  
Security: Everyone

Macintosh Portable: How To Disable Rest Mode (11/94)

=====

Article Created: 31 May 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

My Macintosh Portable cycles the clock speed down after a few minutes when running programs. What's going on?

DISCUSSION -----

The slowdown that you are experiencing is actually called Rest Mode.

The Power Manager processor monitors the amount of time the Macintosh Portable has been inactive. After a period of 15 seconds without any activity, the unit goes into Rest mode. It causes the CPU to insert 64 wait states into RAM and ROM accesses, which lowers the effective clock rate to approximately 1MHz. Interrupts continue to be processed at the same rate. As soon as the trackball or mouse moves, or any peripheral device is activated, the computer returns to full speed instantly.

The following items are checked and stop the unit from entering rest mode:

- Mouse movement
- I/O activity (keyboard, trackball, modem, and so on)
- Cursor change
- Serial port access

This feature can be turned off when running Video Works or some other program that avoids detection by the rest routine. You can disable rest mode by doing this:

- 1) Enter the Control Panel DA and select the Portable CDEV.
- 2) Hold Down the Option key and press on the words "Minutes Until Automatic Sleep".
- 3) Click "Don't Rest" in the dialog box that appears and select "OK".

Article Change History:

17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5684



# Tech Info Library

## Motorola 6888x 680X0: Specifications

Revised: 6/29/90  
Security: Everyone

Motorola 6888x 680X0: Specifications

=====

This article last reviewed: 31 May 1990

TOPIC -----

I am writing specifications for a procurement and have questions about the Motorola 6888x and 680x0 chips used in the Macintosh SE/30 and Macintosh II family.

- 1) Is the external data path the same on the Motorola 68881 and 68882? Is it a 16- or 32-bit bus to the CPU?
- 2) Are the chip sets tightly matched (68020 to 68881 and 68030 to 68882), or can they be connected to other members of the 68000 family (that is, 68000 to 68881)?

DISCUSSION -----

- 1) The MC68881 and MC68882 use the same coprocessor interface (the M68000 Coprocessor Interface as defined by Motorola) and are pin-for-pin compatible with each other. The coprocessor interface can accept or provide transfers in 8 bits, 16 bits, or 32 bits; the bus is 32-bits wide.
- 2) The MC68020 and MC68030 have the M68000 Coprocessor Interface built in and can work in conjunction with any coprocessor that adheres to this interface. This means that these chips are not specifically matched to the MC68881 or MC68882. The MC68000, MC68008, MC68010, and MC68012 do not have the M68000 Coprocessor Interface built in. These chips still can be interfaced to M68000 coprocessors, like the MC68881, by providing instruction sequences that emulate the protocol of the M68000 Coprocessor Interface.

Motorola publishes user's manuals on all their microprocessors and coprocessors. For more information, search the Technical Info library under "Motorola."

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# Tech Info Library

## **SAM 2.0: Fix for MPW Linker Problem**

Revised: 6/29/90  
Security: Everyone

SAM 2.0: Fix for MPW Linker Problem

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This article last reviewed: 31 May 1990

TOPIC -----

SAM 2.0 has a problem with the MPW Linker. It refuses to learn about the MPW Linker adding CODE resources. What can I do?

DISCUSSION -----

Here is the fix for the MPW Linker problem:

- 1) Open SAM Intercept's resource fork with a HEX file editor (for example, FEdit).
- 2) Search for this hex string: "210370427ECFB8DE7E3A5C8F2874AE1B".
- 3) Change it to: "230370427A64DE3E18023C1F0C35E07E".
- 4) Save the changes.
- 5) Close the file.
- 6) Restart your Macintosh.

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Tech Info Library Article Number:5686



# Tech Info Library

## Ethernet: Bridges and Routers

Revised: 6/29/90  
Security: Everyone

Ethernet: Bridges and Routers

=====

This article last reviewed: 1 June 1990

TOPIC -----

I need to have 20 Macintoshes on an Ethernet network but want to isolate them from the backbone. I like the Internet router, but need IP routing. Is there a bridging product that supports multiple protocols and does Ethernet-to-Ethernet bridging? Does DEC have such a product?

DISCUSSION -----

Bridges operate at the datalink layer level and are usually indifferent to network protocol. Routers operate at the network layer level and route only specific protocols.

DEC does have bridges that "routes" IP, as do Cisco, CableTron, Ungermann-Bass, Redix, NCS, ACC, and so on. Be aware, however, that some of the older bridges may not pass both 802.3 and Ethernet packets. If you want to isolate the network segment from the backbone, yet route IP and AppleTalk packets, Cisco is one example of the many companies that can provide this support (product descriptions are on AppleLink). They're among many developers of products sometimes called "brouters" or bridge-router hybrids.

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Tech Info Library Article Number:5688



# Tech Info Library

## Needed: Internet Router-Like Product for IP Routing

Revised: 6/29/90  
Security: Everyone

Needed: Internet Router-Like Product for IP Routing

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This article last reviewed: 1 June 1990

TOPIC -----

Do you know of an IP routing product that works like the AppleTalk Internet Router? Specifically, I am interested in a product that is installed on a Macintosh that does IP routing.

I like the functionality and flexibility of the AppleTalk Internet Router but need IP routing.

DISCUSSION -----

As of April, 1990, there are no IP routing products that work with or like the AppleTalk Internet Router. (We have had repeated requests for this type of product.)

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Tech Info Library Article Number:5691



# Tech Info Library

## Linking Remote Sites Over 25-Pair Telco Wire

Revised: 7/23/92  
Security: Everyone

Linking Remote Sites Over 25-Pair Telco Wire

=====

Article Created: 1 June 1990  
Article Last Reviewed:  
Article Last Updated: 22 June 1992

### TOPIC -----

I want to link a remote site (approximately 3 miles) and has 25-pair Telco wire already laid from point to point. I know of the Shiva Telebridge and the Digital Access solution, but want to know if I have any alternatives.

### DISCUSSION -----

Line drivers, signal boosters, short-haul modems, CSUs, DSUs, and so on should all be available from your local telephone company or suppliers, such as BlackBox. The type you would use depends on the type of link you have (T1, 1MB, ISDN, DDS, and so on) and data rates you want to achieve.

Because you mention the Telebridge, it seems that you want to route AppleTalk packets over the link. Other products, like the Solana R-Server, the H-Server, and the Hayes InterBridge, can do this. Both the R-Server/S and the H-Server support data rates similar to that of the Telebridge.

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

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Tech Info Library Article Number:5692





# Tech Info Library

## Serial NB Card, MacDTF, and MacAPPC

Revised: 10/29/90  
Security: Everyone

Serial NB Card, MacDTF, and MacAPPC

=====

This article last reviewed: 25 October 1990

TOPIC -----

- 1) Can the Serial NB Card communicate with an IBM mainframe over a 4800-baud modem to CICS?
- 2) Can MacAPPC run over SDLC this way?

DISCUSSION -----

- 1) Yes, via MacDFT 1.1 with the Serial NB Card, running SNA/SDLC.
- 2) Yes, MacAPPC 1.1 can communicate with other LU6.2 devices serially or over Token Ring (Serial NB or TokenTalk NB card, respectively). It is also capable of distributing these sessions from the server machine to other AppleTalk network system nodes using ADSP on LocalTalk, TokenTalk, or EtherTalk.

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Tech Info Library Article Number:5696



# Tech Info Library

## A/UX: How to Partition for Two 45MB Cartridges

Revised: 8/28/90  
Security: Everyone

A/UX: How to Partition for Two 45MB Cartridges

=====

This article last reviewed: 1 June 1990

TOPIC -----

In our office, we use 45MB removable cartridges as standards for hard disk storage. Some of us now want to use A/UX. Is it feasible to put A/UX on two separate 45MB cartridges and run it as is? If yes, what partitioning would you recommend?

DISCUSSION -----

If you have two 45MB cartridge drives on a Macintosh running A/UX, it may be possible to separate the standard A/UX Root&Usr partition into Root and Usr partitions on two different drives. Here is the list of disk partitions and their sizes from the standard A/UX 2.0b for an 80MB drive:

| Approx. size | Partition               |
|--------------|-------------------------|
| -----        | -----                   |
| 16K          | Macintosh Driver        |
| 16K          | Free                    |
| 54567K       | A/UX Root&Usr (slice 0) |
| 18432K       | A/UX Swap (slice 1)     |
| 3072K        | A/UX Autorecovery       |
| 2048K        | MacPartition            |
| 1K           | Free A/UX (slice 3)     |
| 1K           | Free                    |

For this particular situation, we would suggest that you put the "Macintosh Driver", the "A/UX Root"(/), the "A/UX Swap", and the "MacPartition" partitions on one drive, and put the "Usr"(/usr) partition on another drive. You may remove the "A/UX Autorecovery" partition if you have a way to recover from any disk disaster.

The total size of the "Macintosh Driver" (16K), the "A/UX Swap" (18432K), and the "MacPartition" (2048K) partitions is 20496K. Therefore, you can create the

## ..TIL05697-A-UX-How\_to\_Partition\_for\_Two\_45MB\_Cartridges\_(TA43555).pdf

"Root" ( / ) file system with the size of about 45MB - 20496K. Note that the current disk space occupied by the "Root" file system (excluding /usr) is about 20MB. Therefore, you have about 5MB of space for growing in the "root" drive. The entire disk size (in blocks) can be found from the report of "dp /dev/rdisk/cXd0s31" (X is the SCSI ID of the drive).

Use the "dp" command to create the above partition names and sizes in one drive. Within "dp", write down the size (in block) of the "Root" ( / ) file system for later "newfs" use.

On the other drive, you can allocate the entire 45MB for the "Usr" ( /usr ) partition. Use the same "dp" to create the "Usr" ( /usr ) partition, and write down its size. Note that the current disk space occupied by the "Usr" ( /usr ) is about 18MB. Therefore, you have about 25MB (maybe less due to 5 percent "low-water-mark" required on BSD UFS) space to grow.

To balance the disk space between the two drives, you can "symbolically" link some files or directories from the "Root" drive to the "Usr" drive.

To make a "Root" ( / ) Berkeley file system (UFS) do:

```
# newfs -s number-of-blocks-for-root /dev/dsk/cXd0s0
```

"X" is the SCSI ID of the 45MB "Root" drive.

To make a "Usr" ( /usr ) Berkeley file system (UFS) do:

```
# pname -cY -s2 "Usr"
==> /dev/dsk/cYd0s2
```

"Y" is the SCSI ID of the 45MB "Usr" drive, and assume "Usr" is the partition name created in the drive.

```
# newfs -s number-of-blocks-for-usr /dev/dsk/cYd0s2
```

After you have these file systems created, you can mount the above two file systems. Here is an example:

```
# mount /dev/dsk/cXd0d0 /45root
# mount /dev/dsk/cYd0s2 /45usr
```

After mounting the file systems, you can use either "cpio" or "tar" to copy the following files and directories (exclude /usr) onto the 45MB "Root" drive:

```
./[a-z]*
/[a-t]*
/[v-z]*
/[A-Z]*
```

and copy the following /usr directory onto the 45MB "Usr" drive:

```
/usr
```

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Tech Info Library Article Number:5697



# Tech Info Library

## A/UX: Questions and Answers (11/95)

Revised: 11/29/95  
Security: Everyone

A/UX: Questions and Answers (11/95)

=====

Article Created: 1 June 1990  
Article Reviewed/Updated: 28 November 1995

TOPIC -----

This article contains frequently asked questions (FAQ) about A/UX?

DISCUSSION -----

Question: A/UX supports the Comm Toolbox. Can I drag tools from Mac OS and use them with A/UX, or must they be special versions?

Answer: If the tool uses a low-level communication protocol that A/UX supports (for example, serial, MacTCP), there is a good chance that the tool will work under A/UX. However, if the tool uses something unsupported, such as DECnet, it will not function properly under A/UX.

Question: MacTCP works on A/UX. Is it the same as on Macintosh OS, a special version, or a switch toward "native TCP/IP on A/UX"?

Answer: The MacTCP on A/UX is a special version of MacTCP for A/UX. The Macintosh OS version of MacTCP lets a non-Ethernet-based Macintosh run IP-based communications programs over LocalTalk by encapsulating IP packets into DDP packets. The A/UX version of MacTCP does not support this option.

Question: MacX works on A/UX. Is it the same as on Macintosh OS, and in this case, is the "MacTCP tool" in the Comm Toolbox the same as on Macintosh OS?

Answer: The MacX server under A/UX is identical to the MacX under Macintosh OS. So is the "MacTCP Tool" in the A/UX Extensions folder. If you intend to use a version other than that supplied with A/UX, refer to the MacX User's Guide for correct installation instructions.

## ..TIL05698-A-UX-Questions\_and\_Answers\_11-95\_(TA43561).pdf

Question: Does "X Window System native" work only in the Console Emulator session type, or does it work with other sessions types?

Answer: The "Native X11 Window System" can work only in the "Console Emulator" session type under A/UX.

Question: Why is UFS quicker than SVFS?

Answer: According to the original implementors of Berkeley Fast File System (UFS), the UFS provides up to ten times the file access rate of the traditional UNIX file system (SVFS). The performance enhancements include better locality of reference in the file system structures and support for large block sizes. In addition, the BSD UFS provides support for file-locking, symbolic links, "long" file names, 32-bit inodes, and resource quotas. In A/UX, however, A/UX UFS does not support resource quotas.

Question: What are the main improvements of X11R4 compared with X11R3?

Answer: In general, compared to X11R3, the code of X11R4 is smaller, and the performance of X11R4 is faster. It also provides a variety of bug fixes in X11R3.

Question: What is the Xaw Athena Widget Set?

Answer: The Xaw Athena Widget Set is a set of user interface components known as widgets, including scroll bars, menus, and buttons, and so on. The Xaw Athena Widget Set is included in the standard X11 distribution. In A/UX Native X Window System, the /usr/lib/libXaw.a library is the Xaw Anthena Widget Set.

Question: How does A/UX manage an A/UX Toolbox application, compared with the MultiFinder Toolbox, which is not "re-entrant"? Are all managed by the startmac process?

Answer: It is managed by the UI (User Interface) device driver and the MF (MultiFinder) under A/UX. Note that MultiFinder under A/UX follows the Macintosh paradigm for cooperative tasks and does NOT create a new or different one from the Macintosh.

Question: When an application uses the Toolbox, the calls are trapped (GetFile is changed in open or fopen, for instance). Is it the same for A/UX and Macintosh OS applications?

Answer: Yes, A/UX performs the same as it does under Macintosh OS. Toolbox applications share the same address space with Macintosh applications in that they have access to the application and system heaps, low-memory globals, and so on.

Question: Do communications cards, like Serial NB and others, work under A/UX?

Answer: It seems that the Apple Serial NB Card does not have a driver for A/UX yet. We would think both the AST-ICP card and the SuperMac Comm card should continue to work under A/UX.

Question: Is there an implementation of Open Look on A/UX?

Answer: Neither Tech.Comm nor A/UX Engineering knows of a port of AT&T Open Look for A/UX.

Question: Can MacX on A/UX manage several screens?

Answer: MacX server under A/UX supports only one screen (display). It does the same as under Macintosh OS.

#### Article Change History:

28 Nov 1995 - Updated format and added keyword.

01 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5698



# Tech Info Library

## Macintosh-to-Amiga Amiga Graphics Transfer

Revised: 6/29/90  
Security: Everyone

Macintosh-to-Amiga Amiga Graphics Transfer

=====

This article last reviewed: 4 June 1990

TOPIC -----

I want to convert Amiga screens to the Macintosh. I don't write Macintosh programs, but I want to use the Macintosh with PageMaker to document Amiga the games.

DISCUSSION -----

GIF, an interchange format designed by CompuServe, is one of the most-used file formats for moving graphic images between different computer platforms. Various utilities are available in both the Macintosh and Amiga public domain arenas for converting standard graphic file formats to the GIF interchange format. Once in this format, just transfer the GIF files to the Macintosh.

On the Macintosh side, there is a utility called Giffer that reads a GIF file and writes a PICT file. The PICT file can then be placed in the PageMaker documents.

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Tech Info Library Article Number:5706





# Tech Info Library

## Altsys Metamorphosis: Utility to Retrieve Fonts

Revised: 6/29/90  
Security: Everyone

Altsys Metamorphosis: Utility to Retrieve Fonts

=====

This article last reviewed: 4 June 1990

TOPIC -----

How can I retrieve the font outlines from the LaserWriter hard disk and save them in Illustrator, Fontographer, and Type 3 font formats?

DISCUSSION -----

Try Metamorphosis from Altsys. It can retrieve the font outlines from the LaserWriter hard disk and save them in Illustrator, Fontographer, and Type 3 font formats. This will work well for all Type 3 fonts that have been loaded on the LaserWriters hard disk. However, as of April, 1990, any Type 1 Adobe fonts that are on the hard disk can be retrieved only as Type 3 fonts.

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Tech Info Library Article Number:5707



# Tech Info Library

## Omnis 5.0: Solution for AppleTalk Printer Timeout Problem

Revised: 6/29/90  
Security: Everyone

Omnis 5.0: Solution for AppleTalk Printer Timeout Problem

=====

This article last reviewed: 4 June 1990

TOPIC -----

I have problems printing long reports (20+ pages) from Omnis 5.0 to an ImageWriter II with AppleTalk Option Card. The print job halts randomly with this error message "Connection with printer has been lost."

DISCUSSION -----

As of April, 1990, Omnis could not able to produce output quickly enough while generating a report to keep the printer from timing out. (This happens with both the AppleTalk ImageWriter and the LaserWriter.) This is similar to what we've seen with 4th Dimension.

The workaround is to have Omnis generate a page of output and then send the entire page to the printer. To do this, either put the report output into a list or spool it to disk. With a LaserWriter, you have an additional option of using background printing under MultiFinder. The page-at-a-time approach is what we've used with our 4th Dimension database.

Although we did not get into specifics, the Omnis people did not tie this problem to a problem with the AppleTalk ImageWriter driver. Instead, it seems to be a reality of printing reports that take a lot of processing when printing to any network-based printer.

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Tech Info Library Article Number:5708



# Tech Info Library

## System Folder: Securing With Secure INIT

Revised: 6/29/90  
Security: Everyone

System Folder: Securing With "Secure INIT"

=====

This article last reviewed: 4 June 1990

TOPIC -----

Do you know of any software that I can use to protect my System Folder configuration, so that users can't change it?

DISCUSSION -----

There is a Macintosh program called "Secure INIT" that records a fixed configuration of the System Folder. An option can be enabled that restores this fixed configuration on system Shutdown or Restart. It is also possible to make the System Folder invisible to the user.

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Tech Info Library Article Number:5710



# Tech Info Library

## AppleTalk: Network Manager Status Program

Revised: 6/29/90  
Security: Everyone

AppleTalk: Network Manager Status Program

=====

This article last reviewed: 4 June 1990

TOPIC -----

Do you know of any product that updates software installed on local workstations through the network? This should act somewhat like Responder and Inter-Poll except that the workstation software can actually be updated. Also, the program should be able to do an analysis on each workstation and summarize the results in report form.

For example:

System 1: (ZONE: Finance)  
MS Word ver 3.01  
MacWrite ver 1.1  
Finder ver 6.0.5  
LaserWriter ver 6.0.1 ...etc..

System 2: (ZONE: Sales)  
MS Word ver 4.0b  
MacWrite ver 1.0  
Finder ver 3.2  
LaserWriter ver 4.1 ...etc..

.  
. .  
.

System n (ZONE: Engineering)  
MS Word ver 3.01  
MacWrite ver 1.1  
Finder ver 6.0.5  
LaserWriter ver 6.0.1 ...etc..

Summary:

|   |          |           |
|---|----------|-----------|
| 2 | MS Word  | ver 3.01  |
| 1 | MS Word  | ver 4.0b  |
| 2 | MacWrite | ver 1.1   |
| 2 | Finder   | ver 6.0.5 |

DISCUSSION -----

We don't know of a package that does updates, but there is a package to be released in July, 1990 from Pharos called System Status Mac. It acts like Inter-Poll and investigates workstations on the network, responding with the version numbers of software. The System Manager can then compile the results and advise users when upgrades are available.

For more details, search the Tech Info library under "Pharos Technologies, Inc."

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Tech Info Library Article Number:5711



# Tech Info Library

## 800K INIT: Use with System 6.0.3 or Earlier

Revised: 4/18/91  
Security: Everyone

800K INIT: Use with System 6.0.3 or Earlier

=====

This article last reviewed: 4 June 1990

TOPIC -----

Was the 800K INIT fix included as part of System 6.0.3 (and later) software? Is it part of the System file? I can't find an INIT file called 800K INIT.

DISCUSSION -----

You do not need to use the 800K INIT with System Software 6.0.4 or later because its equivalent is built in--it's actually part of the System file. However, you do need to install it on Macintosh computers with 800K drives when using System Software 6.0.3 or earlier.

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Tech Info Library Article Number:5712



# Tech Info Library

## Apple Tape Backup 40SC: Third-Party Backup Speeds

Revised: 6/29/90  
Security: Everyone

Apple Tape Backup 40SC: Third-Party Backup Speeds

=====

This article last reviewed: 4 June 1990

TOPIC -----

Using Apple Tape Backup 40SC 2.0.1, what is the average access time for the drive if a user has it mounted on the desktop?

DISCUSSION -----

By "average access time", we assume that you mean the average transfer rate. Measuring the average access time for a tape drive would make little sense, since it's not a random access device. If one were to test this, it could take a very, very long time.

Apple does not publish any official numbers for this specification, but we were able to achieve .95MB per minute using Tape Backup 40SC version 2.0.1. This rating was calculated without the time required to rewind the tape at the beginning and end of the backup. Only the speed of writing to tape for a 20MB volume backup was used.

Backing up files is considerably slower and varies depending on the sizes and numbers of files. Third-party backup programs that are compatible with our tape drive are faster in file-by-file mode than Tape Backup 40SC 2.0.1.

Tape Backup 40SC cannot be mounted on the desktop. The Tape Disk INIT was designed solely for single-file recovery from backups created with the volume backup option. It was not created to provide another backup option, and will not perform this function, unless a volume backup already exists for it to work with. This is documented in the "Apple Tape Backup 40SC Owner's Guide."

SuperMac Technologies has released their equivalent of Tape Disk named TapeDriver. It appears to work with the Apple Tape Backup 40SC to allow mounting the tape on the desktop, even if the tape doesn't contain a volume backup. It is not compatible with Tape Backup 40SC 2.0.1 volume backups, though, and asks to erase any tape inserted that contains one. The INIT is

available on AppleLink by following this path:

3rd Party Connection

Third Party Software Updates

SuperMac

Mass Storage Support Files

TapeDriver

The two programs that we tested and found to be compatible with the Apple Tape Backup 40SC are Retrospect (Dantz Development Corp) and FastBack II (Fifth Generation Systems, Inc). Contact their vendors for more information. For more details, search the Tech Info library under company names for details.

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Tech Info Library Article Number:5713





# Tech Info Library

## Datapen Bar-Code Reader

Revised: 6/29/90  
Security: Everyone

Datapen Bar-Code Reader

=====

This article last reviewed: 4 June 1990

TOPIC -----

I need a lightpen to read bar-code data that will be stored in a 4th Dimension or Foxbase database. Do you know anything about?

DISCUSSION -----

Datapen is a computer-keyboard interface device used for decoding and entering data via bar codes. Bar-coding can be incorporated into any type of computer terminal or point-of-sale system. There is no need to change the system software, because Datapen emulates the existing keyboard and is completely transparent to the programs in use.

You don't need a decoder, since Datapen itself is a decoder device. The system thinks all the data is entered from the keyboard. To the existing programs, Datapen is invisible.

Contact pen readers, laser scanners, badge readers, CCD scanners, and most other types of intelligent, RS-232, input devices work with Datapen. Datapen supports the following bar-code readers/scanners:

- All Datalogic standard readers
- Pens P10, P31, P32, P40
- Laser hand-held scanner LS8110, DL4100, and DL4200
- CCD hand-held scanner DL60 series
- Slot reader SR11

Datapen supports UPC/EAN, 2/5/5 bars, Code 39, Codabar, 2/5 Interleaved, 2/5, ABC Codabar, MSI, Plessy, Code 32, Code 11, UPC A/E Add on code, 2/5 Datalogic, EAN/LAC, 2/5 Industrial, Delta IBM, Code C.I.P., Code 93, and Code 128.

Datapen installs between the computer and the keyboard. The keyboard cable from the Macintosh is plugged into Datapen, and the Datapen cable is plugged

into the computer keyboard.

| Apple Computer Model         | Datapen Model |
|------------------------------|---------------|
| -----                        | -----         |
| Macintosh, Macintosh Plus    | DPA-04        |
| Macintosh SE, II, Apple IIGS | DPA-03        |

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Tech Info Library Article Number:5714



# Tech Info Library

## Converting Various Graphic Files to Macintosh PICT Files

Revised: 9/27/91  
Security: Everyone

Converting Various Graphic Files to Macintosh PICT Files

=====  
Article Created: 4 June 1990  
Article Last Reviewed: 27 September 1991  
Article Last Updated: 27 September 1991

TOPIC -----

I want to transfer DigiPaint (HAM format) and Professional Paint (some type of encapsulated PostScript) files from an Amiga 2500 series computer to the Macintosh. (I don't think they care about the format.) Do you have any suggestions?

DISCUSSION -----

"PICTure This" from FGM Software is an application and DA that converts a wide variety of graphic file formats to PICT and PICT2 formats. Professional Paint should also provide the Amiga IFF format. FGM has indicated that Amiga EPSF files are different than Macintosh EPSF files, and they do not support the Amiga format at this time.

File Formats

-----  
Targa 8, 16, 24, 32  
CGM  
PCX (all varieties)  
TIFF (all varieties)  
LetraSet RIFF  
Amiga IFF (except the 24 bit)  
Amiga HAM  
RIFF  
X11 Bitmaps  
Dr. Halo Cut (with palette support)  
SunRaster Images (B&W and 8 bit)  
CompuServe GIF  
CompuServe RLE  
GEM IMG (PC and Atari)

Lotus PIC

Lotus BIT

Lotus RLE

MacPaint

Macintosh EPSF (due to variations, most other platforms are not supported)

For more details, search the Tech Info library under "FGM Inc."

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Tech Info Library Article Number:5716



# Tech Info Library

## AFP Passwords and User Authentication Methods

Revised: 6/29/90  
Security: Everyone

AFP Passwords and User Authentication Methods

=====

This article last reviewed: 7 June 1990

TOPIC -----

Are AppleShare File Server user passwords stored in the Users and Groups file in an encrypted or unencrypted form? If encrypted, what is the algorithm? If encrypted, is the encryption key stored on the server volume?

It is my understanding that in the Random Number Exchange method for user authentication, user passwords are never transmitted over the network unencrypted. Is this correct?

DISCUSSION -----

It is true that passwords are not encrypted in the Users and Groups file on the server. The theory is that the file is not accessible over the network and that a server requiring security can be locked away from prying eyes and software.

You are correct in stating that the Random Number Exchange method of user authentication does not send a password over the network unencrypted. Be aware that some third-party AFP servers may not support this method (although it would be unusual), and the user has no control over what user authentication method is used. The server being connected determines this. For a more detailed description of user authentication methods available through the AppleTalk Filing Protocol, read "Inside AppleTalk" pages 13-28 through 13-30.

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Tech Info Library Article Number:5717



# Tech Info Library

## Macintosh: Application Launch Time Depends on Amount of RAM

Revised: 7/2/92  
Security: Everyone

Macintosh: Application Launch Time Depends on Amount of RAM

=====

Article Created: 7 June 1990  
Article Last Reviewed: 8 June 1992  
Article Last Updated:

TOPIC -----

When launching FileMaker II (Macintosh IIci, Internal HD80 SC, 8MB RAM) under the Finder, it takes twice as long as under MultiFinder. I've tried it with and without the video card and had the same results. I've also tried it with a Macintosh IICx, and it took approximately the same time to launch under Finder and MultiFinder. Can you explain?

DISCUSSION -----

We were able to reproduce these results on a number of systems, and it seems to be based on the amount of memory available to the application. Launching FileMaker II in a 6MB MultiFinder partition takes significantly longer than in a 2MB space. When the application launches, it checks the space available to it, and prepares it for its own use. It is also possible that more resources are preloaded into available memory. We found the same to happen with a number of applications, including Microsoft Word.

You didn't mention how much RAM was in the Macintosh IICx that you tried, but we suspect that it has 2MB or less. This would explain why the launch time under Finder was close to that under MultiFinder. Launching FileMaker II under Finder on an 8MB Macintosh IIX took 50% longer than on the same system in a 512K MultiFinder partition.

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Tech Info Library Article Number:5718



# Tech Info Library

## Apple HD SC Setup 2.0.1: Partition Size

Revised: 6/29/90  
Security: Everyone

Apple HD SC Setup 2.0.1: Partition Size

=====

This article last reviewed: 7 June 1990

TOPIC -----

I just used the new Apple HD SC Setup 2.0.1, part of System Software 6.0.5, to reformat the internal HD80 SC drives on my Macintosh IIci and my Macintosh II. I was surprised to find that this reduced the disk capacity by roughly 1MB. I did a backup using DiskFit before reformatting. After reformatting, there wasn't enough room to restore. After deleting some non-essential files to make everything fit, I have "74,753K in disk and 1,539K available". Where did the space go?

DISCUSSION -----

If a Quantum PRO drive was originally initialized with Apple HD SC Setup 2.0, the HFS partition would be larger than if it was initialized with Apple HD SC Setup 2.0.1. The reason is that the PRO drives were not directly supported by Apple HD SC Setup 2.0 (the drive did not exist yet!). However, because it was an Apple drive, the Apple HD SC Setup 2.0 software supported the drive with generic, Apple-drive settings. The size of the HFS partition was rounded down to the closest 20MB. Therefore, under Apple HD SC Setup 2.0, the HFS partition was 160,000 blocks (even).

Apple HD SC Setup 2.0.1 included changes that added direct support for PRO drives and the Macintosh IIci. (See the "System 6.0.5 Final Change History" for details.) The default HFS partition size for each drive is in an internal lookup table. The number of blocks allocated on a standard, known 80MB drive is 156,270 blocks. This size has been dictated by the original Quantum Q280 5.25-inch drive that had only 156370 blocks. To make ALL 80MB drives look alike (at least on the surface), we standardize on one 80MB partition size.

Therefore, if you had a PRO 80s drive, and you initialized it with Apple HD SC Setup 2.0 software and then went to Apple HD SC Setup 2.0.1 software, you would have lost 3730 blocks of storage or about 1.5MB. A workaround would be to use the CUSTOM partition screen, remove the original HFS partition, and create a

new one manually, which is 80,000K.

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Tech Info Library Article Number:5720





# Tech Info Library

## A/UX: System 5 Interface Definition (SVID) Compliance (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: System 5 Interface Definition (SVID) Compliance (9/94)

Article Created: 7 June 1990  
Article Reviewed/Updated: 20 September 1994

TOPIC -----

I want to know what our level of SVID compliance is. Can you help?

DISCUSSION -----

This is the response from A/UX Engineering Management regarding the A/UX SVID compliance:

SVID - System Five Interface Definition is a two-volume book that describes the user and program interface to AT&T System V UNIX. It is published by AT&T and available for a nominal charge. SVVS, System Five Verification Suite, is a lengthy test program from AT&T that one MUST pass, WITHOUT modifications to claim SVID compliance.

A/UX passes SVVS V.2 and always has. The V.2 designation means that it is the verification suite for UNIX release V.2 from AT&T. There is also SVVS V.3, which verifies UNIX V.3 compliance, and there will be a V.4 verification suite available from AT&T shortly.

Now, to make matters a little more complex, there are also optional kernel extensions in the SVID. They are optional, not mandatory. However, if implemented, you pass the optional tests in SVVS to claim compliance. All releases of A/UX 1.0, 1.0.1, 1.1, 1.1.1, 2.0, and 3.0 pass these optional kernel extensions as well.

So the bottom line is that A/UX 3.0 is SVID V.2 compliant with the optional kernel extensions.

There are different editions of the SVID associated with the different releases of AT&T System V:

SVID

System V

| ----                         | -----     |
|------------------------------|-----------|
| Issue 2, Volumes 1 and 2     | Release 2 |
| Issue 2, Volumes 1 through 3 | Release 3 |
| Issue 3                      | Release 4 |

Our current version of A/UX conforms to SVID Issue 2, Volumes 1 and 2.

Article Change History:  
20 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5723



# Tech Info Library

## A/UX: Partitioning Third-Party Hard Drives (6/95)

Revised: 6/5/95  
Security: Everyone

A/UX: Partitioning Third-Party Hard Drives (6/95)

Article Created: 7 June 1990  
Article Reviewed/Updated: 5 June 1995

TOPIC -----

I want to use a third-party 320MB hard drive and partition it for use with A/UX.

DISCUSSION -----

To partition non-Apple drives, do the following:

- 1) First, initialize the third-party hard disk drive using SilverLining, FWB Tools, or the utility that came with the drive.
- 2) Launch the HD SC Setup program that came with A/UX on the installation CD-ROM. (NOTE: The Mac OS version of HD SC Setup cannot be used for this task.)

If you have not yet installed A/UX, then boot from the A/UX Installation CD-ROM. Follow the instructions in the A/UX Installation Guide for preparing the disk and installing the A/UX software.

- 3) Partition the hard disk. You should refer to the A/UX Installation Guide section on Performing a Custom Installation for detailed instructions.

Some Important Space Considerations

-----  
In creating a bootable system disk, don't forget to create Autorecovery and swap space partitions and to leave a minimum amount of user free space:

Autorecovery - The Autorecovery partition maintains a copy of the files used in the A/UX startup process so that, if you ever experience a catastrophic system failure with A/UX, the files that are critical to the A/UX startup process can be restored from the Autorecovery partition, if necessary. The Autorecovery partition requires 3 MB of disk space.

Swap space - A/UX provides the ability to use space on a hard disk to increase the computer's memory. The UNIX terminology, this space is called the swap space, and is used to exchange, or swap, portions of files in the computer's memory with those being kept temporarily on the hard disk. The recommended minimum amount of swap space is 18 MB. Generally, swap space should be set to 1.5 to 2 times the amount of physical RAM installed.

User free space - User free space is a portion of each file system not used for storing data. The space is used by the operating system to maintain the files in the file system. The recommended minimum is 5 MB. It cannot be smaller than 2 MB.

It is recommended that you do not create any partitions larger than 1.8 gigabytes in size.

You may also be able to use the "dp" (disk partition) command under A/UX to partition the entire drive. For more detailed information on how to use "dp", refer to dp(1M) manual pages.

#### Article Change History:

05 Jun 1995 - Changed access to everyone.

23 Aug 1994 - Updated for HD SC Setup that comes with A/UX.

Support Information Services

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Tech Info Library Article Number:5724



# Tech Info Library

## A/UX: Recommended Technical and Reference Materials (9/94)

Revised: 9/19/94  
Security: Everyone

A/UX: Recommended Technical and Reference Materials (9/94)

=====

Article Created: 7 June 1990  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

Can you provide documentation or technical references for the following list of OS nucleus functions?

- Interrupt handling
- Process creation and destruction
- Process stat switching
- Dispatching/process scheduling
- Process suspension and resumption
- Process synchronization
- Interprocess communication
- Manipulation of process control blocks
- Support of I/O activities
- Support of storage allocation and deallocation
- Support of the file system
- Support of a procedure call/return mechanism

DISCUSSION -----

First of all, A/UX is based on AT&T System V R2.2 with BSD 4.3 Extensions, which include networking and software interrupts. Both AT&T System V.2.2 Interprocess communication (Message, Semaphores, and Shared Memory) and BSD Interprocess communication (Sockets) are supported by A/UX. Also, NFS (Network File System) from Sun Microsystems is supported by A/UX; services includes NFS, YP, and RPC (Remote Procedure Calls).

With the A/UX description above, and since UNIX is an industry standard operating system, the references for UNIX kernel functions can be found in any UNIX publications and reference books. A notable one is "The Design of the UNIX Operating System" by Maurice Bach. It covers most of the topics.

BSD 4.3 "UNIX System Manager's Manual" is a good reference for B-Net networking

and Fast File System (UFS) supported under A/UX 2.0 and 3.0.

"Implementing Remote Procedure Calls" by Birrell and B.J. Nelson is good reference for RPC. It was published in ACM Transactions on Computer Systems, Vol. 2 No. 1, Feb 1984, pp. 39-59.

In addition, the "A/UX Network Applications Programming" documentation contains RPC, XDR, NFS, and YP Protocol specifications and a B-Net programming guide.

For UNIX system programming, the following books are recommended:

- "The UNIX Programming Environment" by Brian Kernighan and Rob Pike
- "Advanced UNIX Programming" by Marc J. Rochkind

Also, O'Reilly and Associates, Inc. publishes the "Nutshell Handbook" series which covers a wide range of UNIX and TCP/IP topics.

Article Change History:  
19 Sep 1994 - Reviewed.

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Tech Info Library Article Number:5725



# Tech Info Library

## A/UX 2.0: How to Start X11 in Color

Revised: 9/18/92  
Security: Everyone

A/UX 2.0: How to Start X11 in Color

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Article Created: 7 June 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

#### Configuration

-----

Macintosh IIfx with 8MB RAM and internal HD80 SC

A/UX 2.0b10

External HD80 SC

AppleColor High-Resolution RGB Monitor

X11 Window System (version that shipped with A/UX 2.0b3)

#### Problem

-----

I can get X11 in color by selecting the "Console Emulator" session type and typing:

```
X -screen 0 -depth 8
```

However, I cannot find a way to enable X11 color in such a way that the user can select the "X11" session type and have a color X11 display appear as the default. None of the various .Xdefaults, .x11start, and so on files seems to have an option that tells the X server to expect a color display device. Is there any way to do this, other than via the Console Emulator (or hacking the /usr/bin/X11/X startup script)?

### DISCUSSION -----

Yes, there are two ways to launch X11, the native X11 Window System, under A/UX

2.0. One is choosing from the "A/UX Console Emulator" session type. The other is choosing from the "X11" session type from the login dialog Option menu.

The problem you are experiencing is because the default X11 server startup script (/usr/bin/X11/X) starts up the window in black and white mode. To start up the X11 server in color mode from the "X11" session, modify the "xinit" command line in the /usr/bin/X11/X script file as below (this example is for 8-bit color):

Change:

```
xinit xterm ... -- XmacII -logo -v $* >> $DEBUGLOG 2>&1
```

To:

```
xinit xterm ... -- XmacII -logo -v -screen 0 -depth 8 >> $DEBUGLOG 2>&1
```

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Tech Info Library Article Number:5726





# Tech Info Library

## LaserWriter IINTX: Timeout Problems

Revised: 6/29/90  
Security: Everyone

LaserWriter IINTX: Timeout Problems

=====

This article last reviewed: 7 June 1990

TOPIC -----

I have a Compaq PC connected via serial cable to an LaserWriter IINTX. I used terminal emulation to enter PostScript interactive mode and changed the default timeout parameters so that jobs never time out. I want to change these parameters back to a more normal setting.

When I enter the interactive mode and keys in "statusdict begin" followed by a carriage return, the command is processed and the whole job finishes. However, I can't get the LaserWriter IINTX to accept any of the remaining commands required to reset the default settings. Normally, I would get the PS> prompt, but since the change was made to the timeout defaults, this is no longer the case.

- 1) How can I change back to reasonable default times?
- 2) Why am I seeing this problem? Is there something strange going on in the product, or am I doing something that's not permitted?

Nevertheless, printing from applications using the batch mode still works OK, and jobs still seem to timeout.

DISCUSSION -----

Using the following sequence of commands, we were able to set and restore timeout defaults using both batch and interactive modes. Line numbers are for reference in this article only, and are not required by the printer.

```
1 serverdict begin 0 exitserver
2 /helvetica findfont
3 15 scalefont
4 setfont
5 72 700 moveto
```

```
6  /str 20 string def
7  %statusdict begin  0 60 30 setdefaulttimeouts
8  statusdict begin defaulttimeouts str cvs show
9  str cvs show
10 str cvs show
11 showpage
```

What may be confusing in interactive mode is that after typing line 1 the "PS>" prompt is no longer displayed and the printer stops echoing keystrokes to the user. Type line 2 to prove that commands are still accepted by the printer. It returns a notice that it can't find "helvetica" and is substituting courier. Turning local echo on after line 1 will eliminate blind typing.

Commenting out line 7 lets the user power-cycle the printer to see that the changes are permanent. Lines 8, 9, and 10 pop values returned by defaulttimeouts off the stack in the order wait, manual feed, job.

Information on setdefaulttimeouts and defaulttimeouts is available on page 300 of the "PostScript Language: Reference Manual" from Addison-Wesley (ISBN # 0-201-10174-2).

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Tech Info Library Article Number:5728



# Tech Info Library

## Macintosh IIfx: Non-Apple RAM SIMM Requirements

Revised: 7/14/92  
Security: Everyone

Macintosh IIfx: Non-Apple RAM SIMM Requirements

=====

Article Created: 7 June 1990  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

Can you give me the specifications for ordering non-Apple RAM SIMMs for a Macintosh IIfx?

DISCUSSION -----

The Macintosh IIfx requires SIMMs that conform to the following specifications:

- 1 or 4MB capacity--256KB SIMMs are not supported.
- 64-pin (for separate Read and Write lines) versus 32-pin for other Macintoshes. The LaserWriter IINTX uses similar, but slower, 64-pin SIMMs. Macintosh IIfx SIMMs will work in a LaserWriter IINTX, but LaserWriter IINTX SIMMs are too slow for the Macintosh IIfx.
- Fast Page Mode support, like the Macintosh IICi.
- 80ns or faster.

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Tech Info Library Article Number:5729



# Tech Info Library

## SMB Server: Connection Solutions

Revised: 6/29/90  
Security: Everyone

SMB Server: Connection Solutions

=====  
This article last reviewed: 7 June 1990

TOPIC -----

I am having difficulty attaching to an SMB server on a Token Ring. Here are my system specifications and my AUTOEXEC.BAT listing:

Macintosh configuration:

- Macintosh IICx
- 1MB RAM
- 40MB hard disk
- 1-bit monochrome monitor
- Apple TokenTalk NB Card
- System 6.0.3, Finder 6.1

Token Ring network:

- IBM PC server running PC LAN 1.32 Extended Services
- Server Name: DOM1
- System software is on drive labeled CDRIVE
- Applications and documents on drive labeled DDRIIVE
- Using 4MB Token Ring Interface cards on PS/2 nodes

AUTOEXEC.BAT listing:

```
date
time
PATH=C:\PCLP13BS;C:\PCLP13XS\DOS;C:\PCLP13XS\NET1_30
prompt $p$g
cls
@ECHO OFF
YNPROMPT Y N 31 Start PC LAN Program 1.3 (Y/N)?
IF ERRORLEVEL 1 GOTO NOPCLP
FASTOPEN C:=100
```

```
NET START SRV DOM1 /XS
IF ERRORLEVEL 1 GOTO NOPCLP
XSDC.BAT
:NOPCLP
```

I know that the cabling is good, because I can successfully connect a PS/2 to the same cables and get a connection. When I use the Macintosh, I enter the server drive/pathname through the SMB DA and select it for connection. I get the message: "The server is not responding", which, according to the manual, means that the name or path specified is incorrect.

I believe that I am entering the name and path correctly, although there seems to be some discrepancy as to whether I should enter server name\path or volume name\path. I can't find anyone who can tell me if this is an SMB server. IBM systems engineers here haven't heard of SMB. If this is not an SMB server, how can I tell, and can it be made into an SMB server?

Originally, the SMB server hard drive did not have a name. I was using the Macintosh pathname as the server name. I tried naming the Drive volume and using that name in the Macintosh DA SMB pathname, but I still had problems.

#### DISCUSSION -----

The Server Message Block protocol is a Microsoft-developed protocol that is used in the IBM PC LAN program and OS/2 LAN server. It is a presentation layer protocol corresponding to Apple Filing Protocol (AFP) in the AppleTalk Protocol Stack. Since this server is running the PC LAN program, it is an SMB server.

- 1) Workstation Name: Workstation Name is the name of your workstation. It tells the network administrator who you are. You can enter any name in this field as long as it has at least one character. The limit is 14 characters. Note that if you are using an OS/2 LAN server, this name must exactly match the username created on the OS/2 server (all in uppercase).
- 2) When you Add an SMB volume name, the format is \\ServerName\VolumeName.

Server Name is found by issuing the NET NAME command on the server machine. In your case, it is DOM1 as also stated in the NET START command in the AUTOEXEC.BAT file.

Volume Name is the same name you specified in the NET SHARE command. For example, the following shares a volume name "EXAMPLES" for read/write access and with password TESTPASS:

```
NET SHARE EXAMPLES = C:\SMB\EXAMPLES TESTPASS /RW
```

Note that you "equate" the path to a volume name in the above NET SHARE command on the server, and then use that volume name when you add the server volume. The hard drive name on the server has nothing to do with this utility.

The password is optional if you did not specify one in the NET SHARE command on the server. For testing until you get it to work, omit the

password. You can always add a password later. If you specify only the root directory of the drive (such as C:\), all files on that drive are available to other computers.

To display the sharing status on the server, issue the NET SHARE command without any parameters: NET SHARE. We suggest that you check into this since we did not see any NET SHARE command in the AUTOEXEC.BAT file. Remember, you need to use NET SHARE to "publish" a volume to be shared.

- 3) Once you have added a volume, select it and click the Connect button. Leave the password field blank, if you did not enter a password in the NET SHARE command on the server.

If the volume is successfully mounted, its name appears in the lower SMB server DA window.

If you add the names of all SMB volumes on your network at one time, later, when you want to access a different volume, its name will already be an option in the Select an SMB volume window.

- 4) Also, make sure that you use the Apple File Exchange shipped with the latest SMB File Transfer Utility.

We hope that this helps to clear the confusion between server name, volume name, pathname, and so on.

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Tech Info Library Article Number:5730



# Tech Info Library

## A/UX: Sendmail Problem (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: Sendmail Problem (9/94)

=====

Article Created: 7 June 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

### Configuration

-----

Macintosh IIfx with 8MB RAM  
2 HD80 SC (external)  
EtherTalk NB Card  
A/UX 3.0

The kernal was generated with:

```
newconfig ae6 bnet appletalk
```

AppleTalk is connected and functioning; however, the system is not yet connected to an Ethernet network.

### Problem

-----

On startup, a core dump file (86016 bytes) is created in the root directory, and a ps -ef shows that "sendmail" is not running. No relevant message appears in the A/UX System Console Window. Using the UNIX command "strings" on /core gives this as the first two lines:

```
sendmail  
/usr/lib/sendmail -bd -q30m
```

from which I deduced that sendmail has crashed during system initialization. Logged in as root, I issued the command:

```
/usr/lib/sendmail -bd -q30m
```

and the system replies:

"Illegal instruction - core dumped"

Can you help?

DISCUSSION -----

During our testing, A/UX 3.0 seems to start the sendmail successfully.

From the error message you got, it seems that the frozen sendmail configuration file (/usr/lib/sendmail.fc) was bad. Have you ever modified the sendmail configuration file (/usr/lib/sendmail.cf) and correctly rebuilt the frozen file?

Note that the /usr/lib/sendmail, /usr/ucb/mailq, and /usr/ucb/aliases files are all hard-linked together with the mode of -rwsr-x-rx root bin 128216 sendmail.

Try to use the "-bt -dX" option to debug the problem. X is the debugging flag list. Each flag has a number and a level; for example, -d3-19.4 sets debugging flags from 3 through 19 and a level 4.

Normally, the sendmail is started up from the /etc/inittab, but to rebuild the frozen file and restart the sendmail:

- 1) Kill the sendmail process if it is running.
- 2) Do /usr/lib/sendmail -bz
- 3) Do /usr/lib/sendmail -bd -q30m

Article Change History:

21 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5734





# Tech Info Library

## A/UX: Working with Tape Cartridges (3/95)

Revised: 3/31/95  
Security: Everyone

A/UX: Working with Tape Cartridges (3/95)

=====

Article Created: 12 June 1990  
Article Reviewed/Updated: 31 March 1995

TOPIC -----

I am having trouble working with A/UX and tape cartridges. Can you give me some tips?

DISCUSSION -----

If you want to boot A/UX from the cartridge don't forget to make a swap partition on it and set the kernel value SWAPCNT to the size of the partition. Don't make eschatology partitions. They are for backup; and you don't need to backup the backup disk.

A good way of copying files to a syquest disk is to mount it as /syquest and do

```
find /dir -depth -print | cpio -puldma /syquest
```

which will create /syquest/dir and copy over /dir and all subdirectories to the cartridge. Next time you do it, leave out the "u" in "-puldma" and only files that have changed since the last copy will be copied. Great. This method will also copy over the files in /dev.

You don't need to partition each cartridge. Just format it, make sure block 0 is blank (use dd to check or to clear it) use pname to recognize slice 31 and you can use it as c?d?s31. It won't work under Mac OS, of course. To be able to boot from a cartridge you will need a small Mac OS partition plus root and swap partitions.

If your formatting software does not let you create A/UX partitions then you will have to do them under A/UX using dp. You can also format the cartridge under A/UX using the diskformat command and size 512. I suggest making a script to use dp so that you can do more than one cartridge quickly. An example might be something like:

```
dp /dev/rdisk/c4d0s31 << EOF
I7
al      8   86662 SyQuest y 0 86662 0 1 y y
wq
EOF
```

Make sure you always unmount the disk before removing it. Otherwise, you will lose data. The SCSI disk driver should be modified so that the cartridge can only be removed when a umount is done. This is a simple modification.

Remember to do a fsck on the device before you mount it each time. It's easy to forget, because it is not done automatically (unless you put the drive into /etc/fstab). The consequences of using a disk that has not been fsck'ed can be serious, if there are filesystem errors on the disk that fsck could have fixed. (That is, these errors can occur if the Macintosh crashes, or if you forget to unmount the disk before removing it).

#### Article Change History:

31 Mar 1995 - Made minor changes.

31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5735



# Tech Info Library

## IEC 950 Standards: All Current Apple Products Meet and Comply

Revised: 6/8/92  
Security: Everyone

IEC 950 Standards: All Current Apple Products Meet and Comply

Article Created: 17 June 1990  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

Does Apple design and test equipment to the IEC 950 standard?

DISCUSSION -----

All our latest products (including the Serial NB Card) are designed to meet and comply with IEC 950. Furthermore, compliance of CPUs will be verified via third-party, safety-agency approvals. IEC 950 is a hybrid of the electrical-shock, test side of IEC 380 and the flammability requirements of UL 478. Incidentally, it is also Apple's Safety Specification. Older products were designed to meet IEC 380, but they also met the requirements of UL 478 and, therefore, meet the latest specification (IEC 950).

NuBus cards are in the Safety Extra Low Voltage (SELV) category and, as such, do not contribute to any electrical shock hazard. The PC board is approved to UL 94-V-0. In addition, it does not contain any other hazardous component, like a lithium cell. Therefore, a Macintosh system configured with a Serial NB Card does not pose any safety hazard, and the system meets all the requirements of IEC 950.

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Tech Info Library Article Number:5736



# Tech Info Library

## SMB File Transfer: Troubleshooting Macintosh IIx Problems

Revised: 6/29/90  
Security: Everyone

SMB File Transfer: Troubleshooting Macintosh IIx Problems

=====

This article last reviewed: 7 June 1990

TOPIC -----

I am having problems with a Macintosh IIx and SMB File Transfer. I used the 6.0.5 Network Installer disk, and everything seemed to go well. The TokenTalk NB Card is working fine; I can see the zones and devices in the Chooser. Apple File Exchange starts up OK. However, when I try to access the "SMB Servers" choice from the Apple menu, the whole system hangs. I tried using the later versions (1.1.1) of the A/ROSE and TokenTalk Prep files from the MacDFT Golden disk, but I had the same results. Can you help?

DISCUSSION -----

We tested the SMB File Transfer Utility with our Macintosh IIx, and it worked fine. We did not have to use A/ROSE and TokenTalk Prep from the MacDFT Golden disk. We used the version 1.0 SMB software disk, which installs A/ROSE 1.1, PCSession Prep 1.1, SMB 1.0, and TokenTalk Prep 1.1 in the System Folder.

Here are some troubleshooting suggestions:

Check cable connections. Verify that the SMB server is up. Make sure you are using Apple File Exchange 1.1.2. (Earlier versions of AFE will not work.)

- Ensure that you are using version 2.12 ROM on the TokenTalk NB card.
- Remove any INITs in the System Folder that might cause a problem.

If you are still having problems, please send us more information, specifically:

- Hardware and software configurations and versions, including any network hardware and software.
- Other applications on that system, including INITs, CDEVs, and so on.

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Tech Info Library Article Number:5743



# Tech Info Library

## Macintosh SE/30,IIfx: Processor-Direct Slot (PDS) Pinouts

Revised: 4/5/93  
Security: Everyone

Macintosh SE/30,IIfx: Processor-Direct Slot (PDS) Pinouts

=====

Article Created: 7 June 1990

### Article Change History

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04/02/93 - REVISED

- To incorporate SE/30 more fully into the article (and the title).
- Corrected some pinout errors.

### TOPIC -----

I am developing an accelerator board for the Macintosh IIfx and SE/30 and I need pinouts and any other relevant information for the processor-direct slot. Can you help?

### DISCUSSION -----

The processor-direct slot (PDS) in the Macintosh IIfx is similar to the PDS in the Macintosh SE/30. It has the same Euro-Din 120 connector as the Macintosh SE/30 PDS and Macintosh IICi cache connector.

Cards in the PDS are accessed at 20MHz. This speed should let developers create PDS cards without using expensive components while still providing access to the processor bus. There are two locations in the memory map for PDS cards. Developers should see the "Cards and Drivers Manual" for information on creating PDS cards. This manual is available from APDA.

The cache connector in the Macintosh IICi may look like the Macintosh IIfx PDS connector, but the pinouts are vastly different.

Note: If a Macintosh IICi cache card is placed in the Macintosh IIfx PDS, it will damage the logic board.

Here is the Pinout for the 68030 Direct Slot used in the Macintosh IIfx and

SE/30. SE/30 Descriptions, where they are different, come first, followed by the IIfx description.

A1 - Reserved or GND\* Ground  
A2 - Reserved or /PDS.MASTER  
A3 - /BUSLOCK or Reserved  
A4 - /IRQ3 or n.c.  
A5 - /IPL2\* 68030 IPL2  
A6 - /CIOUT\* 68030 Cache inhibit out  
A7 - /STERM\* Sync.cycle termination  
A8 - /DSACK1\* 68030 Data ack 1  
A9 - SIZ1 transfer size bit 1  
A10 - /BGACK\* 68030 bus grant ack  
A11 - FC2 68030 function code 2  
A12 - /RESET\* System reset  
A13 - D0 Data bit 0  
A14 - D2 Data bit 2  
A15 - D5 Data bit 5  
A16 - D8 Data bit 8  
A17 - D10 Data bit 10  
A18 - D13 Data bit 13  
A19 - D16 Data bit 16  
A20 - D18 Data bit 18  
A21 - D21 Data bit 21  
A22 - D24 Data bit 24  
A23 - D26 Data bit 26  
A24 - D29 Data bit 29  
A25 - A31 address bit 31  
A26 - A29 address bit 29  
A27 - A26 address bit 26  
A28 - A23 address bit 23  
A29 - A21 address bit 21  
A30 - A18 address bit 18  
A31 - A15 address bit 15  
A32 - A13 address bit 13  
A33 - A10 address bit 10  
A34 - A7 address bit 7  
A35 - A5 address bit 5  
A36 - A2 address bit 2  
A37 - +5 volts  
A38 - CPUCLOCK or Reserved by Apple  
A39 - GND  
A40 - -12 volts

B1 - Reserved or ECS Early cycle start  
B2 - GND or n.c.  
B3 - /TM1A or /PDS.BG  
B4 - /IRQ2 or /IRQ15  
B5 - /IPL1\* 68030 IPL1  
B6 - /DS\* 68030 Data Strobe  
B7 - /CBACK\* cache burst ack  
B8 - /DSACK0\* 68030 Data ack 0  
B9 - SIZ0 Transfer Size bit 0

B10 - /BG\* 68030 bus grant  
B11 - FC1 68030 function code 1  
B12 - /BERR\* Bus error  
B13 - +5 volts  
B14 - D3 Data bit 3  
B15 - D6 Data bit 6  
B16 - Ground  
B17 - D11 Data bit 11  
B18 - D14 Data bit 14  
B19 - +5 volts  
B20 - D19 Data bit 19  
B21 - D22 Data bit 22  
B22 - Ground  
B23 - D27 Data bit 27  
B24 - D30 Data bit 30  
B25 - +5 volts  
B26 - A28 address bit 28  
B27 - A25 address bit 25  
B28 - Ground  
B29 - A20 address bit 20  
B30 - A17 address bit 17  
B31 - +5 volts  
B32 - A12 address bit 12  
B33 - A9 address bit 9  
B34 - Ground  
B35 - A4 address bit 4  
B36 - A1 address bit 1  
B37 - +5 volts  
B38 - ECLK or n.c.  
B39 - GND or /SLOT.E 68030 slot E replace in address map  
B40 - -5 volts

C1 - PWROFF or /PFW Shutdown bit  
C2 - /NUBUS or n.c.  
C3 - /TM0A or /PDS.BR Bus request  
C4 - /IRQ1 or /IRQ6  
C5 - /IPL0\* 68030 IPL0  
C6 - /RMC\* 68030 read modify cycle  
C7 - /CBREQ\* 68030 cache burst req  
C8 - R/W\* 68030 read write  
C9 - /AS\* 68030 address strobe  
C10 - /BR\* 68030 bus request  
C11 - FC0 68030 function code 0  
C12 - /HALT\* 68030 Halt  
C13 - D1 Data bit 1  
C14 - D4 Data bit 4  
C15 - D7 Data bit 7  
C16 - D9 Data bit 9  
C17 - D12 Data bit 12  
C18 - D15 Data bit 15  
C19 - D17 Data bit 17  
C20 - D20 Data bit 20  
C21 - D23 Data bit 23



C22 - D25 Data bit 25  
C23 - D28 Data bit 28  
C24 - D31 Data bit 31  
C25 - A30 address bit 30  
C26 - A27 address bit 27  
C27 - A24 address bit 24  
C28 - A22 address bit 22  
C29 - A19 address bit 19  
C30 - A16 address bit 16  
C31 - A14 address bit 14  
C32 - A11 address bit 11  
C33 - A8 address bit 8  
C34 - A6 address bit 6  
C35 - A3 address bit 3  
C36 - A0 address bit 0  
C37 - +5 volts  
C38 - C16M or CPUCLK\* 20 MHz on the IIfx  
C39 - GND  
C40 - +12 volts

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Tech Info Library Article Number:5744



# Tech Info Library

## AppleTalk Phase 2: Short-Form Versus Extended-Form DDP Headers

Revised: 6/29/90  
Security: Everyone

AppleTalk Phase 2: Short-Form Versus Extended-Form DDP Headers

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This article last reviewed: 7 June 1990

TOPIC -----

Kinetics K-STAR 8.0 supports AppleTalk Phase 2. Under AppleTalk Phase 2, most of the AppleTalk data-link layer changed. Multicast addressing was added, and RTMP was changed quite a bit. Also, the network layer was changed. The short-form DDP header was outlawed. The short-form DDP header is useful only for sending packets within a network, not between networks.

When Kinetics heavily modified K-STAR to support AppleTalk Phase 2, they failed to change the DDP packets their RTMP and ZIP packets were encapsulated in. So, even under K-STAR 8.0, FastPaths send their RTMP and ZIP packets in the short-form DDP header on AppleTalk Phase 1 (non-extended) networks. This seems to work under most circumstances. However, if you run an Apple Internet Router, it expects to see the extended-form DDP headers even on AppleTalk Phase 1 networks. Therefore, even if you use the AppleTalk Phase 2 Upgrade Utility, you still get "Router Version Mismatch" errors.

Why didn't Kinetics switch all their DDP headers to the extended form, which is valid on all networks and always has been? Why would we ever send anything in a short-form header? Why do we even support sending short-form headers since extended-form headers can do everything the short-form ones can?

DISCUSSION -----

In AppleTalk Phase 2, the short-form DDP header is not "outlawed". The short-form DDP header is, and will continue to be, a valid DDP header format.

The extended-form DDP header must be used on all AppleTalk Phase 2 extended networks. Examples of AppleTalk Phase 2 extended networks include EtherTalk 2.x and TokenTalk 2.0.

The short-form DDP header can be used only on non-extended networks, like LocalTalk or EtherTalk 1.x. On a non-extended network, the short-form DDP

header can be used for packets whose source and destination nodes have the same network number. The Link Access Protocol (LAP) header for LocalTalk and EtherTalk 1.0 packets contain the source and destination node IDs. Because of this, the source and destination network numbers and node IDs in the extended-form DDP packet are redundant when the packets source and destination nodes have the same network number.

Short-form DDP headers are used solely for efficiency reasons. In fact, an implementation of DDP is permitted to send extended-header DDP packets even when the source and destination nodes are on the same AppleTalk Phase 1 or non-extended AppleTalk Phase 2 network. For example, the AppleTalk Internet Router uses extended-form DDP headers exclusively, even on non-extended networks, like EtherTalk 1.x.

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Tech Info Library Article Number:5745



# Tech Info Library

## Macintosh-to-Sytek Broadband Connectivity

Revised: 6/29/90  
Security: Everyone

Macintosh-to-Sytek Broadband Connectivity

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This article last reviewed: 8 June 1990

TOPIC -----

We use a Sytek broadband network with Novell Netware as a standard. Is there any product that lets the Macintosh participate in such a network?

DISCUSSION -----

You should look into a router that routes from LocalTalk or baseband (EtherTalk) to broadband. One such router is the MultiGate 2000 from Network Resources Corporation, which has the ability to connect AppleTalk networks to EtherTalk, broadband, or fiber-optic networks.

The MultiGate 2000 supports Novell, among other network environments, and would give you the flexibility to use LocalTalk or the EtherTalk NB Card, or such Ethernet interface products for compact Macintoshes (and so on, Macintosh SE/30) as the Kinetics EtherPort SE/30. For more information, refer to the Technical Info Library article called "NRC Series 2000 AppleTalk Routers: Description" or contact: Network Resources Corporation.

Other possible solutions are described in the Technical Info library article "Macintosh-To-Novell Netware With AppleTalk" or can be located by searching on "broadband" in the Technical Info library or in either of the buyer's guides on AppleLink. For contact information, search the Technical Info library under "Technical Info library."

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Tech Info Library Article Number:5748



# Tech Info Library

## X.400 Solutions for the Macintosh

Revised: 1/19/93  
Security: Everyone

X.400 Solutions for the Macintosh

Article Created: 17 June 1990

### Article Change History

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1/19/93 - UPDATED  
    • Touch Communications, Inc. now SAIC.  
6/8/1990 - REVIEWED  
    • For accuracy.

### TOPIC -----

My company has a growing number of customers in Europe, and we need to communicate (E-mail) with them via the Macintosh. Our corporate backbone already has an X.400 gateway, but we need a front-end, much like AppleLink, to facilitate national and international communication. Is there such an application?

### DISCUSSION -----

Apple used RetixMail for a Macintosh demonstration in Hanover.

Apple Europe demonstrated the WOPODA developer tool at the last Hanover fair. It is based on the ODA (Office Document Architecture) standard and lets you do conversions from any word processor to ODIF (Office Document Interchange Format), a standardized format for documents. We needed an X.400 product to send the ODIF documents to the other vendors (including DEC, IBM, Sun, HP, and so on) and used RetixMail for the Macintosh. Here is some information about Apple's forthcoming solution:

The Apple X.400 product is an X.400-compliant MTA (Message Transfer Agent) that runs on any modular Macintosh under System 7. It includes the seven layers of the OSI model. It works either over X.25 (on top of the MacX25 product) or over 802.3 (this is the most used link in the U.S.). It lets Macintosh users gain access to public X.400 networks or to connect to their private X.400

backbone.

Note that APDA is the distributor for the Apple X.400 product to give developers the opportunity to write client software for it.

There are two existing X.400 solutions for the Macintosh, to our knowledge, from Retix and SAIC (formerly Touch Communications). They are similar in their design: the MTA (Message Transfer Agent = the X.400 server) runs on a PC and the UAs (User Agents = the clients) run on a Macintosh. So, you need one PC, at least, to access the X.400 backbone.

- Retix did a PC-based MTA and created two versions of their own client: RetixMail for the PC and RetixMail for the Macintosh. You have to buy both client and server software to use it.

- Touch took another approach: they did an X.400 gateway for Microsoft Mail and one for QuickMail. Macintosh users who use Microsoft Mail or QuickMail today can keep their existing client software. They just have to buy a PC with Touch X.400 software plus either the Microsoft Mail gateway or the QuickMail gateway to connect to the X.400 backbone.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5749



# Tech Info Library

## A/UX: Trivial File Transfer Protocol (TFTP) Supported (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Trivial File Transfer Protocol (TFTP) Supported (9/94)

=====

Article Created: 8 June 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

Do any versions of A/UX supports TFTP host and client?

DISCUSSION -----

The TFTP (Trivial File Transfer Protocol) is part of the standard Internet protocols. A/UX B-Net (Berkeley Network) supports most Internet protocols like TCP, IP, FTP, TFTP, SMTP, ICMP, UDP, and so on.

Yes, the TFTP client and server model have been supported since the first release of A/UX (1.0). /usr/bin/tftp and /usr/etc/in.tftpd in A/UX are the TFTP client and server, respectively.

Support Information Services

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Tech Info Library Article Number:5752



# Tech Info Library

## Macintosh Display Cards: RGB-to-NTSC Converters

Revised: 7/16/90  
Security: Everyone

Macintosh Display Cards: RGB-to-NTSC Converters

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This article last reviewed: 8 June 1990

TOPIC -----

Do you know of a device that can convert the color RGB signal (interlaced) from the new video cards to NTSC? Does it have the correct grounding for the sense pins to put the Display Card 8/24 into interlace mode and let the convolution (in 8-bit color) work?

DISCUSSION -----

RasterOps has announced an RGB-to-NTSC converter device. It is mentioned in the RasterOps ad in the June 1990 Macworld (pages 114-115). We have also received a marketing flyer on this converter. The name of the product is the RasterOps Video Expander.

The sense pin issue is normally handled in the cable configuration. This eliminates any concern over the converter having to deal with the card configuration. Engineering has tested an early version of the converter with the new cards. It appears that the shipping converter will work with the Macintosh Display Cards. We have not yet had one to test. However, the Display Card marketing group assures us that everything will be fine.

Another RGB-to-NTSC converter is from Computer Video. Their product, Video NTSC Encoder, provides another solution for converting the High-Resolution 8-Bit Macintosh Video Cards to an NTSC output signal. We believe this converter box will work with the new cards. It uses the configuration of the cable to tell the new Macintosh Display Cards which mode to use.

For more details, search the Technical Info library under "Computer Video" and "RasterOps."

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Tech Info Library Article Number:5753





# Tech Info Library

## Mirror Backup Solutions for the Macintosh

Revised: 6/29/90  
Security: Everyone

Mirror Backup Solutions for the Macintosh

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This article last reviewed: 8 June 1990

TOPIC -----

I heard that there is a mirror-backup solution for the Macintosh called "Reflections" that is sold by Profyle Computers, Ltd.

DISCUSSION -----

Profyle creates mirror systems, not just the software. They have complete software and hardware systems for doing mirror backups. The drives range from 100MB to 1.2GB. Currently, Profyle has no U.S. distribution. For more details, search the Technical Info library under "Profyle" and "Natural Intelligence."

A similar type of backup utility was recently announced. Natural Intelligence publishes a product called "Shadow", which does automatic backups.

Shadow periodically copies the documents that have changed since they were last backed up. Shadow can back up onto any kind of disk, network server, or Finder-mountable tape drive.

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Tech Info Library Article Number:5754



# Tech Info Library

## LocalTalk or PhoneNET: Cable Tester

Revised: 6/29/90  
Security: Everyone

LocalTalk or PhoneNET: Cable Tester

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This article last reviewed: 11 June 1990

TOPIC -----

Do you have a recommendation for a LocalTalk circuit tester?

DISCUSSION -----

We found this article in the Redgate Buyer's Guide Library on AppleLink:

"The AT-Tester is a LocalTalk network cable tester that can test both LocalTalk cables (Mini DIN 3) or PhoneNET cables (RJ-11).

"A user can ensure total circuit integrity in Mini DIN 3 cables by plugging the cable into the power unit and plugging the remote end to the test unit. The tester will then show a user what the problem is. The telephone cable is tested the same way, but using the RJ-11 ports mounted beside the Mini DIN 3 port on either side of the unit."

For more details, search the Technical Info library under "AESP, Inc."

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Tech Info Library Article Number:5756



# Tech Info Library

## ImageWriter II: Text Collides When Printing in Courier 9 and 10

Revised: 6/29/90  
Security: Everyone

ImageWriter II: Text Collides When Printing in Courier 9 and 10

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This article last reviewed: 11 June 1990

TOPIC -----

I have a Macintosh SE running System Software 6.0.4. I use several word processing programs, mostly Microsoft Works 2.0. When I print in Courier 9-point, the ImageWriter II runs words together, either by not spacing between words or by printing the first letter of one word over the last letters of the preceding word. In effect, this is a horizontal compression problem.

I was able to duplicate this problem with a different ImageWriter II attached to a Macintosh II. When I ran Microsoft Works, the text was compressed in a number of places. I didn't test other font sizes.

Can you explain what is happening?

DISCUSSION -----

We were able to duplicate the problem when printing in "Best" mode. We tested other fonts in 9-point and found that only Courier showed these problems. Courier 10 is actually worse than Courier 9.

We don't have an explanation and have forwarded print samples and test results to the proper organization.

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Tech Info Library Article Number:5757



# Tech Info Library

## LaserWriter IINTX & Macintosh IIfx: SIMM Speeds Different (3/94)

Revised: 3/31/94  
Security: Everyone

LaserWriter IINTX & Macintosh IIfx: SIMM Speeds Different (3/94)

Article Created: 11 June 1990  
Article Reviewed/Updated: 31 March 1994

TOPIC -----

Why aren't SIMMs for the Macintosh IIfx and the LaserWriter IINTX interchangeable? What are the differences, and what are the reasons for not interchanging them?

DISCUSSION -----

The pinouts for the Macintosh IIfx and LaserWriter IINTX SIMMs are the same and both have nearly identical SIMM requirements, but the Macintosh IIfx requires SIMMs rated at 80ns or faster, while the LaserWriter IINTX only requires RAM rated at 120ns.

Macintosh IIfx 1MB SIMMs will work in a LaserWriter IINTX, if they fit physically (see Note), but standard LaserWriter IINTX SIMMs will not work in the Macintosh IIfx because the RAM is too slow.

Overall, we recommend that you use Macintosh IIfx SIMMs in Macintosh IIfx systems and LaserWriter IINTX SIMMs in LaserWriter IINTX printers.

NOTE: The LaserWriter II chassis opening limits the height of SIMMs used on the LaserWriter IINTX logic board. We found that some 1MB SIMMs are too tall, and the LaserWriter IINTX logic board will not slide into the chassis when they are inserted.

Article Change History:  
31 March 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5759



# Tech Info Library

## Macintosh-to-DEC Printer Solutions

Revised: 2/1/91  
Security: Everyone

Macintosh-to-DEC Printer Solutions

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This article last reviewed: 18 December 1990

TOPIC -----

I need to interface a DEC LN03R printer to a Macintosh II. Do you have any suggestions?

DISCUSSION -----

We are assuming that you are talking about the Digital ScriptPrinter LN03R.

To connect the ScriptPrinter directly to the serial port of the Macintosh, you need a cable with the correct pinouts to support all signals between the printer and the Macintosh. Second, even though the ScriptPrinter is PostScript-controlled, you need a driver on the Macintosh so you can select from the Chooser. To our knowledge, there is no such driver. One alternative is to print to a disk file from the application, and send the file to the printer using a terminal emulation program. With the correct cable, you can communicate to the printer using a terminal emulation program, like MacTerminal, over the serial port. This is not very convenient.

Another alternative is to use the printer on the network. With Alisa Digital Printer (ADP) support system, an option for AlisaTalk for VAX/VMS, Macintosh users can print to Digital PostScript devices, such as the LN03R ScriptPrinter and the PrintServer 40. To the Macintosh user, the Digital PostScript device looks like an Apple LaserWriter.

ADP makes use of VMS system queueing and printing. Features include forms and paper-type control, optional job-flag and trailer pages for job identification, paper tray selection, and support for the Adobe system typeface pack. One VMS receiver process handles all Macintosh users; a new process for each job is not necessary. The software uses standard Digital Print symbionts and automatically loads the Laser Prep dictionary to the front of each Macintosh job submitted.

Another product called PacerPrint from Pacer Software, Inc., offers similar features. For more information on the Alisa Digital Printer support system or PacerPrint, search the Technical Info library using keywords "Alisa or Pacer".

Finally, PATHWORKS (formerly LanWORKS) for Macintosh, the new Apple-Digital Alliance product announced May 1, 1990, available later this year, will offer this capability. The service is called VAXshare Print Server, and it will support Digital's LPS20, LPS40, ScriptPrinter LN03R, and Apple's LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX.

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Tech Info Library Article Number:5760



# Tech Info Library

## CD Remote: Controls Only the First of Multiple CD-ROM Drives

Revised: 6/16/92  
Security: Everyone

CD Remote: Controls Only the First of Multiple CD-ROM Drives

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Article Created: 11 June 1990  
Article Last Reviewed: 29 May 1992  
Article Last Updated: 29 May 1992

TOPIC -----

How will the desk accessory "CD Remote" act if more than one CD-ROM unit is hooked to a Macintosh, and standard CD audio disks are placed in all drives?

DISCUSSION -----

If more than one Apple CD-ROM device is used on a Macintosh computer, the device with the lowest SCSI number is the unit that CD Remote will control. As an example, two CD-ROM devices are on the SCSI bus. One has a SCSI ID of 2 and the other has an SCSI ID of 5. The CD-ROM device with the SCSI ID of 2 will be the unit accessed by CD Remote. There is no way to change this.

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Tech Info Library Article Number:5762



# Tech Info Library

## A/UX: Domain Names: Plus Sign (+) not Allowed (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: Domain Names: Plus Sign (+) not Allowed (9/94)

Article Created: 11 June 1990  
Article Reviewed/Updated: 20 September 1994

TOPIC -----

I have a Macintosh IIfx running A/UX that is connected to an Internet consisting of Sun and VAX servers with several kinds of workstations. The problem is that I must begin my domain name with the plus sign (+), and A/UX does not recognize the plus sign as part of the name.

Do you know of a fix for this problem?

DISCUSSION -----

Naming conventions for Domain, Host, Net, and Gateway should follow the rules specified in RFC (Request For Comments) 952. Here is part of RFC-952 regarding the naming convention on the Internet:

A "name" (Net, Host, Gateway, or Domain name) is a text string up to 24 characters drawn from the alphabet (A-Z), digits (0-9), minus sign (-), and period(.). Note that periods are only allowed when they serve to delimit components of "domain style names". No blank or space characters are permitted as part of a name. No distinction is made between upper and lower case. The first character must be an alpha character. The last character must not be a minus sign or period.

Apparently, a domain name beginning with the plus sign (+) violates the RFC-952 naming convention. We think that A/UX "BIND" (Berkeley Internet Name Domain) follows the naming convention described in RFC-952; the plus sign (+) is not allowed in the domain name.

We don't think there is a workaround on A/UX, unless the customer name server host follows the RFC-952 naming convention.

Article Change History:  
20 Sep 1994 - Reviewed.



31 Aug 1992 - REVIEWED For technical accuracy.

Support Information Services

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Tech Info Library Article Number:5763



# Tech Info Library

## Floppy Disk Failure: Possible Causes (11/94)

Revised: 11/17/94  
Security: Everyone

Floppy Disk Failure: Possible Causes (11/94)

=====

Article Created: 11 June 1990  
Article Reviewed/Updated: 17 November 1994

TOPIC -----

Our office has experienced what seems to be a high failure rate with diskettes. In what ways can disks be damaged and what can be done to prevent further problems?

DISCUSSION -----

Disk wear results mostly from time in use. Abnormal disk wear is usually caused by unclean environments or misaligned or dirty mechanisms. Cigarette smoke, hair (human or pet), and dust all contribute to disk failure.

You might want to invest in a head-cleaning device. Check the industry periodicals for reviews and pick the least abrasive one.

Article Change History:  
17 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5767



# Tech Info Library

## Everex Backup Problem

Revised: 6/29/90  
Security: Everyone

Everex Backup Problem

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This article last reviewed: 11 June 1990

TOPIC -----

Our file server is a Macintosh SE with 4MB RAM and two external 80MB hard drives running System Software 6.0.2. One hard drive is partitioned into two volumes. When I try to backup one of the volumes on the partitioned drive to an Everex 91/60 using Everex Backup Software, I get System Error 28. (The other volumes back up without any problems.) Can you explain this?

DISCUSSION -----

The EMAC engineer we spoke with indicated that Error 28 typically means too many files have been selected for backup. They suggest either starting up from the EMAC Utility disk for the backup or performing multiple backups with a smaller number of files. For more information, contact their tech support.

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Tech Info Library Article Number:5768



# Tech Info Library

## Shiva/MacTerminal Conflict

Revised: 6/29/90  
Security: Everyone

Shiva/MacTerminal Conflict

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This article last reviewed: 11 June 1990

TOPIC -----

I have a problem with a Macintosh Plus connected to our AppleTalk network, which has a Shiva Telebridge. Recently, I purchased MacTerminal and tried to load it onto the Macintosh Plus. MacTerminal will not load if the Shiva Telebridge software is in the System Folder.

DISCUSSION -----

Shiva told us that MacTerminal and the Shiva software can coexist if the customer chooses "set Shiva config" in the Control Panel and selects "emulate modem port". Contact Shiva tech support for more information.

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Tech Info Library Article Number:5769



# Tech Info Library

## Side-by-Side Monitors Can Interfere with each Other

Revised: 6/29/90  
Security: Everyone

Side-by-Side Monitors Can Interfere with each Other

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This article last reviewed: 11 June 1990

TOPIC -----

I have a customer who bought an Apple RGB monitor and an Apple Two-Page Monochrome monitor to sit side-by-side. The monitors interfere with each other, so badly that I'm ready to send each of them back and buy third-party products. Anyway, what can be done to have both those monitors side-by-side without any screen warping?

DISCUSSION -----

We found the following in the Technical Information Library using "monitor and interference" as a search string:

Apple Two-Page Monochrome Monitor: Images Vibrate

Interference between two monitors placed side-by-side can cause images on the monitors to vibrate. The reason is that, when placed side-by-side, monitors can magnetically interfere with each other, causing the image on one or both monitors to appear to vibrate slightly. This interference problem is most often seen when an RGB color monitor is placed next to a large-screen monochrome monitor. The amount of interference can also vary depending on the user's environment.

Moving the monitors further apart, especially the rear ends, usually reduces the vibration effect.

Technical Reason For Picture Vibrating

-----

The cause of this shimmering effect lies in the vertical refresh rate, the number of times a monitor repaints the screen each second. When this rate differs significantly between monitors, the interference described above can occur. There is often a large difference between RGB and monochrome monitors. Thus, the vibration effect most often occurs with this combination. Because

other factors are involved, it is possible for two monitors with the same refresh rate to exhibit this effect, although this is less frequent.

Shielding monitors so as to prevent this type of interference would add a great deal to the cost of each monitor. Further, by shielding a monitor you can prevent the monitor from interfering with other monitors, but other monitors could still interfere with it. Apple is investigating a number of technologies to prevent this interference in the future and plans to incorporate them as they become feasible.

We are sorry that we cannot solve your problem at this time, but you may see an improvement if:

- the orientation of the monitors is reversed
- the monitors are separated by 8-10 inches
- a metallic plane (foil-wrapped cardboard, for example) is placed between the monitors.

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Tech Info Library Article Number:5771



# Tech Info Library

## System Folder: 'Secure INIT' Update

Revised: 6/29/90  
Security: Everyone

System Folder: 'Secure INIT' Update

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This article last reviewed: 11 June 1990

TOPIC -----

This is regarding "RTA/Securing System Folder With 'Secure INIT'." Where can I get the "Secure INIT"?

DISCUSSION -----

Secure INIT was available on commercial services like GENie and CompuServe, but has been pulled due to potential directory and file damage.

You would be better off with one of the commercially available protection programs, like Empower from Magna.

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Tech Info Library Article Number:5773



# Tech Info Library

## AppleShare: How To Change Network CDEV to EtherTalk

Revised: 6/29/90  
Security: Everyone

AppleShare: How To Change Network CDEV to EtherTalk

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This article last reviewed: 11 June 1990

TOPIC -----

When using a Macintosh II family machine equipped with EtherTalk cards and running EtherTalk only, as an AppleShare server, how do I change the Control Panel's Network setting to EtherTalk?

Once AppleShare is up and running, the Network CDEV cannot be changed to EtherTalk because AppleTalk is active. The Chooser won't let me turn off AppleTalk.

If I have the AppleTalk Internet Router running on the machine, it's no problem because the ATIR handles the change.

DISCUSSION -----

Here is a simple way to do this:

- 1) Start up the Macintosh with a floppy, system disk.
- 2) Set the startup application for the Macintosh hard disk to be the Finder. This prevents AppleShare from starting automatically the next time the Macintosh is started up.
- 3) Restart the Macintosh from the hard disk. It should boot to the Finder.
- 4) Use the Network CDEV to change from Built-in to EtherTalk.
- 5) Open the Server Folder and select the AppleShare File Server application (click it once). Set it as the startup application using the Special menu's Set Startup option. Be sure you don't select MultiFinder in this step, because the AppleShare File Server software is not MultiFinder-compatible.
- 6) Restart the Macintosh, and it should boot to the AppleShare File Server



software, now using EtherTalk instead of LocalTalk.

Note that with EtherTalk version 1.2 and later, you can switch network connections without going through this process. The CDEV alerts you that network services will be disconnected and unavailable until restarting. A cancel option is available.

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Tech Info Library Article Number:5774



# Tech Info Library

## Macintosh-to-DEC: Integration Issues (1/95)

Revised: 1/30/95  
Security: Everyone

Macintosh-to-DEC: Integration Issues (1/95)

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Article Created: 18 December 1990  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

A new building, with approximately over 400 Macintoshes, is being set up with a full Ethernet-based network. All the workstations will be Macintosh IIci 8/80 systems, with a variety of DEC and Apple file- and data-servers. The cabling system to be used is thin-wire coax, with either thick-wire or fiber risers (ideally FDDI) in the building, leading to two wiring closets on each floor.

From each of the two closets, one strand of star-wired coax will extend to each workstation. Although it may seem strange, this cabling architecture has been decided upon before the network protocol and data distribution method has been finalized. As I understand it, DEC DEMPRs will be used for coax cable distribution, and some form of DEC bridge installed for DECnet traffic isolation, but this is subject to change.

I am unsure what routers/bridges are available for AppleTalk, DECnet, and AppleTalk and DECnet traffic management.

Obviously, the AppleTalk InternetRouter is not a major player, as it can only route AppleTalk packets. DECnet packets, and, therefore, AppleTalk packets embedded ("tunneled") within DECnet packets would simply not get through. However, is there something in PATHWORKS for Macintosh that will act as a gateway between AppleTalk and DECnet? If so, how does this work? Layered on top of AppleTalk Internet Router perhaps? What products would you suggest, either from Apple, DEC, or third-party product families, that we should take a look at?

Finally, do you know of any Macintosh-familiar contacts in DEC who we could contact from this end on DEC-specific issues?

DISCUSSION -----

Just so we are together on this, bridges operate at Layer 1 and the Media Access

Control (MAC) sublayer of Layer 2 of the seven-layer Open Systems Interconnection model, and they route packets according to the destination address. Bridges, therefore, are protocol-transparent and allow networks to be constructed using multivendor products and multiple protocols.

Routers, on the other hand, operate at the network layer (Layer 3) of the OSI model and use the protocol information contained within the packet to determine how packets should be routed. In the past, routers were limited by their ability to handle only a single protocol. That's no longer the case.

Many of the newer bridges have multiple communications ports and route packets according to protocol, packet type, and packet length. These are often called "routing bridges."

The following routers support both DECnet and AppleTalk:

Cisco Systems's AGS is a self-learning/load-balancing router that connects 802.3 to 802.5 networks. Protocols supported are TCP/IP, OSI, XNS, DDN, X.25, DECnet, AppleTalk, and Novell's Internetwork Packet Exchange (IPX). It supports the Spanning Tree Protocol, source routing, up to 8 local nets and 14 wide-area net interfaces per unit at up to 4M bits/second. It supports RS-232-C, RS-449, and CCITT V.35. Net management supported is Simple Network Management Protocol (SNMP).

Network Equipment Technologies' LANExchange 50 is a self-learning/load-balancing router that connects 802.3 to 802.5 networks. Protocols supported are TCP/IP, DECnet, XNS, X.25, and AppleTalk. It supports the Spanning Tree Protocol, source routing, up to 24 local nets, and 24 wide-area net interfaces per unit at 1200 to 4M bits/second. It supports RS-232-C, RS-449, and CCITT V.35. Net management supported is Simple Network Management Protocol (SNMP).

Wellfleet Communications, Inc.'s Link Node/Concentrator Node is a self-learning/load-balancing router that connects Ethernet Versions 1 and 2; 802.3 to same local net. Protocols supported are TCP/IP, XNS, IPX, OSI, and AppleTalk. It supports the Spanning Tree Protocol, up to 26 local net on Concentrator Node; 8 on Link Node and up to 52 wide-area interface on Concentrator Node; 16 on Link Node. It supports RS-232-C, RS-449, CCITT V.35, T-1 DS1. Network management supported is SNMP and 802.1.

The AppleTalk/DECnet Transport Gateway in PATHWORKS for Macintosh allows users on one network to access services on the other network. It performs transport relay from DECnet NSP to and from AppleTalk Data Stream Protocol (ADSP). An example of use is running MacX on a Macintosh using a VAX DECwindows client. Without the gateway, the Macintosh needs to run DECnet protocol to talk to DECwindows on the VAX. With the gateway, the Macintosh can run AppleTalk and still can use the VAX DECwindows as its client.

With AppleTalk for VMS 3.0, one can use the VAX as a DECnet and AppleTalk router. With DECnet routing and AppleTalk routing turned on, the VAX can be used to route traffic between two AppleTalk networks. Network management is done via a new management utility called ATK\$MANAGER.

For any DEC-specific issues, you may try the AppleLink address DIGITAL.SELL,

Apple's DEC team.

For more details, search the Technical Info library under "Cisco Systems,"  
"Network Equipment Technologies," and "Network Resources Corp."

Article Change History:

30 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:5776



# Tech Info Library

## Display Card 8/24 GC: Compatible Third-Party Monitors

Revised: 7/16/90  
Security: Everyone

Display Card 8/24 GC: Compatible Third-Party Monitors

=====

This article last reviewed: 12 June 1990

TOPIC -----

I ordered a Macintosh IIfx with the Display Card 8/24 GC. I am also considering a Radius or RasterOps monitor. Do our 24-bit video cards support third-party, large, color monitors?

DISCUSSION -----

SuperMac is the only company that we are aware of that makes monitors that work with the Display Card 8/24 GC. SuperMac is selling two new monitors that work with the new Apple video cards. One is the "Color Two-Page Display" and the other is the "Platinum Two-Page Display."

Both these monitors have a display resolution of 1152 x 870 pixels. The Display Card 8/24 GC will support up to 8 bits per pixel on these monitors.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5777



# Tech Info Library

## MacX25: List of Supported X.25 Functions

Revised: 6/29/90  
Security: Everyone

MacX25: List of Supported X.25 Functions

=====

This article last reviewed: 13 June 1990

TOPIC -----

I need the facts for the following MacX25 categories:

Packet retransmission support  
Closed user group with in- and outgoing access  
In- and outbound calls barred  
In- and outbound calls carred with a c.u.g.  
One way logical channel incoming and outgoing  
Multi-link procedures  
Direct call  
Hunt group  
Flow control parameter negotiation  
Abbreviated address calling

DISCUSSION -----

Much of this information is in the manual. We assume you want to know if MacX25 "supports" the following X.25 functions:

|                                                |                                                   |
|------------------------------------------------|---------------------------------------------------|
| Packet retransmission support                  | No                                                |
| Closed user group with in- and outgoing access | Yes                                               |
| In- and outbound calls barred                  | Yes                                               |
| In- and outbound calls carred with a c.u.g.    | Yes                                               |
| One way logical channel incoming and outgoing  | Yes                                               |
| Multi-link procedures                          | No (No X.25 "MultiLink Operation")                |
| Direct call                                    | N/A (but does have Call Redirection Notification) |
| Hunt group                                     | N/A                                               |
| Flow control parameter negotiation             | Yes                                               |
| Abbreviated address calling                    | Yes (implimented via configurable address         |

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5781



# Tech Info Library

## Motorola

Revised: 4/4/97  
Security: Everyone

Motorola

=====

Article Created: 06/17/90  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Motorola

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1150 Kifer Rd.  
Sunnyvale, CA 94086

800-433-2556 (inside CA)  
800-338-1558 (outside CA)

408-749-0510

916-922-7152 (Sacramento Office)

408-991-7420 Fax

Company Profile:  
Hardware, specializing in microprocessor and coprocessor manuals and  
semiconductors.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5783





# Tech Info Library

## FGM Inc.

Revised: 4/4/97  
Security: Everyone

FGM Inc.

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Article Created: 06/17/90  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

FGM Inc.  
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131 Elden St.  
Suite 308  
Herndon, VA 22070

703-478-9881

703-478-9883 Fax

Company Profile:  
Software, specializing in products that convert a wide variety of graphic file  
formats to PICT and PICT2 formats.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5784



# Tech Info Library

## Pharos Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

Pharos Technologies, Inc.

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 4 April 1997

Pharos Technologies, Inc.

-----

4243 Hunt Road  
Suite 200  
Cincinnati, OH 45242

800-548-8871

513-573-7100

513-573-7110 Fax

Company Profile:  
Software, specializing in utility software for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5785



# Tech Info Library

## Computer Video

Revised: 4/4/97  
Security: Everyone

Computer Video

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Article Created: 06/17/90  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

Computer Video

-----

Londonberry Commons  
Building 46B  
Londonberry, NH 03053

603-434-0800

Fax: 603-434-2211

Company Profile:  
Hardware, specializing in an RGB-to-NTSC converter, and TV scan

Article Change History: 07/07/93 Address Changed, Phone Number Changed, New  
Product Information Added

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5786



# Tech Info Library

## Retix

Revised: 4/4/97  
Security: Everyone

Retix

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 04/04/97

Retix

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2401 Colorado Ave.  
2nd floor  
Santa Monica, CA 90404

310-828-3400

800-255-2333

Fax: 310-828-2255

Company Profile:  
Software and hardware, specializing in electronic mail and messaging systems  
in networks for the Macintosh and PC as clients.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5788



# Tech Info Library

## RGB Spectrum

Revised: 4/4/97  
Security: Everyone

RGB Spectrum

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 4 April 1997

RGB Spectrum

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950 Marina Village Parkway  
Alameda, CA 94501

510-814-7000

Fax: 510-814-7026

Company Profile:

Hardware, specializing in scan converters, high-end video graphic  
systems for workstations and IBM PCs, multimedia, and related products.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5789



# Tech Info Library

## Network Equipment Technologies, Inc.

Revised: 7/14/93  
Security: Everyone

Network Equipment Technologies, Inc.

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Article Created: 17 June 1990  
Article Reviewed/Updated: 14 July 1993

Network Equipment Technologies, Inc.

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800 Saginaw Dr.  
Redwood City, CA 94063

800-234-4638

415-366-4400

415-366-5675 Fax

Company Profile:  
Hardware, specializing in networking.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5790



# Tech Info Library

## Now Software

Revised: 4/4/97  
Security: Everyone

Now Software

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 4 April 1997

Now Software

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319 SW Washington St.  
11th Floor  
Portland, OR 97204

800-237-3611 (Sales)  
503-274-2800  
503-274-0670 Fax

Technical telephone support:

503-796-3617 Now Utilities (Macintosh)  
503-796-3619 Now Update To Date (Macintosh)  
503-796-3620 Now Contact (Macintosh)  
503-796-3603 Now Synchronize (Newton)  
503-796-3621 Now DateBook and Touchbase (Macintosh)

Company Profile:

Software, specializing in system enhancements for Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5791



# Tech Info Library

## Retrospect: Incompatible with Tape Disk Init

Revised: 8/24/93  
Security: Everyone

Retrospect: Incompatible with "Tape Disk" Init

=====

This article last reviewed: 12 June 1990

TOPIC -----

I got a copy of Dantz Development Corporation's Retrospect backup software to use with my Apple Tape Backup 40 SC drive, but it doesn't seem to work.

DISCUSSION -----

Dantz Development Corporation, the makers of Retrospect (the site licensed archival/backup software) have found an init conflict between Retrospect and the Apple Tape Backup 40 SC drive's "Tape Disk" INIT.

Essentially, "Tape Disk" is an init that lets the user mount any tape inserted into the Apple Tape Backup 40SC drive onto the desktop. However, Retrospect also has an INIT called "Retro.SCSI" that has been optimized for use with the Apple Tape Backup 40 SC unit.

Thus, if "Tape Disk" is present in your System Folder and loads at startup, Retrospect will be unable to recognize the Apple Tape Backup Unit, (even if Retro.SCSI is not present in your System Folder) whether or not it can be seen using a diagnostic SCSI utility, such as the "SCSI probe" CDEV.

To fix this problem, remove the "Tape Disk" init from your System Folder and restart your Macintosh. Retrospect should recognize your Apple Tape Backup 40 SC unit at that point.

Copyright 1990, Apple Computer, Inc.

Tech Info Library Article Number:5792





# Tech Info Library

## Traveling Software, Inc.

Revised: 7/20/93  
Security: Everyone

Traveling Software, Inc.

=====

Article Created: 17 June 1990  
Article Reviewed/Updated: 20 July 1993

Traveling Software, Inc.

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18702 N. Creek Pkwy.  
Bothell, WA 98011

206-483-8088 (Main Office / Tech. Support)

800-343-8080 (Customer Service and Sales)

Fax: 206-485-6786 (Customer Service and Sales)

### Company Profile:

Hardware and software utilities, specializing in connectivity and communications, the leader in portable communications

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:5793



# Tech Info Library

## Macintosh SE: Video Display Linearity Adjustments

Revised: 6/23/90  
Security: Everyone

Macintosh SE: Video Display Linearity Adjustments

=====

This article last reviewed: 12 June 1990

TOPIC -----

Using a Macintosh SE, I have drawn three circles of equal size on the same horizontal axis. The circles are touching. When I measure the diameter of the circles on the screen, I find that although the right-hand one is OK, the left-hand one is 1/8 of an inch too narrow.

What's the official way of measuring screen linearity? What is the acceptable tolerance? Does Apple set up the CRT magnets or are they set up by the CRT supplier? How do I have them reset?

DISCUSSION -----

Acceptable tolerance for linearity is approximately 10 percent (horizontal and vertical). That is, an object moved from one place to another will grow or shrink by no more than 10 percent. The CRT magnets, installed by the supplier, are extremely difficult to adjust and should not be moved, even by a service representative. There is no way to adjust linearity of the Macintosh SE display. Apple Manufacturing has developed test patterns to measure linearity.

If the user is dissatisfied with the appearance of the display, the analog sweep PRINTED CIRCUIT BOARD should be replaced by an authorized service provider.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5796



# Tech Info Library

## Display Card 8•24 GC: Using With Different Monitors (11/94)

Revised: 11/7/94  
Security: Everyone

Display Card 8•24 GC: Using With Different Monitors (11/94)

=====

Article Created: 23 June 1990  
Article Reviewed/Updated: 07 November 1994

### TOPIC -----

Someone told me that if I had a Macintosh Display Card 8•24 GC installed for one monitor, and a number of other cards for other monitors (Apple or third party), that all the monitors would benefit from the Macintosh Display Card 8•24 GC, as it will accelerate QuickDraw for the other monitors as well.

Is this correct?

### DISCUSSION -----

When multiple display cards are installed, the Macintosh Display Card 8•24 GC accelerates drawing in frame buffers of the Macintosh Display Card 4•8, Macintosh Display Card 8•24, and other frame buffer cards.

The Macintosh Display Card 4•8 and Macintosh Display Card 8•24 show the most improvement because they support slave NuBus block transfers and many other display cards do not.

Acceleration for frame buffers other than the one resident on the Macintosh Display Card 8•24 GC would not be as dramatic because of the greater amount of NuBus traffic required.

Only one Macintosh Display Card 8•24 GC may be used for graphics acceleration in a system. If two cards are present, one must have its acceleration function disabled.

Article Change History:  
07 Nov 1994 - Changed 8/24 to 8•24 for consistency.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5798



# Tech Info Library

## 5208 Protocol Converter: Macintosh Substitute For Dial3X

Revised: 4/18/91  
Security: Everyone

5208 Protocol Converter: Macintosh Substitute For Dial3X

=====

This article last reviewed: 14 June 1990

TOPIC -----

I use "Dial3X" to access my IBM AS400 via the IBM 5208 protocol converter.

Dial3X is full 5250 emulation using the 5208 FILEXFR protocol. I'm looking for a Macintosh software solution. Do you know of any software for the Macintosh that is equal to Dial3X?

DISCUSSION -----

The 5208 Protocol Converter provides support for "non-IBM ASCII terminals", meaning that it supports VT100, and probably other terminal types too.

After you find out which terminals are supported, you can choose from a wide range of emulators available for the Macintosh, or merely use a VT100 emulator such as MacTerminal or MicroPhone II. You will also need to verify what kind of file formats are being used, and what file transfer methods are provided by the 5208, but one or more of the commonly used generic types of transfer programs will likely be supported by the 5208 and terminal emulators.

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Tech Info Library Article Number:5800



# Tech Info Library

## MacX: Can't Start Remote VAX Applications on MultiNet (1/95)

Revised: 1/30/95  
Security: Everyone

MacX: Can't Start Remote VAX Applications on MultiNet (1/95)

Article Created: 14 June 1990  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

This article discusses why MacX is unable to start up remote applications on VAX systems running MultiNet.

DISCUSSION -----

We have been testing MacX in a DECwindows, VMS/Multinet environment and were never able to get it to work successfully.

We have been working with TGV technical support to find out why MacX is unable to start up remote applications on VAX systems running MultiNet. We were able to get DECwindows applications to display on the MacX server using TCP/IP transport (no DECnet transport, since we don't have that connection tool on my Macintosh), only if we started the application manually on the VAX. We were unable to use the MacX "Remote" menu to start the applications from the Macintosh. The problem was traced to a problem in the rexec server on the VAX.

MultiNet is based on the UC Berkeley implementation of TCP/IP. This is a fairly robust implementation of TCP, since it has been around since about 1982 and has been tuned significantly over the years. However, the Berkeley people added the notion of "privileged ports" to their implementation of TCP.

A TCP port number is a 16-bit integer which identifies individual applications on the same host. In the UCB world, port numbers 1-1023 are considered "privileged," and only the superuser is allowed to access them. The UCB rshell and rlogin protocols use this concept to do remote authentication without sending passwords over the network. The basic idea is that if a request comes in from a privileged port on the remote host, then it must be the superuser making the request, so the server "trusts" the requester. The authentication procedure then proceeds without the use of passwords (I'll not bore you with the details). If the requester is not using a privileged port, then the request is denied (i.e. the server closes the connection). (Aside: if the host on which

the requester resides does not have the concept of a privileged port, then it could conceivably allow anyone to open a port in the range 1-1023 and thus spoof the UCB rshell/rlogin servers. This makes the privileged port concept a bad idea.)

MacX does not use the rshell protocol; it uses the rexec protocol instead. Rexec does not use the privileged port authentication scheme, but instead relies on the username and password being sent over the network. The MultiNet rexec server erroneously checks to make sure that the requester is using a privileged port and closes the connection if it is not. This behavior is incorrect. Rexec does not use the privileged port number scheme, so it should not do this check. The rexec server distributed with UCB-based UNIX systems (like Ultrix and SunOS) is implemented properly, so it does not do the check. That is why MacX interoperates well with UNIX, but not with VMS/MultiNet. I do not know if other TCP/IP implementations for VMS have this problem or not. Oh yeah, since A/UX contains the UCB networking code, including the r-utilities, it works fine as well.

Please note that the problem is not in VMS DECwindows, nor is it in the interaction between DECwindows and the TCP/IP transport provided by MultiNet. We know this because we were able to start up DECwindows clients from the VAX and that worked properly. The problem is only with the MultiNet rexec server erroneously checking for a privileged port from the requester, and TGV has indicated to me that the problem will be fixed in MultiNet V2.2. This problem will not affect using MacX with the DECnet connection tool, since DECnet obviously doesn't use the rexec protocol. It will also not have any affect on other implementations of TCP/IP for VMS, unless they have the same problem.

#### Article Change History:

30 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5807



# Tech Info Library

## External SuperDrive: Macintosh Compatibility Listing (3/94)

Revised: 7/18/94  
Security: Everyone

External SuperDrive: Macintosh Compatibility Listing (3/94)

=====

Article Created: 23 June 1990  
Article Reviewed/Updated: 18 July 1994

TOPIC -----

Which Macintosh models support the External Apple SuperDrive (M0112)?

DISCUSSION -----

The Apple External SuperDrive (formerly Apple FDHD) is compatible with:

- SuperDrive-capable Macintosh SE
- Macintosh SE/30
- Macintosh IICx
- Macintosh IICi
- Macintosh Classic and Classic II
- Macintosh IIsi
- Macintosh Portable

Article Change History

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18 Jul 1994 - Revised topic wording.  
31 Mar 1994 - Reviewed for technical accuracy, updated formatting.  
17 Mar 1993 - Revised to include all applicable Macintosh models.

Support Information Services

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Tech Info Library Article Number:5808





# Tech Info Library

## LaserWriter: Prepping a LaserWriter on a Mixed Network

Revised: 6/23/90  
Security: Everyone

LaserWriter: "Prepping" a LaserWriter on a Mixed Network

=====

This article last reviewed: 14 June 1990

TOPIC -----

Is it possible to prep an Apple LaserWriter II without a Macintosh on the network?

I have mixed PCs, UNIX, and Macintoshes on LocalTalk network. I turn off the LaserWriters at night but in the morning a Macintosh user may not be the first person that prints. Does AppleShare PC handle this? Is there a TEXT PostScript version of the LaserWriter prep we can download via other types of CPU? Any idea on this topic would be appreciated.

DISCUSSION -----

AppleShare PC does not require that a LaserWriter be "prepped" by a Macintosh, or by sending a prep file from the PC before printing. It is capable of printing to a LaserWriter without any Macintosh assistance.

Some programs do require features that are only available in downloaded dictionaries, but these products typically include their own LaserWriter driver that handles this. If a user writes PostScript code on the PC that requires features provided by Laser Prep, they can extract the substance of Laser Prep from a Macintosh, and then download it from the PC along with their code.

Capturing the Laser Prep code on a Macintosh can be done by separating it from any PostScript file that has been generated, by holding down Command-K at print time. Here is the procedure:

- 1) Use the Chooser to select a LaserWriter, and turn off Background Printing.
- 2) Open a word processor and create an empty document.
- 3) Choose the Print... command in the File menu.

4) Click OK.

5) Immediately hold down the Command and k keys.

- the k key dumps a PostScript image with Laser Prep
- the f key would dump a PostScript file without Laser Prep

Hold the keys down until you see the Print Status dialog box.

The Print Status dialog box will say "Creating PostScript File." When the program is through printing, you will find a text file in the current application's folder called "PostScriptn," where n is a number that increments from 0 for each print job. If this is your first try, the file should be named "PostScript0."

Now that you have the PostScript file, you can extract the Prep section by editing it with your word processor. Cut out the section at the end that represents the empty print job. It should begin after the file's first blank line and look something like this:

```
T T 0 0 730 552 -31 -30 761 582 100 72 72 1 F F F F T T T F psu
(Bill's Macintosh IIX; document: Untitled)jn
...and so on...
```

What remains can be transferred to the PC, and downloaded from there to the LaserWriter whenever needed (along with the user's code).

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5809



# Tech Info Library

## MacTCP: List Of Applications

Revised: 6/23/90  
Security: Everyone

MacTCP: List Of Applications

=====

This article last reviewed: 14 June 1990

TOPIC -----

Is there a list of all commercial and public domain programs that use the Apple MacTCP driver or that allow the Macintosh onto a TCP/IP network (either through a DDP/IP gateway or directly onto Ethernet)?

DISCUSSION -----

The following is a substantial, but by no means complete, list of programs that use MacTCP:

Commercial Products that use MacTCP

-----

MacX from Apple

HyperCard MacTCP Toolkit from Apple (APDA)

TCP/Connect (Telnet: VT240, TN3270, TEK 4014, FTP, Mail, News) from InterCon

MacPathWay Access (Telnet: VT240, TN3270, FTP, SMTP mail) from Wollongong

NetOne TCP for Macintosh (FTP, Telnet) from Ungermann-Bass

TCPort Host Access (FTP, Telnet) from Novell

Database access from Oracle and Informix (WingZ)

TGRAF (Tektronix 4017) graphics emulator from Grapoint

Mathematica (mathematical modeling) from Wolfram Research

GatorMail SMTP gateway from Cayman Systems

Exodus (X window server) and a VT 220, 240, 241 emulator from White Pine Software

Non-commercial Products that use MacTCP  
-----

MacIP, MacMH (FTP, Telnet, Mail) from Stanford University

NCSA Telnet from NCSA, University of IL

3270 emulator from Brown University

BeaverGate SMTP gateway for QuickMail

For more information, search the Technical Information Library under the names of the various vendors.

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Tech Info Library Article Number:5810



# Tech Info Library

## TCP/IP & AppleTalk Packets Can Coexist Under A/UX (9/94)

Revised: 9/13/94  
Security: Everyone

TCP/IP & AppleTalk Packets Can Coexist Under A/UX (9/94)

=====

Article Created: 14 June 1990  
Article Reviewed/Updated: 12 September 1994

TOPIC -----

Is it possible to have both TCP/IP and EtherTalk available and active at the same time under A/UX? If so, what is the procedure for doing this?

DISCUSSION -----

AppleTalk (via either EtherTalk card or LocalTalk serial port) is supported under A/UX. AppleTalk printing and File Sharing services are two examples of this. A/UX also supports TCP/IP networks, so that A/UX users can connect to networks of computers running a variety of UNIX-based operating systems. Both EtherTalk and TCP/IP use the Ethernet hardware, and they can use the same Ethernet card. AppleTalk and TCP/IP are not mutually exclusive. That is, a computer running A/UX can be connected to a TCP/IP network at the same time that it is connected to an AppleTalk network.

You can connect a computer that is running A/UX to a LocalTalk network or to an EtherTalk network. Earlier versions of A/UX required a user who logged in as root to modify the /etc/appletalkrc file to select LocalTalk or EtherTalk. With A/UX 3.0, any user who can log in by using the Finder control panel to select LocalTalk or EtherTalk. The /etc/appletalkrc file is no longer provided.

For TCP/IP, once you have determined the values of the TCP/IP configuration parameters for your Macintosh, you can run newconfig to make a kernel that supports the TCP/IP networking software. To run newconfig, log in as root in the Finder environment and open a CommandShell window, or log in as root in the Console Emulator.

Type the command:

```
newconfig bnet
```

Respond to the prompts that newconfig displays. When you have finished, restart the computer.

You can get additional information on this process by referring to the A/UX Network System Administration manual chapter on Configuring and Managing a TCP/IP Network.

Article Change History:

12 Sep 1994 - Updated for A/UX 3.0

Support Information Services

Copyright 1990, 1994 Apple Computer, Inc.

Tech Info Library Article Number:5812



# Tech Info Library

## How IIGS Network Can Print From Single 3.5 Drive

Revised: 6/23/90  
Security: Everyone

How IIGS Network Can Print From Single 3.5 Drive

=====

This article last reviewed: 14 June 1990

TOPIC -----

I want to assemble an Apple IIGS system disk with the Chooser and other associated AppleTalk software that can use AppleWorks 3.0 on an Apple IIGS with a single 3.5 drive and networked ImageWriter II.

Here's what I need to know: What's the minimum ProDOS 8 system configuration that will allow this? Where do I get the required files, and how will I know if I've got the right versions?

DISCUSSION -----

Since the associated AppleTalk software is contained within GS/OS for the Apple IIGS computer, start by using the GS/OS Installer to make a GS/OS boot disk. Install the "AppleShare on a 3.5 Disk" script. Once this has installed successfully, select the "AppleShare" script (NOT the "AppleShare on a 3.5 Disk" again) and press the "Remove" button. After this step is finished, select the "AppleTalk ImageWriter" script and press the install button.

This disk will be the boot disk for providing access to the networked ImageWriter. Contained on this disk will be all the needed system files to run both GS/OS applications and ProDOS 8 applications. Chooser.II is not needed because the Graphic Control Panel will be used.

Once the Apple IIGS has booted to the Finder, use the Graphic Control Panel's AT ImageWriter CDEV to select the desired network ImageWriter. This will leave the selected printer stored in RAM for use by AppleTalk protocols. It will also write the selected printer into the CDEV's resource file for use on the next bootup. Thus, if the same printer is desired, it will not need to be selected again. Eject (with the drive button) the GS/OS boot disk, insert the AppleWorks disk, and double-click on the AppleWorks application icon. Be sure to specify the correct slot information about the printer within AppleWorks (slot 1 for 03 ROMs or slot 7 for 01 ROMs). AppleWorks will then work as

Clariss has designed it to work in a one-drive environment. When you exit AppleWorks, the system will return to the Finder.

If this operation is performed with the GS/OS 5.0.2 System.Disk and System.Tools, all the correct versions will be automatically installed.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5814





# Tech Info Library

## Macintosh Portable: Developer Issues on MIDI Support

Revised: 5/15/92  
Security: Everyone

Macintosh Portable: Developer Issues on MIDI Support

=====

Article Created: 14 June 1990  
Article Last Reviewed: 14 May 1992  
Article Last Updated: 14 May 1992

TOPIC -----

I was told there were some problems with MIDI software on the Macintosh Portable at introduction. What is the current status of this? What is Apple doing to fix the problems? What must a developer do?

DISCUSSION -----

The only change since introduction is that most developers have provided an update to their software or have begun using Apple's MIDI Manager, or both. There are two support issues to be aware of when using an older version of MIDI Manager (1.1) and the Macintosh Portable. Both issues relate to the implementation of the serial ports of the Macintosh Portable.

1) Version 1.1 of the MIDI Management Tools does not support the Macintosh Portable.

MIDI Management Tools version 1.1 required changes to work correctly with the serial ports of the Macintosh Portable. These changes were implemented in version 1.2 of the MIDI Management Tools.

2) Some older versions of third party MIDI applications will have difficulty with the Macintosh Portable.

Until the introduction of Apple's MIDI Manager, all MIDI software had to write to the serial port hardware directly, bypassing the Macintosh Toolbox, to obtain acceptable performance. Writing to the hardware is not an ideal procedure for developers; Apple changes things about the hardware from one Macintosh model to the next. This forced MIDI software developers to revise their programs every time a new Macintosh model was introduced.

With the changes in design of the Macintosh Portable, these direct hardware calls and Toolbox workarounds no longer perform as they would on earlier models of Macintosh. Fortunately, Apple resolved this issue by providing the MIDI Manager. If developers use the MIDI Manager, they will not need to revise their programs as a result of any serial port changes in future computers. MIDI Manager will be revised as needed to deal with changes in serial ports. With MIDI Manager 1.2 or later, applications supporting MIDI Management Tools work correctly on the Macintosh Portable.

Make sure to use the most current version of the MIDI Manager to ensure that a program will communicate successfully with the serial port, regardless of Macintosh model.

Copyright 1990, 1992 Apple Computer, Inc.

Tech Info Library Article Number:5815



# Tech Info Library

## Macintosh Display Cards Overview (3 of 3)

Revised: 7/16/90  
Security: Everyone

Macintosh Display Cards Overview (3 of 3)

=====

This article last reviewed: 19 March 1990

(This is a continuation of, "Macintosh Display Cards Overview (2 of 3)")

### - NuBus Block Transfer

One important display card acceleration feature is the NuBus block transfer function. Macintosh Display Card 8/24 GC supports both master and slave NuBus block transfer. Macintosh Display Card 4/8 and 8/24 support NuBus block transfers in slave mode only.

Most Macintosh systems do not support NuBus block transfer so this function is primarily a factor between NuBus cards with block transfer abilities. However, the Macintosh IIfx does support block transfers in slave mode only.

NuBus block transfer facilitates faster movement of data. Normally data is moved across NuBus in 32-bit words, 16-bit half-words, or bytes. Bus availability must be arbitrated between each word transferred. Under NuBus block transfer, the bus is arbitrated by the master, and then held while one address word and 16 data words are transferred to the addressed NuBus slave. Block transfer mode significantly accelerates the flow of data between the new display cards.

Because the Macintosh and many other NuBus cards lack NuBus block transfer support, another scheme is used to speed up data transfer between the Display Card 8/24 and other NuBus clients. Pseudo-block transfer is similar to block transfer in that it claims the bus for a 16 NuBus data word transaction; however, it must send an address word for each data word that it sends. The extra transfer activity makes pseudo-block transfer slower than block transfer but still an improvement over normal NuBus access times.

### - Multiple Display Cards in One System

When multiple display cards are installed, the Macintosh Display Card 8/24 GC accelerates drawing in frame buffers of the Macintosh Display Card 4/8, 8/24,

or other frame buffer cards. Display Cards 4/8 and 8/24 show the most improvement because they support slave NuBus block transfers and many other display cards do not. Acceleration for frame buffers other than the one resident on the Display Card 8/24 GC card would not be as dramatic because of the greater amount of NuBus traffic required. Only one 8/24 GC may be used for graphics acceleration in a system. If two cards are present, one will have its acceleration function disabled.

#### - Upgrades

The Macintosh Display Card 4/8 can be upgraded to Display Card 8/24 by using the Macintosh Display Card VRAM Kit.

The Macintosh Display Card 8/24 GC can be upgraded with the Macintosh Display Card DRAM Expansion Kit, which improves the performance of applications that use large off-screen bitmaps and other imaging methods.

#### System Software

System Software Version 6.0.5 or greater is required with Display Cards 4/8, 8/24 and 8/24 GC. Macintosh II, IIx, and IICx systems require the 32-bit QuickDraw patch file. Macintosh IICI and IIIfx systems have 32-bit QuickDraw in ROM and require only System 6.0.5 or greater.

#### System Requirements

To use the Macintosh Display Card 4/8, 8/24, or 8/24 GC you need:

- A modular Macintosh II personal computer with an available NuBus slot
- System Software Version 6.0.5 or greater
- For Macintosh II, IIX and IICx: the 32-bit QuickDraw software file is needed to run 24-bit color applications.
- To take advantage of full 24-bit color, a minimum of 2MB of memory is recommended.

#### Support Issues

- Cables For Current Portrait and Two-Page Display Customers

Current Portrait and Two-Page display customers must purchase a DB-15 to DB-25 adaptor when connecting any of the new display cards. Customers buying new Portrait and Two-Page displays will receive the proper cable.

- A/UX

The Display Card 8/24 GC will not initially work with A/UX. A/UX 2.0 compatibility is planned.

- Power Consumption

The Display Card 8/24 GC uses up to a maximum of 20 watts. In systems with all NuBus slots utilized, the power requirements of all cards installed should be added together to ensure that the NuBus power draw is not exceeded. Six-slot

Macintosh modulars provide 90 watts for nuBus, 3-slot Macintoshes provide 45 watts.

- Macintosh II ROMs

The original Mac II ROMs had several problems that will not allow the Display Cards to function properly. There is a service program in place that will replace the original ROMs with new ones.

#### Connector Pinouts

DB-15 Monitor Video Connector for Display Cards 4/8, 8/24 and 8/24 GC.

| Pin   | Signal      | Description          |
|-------|-------------|----------------------|
| 1     | RED.GND     | Red Video Ground     |
| 2     | RED.VID     | Red Video            |
| 3     | CSYNC~      | Composite Sync.      |
| 4     | MON.ID1     | Monitor ID, Bit 1    |
| 5     | GRN.VID     | Green Video          |
| 6     | GRN.GND     | Green Video Ground   |
| 7     | MON.ID2     | Monitor ID, Bit 2    |
| 8     | nc          | (No Connection)      |
| 9     | BLU.VID     | Blue Video           |
| 10    | MON.ID3     | Monitor ID, Bit 3    |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground |
| 12    | VSYNC~      | Vertical Sync.       |
| 13    | BLU.GND     | Blue Video Ground    |
| 14    | HSYNC.GND   | HSYNC Ground         |
| 15    | HSYNC~      | Horizontal Sync.     |
| Shell | CHASSIS.GND | Chassis Ground       |

the Portrait and Two-Page Displays.

| DB-15 | Signal      | D-25        |
|-------|-------------|-------------|
| 1     | RED.GND     | A3 (Outer)  |
| 2     | RED.VID     | A3 (Center) |
| 3     | CSYNC~      | 5           |
| 4     | MON.ID1     | 9           |
| 5     | GRN.VID     | A2 (Center) |
| 6     | GRN.GND     | A2 (Outer)  |
| 7     | MON.ID2     | 8           |
| 8     | nc          |             |
| 9     | BLU.VID     | A1 (Center) |
| 10    | MON.ID3     | 3           |
| 11    | C&VSYNC.GND | 4, 7, 10    |
| 12    | VSYNC~      | 2           |
| 13    | BLU.GND     | A1 (Outer)  |
| 14    | HSYNC.GND   | 1           |
| 15    | HSYNC~      | 6           |
| Shell | CHASSIS.GND | Shell       |

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Tech Info Library Article Number:5818



# Tech Info Library

## DAL: Client O.S. Runtime Environments

Revised: 8/11/92  
Security: Everyone

DAL: Client O.S. Runtime Environments

=====

Article Created: 9 August 1990  
Article Last Reviewed: 20 July 1992  
Article Last Updated: 30 July 1992

TOPIC -----

This article discusses DAL client operating system runtime environments.

DISCUSSION -----

Macintosh

-----

Data Access Language (DAL, formerly known as "CL/1") supports the Macintosh Operating System version 6.0.5 or later on all Macintosh hardware platforms with at least 2MB of RAM. The API is available in MPW C and Pascal object format, Think's Lightspeed C object format, and HyperCard XCMD/XFUNC format (embedded in DAL-HyperCard Help stack) for support of HyperCard 1.2 or later.

Host Servers

-----

DAL supports the VAX/VMS operating system across the VAX hardware platform. This server supports the following DBMSs:

- Oracle
- Sybase
- Informix
- Ingres
- Rdb

DAL Server for A/UX supports the following DBMSs:

- Oracle
- Informix
- Ingres

DAL Server for VM/CMS supports the SQL/DS DBMS on VM/CMS systems.

DAL Servers for MVS/TSO and MVS/VTAM support the DB2 and Teradata DBMSs on MVS/XA and MVS/ESA systems.

Network Adapters (Communication Drivers)

Asynchronous

DAL supports async communications for VAX and A/UX with appropriate supporting hardware.

AppleTalk (ADSP)

DAL supports the AppleTalk Data Stream Protocol (ADSP) on Macintosh client systems running the ADSP driver software over the built-in AppleTalk connection or EtherTalk supporting hardware to VMS host systems running the DAL Server and AppleTalk for VMS.

ADSP Tool

DAL supports the Comm Toolbox AppleTalk Tool to VMS hosts running the DAL Server and AppleTalk for VMS.

Async CTB

DAL supports the Comm Toolbox async tools to VAX and A/UX DAL Servers.

3270 Connections

DAL supports 3270 connections on Macintosh systems equipped with hardware that supports the following 3270 solutions:

Apple MacDFT 1.1 running on:

- Coax/Twinax Card
- TokenTalk Card
- Serial NuBus Card

Tri-Data - Netway 1000, Netway 2000 - uses the Tri-Data API

Avatar - MacMainFrame - uses the Avatar API

DCA - MacIRMA Card - uses the MacIRMA API

SNA•ps Gateways running on:

- Coax/Twinax Card
- TokenTalk Card
- SDLC Card

APPC Connections

SNA•ps APPC Gateways running on any of the above NuBus cards.

#### Protocol Converters

-----  
Asynchronous access to protocol converters (front-ending MVS or VM) that access VT100-type output.

Copyright 1990, 1992, Apple Computer, Inc.

Tech Info Library Article Number:5821





# Tech Info Library

## DAL: Overview and Goals

Revised: 6/30/92  
Security: Everyone

DAL: Overview and Goals

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Article Created: 16 July 1990  
Article Last Reviewed: 30 June 1992  
Article Last Updated:

### Overview

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Data Access Language (DAL, formerly known as "CL/1") is a host database access tool that provides a connectivity language and a set of supporting software components that link personal computer applications to host databases. The connectivity language conforms to the Structured Query Language (SQL) standard. DAL can be used to access host database data from the desktop, where it can be manipulated and presented using familiar personal computer applications. Host databases can only be relational in nature.

DAL provides uniform access to host database data across a wide range of host hardware platforms, operating systems, database management systems, and network connections. The role of DAL is to insulate the desktop application from these details and differences, allowing it to concentrate instead on providing better interaction between "personal" processing on the desktop and organizational computing on the host system.

### Goal of DAL

-----

The goal of DAL is to provide an open, standard, host database access language that enables plug and play connectivity between desktop applications and organizational data. That is, a desktop application using DAL should be able, "out of the box," to access database data on a DAL-supporting host system and make that information an integral part of the data available to the desktop application user.

DAL gives software developers access to a broad range of shared database data through a single programming effort. DAL provides communications as a built in part of the runtime environment in the form of network adapters (communication drivers), thereby relieving the programmer from the burdensome task of

communications programming. Because DAL lets packaged application software uniform access different host operating systems, database management systems (DBMSs), and networks, DAL lets software developers focus on integrating corporate data into their applications, rather than low-level networking and programming tasks.

Using DAL, the desktop application can describe a host data access request in a uniform, high-level way. The DAL server for the host system then carries out the request and returns the results to the desktop application. DAL provides automatic data translation when transferring data between the client and host systems. The language supports a set of standard data types which are used to represent all data manipulated by DAL programs. Data from a host data source is automatically mapped into these standard data types when data is accessed. Descriptions of the host data source are also expressed in terms of the standard DAL types.

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Tech Info Library Article Number:5822



# Tech Info Library

## Apple Macintosh Portrait Monitor: Specs and Pin Assignments

Revised: 7/16/90  
Security: Everyone

Apple Macintosh Portrait Monitor: Specs and Pin Assignments

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This article last reviewed: 22 June 1990

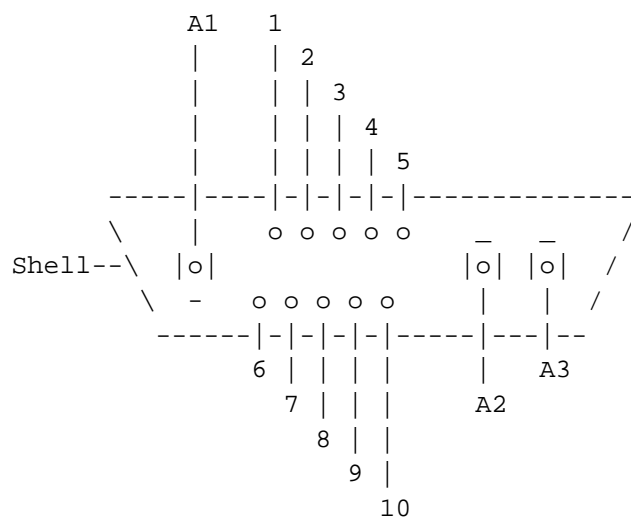
This article gives the specifications for the Apple Macintosh Portrait Monitor along with Pin assignments for input signal jack.

|                              |                                                                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Picture Tube                 | 15-inch (38.1 cm) diagonal<br>Phosphor EIA Type B4 (White)<br>High-contrast antiglare                                                                                                                               |
| Input Signal                 | Video: RS-343 standard<br>Sync: Separate sync, negative<br>going, TTL                                                                                                                                               |
| User Controls                | Power Switch (back panel)<br>Brightness, with detent reference (right side)<br>Contrast (right side)                                                                                                                |
| Scanning Frequencies         | Horizontal 68.85 kHz<br>Vertical 75.0 Hz<br>Dot Clock 57.2832 MHz                                                                                                                                                   |
| Resolution                   | 640 (H) dots by 870 (V) lines                                                                                                                                                                                       |
| Active Video<br>Display Area | Adjusted at the factory to produce an<br>active video area of 8.0-inch (203.2 mm) horizontal<br>by 10.8-inch (276.1 mm) vertical. The remainder of<br>the screen is used for the dark border around<br>the display. |
| Weight                       | 35 lbs (16 kg), approximately                                                                                                                                                                                       |
| Power Requirements           | 75 watts maximum, all line conditions                                                                                                                                                                               |
| Input Voltage                | Operating range 85-270 Vrms,<br>self-configuring                                                                                                                                                                    |

|                               |                                                                                                                                              |          |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                               | Frequency                                                                                                                                    | 50-60 Hz |
| Operating Ambient Temperature | 10 degrees C to 35 degrees C<br>(50 degrees F to 95 degrees F)                                                                               |          |
| Operating Humidity            | 90% maximum, non-condensing                                                                                                                  |          |
| Operating Altitude            | 10,000 feet (3,000 m) maximum                                                                                                                |          |
| Fuse Protection               | The monitor contains internal power line fuse protection. This fuse should be replaced with the same type be a qualified service technician. |          |
| Warm-up Time                  | 20 minutes to meet all specifications                                                                                                        |          |

Pin Assignments For Input Signal Jack (D-25 Shell Style)

|       |                  |
|-------|------------------|
| Pin   | Function         |
| A1    | Monochrome video |
| A2    | 75 Ohms #1       |
| A3    | 75 Ohms #2       |
| 1     | Hsync return     |
| 2     | Vsync            |
| 3     | Sense #3         |
| 4     | Sense return     |
| 5     | Csync            |
| 6     | Hsync            |
| 7     | Vsync return     |
| 8     | Sense #2         |
| 9     | Sense #1         |
| 10    | Csync return     |
| Shell | Shell ground     |





# Tech Info Library

## Fiber Distributed Data Interface (FDDI): Description (9/94)

Revised: 9/8/94  
Security: Everyone

Fiber Distributed Data Interface (FDDI): Description (9/94)

=====

Article Created: 21 June 1990  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

What exactly is FDDI?

DISCUSSION -----

FDDI stands for Fiber Distributed Data Interface and is an American National Standards Institute (ANSI) standard. Their fiber optic LAN standard is for a token-passing, counter-rotating ring that sends data at 100MB per second.

The ANSI X3T.9 committee took IEEE 802.5's token-ring standard and optimized it for fiber. The services provided on an FDDI network are a superset of the services that 802.5 provides; in general, any software that runs over 802.5 should run over FDDI, only faster. This speed is at least six times greater than the three IEEE 802 LAN standards. Even though 802.3 (Ethernet), 802.4 (token bus and MAP), and 802.5 (token ring) all can be implemented with fiber, they do not take advantage of fiber's capacity.

A FDDI network counter-rotating ring means you have two fiber cables instead of one. Normally only one cable will carry data; the second is used when a cable fault occurs to the first. A station is either single attached (connected to a concentrator which is connected to the ring) or dual attached (connected to both fiber cables directly onto the ring). When two neighboring dual attached stations detect a fault, they bring up the secondary data path. Hence the need for every dual attachment device to have management capabilities built in. Dual attached concentrators are used to interface single attached nodes to the ring. Concentrators will have multiple ports to accommodate multiple single attached devices. Concentrators may also be single attached, but will always be on a link that is eventually connected to a dual attached concentrator attached to the ring. With concentrators, you can build a physical star topology offshoot to the ring network.

The maximum circumference of an FDDI network is 100 kilometers (or 200

kilometers if you count both rings), and supports up to 500 stations (1,000 physical connections to both rings). The maximum distance between two active nodes cannot exceed 2 kilometers, so unless all nodes are active all of the time, the FDDI network will probably be less than the 100-kilometer maximum.

Though the recommended transfer rate is 100MB per second, you could send data on both rings simultaneously for a 200MB transfer rate. Although the data rates on the FDDI ring remain constant when loaded, a station's access time to the network may decrease depending upon the station's priority. Sustained data transfer rates for a 100MB implementation is approximately 80MB per second, due to overhead bits, token passing times, and so on.

FDDI is implemented at the Data Link and Physical layers of the Open Systems Inconnection (OSI) seven-layer model. The basic fiber-optic link consists of an optical transmitter, optical receiver, fiber-optic cable, and optical connection.

The next generation of fiber-based high-speed LANs is already being looked into by the ANSI X3T9.5 committee. One that is upwardly compatible with FDDI, that adds voice and video capability, is FDDI-2. FDDI-2 specifies a time-division multiplex approach to divide the available network bandwidth between voice and data.

Article Change History:

8 Sep 1994 - Reviewed for Accuracy.

Support Information Services

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Tech Info Library Article Number:5825



# Tech Info Library

## Read/Write Optical Discs: Using for CD-ROM Emulation

Revised: 7/16/90  
Security: Everyone

Read/Write Optical Discs: Using for CD-ROM Emulation

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This article last reviewed: 21 June 1990

TOPIC -----

I have an optical disc with data stored on it. I am considering putting the data on a CD-ROM, but am unsure of the performance I will get in a CD environment.

If I use a write lock on the optical disc, would this be a suitable emulation of a CD-ROM? If not, what do I need to do in order to emulate the performance of a CD-ROM with the optical disk?

DISCUSSION -----

Using the optical disc in a write-lock mode is the best simulation of a CD-ROM that is available. However, note that some optical discs may have a slightly better performance than a CD-ROM.

Using the write-lock mode will help locate any possible write attempts prior to the pressing of the CD-ROM.

Most CD-ROM pressing facilities provide "one-off" CD-ROMs, which are actual CD-ROMs (but only one is created). This may be an additional expense, although the "one-off" provides an actual CD-ROM to see if all is correctly laid out. The "one-off" is created after using the data in the optical disc environment, prior to pressing the final CD-ROM.

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Tech Info Library Article Number:5828



# Tech Info Library

## Data Modem 2400: Configuring for Credit Card Dialing

Revised: 7/16/90  
Security: Everyone

Data Modem 2400: Configuring for Credit Card Dialing

=====

This article last reviewed: 21 June 1990

TOPIC -----

I have a Macintosh Portable which is now equipped with an Apple Macintosh Portable Modem. When used to dial local numbers or when dialing direct, it works just like a Hayes modem is supposed to.

In my use of the Portable however, I often dial long distance numbers. My technique for doing this is to dial with a 0 (instead of a 1) and then dial my credit card number. On a normal Hayes modem, this is done as follows:

```
ATDT013012869000;
```

Notice the semicolon at the end of the dial string, which tells the modem to return to command mode when done with the phone number.

As the call is completed, AT&T will come around and ask for a credit card number. Since the modem is still in command mode, I give the following command:

```
ATDT1234567890
```

This command tells the modem to send my credit card number. After this, the call is typically completed and I can do my stuff.

The trouble with the Macintosh Portable modem is that when it is given the second command string, it hangs up the phone before doing the credit card number. This is not good. I need a solution.

DISCUSSION -----

Your problem is caused by a feature of the Macintosh Portable Data Modem 2400 and its use of the dial command. The feature in question is dial tone sensing -- waiting for a dial tone before actually dialing the requested number. It is



a common feature of many, but not all, Hayes and Hayes-compatible modems and actually originated with another modem manufacturer.

When you issue the first dial command, the modem goes off-hook, waits for a dial tone, and then dials the number. After the second dial command, the modem (which is already off-hook) again waits for a dial tone. Since there is no dial tone present at this stage of a credit card call, the modem waits 2 seconds as specified by modem register S6 and goes on-hook without dialing the credit card number. It should also alert the user with a NO DIALTONE message.

There are a couple of ways to get around the problem. The first and probably most acceptable way is to use additional dial command options designed just for this kind of situation.

The W modifier can be put in the middle of a dial string to cause the modem to wait for a "secondary" dial tone such as that generated by AT&T "dial 0 first" calls.

```
ATTD 0 123 456-7890 W 12345678901234
```

The above command dials the destination number, and then pauses at the W for a secondary dial tone. When the secondary dial tone is detected, the rest of the number is dialed -- in this case, the credit card number. The number of seconds the modem will wait for the secondary dial tone is controlled by the value of modem register S7.

Some long distance services do not generate this secondary dial tone, and in these cases a different modifier must be used. The @ symbol causes the modem to wait for a 5-second silence before continuing, and is one alternative.

```
ATDT 0 123 456-7890 @ 12345678901234
```

This dials the destination number and then waits for a 5-second silence before dialing the credit card number. If the 5-second silence isn't detected within the number of seconds in modem register S7, the modem will go on-hook and display the message NO ANSWER.

Another useful modifier is the comma character. It will generate 2-second pauses (controlled by modem register S8) while dialing. Two in a row would cause a 4-second pause.

```
ATDT 0 123 456-7890 ,, 12345678901234
```

This dials the destination part of the number and pauses 4 seconds before dialing the credit card number.

The 5-second delay usually works, but is often excessive. Combinations of commas can generate just the right amount of delay, depending on the long distance carrier being used.

One last item to note is that the dial tone sensing is only active when result code set 2 or 4 is used. This is controlled by the ATXn command, where n is a value from 0 to 4 inclusive. If 0, 1, or 3 is used, your original method of

dialing would work.

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Tech Info Library Article Number:5832



# Tech Info Library

## ALERT: Steroid Trojan Horse

Revised: 7/16/90  
Security: Everyone

ALERT: "Steroid" Trojan Horse

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This article last reviewed: 21 June 1990

TOPIC -----

This article discusses the effects of a Trojan Horse called "Steroid", and some suggestions on repairing the losses it can cause.

DISCUSSION -----

The Trojan Horse called "Steroid" is an INIT that claims to speed up QuickDraw on Macintosh computers with 9-inch screens. The INIT contains code that checks for the date being greater than June 6, 1990. If it is, it erases all mounted drives.

We have performed some tests on a Macintosh SE. Having Comm Toolbox installed seemed to interfere with the INIT and kept the erase from happening: the Macintosh SE simply crashed instead.

We then installed the INIT on a floppy disk and booted the Macintosh SE. The floppy and hard disk were promptly erased. NOTE: We had set the date to one LATER than June 6, 1990.

So far, we know that the code does the following operations at restart:

Operations at Restart

-----

DATE & TIME CHECK (Loop)  
SYSENVIRONS CHECK  
GETS VOLUME INFORMATION (probably checking for HFS)  
GETS SOME ADDRESSES (Toolbox traps)  
DOES SOME HFS DISPATCH OPERATIONS  
VOLUME IS REINITIALIZED to "Untitled"

Information

-----

TYPE: INIT  
CREATOR: qdac  
CODE SIZE: 1080  
DATA SIZE: 267  
ID: 148  
Name: QuickDraw Accelerator  
File Name: " Steroid" (first two characters are ASCII 1)

What To Do

-----

If your disk becomes erased, you can use SUM II Disk Clinic to recover the deleted files. We have tried this and it seems to work.

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Tech Info Library Article Number:5833



# Tech Info Library

## AppleShare 2.0 & Older Versions: Recommended Memory Use (8/95)

Revised: 8/22/95  
Security: Everyone

AppleShare 2.0 & Older Versions: Recommended Memory Use (8/95)

=====

Article Created: 21 June 1990  
Article Reviewed/Updated: 21 August 1995

TOPIC -----

Extra memory in an AppleShare file server is automatically given to RAM cache. But because of the algorithms used by Macintosh RAM cache, some have told me that a 2MB server is actually FASTER than a 5MB server.

Is this the case? Are there any recommendations for memory size for:

File Server Only  
File Server and Print Server  
File Server with Internet Router  
File Server and Print Server with Internet Router

If I'm using a Macintosh II as a file server with 2MB of memory (and under the maximum of 50 users) what's the benefit of another 3MB of memory for the file server? I know that the RAM cache will increase (it's at 1024K already, though with 2MB) and that will (theoretically) speed things up, but I've switched back and forth, and don't see much of a difference.

DISCUSSION -----

AppleShare File Server runs in about 1MB of RAM. Any memory beyond this 1MB is given to RAM cache, to cache directory structures, user data files, and so on. Thus, in a 2MB machine, 1MB will be used for caching. As cache size increases, more of the disk directory can be maintained in memory. This results in fewer disk accesses and faster response. Users' data files are also maintained in cache when there is room. This is effective with multi-user applications when several users access the same data file.

In general, 1MB of cache memory is quite adequate. Any more memory beyond this will not buy you much -- and can degrade performance, as you were told. This is why you did not see the difference between a 3MB and a 5MB machine.

For a File Server only, 1MB to 2MB memory is recommended. A 1MB Macintosh server can support 25 concurrent users. A 2MB Macintosh II can support 50 concurrent users.

To run the AppleShare File Server with the Internet Router or the AppleShare Print Server, or both, the minimum memory requirement is 2MB. You should run about 4MB to achieve better performance.

For more information about memory requirement when running the Internet Router with the File Server and the AppleShare Print Server, search the Tech Info Library using keywords "Internet Router" and "memory".

#### Article Change History:

21 Aug 1995 - Change title to reflect the subject.

Support Information Services

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Tech Info Library Article Number:5834



# Tech Info Library

## MacDFT: IBM Environment Printing Support

Revised: 7/16/90  
Security: Everyone

MacDFT: IBM Environment Printing Support

=====

This article last reviewed: 21 June 1990

TOPIC -----

DCA MacIrma supports printing with the IBM standard \$IND file transfer mechanism.

MacDFT doesn't seem to support that function. Why?

DISCUSSION -----

We are not clear how you are using file transfer service IND\$ for printing. DCA MacIrma supports printing via LU Type 3 devices to IRMAPrint attached printers. Tri-Data Systems, Inc.'s Netway supports printing via LU Type 3 device to LAN-based LaserWriters.

In the IBM environment, Local copy means sending a snapshot of your screen to the control unit, which prints it on a 3287 printer. Host Local copy printing means printing a host file on a 3287 printer connected to the terminal. MacDFT version 1.1 does not support host or terminal local copy. However, you can create a screen image that you can save to disk or print from the Macintosh II computer during a MacDFT session.

You can print documents and files produced during your MacDFT session on an Apple printer that is connected to your Macintosh. You can print host-resident documents to an IBM printer that is connected to your control unit or host. Use the print commands that are supported in your IBM environment.

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Tech Info Library Article Number:5835



# Tech Info Library

## Macintosh: Controlling Multimedia Peripheral Devices

Revised: 12/22/95  
Security: Everyone

Macintosh: Controlling Multimedia Peripheral Devices

=====

Article Created: 16 July 1990  
Article Reviewed/Updated: 22 December 1995

TOPIC -----

- 1) Is there any product available that allows peripherals like the video cassette recorder, LaserDisc player, large screen projector, slide projector, sound system, lighting system, and so on, to be controlled from the Macintosh? How about a product that can control the VCR and get it to go to certain frames on the video cassette (just like the way the Macintosh can control the LaserDisc player).
- 2) Are there any products around that can record the Macintosh screen display into PAL video format?

DISCUSSION -----

- 1) We do not know of one commercial product that can control all of the listed peripherals. However, there are products for controlling most of the individual peripherals separately.
  - VCRs, camcorders and still video cameras with Control-L (Sony's video control standard) can be controlled via VidClip XCMDs for HyperCard, which are available from APDA. At this point, it appears that only Sony equipment uses the Control-L protocol. Sony does have 8mm VCRs, VHS VCRs, and still video cameras/players that support the Control-L protocol.
  - There are XCMDs for HyperCard that can control many of the laser disc players. These XCMDs are available from Voyager.
  - Sound systems and lighting systems can be controlled via MIDI. Audio mixing boards, audio equalizers, audio delay and reverb devices, and lighting control boards exist that have MIDI connections built in. A visit to a professional musicians' store should provide an array of possibilities for MIDI-controlled sound and lighting systems.



- Slide projectors usually have a cable-attached button controller for advancing/reversing slides. These button controllers can be replaced with a MIDI-controlled device from Peavey Electronics. Peavey is a music instrument manufacturer that recently produced a line of MIDI-controlled devices for controlling various items used in live performance music. One of these devices can replace the slide projector's remote control. Again, a professional musicians' store that carries Peavey products can supply this device.
- VidClip provides the control access to go to certain locations on tape. However, going to a specific frame on tape is not as easy as on disc. It is possible to get within about 5 frames with the typical Control-L VCR. Since recording single frames on low- to moderate-cost VCRs is not possible, the usual expectation with VCRs is to get close to (and in front of) the beginning of a video segment, start the playback, finish the segment, and stop the playback. Then cue to the next segment and continue.
- In addition to the list of media devices you have, audio CDs can also be controlled from HyperCard XCMDs. This would allow the addition of CD quality music and/or speech from audio CDs to the presentation. (Please be sure to check copyright issues when using material with copyrights.)

There are a variety of ways to integrate all of these various controllers into one application on the Macintosh. HyperCard XCMDs exist for the VCRs, laser discs, and for MIDI. Using a HyperCard stack that has access to all of the XCMDs would be able to control all of the devices at the click of a HyperCard button.

MacroMind Director 2.0 can use XCMDs from HyperCard, as well as its own XObjects. Thus, you can control the list of devices from within a Director movie, much like you would from within a HyperCard stack.

- 2) Many of the video boards can send Macintosh images to videotape in the PAL format. Truevision NuVista cards, several RasterOps Cards, and Mass Microsystems cards are all capable of providing PAL output. Some of these cards require an external encoder box to provide the PAL connection. Please check with the manufacturer for exact configurations. The Display Cards 8/24 and 8/24 GC will be able to provide PAL output via Truevision's VIDI/O Box. Eventually, RasterOps will have a PAL version of their Video Extender that will provide PAL.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

Article Change History:

22 Dec 1995 - Updated LaserDisc XCMD availability, updated format.

Support Information Services

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Tech Info Library Article Number:5836



# Tech Info Library

## Novell Netware: AARP Packet Size Error Fix Available

Revised: 7/16/90  
Security: Everyone

Novell Netware: AARP Packet Size Error Fix Available

=====

This article last reviewed: 21 June 1990

TOPIC -----

I am running AlisaShare and, on another part of the network, Novell File Servers with Netware 2.15c and the Mac VAP 1.1.

The problem is with the AARP packet size that the Novell file servers are sending. AlisaShare is reporting an AARP packet size error.

I have checked out the AARP packet sizes with a sniffer. AlisaShare thinks the only valid AARP size is 60 bytes. Netware is sending AARPs that are 74 bytes in size. The old versions of Netware (2.15a with Mac VAP 1.0) send ARPs with a packet size of 60 bytes. They work fine with AlisaShare.

DISCUSSION -----

There is a maintenance release of Netware for the Macintosh specifically designed to resolve the AARP packet length problem. You can get it by calling Novell Tech Support and asking for maintenance release 1.11 of Netware for the Macintosh.

For more information, search under: "Novell"

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Tech Info Library Article Number:5838



# Tech Info Library

## Apple HD160 SC Drive: Seagate Model Number is 94221-209

Revised: 7/16/90  
Security: Everyone

Apple HD160 SC Drive: Seagate Model Number is 94221-209

=====

This article last reviewed: 21 June 1990

TOPIC -----

I need information on the Apple HD160 SC hard disk drive mechanism.

What is the relationship between the CDC/Imprimis model number and (following Seagate's take-over of Imprimis) the new Seagate number?

DISCUSSION -----

Service Engineering provided us with the following information:

Imprimis 160MB Apple drive = Seagate model number: 94221-209

Seagate P/N are:  
77748206 for Apple internal drive.  
77748226 for Apple external drive

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Tech Info Library Article Number:5840



# Tech Info Library

## AppleShare Print Server: How To Speed Up Lino L300 Spooling

Revised: 7/16/90  
Security: Everyone

AppleShare Print Server: How To Speed Up Lino L300 Spooling

=====

This article last reviewed: 21 June 1990

TOPIC -----

This article discusses solutions for slow spooling and printing from a Macintosh to a Linotronic L300.

DISCUSSION -----

We ran into a SEVERE slowdown using the Print Server on a dedicated Macintosh SE with 2.5MB that was spooling to a Linotronic L300. 700K files were taking up to seven minutes to spool.

The first step was to take the two high-end output workstations and link them to the Rip 4s via Ethernet, using the 5.2 Laser Prep and so on. The same print job now took 1 minute 40 seconds to the Print Server, and 1 minute 30 seconds direct to the Rip.

Laser Prep & Laser 6.0 are the only drivers that are able to take advantage of font caching. So we installed 6.0 on the Print Server and Workstations.

Printing to the AppleShare print server then dropped to 40 seconds.

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Tech Info Library Article Number:5841



# Tech Info Library

## DayStar FastCache: Incompatible with Apple Tape Backup

Revised: 7/16/90  
Security: Everyone

DayStar FastCache: Incompatible with Apple Tape Backup

=====

This article last reviewed: 21 June 1990

TOPIC -----

Apple Tape Backup 2.0.1 crashes when running on my Macintosh IIci whenever a DayStar Digital FastCache card is physically installed in the Macintosh.

DISCUSSION -----

DayStar Digital confirmed that Apple Tape Backup does not run with cache turned on. The only current workaround (June, 1990) is to turn the cache off when running Tape Backup.

Please note that removing the DayStar FastCache Macintosh IIci CDEV will not turn cache off, since it is controlled in ROM. The correct way is to leave the DayStar CDEV in the System Folder, choose Control Panel from the Apple menu, click the DayStar FastCache Macintosh IIci CDEV, and turn the cache off.

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Tech Info Library Article Number:5842



# Tech Info Library

## Macintosh Communications Toolbox: Where to Find Information

Revised: 7/16/90  
Security: Everyone

Macintosh Communications Toolbox: Where to Find Information

=====

This article last reviewed: 2 July 1990

TOPIC -----

I am interested in making some tools for the commtoolbox. Where can I find guidelines, sample source, and so on?

DISCUSSION -----

You might consider purchasing the "Macintosh Communications Toolbox," and the "Communications Tools, Basic Connectivity Set" from APDA.

There is also a Macintosh Communications Toolbox folder on the Developer Services board, where you'll find: product information, common questions and answers relating to the Communications Toolbox, tools and sample code, listings of third-party products that support the Communications Toolbox, and ongoing discussions on the Comm Toolbox.

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Tech Info Library Article Number:5843



# Tech Info Library

## LaserWriter IINTX: ROMs Are v3.0 as of June, 1990

Revised: 7/16/90  
Security: Everyone

LaserWriter IINTX: ROMs Are v3.0 as of June, 1990

=====

This article last reviewed: 2 July 1990

TOPIC -----

Have the LaserWriter IINTX ROMs been updated to allow software switching back from LaserJet to PostScript? My LaserWriter IINTX manual says you can get the software to switch back, but I am unable to make it work.

DISCUSSION -----

LaserWriter IINTXs (controller board Apple part #M6004/A) are currently shipping with version 3.0 ROMs. The major differences between these and older ROMs are:

- Software switching from LaserJet emulation to PostScript
- Font cleanup in LaserJet emulation
- Better disk management routines
- PostScript 51.8.

The upgrade kit (Apple part #M0445LL/A) is expected to ship (in very small numbers) in the third week of June.

Support Readiness will send upgrade kits (including the new manual) on a one-per-site basis as soon as they are available.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5845





# Tech Info Library

## LaserWriter IINTX: Use Font Utility 2.0 with Rev 3.0 ROMs

Revised: 7/16/90  
Security: Everyone

LaserWriter IINTX: Use Font Utility 2.0 with Rev 3.0 ROMs

=====

This article last reviewed: 2 July 1990

TOPIC -----

System: LaserWriter IINTX with Rev 3.0 ROMs (PostScript Version 51.8) and 20MB hard drive attached to SCSI port. Apple LaserWriter Font Utility Version 1.0/ System Software 6.0.5

Problem  
-----

When using the Apple Font Utility to download fonts, I downloaded some fonts, stopped and then restarted the process again in the morning. The Apple Font Utility did not show any fonts previously downloaded as appearing on the hard drive. The start-up test page does show that there were 46 fonts available. The Adobe Font Utility also lists all of the available fonts. Only the Apple Font Utility doesn't show them.

I then installed another font and it showed as being there, but none of the others did (this was done without quitting the Apple Font Utility). After quitting the Apple Font Utility and restarting, the fonts don't show. Adobe's utility does show the additional font, as does the startup page.

The fonts do print correctly and the LaserWriter goes to the hard drive and gets the fonts as needed; that is, they DO NOT get downloaded over LocalTalk.

Is there a problem with the Apple LaserWriter Font Utility Version 1.0 and the new LaserWriter IINTX board? Is there a problem with the 1.0 Font Utility and System Software 6.0.5?

DISCUSSION -----

A new version of the LaserWriter Font Utility ships with the new LaserWriter IINTX board. If you have the new board, you should be using version 2.0 of the LaserWriter Font Utility.

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Tech Info Library Article Number:5848



# Tech Info Library

## Radius Pivot Card: Display Card 8/24 GC Compatibility

Revised: 7/16/90  
Security: Everyone

Radius Pivot Card: Display Card 8/24 GC Compatibility

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This article last reviewed: 2 July 1990

TOPIC -----

Can the Radius Pivot Video Card coexist in a Macintosh with Apple's Display Card 8/24 GC?

DISCUSSION -----

Radius Tech Support assures us that there should be no problem running a Macintosh system with both cards installed.

For more information, search under: "Radius"

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Tech Info Library Article Number:5850



# Tech Info Library

## MacDFT 1.1: Configuring in NON-SNA Mode

Revised: 7/16/90  
Security: Everyone

MacDFT 1.1: Configuring in NON-SNA Mode

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This article last reviewed: 2 July 1990

TOPIC -----

I have a problem configuring MacDFT 1.1 for NON-SNA.

Configuration

-----

MacDFT 1.1  
Coax/Twinax NB Card  
Cluster Controller 3274 61C - configured for DFT  
modem to an IBM host

I tried to configure MacDFT 1.1 for NON-SNA. During the startup of MacDFT an error window opened and told me to re-configure MacDFT to SNA-mode because NON-SNA was not a valid configuration. Then I tried to configure MacDFT for SNA and the same error message told me to configure MacDFT to NON-SNA.

Why can't I configure MacDFT 1.1 for NON-SNA?

DISCUSSION -----

It looks like your cluster controller is configured for Bisynchronous communications. If this is the case, MacDFT can provide CUT support only over Bisynchronous, so switching the coax CDEV setting to CUT mode should work.

The significance of the "DFT (NON-SNA)" setting is to support non-SNA channel protocols for locally attached controllers such as the old 41D models. Since your 61C is designed for remote connections, it isn't prepared to handle channel protocols, and MacDFT notifies you of the conflict.

If you're not trying to maintain Bisynchronous communications, and SDLC communications are OK, then you will need to check your controller's customization; if it is set for Bisynchronous, you will need to change it to SDLC in order for MacDFT to provide full DFT capabilities. The attach option

is configured in customization question 101 on the "Model/Attach" panel of the customization utility (see the 3174 customization manual for further reference).

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Tech Info Library Article Number:5852



# Tech Info Library

## Easel-Type Programs are Available for Macintosh

Revised: 7/16/90  
Security: Everyone

"Easel"-Type Programs are Available for Macintosh

=====

This article last reviewed: 5 July 1990

TOPIC -----

I need to find out about a product called Easel, currently available for MS-DOS systems. Is there anything equivalent for the Macintosh?

DISCUSSION -----

Easel is a front-end package that allows you to build a better interface to what may perhaps, from a GUI standpoint, be a more complex or inelegant system interface.

Proven programs for the Macintosh that perform similar functions include HyperCard and MitemView.

For more information, search under: "MITEM"

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Tech Info Library Article Number:5856



# Tech Info Library

## Macintosh: 24-bit Image Copying Problem Caused By Heap Space

Revised: 7/16/90  
Security: Everyone

Macintosh: 24-bit Image Copying Problem Caused By Heap Space

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This article last reviewed: 5 July 1990

TOPIC -----

I'm having trouble copying and pasting between Microsoft PowerPoint and Solutions International's SmartScrap. I tried to copy several 24-bit images from the PowerPoint document (they occupy a total of about 2.5MB), but when I tried to paste them, the first couple pasted OK but the rest didn't, and the machine hung.

DISCUSSION -----

We solved the problem by increasing the system heap space.

Normally the system has a small amount of heap space available. We increased the space using CE Software's Heapfixer, and all the problems went away.

We also checked with both Solutions International and Microsoft, and neither was aware of any other conflicts.

Microsoft, however, strongly recommends that anyone using 24-bit graphics in PowerPoint upgrade to version 2.0.1d.

For more information, search under: "CE Software"

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Tech Info Library Article Number:5858



# Tech Info Library

## Macintosh Display Card 8/24: NTSC Video Encoding

Revised: 6/18/92  
Security: Everyone

Macintosh Display Card 8/24: NTSC Video Encoding

=====

Article Created: 5 July 1990  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

I am very interested in getting a decent video signal from Macintosh II systems. I'm interested in Apple's Display Card 8•24 because of the convolution filter that (as far as I know) has no equivalent in third-party products.

Will the Display Card 8•24 ship with a CDEV like the Macintosh II video card utility to step the board down to interlaced NTSC scan rates? If not, how can I get such a utility/application?

Currently, I'm using a Truevision VIDIO/O box to do the RGB encoding. Has anyone tried the Truevision product with the Display Card 8/24?

DISCUSSION -----

The Display Cards 8•24 and 8•24 GC do not use software for switching to the NTSC interlaced mode. To put the Display Card 8•24 GC into the NTSC mode, a properly configured cable is all that is required. For more information, search under "NTSC output without converter".

To acquire a color NTSC signal from any Apple Macintosh display card, an RGB-to-NTSC converter will be required.

RasterOps and Truevision both have RGB-to-NTSC converters. RasterOps' Video Expander and Truevision's VIDIO/O Box accept the RS-170-A output of the Display Card 8/24 and 8/24 GC and generate a full color NTSC interlaced video signal. Both of these interface boxes also provide S-Video (also known as Y/C component video) output via the standard 4-pin mini-DIN connector. S-Video connections are used by S-VHS, HiBand 8mm, and ED Beta video devices.



Another device for RGB-to-NTSC conversion is ComputerVideo's Video NTSC Encoder. This was designed for the older Macintosh video card; however, it should work with the new display cards when the correct cable is used (see above).

For cable requirements for these interface devices, please check with the appropriate interface manufacturer.

For 8-bit video, Apple's convolution provides one of the finest methods for eliminating the single-pixel flicker that NTSC produces. When using 24-bit color, a different approach is required to address the NTSC flicker issue, since Apple convolution works only to the 8-bit level. Scan converters, like RGB/Videolink 600A, have been used for many years in the professional computer graphics companies to address NTSC flicker.

Scan converters would be used for television broadcast-quality 24-bit images. Scan converters not only convert the RGB signal to NTSC, they also eliminate the flicker associated with horizontal single-pixel lines and provide aspect-ratio conversion, color-bar generation, video transitions, freeze frame, and video mixing.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5859



# Tech Info Library

## Display Card 8/24: RS-170 External Sync

Revised: 7/16/90  
Security: Everyone

Display Card 8/24: RS-170 External Sync

=====

This article last reviewed: 5 July 1990

TOPIC -----

Do the Apple Display Cards 8/24 and 8/24 GC accept an external sync signal when in RS-170 mode? How is RS-170 external sync mode enabled?

DISCUSSION -----

The video cards alone do not except external sync -- however, if the video cards are being used in an environment where external sync is an issue, an RGB-to-NTSC converter is very likely in use. Truevision's VIDI/O Box and RasterOps' Video Expander can be used with either video card to allow external sync ability.

The specifics of using external sync are provided in each converter manufacturer's documentation.

At announcement, many references were made to the Display Card 8/24 being RS-170. In actuality, the production video cards meet the full RS-170-A specifications -- RS-170 being the original black and white specification; RS-170-A is the color extension to the original specification.

Without one of the above converters, the interlaced signal coming from the Display Card 8/24 and 8/24 GC will still be in black and white. With one of the converters, the Display Card 8/24 and 8/24 GC will provide full RS-170-A color.

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Tech Info Library Article Number:5860



# Tech Info Library

## Why Apple Computers Make Rounding Errors

Revised: 6/15/92  
Security: Everyone

Why Apple Computers Make "Rounding Errors"

Article Created: 5 July 1990  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

I'm having trouble doing a simple math calculation with FileMaker II. All subsequent programs I tried produced the same mathematical "error" (Excel and the Calculator desk accessory are a couple).

The calculation is very simple:

$$1194.6 - 500 - 640 - 54.6 = X$$

The result should be 0; however, all software produced the result -2.428612866E-17.

I can cure this problem in FileMaker II by rounding the result to two decimal places, but I am very interested in why the result does not go to zero. My IBM PC produced the same result. I gather the answer lies in the way personal computers handle subtraction.

DISCUSSION -----

The rounding errors you have run into on the Macintosh and IBM PC have been around since the beginning of personal computers (and longer!).

Computers must convert from a floating point decimal number to binary in order for the CPU to do math operations. To make the conversion process perform at a user-tolerable rate, past computer designers came up with "short cut" processes to do the conversion. These short cuts cause slight rounding errors. In the example you describe, the error is .00000000000000002486.... This can be annoying, but is a good trade-off for the amount of time that is saved when doing math functions.

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Tech Info Library Article Number:5862



# Tech Info Library

## Installer Software: Where to Find Documentation (11/94)

Revised: 11/7/94  
Security: Everyone

Installer Software: Where to Find Documentation (11/94)

=====

Article Created: 16 July 1990  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I'm interested in creating an install program (perhaps in C or Pascal) that will automatically install software and utilities on Macintosh systems.

Is there an easy way to write installer scripts for applications? It is becoming more time-consuming, as my Macintosh network has expanded, to update software on every machine.

Is there a way to produce installer scripts similar to what Apple offers with the operating system software -- without getting into Macintosh programming?

DISCUSSION -----

You can use Apple's Installer software. Documentation on the software and its scripts is available on AppleLink. Use the following path to find it:

Developer Support  
  Developer Services  
    Tool Chest  
      Developer Utilities  
        Installer 3.4  
          Installer.sit (StuffIt) 5/93

Article Change History:  
07 Nov 1994 - Revised AppleLink path.

Support Information Services

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Tech Info Library Article Number:5864



# Tech Info Library

## PrintMonitor: LaserWriter Timeout Messages

Revised: 12/16/91  
Security: Everyone

PrintMonitor: LaserWriter Timeout Messages

=====

Article Created: 5 July 1990  
Article Last Reviewed: 2 February 1991  
Article Last Updated:

TOPIC -----

If a few users are on the same network sharing a LaserWriter and one of them has sent a print job of many (say 100) pages to the LaserWriter, then the others have to wait for that job to be finished to capture the LaserWriter for their print job.

If they work under MultiFinder, and background printing has been activated in the Chooser, during the large print job, the print jobs of others will be spooled to their local disks without being canceled because of a timeout error.

Perhaps you can tell me if PrintMonitor has its own timeout mechanism and if so, is it possible to alter the timeout values by patching some code/resource?

DISCUSSION -----

PrintMonitor returns the message in question after the LaserWriter returns a timeout error. We occupied a system for over two hours, and, after releasing it, PrintMonitor printed the file that had been spooled.

If you are seeing excessive timeout errors, we suggest changing the timeout limits. To do this, see the Tech Info Library article, "LaserWriter: How to Change the Manual Timeout".

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Tech Info Library Article Number:5865



# Tech Info Library

## RMS and DATATRIEVE: Macintosh File Access

Revised: 8/28/90  
Security: Everyone

RMS and DATATRIEVE: Macintosh File Access

=====  
This article last reviewed: 9 August 1990

TOPIC -----

Are you aware of a product for the Macintosh that allows direct access to RMS flat files? I am looking for programs that also support DATATRIEVE.

Also, is DATATRIEVE -- which was supported under CDD (Common Data Dictionary) -- supported under CDD+?

DISCUSSION -----

1) We are not aware of a product for the Macintosh that provides an interface to a flat file system such as RMS. Although the capability does exist in the Data Access Language (formerly CL/1) architecture, it would require development efforts on the host, since no such host services have been developed to our knowledge.

One option would be to develop your own environment on the host using MacWorkStation. Since the interface to the RMS file system is provided through VMS run time libraries, you could write a MacWorkStation application that accessed those libraries and presented them on the Macintosh. However, this would restrict the presentation on the Macintosh to MacWorkStation, and you would have to use Copy and Paste to transfer the information to other applications.

2) We are not aware of any product for the Macintosh that supports VAX DATATRIEVE. Please note the VAX DATATRIEVE is a query and report system and is a uniform access method for data stored by RMS, VAX Rdb, and VAX DBMS files; it does not have its own file architecture. Programmable softkeys such as ones provided by PacerLink can be used to program DATATRIEVE commands. If you are looking for products to access RMS files, then the answer is the same as in (1) above.

3) According to DEC's Pre-purchase Technical Assistance, VAX DATATRIEVE

version 5.0 will work with VAX Common Data Dictionary/Plus (VAX CDD/Plus version 4.2) and VAX CDD as long as you run VAX/VMS 5.2 or 5.3.

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Tech Info Library Article Number:5866





# Tech Info Library

## Apple II: Transferring Data to the Macintosh

Revised: 7/16/90  
Security: Everyone

Apple II: Transferring Data to the Macintosh

=====

This article last reviewed: 23 June 1990

TOPIC -----

Can the Apple 5.25 PC Drive (and card) read ProDOS 5.25-inch disks under AFE?

DISCUSSION -----

Apple 5.25 PC Drive only supports disks that are formatted using the MFM encoding methods. Therefore, it does not read ProDOS-formatted disks, which use GCR. Alternative ways to move data from the Apple II to the Macintosh include AppleShare, a serial link (cable and/or modem), and by first moving the ProDOS data to 3.5-inch disks, which any Macintosh will mount.

You may find the AFE Works-Works translator helpful when actually translating the files. It is on the InfoSource CD-ROM available from Apple.

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Tech Info Library Article Number:5867



# Tech Info Library

## PostScript Fonts: How to Determine ASCII Assignments

Revised: 12/11/92  
Security: Everyone

PostScript Fonts: How to Determine ASCII Assignments

=====

Article Created: 17 July 1990

### Article Change History

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12/1/92 - REVISED

- To consolidate the method for using this program.

### TOPIC -----

Users with typesetting equipment and LaserWriters have run into the problem that the fonts generated by the LaserWriter are not quite the same as those from the typesetter being used. This is causing some problems when documents are printed on machines other than the LaserWriter.

This article describes a method for determining the ASCII assignment of any font.

### DISCUSSION -----

By sending a PostScript program (listed below) to a LaserWriter, a user can determine which character is encoded to what ASCII assignment for any laser font. For example, this specific program gives all ASCII codes and their respective characters for the Times-Roman font. By changing the name of the font, where noted with the % and comment, the ASCII assignment and character can be determined for any laser font.

```
/Times-Roman findfont
[12 0 0 -12 0 0] makefont setfont
60 47 moveto
(ASCII Code - Character      Times-Roman) show  %Change the font name
here.
60 59 moveto
```

```
500 59 lineto
500 762 lineto
60 762 lineto
60 59 lineto
stroke
/Times-Roman findfont           %Also, change the font name
here.
[12 0 0 -12 0 0] makefont setfont
/char 1 string def
/nstr 3 string def /newline
{ currentpoint 14 add
exch pop LM
exch moveto } def
/prt-n
{nstr cvs show} def
/prtchar
{ char 0
3 -1 roll put
char show } def
/PrintCodeandChar
{ dup prt-n
( - ) show
prtchar newline } def
/LM 72 def
LM 72 moveto
0 1 49 {PrintCodeandChar} for
/LM 144 def
LM 72 moveto
50 1 99 {PrintCodeandChar} for
/LM 216 def
LM 72 moveto
100 1 149 {PrintCodeandChar} for
/LM 288 def
LM 72 moveto
150 1 199 {PrintCodeandChar} for
/LM 360 def
LM 72 moveto
200 1 249 {PrintCodeandChar} for
/LM 432 def
LM 72 moveto
250 1 255 {PrintCodeandChar} for
showpage
```

This PostScript program can be sent to the LaserWriter with the LaserWriter Utility that can be located on the LaserWriter Utility Disk. Put the text of this program into a text file (you can use TeachText) and send it to the printer with the LaserWriter Utility.

For additional information on PostScript, refer to the Adobe PostScript Language Reference Manual, 2nd Edition, by Adobe Systems, Inc.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:5870



# Tech Info Library

## Apple IIe: Printing to Networked Printers

Revised: 7/16/90  
Security: Everyone

Apple IIe: Printing to Networked Printers

=====

This article last reviewed: 15 June 1990

TOPIC -----

I have an Apple IIe network problem. I have a printer network only with no file server. The school district wants to use the printer network with its 5.25-inch disk drives. There are about 50 labs with 20 to 25 Apple IIe systems in each lab.

I created a Chooser and Menu program "startup disk". I copied the necessary files and ATINIT to let the startup disk auto-select the networked printers. We found a public-domain menu program that requires only 1.5K. This lets the Chooser be part of the menu and lets teachers and students (especially K-3) select program without using pathnames.

I understand the AppleTalk network process and the need for the 3.5-inch drive. However, why can't we also provide support for the Apple IIe and the 5.25-inch drives?

DISCUSSION -----

The only issue with using 5.25-inch drives for the described environment concerns disk space. After adding ProDOS 8, Chooser.II (with associated files), and ATINIT, the remaining space is all that is available for applications and data files on the startup disk. This means that there is approximately only 60K available for applications on a disk configured with the needed resources for network printing.

For a printer choice to be retained, you need run Chooser.II only once, as long as the selected printer maintains the same name and stays available on the network. The selected printer is stored in the ATINIT file of the disk that contains Chooser.II. On subsequent startups with that disk, the printer that was previously selected becomes the default printer. Thus, Chooser.II is not required to be run every session.

If only one 5.25-inch drive is available and if applications and/or data files larger than 60K are to be used, it is possible to start up with the disk described above, then switch (without restarting) to a second disk containing the larger application or data file. We do not know of any menu programs that can launch an application on a second disk, although such a program would not be difficult for an Apple II programmer to write.

However, since Chooser.II needs to run only once (unless something about the printer changes), alternate methods of launching an application from the second disk can be considered. One example would be an Applesoft program that launched the menu program. By giving the Applesoft program a simple name (like MENU) and placing it in the main directory, the students would be able to switch disks, type RUN MENU, and then select the application desired.

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Tech Info Library Article Number:5875



# Tech Info Library

## LaserWriter IINTX: Setting Baud Rate to 19.2Kb

Revised: 7/16/90  
Security: Everyone

LaserWriter IINTX: Setting Baud Rate to 19.2Kb

=====

This article last reviewed: 18 June 1990

TOPIC -----

I have a LaserWriter IINTX on an Apollo workstation network. Initially, I direct-connected (9600 baud) the LaserWriter to a print server to download the PostScript file that sets the printer to 19.2K baud.

Is a hardware setting available for this 19.2K baud setting, perhaps a jumper inside the LaserWriter IINTX or switch settings? This would eliminate the need to download the file.

DISCUSSION -----

The only way to set the baud rate of the LaserWriter IINTX to 19.2K baud is by sending a PostScript program to the LaserWriter. For reference, here is the PostScript program:

```
serverdict begin 0 exitserver
statusdict begin 25 19200 64 setsccbatch
```

For a more detailed description of this program and the options it can change, see page 122 of the "LaserWriter IINT/NTX Owner's Guide."

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Tech Info Library Article Number:5878



# Tech Info Library

## Macintosh SE: Models After July 1988 Can Take DIP SIMMs

Revised: 7/16/90  
Security: Everyone

Macintosh SE: Models After July 1988 Can Take DIP SIMMs

=====

This article last reviewed: 26 June 1990

TOPIC -----

Concerning the Macintosh SE, are we using (or have we ever used) DIP SIMMs? I was wondering if there might be a physical interference problem with some Ethernet cards if this were the case.

DISCUSSION -----

Originally, Apple did not use DIP SIMMs in the Macintosh SE, because they did not fit. However, in July 1988, we revised our SIMM strategy for the Macintosh SE and began shipping the DIP SIMMs with the Macintosh SE. The Macintosh SE logic board was revised, and a jumper added that lets you put DIP SIMMs in banks 3 and 4 (the two frontmost banks), and still have room to install an option board.

This information is documented in the "Technical Procedures" manuals and in a service notice sent to Apple dealers in July 1988.

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Tech Info Library Article Number:5879





# Tech Info Library

## Macintosh: Front End for Telemail or MCI Mail

Revised: 12/17/91  
Security: Everyone

Macintosh: Front End for Telemail or MCI Mail

=====

Article Created: 27 June 1990  
Article Last Reviewed: 10 August 1992  
Article Last Updated:

TOPIC -----

I am looking for a Macintosh software package, besides Desktop Express,  
that can act as a front end for either Telemail or MCI Mail.

DISCUSSION -----

You might be interested in Software Ventures' MicroPhone II (which has an  
MCI Mail CCL). Prometheus offers Acknowledge (a toolkit for programming an  
interface for MCI Mail and Telemail) and Macknowledge, software for end  
users with scripting capabilities. Macknowledge comes with an MCI Mail  
button ready to use.

For more information, search on "Software Ventures" or "Prometheus  
Products".

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Tech Info Library Article Number:5880



# Tech Info Library

## Macintosh: RGB-To-NTSC Video Conversion Options

Revised: 6/17/91  
Security: Everyone

Macintosh: RGB-To-NTSC Video Conversion Options

=====

Article Created: 18 June 1990  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I work at a TV station and am researching the best solution for recording 24-bit images from my Macintosh IICx to videotape. I am interested in the Display Card 8/24 GC as a solution.

I have also considered the RasterOps 364 board that lets the Macintosh display real-time, 24-bit images on the Macintosh monitor from a video source. However, I do not know if this card offers the ability to record Macintosh video onto tape.

I am aware that the cards from Orange Micro, TrueVision, and Mass Micro may also be solutions. However I am not familiar with these cards and their features. If you can provide me with any info (or an opinion) I would appreciate it.

DISCUSSION -----

There are three approaches to placing Macintosh images into the NTSC world:

- A video card with onboard NTSC output. RasterOps, SuperMac, Orange Micro, Computer Friends, Mass Micro, and others make Macintosh video cards that provide NTSC output directly from the cards.
- An RGB-to-NTSC converter box. RasterOps and ComputerVideo make RGB-to-NTSC converter boxes that work with Apple's color video cards, both the new ones and the original 8-bit video cards. RasterOps' converter also works with their 208, 264, 364, and 16PC cards. TrueVision also provides a RGB-to-NTSC converter box for their video cards. However, it does not work with the Apple video cards.

- A scan converter. RGB Spectrum builds a scan converter that works with most Macintosh 640x480 video cards.

The card providing onboard NTSC output must have all the necessary circuitry built on the NuBus video card. These are the simplest to install and use. There are connections on the cards for connecting the NTSC video signal coming from the card directly to the NTSC destination device. This usually uses an RCA-type phono-plug-to-phono-plug connection. The various cards provide a variety of features, from only video out to video overlay to frame grabbing to special video effects.

Note: In this article, the reference to frame grabbing indicates the ability to grab a frame of video in 1/30 of second. Scanning indicates the need for more time to acquire the image. This generally requires using a video camera for input, because most freeze-frame images are not usable for source material. The issue concerns the lack of video sync during freeze-frame mode.

There is currently one RGB to NTSC converter box available. Tech Comm has not been able to test this box, so we are unable to provide additional details. However, it appears that it should work correctly with the new video cards when the correct cable is used. It does work with the older 8-bit Macintosh color video cards when used with the interlace utility Apple has made available. The box is from ComputerVideo and is called Video NTSC Encoder.

RasterOps has announced The RasterOps Video Expander box, which is listed as compatible with the new Apple video cards. The RasterOps box provides both composite and S-Video (for S-VHS, HiBand 8mm and ED Beta) output signals. This converter also requires the correct cable to be used. Again, Tech Comm has not had the opportunity to test this card with the new video cards. Beyond the conversion to NTSC, these converter boxes do not provide any additional features to the video card that is used. These boxes require the signal coming from the cards to be in the NTSC interlaced mode.

For the finest conversion of RGB to NTSC, a scan converter is required. They are far more expensive than the converters mentioned above. Scan converters are used to create the highest-quality broadcast image. Scan converters not only convert the RGB signal to NTSC, they also eliminate the flicker associated with horizontal single-pixel lines and provide aspect-ratio conversion, color-bar generation, video transitions, freeze frame, and video mixing--all at the best available quality. The scan converters take the high scan rate RGB signal directly from the video cards, convert it to a digital frame buffer, do their functions digitally, and reconvert the image in an analog NTSC signal. This lets you do a function similar to Apple's 8-bit convolution on 24-bit images.

The RasterOps 364 does not provide NTSC video output without the use of the Video Expander box. In this respect, it is the same as the Display Card 8/24 GC. The frame grabbing ability and the live video on the Macintosh RGB display, however, do set it apart from the Display Card 8/24 GC. The 364 card does not provide the ability to overlay computer graphics on top of the live video. The live video window can be placed on top of a graphic background. None of the background will be seen through the live video image. The live video window is resizable.

The NuVista cards from TrueVision also provide frame grabbing from a video source. To lay the image back to videotape, the TrueVision VIDI/O converter box is required. The NuVista are not designed to provide live video images on the Macintosh RGB screen. Instead they provide the ability to overlay the Macintosh graphics on top of the video image. This composited image must be viewed on an NTSC screen.

Mass Micro provides a two-card set, the ColorSpace III and ColorSpace F/X cards. The ColorSpace III provides NTSC output of a Macintosh 8-bit image. It can also overlay the Macintosh graphics on top of video fed into the card. This composited image will appear on the NTSC device. Limited, non-real-time scanning can be accomplished. With the addition of the F/X card, a variety of video special effects can be achieved with the video signal being sent to the Macintosh.

The video image can be compressed, stretched, flipped, and so on in real time for use in the NTSC world. The F/X card can also frame grab from the incoming video in 24-bits. With the ColorSpace III and F/X cards the single-pixel line flicker problem is addressed. They do not use convolution as Apple does. Rather, they have devised their own method of addressing this NTSC issue.

The Orange Micro Personal Vision card offers frame grabbing and the ability to display incoming video on the Macintosh RGB screen. The Personal Vision card does not have an NTSC video output on the card. This card relates most to the RasterOps 364 card. However, we don't know of any RGB-to-NTSC converter box for the Personal Vision card.

Some of the video cards that have onboard NTSC video output also offer the ability to overlay the Macintosh graphics on top of incoming video to provide a composite image at the NTSC output. This feature needs to be checked for any card being considered for combining video sources with Macintosh graphics.

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Tech Info Library Article Number:5884



# Tech Info Library

## A/UX: Porting C Code from SUN (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: Porting C Code from SUN (9/94)

Article Created: 19 June 1990  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

I have a question about Berkeley UNIX type compilers that run on a SUN/3 and similar machines. Would code compiled on a typical C compiler on a SUN run relatively unaltered (assuming recompilation) under A/UX?

Because we don't implement full Berkeley, would a program for a SUN system have to be radically re-written to run on a Macintosh running A/UX?

DISCUSSION -----

A/UX is based on AT&T System 5.2.2. All C codes written on any System V.2.2 based system (use of standard System V.2 C compiler) should compile and run under A/UX without any change.

Since SUN/3 is based on BSD 4.[23] UNIX, there are differences between AT&T System V.2.2 and BSD UNIX 4.[23]. The area of difference includes ioctl() system call, signal handling, directory structure, and so on. Therefore, if the C code involves these differences, it needs to be modified to run on A/UX.

A/UX also supports UNIX 4.2BSD-style signals (software interrupts) and Berkeley UNIX 4.2-style network systems. For example, A/UX includes set42sig() so you can use the 4.2BSD signals. The Berkeley TCP/IP networking facilities like socket(), bind(), connect(), and so on are supported.

Now that the A/UX 2.0 and 3.0 kernel implements Berkeley file system (UFS), the system calls for UFS file system structure are available and supported.

Be aware that if the C code contains SUN specific (non-Berkeley or non-standard UNIX calls), it has to be re-written for A/UX. In short, porting C code to A/UX should not be a difficult task, although there are differences between System V.2.2 and BSD UNIX.

Article Change History:

19 Sep 1994 - Reviewed for technical accuracy.

31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5887



# Tech Info Library

## A/UX: X Window System Symbolic Links

Revised: 9/18/92  
Security: Everyone

A/UX: X Window System Symbolic Links

Article Created: 23 June 1990

### Article Change History

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I am installing X Windows. I have installed the software without problems, but when I run it, I get "X11BINDIR ENVIRONMENT ERROR". This is because I am using a second partition mounted under my own directory. I know that I need to do a symbolic link for some files, but I don't know to which ones and the manual has nothing about accessing X Windows under another directory.

When there is no room to install X in the root directory, why isn't this information included in the manual?

### DISCUSSION -----

If you installed X11 Window System (the Native X) on a separate partition, make sure the following files and directories are symbolically linked or copied to the right places:

```
ln -s ../../bin/X11      /usr/bin/X11
ln -s ../../lib/X11      /usr/lib/X11
ln -s ../../include/X11  /usr/include/X11
ln -s ../../lib/lib*X*.a /usr/lib
cp /usr/lib/X11/xterm*    /usr/lib/terminfo/x
cp /usr/lib/X11/.x11start /
cp /usr/lib/X11/Sample.twmrc /.twmrc
```

Also, edit the .profile (for Bourne or Korn shell) or the .login file (for Csh shell) to include the /usr/bin/X11 directory in the search PATH.

The X Window System installation document does mention it requires 12MB of free disk space, and the Xinstall shell script also checks the available disk space before actually performing the installation.

For more information, refer to "Chapter 3 Install X11" in the "Getting Started With X Window System for A/UX" documentation.

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Tech Info Library Article Number:5891





# Tech Info Library

## A/UX 2.0: Macintosh Applications Can Use 32-Bit Addressing

Revised: 9/30/92  
Security: Everyone

A/UX 2.0: Macintosh Applications Can Use 32-Bit Addressing

=====

Article Created: 19 June 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does A/UX 2.0's 32-bit addressing extend to the "MultiFinder" process? That is, if I am running "normal" Macintosh applications under A/UX 2.0, do I have access to more than 8MB of memory space?

### DISCUSSION -----

Yes, A/UX 2.0's 32-bit addressing capability can be extended to the Macintosh applications which run under A/UX 2.0 MultiFinder Environment. However, the Macintosh application can access up to 16MB, because this is the maximum memory size allowed in Macintosh OS.

The size of the Macintosh application's memory address space can be changed via either ResEdit or Get Info. Note that there is a limitation on using the "Get Info" method; it lets you key no more than four digits. Therefore, use ResEdit if you require a change of more than 9999K.

To have your Macintosh applications run in the A/UX 2.0 32-bit environment, make sure you have sufficient virtual memory allocated before the session is started. There are two ways of controlling the size of the virtual memory allocation:

- 1) By assigning a value to an environment variable TBMEMORY. For example, "TBMEMORY=16m; export TBMEMORY" (or put them in the .profile file or .login file), logout then login again. This will create a 16MB virtual memory for MultiFinder.

2) By passing a flag when starting the "startmac" process. For example, edit the /mac/bin/mac32 file to have the "startmac" command line to read  
"/mac/bin/startmac -m16m &". This will create a 16MB virtual memory for MultiFinder.

The maximum feasible size for virtual memory is dependent on the environment (24-bit or 32-bit), and of course the size of the Swap space on the disk. For the 24-bit environment, the maximum virtual memory is 8MB; for the 32-bit environment the maximum virtual memory is 256MB.

System performance, however, will degrade if the virtual memory is much larger than the physical memory present in the system because a lot of paging and swapping activities will take place. A good rule of thumb is to keep virtual memory no larger than twice the size of physical memory present in the system.

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Tech Info Library Article Number:5892



# Tech Info Library

## A/UX 2.0: How to Escape from a Hung Login Under X Windows

Revised: 9/18/92  
Security: Everyone

A/UX 2.0: How to Escape from a Hung Login Under X Windows

=====

Article Created: 19 June 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I created an interesting problem for myself. I was preparing a Macintosh IIIfx with X Window and mistyped a line into the PATH variable. When I tried to log in, I hung. I was finally able to break out of the login process, but it was time-consuming and not very intuitive. The typo was /usr/lib/X11, instead of /usr/bin/X11. Obviously, this didn't let the process look in the right place for the software, so it wouldn't boot properly.

Do you have any suggestions?

### DISCUSSION -----

As we have tested the above X11 session scenario (login as "Guest" without the /usr/bin/X11 in the search PATH) we won't get into the "hung" situation. It is true that the screen displays, "Starting session for Guest...", if no one presses the Return key.

At that "hung" point, however, if you only press Return, the default X11 session will come up. The default X11 session includes a "Console" window, two "xterm" windows, and three X client applications (xlogo, xload, and xclock). If you have pressed any printable key then Return, it will bring you back to the Login dialog box.

As we examine the /usr/bin/X11/X11 script, the above behavior becomes clear, because the X11 script does check if /usr/bin/X11 is in your search path, then asks you if it should be appended to your search path. This is why the

"Starting session for Guest..." message was waiting for your reply.

Note that the "x11debug.log" file will be created under the user's home directory, if any error is encountered. Check with that file for an explanation.

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Tech Info Library Article Number:5894



# Tech Info Library

## A/UX: Supported Printing from UNIX (12/95)

Revised: 12/14/95  
Security: Everyone

A/UX: Supported Printing from UNIX (12/95)

Article Created: 19 June 1990  
Article Reviewed/Updated: 14 December 1995

TOPIC -----

This article describes printing features available to UNIX users.

DISCUSSION -----

A/UX 3.0 supports both AT&T System V and Berkeley BSD printer spoolers. The default printer spooler now is the Berkeley printer spooler that supports printcap (/etc/printcap) and remote printing capability.

You can configure printcap to print to locally connected devices like a serially connected ImageWriter or LaserWriter, or remote printers like other UNIX systems with lpd or TCP/IP capable Laser printers.

For more detailed information on Berkeley printer spooler system, refer to the printcap(4), lpr(1), lpc(1M), lpd(1M), lpq(1), & lprm(1) manual pages, and the "Setting Up Accounts and Peripherals for A/UX" documentation.

Additionally, printcap can be configured to make connections to AppleTalk printers, by have lpd use the AppleTalk protocol stack that is part of A/UX.

The input/output filters for AppleTalk LaserWriter Printer are provided in the /usr/spool/lpd/AppleTalk directory. For those who need to create multiple AppleTalk LaserWriters access, be sure to follow the instructions included in the input filter file (ifiler).

NOTE: The "pipe" file and filter files under each individual printer directory must be owned by "daemon" and grouped by "daemon".

As an example, to print a file "test", to a LaserWriter named "Metro" on an AppleTalk network (assuming the LaserWriter has a printcap entry "metro|mt") the user may give the command:

```
lpr -Pmetro test  
or   lpr -Pmt test
```

If the "-P" option is omitted, A/UX will print to either the default printer chosen from CHOOSER, from "at\_cho\_prn", or from the value of environment variable PRINTER.

For information on AppleTalk printing, refer to the atprint(1), atstatus(1), at\_cho\_prn(1), & atlookup(1) manual pages. Also look at "A/UX Networking Essentials" and "A/UX Local System Administration" manuals.

Article Change History:

14 Dec 1995 - Updated article with new information.

08 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5896



# Tech Info Library

## A/UX 2.0: Virus Protection (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX 2.0: Virus Protection (6/93)

=====  
Article Created: 16 July 1990  
Article Reviewed/Updated: 15 June 1993

TOPIC -----

What do you recommend for virus protection in the mixed A/UX-and-Macintosh OS environment?

DISCUSSION -----

We haven't heard of any virus reports on A/UX machines. Most anti-virus programs like "Disinfectant" or "SAM" should run under A/UX. Just check the product you plan to buy to make sure it works in the A/UX environment.

Article Change History:

15 Jun 1993 - Updated, bring question and virus-protection information up to date.  
19 Jun 1992 - Reviewed for technical accuracy.

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=====  
Created: 7/16/90  
Author: WK  
Source: SIS  
Library: TECHINFO

Tech Info Library Article Number:5901



# Tech Info Library

## A/UX Patch Server (3/94)

Revised: 3/11/94  
Security: Everyone

A/UX Patch Server (3/94)

=====

Article Created: 19 June 1990  
Article Reviewed/Updated: 11 March 1994

TOPIC -----

Location of updates for A/UX, if available.

DISCUSSION -----

Any updates or patches that are available for A/UX will be found via anonymous ftp on: aux.support.apple.com. Users should ftp to aux.support.apple.com and type in 'anonymous' as their username. The password should be their username.

### Article Change History:

11 Mar 1994 - Modified article to indicate location on the internet of Apple's anonymous ftp server.

Support Information Services

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Tech Info Library Article Number:5902





# Tech Info Library

## LaserWriter: All Printers on Network Need Same Driver

Revised: 7/23/92  
Security: Everyone

LaserWriter: All Printers on Network Need Same Driver

=====

Article Created: 19 June 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

I have Version 6.0.1 of the LaserWriter driver and Laser Prep. After installing it on one of our machines, I get a message that the LaserWriter contains an incompatible version of Laser Prep that cannot be removed and that I should restart the printer.

Restarting the printer doesn't help. The LaserWriter in question is spooled using the AppleShare Print Spooler on an AppleShare server. When the spooler "picks up" the LaserWriter, it must be downloading the Laser Prep to the LaserWriter. The problem is that I am spooling LaserWriters for two departments on this spooler and don't want to update both departments to the new drivers.

Will I have to update everyone to System 6.0.5 and the 6.0.1 LaserWriter driver?

DISCUSSION -----

The LaserWriter driver on the spooler determines the version needed by each workstation. Therefore, all printers captured by the spooler must use the same drivers. However, you need only update the users' drivers, not the system software. The 6.0.1 driver is compatible with Macintosh System Software 6.0.x.

In other words, if there are different versions of the LaserWriter Driver in your network on various Macintoshes, including System 7 versions, the printer will have to go through a lengthy process of reinitializing itself to a new version of the LaserWriter driver every time a different version is used in the printing process. In general, the best and most consistent approach is to update every Macintosh on the network with the highest

version of the LaserWriter driver being used on the network.

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Tech Info Library Article Number:5904



# Tech Info Library

## AppleShare: Folder View Is Set by Owner

Revised: 7/16/90  
Security: Everyone

AppleShare: Folder "View" Is Set by Owner

=====

This article last reviewed: 19 June 1990

TOPIC -----

Is there any way to "set" an AppleShare file server, so that the folders and files are viewed by date instead of by folder as default?

DISCUSSION -----

The "View" choice for a folder is set by the owner of the folder. Once the owner has made the change (view by date, for instance), users of the folder won't see a difference until the folder has been closed by the owner.

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Tech Info Library Article Number:5905



# Tech Info Library

## Macintosh Portable: Modem Ring Detect Problem and Workaround

Revised: 8/5/92  
Security: Everyone

Macintosh Portable: Modem Ring Detect Problem and Workaround

=====

Article Created: 19 June 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 4 August 1992

TOPIC -----

I have a Macintosh Portable. I experienced problems using the internal modem when the Portable's Ring Detect feature is on.

DISCUSSION -----

The Ring Detect setting is located in the Portable's Control Panel Device (CDEV) and lets users wake up their Portable when an internal modem detects a phone ring. This setting can be accessed only when an internal modem is installed.

This problem was fixed in System 6.0.7. System 7 also fixes the problem.

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Tech Info Library Article Number:5906



# Tech Info Library

## IBM 3476, 3477 Terminals: Emulation Alternatives (8/94)

Revised: 8/30/94  
Security: Everyone

IBM 3476, 3477 Terminals: Emulation Alternatives (8/94)

Article Created: 25 June 1990  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

I have an IBM AS/ENTRY model A20 with 3476 B20 and 3477 D20 terminals. I would like to replace the terminals with Macintoshes.

Do you have technical information on those terminals, and are you aware of any products for the Macintosh to emulate those terminals?

DISCUSSION -----

We are not sure about models B30 and D20. Here is what we got from IBM brochures:

IBM InfoWindow 3476 Monochrome Models EA and EG:

- 14-inch, low-glare etched flat screen
- Choice of amber (EA) or green (EG) characters on a black background
- Enhanced ergonomics
- Low-cost, entry-level 5250 compatibility
- Choice of three low-profile keyboards

IBM InfoWindow 3477 Monochrome Models FA and FG:

- 14-inch, low-glare etched flat screen
- Choice of amber (FA) or green (FG) characters on a black background
- Enhanced ergonomics
- Full-function 5250 compatibility
- Choice of two low-profile keyboards
- Printer port for host or screen print

We don't know of any Macintosh programs that emulate the two terminals you mentioned, but because they are 5250-compatible, you can use one of the following alternatives:

Andrew Corp. provides a system of hardware and software for connecting to both the AS/400 and System 3x computers. Their product line includes MacTwin, NetAxxess, TokenAxxess, Boxer (protocol converter), and TCPAxxess.

IDEAssociates has a Macintosh product for connecting to AS/400 computers and to System 3x computers. IDEAcomm Mac version 1.0+ is the product's name.

Wall Data has a Macintosh product line for connecting to an AS/400. Their product line includes SNA•ps 5250 stand alone product, SNA•ps 5250 client, and SNA•ps Gateway.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

#### Article Change History:

30 Aug 1994 - Updated third-party vendor alternatives.  
12 Feb 1993 - Updated KMW now Andrew Corp.  
15 Mar 1991 - Reviewed for accuracy.

Support Information Services

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Tech Info Library Article Number:5909



# Tech Info Library

## Macintosh: Support for External Floppy Drives (9/95)

Revised: 9/26/95  
Security: Everyone

Macintosh: Support for External Floppy Drives (9/95)

Article Created: 25 June 1990  
Article Reviewed/Updated: 26 September 1995

TOPIC -----

I want to use two Apple 3.5-inch external floppy drives with my Macintosh. I have tried to chain them together, but the system recognizes only the first drive in the chain. Can I use more than one external floppy drive?

DISCUSSION -----

NOTE: No Macintosh computer supports more than one external floppy drive. Only the Macintosh SE and later support the Apple SuperDrive (Apple FDHD).

Begin\_Table

| System                               | Floppy Disk Drive Configuration                                                                                                                        |
|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Macintosh Plus                       | 1 Internal (800K) and 1 External (400K or 800K)                                                                                                        |
| Macintosh SE                         | 1 or 2 Internal (800K or SuperDrive if upgraded) and 1 External (400K, 800K, or SuperDrive if upgraded)                                                |
| Macintosh SE with SuperDrive         | 1 or 2 Internal (SuperDrive) and 1 External (800K or SuperDrive)                                                                                       |
| Macintosh SE/30, Classic, Classic II | 1 Internal (SuperDrive) and 1 External (800K or SuperDrive)                                                                                            |
| Macintosh Color Classic              | 1 Internal (SuperDrive and no External                                                                                                                 |
| Macintosh II, IIx                    | 1 or 2 Internal (800K or SuperDrive) and no External<br>NOTE: The Macintosh II must be upgraded to a IIx, or must use a PMMU, to support a SuperDrive. |

|                                                                                                        |                                                                  |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Macintosh IICx, IICi                                                                                   | 1 Internal (SuperDrive) and 1 External (800K or SuperDrive)      |
| Macintosh IIfx                                                                                         | 1 or 2 Internal (800K or SuperDrive) and no External             |
| Macintosh LC                                                                                           | 1 or 2 Internal (SuperDrive) and no External                     |
| Macintosh LC II, LC III                                                                                | 1 Internal (SuperDrive) and no External                          |
| Macintosh IISi                                                                                         | 1 Internal (SuperDrive) and 1 External (800K or SuperDrive)      |
| Macintosh IIVx                                                                                         | 1 Internal and no External                                       |
| Macintosh Quadra 610,<br>630, 650, 700, 800, 900,<br>950, Power Macintosh<br>6100/60, 7100/66, 8100/80 | 1 Internal (SuperDrive) and no External                          |
| Macintosh Portable                                                                                     | 1 or 2 Internal (SuperDrive) and 1 External (800K or SuperDrive) |
| Macintosh PowerBook 100                                                                                | No Internal and 1 External HDI-20 1.4MB floppy drive             |
| Macintosh PowerBook 140,<br>145, 160, 165c, 170 180,<br>180c                                           | 1 Internal (SuperDrive) and no External                          |
| PowerBook Duo 210, 230,<br>250, 270c, 280c                                                             | No Internal and 1 External (with MiniDock)                       |
| Macintosh PowerBook 520,<br>520c, 540, 540c                                                            | 1 Internal (SuperDrive) and no External                          |
| Macintosh Performa 200                                                                                 | 1 Internal (SuperDrive) and 1 External (800K or SuperDrive)      |
| Macintosh Performa 400,<br>405, 410, 430, 450, 460,<br>466, 467, 475, 476, 550,<br>600, 630            | 1 Internal and no External                                       |
| End_Table                                                                                              |                                                                  |

This article was published in the "Information Alley":  
Volume II, Issue 9, Page 8

Article Change History:

26 Sep 1995 - Added Info Alley information; udpated article.  
14 Mar 1995 - Corrected wording of MiniDock.



# ..TIL05911-Macintosh-Support\_for\_External\_Floppy\_Drives\_9-95\_(TA44069).pdf

18 Jul 1994 - Updated to include recently introduced models.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:5911



# Tech Info Library

## Macintosh: Photo Downloading from Wire Services

Revised: 7/16/90  
Security: Everyone

Macintosh: Photo Downloading from Wire Services

=====

This article last reviewed: 25 June 1990

TOPIC -----

Do you know of any product that will permit a newspaper to download photographs from a photo wire service.

DISCUSSION -----

All of the news wire services we checked with feel that though this would be highly desirable (to download pictures directly into a Macintosh), this capability doesn't exist for any PC.

The news wire services presently support "photo" downloading to printers only, a service that can be purchased from Independent Network System (INS).

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5915



# Tech Info Library

## Metrowerks, Inc. (12/95)

Revised: 4/4/97  
Security: Everyone

Metrowerks, Inc. (12/95)

=====

Article Created: 16 July 1990  
Article Reviewed/Updated: 4 April 1997

Metrowerks, Inc.

-----

3925 W. Braker Lane  
Suite 310  
Austin, TX 78759-5321

Telephone: 1-800-377-5416 or 512-305-0400

Fax: 512-305-0440

e-mail:  
sales@metrowerks.com

Worldwide Web:  
<http://www.metrowerks.com>

Company Profile:  
Software, specializing in Modula-II, Pascal and C++ compilers, including the  
Metrowerks CodeWarrior series..

Support Information Services

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5916



# Tech Info Library

## Ethernet: Preventing Macintosh IIci Performance Degradation

Revised: 7/16/90  
Security: Everyone

Ethernet: Preventing Macintosh IIci Performance Degradation

=====

This article last reviewed: 27 June 1990

TOPIC -----

Apple engineering has discovered performance degradation under the following configuration:

- EtherTalk NB Revision K card
- EtherTalk 2.0.1 or 2.0.2 software
- Macintosh IIci
- On-board video and four or more colors (In 2-bit or greater mode).

DISCUSSION -----

To avoid Ethernet performance degradation on a Macintosh IIci, choose from among these three options:

- Use an EtherTalk NB Revision L card (shipping since December of 1989).
- Do not use on-board video (i.e. use a video card)
- Use only black and white video (1-bit video)

If you're using EtherTalk software, the Ethernet performance can be improved somewhat by starting the Macintosh IIci in 1-bit video and later switching to 2-bit or more video. This workaround is effective when using EtherTalk software (AppleTalk), but not MacTCP software (like MacX.)

The Ethernet performance can also be improved somewhat if you start the Macintosh IIci in LocalTalk and then switch to EtherTalk. This doesn't help in the MacTCP case, unless you are running MacTCP over EtherTalk, rather than standard Ethernet.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5917



# Tech Info Library

## Independent Network System (INS)

Revised: 4/4/97  
Security: Everyone

Independent Network System (INS)

=====

Article Created: 02/18/91  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

Independent Network System (INS)

-----

527 West 34th St.  
6th Floor  
New York, NY 10001

212-330-0686

212-330-0691 Fax

Company Profile:  
Specializing in a service for downloading photos to printers (used largely by newspapers, broadcasting industry).

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5918



# Tech Info Library

## Macintosh Finder: Print Directory Workaround

Revised: 7/22/91  
Security: Everyone

Macintosh Finder: Print Directory Workaround

=====

Article Created: 17 July 1990  
Article Last Reviewed: 19 July 1991  
Article Last Updated: 19 July 1991

TOPIC -----

I have a problem printing a disk directory from the Finder while in "View by Name" mode (running System Software 6.0.5 with the LaserWriter 6.0.1 and 5.2 drivers).

Black areas are printed on the pages along with the correct information. Sometimes, the areas are narrow, running along the right side of the page. Other times, the areas are broad, running right through the middle of the page. It is NOT a problem with the toner cartridge, as the black areas have a definite pattern like a scaled graphic character.

DISCUSSION -----

When you choose Print Directory for the directory of a folder or disk that has one or more locked files, and with the view set to something other than Icon or Small Icon, the pixels for the padlock are printed like fat bits on top of (or next to) the text. The size of the padlock (usually very distorted) varies.

You can work around the problem under MultiFinder by turning on background printing.

This has been fixed in System 7.

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5922



# Tech Info Library

## MacX: Key-Mapping Problem When Oracle Changes sysenvir to tty

Revised: 4/20/93  
Security: Everyone

MacX: Key-Mapping Problem When Oracle Changes sysenvir to tty

=====

Article Created: 17 July 1990

### Article Change History

-----

04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm having a problem with the new MacX.

I was using a Macintosh SE with Extended Keyboard on LocalTalk going through a GatorBox Box. The host was a SUN workstation; OS was 4.0

When doing Xterm or accessing an Xwindow based Oracle database, certain keys didn't seem to be mapping -- A, D, M, and N. Also, numbers on the top of the keyboard weren't being mapped, but the numbers on the side key pad worked fine.

What's the scoop?

### DISCUSSION -----

If you logged on to the X Window-based Oracle database, it was changing the sysenvir to tty mode. In our own test, we changed the Oracle profile so the userid was TERM=PC. This solved the problem.

Copyright 1990-93 Apple Computer, Inc.

Tech Info Library Article Number:5924





# Tech Info Library

## AppleShare PC: Switching From PostScript to Epson

Revised: 7/30/90  
Security: Everyone

AppleShare PC: Switching From PostScript to Epson

=====

This article last reviewed: 17 July 1990

TOPIC -----

Are there any DOS batch files that will switch AppleShare PC print services from PostScript to Epson mode transparently as a pre-defined application is loaded, and then back again when the application is quit?

(The two applications in question are Smartterm and CrossTalk. Both are being used for All-in-1 emulation.)

Barring the batch files, do you have any other suggestions. It's unacceptable to me to have to access the ASPC chooser every time I want to use All-in-1?

DISCUSSION -----

The easiest solution would be to establish two connections to the same LaserWriter. One connection can be set up to use PostScript, and print to LPT2 (or the first available). The second can then be set up to use Epson emulation and print to LPT3 (or the next available). You would then configure one application to print to LPT2 and the other to LPT3. (We have done this with AppleShare PC 2.0 and 2.0.1 and it works fine.)

The connections can be configured from DA to be established automatically on startup, so that you need only remember that printing to LPT2 uses PostScript and printing to LPT3 uses Epson emulation.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5925



# Tech Info Library

## Macintosh-to-CA-Datcom/DB Access

Revised: 9/13/91  
Security: Everyone

Macintosh-to-CA-Datcom/DB Access

=====  
Article Created: 17 July 1990  
Article Last Reviewed: 13 September 1991  
Article Last Updated: 13 September 1991

### TOPIC -----

I need to access a database on an IBM 3090. It's called DATACOM, by Computer Associates International. Can you help?

### DISCUSSION -----

CA-Datcom/DB is a database management system from Applied Data Research (ADR) which was acquired by Computer Associates International in 1988. Since then, CA has tried to merge Datcom/DB with its other DBMS product: CA-Universe. Prior to release 8.0, Datcom/DB did not provide SQL capability.

A terminal emulation program such as MacDFT would allow access to IBM hosts and databases. However, we assume you would like to access the database in the client/server fashion, such as what is offered by Data Access Language (formerly CL/1). We provide DAL servers for both VM/CMS and MVS/TSO. However, on VM/CMS, DAL servers only allow access to IBM's Structured Query Language/Data System (SQL/DS) and on MVS/TSO, only Database 2 (DB2). There is no adapter currently for CA-Datcom/DB.

For more information, search under "Computer Associates".

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5926



# Tech Info Library

## Macintosh IIfx: CDC Wren Hard Drive Compatibility (11/94)

Revised: 11/21/94  
Security: Everyone

Macintosh IIfx: CDC Wren Hard Drive Compatibility (11/94)

=====

Article Created: 17 July 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

Is there a way to connect a CDC Wren Series 7 94601 or CDC Wren Series 6 602 to the SCSI port of the Macintosh IIfx? Both hard disks need to be connected synchronously.

DISCUSSION -----

We called Seagate Technical Support and asked them about the two drives mentioned above. They were aware of the CDC Wren 94601 but not the CDC Wren 602. There is a CDC Wren 94602 but it is not compatible with the Macintosh. Note: CDC is a division of Seagate.

There is a specific model of the CDC Wren 94601, the CDC MacWren 94601-1.2GM, that is, according to Seagate, compatible with the Macintosh IIfx; other models of the CDC Wren 94601 are not compatible with the Macintosh IIfx. Driver software and cables are available from a company called Ontrack (Technical Support: 612-937-2121; Sales: 800-752-1333).

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5929



# Tech Info Library

## Macintosh IIfx: SCSI Port and Hard Drive Performance

Revised: 7/11/91  
Security: Everyone

Macintosh IIfx: SCSI Port and Hard Drive Performance

=====

Article Created: 30 July 1990  
Article Last Reviewed: 23 April 1991  
Article Last Updated: 23 April 1991

TOPIC -----

How fast must a hard disk be to take full advantage of the speed (3 megabytes per second) of the Macintosh IIfx SCSI port?

DISCUSSION -----

A hard disk drive with a sustained data transfer rate (not to be confused with "throughput") of 3 megabytes per second or faster will take full advantage of the improved performance of the Macintosh IIfx SCSI port.

This transfer rate is independent of the operating system. For example, there is no difference in the transfer rate when using A/UX.

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:5931



# Tech Info Library

## ELF: Where to Get More Information (11/94)

Revised: 11/22/94  
Security: Everyone

ELF: Where to Get More Information (11/94)

Article Created: 17 July 1990  
Article Reviewed/Updated: 22 November 1994

TOPIC -----

I have lots of questions about the ELF (Extremely Low Frequency) radiation issue.

For example, how does the radiation from a 27-inch television viewed at 24 inches (the standard viewing distance for my seven and ten year old boys despite constant harassment on my part) compare to the radiation from an Apple Color RGB monitor viewed at 14 inches?

Where can I get such information?

DISCUSSION -----

The Apple Environmental Health & Safety group is responsible for information on Apple products and ELF emissions. While they do not currently have any direct access for the general public, questions can be posed to the Customer Assistance Center at 800-776-2333.

The Customer Assistance Center will do their best to obtain an answer to your questions.

Article Change History:  
22 Nov 1994 - Clarified where to go for information on ELF.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:5932



# Tech Info Library

## TCP/IP: Network Administration Recommended Reading

Revised: 9/21/92  
Security: Everyone

TCP/IP: Network Administration Recommended Reading

=====

Article Created: 13 July 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can you suggest a good book on TCP/IP from a network administrator's point of view?

### DISCUSSION -----

We don't know of any TCP/IP network administrator-specific books. However, there are two well-known TCP/IP documents that you might find helpful: "Introduction to the Internet Protocols" and "Introduction to Administration of an Internet-based Local Network." They are available from Rutgers University, Computer Science Facilities Group. Contact them from the internet

Also, the "A/UX Network System Administration" documentation is a good reference for TCP/IP administration. It includes B-Net (TCP/IP), NFS, Subnet, Slip, Yellow Pages (client and server), and AppleTalk network issues.

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Tech Info Library Article Number:5933



# Tech Info Library

## A/UX 3.0 Workstation Information (9/94)

Revised: 9/19/94  
Security: Everyone

A/UX 3.0 Workstation Information (9/94)

Article Created: 13 July 1990  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

This article contains a series of questions about using Macintosh IIci systems as A/UX workstations.

- 1) How many NuBus slots can be connected as 802.3 Ethernet ports?
- 2) What UNIX is A/UX based on?
- 3) What about the A/UX C compiler?
- 4) Does the current version of A/UX support menu-driven System Administration type of function?
- 5) Are the remote system administration utilities like "rdump" and "rrestore" supported in A/UX?
- 6) Does A/UX support Xerox's Ethernet (XNS)?
- 7) Does A/UX support RFC 943?
- 8) Does A/UX support RFC 951 (Bootstrap Protocol)?
- 9) How many physical layer supported connections can you have?
- 10) How many sockets per session can you have?

DISCUSSION -----

Here are the answers:

- 1) In theory, up to 6 NuBus slots can be connected as 802.3 Ethernet ports.

- 2) The current version of A/UX 3.0 is based on AT&T System V2.2 UNIX with BSD 4.[23] extensions which include software signals and Internetwork facilities. It conforms to SVID (System V Interface Definition) and SVVS (System V Verification Suite). Also the System V3 Streams is supported in A/UX.
- 3) The A/UX C compiler is driven from the standard AT&T System V.2 C compiler. However, it is not ANSI C compatible.
- 4) The current version of A/UX does not support menu driven System Administration type of function.
- 5) The remote system administration utilities like "rdump" and "rrestore" are supported in A/UX.
- 6) Currently, A/UX 3.0 does not support Xerox's Ethernet (XNS), but a third-party might have solution on it, for instance the BSD 4.3 UNIX supports XNS protocol. Porting to any UNIX box should be easy.
- 7) RFC 1117 is pretty standard in Internet. It replaced the obsolete RFC 943. Basically, DDN Network Information Center (NIC) maintains the assigned network number for the Internet community, Class A network is assigned with numbers between 1 and 127, Class B network is assigned with numbers between 128 and 191, and Class C is assigned with numbers between 192 and 255. This is supported by A/UX.
- 8) RFC 951 (Bootstrap Protocol) describes an IP/UDP bootstrap protocol (BOOTP) that lets a diskless client machine discover its own IP address, the address of a server host, and the name of a file to be loaded into memory and executed. The current version of A/UX 3.0 does not support bootp.
- 9) The number of physical layer supported connections can be up to the number of available NuBus slots. (That's 6 in Macintosh IIX.)
- 10) The number of sockets per session can be configured via "kconfig" to as many as the user wishes. However, for the sake of performance, more physical memory is needed if the number of sessions is increased. The default is 16.

Article Change History:

19 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5934





# Tech Info Library

## Floppy Drive Port: Maximum Power Load (11/94)

Revised: 11/21/94  
Security: Everyone

Floppy Drive Port: Maximum Power Load (11/94)

Article Created: 30 July 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I am interested in the Integrated Data Systems IDS-WIP series drive. It is a low-power, compact SCSI drive that gets its power from the external, floppy port.

Are there any possible problems with this drive? Would it invalidate Apple's warranty? They mentioned in its specifications that it uses from .25 to 1.5 watts maximum draw, depending on the size of the hard disk.

DISCUSSION -----

The power budget of this port varies slightly with each of the Macintosh models, but the worst-case scenario follows. The combined load of all devices connected to the floppy drive ports shouldn't exceed the following:

|     |               |
|-----|---------------|
| +5  | 700 milliamps |
| +12 | 600 milliamps |
| -5  | 10 milliamps  |

Apple typically discourages using the floppy port in the way you describe. These ports were designed to support the 400K, 800K, and the 1.44MB Apple disk drives. The older Macintosh computers also had ROM support for the Apple HD20-- which provided its own power.

Because the drive you describe requires no physical modification to the Macintosh, powering a SCSI drive in this fashion would not void the warranty--unless the damage caused to the Macintosh is traced back to the drive.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5935



# Tech Info Library

## A/UX: Quantum Pro-80 Requires Different Formatting (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: Quantum Pro-80 Requires Different Formatting (9/94)

=====

Article Created: 10 July 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

I have been unsuccessful in installing A/UX 1.1.1 onto Quantum Pro-80 drives using the Apple HD Setup utility. I heard that there is a ROM difference between the Quantum drives I have and the ones Apple uses. My drives have Quantum ROMs, while Apple's have an Apple ROM. Have you heard of problems with Quantum drives?

DISCUSSION -----

According to Quantum technical support, the Pro-80 drive is not compatible with the Quantum Q280 drive which is used in the Apple HD 80SC. They use their own ROM. The Apple HD Setup software cannot be used to initialize the Quantum Pro-80 drive.

To install A/UX onto a Quantum Pro-80 drive, find a third-party disk formatter to format and partition it for A/UX. A good example is SilverLining from La Cie Ltd.

Support Information Services

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Tech Info Library Article Number:5936



# Tech Info Library

## A/UX: Change Process Priority with nice (1) and (2)

Revised: 9/16/92  
Security: Everyone

A/UX: Change Process Priority with nice (1) and (2)

=====

Article Created: 10 July 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Apple gives a high priority or time slice to the mac32 process. I'm developing a product that needs to throw up a dialog saying that it's going to process data and then take over as much of the CPU's time as possible.

Do you have any tools and/or facilities to give priorities to specific tasks? Ultimately, I would like to shut off tasks like network daemons, cron daemons, and so on.

### DISCUSSION -----

A/UX supports both nice (1) and nice (2). These let you run or change the priority of a process.

nice (1), which is available from the command level, executes the specified command with a lower or higher CPU scheduling priority. Note that the nice built-in function in the C shell is different from /bin/nice, so be careful using nice. The superuser may run commands with priority higher than normal by using a negative increment. For example:

```
/bin/nice --15 wc /usr/dict/words
```

causes the program "wc" to be run with higher priority than a normal process. See nice (1) manual page for more details.

nice (2) is a system call to change the priority of a process. It adds the

increment value (specified in the argument) to the value of the calling process. See nice (2) manual page for more details.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5937



# Tech Info Library

## Apple IIGS: High-Speed SCSI Card Memory Requirement (11/94)

Revised: 11/21/94  
Security: Everyone

Apple IIGS: High-Speed SCSI Card Memory Requirement (11/94)

=====

Article Created: 10 July 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

How much memory does the Apple II High-Speed SCSI card require? I can't find anything about this in the manual.

DISCUSSION -----

The Apple II High-Speed SCSI card requires a minimum of 768K on the Apple IIGS computer.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:5938



# Tech Info Library

## Farallon StarController: IIGS and IIfx Upgrade Information

Revised: 7/30/90  
Security: Everyone

Farallon StarController: IIGS and IIfx Upgrade Information

=====

This article last reviewed: 10 July 1990

TOPIC -----

Is there a known problem using Macintosh IIfx systems with (older) Farallon's StarControllers similar to the problem with Apple IIGS systems on networks with StarControllers?

Do you have the date that StarControllers began shipping with the new PAL, and what is Farallon's policy regarding upgrading old controllers?

DISCUSSION -----

Farallon is aware of a performance loss when using the Macintosh IIfx and the Apple IIGS with the StarController, part number PN207. This occurs only on networks with Apple IIGS systems or Macintosh IIfx systems. Networks without these systems not experience any loss.

According to Farallon, the original StarController has been replaced with the PhoneNET StarController Series 300. The new product began shipping on April 30, 1990. Among other additions, this new version of the StarController contains the fix for the Apple IIGS and Macintosh IIfx.

For owners of the older StarController (PN207), chip upgrades (part number FX207) are available directly from Farallon. For more information, call Farallon customer service.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5939



# Tech Info Library

## AppleShare PC 2.0: How to Set Zones

Revised: 7/30/90  
Security: Everyone

AppleShare PC 2.0: How to Set Zones

=====

This article last reviewed: 10 July 1990

TOPIC -----

What is the analogous mechanism for PC users to change the zone they reside in? ANET? If so, which command(s)? I've gone over the manual and was unable to find the answer.

DISCUSSION -----

ANET is the correct command to use to set the zone that you wish the PC to reside in. The exact format of the command is:

```
ANET USE MLIDname Z zonename
```

where MLIDname is the name of the MLID you are using, and zonename is the zone you wish to reside in. Executing this command also stores these values in the NET.CFG file, keeping them across restarts of the machine. For more information on this command, check page 132 of the "AppleShare PC User's Guide."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5940





# Tech Info Library

## MacDFT v1.1: Doesn't Support IBM Entry Assist Function

Revised: 7/30/90  
Security: Everyone

MacDFT v1.1: Doesn't Support IBM Entry Assist Function

=====

This article last reviewed: 10 July 1990

TOPIC -----

Turning Document mode on enable's IBM's Entry Assist function. This feature works with several IBM host editors to provide limited local-formatting, entry, and edit control.

The key sequence that initiates this on a 3278 Model 2 terminal is "Alt-Blank" (on the MacDFT keyboard layout this is "Alt-CR POS"). Also, I have seen this function implemented on a PS/2 Model 60 using IRMA DFT.

I need to know if I can imitiate this function. However, I cannot get into Document mode, because I am already showing "Alt-CR POS" in the key position that produces this function on a 3278 terminal.

DISCUSSION -----

MacDFT 1.1 does not support IBM's Entry Assist function. If this functionality is needed, we suggest investigating DCA's MacIrma product, because it is likely to provide features similar to those found in their DOS products.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5941



# Tech Info Library

## Casady & Greene, Inc.

Revised: 4/4/97  
Security: Everyone

Casady & Greene, Inc.

=====  
Article Created: 30 July 1990  
Article Reviewed/Updated: 4 April 1997

Casady & Greene, Inc.

-----  
22734 Portola Dr.  
Salinas, CA 93908-1119

408-484-9228 (Sales, Technical Support)

408-484-9218 Fax

Company Profile:  
Software, specializing in integrated security, games, fonts, virus, programs,  
and utility programs.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:5942



# Tech Info Library

## Monochrome Monitors: Portrait and 2-Page Linearity Specs

Revised: 10/22/90  
Security: Everyone

Monochrome Monitors: Portrait and 2-Page Linearity Specs

=====

This article last reviewed: 20 July 1990

TOPIC -----

What are the linearity specifications for the Apple Portrait Display and the Apple Two-Page Monochrome.

DISCUSSION -----

Apple displays for the Macintosh have a linearity specification of 10%; that is, when moved, the size of an object on the screen changes (larger or smaller) by no more than 10%.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5943



# Tech Info Library

## LaserWriter: Direct Printing over Mixed Ethernet

Revised: 7/30/90  
Security: Everyone

LaserWriter: Direct Printing over Mixed Ethernet

=====

This article last reviewed: 20 July 1990

TOPIC -----

I have a Novell Ethernet network (spread over four floors) with 30 IBM PCs. I want to connect 20 Macintosh IIs. To date, I have tested two Macintosh directly connected to the Ethernet network (version 2.15c, Mac VAP 1.1). Both of the connected Macintoshes have InterLAN NIA310 MacConnect cards running the NIA310 driver, Rev. AA, version 1.0.

I would like to connect my LaserWriters to the Macintoshes and not to the Novell Server, because the Server is on another floor. I need a solution that lets Macintosh users connect directly to Ethernet and print to any LaserWriter linked through any Macintosh II AppleTalk printer port--without requiring the user to disconnect from Ethernet and connect to AppleTalk.

- 1) Can I use an Apple Internet Router?
- 2) If yes, can I use the InterLAN card, or do I need the EtherTalk NB Card?
- 3) Can I use, for example, the GatorBox or FastPath as another solution?

DISCUSSION -----

Netware for Macintosh (which is included with ELS Netware Level II 2.15, Advanced Netware 2.15, and SFT Netware 2.15) lets DOS, OS/2, and Macintosh users share Apple LaserWriters and Apple ImageWriters. Macintosh users have the option of printing directly to the printer or through the Netware print queue.

Because as Apple LaserWriters and Apple ImageWriters can be connected to the network only through their built-in LocalTalk connectors, you must use one of the routers that supports connections between LocalTalk- and EtherTalk-based networks. The Apple Internet Router, the GatorBox, or the FastPath can be used

for this purpose.

You should be able to use the same InterLAN cards, if you can successfully connect to the Netware server over EtherTalk with these cards.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5945



# Tech Info Library

## ImageWriter II/L: What Is It?

Revised: 7/30/90  
Security: Everyone

ImageWriter II/L: What Is It?

=====

This article last reviewed: 20 July 1990

TOPIC -----

I've seen references to an "ImageWriter II/L." What is it?

DISCUSSION -----

Apple has rolled out a new ImageWriter II printer without changing the printer's name. The easiest way to identify the new model is by observing where the serial or power connector is located. If the connector is on the leg of the printer, you have an old ImageWriter II. Otherwise, it is the recent model.

Service addressed the identification problem by using the suffix "/L" in all their service documents referring to the new printer. Articles in the Tech Info Library follow this same convention.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5947



# Tech Info Library

## Personal LaserWriter: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Personal LaserWriter: Specifications (Discontinued)

=====

This article last reviewed: 20 July 1990

TOPIC -----

These are the technical specifications for the Personal LaserWriter.

DISCUSSION -----

Printing Method

-----  
Electrophotography (single-component dry toner)

Printing Speed

-----  
4 pages/minute

Page Size Limits

-----  
Width: min. 97 mm (3.2 in.)  
max. 216 mm (8.5 in.)  
Length: min. 148 mm (5.83 in.)  
max. 356 mm (14.01 in.)

Paper

-----  
Face Down Output: 16 to 24 lbs. single sheet photocopy bond  
Face Up Output: 16 to 28 lbs. letterhead and colored stock  
Standard Weight transparency material  
Envelopes and labels

Paper Cassettes

-----  
Multi-Purpose Tray: 50 sheets of 80 gr/sq m  
or 15 envelopes of 80 gr/sq m  
US Letter, US Legal, A4, B5, Envelope  
Manual: Single sheets: US Letter, US Legal, A4, B5, Envelope

Print Delivery/Capacity

-----  
Face down: 50 sheets  
Face up: 50 sheets

Service

-----  
Duty cycle (month): no limit  
Minimum life expectancy: 150,000 pages  
Service interval: 100,000 pages  
Pages per Toner: 2500 pages

Noise

-----  
Printing: under 54 dB(A) Max.  
Standby: under 40 dB(A) Max.

Weight & Dimensions

-----  
width 15 inches, depth 18.3 inches, height 9.8 inches  
weight 32 lbs.

Power Consumption

-----  
operating: maximum 600W (115V)  
550W (220V)

Line Voltage Requirements

-----  

|                  | Voltage (V) 10% | Frequency (Hz) |
|------------------|-----------------|----------------|
| US/Japan         | 100/115         | 50/60          |
| Europe/Australia | 220/240         | 50             |

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Tech Info Library Article Number:5951





# Tech Info Library

## Running AppleTalk for VMS 2.1 on a VAX Cluster

Revised: 8/28/90  
Security: Everyone

Running AppleTalk for VMS 2.1 on a VAX Cluster

=====

This article last reviewed: 27 July 1990

TOPIC -----

I want to run AppleTalk for VMS 2.1 on a VAX cluster, which has two VAX systems sharing the same disks. I cannot run AppleTalk for VMS on both VAX systems. A file called PORTDESC.TEXT can have only one AppleTalk network number and can be accessed only from a directory called ATK\$ROOT. Therefore, I can run AppleTalk for VMS from only one VAX at the time.

Is this a known problem, or is it a question of configuration?

DISCUSSION -----

PORTDESC.TEXT resides in the directory ATK\$ROOT:[APPLETALK]. This port descriptor file is a text file that stores port descriptions. When the router process is initialized, it uses the port descriptor file to set up the port handlers. The AppleTalk for VMS installation procedure creates this file for you, using the information you supply during the installation procedure.

ATK\$ROOT is a VMS logical name. You can assign it to any rooted directory. The default is SYS\$SPECIFIC:.

In a cluster environment, there is a common disk that stores the entire directory structure (the common root plus each node's local root). Each local root contains, in addition to the usual system directories, a [SYSx.SYSCOMMON] directory that is an alias for [VMS\$COMMON], the cluster common root directory, in which cluster common files actually reside. The disk Master File Directory (MFD) contains the local roots (SYS0 for NODE1, SYS1 for NODE2, and so on) and the cluster common root directory, [VMS\$COMMON].

The VMS Install Utility puts everything in SYS\$COMMON unless you specify a directory for the files. In AppleTalk for VMS installation, you have a choice for the directory ATK\$ROOT. ATK\$ROOT is a system-wide logical name assigned to a rooted directory. The default rooted directory is SYS\$SPECIFIC:. If you

install AppleTalk for VMS on each node and use the default rooted directory, most AppleTalk for VMS files are placed in ATK\$ROOT:[APPLETALK] and its subdirectories. In a cluster, SYS\$SPECIFIC for each node is unique. Therefore, the PORTDESC.TEXT and other files are in the unique directories for each node. Keep in mind that you must have a unique network number for each ATKVLAP port on each node, and the ATKAELAP ports on all nodes should have the same network number. That means that the PORTDESC.TEXT files are not the same on every node.

If you use the default SYS\$SPECIFIC for the default during the installation and have correct network numbers in the PORTDESC.TEXT file (like above), each VAX should read the correct file when you start AppleTalk for VMS.

The only problem with this, beside the PORTDESC.TEXT file (which you want to keep unique on each VAX), is that copies of all other files are kept on each node. This can be a waste of space, and it is difficult to manage the same copies of files on each node, especially on a cluster with many nodes. If you are concerned about this, install everything in SYS\$COMMON. Then, after installation, manually move the PORTDESC.TEXT file to each node SYS\$SPECIFIC:. Modify the PORTDESC.TEXT files to have unique VLAP network numbers.

Re-define the ATK\$ROOT logical name to search the node SYS\$SPECIFIC first, then SYS\$COMMON. When you start AppleTalk for VMS on each node, the cluster will search SYS\$SPECIFIC and find the PORTDESC.TEXT file for that node, and then it will go to SYS\$COMMON for the rest of the file.

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Tech Info Library Article Number:5952



# Tech Info Library

## Printing to PostScript Printer Using Novell Server (7/93)

Revised: 8/4/93  
Security: Everyone

Printing to PostScript Printer Using Novell Server (7/93)

=====

Article Created: 28 August 1990  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

I have a Macintosh Plus with system software 6.0.4 and 1MB RAM, connected via thin Ethernet (Nuvotech's SCSI Ethernet Device) to a Novell file server running 2.15c.

This Macintosh can access the file server without problems, but when it tries to print to a PostScript printer connected to the serial port on the file server, a NEC LC890, nothing prints -- the Macintosh can see the print queue, can go ahead and print to it, and the light blinks on the printer...but nothing happens.

Do you have any suggestions?

DISCUSSION -----

We contacted Novell Technical Support and they confirmed that the printer device has to be one of the Apple LaserWriters or Apple ImageWriters supported by Netware for Macintosh, OR a third-party printer which supports LocalTalk and the Apple printer dictionary.

The printers have to be on the LocalTalk network connected to the Novell server via a LocalTalk Adapter such as NL1000, or on any LocalTalk networks connected to an Ethernet network connected to the server via a LocalTalk-Ethernet router.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:

- 27 July 1993 - Company title updated from Focus Enhancement to Focus Enhancements, Inc.
- 19 June 1992 - Focus Enhancement acquired Nuvotech connectivity products.

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Tech Info Library Article Number:5954



# Tech Info Library

## AppleTalk Phase 2: Obtaining Node Number on Startup

Revised: 8/28/90  
Security: Everyone

AppleTalk Phase 2: Obtaining Node Number on Startup

=====

This article last reviewed: 27 July 1990

TOPIC -----

Under the AppleTalk Phase 2 protocol specification, a node remembers the node number previously assigned to it and that it is stored in the Macintosh. Does the Macintosh also remember the last network number it was associated with, and where is that number stored? If the network number is not stored, does the resolution begin at the base of the network range?

DISCUSSION -----

This information is on page 8 of the "AppleTalk Phase 2 Protocol Specification":

Obtaining a provisional address

Obtaining a provisional address upon startup is accomplished in two different ways depending on whether the node has previously saved an address in parameter RAM. An address saved in PRAM consists of two parts: the 16-bit network number, denoted \$nnnn, and the 8-bit node ID, denote \$yy. The concatenated 24-bit address value of [network number, node ID] is denoted \$nnnnyy.

If no address was previously saved in PRAM:

Upon starting up when no information is saved in parameter RAM, a node will randomly select a provisional network number \$FFnn in the startup range. This range is specified to be \$FF00 to \$FFFE inclusive (most significant byte first). The node then also randomly selects a node ID \$yy (yy cannot be \$00, \$FE, \$FF). As in AppleTalk Phase 1, the node must first use AARP to ensure that \$FFnnyy is not in use by any other node on the network. If another node is already using this address, the node should try all other possibilities for \$FFnnyy until a valid provisional address is obtained.

If an address was saved in PRAM:

If there is a saved 24-bit address of the form \$nnnnyy in PRAM, the node can use it as the provisional address. The node must use AARP to ensure that this address is not in use by any other node. If another node is already using this address, the node should try all other possibilities for yy (yy cannot be \$00, \$FE, \$FF) keeping nnnn the same until all possibilities are exhausted (nnnn is probably a valid network number for this network unless the node has been moved from another network).

If all possibilities are exhausted, the node must select a new address as if none was previously saved in PRAM (as described in the previous section).

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:5955



# Tech Info Library

## Macintosh IIfx: Hangs with Macintosh IIci AppleShare Server

Revised: 8/4/93  
Security: Everyone

Macintosh IIfx: Hangs with Macintosh IIci AppleShare Server

=====

Article Created: 27 July 1990  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

I'm having a problem keeping a new Macintosh IIfx logged on to an AppleShare 2.0 File Server running on a Macintosh IIci over LocalTalk.

Apparently, whenever the Macintosh IIfx logs on to the server it freezes and locks up. When it isn't logged on to AppleShare, the Macintosh IIfx is fine. Also, the Macintosh IIfx can log on to other non-Macintosh IIci servers without freezing.

I'm running system software 6.0.5 on the Macintosh IIfx and version 2.0 of AppleShare on the Macintosh IIci. Other Macintosh II and Macintosh SE systems run fine. I haven't tried the Macintosh IIfx serial INIT yet, nor have I tried server connections over EtherTalk or TokenTalk.

Do you have any ideas on what I might do to isolate this problem? All non-Apple INITs have been removed from the Macintosh IIfx, and there are no known viruses.

DISCUSSION -----

We haven't encountered any problems during our testing of a Macintosh IIfx client on a Macintosh IIci AppleShare File Server over LocalTalk.

We tested the Macintosh IIfx both in the "compatibility" and "faster" modes. We wrote a program to run on the client Macintosh IIfx to write 512 bytes at a time to a file until it grew to 3MB, then erase the file and repeat the process. These specific tests ran over 24 hours. We also ran other tests over EtherTalk while investigating another unrelated issue, and the Macintosh IIfx client didn't hang during any of these tests.

Troubleshooting  
-----

- Have you tried running the Macintosh IIfx with the IOPs turned off/on?
- Do other Macintosh IIfx systems have the same problem?
- Are you using a clean system? (Did you trash the System Folder and reinstall?)
- Have you tried connecting other Macintoshes to the network connector that the Macintosh IIfx was connected to?
- Does the Macintosh IIfx in question have problems when connected to other physical networks?
- Are the other Macintosh systems used similarly; that is, are they connected to AppleShare for the same length of time, are they running the same software?

Another line of inquiry:

Is your Macintosh IIfx attached to a Farallon "Black Beauty" Star Controller or a Nuvotech TurboStar? Farallon and Nuvotech have acknowledged severe performance problems with the Macintosh IIfx over LocalTalk on their star repeaters.

Both Farallon and Nuvotech are shipping upgrades to fix compatibility problems with the Macintosh IIfx and the Apple IIGS. These systems exhibit extremely slow network response, sometimes to the point that they seem to hang, when using those network products. This may explain your problem.

Nuvotech's upgrade to their TurboStar involves exchanging the old connector for a new one. Arrange an upgrade by contacting Nuvotech. All new TurboStars shipped since approximately the middle of June 1990 have the upgraded components and can be identified by the rev number ECO #4 on the circuit board. This newer connector also fixes previous compatibility problems with ImageWriters having and using the LocalTalk Expansion Cards and with PCs using LocalTalk PC Cards.

Farallon's upgrade involves installing a new chip in the "Black Beauty" Star Controller (part #207--easily identified since the case is black). The new platinum-colored Star Controller (part number 307) contains the fix.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

- 27 July 1993 - Company title updated from Focus Enhancements to Focus Enhancements, Inc.
- 19 June 1992 - Focus Enhancement, Inc. has acquired the Macintosh connectivity product family from Nuvotech.



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Tech Info Library Article Number:5957



# Tech Info Library

## MPW: Installer Documentation Is On Developer Services BBS

Revised: 8/28/90  
Security: Everyone

MPW: Installer Documentation Is On Developer Services BBS

=====

This article last reviewed: 27 July 1990

TOPIC -----

I was told that there would be documentation explaining modification of Installer Scripts for those of us who have MPW. Is this documentation now available (and do I already have it someplace?)

DISCUSSION -----

Installer documentation is on the Developer Services bulletin board. It includes a StuffIt archive containing documentation for Apple's Installer 3.0 and Tech Note #75, which documents Installer 3.0.1 scripting and changes from previous versions of the Installer.

The StuffIt package consists of the following:

- A ScriptWriter's Guide to Installer 3.0 (MacWrite).
- Technical Reference for Writing Installer Scripts (MacWrite).
- An MPW Rez file, InstallerTypes.r.
- An MPW Tool, ScriptCheck, for testing scripts.

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Tech Info Library Article Number:5958



# Tech Info Library

## A/UX 2.0: Price Doesn't Include HD160 SC Installation

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: Price Doesn't Include HD160 SC Installation

=====

Article Created: 28 August 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

Is it possible to order A/UX 2.0 preconfigured on an HD160 SC (either internal or external)?

### DISCUSSION -----

The suggested retail price list doesn't include any configuration for A/UX on an HD160 SC.

If you want to have A/UX installed on an HD160 SC, you need to obtain it on a different medium and install it on the hard drive from there.

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Tech Info Library Article Number:5960



# Tech Info Library

## A/UX 2.0: How To Stop newconfig From Dumping Modules

Revised: 9/30/92  
Security: Everyone

A/UX 2.0: How To Stop "newconfig" From Dumping Modules

=====

Article Created: 27 July 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I have a problem with newconfig.

It seems that newconfig does not do an "eupdate" after building a new kernel. Therefore, when the system starts up and finds something strange, it takes the old kernel back from Eschatology. This leads to strange problems, like missing modules in the kernel.

Is it possible to include an eupdate in the script so the Eschatology information is automatically updated after a new kernel build?

### DISCUSSION -----

You are correct in stating that newconfig does not do an eupdate. However, we do not think that is the cause of your problem.

When the system is started up, and something "strange" is found (such as a new card installed), newconfig is run to rebuild the kernel. The file, /newunix, is used as the base for the new kernel. Since this is a minimal kernel, modules that you had previously installed will be missing.

It should be possible to write your own script that first called newconfig and then eupdate to save the new kernel in the Eschatology partition. When the system finds an invalid kernel and builds a new one, you could then restore your kernel from Eschatology.

Another method that many people use is to copy /newunix to /newunix.save and install the modules you want in /newunix. Then, anytime your kernel is rebuilt from this /newunix, you will automatically have all of the modules you want.

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Tech Info Library Article Number:5961



# Tech Info Library

## A/UX: Only AppleTalk Phase 2 Is Supported (9/94)

Revised: 9/19/94  
Security: Everyone

A/UX: Only AppleTalk Phase 2 Is Supported (9/94)

=====

Article Created: 18 December 1990  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

Using A/UX 2.0 and AppleTalk, it seems that we can run only EtherTalk Phase 2.  
Is there a way to switch back to EtherTalk Phase 1?

DISCUSSION -----

AppleTalk Phase 2 is the only version of AppleTalk supported under A/UX 2.0 and 3.0. There are no plans to provide Phase 1 support in the future. If AppleTalk Phase 1 is required, you must use LocalTalk or, for EtherTalk, use an AppleTalk Internet Router.

AppleTalk Phase 2 is our networking system, and Apple will not continue to support two different protocol stacks.

This has already been implemented in other products, such as TokenTalk and DEC PATHWORKS (formerly LanWORKS) for Macintosh, which support only AppleTalk Phase 2.

Article Change History:  
19 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5962



# Tech Info Library

## MacX: Rootless Windows vs. Rooted Windows

Revised: 4/20/93  
Security: Everyone

MacX: Rootless Windows vs. Rooted Windows

Article Created: 27 July 1990

### Article Change History

-----  
04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm very interested in using MacX to provide nationwide access to a database I'm working on. The software is written for X Window System and (mostly) works using MacX.

I would like to have the Macintosh handle the scrolling of an image that is larger than the window. Ideally, it would be a "rootless" window. If this is possible, I can ship a complete image across the country to a user and still have the user get "excellent" response to scrolling operations. If the program on the "client" side has to do the scrolling, performance will not be acceptable.

Can you help?

### DISCUSSION -----

The only way to do what you want is to use a rooted window in MacX. If you use a rootless window, the client application will be completely responsible for all scrolling, updating, and so on. At that point, the X Window System calls are being mapped onto the Macintosh's Window Manager by MacX, and everything is being handled remotely. This includes using the scroll bars, moving the window, sizing the window, and so on.

If you use a rooted window instead, MacX will handle the bitmap, including the updating and scrolling of images that are bigger than the Macintosh window they are being displayed in.

In this case, the Macintosh window has nothing to do with the X Window System Window Manager being used. Therefore, as long as the entire X Window System image has been drawn in the Macintosh window's GrafPort, MacX will handle the scrolling and updating locally.

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Tech Info Library Article Number:5964





# Tech Info Library

## A/UX 2.0: Supports the AT&T System V Level 2 Specification

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: Supports the AT&T System V Level 2 Specification

=====

Article Created: 27 July 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I have a question about TCP/IP on A/UX 2.0:

Is there a TLI interface (transport level) and/or a DLPI interface (network level)? (These interfaces are defined by AT&T and are standard in System V 4.0.)

### DISCUSSION -----

A/UX 2.0 is designed to meet the AT&T System V level 2 specification. We do not provide a Transport Level Interface or a Network Level Interface.

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Tech Info Library Article Number:5965



# Tech Info Library

## A/UX 2.0: MacTCP and native TCP/IP

Revised: 9/24/92  
Security: Everyone

A/UX 2.0: MacTCP and "native TCP/IP"

=====

Article Created: 27 July 1990

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

Does MacTCP use the A/UX 2.0 "native TCP/IP"?

### DISCUSSION -----

Under A/UX 2.0, MacTCP maps its calls to the "native TCP/IP" calls available under A/UX.

MacTCP maintains the same API in both A/UX and the Macintosh OS, but under A/UX, MacTCP is merely a front end to the existing implementation of TCP/IP.

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Tech Info Library Article Number:5966



# Tech Info Library

## Excel: Leading Space Will Enter Numeric String as Text

Revised: 8/28/90  
Security: Everyone

Excel: Leading Space Will Enter Numeric String as Text

=====

This article last reviewed: 27 July 1990

TOPIC -----

When I enter certain text strings into Microsoft Excel, such as 2/5/80, the cell format is automatically changed to a date format. How do I avoid this without encapsulating the text in quotation marks?

In other words, how do I get Excel to treat certain text as text and not numerals?

DISCUSSION -----

To enter a numeric string in Excel as text, type a space before the entry.

Typing " 1/1/90" (without the quotes) into a cell formatted for "d/mmm/yy" displays 1/1/90 instead of 1-Jan-90.

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Tech Info Library Article Number:5967



# Tech Info Library

## HyperCard: How To Use for Text File Column Alignment

Revised: 8/28/90  
Security: Everyone

HyperCard: How To Use for Text File Column Alignment

=====

Article Created: 27 July 1990  
Article Last Reviewed: 4 June 1992  
Article Last Updated:

TOPIC -----

I want to upload a Macintosh spreadsheet to an AS/400 - via a KMW box - as a text file with column alignment intact. Both WingZ and Excel write to text files, but add tabs between columns. I need to have spaces between columns to correctly align the columns using a nonproportional font.

I tried using Vantage/McSink, but it only left-justifies columns; I need right justification on numbers.

My idea was to get a generic TTY print driver to print the spreadsheet, then capture it to a text file for uploading. I received a TTY print driver from GDT Softworks, but can't think of a method/utility to capture printer output to a text file.

DISCUSSION -----

We aren't aware of a commercial solution to your needs, but HyperCard can be used for a custom workaround.

Use Vantage (or Microsoft Word or equivalent) to convert the tab-delimited output from the spreadsheet to comma-delimited text. HyperCard considers each spreadsheet entry in the text file an item in a line. You could even use HyperCard to do the tab-comma conversion, but for simplicity, we'll assume the tabs have been converted.

Read the comma-delimited text into a variable (we used "container1") and call the following code:

```
on mouseUp
  repeat with i = 1 to the number of lines in container1
```

```
    repeat with j = 1 to the number of items in line i of container1
      set cursor to busy
      put expand (item j of line i of container1) after container2
    end repeat
    put return after container2
  end repeat
  open file "your filename here"
  write container2 to file "your filename here"
end mouseUp
```

```
function expand which
  put 25 into fieldLength
  if which = empty
    -- send a string of spaces fieldLength long
    then
      repeat with i = 1 to fieldLength
        put " " after temp
      return temp
    end repeat
  else
    repeat with i = 1 to fieldLength - length (which)
      put " " after temp
    end repeat
    -- pad with spaces
    return temp & which
  end if
end expand
```

The formatted text is now saved as "your filename here".

(NOTE: The entire process could have been done while reading the text in a line at a time, rather than moving it into a container before expanding, but it was easier to explain as a multistep process.)

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Tech Info Library Article Number:5968



# Tech Info Library

## Display Card 8/24: RasterOps 19 724 Is Not Supported

Revised: 8/28/90  
Security: Everyone

Display Card 8/24: RasterOps 19" 724 Is Not Supported

=====

This article last reviewed: 27 July 1990

TOPIC -----

I need to confirm that the Macintosh Display Card 8/24 does not support the RasterOps 724 19-inch monitor.

I know that the Macintosh Display Card 8/24 GC does not support the RasterOps 19-inch monitors based on its pinouts, but there is no mention of the Macintosh Display Card 8/24.

Are the pinouts for the Macintosh Display Card 8/24 GC the same as for the Macintosh Display Card 8/24?

DISCUSSION -----

The Macintosh Display Card 8/24 and the Macintosh Display Card 8/24 GC have the same connector and pinouts, and produce the same signals.

The RasterOps 724 19-inch monitor is not supported by either.

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Tech Info Library Article Number:5969



# Tech Info Library

## Apple Products: EMI Susceptibility (10/95)

Revised: 10/30/95  
Security: Everyone

Apple Products: EMI Susceptibility (10/95)

Article Created: 28 August 1990  
Article Reviewed/Updated: 30 October 1995

TOPIC -----

I'm designing office workspaces to house computers and would like specifications for Apple equipment regarding acceptable electro magnetic environmental conditions.

For instance, what's the maximum 60Hz magnetic field Apple monitors can be exposed to before they produce objectionable jitter? Do you have any information about exposing disk drives to Electro-Magnetic Interference (EMI) fields, and so on?

In addition, I would like similar information on AC power supply specifications.

DISCUSSION -----

Except for disk drives, Apple does not perform EMI susceptibility tests on its products.

We test the disk drives to ensure that they have sufficient shielding to maintain data integrity in a typical home or office environment. As long as the drives remain in their housings, you should have a great deal of latitude when positioning them, even without adding additional shielding. They should certainly be fine in any normal home or work environment.

As a general rule, in the abnormal situation where EMI is present, your monitors will be visibly effected long before there is any affect to data on your disk drives or other hardware.

Article Change History:  
30 Oct 1995 - Minor corrections.

Support Information Services

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Tech Info Library Article Number:5970





# Tech Info Library

## Macintosh Portable: VHF Emission Level Information

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: VHF Emission Level Information

=====

Article Created: 27 July 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

Do you have any information on the VHF interference that the Macintosh Portable generates?

DISCUSSION -----

Apple doesn't publish the VHF levels of the Macintosh Portable, or of other systems or peripherals, which is probably why you didn't locate that information. Ironically, the Federal Communications Commission results ARE available to the public, and can be obtained from them.

The Macintosh Portable (as well as most other products we sell) is designed to be used in a home or work environment, and has been tested to comply with the limits set for an FCC Class B computing device or equivalent in all countries it is sold in. This means that it is less "noisy" or likely to cause interference than a Class A device, which can legally be used only in a work environment.

Page X of the Macintosh Portable Owner's Guide lists some measures that minimize or eliminate the Macintosh Portable's potential for radio-frequency energy interference with other electronic devices, such as radios and televisions.

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Tech Info Library Article Number:5971



# Tech Info Library

## WingsZ 1.1a: Upgrade for System Software 6.0.5

Revised: 8/28/90  
Security: Everyone

WingsZ 1.1a: Upgrade for System Software 6.0.5

=====

This article last reviewed: 27 July 1990

TOPIC -----

I know there are compatibility problems with System Software 6.0.5 and Informix WingZ 1.1. I heard there is a patch for WingZ. Do you have any information?

DISCUSSION -----

Informix (makers of WingZ) recommends that customers call them to obtain version 1.1a of the software, which includes the fixes in the first-generation patch, and more.

Informix will mail the upgraded software to registered users free of charge.

For more information, search under: "Informix"

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Tech Info Library Article Number:5972



# Tech Info Library

## AppleShare Print Server: Improving Lino L300 Spooling Speed

Revised: 8/28/90  
Security: Everyone

AppleShare Print Server: Improving Lino L300 Spooling Speed

=====

This article last reviewed: 2 August 1990

TOPIC -----

I ran into a severe slowdown using the AppleShare Print Server and LaserWriter Driver 5.2. on a dedicated Macintosh SE (with 2.5MB of RAM) that was spooling to a Linotronic L300. 700K files took up to 7 minutes to spool.

I then took the two high-end output workstations and linked them to the Rip 4s via Ethernet, using the 5.2 Laser Prep and so on. The same print job now took 1 minute 40 seconds to the Print Server, and 1 minute 30 seconds direct to the Rip.

DISCUSSION -----

The Laser Prep and LaserWriter Driver 6.0 are the only drivers that are able to take advantage of font caching.

We installed LaserWriter Driver 6.0 on an AppleShare Print Server and workstations. The AppleShare Print Server then printed in 40 seconds.

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Tech Info Library Article Number:5973



# Tech Info Library

## Macintosh II: 1-Bit Video Card Pinouts

Revised: 8/28/90  
Security: Everyone

Macintosh II: 1-Bit Video Card Pinouts

=====

This article last reviewed: 2 August 1990

TOPIC -----

What are the pinouts for the Macintosh II 1-Bit Video Card?

DISCUSSION -----

| Pin    | Signal                |
|--------|-----------------------|
| ---    | -----                 |
| 1      | Signal ground (Red)   |
| 2      | Analog red video      |
| 3      | Composite Sync        |
| 4      | Signal ground (Sync)  |
| 5      | Analog green video    |
| 6      | Signal ground (Green) |
| 7      | NC                    |
| 8      | NC                    |
| 9      | Analog blue video     |
| 10     | NC                    |
| 11     | NC                    |
| 12     | NC                    |
| 13     | Signal ground (Blue)  |
| 14     | GND                   |
| 15     | NC                    |
| Shield | Shield ground         |

Connector Type: DA-15 Male

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Tech Info Library Article Number:5978



# Tech Info Library

## LaserWriter IINTX: Can't Print HPGL Files Without Translation

Revised: 8/28/90  
Security: Everyone

LaserWriter IINTX: Can't Print HPGL Files Without Translation

=====

This article last reviewed: 2 August 1990

TOPIC -----

There are no Macintosh systems involved in this.

HPGL (a Hewlett-Packard protocol), and my LaserWriter IINTX can emulate an HP LaserJet Plus.

Therefore, if you connect our LaserWriter IINTX to a PC through the serial port, can you print HPGL format? (I don't want to convert the file before printing.)

Is it up to the program I'm using to emulate an HP plotter on an Apple LaserWriter?

DISCUSSION -----

Briefly, the LaserWriter IINTX emulates an HP LaserJet Plus. LaserJets use PCL, not HPGL; a PC printing an HPGL print job cannot print to a LaserWriter IINTX.

Hewlett-Packard uses different printer control languages -- including HPGL and PCL -- for their different printers. HPGL is commonly used by CAD/CAM type programs for outputting to plotters; PCL is used by more common, generic programs for outputting to HP LaserJets and similar printers.

Apple's PostScript LaserWriters emulate Diablo 630s. In addition, the LaserWriter IINTX emulates an HP LaserJet Plus; therefore, a program that uses PCL and is LaserJet Plus compatible can print to the LaserWriter IINTX when the LaserWriter IINTX is in its LaserJet Plus emulation mode. Again, you cannot print an HPGL print file directly (without file translation) on the LaserWriter IINTX.

If you want to print to an Apple LaserWriter, you must use a program that

supports a Diablo 630, LaserJet Plus, or PostScript-compatible printer. If your program and drivers do not support these types of printers, you need to export and, possibly, translate the data before importing the data to a program that does -- whether that program runs on a PC, Macintosh, or another system.

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Tech Info Library Article Number:5980



# Tech Info Library

## LaserWriter IINTX: How To Print HPGL Files from a PC

Revised: 8/28/90  
Security: Everyone

LaserWriter IINTX: How To Print HPGL Files from a PC

=====

This article last reviewed: 2 August 1990

TOPIC -----

Is it possible to write HPGL files from a PC to a Macintosh LaserWriter IINTX without converting them to PICT or PostScript?

DISCUSSION -----

Two possibilities that might work are:

- 1) PlotView (formerly called MacHP) from Stevens Creek Software allows you to open and display Macintosh HPGL files on a Macintosh, and copy and paste them into other Macintosh programs for embellishment before printing to a LaserWriter. If you can use Apple File Exchange or a similar program and perform a generic text translation on the PC HPGL file, you can then open it with PlotView. This may work, but may require a little experimentation and manipulation with ResEdit or similar programs. Another option is to write your own AFE translator.
- 2) Another program that may work is called CADMOVER from Kandu, which is a 2-D/3-D Macintosh-based vector graphics translation utility, with bidirectional IGES, DXF, PICT, MacDraw, Minicad+, MacConcept, HPGL, Minicad+, Dimensions, Hyperspace and Space Edit.

Both products are listed in the Tech Info Library and/or the buyer's guides on AppleLink.

We feel the easiest solution would have been to select a program on the PC that also prints to a PostScript printer or, at least, use a program that can save the file in a format (not just an HPGL print file) that can also be read by other Macintosh or PC programs that can print to a PostScript printer. There may be PC programs that open HPGL files and save in a more commonly used file format, but we aren't familiar with any.

For more information, search under: "Stevens Creek" and "Kandu"

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Tech Info Library Article Number:5981





# Tech Info Library

## MacTerminal 3.0: Conforms to ISO Latin 8859/1 Standard

Revised: 8/28/90  
Security: Everyone

MacTerminal 3.0: Conforms to ISO Latin 8859/1 Standard

=====

This article last reviewed: 2 August 1990

TOPIC -----

When using VT320 emulation with MacTerminal 3.0, there is support for multilingual ISO Latin character sets.

Does it support ISO Latin 8859/1 and/or ISO Latin 8859/7?

DISCUSSION -----

Apple's VT320 Tool conforms to the ISO Latin-1 Supplemental Graphic (ISO Latin 8859/1) standard.

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Tech Info Library Article Number:5983



# Tech Info Library

## A/UX: Ethernet Input Errors (9/94)

Revised: 9/19/94  
Security: Everyone

A/UX: Ethernet Input Errors (9/94)

Article Created: 2 August 1990  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

I seem to have a high number of input errors on two Macintosh computers running A/UX on ethernet. This number increases all the time.

For instance, today:

Mac1:

| Name | Mtu  | Network     | Address | Ipkts   | Ierrs | Opkts  | Oerrs | Coll |
|------|------|-------------|---------|---------|-------|--------|-------|------|
| ---- | ---  | -----       | -----   | -----   | ----- | -----  | ----- | ---- |
| ae0  | 1500 | nta-ring    | bic     | 2003687 | 2398  | 461618 | 0     | 0    |
| lo0  | 1536 | loopback-ne | loop    | 20802   | 0     | 20802  | 0     | 0    |

Mac2:

| Name | Mtu  | Network     | Address | Ipkts   | Ierrs | Opkts  | Oerrs | Coll |
|------|------|-------------|---------|---------|-------|--------|-------|------|
| ---- | ---  | -----       | -----   | -----   | ----- | -----  | ----- | ---- |
| ae0  | 1500 | nta-ring    | cm      | 2126045 | 2350  | 547482 | 0     | 0    |
| lo0  | 1536 | loopback-ne | loop    | 18989   | 0     | 18989  | 0     | 0    |

Is this normal, or do we have a problem?

DISCUSSION -----

The following input errors are reported as "Ierrs" by netstat:

- receive CRC errors
- frame alignment errors
- fifo overflows

- missed packet errors

One or all of these errors could be causing netstat to report the Ierrs. Unfortunately, all of these errors are summed together to create a global input error counter for each interface. This counter is what netstat is reporting to you.

As you probably already guessed, there is no program to separate the error counters for each type of input error. Without such a tool, we have little idea of what is causing the problem.

You are seeing about a 1% hit on inbound traffic. This is fairly high, but not necessarily a cause for alarm. Higher-level protocols usually take care of problems encountered in any lower layers. The problem won't be seen or felt by the user unless it is a serious enough problem to cause degradation or loss of services. You should monitor this situation, but until you can determine exactly what errors are being reported, all we can do is guess at what the problem might be.

If it's only the A/UX systems that are experiencing these errors, you can probably eliminate the physical network as the problem. Since this is a very busy network, you're probably seeing a few missed packets, and there are probably a fair amount of collisions on this Ethernet, which we suspect are frame alignment errors on the receive. All of these, with an occasional CRC error, could cause the number of errors you're seeing. It really depends on the environment and amount of traffic on the Ethernet as to how many errors will be reported as input errors.

Article Change History:  
19 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:5985



# Tech Info Library

## A/UX 2.0: Problem Running rez (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX 2.0: Problem Running rez (9/94)

Article Created: 2 August 1990  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

I am having a problem trying to run rez under A/UX 2.0. I am using the same rez line from a makefile that runs perfectly under A/UX 1.1.

The line under A/UX 1.1 is:

```
/mac/bin/rez -i /cardinal/cape/HEADER/v4r8m0 -o %test test.r cursor.r
```

Under A/UX 2.0 Golden, I tried the following:

When using launch, I tried the following commands:

```
==>> ops_test.pechner /cardinal/cape/APPL/v4r8m0> /mac/bin/launch /mac/bin/rez  
-i /cardinal/cape/HEADER/v4r8m0 -s /cardinal/cape/HEADER/v4r8m0  
-o %test test.r cursor.r
```

```
==>>ops_test.pechner /cardinal/cape/APPL/v4r8m0> /mac/bin/launch /mac/bin/rez  
-i /cardinal/cape/HEADER/v4r8m0 -s /cardinal/cape/HEADER/v4r8m0  
-o %test test.r cursor.r
```

```
==>>ops_test.pechner /cardinal/cape/APPL/v4r8m0> /mac/bin/launch /mac/bin/rez  
-i /cardinal/cape/HEADER/v4r8m0 -s /cardinal/cape/HEADER/v4r8m0  
test.r cursor.r -o %test
```

```
==>>ops_test.pechner /cardinal/cape/APPL/v4r8m0> /mac/bin/launch /mac/bin/rez  
-o %test test.r cursor.r
```

These give the following results:

```
### /mac/bin/rez - OS error -43 (Error message file not available)  
during open of "%test".  
### /mac/bin/rez - Fatal error trying to open the resource file "%test"
```

```
for writing.  
### /mac/bin/rez - Fatal Error, can't recover.  
### /mac/bin/rez - Since errors occurred, Ttest's resource fork was not  
written.
```

Without using launch:

```
==> /mac/bin/rez  
-i /cardinal/cape/HEADER/v4r8m0 -s /cardinal/cape/HEADER/v4r8m0  
-o %test test.r cursor.r
```

I get the following result:

```
/cardinal/cape/APPL/v4r8m0: No such file or directory  
ops_test.pechner /cardinal/cape/APPL/v4r8m0>
```

What has worked is when I output to the default rez.out and when I specify the full pathname in test.r "#include".

Therefore, rez is not recognizing the options "-i" and "-o". It also must be "launched" to run.

Can you explain?

DISCUSSION -----

The man page (the manual command) for rez(1) states that you must be in 32-bit mode and run the command from the command line (without using launch). You didn't specify the environment you were in when you were trying to run this.

The -o option to rez seems to work fine as long as you don't specify an output filename with a % appended to it. Rez is supposed to take the name you gave it from the -o option and affixes a % sign to it.

The -s option to rez also seems to be broken, but the -i option (which basically does the same thing) does work correctly.

Otherwise, this problem is currently (as of August, 1990) without a solution.

Support Information Services

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Tech Info Library Article Number:5986



# Tech Info Library

## Apple Software Licensing Group: How to Contact (4/97)

Revised: 4/2/97  
Security: Everyone

Apple Software Licensing Group: How to Contact (4/97)

=====

Article Created: 2 August 1990  
Article Reviewed/Updated: 02 April 1997

TOPIC -----

I understand Apple has a software licensing group. How do I get in contact with them and what is their function?

DISCUSSION -----

Contact Apple's Software Licensing department for a complete list of Apple software available for licensing. This list provides information on the different types of agreements available and the corresponding license fees.

Before producing any written materials that accompany a product being licensed (such as manuals and disk labels), be sure to contact Software Licensing.

All requests to license Apple source code require a written proposal.

You can contact the software licensing group by eMail at [SW.LICENSE@apple.com](mailto:SW.LICENSE@apple.com); by telephone at (512) 919-2645; and by fax at (512) 919-2120.

Article Change History:  
02 Apr 1997 - Updated eMail address.  
21 Nov 1994 - Revised contact information and group function.

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Tech Info Library Article Number:5988



# Tech Info Library

## System Software 6.0.5 and System Heap Size Adjustment (11/94)

Revised: 11/21/94  
Security: Everyone

System Software 6.0.5 and System Heap Size Adjustment (11/94)

Article Created: 7 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I have heard that when you upgrade to System Software 6.0.5, you should also increase your system heap size at least 32K via SUM Tools or Heap Fixer. This is supposed to increase compatibility with third-party programs.

Is this correct? If yes, what utility do you suggest?

DISCUSSION -----

In our testing, System Software 6.0.5 does NOT require the system heap size to be adjusted to work properly with Apple or third-party software.

It is possible to run out of system heap space when using a lot of public domain or commercial INITs. This may necessitate adjusting the system heap size. We cannot make a recommendation on what utility to use, but both Heap Fixer from CE Software and SUM Tools from Symantec seem to work fine.

For more information, search under: "CE Software" and "Symantec"

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5989



# Tech Info Library

## GS/OS: Setting the Finder as the Startup Application

Revised: 8/28/90  
Security: Everyone

GS/OS: Setting the Finder as the Startup Application

=====

This article last reviewed: 7 August 1990

TOPIC -----

My school district has an Apple IIGS network.

I want to change the startup application from Aristotle to the GS/OS 5.0.2 Finder. I tried to set "Finder" as the startup and got an error, "Unable to load descriptor \$004E".

I set the appropriate permissions for access to the GS/OS operating system folder on the server, but I got the same error.

Can you help?

DISCUSSION -----

The \$004E error indicates that GS/OS attempted an invalid access procedure. There was only one way we were able to duplicate this error -- by denying access privileges to the Icons folder on the server. When the access privileges on the Icons folder weren't set to See Folders/See Files for everyone, the "Unable to load descriptors" message appeared. Descriptor refers to information stored in files within the Icon folder, which is needed by the Finder. Once we reset the Icon folder privileges so See Folders/See Files were allowed for everyone, startup proceeded normally.

Once access is granted to the Icons folder on the server and Finder is set as the startup application in the server's Admin program, the startup process should continue until you reach the Finder's desktop.

IMPORTANT NOTE: When using the "Icon Info" menu item from the GS/OS "Special" menu, there is one step that is sometimes forgotten. Be sure to press the "Apply" button while on the "Access" card of the "Icon Info" dialog box after making any changes to access privileges. If this button is not pressed, the changes are not recorded and the privileges revert to the previous settings.



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Tech Info Library Article Number:5990



# Tech Info Library

## AppleShare PC 2.0.1: Use COMPAT.COM for Compatibility

Revised: 8/28/90  
Security: Everyone

AppleShare PC 2.0.1: Use COMPAT.COM for Compatibility

=====

This article last reviewed: 7 August 1990

TOPIC -----

I have a DOS machine with a LocalTalk PC Card running AppleShare PC 2.0.1, and I'm trying to run TCP/Connect through the card.

TCP/Connect was configured to run with AppleTalk; however, when running version 2.0.1 of AppleShare PC, I get an error that "AppleTalk was not initialized with the proper interrupt". TCP/Connect claims that this product worked with AppleShare PC 1.X.X, and that it uses interrupt #60.

Were the interrupts changed from version 1 to 2? If yes, what interrupt range can be used by the software?

DISCUSSION -----

It's not surprising that a product layered on top of the protocol stack in AppleShare PC 1.X wouldn't automatically work with AppleShare PC 2.0.1. Apple totally reworked the interface to make it more accessible to developers, and we changed the way we interfaced with MS-DOS. This includes the interrupts used.

There should be a relatively simple solution to the problem.

There is a program that ships with AppleShare PC 2.0.1 that tries to ensure compatibility with programs that layered on top of older versions of AppleShare PC. This program is called COMPAT.COM. You should run it immediately after you run ATALK.COM (most likely in a batch file). It intercepts the old style calls and reroutes them to the new API.

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Tech Info Library Article Number:5992



# Tech Info Library

## MacX: Window Management Q & A (4/93)

Revised: 4/26/93  
Security: Everyone

MacX: Window Management Q & A (4/93)

=====

Article Created: 7 August 1990

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

Here are some questions and answers about MacX and window management.

### DISCUSSION -----

Q) Does the host machine send bitmaps or an object / vector description to the network? If bitmaps are sent, there may be some issues with network performance and cutting and pasting text.

A) Typically, an X client application sends information in the form of an object / vector description. For instance, when drawing a scroll bar, the bit image of the scroll bar is not transmitted, only the commands to generate the bit image are transmitted. However, it is quite possible for the client application to transmit bit images. A perfect example of this is a bit image viewing application.

Q) Does MacX always use the Macintosh Window Manager in rootless and rooted modes? I'm running Open Look under MacX in a rooted window, and I'm concerned about the implications of the Open Look interface being mapped onto Macintosh windows (although I can understand why this may have been done). I'm concerned also with consistency between machines. I have had some interesting problems with windows disappearing, use of menus, and so on (things that may be considered normal with the Macintosh interface). Interestingly, the calculator appears in a normal Open Look

window, but everything else is in Macintosh windows. My feeling is that the choice of rooted or rootless should define what happens (that is, whether Macintosh windows or Open Look windows are used).

A good example of the problem is when you iconify the clock. Normally, under Open Look, the time still appears and is updated--in MacX this doesn't happen. Is there a way that this can be configured to use Open Look windows (I am aware of the disadvantages), or will Macintosh windows always be used?

- A) When you execute a client application in a rootless window, MacX always maps the client's calls into the Macintosh Window Manager. When you use a rooted window, the Macintosh Window Manager is not used except to contain the entire "screen" or display that is being drawn into. If client applications are being displayed in Macintosh windows, the environment for the remote call is not being properly set. You need to set the display to the rooted window desired for each application you execute.

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Tech Info Library Article Number:5993



# Tech Info Library

## HyperCard: closeCard Error Fixed in 2.0 (11/94)

Revised: 11/21/94  
Security: Everyone

HyperCard: "closeCard" Error Fixed in 2.0 (11/94)

=====

Article Created: 7 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

When you cut or delete a card in HyperCard, an "openCard" message is not sent to the card that is then opened.

DISCUSSION -----

This problem has been fixed in HyperCard v2.0.

Old message order:  
deleteCard closeCard

Revised message order (under HyperCard 2.0):  
closeCard [closeBackground] deleteCard [deleteBackgroundI IopenBackground]  
openCard

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5994



# Tech Info Library

## 800K Disk Eject INIT: Not Available for the Apple IIGS (11/94)

Revised: 11/21/94  
Security: Everyone

800K Disk Eject INIT: Not Available for the Apple IIGS (11/94)

=====

Article Created: 7 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I use the 800K Eject INIT in Macintosh systems. Is there is a similar program for the Apple IIGS?

DISCUSSION -----

There is no program for the Apple IIGS that provides the same function as the 800K Eject INIT. There were no reports of drive failures on the Apple IIGS using 800K disk drives, as there were with some Macintosh systems. Because of this, such a program is not necessary.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:5995



# Tech Info Library

## Wang LPS/LIS-8 Laser Printer: Connecting to a Macintosh

Revised: 8/28/90  
Security: Everyone

Wang LPS/LIS-8 Laser Printer: Connecting to a Macintosh

=====

This article last reviewed: 9 August 1990

TOPIC -----

Can I connect my Macintosh systems to a Wang LPS/LIS-8 laser printer? If yes, please explain how to do this.

DISCUSSION -----

The LPS-8 printer technology is many years old and is not likely to be PostScript-compatible. Therefore, to print Macintosh files you would need a specialized driver -- and to our knowledge, none exist. Alternatively, if the printer is similar enough to other printers for which third parties like GDT provide drivers (HPs, daisy-wheel printers, and so on), you might be able to use one of those drivers along with a serial connection.

To initiate a print job when the Macintosh is emulating a Wang terminal is much more likely by using one of the terminal emulation products described in the Tech Info Library or in one of the AppleLink buyer's guides. However, we don't think this is what you are looking for, and you'd definitely lose the neat graphical and WYSISYG capabilities the Macintosh offers.

A third possibility is to translate the Macintosh file to a Wang file format to print on the LPS-8, but again you'd lose many of the advantages of the Macintosh.

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Tech Info Library Article Number:6000



# Tech Info Library

## AppleShare PC 2.0.1: EtherLink II Problems

Revised: 9/27/91  
Security: Everyone

AppleShare PC 2.0.1: EtherLink II Problems

=====

Article Created: 9 August 1990  
Article Last Reviewed: 27 September 1991  
Article Last Updated: 27 September 1991

TOPIC -----

I'm using AppleShare PC 2.0.1 and the 3COM EtherLink II card (AT bus card).  
I'm trying to use a thick Ethernet external transceiver with the card.

Essentially, the card seems to be functioning, but it does not communicate  
with the network. I've also noticed that the NET.CFG file generates the same  
code for both thin and thick Ethernet.

Since AppleShare PC is supposed to support this card out of the box, I need  
some help. Do you have any suggestions?

DISCUSSION -----

There are several potential causes for problems with AppleShare PC and 3COM  
EtherLink II cards.

The most common is attempting to use Phase 1 services (usually after upgrading  
from AppleShare PC 1.x to AppleShare PC 2.0.x). Since AppleShare PC 2.0.x is  
Phase 2 only, you can only use it with Phase 2 services unless a router with  
both Phase 1 and Phase 2 drivers is present.

The card model is also important. 3COM has produced at least three different  
PC or AT bus Ethernet cards, all with the name EtherLink II. We are familiar  
with models 501, 503, and 505. The model 501 is an 8-bit card, quite old, and  
not supported. The model 503 is the most common, and what we wrote our  
EtherLink II MLID for. The model 505 arrived later and is a 16-bit card (AT  
bus only). We do not yet support this card. The 503 driver will not work  
with it because the model 505 is substantially more complex and full-featured.

Another reason could be that they are trying to load 3COM-supplied drivers



before loading AppleShare PC. This does not work. It prevents AppleShare PC from communicating with the network. Installing NetBIOS support will have the same effect.

Finally, the ENET3CII driver has problems when the bus speed of the PC is over 8MHz. The CPU speed can be greater, but the expansion bus speed cannot be above 8MHz. This is rarely a problem, but could be if you shift the PC into its non-turbo mode and things work.

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Tech Info Library Article Number:6001



# Tech Info Library

## A/UX 2.0: panic(vbwrite) Error

Revised: 9/30/92  
Security: Everyone

A/UX 2.0: panic(vbwrite) Error

=====

Article Created: 15 August 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm having problems with A/UX 2.0 and the Macintosh IIci.

I receive VB Write Error, at which point MultiFinder freezes up. I don't have to be doing anything with my system for this to occur. The systems configuration is as follows:

#### Hardware

-----

Macintosh IIci with HD80 SC and 8MB RAM  
EtherTalk NB Card rev L  
Apple external 160SC

#### Software

-----

A/UX 2.0

### DISCUSSION -----

The error you're seeing is probably "panic(vbwrite)".

This is a kernel panic error which occurred in the I/O buffer routines. The I/O buffer routines take care of reading/writing and freeing buffers within the UNIX kernel. In this case the kernel thinks the size of the available buffers are smaller than the amount of data that needs to be written out. In other words, you can't write out what you don't have. This is a very serious error,

which under normal circumstances should never occur.

The first thing to resolve the problem is to try a "kconfig -v -a /UNIX > kernel.conf" and have the output checked by an expert.

Let the same person look at a "module\_dump /unix"

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Tech Info Library Article Number:6003



# Tech Info Library

## A/UX: EtherTalk Support and MacTCP Issues (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: EtherTalk Support and MacTCP Issues (9/94)

=====

Article Created: 15 August 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

I have heard that A/UX ships with EtherTalk already built into the kernel. Is this true?

If yes, how do I change the driver to run on the Macintosh IIfx and 1.2 to run on a Phase 1 network to update later revs to the driver?

I also noticed that MacTCP is shipped locked, and the MacX folders says not to add MacTCP Admin to A/UX. I did this anyway, so I could unlock MacTCP to change the IP addressing. This resulted in the system hanging.

After restarting, I tried newconfig with commando to turn on NFS and the Berkeley file system and restarted. The EtherTalk NB Card (rev K) did not get configured. I replaced MacTCP with a different, unlocked version, ran newconfig without commando, and the card was configured with no problem. I was using a Macintosh IIfx.

Why is MacTCP shipping locked? How do I make changes to it if I cannot use MacTCP Admin?

DISCUSSION -----

The AppleTalk for A/UX product, which could be ordered as a separate product for A/UX 1.1.1 and was rolled into the A/UX 2.0 and 3.0 release, is based on the new AppleTalk Phase 2 protocol specification but is in no way tied to any version of the Macintosh OS EtherTalk driver.

The Ethernet driver running under A/UX is completely different from the driver written to support the Macintosh OS. The driver for A/UX is called ae6; you add and remove this driver from A/UX via the newconfig(1M) command. This driver does not have the same problems that the Macintosh OS driver has with the Macintosh IIci and Macintosh IIfx and, therefore, does not require the same

revisions that the Macintosh OS driver needed.

There is no Ethernet support for the AppleTalk Phase 1 protocol suite. If you're using A/UX on an Ethernet and you want to use AppleTalk services, you must be attached to a Phase 2 network.

MacTCP for A/UX is a completely different version from the one we use under the Macintosh OSs. The version running under A/UX does not, and cannot, use the MacTCP Admin CDEV for configuration purposes. MacTCP running under A/UX gets all its configuration information from the kernel, making the Admin utility unnecessary. Use the `ifconfig(1M)` command to configure the IP network parameters under A/UX, or edit the `/etc/NETADDRS` file to change them permanently.

This shouldn't be necessary for a first-time installation since A/UX asks you for all configuration information it needs after you run the `newconfig(1M)` command to add an IP (`ae6/bnet/ae6`) network device driver to the kernel.

#### Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6004



# Tech Info Library

## Serial Cables: Extreme Length Can Generate Noise (11/94)

Revised: 11/21/94  
Security: Everyone

Serial Cables: Extreme Length Can Generate Noise (11/94)

=====

Article Created: 15 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I've connected a Macintosh SE to my MV15000 (Data General host) through the serial port using a cable wired according to the pinouts documented in the Tech Info Library.

When a terminal line is enabled, the host sends a "welcome" message to the terminal. If the Macintosh is not already in the terminal emulation program, the host receives arbitrary noise back on the line, causing the operating system to disable that port.

Can you shed any light on why this may be occurring, and where I could look for a solution?

DISCUSSION -----

When a Macintosh system is turned on and the System software is loaded, the transmit lines of the serial ports are in a high-impedance mode. This does not change until a terminal program, such as MacTerminal, is run.

Arbitrary noise back on the Macintosh transmit line could result if the cable is too long. The maximum serial cable length that the Macintosh supports is 50 feet. If the cable is longer than this, you may want to use short-haul modems.

You did not provide us with the pinouts that you're using. We are providing the following as a reference:

RS-422 and RS-232 Equivalents

-----

| Pin | RS-422 name          | RS-232 equivalent         |
|-----|----------------------|---------------------------|
| 1   | HSKo (handshake out) | DTR (data terminal ready) |
| 2   | HSKi (handshake in)  | CTS (clear to send)       |

|   |                               |                                                              |
|---|-------------------------------|--------------------------------------------------------------|
| 3 | TXD- (transmit data negative) | TXD (transmit data)                                          |
| 4 | GND (signal ground)           | GND (signal ground)                                          |
| 5 | RXD- (receive data negative)  | RXD (receive data)                                           |
| 6 | TXD+ (transmit data positive) | leave unconnected                                            |
| 7 | not connected                 | not connected                                                |
| 8 | RXD+ (receive data positive)  | must be grounded to pin 4 (on<br>Macintosh RS-422 connector) |

Article Change History:

21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6006



# Tech Info Library

## Macintosh: Third-Party Drivers for High-Speed Printers

Revised: 11/4/91  
Security: Everyone

Macintosh: Third-Party Drivers for High-Speed Printers

=====

Article Created: 15 August 1990  
Article Last Reviewed: 4 November 1991  
Article Last Updated: 4 November 1991

TOPIC -----

I have HP RuggedWriter 480 printers and Printronics P300 High-speed line printers. I want to use the Macintosh with a 4D database to print labels in mass volumes at high speed using the printer-resident font characters.

Currently, I have drivers from GDT (of Canada) that let me print to these printers from the Macintosh, but at very low speed.

- 1) Do you know of any drivers that work on these high-speed printers using the printer-resident font characters?
- 2) Do you know of any other printer and drivers that will do the job?

DISCUSSION -----

We know of three possible sources: GDT Softworks, Orange Micro, and Insight. Most support fonts built into printers, but none lists your specific printers in their product literature. Perhaps you should contact the printer manufacturers to discuss their specific requirements.

For more information, search the Tech Info Library under: "GDT Softworks", "Orange Micro", and "Insight".

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6007





# Tech Info Library

## Macintosh IIfx: Xerox 7650 Scanner Termination (11/94)

Revised: 11/21/94  
Security: Everyone

Macintosh IIfx: Xerox 7650 Scanner Termination (11/94)

=====

Article Created: 15 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I have a Macintosh IIfx with HD80 SC and 4MB RAM (Quantum) running System software 6.0.5.

The Macintosh alone is functioning perfectly, but as soon I put on a Rank Xerox scanner 7650 and terminate with the black terminator, I am not able to start my system. The same scanner connected to a Macintosh IICx, terminated with the old terminator, is functioning perfectly.

Do you have any suggestions?

DISCUSSION -----

From your description, it sounds as if either the SCSI cables and terminators or the SCSI port on that Macintosh IIfx are bad -- or, much more likely, that there is an incompatibility between the Macintosh IIfx and Xerox 7650 scanner.

We contacted Xerox and found that this version of the scanner (having Macintosh and PC support) is distributed only by their VARs, and that Xerox will only support their VARs on this product. Because we were unable to get any assistance for you, we recommend the user contact the company that sold the scanner to see if there are new drivers or workarounds, and if not to escalate the problem through that organization and eventually to Xerox.

You also might try connecting another SCSI device or two on the same chain -- try in the middle or at the end.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6008



# Tech Info Library

## Macintosh Portable: Details About the Idle and Sleep States 9/95

Revised: 9/8/95  
Security: Everyone

Macintosh Portable: Details About the Idle and Sleep States 9/95

=====

Article Created: 15 August 1990  
Article Reviewed/Updated: 8 September 1995

TOPIC -----

How much of the Macintosh Portable gets turned off at Shutdown, and how much gets shut down when you sleep? I am particularly interested in RAM disks.

DISCUSSION -----

The Macintosh Portable has two power saving states: Idle (or Rest) and Sleep. Shutdown uses the same amount of energy as Sleep except when going into or coming out of a Shutdown state, when it requires more energy than Sleep for closing and saving files, and for bringing up the system and reloading the operating system when restarting. But while it is IN the Shutdown or Sleep state, the Portable will draw the same amount of electricity.

The Portable is considered idle after 15 seconds without any activity of any kind. The Portable is not considered to be idle if any of the following occurs:

- Any ADB routine other than routine monitoring of the bus
- Any I/O call to firmware (Read, Write, Control, Format, Status)
- Any change in the cursor (for example, the rotation of a hand in the clock icon)
- Any post-event call (for example, a call resulting from insertion of a disk)
- Any communication through the serial port

When the BatteryMonitor routine determines that the Portable is idle, it causes the CPU to insert 64 wait states into RAM and ROM accesses; this lowers the effective clock rate to approximately 1MHz. Interrupts continue to be processed at the full speed of the CPU.

After the Portable has been idle for the amount of time selected by the user, the BatteryMonitor routine puts the machine into the sleep state. When the Macintosh Portable goes into the sleep state, the Portable maintains full power to system RAM, video RAM, and the Power Manager IC.

The Power Manager IC stops the clocks to the SCC, the SWIM, and the ASC. By stopping the clocks to these devices, their power consumption is reduced to almost zero without requiring that they be reset, as would be necessary if all power were switched off. The Power Manager IC switches off power to the serial drivers, ROM, the flat-panel display, the ASC, the Sony sound ICs, the SCSI, and to a variety of pullup resistors and other components. The Power Manager IC sends a signal to the internal modem (if one is installed) that causes the modem to shut itself down.

After putting the rest of the system in the sleep state, the Power Manager IC does no processing except to monitor the 60HZ interrupt signal. Each time the 60HZ interrupt occurs, the Power Manager IC performs the following functions:

- It updates the real-time clock.
- It checks the wake-up timer to see if it matches the real-time clock.
- It checks the events that should return the machine to the operating state, such as a keystroke or a Ring Detect signal from the modem (when the modem feature has been enabled by the user).

The periodic functions take approximately 200 microseconds out of the 16.7 milliseconds between interrupts, so the Power Manager IC is inactive most of the time that the Portable is in the sleep state.

When the Power Manager IC determines that the wake-up timer matches the real-time clock or detects an event, it asserts the /RESET signal to the CPU, restores the clocks and power to other devices in the system, and then raises (deasserts) the /RESET signal.

#### Article Change History:

08 Sep 1995 - Reviewed for technical accuracy, corrected minor typo.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:6009



# Tech Info Library

## A/UX 2.0: Disk Space Value Depends on Login (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX 2.0: "Disk Space" Value Depends on Login (6/93)

=====

Article Created: 19 June 1990  
Article Reviewed/Updated: 23 June 1993

TOPIC -----

We set up a 160MB disk with a 57MB Root&Usr and a 70MB Usr partition. The 70MB partition is automatically mounted by an entry in fstab. Everything works, except there seems to be a major discrepancy in available space reported by the Finder.

When logging in as root, the Finder reports 3MB free on the Root&Usr and 16MB on the Usr partition (after double clicking the directory specified as the mount point in fstab). When logging in as any other user, the Finder reports less than 1MB on the Root&Usr partition and 7MB on the Usr partition. Why the discrepancy?

DISCUSSION -----

The values you see for available free disk space (from either Finder or the "df" command), depend on whether you login as "root" or with a normal user (non-root) accounts. This is because A/UX 2.0 adopts UFS (Berkeley Fast File System) as the default root file system with minimum free-space threshold. UFS provides a mechanism that lets you specify the percentage of disk space RESERVED FROM USE by normal (non-root) users to reduce disk overhead and increase disk performance.

The percentage of space reserved for the Root file system shipped with A/UX 2.0 is about 5 percent, and the default percentage of space reserved for the non-root file system is 10 percent on the UFS file system. This is done via the -m option of the "newfs" command.

The point is that the root superuser has the privilege to see and use all free disk space, including the reserved space, but other users see only the AVAILABLE disk space.

If you really need some or all of the reserved disk space for normal use

and don't care about disk performance, use the `tunefs(1M)` command with the `-m minfree` option to change the percentage of the reserved space on an unmounted UFS file system. For example, the command,

```
tunefs -m 0
```

sets a UFS file system without free-space threshold. However, the disk performance (throughput) is significantly lower than performance at the default 10 percent threshold.

For more information on Berkeley UFS, refer to `newfs(1M)` and `tunefs(1M)` manual pages.

Article Change History:

23 Jun 1993 - Cleaned up.

31 Aug 1992 - Reviewed for technical accuracy.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6015



# Tech Info Library

## StuffIt Deluxe: Use Commercial Version for Important Work

Revised: 8/28/90  
Security: Everyone

StuffIt Deluxe: Use Commercial Version for Important Work

=====

This article last reviewed: 26 July 1990

TOPIC -----

I use StuffIt 1.5.1 to archive large amounts of data. I made one large StuffIt archive (about 20MB). Later, I extracted and deleted some of the files in the archive, making the size about 8MB. Then, I tried to extract more files, but got the following message:

U-uh! The CRC-check for the resource fork has failed. Chances are that the file is trashed. Please use this file with caution.

This happens when StuffIt has almost finished extracting the resource fork. That seems reasonable, because that is the time for calculating the CRC. Sometimes, I'll get the error message above. Other times the machine bombs or just hangs. The message says that one should use the file with caution, but that is impossible, because StuffIt is unable to finish extracting the file. This happens with all the remaining files in the archive. I have tried to delete all files in the archive except one, but that does not help either.

I suspect that the error is caused by a media fault. The drive in question is a Bernoulli Box from IOMega, and the error has occurred only on the two cartridges that came with the drive. Later, I ordered at least 30 cartridges from the USA without any problems.

DISCUSSION -----

Sorry but we aren't familiar with StuffIt's error handling or bugs, nor are we familiar with this specific problem. The user might check with the programmer (name located on program's splash-screen) or the new distributor for any recovery routines they may have.

We generally caution users against using shareware software for critical work; you may wish to get the enhanced commercial StuffIt Deluxe. StuffIt Deluxe, a file compression, encryption, and file-archiving software. It is designed to

compress files (or folders) of all types into compact spaces, potentially saving 50 to 75 percent of hard disk space. You can also password protection (DES algorithms) any archive. StuffIt Deluxe works on 512KE or larger Macintosh running System 5.0 or later.

For more details, search the Technical Info library under "Aladdin Systems" or "StuffIt Deluxe."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6018





# Tech Info Library

## A/UX: TCP/IP Problem Configuration Solved

Revised: 9/24/92  
Security: Everyone

A/UX: TCP/IP Problem Configuration Solved

=====

Article Created: 28 August 1990

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

We have had a problem with A/UX and TCP/IP lines dropping. The problem configuration was:

```
IP: 192.31.38.69
Broadcast : 255.255.255.0
Netmask : 0
```

### DISCUSSION -----

The resolution to the problem is with the configuration of the /etc/NETADDRS file and the setting for the Broadcast address. The corrected configuration is:

```
IP: 192.31.38.69
Broadcast : 192.31.38.255
Netmask : 255.255.255.0
```

With this modification all line drops will be eliminated.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6029



# Tech Info Library

## Apple IIGS System 5.0: Setting Up an AppleShare Network (7/91)

Revised: 7/20/95  
Security: Everyone

Apple IIGS System 5.0: Setting Up an AppleShare Network (7/91)

Article Created: 14 August 1990  
Article Last Reviewed and Updated: 23 April 1991

TOPIC -----

I have been having problems adding Apple IIGS systems to an AppleShare network under Apple IIGS System Software Update Version 5.0. Can you give me some help?

DISCUSSION -----

The following information applies to Apple IIGS System Software Version 5.0 and later.

Because of recent rapid development of the Apple IIGS operating system, setting up an AppleShare network with IIGS systems can be confusing. For example, the Apple II Setup disk included with AppleShare Version 2.0.1, a Macintosh disk designed to install Apple II features onto the Macintosh file server, is now obsolete. You should use the Apple II Setup disk that comes with the Apple IIGS System Software Update Version 5.0 and later. If you do the AppleShare installation with the obsolete Apple II Setup disk from AppleShare Version 2.0.1, you get the following error message when you try to start an Apple IIGS over the network:

Cannot load (servername) /SYSTEM/SYSTEM.SETUP/CDev.Init.

To add IIGS systems to an AppleShare network properly under Version 5.0, you must buy the Apple IIGS System Software Update Version 5.0 or later. The update package includes the Apple II Setup disk and the manual "AppleTalk Network User's Guide for the Apple IIGS."

Setting up AppleShare on the Macintosh Server

-----  
Follow the steps below to set up AppleShare, so that IIGS systems start over the network.

- 1) Start up with the System Tools disk and run Apple HD SC Setup.
- 2) Initialize the server hard disk.
- 3) Name the hard disk using an Apple II convention; for example, "A2."  
(The shorter the name, the better.)
- 4) Install the Macintosh System Software on the server, making sure to use the latest version possible for your Macintosh computer.
- 5) Restart with the AppleShare Version 2.0.1 Server Installer disk. Install "AppleShare 2.0.1 Server" onto the server volume. Be sure you don't click any of the Macintosh-family installation scripts, because they will install old system software, overwriting the system software you just installed.
- 6) Restart from the AppleShare Server Admin disk and launch the Server Admin application.
- 7) Enter the administrator's key and password, name your server, and create the users and groups you need.
- 8) Choose Volume List from the Volumes menu and double-click the server volume. A dialog box allows you to set access privileges. Click all boxes and save enclosed folders.
- 9) Quit the Server Admin application and restart the Macintosh server from the Apple II Admin disk that came with the Apple IIGS System Software Update Version 5.0.
- 10) Launch the Installer program on the Apple II Admin disk, and install "Apple II Info" on the server volume; then quit.
- 11) Restart from the Server Admin disk and launch the Server Admin application.
- 12) From the Server menu, choose Server Info and click the Apple II feature. Then, click Save.
- 13) Choose Volume List from the Volumes menu and double-click the server volume. A dialog box allows you to set access privileges. Click all boxes and save enclosed folders.
- 14) Quit the Server Admin application and restart the server. Keep the server on-line while you perform the steps for the Apple IIGS.

#### Setting up AppleShare on the Apple IIGS

-----

Follow the steps below to set up AppleShare on the IIGS systems:

- 1) Start up with the System.Disk that came with the Apple IIGS System Software Update Version 5.0, and format a blank 3.5-inch disk.

- 2) Launch the System 5.0 Installer on the System.Tools disk.
- 3) In the Installer, select "AppleShare on 3.5 Disk" and install it on the formatted disk. (You'll have to do some disk swapping.)
- 4) Shut down the IIGS and restart from the AppleShare 3.5 disk you just created.
- 5) Enter the administrator's name (usually "Administrator") and password. On the Graphic Control Panel under the Apple menu, click the AppleShare icon and mount the server volume.
- 6) Launch the Installer program on the IIGS System.Tools disk.
- 7) Using the Command key (Open Apple), select the following scripts:
  - Latest Sys. Files (No Finder)
  - Server Network Startup
  - Server Quick Logoff
  - Optional scripts (Install the scripts that the IIGS systems starting up over the network will require; for example, the SCSI driver, 5.25 driver, LaserWriter printer, or AppleTalk printer.)
- 8) Install the selected scripts on the server volume. The system installs over the network, and the double-arrow icon at the top left of your screen flashes. You may have to do some disk swapping, and the installation may take a fair amount of time.
- 9) Once the installation is complete, quit and shut off the IIGS.
- 10) Shut down the file server and restart it from the Server Admin disk.
- 11) Launch the Server Admin application.
- 12) Select all users, or all Apple IIGS users who you want to be able to start up over the network.
- 13) Under the Apple II menu, choose Set Startup, and designate "Finder" as the startup application. (It will be located at /servername/System/Finder.)
- 14) When you're prompted for a response, allow the system to set the prefix automatically.
- 15) If the users you selected will be using a network printer, select Set Printer.
- 16) Choose Volume List from the Volumes menu and double-click the server volume. A dialog box allows you to set access privileges. Click all boxes and save enclosed folders.

17) Quit the Server Admin program and restart the file server.

18) On the IIGS units that you want to start up over the network, reset the startup slot from the Control Panel. Systems with ROM 01 should have the printer port set to "Your Card," Slot 7 set to "Built-in AppleTalk," and the startup slot set to "7." Systems with ROM 03 should have the printer port set to "Built-in AppleTalk," Slot 7 set to "Built-in AppleTalk," and the startup slot set to "AppleTalk."

(Note: If you have the newer model Apple IIGS with 1MB of RAM on the logic board, set Slot 7 to AppleTalk and EITHER slot 1 or slot 2 to AppleTalk.)

19) Restart the Apple IIGS. It now boots over the network and prompts you to enter a user name and password. Once you enter the name and password, the "progress thermometer" appears, and then you see the Apple IIGS System 5.0 desktop with the server volume icon at the top right.

Support Information Services

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:6034



# Tech Info Library

## A/UX: The Event Manager and Mouse Events

Revised: 9/4/92  
Security: Everyone

A/UX: The Event Manager and Mouse Events

=====

Article Created: 28 August 1990

Article Change History

-----

08/31/92 - REVIEWED  
•For technical accuracy

TOPIC -----

I'd like to share a general observation, concerning A/UX and multitasking support while running the Finder.

While it is true that A/UX provides true pre-emptive multi-tasking for processes on the machine, it is also true that when the mouse button is held down, all activity appears to cease. The customer observation here is that the computer halts everything to deal with the mouse being down, and nothing seems to happen during this time.

What little I know about Macintosh development and priority queues tells me that StillDown events are taking precedence over screen update events. Therefore, the machine seems to stop. Although, in reality, it continues to process other tasks. Typical workstations have different priorities for user events, and, therefore, tasks continue to run and change their displays despite the actions of the user. Potentially, this could affect the responsiveness of the machine to the user, because user actions are not assigned any special priorities.

Is this is correct?

DISCUSSION -----

Your observations are correct. The Event Manager always returns the highest priority event waiting in the queue. When using A/UX, even though it looks like processing has stopped when you hold down the mouse button, it still is continuing to give processor time to other processes. This is handled by the A/UX scheduler process and falls outside the realm of the Finder shell.

The Event Manager priorities are defined as follows:

- 1) Activate (window becoming inactive is higher than window becoming active).
- 2) Mouse down, mouse up, key down, key up, disk inserted, network, device driver, application defined (in that order).
- 3) Auto key.
- 4) Update (in front-to-back order of the windows).
- 5) Null.

To demonstrate this, you could use the small shell script that follows:

- 1) Start up this process.
- 2) Let it count up to 10.
- 3) Press and hold the mouse button. The screen stops updating. The log file will continue to be updated (you will continue to hear the drive).
- 4) While still holding the mouse button down, press Control-C. Screen output from the program should be halted from the time you first pressed the mouse button down, somewhere around 10.
- 5) Open the log file (/tmp/junk.log). It shows that the file was being updated even though the screen was not.

#### C Shell Script

-----

```
#!/bin/csh
```

```
set counter = 1
```

```
while (1)
```

```
    echo "The counter value is " $counter | tee -a /tmp/junk.log
```

```
@ counter++
```

```
end
```

```
exit 0
```

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6037



# Tech Info Library

## Aladdin Systems, Inc.

Revised: 4/4/97  
Security: Everyone

Aladdin Systems, Inc.

=====

Article Created: 28 August 1990  
Article Reviewed/Updated: 4 April 1997

Aladdin Systems, Inc.

-----

165 Westridge Dr.  
Watsonville, CA 95076

408-761-6200 (Sales, Technical Support)

408-761-6206 Fax

Company Profile:  
Software, specializing in file compression, encryption, and file-archiving products.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6038





# Tech Info Library

## DigiBoard

Revised: 4/4/97  
Security: Everyone

DigiBoard

=====

Article Created: 08/28/90  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

DigiBoard  
-----

6400 Flying Cloud Dr.  
Eden Prairie, MN 55344

800-344-4273

612-943-9020

612-943-5398 Fax

Company Profile:  
DigiBoard, hardware, specializing in intelligent, multichannel  
communication boards, data communications hardware and software for multi-user  
computer systems

Article Change History: 07/07/93 New Product Information Added

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6039



# Tech Info Library

## Taniwha Systems Design

Revised: 4/4/97  
Security: Everyone

Taniwha Systems Design

=====

Article Created: 28 August 1990  
Article Reviewed/Updated: 4 April 1997

Taniwha Systems Design

-----

2206 Roosevelt Ave.  
Berkeley, CA 94703

510-540-5557

Fax: 510-845-7336

Company Profile:  
Hardware, specializing in serial communication cards.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6040



# Tech Info Library

## Linguist's Software

Revised: 4/4/97  
Security: Everyone

Linguist's Software

=====

Article Created: 09/29/90  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Linguist's Software

-----

8010 212th St. SW  
P.O. Box 580  
Edmonds, WA 98026

206-775-1130

206-771-5911 Fax

Company Profile:  
Software, specializing in international fonts both bitmapped and PostScript.  
Over 250 languages for Macintosh and over 190 for PC represented.

Article Change History: 07/12/93 New product information added, address  
changed

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6041



# Tech Info Library

## Macintosh Portable Data Modem 2400: Dialing Without Dial Tone

Revised: 7/28/92  
Security: Everyone

Macintosh Portable Data Modem 2400: Dialing Without Dial Tone

=====  
Article Created: 12 September 1990  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

### TOPIC -----

We have had reports that the Macintosh Portable Data Modem 2400 cannot find a dial tone when plugged into an internal switchboard. The Hayes commands to do this, although accepted by the modem, seem to have no effect.

### DISCUSSION -----

Setting the active result codes with the X command tells the modem to:

- dial after a delay set by modem register S6, and
- not wait for a dial tone.

Use the following commands. You may or may not need to set register S6, depending on the phone system in use. The text in parentheses is comment only, and not part of the commands.

ATX3 (OK, CONNECT, RING, NO CARRIER, ERROR, CONNECT 1200 & 2400, BUSY)  
ATS6=3 (Wait 3 seconds. Default is 2, so this probably isn't necessary.)

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6042



# Tech Info Library

## Apple IIGS: Disabling the Control Panel

Revised: 9/29/90  
Security: Everyone

Apple IIGS: Disabling the Control Panel

=====

This article last reviewed: 12 September 1990

TOPIC -----

How can I disable the Control Panel on the Apple IIGS?

DISCUSSION -----

The following is Electronic Learning Systems' description of Menu Master, a product that provides a way to disable the Apple IIGS Control Panel. For further information on ELS, search the Technical Information Library on "ELS".

"Menu Master is a simple menu system for the Apple II. It allows creation of customized menus and sub-menus to launch all ProDOS, GS/OS, and DOS 3.3 applications. Menu Master provides automatic pathfinding, simplifying the need to understand or manually set ProDOS paths. Menu Master has password protection, is mouse-compatible, and displays the time and date from any ProDOS clock. A utility feature enables or disables the Apple IIGS Control Panel.

"DOS 3.3 programs can now be launched and returned from, within the ProDOS operating system. DOS 3.3 software developers now have the ability to run DOS 3.3 programs on AppleShare or any ProDOS-specific environment.

"Any Apple II with 128K of memory and an 80-column display can now organize, launch and return from ProDOS, GS/OS, and DOS 3.3 applications with Menu Master. Apple IIc Plus systems can have 3.5-inch diskettes created with DOS 3.3 programs that will run on their computers.

"The network version of Menu Master is compatible with all Apple II networks including AppleShare, Corvus, ELAN, VELAN, and DIGICARD. Menu Master provides all the features of Apple's Aristotle program when used on AppleShare, but requires no memory expansion and can launch DOS 3.3 applications."

Copyright 1990 Apple Computer, Inc.





# Tech Info Library

## Personal LaserWriter: Multiple Port Switching (11/94)

Revised: 11/21/94  
Security: Everyone

Personal LaserWriter: Multiple Port Switching (11/94)

=====

Article Created: 19 November 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

Is it possible for a Personal LaserWriter to switch printing sessions between the serial port and the LocalTalk connection without the user having to use the hard switch? The customer wants one printer that will work in both environments and is "smart" enough to spool documents from one side while printing on the other.

DISCUSSION -----

The Personal LaserWriter NT was not designed with the necessary intelligence to handle print jobs from both ports simultaneously. This would require an internal spooler that could queue print jobs from either port. It would probably also need to handle switching between PostScript and different emulations on the fly for this to be useful. You have two possible solutions: an external switching device or a different printer.

One such external device is a third-party product called BridgePort, by Extended Systems Inc. BridgePort lets any PostScript printer (including all of Apple's) accept jobs from a serial, parallel, or LocalTalk port. This external device automatically switches input to either a serial or parallel output to the PostScript printer. It is limited to accepting PostScript jobs only; it can't switch between HP and PostScript.

The LaserWriter Pro printers from Apple are capable of accepting print jobs from different ports without any additional hardware or software switching.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:6045





# Tech Info Library

## Sony 40MB 3.5-inch Hard Disk: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Sony 40MB 3.5-inch Hard Disk: Specifications (Discontinued)

=====

This article last reviewed: 12 September 1990

Here are specifications for the Sony 40MB 3.5-inch hard disk that Apple uses in some Macintosh systems:

|                            |     |
|----------------------------|-----|
| Heads                      | 4   |
| Platters                   | 2   |
| Cylinders                  | 624 |
| Tracks per cylinder        | 4   |
| Sectors per track          | 33  |
| Spare sectors per cylinder | 1   |

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6046



# Tech Info Library

## Menlo Business Systems, Inc.

Revised: 4/4/97  
Security: Everyone

Menlo Business Systems, Inc.

=====

Article Created: 09/29/90  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Menlo Business Systems, Inc.

-----

201 Main St.  
Los Altos, CA 94022

415-948-7920

415-949-6655 Fax

Company Profile:  
Software, specializing in Macintosh-to-Tandem connectivity, CASE tools, and  
computer-based training.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6047



# Tech Info Library

## AppleShare File Server: How To Set Unattended Restart

Revised: 9/29/90  
Security: Everyone

AppleShare File Server: How To Set Unattended Restart

=====

This article last reviewed: 13 September 1990

TOPIC -----

A customer needs to perform daily unattended restart of several Macintosh systems that are used customer as communications servers.

DISCUSSION -----

CE Software's QuicKeys and QuickTimer CDEVs should provide the solution.

QuickTimer can run a QuicKeys sequence called "Daily" at a specified time every day, or run a sequence called "Periodic" at regular intervals. From Finder or MultiFinder, define a QuicKeys sequence that does a Restart, and name it "Daily". The sequence needs a keyboard equivalent to be called by QuickTimer. Set the time you want the "Daily" sequence to be run, and restart the computer. The system should restart every day at the time specified in QuickTimer.

If the Macintosh Systems are AppleShare File Servers

-----

In this case, the setup is a little more complicated. There are six steps: patch the AppleShare file server software (please note that this patch is an unsupported solution), define four QuicKeys sequences, and use the Control Panel to choose a time.

Note: It's not necessary to patch AppleShare if the file server is a Macintosh IICx or Macintosh IICI, because you can lock the power switch in the ON position on these systems. With the power switch locked in the ON position, the Macintosh IICx and Macintosh IICI automatically restart after the Shut Down command is issued. This is not possible with Macintosh II and Macintosh IIX, because their power switches don't lock in the ON position.

Step A

-----

When Shut Down... is selected from the Server menu, the AppleShare file server closes all open files, writes information in the disk cache to disk, and shuts down the system. You need to patch the AppleShare file server software to just Restart instead of Shut Down.

The Shutdown Manager procedure is called ShutDwnPower, and it turns the computer off. If the Macintosh must be turned off manually (for example, a Macintosh SE), the Shutdown alert is presented to the user.

Disassembled, ShutDwnPower looks like this:

```
MOVE.W    #1,-(SP)    ;1 is the selector for the "ShutDwnPower" proc
_Shutdown
```

and in hexadecimal:

```
3F3C 0001 A895.
```

You need to have AppleShare call ShutDwnStart (the Shutdown Manager) instead of ShutDwnPower. ShutDwnStart restarts the system instead of turning it off.

Disassembled, ShutDwnStart looks like this:

```
MOVE.W    #2,-(SP)    ;2 is the selector for the "ShutDwnStart" proc
_Shutdown
```

and in hexadecimal:

```
3F3C 0002 A895.
```

Here's how to use ResEdit to make this change:

- 1) In ResEdit, open the application AppleShare File Srv (in the "Server Folder").
- 2) Open the CODE resources, find the 2 "Main" ID = 1 resource, and open it.
- 3) Select Find Offset... from ResEdit's Find menu.
- 4) Enter an offset of "512D" (a hexadecimal number).
- 5) "01" is highlighted in the CODE "Main" ID = 1 window. Type "02".
- 6) Select Save from ResEdit's File menu, and quit.

Here's how to apply the same patch using a file editor such as FEdit:

- 1) Use the file editor to open the application named AppleShare File Srv.
- 2) Search for the hexadecimal string "3F3C 0001 A895" (this occurs only once).
- 3) Replace the string with "3F3C 0002 A895".
- 4) Save the changes.

Now, the AppleShare file server will restart instead of shutting down when Shut Down... is selected from the Server menu.

(For more information on the Shutdown Manager, see pages 585 to 590 of Inside Macintosh Volume V.)

#### Step B

-----

Define a QuickKeys sequence that issues a Shut Down command:

- 1) With the AppleShare file server running, select QuickKeys from the Control Panel.
- 2) From the QuickKeys CDEV's Define menu, select Menu/DA....
- 3) From AppleShare's Server menu, select Shut Down.
- 4) Give this QuickKeys sequence a unique keyboard equivalent, perhaps Shift-Control-A.

#### Step C

-----

Define a QuickKeys sequence that enters the "Number of minutes until shutdown" into the time delay dialog:

- 1) From the QuickKeys CDEV's Define menu, select Text....
- 2) Type the number of minutes you want the AppleShare file server to delay before shutting down.
- 3) Give this QuickKeys sequence a unique keyboard equivalent, such as Shift-Control-B.

#### Step D

-----

Define a QuickKeys sequence that selects the OK button in the dialog:

- 1) From the QuickKeys CDEV's Define menu, select Buttons...
- 2) When a dialog asks you to "Enter button to look for", type "OK" and click on the OK button.
- 3) Give this QuickKeys sequence a unique keyboard equivalent, such as Shift-Control-C.

#### Step E

-----

Define a QuickKeys sequence that links all the above sequences:

- 1) From the QuickKeys CDEV's Define menu, select Sequences...
- 2) A dialog appears; on its right side are the three QuickKeys you already defined. On the left side is the default name "List". Change that name to "Daily".
- 3) Double-click the QuickKeys on the right side of the dialog in this order:
  - Shift-Control-A Shut Down...
  - Shift-Control-B '5'
  - Shift-Control-C OK
- 4) Click the "OK" button.
- 5) Give the "Daily" sequence a keyboard equivalent.
- 6) In the Control Panel, select the QuickTimer CDEV.
- 7) Click the word "Daily" so that the check box is selected, and set the time.

#### Step F

-----

- 1) From the Control Panel, Select the QuickTimer CDEV.
- 2) Click on the word "Daily", so that the check box is selected.
- 3) Set the time to, say, 4:30 am.

The AppleShare file server will now shut down and restart every day at the

defined time.

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Tech Info Library Article Number:6049



# Tech Info Library

## Videodisc Control Stacks for CLV and CAV Formats

Revised: 12/22/95  
Security: Everyone

Videodisc Control Stacks for CLV and CAV Formats

=====

Article Created: 29 September 1990  
Article Reviewed/Updated: 22 December 1995

TOPIC -----

Does the APDA Videodisc Toolkit, which allows you to control a videodisc player from HyperCard, work with both CAV and CLV discs?

DISCUSSION -----

The command set of the videodisc player is the same for both CAV and CLV discs. This means that the Videodisc Toolkit will work with both type of discs.

However, there are differences in the discs that will not allow certain commands to provide useful results. Because the Videodisc Toolkit documentation states that the Toolkit does not specifically address CLV control, determining the controls that actually work with CLV discs is a matter of exploring. (Often, the videodisc player determines the available functions when using CLV discs. The player knows whether a CLV or CAV disc is loaded. Some functions are disabled by the player when CLV discs are in the tray.

Commands related to "frameMode" -- that is, "videoFrame()" -- do not work. Using "chapterMode" instead allows access to longer sections of video. The "playVideo" and "searchVideo" commands use chapter numbers rather than frame numbers when in "chapterMode".

Still-frame with CAV discs provides a crisp and clear still image. Attempting to freeze a frame from a CLV disc will not produce a stable image. This is a limitation inherent in the design and layout of CLV discs, not a limitation of the Videodisc Toolkit. CAV discs place one video frame per revolution of the disc; CLV discs place any number of frames within one revolution. One frame per revolution allows the disc to continue to spin with the laser reading head stationary, thus providing the same frame once per revolution. CAV discs have differing numbers of frames

from the outside edge of the disc to the inside of the disc. Holding the laser reading head stationary will not provide a stable image, because there is a variable number of frames/fields passing under the head in one revolution.

The Voyager Company markets "The Voyager VideoStack", which supports time mode with the CLV discs. This allows a stack to tell the player to go, for example, to "19 minutes 12 seconds" and begin playing until it reaches "21 minutes 32 seconds." This is not frame accurate, but in many situations provides sufficiently accurate control.

Voyager also provides "VideoStack 8000 Extension", which is for the Pioneer 8000 player. These extensions support special 8000 model features, such as true CLV still-frame and CLV frame search, digital sound control, and still-frame with audio. CLV still-frame is achieved through the use of the Pioneer 8000 digital frame buffer. The Pioneer 8000 can search to a particular frame and grab a frame of video into its digital buffer. This is different from the CAV method of still-frame.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

Article Change History:

22 Dec 1995 - Reviewed for technical accuracy, updated format.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:6050





# Tech Info Library

## Videologic, Inc.

Revised: 4/4/97  
Security: Everyone

Videologic, Inc.

=====

Article Created: 29 September 1990  
Article Reviewed/Updated: 4 April 1997

Videologic, Inc.

-----

245 First St.  
Cambridge, MA 02142

617-494-0530

Fax: 617-494-0534

Company Profile:  
Hardware, specializing in multimedia products for Macintosh and MS-DOS systems.

Copyright 1990-937, Apple Computer, Inc.

Tech Info Library Article Number:6053



# Tech Info Library

## Workstation Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

Workstation Technologies, Inc.

=====

Article Created: 29 September 1990  
Article Reviewed/Updated: 4 April 1997

Workstation Technologies, Inc.

-----

18010 Sky Park Circle  
Suite 155  
Irvine, CA 92714

714-250-8983

Fax: 714-250-8969

Company Profile:  
Hardware, specializing in video and multimedia products.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6054



# Tech Info Library

## ALAC (Any Language, Any Computer) Product Information

Revised: 9/29/90  
Security: Everyone

ALAC (Any Language, Any Computer) Product Information

=====

This article last reviewed: 18 September 1990

TOPIC -----

Is there a programming environment that allows programmers to use one language to write a host application that controls systems as diverse as Macintosh, IBM mainframes, DEC VAX, Cray, and IBM PCs?

DISCUSSION -----

United Data Corporation has announced a product that facilitates this process: ALAC (Any Language, Any Computer).

ALAC is a MacWorkStation-compliant MS-DOS application server that runs under MS Windows. A PC running ALAC responds to the same protocol messages as a Macintosh running MacWorkStation. This lets you build applications while your users remain on familiar hardware. You can use COBOL, Fortran, C, BASIC, or APL. Any computer that can run Windows can also run ALAC.

ALAC provides access to a graphical user interface. Programmers not familiar with Windows and the Macintosh can build applications for these environments, with full access to and control of dialog boxes, menus, and windows.

Single-user versions of ALAC are available through United Data or through APDA. Site licenses are available through United Data. For further information on United Data Corporation or APDA, search the Tech Info Library for the name.

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Tech Info Library Article Number:6056



# Tech Info Library

## LaserWriter II: Envelope Tray Dimensions

Revised: 9/29/90  
Security: Everyone

LaserWriter II: Envelope Tray Dimensions

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This article last reviewed: 18 September 1990

TOPIC -----

What are the smallest and largest envelope sizes that the LaserWriter II's envelope tray can handle?

DISCUSSION -----

The LaserWriter II's U.S. envelope tray handles envelopes measuring:

- as small as 87mm x 177mm, and
- as large as 189mm x 268mm.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6057



# Tech Info Library

## HyperCard and Multi-User Applications on Servers

Revised: 9/29/90  
Security: Everyone

HyperCard and Multi-User Applications on Servers

=====

This article last reviewed: 18 September 1990

TOPIC -----

Some customers have reported problems using HyperCard to open multi-user applications that are on a server. If they launch the application from a HyperCard script, they don't have multi-user access.

If they launch the application from the Finder, then use the HyperCard script to open a session with the application, they do have multi-user access. And if they launch the application entirely without HyperCard, they have multi-user access.

DISCUSSION -----

When you launch an application using HyperCard's Open command, it opens the application with privileges that lock the file. This prevents any other application, including the Finder, from launching the same application. HyperCard's Open command, therefore, can not multi-launch a single application.

There are ways to work around this. As mentioned, if you initially launch the application from the Finder, additional launches of the application from HyperCard do work, because it's the first application (in this case, the Finder) rather than HyperCard that sets the privileges of the open file.

You can also write an XCMD that does what the Open command does, except that you set the privileges for multilaunch in the XCMD.

Another option is to launch multi-user applications locally, rather than from the server. We've found that multi-user applications work faster when each Macintosh has a local copy of the application and accesses only the data file on the server. If the application is kept at the root level of each Macintosh, a HyperCard stack could launch the application locally, and

the application could get the data from the server.

If you don't want to have the application at the root level, you can:

- program each HyperCard stack with the access path to the application; or
- have the user tell HyperCard where the application is on the local disk (via the dialog that HyperCard shows if it doesn't know where an application is).

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Tech Info Library Article Number:6058



# Tech Info Library

## Data Access Language: Problem Opening Rdb Databases

Revised: 9/29/90  
Security: Everyone

Data Access Language: Problem Opening Rdb Databases

=====

Article Created: 29 September 1990  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

A customer had a problem with DAL that prevents Rdb/VMS databases from being opened in certain cases. When they issue the OPEN DATABASE command

```
OPEN RDB DATABASE 'mydisk:[mydir.mysubdir]my_database'
```

the database can't be opened.

DISCUSSION -----

You always need to use the IN LOCATION or USE LOCATION statement to open databases that are not in the default directory. Although you might have been able to open databases by specifying the full path name with the database name in version 1.0, later versions (which support opening multiple databases simultaneously in Rdb) do not accept a full path name here.

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Tech Info Library Article Number:6059



# Tech Info Library

## Electronic Learning Systems, Inc.

Revised: 7/8/93  
Security: Everyone

Electronic Learning Systems, Inc.

=====

Article Created: 09/29/90  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Electronic Learning Systems, Inc.

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4131 N.W. 28th ln.  
Suite 3A  
Gainesville, FL 32606

800-443-7971 (Orders)

904-375-0558 (Tech. Support)

(For Fax call this number first) 904-375-0558  
904-375-5679 Fax

AppleLink: ELS

Company Profile:  
Software, specializing in individual and network educational products for the  
Apple II family, Macintosh Development, security software

Article Change History: 07/08/93 New Product Information Added, Name  
Information Added

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6060





# Tech Info Library

## United Data Corporation

Revised: 4/4/97  
Security: Everyone

United Data Corporation

=====

Article Created: 29 September 1990  
Article Reviewed/Updated: 4 April 1997

United Data Corporation

-----

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Suite 203  
San Francisco, CA 94121

415-750-8068

Fax: 415-221-2798

Company Profile:  
Software, specializing in programming tools.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6061



# Tech Info Library

## LaserWriter: Using Refilled Toner Cartridges

Revised: 9/29/90  
Security: Everyone

LaserWriter: Using Refilled Toner Cartridges

=====

This article last reviewed: 06 September 1990

Apple does not recommend the use of refilled toner cartridges because print quality may suffer as parts inside the toner cartridge wear out. Using refilled toner cartridges in your LaserWriter, LaserWriter Plus, LaserWriter II, or Personal LaserWriter printers may or may not cause damage. The impact on Apple printers is difficult to assess because it is impossible to predict the quality of refurbished cartridges.

The use of a refilled toner cartridge in your printer will not void a LaserWriter printer's limited warranty or an AppleCare contract. However, if printer failure is attributable to the use of a refilled toner cartridge, the damage resulting from this failure will not be covered under Apple's limited warranty or AppleCare contract.

The following is a reminder of which cartridges to use with your printer:

- The LaserWriter and LaserWriter Plus both use EP cartridges.
- The LaserWriter II uses EPS cartridges.
- The Personal LaserWriter uses EP-L cartridges.

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Tech Info Library Article Number:6062



# Tech Info Library

## LaserWriter IINTX: How To Network a PS/2 and Macintosh Computers

Revised: 9/29/90  
Security: Everyone

LaserWriter IINTX: How To Network a PS/2 and Macintosh Computers

=====

This article last reviewed: 29 August 1990

You can connect multiple IBM PS/2 computers, Macintosh computers, and one Apple LaserWriter IINTX, so that all the computers are connected to the LaserWriter and using it simultaneously.

### DayStar Digital Solution

-----

The best solution is to use a LocalTalk MicroChannel card. The MicroChannel systems can be networked together using a AppleTalk card for the MicroChannel bus PS/2s by DayStar Digital (the LT200MC MicroChannel LocalTalk card). The card lets MicroChannel PS/2s communicate with other AppleTalk system components, like the LaserWriter IINT/NTX. The card comes with software for PS/2s to connect to AppleTalk printers, like LaserWriters. TOPS is reported to work with the card, too. AppleShare PC is reported to be incompatible with the DayStar card. For more details, search the Tech Info Library under "Day Star".

### 3COM Solution

-----

Another solution is to use the EtherLink MC PS/2 card from 3COM. This is a more complex solution, because it involves several components. This connects MicroChannel PS/2s to Ethernet. The PS/2s can print to a 3S200 server from 3COM and connect to a serially-connected LaserWriter II. The Macintoshes require an Ethernet interface card or Ethernet router to connect to the 3S200. 3COM servers do not support AppleTalk connections to LaserWriters and can only connect serially.

### Kinetics Solution

-----

If you can use a Kinetics FastPath with the EtherLink MC PS/2 product from 3COM (this depends on whether 3COM supports AFP), then the Macintoshes and the LaserWriter can be placed on LocalTalk cabling and be connected to the Ethernet PCs with the FastPath. This configuration does not need the Asynchronous LaserWriter driver for the Macintoshes.

PS/2 Notes

-----

There are six PS/2 models 25, 30, 50, 60, 70, and 80. Each model can also be bought in a different configuration. The low-end models 25 and 30 retain a PC and/or AT bus architecture that works with the Apple LocalTalk PC card.

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Tech Info Library Article Number:6063



# Tech Info Library

## HyperCard: General Problems with XCMDs

Revised: 9/29/90  
Security: Everyone

HyperCard: General Problems with XCMDs

=====

This article last reviewed: 29 August 1990

Some XCMDs may cause system crashes or unusual problems to appear. These problems are usually results of poor programming.

When running a new XCMD, check the result of the command. Try placing this statement into the script after executing the command:

"Put the result into the message"

Here are some possible problems and their solutions when the system locks up:

- 1) The memory management system is purging needed data, because the XCMD has not taken precautions to protect it.
- 2) The XCMD has broken the master pointer block, and the problem is not uncovered until some random, future action.
- 3) The application stack has become fragmented causing an out-of-memory error, because the XCMD has allocated memory, locked it down, and has not removed the data after it was finished.
- 4) There just is not enough memory available.

There are several ways for XCMDs to crash. Almost all are due to bad programming and trying to use HyperCard in ways for which it was not designed. Anyone using an XCMD needs to test the XCMD in a stack by itself and slowly add and execute other XCMDs. Any one of them may be fragmenting the stack, corrupting the master pointer block, or using up memory by leaving data floating around.

Apple does not support extensions that are not part of the HyperTalk language. The ability to add extensions has been created so that programmers can enhance their stacks. However, each programmer must take the

responsibility to check for errors and report any problems to the user when writing the XCMD or XFCN. Programmers who are using extensions from unknown sources must take on the consequences.

Finally, a user's needs may not be appropriate for the capabilities of HyperCard. There are some supported XCMDs, like those available within legitimate HyperCard software products. We suggest HyperTalk programmers use only those XCMDs that they are confident with or that are supported if any future problems develop.

There are many other programming environments that support and handle advanced programming requirements. HyperTalk is not meant to be a replacement for programming languages like Pascal or C.

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Tech Info Library Article Number:6064



# Tech Info Library

## HyperCard 2.0: New Product Features (1 of 2)

Revised: 9/30/90  
Security: Everyone

HyperCard 2.0: New Product Features (1 of 2)

=====

This article last reviewed: 30 August 1990

### OVERVIEW

=====

HyperCard 2.0 is the most-significant, major enhancement to HyperCard since the first version, which was introduced to the public in 1987. There are more than 40 new features in HyperCard 2.0. It runs on all Macintosh computers with the 128K or later ROM and 1MB of memory. Displaying multiple stacks and large cards in their entirety, and using the paint tools will require more memory. Here are a few of the main changes:

- Variable card sizes
- Multiple stacks open at same time
- Styled text in fields
- Runs existing HyperCard stacks with one-way conversion to 2.0 format
- Printing improvements
- Extended XCMD interface
- Enhancements to HyperTalk
- Modal script editor
- Debugging
- User-definable menus

### PRODUCT FEATURES

=====

#### Variable Card Size

-----

Previously, HyperCard supported only one card size (512 x 342). HyperCard 2.0 allows card windows from 64 x 64 to 1280 x 1280 pixels.

On the right side of the dialog, you can select one of seven possible standard window sizes from the Card size pop-up menu. You can change the card size any time, but all cards in a given stack are one size. If you reduce the size of a card, none of the fields or buttons that fall outside the new boundaries are lost, just hidden from view. The graphics will stay until they are edited by the paint tools or the stack is compacted, then they are clipped to the new

size. You can select a number of default settings for the screen size. These include:

- Small: 416 x 240
- Standard 9" 512 x 342
- Mac II 12" 640 x 480
- MacPaint 575 x 719
- Window 512 x 342
- Screen depends on monitor
- Custom 64x64 to 1024x1024

#### Multiple Stacks Open Simultaneously

Multiple Windows allow a user to have several stacks open at one time. There will be one window for each stack that is open. Users can have as many stacks open as available RAM space will allow. Only one window is allowed per stack and only one card from a given stack may be displays at the same time.

#### Text Enhancements

- **Styled Text in Fields:** HyperCard 2.0 lets a text field contain multiple fonts, styles, and sizes. The text can be changed by selecting the text and then choosing "Text Style..." from the Edit menu or selecting an item from the Font or Style menu. You can also find or set the attributes of any range of characters using HyperTalk.
- **Word Wrap:** Word wrap has been changed so only a space character will break up a word at the end of a line. In past versions, HyperCard would break any string with punctuation at the end of a line.
- **HotText** means that any text within a locked text field can be accessed by a number of new HyperTalk commands. This lets a HyperCard developer create stacks that respond to user mouse clicks in a text field. The commands are:

ClickText  
ClickChunk  
ClickLine

ClickText returns the text characters that were clicked. ClickChunk returns the range of characters. ClickLine returns the line that was clicked (e.g., Line 5 of card field 2).

You can use a "Group" style to override the standard grouping of text. This lets the stack creator join two or more words together and have them act as one word. When text is joined using Group style, the ClickText and ClickChunk change to return the combined words.

|           | Not Grouped | Grouped    |
|-----------|-------------|------------|
|           | -----       | -----      |
| ClickText | FINDER      | FINDER 5.3 |



ClickChunk          char 1 to 6 of cd field 3      char 1 to 10 of cd field 3

- Shared Background Text: lets designers enter text in a background field and have the text appear on every card of that background. In the past, text had to be "painted" on or entered in every card that used that background.

#### Printing Enhancements

-----

HyperCard 2.0 has improved printing abilities:

- Design custom reports for a single stack
- Create and save multiple reports for a stack (up to 7)
- Print fields
- Print the entire contents of a scrolling text field
- Print portions of a card
- Print the value of any HyperTalk expression using HyperTalk
- Print text field in same font as they appear on the screen
- Prints to non LaserWriter devices (fax modem)

When you print a report, you must specify the items to print in by using the menu items that come up when you select Print Report. These items are no longer in the Print Reports dialog box.

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Tech Info Library Article Number:6068



# Tech Info Library

## Hayes V 9600: Macintosh Pinouts

Revised: 9/30/90  
Security: Everyone

Hayes V 9600: Macintosh Pinouts

=====

This article last reviewed: 31 August 1990

TOPIC -----

Can you give me the pinouts for connecting the Hayes V series 9600 baud modems to the Macintosh with a DIN 8 serial port.

DISCUSSION -----

Here are the pinouts for connecting the Hayes V series 9600 baud modems to the Macintosh with a DIN 8 serial port. They are direct from Hayes so they should be correct.

| Hayes 9600 V | Macintosh |
|--------------|-----------|
| 1-7          | 4-8       |
| 2            | 3         |
| 3            | 5         |
| 5            | 2         |
| 4            | 1         |

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Tech Info Library Article Number:6069



# Tech Info Library

## Macintosh SCSI Termination: A Brief Explanation

Revised: 9/30/90  
Security: Everyone

Macintosh SCSI Termination: A Brief Explanation

=====

This article last reviewed: 31 August 1990

TOPIC -----

Is the Macintosh SCSI connector terminated on the logic board? In other words, are both ends of the chain terminated or only the last peripheral?

DISCUSSION -----

The Macintosh systems that have SCSI ports are not terminated on the logic board. One system, the Macintosh IIx, when shipped without an internal hard drive, comes with a terminator plugged into the internal SCSI connector. If an internal hard drive is installed in a Macintosh system, it should be terminated. The internal hard drive is the first device in a SCSI chain. The last device in the SCSI chain should also be terminated.

Typically, a Macintosh system with only one SCSI device needs only one terminator. The exception to this is the Macintosh IIx when it has a single SCSI device attached on the external SCSI connector. In this case, there should be the internal terminator that came with Macintosh IIx and a terminator on the external SCSI device.

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Tech Info Library Article Number:6070



# Tech Info Library

## Macintosh Pascal Discontinued but Supported: Update

Revised: 9/30/90  
Security: Everyone

Macintosh Pascal Discontinued but Supported: Update

=====

This article last reviewed: 31 August 1990

TOPIC -----

Is there a product called MacPascal? If yes, what is the latest version, and is it an Apple's product?

DISCUSSION -----

Macintosh Pascal was discontinued many years ago. The latest version shipped by Apple was version 2.1. Although we no longer ship it, we continue to support the product (though we rarely get any questions on it since most people have migrated to newer products).

There are many substitutes, including Think Pascal from Symantec, which could be used in conjunction with an interactive tutorial called Just Enough Pascal, also from Symantec (these, as well as others, are described in the buyer's guides on AppleLink).

We'll update the article "Macintosh Pascal Is Discontinued But Supported" in the Tech Info Library with this information.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6071



# Tech Info Library

## Macintosh Portable: RAM Consumes Insignificant Power

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: RAM Consumes Insignificant Power

=====

Article Created: 31 August 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

Is there a significant decrease in battery life for a Macintosh Portable with 2MB of Apple Portable RAM as compared to one with 1MB? Also, does the extra 1MB of Apple Portable RAM drain the battery during "Shut Down?"

DISCUSSION -----

When the Macintosh Portable is in a "Sleep" or "Shut Down" state, having 1MB of RAM draws 4.5mA, and adding another 1MB in the RAM expansion-card slot raises the total draw to 6mA. Though we haven't tested the longevity of the battery with the additional 1MB of RAM, it should have a very minimal effect.

When the Macintosh Portable is active, the RAM power requirements are approximately 20 to 35mA with 1MB or 2MB of RAM installed, respectively. This power draw is relatively insignificant, a mere increase of 15mA, as compared to the 200mA the logic board draws, 50 to 70mA for the display, and 700mA for the hard drive.

Of course, this applies to Apple's Portable RAM expansion, because third-party RAM boards may use different kinds of RAM with different power consumption characteristics.

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Tech Info Library Article Number:6072



# Tech Info Library

## Macintosh Portable: SCSI Termination Problems (1/95)

Revised: 1/19/95  
Security: Everyone

Macintosh Portable: SCSI Termination Problems (1/95)

Article Created: 31 August 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I have a Macintosh Portable to which I have connected separately either an Apple Tape Backup or external hard drive. In either case, the presence of the SCSI device crashes the SCSI system even though it is terminated correctly.

Could it be that the Macintosh Portable and other new Apple systems do not generate the initial termination due to a change in the CMOS chip?

DISCUSSION -----

There are no known problems using Apple's external SCSI hard drives or the Apple Tape Backup on the Macintosh Portable. However, because the Macintosh Portable doesn't provide termination power (to limit demands on the battery), external SCSI devices connected to the Macintosh Portable must provide that power. That is, they must be powered on and left on while using the Macintosh Portable. Also, the Macintosh Portable should be shut down when connecting or disconnecting peripherals.

We don't know your Macintosh Portable configuration, the software used, the software versions, the events leading up to the error, or what the error was, but what is described above about termination power is common enough that it bears repeating.

If by "initial" termination you mean that the Macintosh Portable does not have "built-in" termination, it is just like all other Macintosh systems except for the Macintosh IIfx. They are internally terminated.

Article Change History:  
09 Jan 1995 - Made article public.  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6073



# Tech Info Library

## Macintosh: How to View GDDM Files on Host

Revised: 7/28/93  
Security: Everyone

Macintosh: How to View GDDM Files on Host

Article Created: 31 August 1990  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

I want to view GDDM files using a terminal application (with board or preferably Ethernet-supported) for 3192G or 3279G terminal types. Can you help?

DISCUSSION -----

The latest release of DCA's (formerly Avatar) MacMainFrame product supports both features you want. It provides APA (All Points Addressable) graphics, and it distributes sessions across AppleTalk to other Macintosh systems on the network. Because the product emulates a 3279 terminal with APA graphics, you can use GDDM on the host to display graphics on the Macintosh.

Because you mentioned Ethernet as a preferred connection, we assume you're looking for a TN3270 solution. We haven't used it personally, but we understand that the latest TN3270 product from Brown University Computing and Information Services supports several IBM graphic terminals (3179G, with GDDM support).

Also, you might want to contact Wollongong with regard to their MacPathway TN3270 product. To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:  
26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates)

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Tech Info Library Article Number:6077





# Tech Info Library

## Macintosh SE: Products for NTSC Output

Revised: 9/30/90  
Security: Everyone

Macintosh SE: Products for NTSC Output

=====

This article last reviewed: 4 September 1990

TOPIC -----

Can a Macintosh SE or Macintosh SE/30 use a TV as a display device? If yes, what components are needed?

DISCUSSION -----

We searched the Redgate Buyer's Guide Library using "Macintosh and NTSC" as a search string and found a number of articles on this subject. Read the following articles in the Redgate library to find the product(s) that best suits your needs.

- VideoShow
- DisplayServer SE-TV
- MegaScreen SE Dual-Page Rival Monochrome Display System
- D5-SCX Video Scan Converter

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6078



# Tech Info Library

## Fiber Optic Network Developers

Revised: 7/27/93  
Security: Everyone

Fiber Optic Network Developers

=====

Article Created: 30 September 1990  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

Do you happen to know of sites in the U.S. or Europe where fiber optics are being tested or used as the transport media in a LAN of Macintoshes and possibly PCs?

DISCUSSION -----

Although we don't know of any devices that bring fiber optics into the Macintosh (for example, a fiber optics NuBus card), there are numerous companies that offer Ethernet-, Token Ring-, and LocalTalk-to-Fiber Optics transceivers. So a network could look like:

```
Macintosh<-->LocalTalk<-->transceiver<-->fiber<-->transceiver<-->
EtherTalk<-->Macintosh
```

Just a few of the companies offering such products are Berg Electronics (formerly DuPont Electronics), Network Resources Corporation, and SynOptics. Other similar devices are readily available from network-product suppliers like Black Box Corp. Routing AppleTalk over that medium is not a problem. Additional information on these companies can be found in the Technical Info Library.

A significant number of corporations, universities, and government agencies are using (or experimenting with and preparing to use) fiber to some degree. For information on established networks with particular characteristics, contact the vendors of the products you are considering.

Article Change History:  
27 July 1993 - Company title changed from DuPont Electronics to Berg Electronics.

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# Tech Info Library

## AlisaShare: User Limit around 62

Revised: 9/30/90  
Security: Everyone

AlisaShare: User Limit "around" 62

=====

This article last reviewed: 5 September 1990

TOPIC -----

I have the following configuration:

- DEC VAX 6000 series running VMS 5.3 PCSA and AlisaShare
- All-Ethernet environment

The VAX is dedicated to desktop services, including file and print sharing. When more than 62 users log on to the VAX using AlisaShare, the process locks up and must be restarted. Even when this limit is approached and users log off, the process remains locked. The VAX is currently serving over 200 Macintosh and MS-DOS systems.

I spoke with Alisa Tech Support and was told the limit for AppleShare in general was 62 users and could not go beyond that. They suggested starting a second Alisa Process to cover additional needs, but I am reluctant to do this because of the extra time needed to administer it.

I know of the 50-user limit of Apple's AppleShare server software and the 254-node limitation of AppleTalk Phase 1, but not of a maximum limit of 62 simultaneous users.

Do you know of any such limitation? If yes, is there a workaround? If not, what could be the source of the problem?

DISCUSSION -----

We contacted Alisa Technical Support and they told us that AlisaShare has a user limit of "around" 62 users. This is not an AppleShare limit. Starting another process is the only way we know to work around this problem.

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# Tech Info Library

## Data Access Language (DAL) and Distributed Sessions

Revised: 7/9/92  
Security: Everyone

Data Access Language (DAL) and Distributed Sessions

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Article Created: 30 Septemmbber 1992  
Article Last Reviewed: 9 July 1992  
Article Last Updated: 9 July 1992

TOPIC -----

I am very interested in the Data Access Language, especially in relation to a DB2 database. Does DAL support accessing the IBM mainframe via distributed-session, 3270-connectivity products like Avatar's distributed session product or Tri-Data Netway?

DISCUSSION -----

Data Access Language (DAL, formerly CL/1) uses a connection definition in the hosts.cl1 file when making connection to a DAL host server. The following mainframe interfaces are currently supported by DAL:

- MacDFT 1.1 with Apple Coax/Twinax Card connection
- MacDFT 1.1 with Apple TokenTalk NB card connection
- MacDFT 1.1 with Apple Serial NuBus Card Connection
- Tri-Data Netway 1000/2000 connection
- Avatar MacMainFrame connection
- DCA MacIrma connection

CVT and DFT sessions are supported byt all these connection methods.

Copyright 1990, 1992 Apple Computer, Inc.

Tech Info Library Article Number:6084



# Tech Info Library

## A/UX: How It Handles Multiple Monitors and Function Keys (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: How It Handles Multiple Monitors and Function Keys (9/94)

=====

Article Created: 5 September 1990  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

I have some problems with A/UX:

- 1) Since A/UX supports only one monitor, which monitor will A/UX use on a Macintosh SE/30 with an external monitor (RasterOps)?
- 2) The command shell in A/UX uses a VT100 definition in the termcap file. How are the VT100 keys mapped to the Apple extended keyboard (like the VT100 keypad, PF1-PF4)?

DISCUSSION -----

A/UX uses only the internal monitor when running on a Macintosh SE/30. A/UX running on a Macintosh II class machine will always use the video card installed in the lowest number slot.

The PF1 through PF4 function keys on the extended keyboard are supported under the A/UX 3.0 CommandShell terminal emulation. Use the "Keys" pull down menu.

Article Change History:  
23 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6085



# Tech Info Library

## A/UX 2.0: How to Protect the Macintosh OS Partition

Revised: 9/4/92  
Security: Everyone

A/UX 2.0: How to Protect the Macintosh OS Partition

=====

Article Created: 30 September 1990  
Article Last Reviewed: 31 August 1992  
Article Last Updated : 31 August 1992

TOPIC -----

I want to put in a lab of A/UX systems to teach UNIX on. In A/UX 2.0b9 I found a hole for lab use. That is, you can boot A/UX; log in as guest, root, or regular account; and throw away the System folder from the Macintosh OS boot partition. If the system is then powered down, it can't be restarted. This is a serious problem for public-access types of facilities. Is this also in the final?

DISCUSSION -----

This problem remains in the released version, but here's a temporary solution:

- 1) Format the A/UX drive using SilverLining from LaCie.
- 2) Password protect the Macintosh OS partition using SilverLining.
- 3) Put only a System file and the A/UX Startup application on the Macintosh OS side. NO Finder should be put on the Macintosh OS side.
- 4) Set A/UX Startup as the startup application after you have started up from a floppy or another disk.

A/UX 2.0 will not recognize the password-protected disk and will not mount it. Because the Macintosh OS side has only a System file and the A/UX Startup application, no one can short-circuit the boot into A/UX and mess with the Macintosh OS files.

However, two possibilities remain for tampering with the Macintosh OS side. Making a bootable floppy that has a Finder on it from A/UX could be troublesome. A clever hacker could use "dp" to remove the password protection on the Macintosh OS side. However, proper file protections could



stop this sort of thing. You might also have to protect power switches.

In A/UX 3.0, A/UX Startup includes a password feature that can make the MacPartition unavailable to all users except root.

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Tech Info Library Article Number:6086



# Tech Info Library

## AFE: Incompatibility with A/UX 2.0

Revised: 9/14/92  
Security: Everyone

AFE: Incompatibility with A/UX 2.0

=====

Article Created: 6 September 1990

### Article Change History

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08/31/92 - REVIEWED  
•For technical accuracy

### TOPIC -----

AFE (under A/UX 2.0) fails to initialize DSDD disks as MS-DOS 720K, with the error "Initialization Failed!" The same disks formatted fine on an MS-DOS machine, another Macintosh running AFE, and the same A/UX Macintosh booted under Macintosh OS. The results were the same on several different disks regardless of whether DOS Mounter was running or not.

### DISCUSSION -----

AFE isn't completely compatible with A/UX 2.0, although formatting 720K DOS disk was the only problem I found with it. It would mount and translate both 720K and 1.44MB DOS disks with no problems.

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Tech Info Library Article Number:6087



# Tech Info Library

## LaserWriter: Remote Status Feedback (11/94)

Revised: 11/21/94  
Security: Everyone

LaserWriter: Remote Status Feedback (11/94)

Article Created: 6 September 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I am using the LaserWriter IINTX in PostScript batch mode, attached to a Hewlett-Packard workstation. The printer's location makes it impossible to see the status lights. Can one write a program to read the status and notify the user of a condition requiring operator intervention?

What is the difference between "PostScript batch" and "PostScript interactive" modes? Would "PostScript interactive" give me the capabilities I need? Are these modes described anywhere?

DISCUSSION -----

PostScript batch mode is the mode to use. To quote page 275 of the PostScript Language Reference Manual (available from Addison-Wesley):

"In batch mode, a job consists of the execution of a single file containing a PostScript program."

The manual goes on to say:

"In interactive mode, a job consists of an arbitrarily long dialogue in which the user issues a PostScript statement and the server executes the statement and prompts for the next one."

Page 282 of the manual discusses status queries:

"The LaserWriter provides a status query facility that enables the host or user to determine what the LaserWriter is doing. The LaserWriter responds to a status query asynchronously with respect to normal job execution; that is, it sends a response immediately, regardless of what has gone on before or how much input data has been buffered. This facility is intended primarily to enable 'spoolers' (printer control programs) to keep track of the activities of

LaserWriters under their control."

"The status query mechanism works differently depending on whether AppleTalk or serial communications is in use, but the syntax and semantics of the response are the same in either case."

"In case of AppleTalk, a request to open a connection to a busy LaserWriter yields a rejection packet whose data consists of a status message. There is also a separate status request packet that yields the same information. The path over which the status response packet travels is logically separate from the connection through which the server is receiving its current job."

"In case of serial communication, receipt of a control-T character from either channel (9-pin or 25-pin connector) elicits a one-line status message over the same channel. This channel need not be the one through which the server is receiving its current job. The message is bracketed by the text sequences '%%[' and ']'%' to enable host software to extract the message from ordinary data generated by the job being executed."

#### Article Change History:

21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6089



# Tech Info Library

## A/UX 2.0: Slot Manager and Device Drivers (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX 2.0: Slot Manager and Device Drivers (6/93)

Article Created: 7 September 1990  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

I want to use a NuBus accelerator card (MacDSP) with A/UX 2.0. I got it to work under the Macintosh OS. However, when I try to get it to work under A/UX, the software says that it cannot find the device driver for the DSP NuBus card. What needs to be done to get A/UX to recognize this? Do I need to write a custom device driver for A/UX? Why does Apple map serial applications like MacTerminal correctly through the /dev/tty driver and not map SCSI devices and/or NuBus boards (Slot Manager)?

DISCUSSION -----

Yes, a NuBus card used under A/UX must have a device driver written for it, or it will not be recognized as a valid device, and it will not function. Actually, this is similar to what we have in the Macintosh OS. For example, a .ENET driver is installed in the System file when you use the Macintosh II EtherTalk NB card, and the Apple TokenTalk NB card requires A/ROSE to function.

Therefore, although the Slot Manager provides the basic functionality of recognizing and communicating with NuBus cards at system startup, it is actually the manufacturers' software that initializes the cards and lets the system use them. This software uses the Slot Manager to integrate the cards into the Macintosh OS.

Although it provides excellent Macintosh OS compatibility, A/UX 2.0 cannot provide this low-level hardware communication in the same fashion as the Macintosh OS and remain UNIX. UNIX uses device drivers of a particular format to communicate with hardware, and just as we have had to do with the NuBus cards we support, manufacturers wishing their cards to work with A/UX must either support Apple's drivers (as in third-party video cards) or write their own.

Article Change History:

17 Jun 1993 - Retitled to show A/UX 2.0 in title.

07 Sep 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6091



# Tech Info Library

## MacDFT, TokenTalk, and Error 32804

Revised: 9/30/90  
Security: Everyone

MacDFT, TokenTalk, and Error 32804

=====

This article last reviewed: 7 September 1990

TOPIC -----

I am having problems with a Macintosh IIci with Apple TokenTalk NB card and MacDFT hooked to an IBM host running TSO. When I call up MacDFT 1.1, I set my terminal type to Model 3, then begin to log on. After typing my log on and password, a dialog box appears:

Session 1: Request 14: Error 32804

I can log on and run terminal sessions just fine, but this error message may appear one more time during the session. The manual gives no indication of what this problem may be.

Another, and possibly related, symptom is that file transfer, which worked fine under version 1.0, does not work; the file transfer always times out at the file transfer dialog box. Any suggestions?

DISCUSSION -----

We suspect that both of these problems are being caused by an improperly configured Log Mode Table on the host. Specifically, we are looking at the PSERVIC field in the Log Mode Table that has the following format:

|    |    |           |      |      |    |                       |
|----|----|-----------|------|------|----|-----------------------|
| 02 | 80 | 00000000  | 2050 | 1850 | 7F | 00                    |
|    |    |           |      |      |    |                       |
| \| | \| | reserved | \| | \| | \| | reserved              |
|    |    |           |      |      |    |                       |
| \| | \| | Query bit | \| | \| | \| | Screen Size Switch    |
|    |    |           |      |      |    |                       |
| \| | \| | LU Type | \| | \| | \| | Alternate Screen Size |
|    |    |           |      |      |    |                       |
| \| | \| | \| | \| | \| | \| | Default Screen Size   |

Where:

- 1) LU Type is the device type. 02 is a display device.
- 2) Query bit determines file transfer ability. You need the first digit of this byte set to 8 or higher to enable DFT file transfer.
- 3) Default Screen Size and Alternate Screen Size are values determining the terminal model being used. The following table shows the possible settings:

|         |      |
|---------|------|
| Model 1 | 1828 |
| Model 2 | 1850 |
| Model 3 | 2050 |
| Model 4 | 2B50 |
| Model 5 | 1B84 |

- 4) Screen Size Switch sets your ability to switch between the default and alternate display types. If this is set to 7F, you can. If it is set to 7E, you cannot.

In your case, we suspect that the Query bit and Default Screen Size fields need to be reset, based on the functionality you desire. It is quite likely that the settings are still those used when MacDFT 1.0 was being used through a Coax/Twinax card in CUT mode.

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Tech Info Library Article Number:6092





# Tech Info Library

## Epson LX-800 Printer Connectivity

Revised: 9/30/90  
Security: Everyone

Epson LX-800 Printer Connectivity

=====

This article last reviewed: 7 September 1990

TOPIC -----

Can an Epson LX-800 printer be directly attached to a Macintosh?

DISCUSSION -----

The Epson LX-800 is a 9-pin dot-matrix parallel printer. Connecting it to a Macintosh would require the use of an optional serial interface and a driver designed for Epson printers. Many third parties listed in the Menu Library on AppleLink produce drivers for the Epson line of printers.

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Tech Info Library Article Number:6094



# Tech Info Library

## Macintosh-to-NCR ITX Connectivity

Revised: 9/30/90  
Security: Everyone

Macintosh-to-NCR ITX Connectivity

=====

This article last reviewed: 7 September 1990

TOPIC -----

Can a Macintosh communicate with an NCR System 10000 running ITX operating system? If so, can this software control file transfer to a specific disk on the NCR system? If not, do you know of a third-party software package that provides either or both of the capabilities? This request involves a school district decision regarding the use of Macintosh as administrative computers and front ends to their NCR mainframe.

DISCUSSION -----

We contacted the local NCR office to find out what was required in connecting to an NCR system running ITX. They said that a dumb terminal (MacTerminal in VT100 would work) was all that was required for one session. There is special software for the PC world (ITX Windows for PC) that allows multiple connections to the system, but we have been unable to find information on a Macintosh version. The local engineer suggested that you contact Central Dispatch at their local NCR office for detailed information on what is required for their particular system.

Further, we found the following software in the Macintosh Buyer's Guide on AppleLink:

MacQT - Macintosh terminal emulation and file transfer

MacQT (Macintosh Quick Terminal) provides emulation of an ADDS Viewpoint (a.k.a., NCR 7901) and NCR 7900 connected to an NCR host running UNIX or NCR's ITX or other operating system. It lets a user run any program on the host system, just as though they were working on a dumb terminal. Emulation is fast and thorough. MacQT will transfer, in either direction, sequential ASCII files or spool (print out) files. Host software is provided where necessary for file transfer. Contact Rasmussen Software, Inc (check the Technical Info library for details) about MacQt.

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Tech Info Library Article Number:6095



# Tech Info Library

## MacTerminal: Eliminating the X0 Command

Revised: 9/30/90  
Security: Everyone

MacTerminal: Eliminating the X0 Command

=====

This article last reviewed: 7 September 1990

TOPIC -----

I have discovered that MacTerminal sends out a command that is not always accepted by the telephone company. If you do the automatic dialing, using Dial in the Phone menu, the Macintosh sends the following:

```
ATS0=0 E0 V0 X0 H0 cr
AT cr
ATDT number cr
```

The problem is the X0. This puts the modem in a "blind dial mode." In other words, the modem does not wait for a dial tone before it starts to dial. This doesn't always work, depending on what kind of telephone system there is.

Is there any way of changing this command sequence, so that MacTerminal doesn't send X0?

DISCUSSION -----

To change the X0 in MacTerminal's dial string to an X2 or X4 requires the use of a file editing utility such as FEdit or SEdit. Make a working copy of MacTerminal first, and open it from the utility. Do an ASCII search for "ATS0" (the 0 is a zero). Within one block, there should be two occurrences of "ATS0=0E0V0X0H0". Edit the "X0" to "X2", being careful not to add any extra text. Write the sector back to disk.

It would also be a good idea to modify MacTerminal's version resource, so that users can easily tell this copy has been modified. Using ResEdit, open MacTerminal's vers resource ID#1. Modify two strings as follows:

```
Abbreviated string "2.3.1"
Change it to        "2.3.1.x2"
```

## ..TIL06096-MacTerminal-Eliminating\_the\_X0\_Command\_(TA44556).pdf

```
Get Info string "2.3.1 Copyright c Apple Computer, Inc. 1983-1989"  
Change it to    "2.3.1.x2 Copyright c Apple Computer, Inc. 1983-1989"
```

Remember that this is an unsupported patch, and could cause problems if MacTerminal encounters result codes it doesn't expect. By changing the X0 to X2 or X4, you immediately expand the set of result codes that MacTerminal may see. If it doesn't handle these well, the results can be unpredictable.

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Tech Info Library Article Number:6096



# Tech Info Library

## Microsoft Word: Repairing Corrupted Documents

Revised: 9/30/90  
Security: Everyone

Microsoft Word: Repairing Corrupted Documents

=====

This article last reviewed: 7 September 1990

TOPIC -----

I have designed a table/chart in Microsoft Word 4.0. Superpaint 2.0 was used to rotate some of the headings and insert large bullets.

When printing the document, I get the beginning of the table in Palatino (the desired font) and Helvetica, but later in the document the Palatino font is being replaced by Courier. I checked "no font substitution," but got the same result. The chart printed fine with LaserWriter 5.2, but this problem occurs with LaserWriter 6.0 or above. What happened with the new version of the driver?

DISCUSSION -----

When we printed your document here, it printed incorrectly every time--not only with LaserWriter 6.0 and 6.0.1. This suggests that the problem is some type of file corruption.

When a Microsoft Word file is corrupted, Microsoft suggests saving the file under a different name in RTF format, closing it, opening it again, and saving it again in regular Microsoft Word 4.0 format. When opening the RTF format file, Microsoft Word will ask if you would like to convert the file from RTF to regular Microsoft Word format. Say yes. This process will take a few minutes.

We tried this process with the file you sent, and all tables in the document printed with the correct font (Palatino).

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Tech Info Library Article Number:6097



# Tech Info Library

## A/UX 2.0: and dbm.h

Revised: 9/15/92  
Security: Everyone

A/UX 2.0: and dbm.h

=====

Article Created: 7 September 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

I am working with a Macintosh IIfx with HD80 SC and 8MB RAM and A/UX 2.0 Golden. My group is currently operating an AT&T System V system and evaluating A/UX as a replacement for their current system. As part of this evaluation, we are taking their code and re-compiling it under A/UX 2.0. All of these questions concern the operation of the dbm function under A/UX 2.0.

- 1) Because dbm.h redefines null, it is a problem using standard I/O calls. Any workarounds available?
- 2) The dbm.h file lists several functions not described in the manual such as:
  - makedatum
  - calchash
- 3) The fetch function under dbm is described in the manual to return a pointer to data. However, in the dbh.h file, it is described as returning the data itself. Which is true?

### DISCUSSION -----

- 1) dbm.h redefines null to be a pointer instead of just 0, but nothing says that you can't redefine it yourself within your function that wants to use standard I/O library calls. Or redefine your own NULL and use it as your NULL reference. Without specific examples, it's hard to give you a specific workaround.

2) Anything you find in a header file that is not documented or obvious as to its function is usually an internal declaration used for the program itself. This is the case with the extra function declarations in the dbm.h file.

3) The fetch function returns the data itself, not a pointer to it.

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Tech Info Library Article Number:6098





# Tech Info Library

## ATalk Phase 2: Extracting Zone Multicast Addresses

Revised: 9/30/90  
Security: Everyone

ATalk Phase 2: Extracting Zone Multicast Addresses

=====

This article last reviewed: 7 September 1990

TOPIC -----

I manage a large Ethernet network supporting Macintoshes and VAX systems. To manage the network traffic, we want to install filtering bridges to contain multicast packets within defined parts of the internet.

I understand that the Ethernet destination address for AppleTalk Phase 2 isn't broadcast, and zone multicasts are supported. How do you get access to the zone name/multicast address mapping for the Internet, as this is held within the bridges in the ZIT (Zone Information Tables)? We would need to dump the ZIT so that the bridge can be configured, but I can't find any utility that will extract the zone table from the Internet router. Do you know how this can be done?

DISCUSSION -----

There are no utilities that we know of to extract the zone multicast address from the routers of AppleTalk Phase 2 networks. You could use any of the new Macintosh-based Ethernet monitor programs (EtherPeek from the Avant Garde Group or Netminder from NEON Software) to extract the information.

There may be some problems even after you have the data. Zone multicast addresses are assigned on a dynamic basis, using an algorithm that gets the seed number of the multicast address from the zone name itself. If the zone names were changed, the multicast address could also change. There is also a problem where different zones can be assigned the same multicast address, in which case if you blocked one zone you would block all zones that are assigned to that multicast address.

I think you will find a small savings in packet traffic for the amount of work involved in setting up this non-standard approach to segmenting their network. Zone multicast traffic accounts for only a very small amount of the over all traffic present on the net. If you really want to segment your traffic, look

at installing some Ethernet-based routers instead of the bridges. Routers are a much cleaner way of isolating network traffic in such situations.

You could also program their bridges to isolate all of the AppleTalk multicast addresses; the addresses start at 0x090007000000 and end at 0x0900070000FC. 0x0900007FFFFFFF is also used as the general AppleTalk broadcast address.

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Tech Info Library Article Number:6099



# Tech Info Library

## Hard-Disk Recovery: Third-Party Products

Revised: 1/21/93  
Security: Everyone

Hard-Disk Recovery: Third-Party Products

=====

Article Created: 30 September 1990

### Article Change History

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1/20/93 - UPDATED  
• Vendor information.  
9/10/90 - REVIEWED  
• For accuracy.

### TOPIC -----

What do you recommend for recovering data from a "soft-crashed" hard-disk?

### DISCUSSION -----

We know of three disk recovery packages. We have used Symantec Utilities for the Macintosh II from Symantec and The Norton Utilities for the Macintosh from Peter Norton Computing (acquired by Symantec Corp). Both products work as advertised. We also know of Copy II/Mac and PC Tools/Macintosh from Central Point Software.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6102



# Tech Info Library

## Auto-Restart after Power Failures: An ADB Device

Revised: 9/30/90  
Security: Everyone

Auto-Restart after Power Failures: An ADB Device

=====

This article last reviewed: 10 September 1990

TOPIC -----

Is there any way to restart a Macintosh II, Macintosh IIfx, or Macintosh IIfx server after a power failure?

DISCUSSION -----

There is no software that restarts a Macintosh after a power failure. However, we heard of a new ADB device that restarts a Macintosh after a power failure--just the thing for a remote server or router. It is called JumpStart, from ARCOM. For more details, search the Technical Info library under "ARCOM Electronics Inc."

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Tech Info Library Article Number:6103



# Tech Info Library

## MacDFT and IBM 4700 Connectivity

Revised: 9/30/90  
Security: Everyone

MacDFT and IBM 4700 Connectivity

=====

This article last reviewed: 10 September 1990

TOPIC -----

I have installed MacDFT with the Apple Coax/Twinax Card. I am interested in setting up a 4700 connection using MacDFT also. Tests have gone well, apart from some problems related to the keyboard. For instance, the string generated from a Clear in a 4700 configuration is different from the one generated from a 3278.

DISCUSSION -----

The 4700 series of Control Units are specialized controllers sold by IBM, typically to banks. This series includes the 4700, 4701, and 4702. The 8770 Control Unit is also a specialized controller sold by IBM to finance companies. These are specialized controllers, and there is no stated support for them with MacDFT.

One solution might be to set MacDFT up for CUT mode emulation. When MacDFT is in CUT mode, much of the terminal and communication processing is done by the controller. In this case, this may help eliminate or minimize any keyboard mapping discrepancies.

It is also possible there is an RPQ installed, which is a specialized remapping program. When using RPQ, you can usually go back to any "default" key by pressing "Alt" and the appropriate key. For example, to execute a Clear when using a RPQ, press Alt and Clear. With MacDFT, because the Alt key isn't mapped, you'll need to assign a key to the Alt-Clear sequence using the Keyboard mapping feature. This is documented in Chapter 5 of the "MacDFT User's Guide."

Other companies use a different strategy with RPQs. DCA sells different keyboard layouts for the Macintosh for some of the different RPQs commonly used.

If no RPQ is installed, you might be able to remap any errant keys using the keyboard mapping feature anyway.

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Tech Info Library Article Number:6105



# Tech Info Library

## UNIX: Access to Macintosh File System

Revised: 9/4/92  
Security: Everyone

UNIX: Access to Macintosh File System

=====

Article Created: 30 September 1990  
Article Last Reviewed: 31 August 1992  
Article Last Updated : 31 August 1992

TOPIC -----

Do we have any documentation of what type of access is available in A/UX 2.0 to access the Macintosh side from UNIX applications? This would include writing programs or shell scripts that manipulate Macintosh programs or data in a Macintosh file system.

DISCUSSION -----

You can write hybrid applications that can access Macintosh volumes but retain a UNIX interface. To do this, you must use the calls provided in the Toolbox. These calls are documented in "Inside Macintosh" with the differences documented in the "A/UX Toolbox" manual.

Standard Macintosh applications can, of course, use both UNIX and Macintosh file systems simply by making the standard Macintosh File Manager calls. If these calls are used to access a UNIX file system, they are mapped internally to the appropriate UNIX routines instead, without the Macintosh application being aware of any differences.

On the other side, UNIX programs cannot see or use the Macintosh volumes. The "ls" binary is a perfect example of this. Because it was written using the standard UNIX libraries, it cannot access any Macintosh volumes. Because of this, shell scripts are also incapable of accessing Macintosh volumes. It is conceivable that you could write your own version of "ls" that uses the Toolbox but retains the same interface as the existing command. At that point, you could then use the command from within a shell script.

The A/UX Development Tools product is a full development package supporting this type of development.

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# Tech Info Library

## Macintosh: Input of CD Player Digital Data (11/94)

Revised: 11/21/94  
Security: Everyone

Macintosh: Input of CD Player Digital Data (11/94)

Article Created: 10 September 1990  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I have heard that there might be a hardware interface between an audio CD player's digital output and the Macintosh. Does such a thing exist?

DISCUSSION -----

DigiDesign offers Sound Designer, a digital signal processor that connects to the Sony-Phillips Digital Interface (the port on the back of many audio CD players).

The product does not provide any control for the CD player. It's purpose is to move digital information from a CD to a Macintosh hard disk. Once stored on the disk, the signal can be "played" or modified by programs like SoundEdit.

For more details, search the Technical Info library under "DigiDesign, Inc."

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6109



# Tech Info Library

## LaserWriter IINTX: Setting the Mode Software Switch

Revised: 9/30/90  
Security: Everyone

LaserWriter IINTX: Setting the Mode Software Switch

=====

This article last reviewed: 10 September 1990

TOPIC -----

The new LaserWriter IINTX ROMs apparently allow software switching between the AppleTalk and RS-232 input modes. Has anyone written these files?

DISCUSSION -----

Yes, the new version of the "LaserWriter IINT/NTX Owner's Guide" details the commands necessary to switch modes. This manual is included with new LaserWriter IINTX models, and with all ROM upgrades. Appendix C of the manual, "Connecting to and Printing with an MS-DOS Computer," covers this and related issues in relative detail. We definitely recommend reading it, but below we have copied some of this section, which should be useful to you.

Although the section assumes use of a DOS computer, the PostScript code is the same for a Macintosh. Simply remove the DOS specific lines and download the file with the LaserWriter Font Utility.

-----

Selecting an operating mode

If you have a LaserWriter IINT:

\*\*\* Details on setting the LaserWriter IINT modes omitted \*\*\*

If you have a LaserWriter IINTX:

There are two ways to set the LaserWriter IINTX operating mode:

- You can use the DIP switches to set the mode.
- You can use software switching (sending a program to the printer) to set the mode. Software switching works only with LaserWriter IINTX printers that use

PostScript Rev 3.0 or later. Check your printer's startup page to see what Rev it uses.

If you plan to set the printer mode once or infrequently, use the DIP switches to set the mode. If you plan to change operating modes frequently, you should use software switching to set the mode. Both methods are described here.

#### Setting the Mode with DIP Switches

-----

You can set the LaserWriter IINTX to work in PostScript mode, to emulate a Diablo 630 printer, or to emulate a Hewlett-Packard LaserJet+ printer. Set the switches on the LaserWriter IINTX as follows.

#### PostScript Mode

-----

If you plan to use software that supports PostScript, switch 2 should be down, and switches 3 and 4 should both be up. Switch 1 can be up or down.

#### Diablo Emulation

-----

If you plan to use the Diablo emulator, switches 2 and 3 should be down and switch 4 should be up. Switch 1 can be up or down.

#### LaserJet+ Emulation

-----

If you plan to use the LaserJet+ emulator, switches 2, 3, and 4 should be down. Switch 1 can be up or down.

#### Setting the Mode with Software Switching

-----

Software switching can be used to set both the software mode used by the printer (PostScript or an emulator), and the hardware mode used by the printer (serial or AppleTalk).

To change the software mode using software switching, you send a program to the printer that changes a value called softwareiomode. To change the hardware mode using software switching, you send a program to the printer that changes a value called hardwareiomode.

The LaserWriter IINTX supports four values for softwareiomode:

- 0 (PostScript batch mode)
- 1 (PostScript interactive mode)
- 2 (Diablo 630 emulation)
- 5 (HP LaserJet+ emulation)

The LaserWriter IINTX supports two values for hardwareiomode:

- 0 (serial communication)
- 2 (the AppleTalk communication protocol)

To use software switching to select a hardware and software operating mode, type the following PostScript program at the DOS prompt and send the program to

the LaserWriter IINTX:

```
cd \  
copy con set.mod  
(Macintosh file begins here)  
serverdict begin 0 exitserver  
statusdict begin  
S setsoftwareiomode  
H sethardwareiomode  
(Macintosh file ends here)  
Control - Z
```

Instead of typing S in the line where it appears in the program, type the value for the software mode you want to set (0, 1, 2, or 5).

Instead of typing H in the line where it appears in the program, type the value for the hardware mode you want to set (0 or 2).

The program that changes your hardware and software modes is now saved in a file called SET.MOD. To send the program to the LaserWriter IINTX, type this line at the DOS prompt:

```
type SET.MOD > COM1
```

Substitute COM2 for COM1 in the line above if the LaserWriter II is connected to the COM2 port on your computer.

Typing the line given above and pressing return sets the software and hardware operating modes on the LaserWriter IINTX.

Switching from an Emulator to PostScript on the LaserWriter IINTX

-----  
There is a quick way to switch from either the Diablo 630 emulation or the LaserJet+ emulation and go into PostScript batch mode. Simply type into a file the command sequence Escape-Delete-Zero, followed by a Control-D, and print the file to the LaserWriter II. When you send this file, the LaserWriter II resets itself to PostScript batch mode.

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Tech Info Library Article Number:6110



# Tech Info Library

## Sending SunView to MacX Server

Revised: 2/11/93  
Security: Everyone

Sending SunView to MacX Server

Article Created: 10 September 1990

### Article Change History

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01/15/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I was trying to install MacX. Everything went fine until I tried to have my Sun computer send "SunView" to my MacX server. It didn't work. Instead of the client appearing on my screen, it showed the console screen. I tried the same thing with a VT100 terminal, and the same thing happened.

I know SunView is a "windowing" environment, but is it an X Window System? Isn't Sun's X Window System called OpenLook? Can SunView be a X client?

### DISCUSSION -----

SunView is Sun's older window system and is not an X client. Together, SunTools and SunView provide functionality similar to that provided by X Windows and X Windows-based applications -- that is, SunView provides a programming interface and basic windowing capabilities similar to X Windows. But this system is NOT X Windows, it is Sun's proprietary windowing environment, and is best thought of as a competitor to X Windows.

X is now the default window system shipping with new products (as of July 1990). Previously X was an unbundled product, available free from MIT or available from Sun for a media and documentation charge.

XNEWS is Sun's X server that interprets X protocol and PostScript (NeWS protocol). OpenLook is a functional specification for the "look and feel" of the user interface (by AT&T). X clients generally use X toolkits (like

XView, XT+, OLIT, and so on), but they could simply make Xlib calls.

Thus, SunView is not an X Window System nor an X client; you can't display it on MacX. If the Sun machine has the Xlib and applications, you should be able to start one using a command similar to:

```
/usr/bin/xcalc -display mac:0,0
```

where "mac" is the Macintosh node name defined in the host's file.

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Tech Info Library Article Number:6111



# Tech Info Library

## VAX: Need to Use Non-PostScript Printer

Revised: 9/30/90  
Security: Everyone

VAX: Need to Use Non-PostScript Printer

=====

TOPIC -----

Is there software that lets the Macintosh print to a non-PostScript printer (for example, the LN03 or LA210 connected to a VAX via RS-232)?

DISCUSSION -----

We don't know of a product that lets you do this. For non-PostScript printers connected to a VAX via RS-232, you normally have to save the file as text only, and send this file to the VAX queue, using the device name of the printer captured by that queue.

If you have DECnet support on the Macintosh, you can use the DECnet COPY command to copy the file to the VAX, using the VAX node name and printer device name as the destination (for example, ENGVAX::LPA0:, where "ENGVA" is the DECnet node name of the VAX, and "LPA0:" is the printer name).

If you don't have DECnet on the Macintosh, you have to transfer the file to the VAX first, using a terminal emulation program and XModem or Kermit, and use a VAX/VMS DCL command to print the file.

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Tech Info Library Article Number:6112



# Tech Info Library

## A/UX 3.0 and X Installation Problems

Revised: 2/11/93  
Security: Everyone

A/UX 3.0 and X Installation Problems

=====

Article Created: 10 September 1990

### Article Change History

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01/15/93 - REVIEWED  
    • For technical accuracy.  
01/15/93 - REVISED  
    • Updated article to A/UX 3.0.

### TOPIC -----

Due to the size of the A/UX partitions, I decided to load X Window System in a separate partition. Modifying the path parameter in .profile and .login should provide the proper support for this location. It didn't work. It continued looking in the /usr/xxx/X11 directories versus /App/usr/xxx/X11 as was stated in the .profile command. What other supporting files need to be modified for this redirection? We accomplished the task via the link command "ln -s /xxx/xxx /xxx".

### DISCUSSION -----

The files X, X11, and X11R3 in the /usr/bin/X11 directory contain references to the /usr/bin/X11 and /usr/lib/X11 directories. There are several ways to get around this. You could add the environment variables \$X11BINDIR and \$X11LIBDIR to your .login or .profile files, setting them to the location of the new X lib and bin directories. If you are using the Bourne shell you would then export them, or if you're using the csh you would create them as environment variables (that is, with setenv(1)). You could also just link the new directories to the old locations, making symbolic links between the old and the new. Or you could modify the /usr/bin/X11/[X X11 X11R3] scripts to reflect the new directory locations. Any of these procedures should solve your problem.

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# Tech Info Library

## Token Ring Cards: Incompatible with A/UX (8/94)

Revised: 8/25/94  
Security: Everyone

Token Ring Cards: Incompatible with A/UX (8/94)

=====

Article Created: 10 September 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I am using a Macintosh IIfx with the Apple TokenTalk NB card and MacDFT for terminal sessions to an IBM host. Can I use TokenTalk NB Card under A/UX.

DISCUSSION -----

Sorry, but there's no way to run the Apple TokenTalk NB card or the Apple 4/16 Token Ring NB card under A/UX at this time.

Article Change History:  
24 Aug 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6114



# Tech Info Library

## AppleTalk Routers that Support TCP/IP

Revised: 9/30/90  
Security: Everyone

AppleTalk Routers that Support TCP/IP

=====

This article last reviewed: 10 September 1990

TOPIC -----

I want to install twenty Macintosh IIx systems on an Ethernet. I don't want to connect my Macintosh IIx directly to the Ethernet backbone. Now, I am looking for a router that can route Ethernet to Ethernet. Apple's Internet Router is no solution because I need TCP/IP routing.

Do you know of a TCP/IP and AppleTalk router (hardware or software) that can route between two Ethernets, not only LocalTalk to EtherTalk.

DISCUSSION -----

There are a couple of alternatives. The NRC (Network Resources) router is a TCP/IP and AppleTalk combined router that runs on a Macintosh II class system. They also offer hardware based stand-alone routers that perform the same function. Cisco Systems and ACC (Advanced Computer Communications) both offer Ethernet-to-Ethernet routers that support both AppleTalk and TCP/IP.

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Tech Info Library Article Number:6115



# Tech Info Library

## Parallel AppleTalk Internet Routers

Revised: 9/30/90  
Security: Everyone

Parallel AppleTalk Internet Routers

=====

This article last reviewed: 10 September 1990

TOPIC -----

What route does an AppleTalk message take if you have two AppleTalk Internet Routers connected in parallel? For example, if you have an EtherTalk backbone with two AppleTalk Internet Routers to a LocalTalk-based network, how and what decides which route the message takes?

DISCUSSION -----

LocalTalk nodes use the router contained in the A-ROUTER variable. This variable is updated every time the node sees an RTMP packet. The source network number and node number of the RTMP packet are copied into the A-ROUTER variable. Sometimes, the packet travels to the EtherTalk backbone via the first router, and sometimes it travels to the EtherTalk backbone by the second router.

The best routing algorithm is implemented in EtherTalk 2.0, TokenTalk 2.0, and AppleTalk Phase 2 for A/UX and MS-DOS. It can, theoretically, be added to LocalTalk nodes at a later date.

In the past, a non-router node has not kept much information on how to get to other networks. A node kept track only of the address of one router on its local network, assuming that the router would know how to reach the rest of the Internet. Whenever the node had a packet to send to a different network, the node sent the packet to the one router it knew about.

Generally, this algorithm didn't cause any problems. However, in very large, bridged Ethernets or Token Rings, it can be inefficient, because the one router that a node knows about can be quite far away and not the best router to use.

With AppleTalk Phase 2, nodes can optionally keep information on how best to get to other networks. When a node that uses the best-routing algorithm gets a packet from another network, it looks at the address of the last router that

forwarded the packet. This is the router it uses to get to that distant network in the future.

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Tech Info Library Article Number:6116



# Tech Info Library

## AppleTalk for VMS: Router Problems

Revised: 9/30/90  
Security: Everyone

AppleTalk for VMS: Router Problems

=====

This article last reviewed: 10 September 1990

TOPIC -----

I am having a problem with AppleTalk for VMS when connecting Macintoshes to other computer systems. If I use Liaison as a gateway between LocalTalk and Ethernet, I don't get any response from the AlisaTalk software on the VAX. I said that the RTMP table is not correct, so there is no connection between the networks. If I remove Liaison from the Macintosh and connect it directly to the Ethernet, there is no problem. I do not believe this is a problem with Liaison, because I have the same problem with Shiva FastPath.

Is this a known problem? Can you explain?

DISCUSSION -----

There are two possible areas that might be causing the problems you are seeing.

The first has to do with AppleTalk Phase 2 versus AppleTalk Phase 1. It is possible that you have installed the Phase 2 version of AppleTalk for VMS without realizing it, and you are trying to use Phase 1 routers, like Liaison. There are two ways you can test this:

- 1) Open the ATKBRIDGE.LOG file on the VAX and check the version of AppleTalk for VMS that is being run. If it says you are running version 2.1, you are running the Phase 2 version of ATK/VMS.
- 2) On the machine you are running Liaison, run the Internet Router instead. If you run the Internet Router without the Phase 2 Upgrade Utility installed, and you can see the services, you are running AppleTalk Phase 2 on the VAX. If you cannot see the services, and then you install the Upgrade Utility along with Phase 1 EtherTalk on the router and you can see the services, you are running Phase 1. We also know that it is something about the other routers causing the problems.

The other area you should investigate if it is not a Phase 1 versus Phase 2 issue is network numbers. AppleTalk for VMS is a router. In the default configuration, it has specifications for two networks, the Ethernet the VAX is connected to and the virtual network running inside the VAX. When you add the other router to the network, you have to ensure:

- 1) AppleTalk for VMS and the new router have the same network number specified for the Ethernet.
- 2) The virtual network has a unique network number specified for it.
- 3) Any other networks connected to the new router have unique network numbers as well.

Each router has a different method for specifying network numbers. For AppleTalk for VMS, this information is maintained in the PORTDESC.TXT file in the AppleTalk directory.

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Tech Info Library Article Number:6119



# Tech Info Library

## A/UX 2.0: IBM ftp Problem (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX 2.0: IBM "ftp" Problem (8/94)

=====

Article Created: 10 September 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I am having problems with A/UX 2.0 and "ftp". When I do this:

Account Read

I get the message message:

230 Working directory is RVFC60 191 (read only)  
Segmentation fault (core dump)

The network components are A/UX on an Ethernet connected to an IBM 8232 gateway through a Cisco Systems router to an IBM 3090 running IBM TCP/IP. The IBM operating system being used is VM/XA CMS. The CMS volume referenced in the error message has a proper READ password and is accessible using the same technique from a Sun Workstation.

The process worked once, but I'm not sure why. It has failed consistently ever since. Can you explain?

DISCUSSION -----

We have duplicated the problem you describe, and it will be submitted as a bug report to A/UX Engineering. One workaround is to enter the "account" command by itself and then input the account information when "ftp" prompts you for it. This seems to prevent the core dump and lets "ftp" function normally. This problem is resolved in A/UX 3.0.

Article Change History:  
24 Aug 1994 - Updated for A/UX 3.0

Support Information Services



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Tech Info Library Article Number:6123



# Tech Info Library

## A/UX 2.0: Various Issues

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: Various Issues

=====

Article Created: 10 September 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can you help me with these A/UX 2.0 questions and problems?

1) "adb" does not seem to work. Therefore, I cannot debug my program. We have ordered MacsBug.

2) When using "sfgetfile" and "sfputfile," why is my home directory in "/"? It creates bad pathnames when I try to get something from

/usr/mgb/images/image1

The path I get from "sfgetfile" is

/mgb/images/image1

3) When I log in to A/UX after it says that it is starting "session for mgb", it clears the screen. Is this correct?

4) If I am "mgb" and I do a "df" disk free command, I get different values from when I am the "root". Try these next lines:

```
% df
xxx xxx xxx xxx
% su
# df
YYY YYY YYY YYY #
```

where x and y are different by about 10000 blocks.

DISCUSSION -----

- 1) Use MacsBug version 6.2 or later. See APDA for a copy.
- 2) The reason for this behavior is that under A/UX you have a virtual root that is accessible by all users (one at a time). A/UX 2.0 puts your personal user directory onto the desktop so that you see it when you log in. To do this, the Finder has "to play some games" with the UNIX file system to make this seem like what the Finder expects. Folders on the desktop are at the root level under the Macintosh OS, so we had to try to emulate that behavior under A/UX. This is why your path to your home directory appears as "/". It may be more proper from a UNIX standpoint to map the directory to its real location, but if you need that functionality use "open" or "fopen" instead of "sfgetfile".
- 3) No, that's not the correct behavior. Check the contents of your .login file.
- 4) A/UX now uses the Berkeley file system. As "root" you have no limitations on its use, as a normal user, there is a 10% overhead attached to each partition that is not available to a normal user. This prevents unnecessary disk thrashing if the partitions become full.

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Tech Info Library Article Number:6124



# Tech Info Library

## A/UX: NFS Auto-Mount and other Support Issues (9/94)

Revised: 9/1/94  
Security: Everyone

A/UX: NFS Auto-Mount and other Support Issues (9/94)

=====

Article Created: 10 September 1990  
Article Reviewed/Updated: 1 September 1994

TOPIC -----

- 1) What are secured RPCs, and does Apple support this in A/UX?
- 2) Does A/UX 3.0 have the NFS auto-mount feature? Also, what is auto-mount?
- 3) Does Apple support TCP/IP over Token Ring with A/UX?

DISCUSSION -----

- 1) Secure RPC is an additional authentication flavor for ONC RPC that uses a public-key system to ensure that nobody is passing forged credentials over the wire.

The RPC protocol allows arbitrary authentication "flavors". Normally, the flavor "NULL" is used, or "UNIX", which carries around a UID and GID list, must be used from a reserved port to be trusted. The idea was that secure RPC would use DES encryption, based on keys obtained through a public-key distribution scheme.

Unfortunately, I don't know anyone who has successfully set up secure RPC (the primary application is, of course, secure NFS). There are also some ad-hoc changes done by Athena to use Kerberos authentication to NFS.

It differs from non-secure RPC in that it uses a different authentication flavor. ONC RPC supports multiple flavors of credentials:

AUTH\_NONE - No credentials; the server has no idea who the user was who made the request, so there better not be any risks of an unauthorized user making the request.

AUTH\_UNIX - UNIX user ID, group ID, and group list passed over the wire; if you work hard enough, and it's not *that* difficult, you can send somebody else's user ID over the wire--NFS servers often map user ID 0 to the user ID for "nobody", and may do other mappings, but few other servers do that kind of mapping.

AUTH\_DES - "network name" passed over the wire, which is converted to the appropriate native machine credentials (for UNIX, a user ID, group ID, and group set) on the server. The credentials are encrypted using a public-key system, which makes it more difficult to forge credentials, but, allegedly, the public-key cryptosystem in question *is* breakable if you burn enough cycles.

"Secure RPC" in SunOS/ONC terms is RPC using AUTH\_DES authentication.

Other flavors of authentication can be added by developers.

There is a very good writeup on Secure RPC in the "Security Features Guide" (part number: 800-1735-10), May 1988 for SunOS 4.0.x, section 6.3 "RPC Authentication." This information was moved to "Network and Communications Administration" (part number 800-3805-10), March 1990 in the SunOS 4.1 DocBox set, section 14.9 "RPC Authentication".

- 2) The auto-mount feature of NFS provides a mechanism to mount automatically NFS exported filesystems on the fly. This allows dynamic mounting of NFS partitions without having to explicitly mount the partitions from within the "/etc/fstab" file or by using the mount(1) command.

A/UX 2.0 does NOT have the NFS automount feature. However, A/UX 3.0 DOES have this feature.

- 3) There are no plans to support Token Ring under A/UX. Therefore, there are no plans to support TCP/IP running over Token Ring.

Article Change History:

1 Sept 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6125



# Tech Info Library

## Zone Problems Caused by Old Phase 1 Routers

Revised: 9/30/90  
Security: Everyone

Zone Problems Caused by Old Phase 1 Routers

=====

This article last reviewed: 10 September 1990

TOPIC -----

I have a Phase 1 network with FastPaths bridging between LocalTalk and Ethernet. It has a problem seeing a defined as 0, which is causing some network problems. What is the cause of this?

DISCUSSION -----

The problem you're seeing is caused by older Phase 1 routers that are seeing the new-style, Phase 2 non-extended RTMP packets. New-style, non-extended RTMP packets have a special tuple as the first tuple in the set. This tuple contains 2 bytes of 0 and 1 byte used for an RTMP version number (0x82,131 decimal).

Older Phase 1 routers do not understand that this tuple is not a valid network tuple and, instead, interprets it as a distant network. This is usually reported as network 0, 131 hops away. This should not cause any significant problems for your network, but you should try to get all of your routers updated to the most recent releases available from the different vendors.

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Tech Info Library Article Number:6126



# Tech Info Library

## System 6.0.x, 7.x: How They Handle 4MB SIMMs (9/95)

Revised: 9/19/95  
Security: Everyone

System 6.0.x, 7.x: How They Handle 4MB SIMMs (9/95)

Article Created: 10 September 1990  
Article Reviewed/Updated: 19 September 1995

TOPIC -----

If a SIMM bank is filled with 4MB modules (giving 16MB), will 8MB be used by System Software 6.0.x, or will the system not know what to do with these SIMMs? We are concerned that these SIMMs will bomb the system.

DISCUSSION -----

System software 6.0.x is a 24-bit operating system. When a Macintosh system is running system software 6.0.x, the Macintosh is in 24-bit mode. In 24-bit mode, the Macintosh II family of computers has the address space starting at \$00 0000 through \$7F FFFF (8MB) reserved for system RAM. The SIMM sockets use the entire system RAM address range of \$00 0000 through \$7F FFFF, which equals 8MB of RAM.

As you can see from this, with 24-bit addressing, installing four 4MB SIMMs would give you 8MB of usable RAM. The memory configuration under "About This Macintosh..." (About the Finder with System 6) will report 16MB installed, but 8MB is usable with the remainder being assigned to the system software. The extra memory assigned to the system software is unusable. In the case of the Macintosh LC, 2MB RAM is on the logic board. If you install two 4MB SIMMs, the Finder will report that 10MB of RAM installed. 8MB of RAM is usable.

With System 7, you have the option of turning on 32-bit addressing in 32-bit clean ROM computers, with the exception of the AV and Power Macintosh models which operate in 32-Bit mode at all times. (MODE32 installed on computers running System 7 versions prior to 7.1 or the 32-Bit System Enabler installed on computers running 7.1 will enable 32-bit operation). This allows addressing above 8MB in those computers that physically support more than 8MB of RAM.

A/UX is also a 32-bit operating system that can address above 8 megabytes of RAM. A/UX supports up to 256MB of physical RAM.

In 32-bit mode, the Macintosh II family of computers (which includes the

Macintosh SE/30) has the address space starting at \$0000 0000 through \$3FFF FFFF (1 gigabyte) reserved for system RAM. NuBus RAM cards may use address \$0000 0000 through \$3FFF FFFF to add system RAM. The SIMM sockets use address \$0000 0000 through \$07FF FFFF, which equals 128MB of RAM.

Here's a list of the current Macintosh systems and the maximum physical memory that the SIMM sockets support:

Begin\_Table

| Macintosh System | Maximum Physical<br>RAM |
|------------------|-------------------------|
|------------------|-------------------------|

-----

Non 32-Bit clean systems

|                              |           |
|------------------------------|-----------|
| Macintosh Plus               | 4MB       |
| Macintosh SE                 | 4MB       |
| Macintosh SE/30              | 128MB + # |
| Macintosh II                 | 32MB * ## |
| Macintosh IIX                | 32MB * #  |
| Macintosh IICx               | 128MB + # |
| Macintosh Portable           | 9MB #     |
| Macintosh Portable (backlit) | 8MB       |

32-Bit Clean systems

|                         |         |
|-------------------------|---------|
| Macintosh Classic       | 4MB     |
| Macintosh Classic II    | 10MB    |
| Macintosh Color Classic | 10MB    |
| Macintosh LC            | 10MB    |
| Macintosh LC II         | 10MB    |
| Macintosh LC III        | 36MB    |
| Macintosh LC 475        | 36MB    |
| Macintosh LC 520        | 12MB    |
| Macintosh LC 550        | 36MB    |
| Macintosh LC 575        | 36MB    |
| Macintosh LC 630        | 36MB    |
| Macintosh IICi          | 128MB + |
| Macintosh IIsi          | 65MB +  |
| Macintosh IIfx          | 128MB + |
| Macintosh IIvi          | 20MB    |
| Macintosh IIvx          | 68MB    |
| Macintosh Quadra 610    | 68MB    |
| Macintosh Quadra 630    | 36MB    |
| Macintosh Quadra 650    | 132MB   |
| Macintosh Quadra 660AV  | 68MB    |
| Quadra 700              | 68MB +  |
| Quadra 900              | 256MB + |
| Quadra 800              | 136MB   |
| Quadra 840AV            | 128MB   |
| Quadra 950              | 256MB + |
| Power Macintosh 6100/60 | 72MB    |



|                            |       |
|----------------------------|-------|
| Power Macintosh 7100/66    | 136MB |
| Power Macintosh 8100/80    | 264MB |
| Macintosh Performa 200     | 10MB  |
| Macintosh Performa 400     | 10MB  |
| Macintosh Performa 405     | 10MB  |
| Macintosh Performa 410     | 10MB  |
| Macintosh Performa 430     | 10MB  |
| Macintosh Performa 450     | 36MB  |
| Macintosh Performa 460     | 36MB  |
| Macintosh Performa 466/467 | 36MB  |
| Macintosh Performa 475     | 36MB  |
| Macintosh Performa 476     | 36MB  |
| Macintosh Performa 550     | 36MB  |
| Macintosh Performa 600     | 68MB  |
| Macintosh Performa 63X     | 36MB  |
| PowerBook 100              | 8MB   |
| PowerBook 140              | 8MB   |
| PowerBook 145              | 8MB   |
| PowerBook 160              | 14MB  |
| PowerBook 165              | 14MB  |
| PowerBook 165c             | 14MB  |
| PowerBook 170              | 8MB   |
| PowerBook 180              | 14MB  |
| PowerBook 180c             | 14MB  |
| PowerBook Duo 210          | 24MB  |
| PowerBook Duo 230          | 24MB  |
| PowerBook Duo 250          | 24MB  |
| PowerBook Duo 270c         | 32MB  |
| PowerBook Duo 280c         | 40MB  |

End\_Table

# Requires the 32-Bit System Enabler with System 7.1 or MODE32 with versions of System 7 earlier than 7.1.

## Requires the 32-Bit System Enabler with System 7.1 or MODE32 with versions of System 7 earlier than 7.1, as well as the FDHD upgrade kit and PMMU (The FDHD upgrade has been discontinued).

+ These models are designed to handle 16 megabyte SIMMs but only 4 megabyte SIMMs are officially supported by Apple at this time.

\* There are two different reasons that the Macintosh II and the Macintosh IIX can't support the higher density SIMMs. First, the Macintosh II ROM startup code doesn't know about 4MB SIMMs and won't start up.

Second, the Macintosh IIX ROM does know about 4MB SIMMs, but standard 4MB SIMMs won't work on the Macintosh IIX. This is because JEDEC, the committee overseeing the standardization of new solid-state devices, added an additional built-in test mode to high-density DRAMs. The test mode is invoked by a sequence of electrical signals which was ignored by earlier-generation DRAM. This specification for 4MB SIMMs was changed after the Macintosh IIX was developed. At the time the Macintosh IIX

was developed, in theory, 4MB SIMMs should have worked. It wasn't known at the time that the specification would be changed. The result is that the current standard 4MB SIMMs don't work on the Macintosh IIX.

There are special 4 Megabyte SIMMs available that have a PAL chip which will allow their use in the Macintosh II and IIX. You'll need to contact the SIMM vendor or manufacturer to see if they have these special SIMMs available.

This subject is described in detail in Tech Note #176. Refer to the Developer Tech Answers Library in the Developer Support folder for further information on this Tech Note.

Article Change History:

19 Sep 1995 - Revised to show discontinued upgrade.

18 Aug 1994 - Revised to include Macintosh 630 family and Duo 280c.

15 Mar 1994 - Revised to include recent Macintosh and Performa models, corrected formatting.

Support Information Services

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Tech Info Library Article Number:6127



# Tech Info Library

## Macintosh: How System Heap Size Is Allocated (11/94)

Revised: 11/28/94  
Security: Everyone

Macintosh: How System Heap Size Is Allocated (11/94)

=====

Article Created: 10 September 1990  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

- 1) Where is the heap size stored on a volume?
- 2) If I adjust a heap size on a volume and copy that System Folder to another empty drive, will the boot blocks be set to the new modified size?

DISCUSSION -----

The default heap size is stored in the boot blocks of a startup volume. For System Software 6.0.4 and System Software 6.0.5, the default size 128K.

Note: When the System Software 6.0.5 System Tools disk is booted on a Macintosh SE with 1MB RAM, the System heap takes up 188K of RAM. The default System heap size is used as a guideline; the heap size is increased, if necessary.

The boot blocks, including the default heap size, are taken from the source disk, unless that disk does not have a valid copy of the boot blocks or if it is a file server. In these cases, the boot blocks are taken from the "boot" resource in the System file being copied.

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6130



# Tech Info Library

## A/UX 2.0: CD-ROM in A/UX File System Format

Revised: 9/29/92  
Security: Everyone

A/UX 2.0: CD-ROM in A/UX File System Format

=====

Article Created: 30 September 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is anyone doing CD-ROMs with an A/UX file system rather than hfs? I am setting up an A/UX anonymous ftp server for a university that would like to have CD-ROMs connected for public access.

### DISCUSSION -----

Yes, it is possible to have a CD-ROM in A/UX file system format mounted under A/UX and accessed by local or remote users. The distributed A/UX CD-ROM is an example of this.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6132



# Tech Info Library

## Brown University

Revised: 7/6/93  
Security: Everyone

Brown University

=====  
Article Created: 09/30/90  
Article Reviewed: 07/06/93  
Article Updated: 04/01/92

Brown University / Computing and Information Services (CIS)  
-----

115 Waterman St.  
P.O. Box 1885  
Providence, RI 02912

401-863-7247 (CIS)

401-863-7329 Fax

Company Profile:  
Software, specializing in a TN3270 product that supports several IBM graphic terminals (3179G, with GDDM support).

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6134



# Tech Info Library

## **Peter Norton Computing (acquired by Symantec Corp.)**

Revised: 4/4/97  
Security: Everyone

Peter Norton Computing (acquired by Symantec Corp.)

=====

Article Created: 30 September 1990  
Article Reviewed/Updated: 4 April 1997

Symantec Corp. (Peter Norton Group)

-----

2500 Broadway  
Suite 200  
Santa Monica, CA 90404

310-453-4600

Fax: 310-453-0636

### Company Profile:

Formerly Peter Norton Computing, Inc., software, specializing in file-rescuing and other utilities for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6137



# Tech Info Library

## MacroMind Director 2.0 Bug: Conflict with On Location

Revised: 9/30/90  
Security: Everyone

MacroMind Director 2.0 Bug: Conflict with On Location

=====

This article last reviewed: 11 September 1990

TOPIC -----

Is there anything about peculiar about the ON Location update (special edition of Desktop Focus)?

DISCUSSION -----

No, there is nothing peculiar about On Location. Rather, the problem was with MacroMind Director release 2.0. Disabling the ON Location INIT was the temporary workaround. The solution is to get release 2.0.1 of MacroMind Director. It fixes the bug.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6138



# Tech Info Library

## ON Technology Inc.

Revised: 4/4/97  
Security: Everyone

ON Technology Inc.

=====

Article Created: 30 September 1990  
Article Reviewed/Updated: 4 April 1997

On Technology Inc.

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1 Cambridge Center  
Cambridge, MA 02142-1604

617-876-0900

800-548-8871 (Technical Support)

617-876-0391 Fax

Company Profile:  
Software, specializing in networking products and utilities for the Macintosh.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6139





# Tech Info Library

## Wollongong Group, Inc. (4/97)

Revised: 4/4/97  
Security: Everyone

Wollongong Group, Inc. (4/97)

=====

Article Created: 30 September 1990  
Article Reviewed/Updated: 4 April 1997

Wollongong Group, Inc.  
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1129 San Antonio Rd.  
Palo Alto, CA 94303

415-962-7100  
415-962-7140 (Tech. Support)

800-962-8649 (Sales: In CA)  
800-872-8649 (Sales: Outside CA)

Fax: 415-969-5547

WWW: <http://www.twg.com>

Company Profile:  
Software, specializing in networking.

Support Information Services

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6140



# Tech Info Library

## AppleShare PC: 3.5-Inch and 5.25-Inch Install Disks

Revised: 9/30/90  
Security: Everyone

AppleShare PC: 3.5-Inch and 5.25-Inch Install Disks

=====  
This article last reviewed: 16 November 1989

TOPIC -----

My office does not have a dual 5.25-inch drive PC. This makes it cumbersome to copy AFE the files, because when I find that they are the wrong ones, and have to go back to AFE. What files does install.exe look for when doing the four different installs (printing, printing, file access, and so on)?

DISCUSSION -----

AppleShare PC 2.0 shipped with both a 3.5-inch 720K install disk, and a set of 5.25-inch 360K install disks. The files contained on the 5.25-inch disks are no different than those on the 3.5-inch disk; they're just divided across two disks. However, as you have found, the distribution of the files is important.

Until you get the new version, you can make a functional set by creating two disks with the file distribution listed below. After you copy all the files, Disk #1 will have approximately 4K available, and disk #2 will have approximately 33K available. Neither has enough space for MS-DOS system files.

Workstation Disk #1

-----

|          |     |         |     |          |     |          |     |
|----------|-----|---------|-----|----------|-----|----------|-----|
| LSL      | COM | AARP    | COM | ENET3CII | DEF | LTALKP   | DOC |
| COMPAT   | COM | ATALK   | COM | ENET3CMC | DEF | ENET3CII | DOC |
| LTALKP   | COM | ASP_WS  | COM | DSTARLT  | DEF | ENET3CMC | DOC |
| LTALK    | COM | PAP_WS  | COM | DSTARMC  | DEF | TOKNRING | DOC |
| ENET3CII | COM | PAP_SRV | COM | TOKEN_M  | DEF | DSTARLT  | DOC |
| ENET3CMC | COM | INSTALL | EXE | TOKEN_S  | DEF | ASHARE   | MEM |
| TOKNRING | COM | LTALKP  | DEF | TOKEN_L  | DEF | README   | DOC |
| DSTARLT  | COM | LTALK   | DEF | LTALK    | DOC | APRINT   | COM |

-----

Workstation Disk #2

-----

|    |     |        |     |       |     |        |     |
|----|-----|--------|-----|-------|-----|--------|-----|
| DA | EXE | DA     | HLP | REDIR | 310 | REDIR  | 400 |
| DA | OVL | ANET   | EXE | REDIR | 320 | MINSES | EXE |
| DA | DTA | ASHARE | COM | REDIR | 330 |        |     |

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Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6141



# Tech Info Library

## HyperCard 2.0: New Product Features (2 of 2)

Revised: 9/30/90  
Security: Everyone

HyperCard 2.0: New Product Features (2 of 2)

=====

This article last reviewed: 30 August 1990

### HyperTalk Enhancements

-----

- The Script Editor supports numerous of new features:
  - Modeless windows (several open at same time)
  - Search and Replace
  - Commenting and uncommenting selected lines
  - Undo for cut, copy, paste, clear, and typing operations
  - Horizontal scrolling (for 2-page display)
  - Triple-clicking to select a line
  - Allows setting of debugging checkpoints
- The HyperTalk Compiler replaces the HyperTalk interpreter used in earlier versions. As a result, HyperTalk scripts run faster in HyperCard 2.0 (as much as three times faster). Handlers are compiled automatically on the first execution of the handler and the compiled code is cached in RAM to be available for subsequent calls to that handler. The compiled handler remains in memory until that memory is needed for other handlers. When HyperCard 2.0 quits, the compiled HyperTalk code is flushed from memory, so only the HyperTalk source code is saved to disk.
- The HyperTalk Debugger engages when a execution encounters checkpoint. These checkpoints are inserted in the source code using the script editor. You can also enter the debugger by pressing Command-Option-Period.
- Background Processing: With HyperCard 2.0, you can switch to another application under MultiFinder while a script is running, and the script will continue to execute while HyperCard 2.0 is in the background. Other functions, like sorting and compacting also work while HyperCard 2.0 is in the background. HyperCard 2.0 yields to MultiFinder at the following times:
  - At the completion of a HyperTalk line.
  - When the busy cursor rotates (sorting, compacting, and printing)

- During the execution of the Show Cards and Wait commands

HyperCard 2.0 notifies the user whenever user intervention is required.

- **XCMD Enhancements:** The XCMD interface in HyperCard 2.0 is an extension of the XCMD interface originally implemented in HyperCard. HyperCard 2.0 provides the means for XCMDs to create and manage their own windows and menus and to call the sound manager directly. HyperCard 2.0 uses this XCMD window interface to implement the Script Editor and Debugger.
- **Color Windows:** While the card window does not support color, an XCMD can own a color window that supports bit depths of up to 24-bits. This lets the stack creator display a color picture while inside of HyperCard.
- **Sound Control:** Now, XCMDs can call the sound manager directly for increased control over sound from an XCMD.

#### Miscellaneous. Enhancements

- **Custom Menus:** The entire menu bar and its contents can be controlled by a HyperTalk script. This lets stack creators add, modify, or remove any menu items. As a result, you can make stacks that look like stand-alone applications, without having to resort to XCMDs.
- **Palettes:** HyperCard 2.0 has a feature which lets users create palettes, similar-to the Tools palette and the Patterns palette. To create these palettes, you must create a PICT resource that defines the visual part of the palette. This can be created in many of the popular paint programs and can be in color. You must also create a PLTE resource to define the rectangles for the buttons in the palette and the HyperTalk scripts that are executed when each is pressed. Creating a palette does not require coding in languages like Pascal, C or Assembly.
- **Icon Editor:** HyperCard 2.0 has a built-in icon editor, so that you can create or modify icons without the use of utilities such as ResEdit.

The editor displays a "fat-bits" representation of the icon, in which you can click within the image to toggle bits on or off. There are also several menu commands that further help you edit icons. They include the commands Flip Horizontal, Flip Vertical, Frame, Gray, Invert, Mirror Horizontal, Mirror Vertical, Rotate 90 degrees, Shadow, and Pickup.

- **Marked Cards:** Now, each card has a Mark property that lets a user or HyperTalk handler flag a card for some reason. Usually, this feature is used by a HyperTalk script during a search for cards that contain information that matches a certain criteria. Each card that contains that information is then marked. Once the appropriate cards have been marked, they can be processed as needed.

This feature is used with the HyperCard 2.0's report-printing capabilities to select which cards will be included within a report. For example, in a quiz

the developer could mark the cards the student got wrong and print those cards out for later review.

- Visual Effects: In the past, visual effects have only worked on monitors set to 1 bit per pixel. HyperCard 2.0 supports visual effects on monitors set up to 8 bits per pixel. There are two new visual effects--Stretch and Shrink.,

To help make it easier for stack developers to use visual effects, HyperCard 2.0 has a visual effects selection dialog for buttons. This dialog is illustrated below.

- Dynamic Dialog Sizing: Most of the HyperCard 2.0 dialogs, including the Ask and Answer dialogs, can now hold more text and size themselves to fit the amount of text. The previous limit was one line of text. This limit has been raised to approximately 240 characters, and as many lines that can be displayed on a classic, nine-inch Macintosh screen. For example, if a stack pathname is too long to fit on a single line, the Stack Info dialog will resize itself to fit up to five lines to accommodate the pathname.
- Painting Enhancements: New special effects have been added to HyperCard 2.0's Options menu. These effects work on graphical selections chosen with HyperCard 2.0's paint Selection tool. The four new effects are:
  - Rotate to provides free rotation of graphics about the center of the selection.
  - Slant to stretch the selection into the shape of a parallelogram, making the image appear slanted.
  - Distort to let you stretch a corner of the selection arbitrarily in two directions
  - Perspective to stretch the selection into the shape of a parallelogram or trapezoid, making the image appear to have perspective depth.
- Stack Security: When protecting stacks, HyperCard 2.0 has the two new possibilities of Can't Peek and Can't Abort. Can't Peek lets stack developers protect confidential script source code from users. Can't Abort prevents users from pressing Command-Period to stop execution of a HyperTalk handler. When this protection is set, execution of handlers cannot be prematurely halted by the user.

Note: Both of these features should be used with care. In most cases, it is advisable to lock only copies of the stack, and not the original stack.

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Tech Info Library Article Number:6142



# Tech Info Library

## GARFIELD 2 and MDEF Virus: Definition

Revised: 9/30/90  
Security: Everyone

GARFIELD 2 and MDEF Virus: Definition

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This article last reviewed: 28 September 1990

The GARFIELD 2 virus, also known as MDEF, was discovered 13 August 1990. It is a variation of the GARFIELD virus that originated at Cornell University. It rennumbers the system menu definitions of System files, resulting in odd menu behavior, no menu pop-down, odd system behavior, and odd application behavior.

To add a new virus definition to SAM 2.0, enter the following information:

Virus Name: GARFIELD

Resource Type: MDEF

Resource ID: 0

Resource size: ANY

Search String: A9A92F0CA9AA2F0CA9B0

String Offset: ANY

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Tech Info Library Article Number:6144



# Tech Info Library

## CDEF Virus: Definition

Revised: 9/30/90  
Security: Everyone

CDEF Virus: Definition

=====

This article last reviewed: 28 September 1990

The CDEF virus was discovered 15 August 1990. It is a non-destructive virus that adds devices to the Desktop file.

To add a new virus definition to SAM 2.0, enter the following information:

Virus Name: CDEF

Resource Type: CDEF

Resource ID: 1

Resource size: 510

Search String: 45463F3C0001487A0046A9AB

String Offset: 420

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Tech Info Library Article Number:6145





# Tech Info Library

## NEC DM-3000P Monitor: Connecting to a Macintosh

Revised: 9/30/90  
Security: Everyone

NEC DM-3000P Monitor: Connecting to a Macintosh

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This article last reviewed: 28 September 1990

TOPIC -----

What are the specifications for the cable to connect a Macintosh to an NEC IPS-100 Monitor?

DISCUSSION -----

According to NEC technical support, the most efficient way to connect the Macintosh (with the older Apple 8-bit video card) is to use a cable from Inline, Inc. (part number is IN9021). This connects the 15-pin connector on the older Apple 8-bit video card to the 34-pin connector on the DM-3000P.

At this writing, NEC had not tested this cable with the newer Apple video cards, but it may work unless there is a problem with the configuration of the sense pin connections on the new cards. The sense pins are used to let the new video cards know what mode to use.

Inline checked the configuration information and said that there is no need for the NEC IPS-100 Computer Interface when connecting the DM-3000P to the Macintosh. Their IN9021 cable, which is 15-pin-to-34-pin, is all that is needed to connect the two.

For further information on Inline, search the Tech Info Library using "Inline, Inc."

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Tech Info Library Article Number:6146



# Tech Info Library

## Macintosh: How to Connect to UPI News Service

Revised: 12/17/91  
Security: Everyone

Macintosh: How to Connect to UPI News Service

=====

Article Created: 28 September 1990  
Article Last Reviewed: 10 August 1992  
Article Last Updated:

TOPIC -----

Can I connect to the UPI wire service from a Macintosh?

DISCUSSION -----

According to UPI (United Press International), all you need is a:

- Modem
- Communications program
- Subscription to the UPI service

News services like UPI are aimed at media clients: newspapers, magazines, radio, and television. Direct connections to these services are more expensive than the average individual can afford. For those interested in news services, an alternative is to use commercial network services like CompuServe or GEnie. These are far less expensive, but contain a wide range of information.

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Tech Info Library Article Number:6147



# Tech Info Library

## Macintosh 12 RGB Display: Software Compatibility

Revised: 4/18/91  
Security: Everyone

Macintosh 12" RGB Display: Software Compatibility

=====

This article last reviewed: 15 October 1990

Several applications do not recognize the Apple Macintosh 12" RGB Display as being 512 x 384 pixels instead of 640 x 480. This leads to windows that are partially off the screen. ColorStudio 1.0 and PixelPaint 2.0 are two applications with this problem. In some cases, the windows can be resized -- but in others, there is no way to work with the application and restarting the system is the only way out.

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Tech Info Library Article Number:6149



# Tech Info Library

## Macintosh IIsi: Application Software Compatibility

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi: Application Software Compatibility

=====

Article Created: 15 October 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

This article summarizes the software compatibility issues at the introduction of the Macintosh IIsi.

DISCUSSION -----

The Macintosh IIsi Was Widely Seeded

-----

In the United States alone, over 300 developers received Macintosh IIsi seed units. Many other developers received full documentation, and were able to test their products at Apple. This was the most extensive seeding and testing of a new computer in recent history.

Of the applications on which Apple had compatibility information, 97% either worked with the Macintosh IIsi, or were in the process of being revised. The other 3% were discontinued products.

Compatibility Issues

-----

FPU: Apple identified about twenty application programs that required an FPU (and did not have an alternate non-FPU version). Many of the color paint programs that fell in this category were revised to work on all Macintosh models. However, most CAD/CAM programs and other high-end graphics/math programs still require an FPU. We will identify these applications on all compatibility lists.

Microsoft Excel: Version 2.2a or higher is recommended for all Macintosh IIsi and Macintosh LC configurations. Microsoft offers a free upgrade from 2.2 to 2.2a.

Monitor size: Several programs did not work properly on the Apple Macintosh 12-inch RGB Display, because they assumed a minimum 640-pixel by 480-pixel size. These programs were in the process of being revised.

Macintosh SE/30 cards: Some Macintosh SE/30 cards did not work with the Macintosh IIsi, due to incorrect timing and physical dimensions. All cards that followed the guidelines in Apple's "Cards and Drivers" manual work correctly.

NuBus power requirements: Some NuBus cards exceeded the 15W power maximum specification. These cards were primarily the high-end graphics and video cards. We asked developers of these cards to include, in their manuals, references to power if they exceeded the maximum specification. We also included a caution in the Macintosh IIsi manual.

Sound: The new sound input software made it necessary for some developers to update their software. Latest versions should work with the new Macintosh models.

AppleTalk: An AppleTalk problem in System 6.0.6 was fixed in System 6.0.7, which shipped with all Macintosh IIsi and Macintosh LC systems sold in the United states.

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Tech Info Library Article Number:6152



# Tech Info Library

## Macintosh IIsi: Compatibility With Selected Software 1/93

Revised: 7/28/93  
Security: Everyone

Macintosh IIsi: Compatibility With Selected Software 1/93

Article Created: 15 October 1990  
Article Reviewed/Updated: 27 July 1993

Apple recommends that customers use the latest versions of Macintosh software that are compatible with their Macintosh hardware. Apple compiled the following list from information received from many software developers. These developers have recommended certain versions of their software for use with the Macintosh IIsi computer.

This is not a comprehensive list of programs, or versions of programs, that are compatible with the Macintosh IIsi. Please contact your dealer or the software developer if you have any questions. They can help you identify the newest version of a particular program and tell you how to upgrade if necessary.

| Developer             | Program/Version               | Telephone           |
|-----------------------|-------------------------------|---------------------|
| Abacus Concepts, Inc. | StatView II 1.03 (1)          | 800-666-7828        |
|                       | StatView SE+Graphics 1.03     |                     |
|                       | SuperANOVA for Mac II 1.1 (1) |                     |
|                       | SuperANOVA for Mac+ 1.1       |                     |
| ACI US, Inc.          | 4th Dimension 2.0.11, 2.1     | 408-252-4444 ext. 4 |
| Adobe Systems, Inc.   | Font Porter 1.0               | 415-961-0911        |
|                       | Illustrator 3.0               |                     |
|                       | Photoshop 1.0.7               |                     |
|                       | Streamline 1.0 and above      |                     |
|                       | Type Align 1.0 and above      |                     |
|                       | Type Library All versions     |                     |
|                       | Type Manager 2.0              |                     |
|                       | Type Reunion 1.0 and above    |                     |
| Aldus                 | Freehand 2.02                 | 206-628-2320        |
|                       | PageMaker 3.02, 3.02CE, 4.0   |                     |
|                       | Persuasion 2.0                |                     |
|                       | PrePrint 1.0 (1)              |                     |
| Altsys                | Fontographer 3.1 and above    | 214-680-2060        |
|                       | Metamorphosis 1.5 and above   |                     |

|                          |                                            |                  |
|--------------------------|--------------------------------------------|------------------|
|                          | The Art Importer 2.0 and above             |                  |
| Apple Computer, Inc.     | MacTerminal 2.3.1 and above                | 408-996-1010     |
| Articulate Systems, Inc. | Voice Link 1.0                             | 800-443-7077     |
|                          | Voice Link S/W 1.0                         |                  |
|                          | Voice Navigator 2.0                        |                  |
|                          | Voice Navigator II 2.0                     |                  |
| Ashlar Incorporated      | Vellum 2.0 (1)                             | 408-746-3953     |
| Borland                  | Full Impact 2.0                            | 408-438-7436     |
|                          | FullWrite Professional 1.5                 |                  |
| Blyth Software, Inc.     | Omnis 3 Plus 3.308                         | 415-571-0222     |
|                          | Omnis 5 All versions                       |                  |
| Broderbund               | BannerMania 1.0                            | 800-521-6263     |
|                          | Drawing Table 1.0                          |                  |
|                          | DTP Advisor 1.0                            |                  |
|                          | Jam Session 1.1.1                          |                  |
|                          | Playmaker Football 1.1.1                   |                  |
|                          | Playroom 1.1                               |                  |
|                          | Printshop 1.3.2                            |                  |
|                          | SimCity 1.2c                               |                  |
|                          | Type 1.0                                   |                  |
|                          | Typewriter 1.5                             |                  |
|                          | Where in Europe is Carmen Sandiego? 1.1    |                  |
|                          | Where in the USA is Carmen Sandiego? 1.1   |                  |
|                          | Where in the World is Carmen Sandiego? 1.2 |                  |
|                          | Where in Time is Carmen Sandiego? 1.0      |                  |
| CE Software, Inc.        | Alarming Events 1.0.1                      | 515-224-1995     |
|                          | Amazing Paint 1.0.1                        |                  |
|                          | Calendar Maker 3.0.1                       |                  |
|                          | DiskTop 4.0                                |                  |
|                          | In/Out 1.0.1                               |                  |
|                          | QuicKeys 1.2.1                             |                  |
|                          | QuicKeys 2 2.0                             |                  |
|                          | QuickMail 2.2.3                            |                  |
| Central Point Software   | MacTools Deluxe 1.0                        | 503-690-8080     |
| Claris Corp.             | Claris CAD 2.0v1                           | 408-727-8227     |
|                          | FileMaker Pro 1.0                          |                  |
|                          | HyperCard 2.0                              |                  |
|                          | MacDraw II 1.1v2                           |                  |
|                          | MacPaint 2.0                               |                  |
|                          | MacProject II 2.1v3                        |                  |
|                          | MacWrite II 1.1v2                          |                  |
|                          | SmartForm Assistant 1.1v2                  |                  |
|                          | SmartForm Designer 1.1v2                   |                  |
| Computer Associates      | AccPac/Simply Accounting 1.1               | 800-531-5236     |
| Dayna Communications     | DOS Mounter 1.2                            | 801-972-2000     |
| Deltapoint, Inc.         | DeltaGraph 1.5                             | 800-367-4334     |
|                          | TASTE 1.0                                  |                  |
| Electronic Arts          | Studio/1 1.0                               | 800-245-4525 (6) |
|                          | Studio/8 2.0                               |                  |
|                          | Studio/32 1.0                              |                  |
| Farallon Computing       | Farallon Sound Driver 1.2                  | 415-596-9000     |
|                          | LW Status 1.0.2                            |                  |
|                          | MacRecorder Sound System 2.0.3             |                  |

|                                |                                 |              |
|--------------------------------|---------------------------------|--------------|
|                                | MediaTracks 1.0.1               |              |
|                                | NodeHint 1.0.2                  |              |
|                                | PhoneNET CheckNET 1.0.2         |              |
|                                | PhoneNET Manager's Pack 1.0     |              |
|                                | RegisterName 9.0                |              |
|                                | StarCommand 2.2                 |              |
|                                | Timbuktu 3.1.2                  |              |
|                                | Timbuktu/Remote 2.0.1           |              |
|                                | TrafficWatch 1.0.8              |              |
| Fifth Generation Systems, Inc. | DiskLock 2.0                    | 504-291-7221 |
|                                | Fastback II 2.5                 |              |
|                                | File Director 1.0               |              |
|                                | Pyro! 4.0                       |              |
|                                | Suitcase II 1.2.6               |              |
|                                | SuperLaserSpool 2.02            |              |
|                                | SuperSpool 5.0                  |              |
| GeoQuery Corporation           | GeoQuery 2.01                   | 800-541-0181 |
| Informix Software, Inc.        | Wingz 1.1a                      | 913-492-9922 |
| Innovative Data Design         | MacDraft 2.0, 2.1               | 415-680-6818 |
| Interleaf                      | Interleaf Publisher 3.6 & above | 617-577-9800 |
| Intuit, Inc.                   | Quicken 1.5                     | 800-624-8742 |
| LetraSet                       | DesignStudio 1.02               | 800-343-TYPE |
|                                | FontStudio 1.0 (4)              |              |
|                                | ImageStudio 1.7                 |              |
|                                | LetraStudio 1.53                |              |
|                                | Ready,Set,Go! 4.5a              |              |
| MacroMind, Inc.                | Accelerator 2.0.1               | 415-442-0200 |
|                                | Director 2.0.1                  |              |
|                                | Player 2.0.1                    |              |
|                                | Three-D .90 (1)                 |              |
| Mainstay                       | AntiToxin 1.3 and above         | 818-991-6540 |
|                                | Capture 3.0 and above           |              |
|                                | ClickPaste 1.1 and above        |              |
|                                | MacFlow 3.1.5 and above         |              |
|                                | MacSchedule 2.0.4 and above     |              |
|                                | MarcoPolo 1.01 and above        |              |
|                                | MarkUp 1.03 and above           |              |
|                                | V.I.P. 2.51                     |              |
| Microsoft Corporation          | Excel 2.2a and above            | 206-454-2030 |
|                                | File 2.0a and above             |              |
|                                | Mail 2.0 and above              |              |
|                                | Office 1.0 and above            |              |
|                                | Powerpoint 2.01 and above       |              |
|                                | QuickBASIC 1.00b and above      |              |
|                                | Word 4.0a and above             |              |
|                                | Works 2.0b and above            |              |
| Odesta Corporation             | Double Helix 3.0                | 708-498-5615 |
| Oracle                         | Oracle For Macintosh 1.2        | 800-ORACLE1  |
| PeachTree (Symmetry)           | atOnce! 1.01                    | 602-998-9106 |
| Quark, Inc.                    | QuarkStyle 1.01                 | 303-934-0784 |
|                                | QuarkXPress 2.12, 3.00          |              |
| Aldus Consumer Division        | Digital Darkroom 1.1            | 619-695-6956 |
|                                | Super 3D 2.1 (3)                |              |



|                          |                                 |                  |
|--------------------------|---------------------------------|------------------|
|                          | SuperCard 1.5                   |                  |
|                          | SuperPaint 2.0                  |                  |
| Softsync/BLOC Accountant | Professional 1.0 and above      | 800-933-2537     |
| SuperMac Technology      | DiskFit 1.5.1                   | 408-245-2202     |
|                          | Network DiskFit 1.5.1           |                  |
|                          | PixelPaint 2.1 (5)              |                  |
|                          | PixelPaint Professional 2.0 (2) |                  |
|                          | Sentinel 2.2                    |                  |
| Symantec Corporation     | MORE 3.0                        | 800-441-7234 (7) |
|                          | SAM II 2.03                     |                  |
|                          | SUM II 2.0                      |                  |
|                          | Think C 4.02                    |                  |
|                          | Think Pascal 3.01               |                  |
| Symmetry Software Corp.  | Acta 1.0 and above              | 602-998-9106     |
|                          | HyperDA II 2.0                  |                  |
|                          | KeyPlan 1.0 and above           |                  |
|                          | Mariah 1.0                      |                  |
| T/Maker Company          | WriteNow 2.0, 2.2               | 415-962-0195     |
| WordPerfect Corporation  | WordPerfect 1.0.5               | 800-451-5151     |

footnotes

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- (1) Requires floating-point math coprocessor
- (2) Application scheduled to ship fourth quarter 1990.
- (3) Requires floating-point math coprocessor to run color.
- (4) Use disk labeled "Mac Plus 68000".
- (5) Requires 13" RGB monitor. Application scheduled to ship 10/31/90.
- (6) from California: 415-572-2787
- (7) from California: 800-626-8847

This partial list of third parties and third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation by Apple Computer, Inc. All product specifications and descriptions were supplied by the products' vendors or suppliers. Apple Computer, Inc., has no information about the testing procedures and compatibility verification conducted by the products' vendors and suppliers. Apple Computer, Inc., assumes no responsibility with regard to the selection, performance, or use of these products or vendors. All understandings, agreements, or warranties with respect to the software in this list, if any, take place directly between the vendors and the prospective users. Apple Computer, Inc., makes no warranties as to the completeness or accuracy of this list.

Article Change History:

- 27 July 1993 - Company title updated from Fifth Generation Systems to Fifth Generation Systems, Inc.
- 15 January 1993 - Updated, vendor information.

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Tech Info Library Article Number:6153



# Tech Info Library

## Macintosh IIsi: Expansion Card Compatibility

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi: Expansion Card Compatibility

=====

Article Created: 15 October 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

This article describes some of the compatibility issues between the Macintosh IIsi and NuBus and 030 direct cards. To determine if a given card has any of the following problems with the IIsi, the manufacturer of the card should be contacted.

DISCUSSION -----

### CARD POWER REQUIREMENTS

Some NuBus cards exceed the 15-watt limit for NuBus cards. In the case of Macintosh II models with multiple NuBus slots, an empty NuBus slot usually provides some margin. Because the Macintosh IIsi is a one-slot system, that margin does not exist. As a result, it is more critical that the 15-watt power requirement for NuBus cards be maintained in the Macintosh IIsi.

For example, the Apple Macintosh Display Card 8•24 GC takes slightly more power, due to the processor and on-board memory, than the NuBus power specification of 15 watts. However, after the completion of initial tests, Apple is able to recommend using the card with the Macintosh IIsi in normal operating environments. Apple is continuing testing for elevated temperature environments. We will publish results of these tests as they become available. Until then, we do not recommend the combination of Macintosh IIsi and Macintosh Display Card 8•24 GC in environments where the temperature is expected to regularly exceed 32 C or 90 F.

For more information on Macintosh Display Card 8•24 GC, search under "Macintosh IIsi" and "Display Card 8•24 GC".

With regard to third-party cards, we have found the vast majority to be completely compatible and to work reliably with the Macintosh IIsi. In those few instances where the power specification exceeds the NuBus specification, or if you have any questions or concerns about a specific product, contact the vendor. In Apple's case, we can now recommend all of our displays cards across the line of NuBus-capable Macintoshes.

#### CARD SIZE

NuBus and 030 Direct cards that deviate from the size specifications of each type of card may experience fit problems. Also, NuBus cards that are a two-card set, such as a video card and an accelerator, will not work in the Macintosh IIsi.

#### CLOCK SIGNAL

Macintosh SE/30 cards that depend on the 16-MHz clock speed of the Macintosh SE/30 do not work with the Macintosh IIsi because the clock speed of the Macintosh IIsi is 20 MHz.

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Tech Info Library Article Number:6154



# Tech Info Library

## Macintosh IIsi: Specifications (Discontinued 3/93)

Revised: 9/13/94  
Security: Everyone

Macintosh IIsi: Specifications (Discontinued 3/93)

Article Created: 12 November 1990  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

This article provides specifications for the Macintosh IIsi.

DISCUSSION -----

### MICROPROCESSOR

- MC68030, 32-bit architecture, 20 MHz clock frequency, built-in memory management unit (MMU)

### CO-PROCESSOR

- Optional MC68882 Floating-Point Unit (FPU), 20 MHz clock frequency through the installation of a IIsi NuBus adaptor card

### MEMORY

- 1MB RAM on logic board and four memory expansion slots. Expandable to 17MB of RAM by installing 4MB SIMMs in the empty slots. The Macintosh IIsi requires RAM that is 100ns or faster. The RAM that Apple installs in Macintosh IIsi systems is 80ns.
- 512K ROM, with ROM SIMM for future upgrades
- 256 bytes of parameter memory

### DISK DRIVES

- SuperDrive 1.4MB high-density floppy disk drive
- Optional external 1.4MB or 800K disk drive
- Internal Apple SCSI hard disk drive (1/3 height @ 40 or 80 MB)
- Optional external SCSI hard disk drives (up to 6)

### SOUND

- Custom sound chip, including stereo output capability
- Monaural sound input

### INTERFACES

- One ADB port supports keyboard, mouse, and other daisy-chained devices via its synchronous serial bus.
- Video port supports various RGB and monochrome displays.
- Internal expansion slot accommodates either a NuBus or 030 Direct expansion card connected to the appropriate adaptor. Power budget: maximum 15 watts.
- Two RS-232 / RS-422 serial ports, 230.4 Kbits/second maximum.

#### AC INPUT REQUIREMENT

- Line voltage: 00-240 volts AC, automatically configured
- Line power: 67 watts maximum, not including monitor power
- Line current: 1.43-0.56 amps (determined by input voltage)
- Frequency: 50-60 Hz single phase

#### AC AUXILIARY OUTPUT

- Output receptacle voltage: 100-240 volts AC (determined by input voltage)
- Output receptacle power: 300 VA maximum
- Output receptacle current: 3 amp maximum steady-state

#### SYSTEM POWER

47 watts maximum {60 watts peak during hard drive spin-up (15 sec)}  
+ 5 volt 6.8 amps  
+12 volt 0.8 amps {1.9 amps during hard drive spin-up (15 sec)}  
-12 volt 0.3 amps

#### CLOCK/CALENDAR

- CMOS custom chip with long-life lithium battery

#### SIZE AND WEIGHT

- Main Unit
  - Width 12.4 inches (31 cm)
  - Height 4 inches (10 cm)
  - Depth 14.9 inches (37.2 cm)
  - Weight 10 lb. (4.5 kg)
- Mouse
  - Height 1.1 inches (2.8 cm)
  - Width 2.1 inches (5.3 cm)
  - Depth 3.8 inches (9.7 cm)
  - Weight 6 oz. (.17 kg)

#### ENVIRONMENT

- Operating temperature: 10 to 40 degrees Celsius  
50 to 104 degrees Fahrenheit
- Storage temperature: -40 to 47 degrees Celsius  
-40 to 116.6 degrees Fahrenheit
- Relative humidity: 5% to 95% (noncondensing)
- Altitude: 0 to 3048 m (0 to 10,000 ft.)

#### Article Change History

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# ..TIL06155-Macintosh\_IIsi-Specifications\_Discontinued\_3-93\_(199\_Mac).pdf

13 Sep 1994 - Clarified how FPU option is provided.

15 Jul 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6155



# Tech Info Library

## Connectivite Corp.

Revised: 4/4/97  
Security: Everyone

Connectivite Corp.

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Article Created: 10/18/90  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97  
Connectivite Corp.

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220 White Plains Rd.  
Terry Town, NY 10591

914-631-5365

914-631-6930 Fax

Company Profile:  
Software, specializing in frontware development tools.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6158



# Tech Info Library

## Advanced Gravis Computer Technology Ltd.

Revised: 4/4/97  
Security: Everyone

Advanced Gravis Computer Technology Ltd.

=====

Article Created: 10/08/90  
Article Reviewed: 07/02/93  
Article Updated: 04/04/97

Advanced Gravis Computer Technology Ltd.

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1013750 n. Fraser Wy.  
Burnaby, BC V5J 5E9

604-431-5020  
604-431-1807 (Tech. Support)

604-431-5155 Fax

Company Profile:  
Hardware, specializing in input devices, and joysticks

for mail in the U.S.:  
Advanced Gravis Computer Technology  
1790 Midway Ln.  
Bellingham, WA 98226

Article Change History: 07/02/93 Address changed, New Product added to  
discription

Copyright 1990-97 Apple Computer, Inc.

Tech Info Library Article Number:6160





# Tech Info Library

## SunView Applications Cannot Run Under A/UX

Revised: 9/30/92  
Security: Everyone

SunView Applications Cannot Run Under A/UX

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Article Created: 18 October 1990

### Article Change History

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09/07/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can SunView applications run under A/UX?

### DISCUSSION -----

SunView is a proprietary windowing system, specific to Sun's operating system. Without a way for a A/UX system to emulate a Sun, SunView applications cannot run under A/UX.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6161



# Tech Info Library

## Macintosh: BASIC Compilers and Interpreters

Revised: 1/21/93  
Security: Everyone

Macintosh: BASIC Compilers and Interpreters

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Article Created: 18 October 1990

### Article Change History

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01/20/93 - UPDATED  
• Vendor information.  
10/10/90 - REVIEWED  
• For accuracy.

### TOPIC -----

What BASIC language compilers and interpreters are available for the Macintosh?

### DISCUSSION -----

BASIC language compilers and interpreters are available for the Macintosh from the vendors listed below.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

- Complete BASIC, from Complete Technologies
- True BASIC, from True BASIC, Inc.
- QuickBASIC, from Microsoft Corp.
- NKR BASIC Interpreter and NKR BASIC Compiler, from PenWare, Inc.
- ZBASIC, from Zedcor

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Tech Info Library Article Number:6162



# Tech Info Library

## Intellimation

Revised: 4/4/97  
Security: Everyone

Intellimation

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Article Created: 10/18/90  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

Intellimation  
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130 Cremona Dr.  
Santa Barbara, CA 93117

Mailing Address:  
P.O. Box 1922  
Santa Barbara, CA 93116-1922

805-968-2291  
805-685-2100 (Tech. Support)

800-346-8355 (Orders only)

Fax: 805-968-8899

Company Profile:  
Software, specializing in educational videotapes, laserdiscs, and catalogs.

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Tech Info Library Article Number:6163



# Tech Info Library

## Leonard Development Group (acquired by Symantec Corp.)

Revised: 4/4/97  
Security: Everyone

Leonard Development Group (acquired by Symantec Corp.)

=====

Article Created: 18 October 1990  
Article Reviewed/Updated: 4 April 1997

Symantec Corp.  
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10201 Torre Ave.  
Cupertino, CA 95014-2132

800-441-7234 (End-users Only)  
800-222-2616 (Corporate)

408-253-9600

408-252-4694 Fax

Company Profile:  
Acquired by Symantec Corp.; product line still exists, software, specializing  
in productivity applications for the Macintosh, and IBM

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Tech Info Library Article Number:6164



# Tech Info Library

## PenWare, Inc.

Revised: 7/15/93  
Security: Everyone

PenWare, Inc.

=====

Article Created: 18 October 1990  
Article Reviewed/Updated: 15 July 1993

PenWare, Inc.

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845 Page Mill Rd.  
Palo Alto, CA 94304-1011

415-858-4920

415-858-4929 Fax

Company Profile:  
Formerly NKR Research, Inc., specializing in application development of Pen  
Computing.

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Tech Info Library Article Number:6165



# Tech Info Library

## SNEWS (Small Newspaper Management Systems)

Revised: 4/4/97  
Security: Everyone

SNEWS (Small Newspaper Management Systems)

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Article Created: 18 October 1990  
Article Last Reviewed: 5 November 1992  
Article Last Updated: 4 April 1997

SNEWS (Small Newspaper Management Systems), specializing in software for small- to medium-sized newspapers.

SNEWS (Small Newspaper Management Systems)  
(Affiliated with Computer Associates)  
812 Brittany Court  
Norman, OK 73072  
405-360-6818  
405-360-3332  
Fax: 405-360-3169

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6166



# Tech Info Library

## True BASIC, Inc.

Revised: 4/4/97  
Security: Everyone

True BASIC, Inc.

=====  
Article Created:18 October 1990  
Article Reviewed/Updated: 4 April 1997

True BASIC, Inc.  
-----

12 Commerce Ave.  
West Lebanon, NH 03784

800-872-2742 (Sales)

603-298-8517 (Technical Support)

Fax: 603-298-7015

Company Profile:  
Software, specializing in educational software.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6167



# Tech Info Library

## Macintosh 12-inch RGB Display

Revised: 10/23/90  
Security: Everyone

Macintosh 12-inch RGB Display

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This article last reviewed: 16 October 1990

TOPIC -----

This article describes the Macintosh 12-inch RGB Display, introduced 15 October 1990.

DISCUSSION -----

Not all Macintosh video sources will support the Macintosh 12-inch RGB Display. The following Apple video outputs support this monitor:

- Macintosh Display Card 4/8 and 8/24 video card
- Macintosh IIci built-in video
- Macintosh LC built-in video
- Macintosh IIsi built-in video

All previous video cards do not work with the Macintosh 12-inch RGB Display. At the time these cards were developed, the timing for the 12-inch RGB was not known and, therefore, does not support the proper video signaling.

In addition, the Macintosh Display Card 8/24 GC card does not work with the Macintosh 12-inch RGB Display. The card is designed for high-end systems, and the 12-inch RGB Display for inexpensive systems.

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Tech Info Library Article Number:6168





# Tech Info Library

## Macintosh LC and Macintosh IIsi: Sound Input

Revised: 6/21/93  
Security: Everyone

Macintosh LC and Macintosh IIsi: Sound Input

Article Created: 16 October 1990

### Article Change History

06/21/93 - REVIEWED

- To confirm specifications of Sony and Radio Shack cables.

### TOPIC -----

This article is about the sound input circuitry for the Macintosh LC and Macintosh IIsi.

### DISCUSSION -----

The Macintosh LC and Macintosh IIsi computers have built-in mono 8-bit sound input circuitry. This hardware is supported by the System 7.0 Sound Manager, which is included in System 6.0.7.

An electret microphone and a plastic holder to attach the microphone to the front of a monitor are included with the system. The microphone has a male miniature stereo phone connector. Customers can use any commercially available microphone that does not require an external power source.

An attenuated RCA adapter cable, with a male miniature phone connector on one end and two female RCA connectors on the other steps down the voltage level of the incoming signal. Devices such as CD players or tape players provide line out signals at a higher level than the 20 millivolt - 600-ohm impedance expected by the sound input circuitry. If you use a non-attenuated RCA adaptor cable in the audio-in jack, you will not hurt the system and it will still digitize the signal, but it may be very distorted.

If you use an attenuated RCA adapter cable as an audio-out cable, it may or may not work, depending on what you're connecting to. A standard RCA adapter cable is recommended for audio out. If the microphone is plugged

into the audio-out jack, no sound will come out of the jack or the internal speaker.

Both Sony and Radio Shack sell attenuated RCA cables. The Sony part number is RK-G128 and the Radio Shack part number is 42-2461-A.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6170



# Tech Info Library

## Macintosh Classic 1MB Memory Expansion Card Pinouts

Revised: 6/18/92  
Security: Everyone

Macintosh Classic 1MB Memory Expansion Card Pinouts

Article Created: 16 October 1990  
Article Last Reviewed: 16 June 1992  
Article Last Updated:

TOPIC -----

This article gives the pinouts for the Macintosh Classic 1MB Memory Expansion Card.

DISCUSSION -----

- 1 - Gnd Ground
- 2 - Gnd Ground
- 3 - +5 VDC+5 VDC
- 4 - +5 VDC+5 VDC
- 5 - CASCH\*Column Access Strobe - High Bank C
- 6 - CASCL\*Column Access Strobe - Low Bank C
- 7 - CASEL\*Column Access Strobe - Low Bank E
- 8 - CASEH\*Column Access Strobe - High Bank E
- 9 - CASDH\*Column Access Strobe - High Bank D
- 10 - CASDL\*Column Access Strobe -Low Bank D
- 11 - SIMM.IN\* SIMMs installed
- 12 - EXP.IN\* Expansion Card installed
- 13 - RD(3) Data Bit 3
- 14 - RD(2) Data Bit 2
- 15 - RD(0) Data Bit 0
- 16 - RD(1) Data Bit 1
- 17 - RD(7) Data Bit 7
- 18 - RD(6) Data Bit 6
- 19 - RD(4) Data Bit 4
- 20 - RD(5) Data Bit 5
- 21 - RD(11)Data Bit 11
- 22 - RD(10)Data Bit 10
- 23 - RD(8) Data Bit 8
- 24 - RD(9) Data Bit 9

25 - FRA(9)Address Line 9  
26 - FRA(4)Address Line 4  
27 - FRA(3)Address Line 3  
28 - FRA(5)Address Line 5  
29 - FRA(2)Address Line 2  
30 - FRA(6)Address Line 6  
31 - FRA(1)Address Line 1  
32 - FRA(7)Address Line 7  
33 - FRA(0)Address Line 0  
34 - FRA(8)Address Line 8  
35 - FRAS\* Row After Strobe  
36 - FRMRW\*Memory Read Write  
37 - RD(15)Data Bit 15  
38 - RD(13)Data Bit 13  
39 - RD(14)Data Bit 14  
40 - RD(12)Data Bit 12  
41 - +5 VDC+5 VDC  
42 - +5 VDC+5 VDC  
43 - Gnd Ground  
44 - Gnd Ground

Connector Type: Dual In Line 44-pin

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Tech Info Library Article Number:6171



# Tech Info Library

## Macintosh Classic: Specifications (Discontinued 10/91)

Revised: 9/27/93  
Security: Everyone

Macintosh Classic: Specifications (Discontinued 10/91)

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Article Created: 23 October 1990

TOPIC -----

This article gives the specifications for the Macintosh Classic computer.

DISCUSSION -----

### CENTRAL PROCESSING UNIT (CPU)

- Microprocessor: 8 MHz MC68000 CPU
- Internal architecture: 32-bit

### OPERATING SYSTEM

- Macintosh System Software 6.0.7 or later

### MEMORY

- 1 or 2 MB RAM (Random Access Memory), up to 4 MB using Macintosh Classic 1MB Memory Expansion Card and 150ns, or faster, 32-pin SIMM
- 512K of ROM (Read-Only Memory)
- 256 bytes of parameter memory with built-in battery backup

### KEYBOARD

- Apple Keyboard II (included with the Classic system)

### MOUSE

- Apple Desktop Bus (ADB) Mouse, mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch (3.94 +/- 0.39 pulse per mm) of travel

### DISK DRIVE

- One 1.4 MB high-density (Apple SuperDrive) internal drive. (Optional external 1.4 MB or 800K disk drive available)

The disk port on the Macintosh Classic supports the Apple 800K External Drive but not the 400K drive.

#### HARD DISK DRIVE

- A 3.5-inch 40 MB drive is available. The disk port on the Macintosh Classic supports the Apple HD20.

#### MONITOR

- Built-in 9-inch diagonal, 512 by 342-pixel high-resolution bit-mapped monochrome display

#### INTERFACES

- One Apple Desktop Bus (ADB) connector for keyboard, mouse, and low-speed input devices
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally)
- SCSI interface
- External 3.5-inch disk interface
- Stereo sound port for external audio amplifier or headphones

#### SOUND GENERATION

- Four-voice sound with 8-bit digital-analog conversion using 22KH sample rate capable of driving stereo headphones or other stereo equipment through the sound jack

#### FAN

- 10 CFM axial, positive pressure cooling

#### CLOCK/CALENDAR

- CMOS custom chip with long-life lithium battery

#### ELECTRICAL REQUIREMENTS

- Line voltage: 120 volts AC, RMS automatically configured (U.S./Japan)  
240 volts AC, RMS automatically configured (International)
- Line frequency: 47 to 63 hertz single phase
- Power consumption: 100 watts maximum

#### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: -40 to 116.6 degrees F
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 15,000 ft (4,772 m)

#### SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 1950 Information Technology Equipment
- CSA (Canadian Standards Assn.) 950 Information Technology Equipment

#### SIZE AND WEIGHT

- Main Unit
  - Height: 13.2 inches (33.6 cm)
  - Width: 9.7 inches (24.6 cm)
  - Depth: 11.2 inches (28.5 cm)
  - Weight: 16 to 17.1 lbs. (7.3 to 7.8 kg) not including internal hard disk
- Apple Keyboard II

- Height: 1.3 inches (3.3 cm)
  - Width: 16.0 inches (40.5 cm)
  - Depth: 5.9 inches (15.1 cm)
  - Weight: 1.96 lbs. (0.89 kg)
- 
- Apple Mouse (ADB)
    - Height: 1.1 inches (2.8 cm)
    - Width: 2.1 inches (5.3 cm)
    - Depth: 3.8 inches (9.7 cm)
    - Weight: 6 oz. (.17 kg)

#### Article Change History

-----

09/10/92 - PRODUCT DISCONTINUED

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Tech Info Library Article Number:6172



# Tech Info Library

## Macintosh LC, IIsi: Keys Take Place of Programmer's Switch

Revised: 7/16/92  
Security: Everyone

Macintosh LC, IIsi: Keys Take Place of Programmer's Switch

=====

Article Created: 16 October 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 14 March 1991

TOPIC -----

This article gives the keystroke combination that takes the place of the programmer's switch on the Macintosh LC and Macintosh IIsi.

DISCUSSION -----

The Macintosh LC and Macintosh IIsi do not have a programmer's switch. Here are the key combinations for the Reset and non-maskable interrupt (NMI) functions:

- Control-Command-Power generates a reset.
- Command-Power generates an NMI.

Note: MacsBug 6.2b1 or later (available from APDA) needs to be installed for the non-maskable interrupt to happen when the Command and Power keys are pressed.

These key combinations are similar to those used in the Apple IIGS.

Copyright 1990, 1991, Apple Computer, Inc.

Tech Info Library Article Number:6173





# Tech Info Library

## 12-inch Mono Display: Specs & Pin Assignments (Discon 10/93)

Revised: 10/21/93  
Security: Everyone

12-inch Mono Display: Specs & Pin Assignments (Discon 10/93)

=====

This article last reviewed: 16 October 1990

TOPIC -----

This article gives the specifications for the Apple Macintosh 12-inch Monochrome Display, along with pin assignments for the input signal jack.

DISCUSSION -----

|                              |                                                                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Picture Tube                 | 12-inch (30.5 cm) diagonal<br>Combination phosphor EIA Type P104 and P193 (white)<br>High-contrast antiglare                                                                       |
| Input Signal                 | Video: RS-343 standard<br>Sync: Separate sync, negative<br>going, TTL                                                                                                              |
| User Controls                | Power Switch (back panel)<br>Brightness, with detent reference (right side)<br>Contrast (right side)                                                                               |
| Scanning Frequencies         | Macintosh II mode:<br>Horizontal 35.0 kHz<br>Vertical 66.7 Hz<br>Dot Clock 30.24 MHz<br><br>Macintosh LC mode:<br>Horizontal 34.975 kHz<br>Vertical 66.7 Hz<br>Dot Clock 31.91 MHz |
| Resolution                   | 640 (H) dots by 480 (V) lines                                                                                                                                                      |
| Active Video<br>Display Area | Adjusted at the factory to produce an<br>active video area of 8.35-inch (212 mm) horizontal<br>by 6.26-inch (159 mm) vertical. The remainder of                                    |

the screen is used for the dark border around  
the display.

|                                  |                                                                                                                                                       |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Size                             | Height: 12.2 inches (31.0 cm)<br>Width: 14.4 inches (36.5 cm)<br>Depth: 10.2 inches (25.9 cm)                                                         |
| Weight                           | 16 lbs (7.3 kg)                                                                                                                                       |
| Power Requirements               | 30 watts maximum, all line conditions                                                                                                                 |
| Input Voltage                    | Operating range 90 to 132 and 190 to 270 Vrms,<br>Frequency 50-60 Hz                                                                                  |
| Operating Ambient<br>Temperature | 50 degrees F to 104 degrees F<br>(10 degrees C to 40 degrees C)                                                                                       |
| Operating Humidity               | 95% maximum, non-condensing                                                                                                                           |
| Operating Altitude               | 10,000 feet (3,000 m) maximum                                                                                                                         |
| Fuse Protection                  | The monitor contains internal power line<br>fuse protection. This fuse should be<br>replaced with the same type by a qualified<br>service technician. |

#### DB-15 Style Connector Pin-outs

| Pin   | Function                   |
|-------|----------------------------|
| 1     | (not used)                 |
| 2     | (not used)                 |
| 3     | Composite H and V TTL sync |
| 4     | ID bit 1 - Grounded        |
| 5     | B/W Video                  |
| 6     | B/W Video return           |
| 7     | ID bit 2 - open            |
| 8     | (not used)                 |
| 9     | (not used)                 |
| 10    | ID bit 3 - open            |
| 11    | Csync return               |
| 12    | (not used)                 |
| 13    | (not used)                 |
| 14    | (not used)                 |
| 15    | (not used)                 |
| Shell | Shield ground              |

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Tech Info Library Article Number:6174



# Tech Info Library

## Apple Macintosh 12-inch RGB Display: Specs and Pin Assignments

Revised: 12/12/91  
Security: Everyone

Apple Macintosh 12-inch RGB Display: Specs and Pin Assignments

=====

Article Created: 16 October 1990  
Article Last Reviewed: 10 April 1991  
Article Last Updated: 10 April 1991

TOPIC -----

This article gives the specifications for the U.S. Apple Macintosh 12-inch RGB Display, introduced 15 October 1990, along with the pin assignments for the input signal jack.

DISCUSSION -----

|                      |                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Picture Tube         | 12-inch (30.5 cm) diagonal<br>Phosphor EIA Type P22 (aluminized)<br>High-contrast antiglare (international versions only)<br>Shadow mask |
| Input Signal         | Video: RS-343 standard<br>Sync: Separate sync, negative going, TTL                                                                       |
| User Controls        | Power Switch (back panel)<br>Brightness, with detent reference (right side)<br>Contrast (right side)                                     |
| Scanning Frequencies | Horizontal 24.48 kHz<br>Vertical 60.15 Hz<br>Dot Clock 30.24 MHz                                                                         |
| Resolution           | 512 (H) dots by 384 (V) lines - Macintosh II<br>560 (H) dots by 384 (V) lines - Mac LC w/ Apple IIe Card                                 |
| Active Video         | Adjusted at the factory to produce an                                                                                                    |

|                               |                                                                                                                                                                |                       |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Display Area                  | active video area of 8.08-inch (205 mm) horizontal by 6.02-inch (153 mm) vertical. The remainder of the screen is used for the dark border around the display. |                       |
| Size                          | Height:                                                                                                                                                        | 12.2 inches (31.0 cm) |
|                               | Width:                                                                                                                                                         | 14.4 inches (36.5 cm) |
|                               | Depth:                                                                                                                                                         | 10.2 inches (25.9 cm) |
| Weight                        | 24 lbs (10.8 kg)                                                                                                                                               |                       |
| Power Requirements            | 90 watts maximum                                                                                                                                               |                       |
| Input Voltage                 | Operating range                                                                                                                                                | 100 to 120 volts      |
|                               | Frequency                                                                                                                                                      | 50-60 Hz              |
| Operating Ambient Temperature | 50 degrees F to 104 degrees F<br>(10 degrees C to 40 degrees C)                                                                                                |                       |
| Operating Humidity            | 95% maximum, non-condensing                                                                                                                                    |                       |
| Operating Altitude            | 10,000 feet (3,000 m) maximum                                                                                                                                  |                       |
| Fuse Protection               | The monitor contains internal power line fuse protection. This fuse should be replaced with the same type by a qualified service technician.                   |                       |

DB-15 style connector

| Pin   | Function                   |
|-------|----------------------------|
| 1     | Red video return           |
| 2     | Red video                  |
| 3     | Composite H and V TTL sync |
| 4     | Sense ID #1 - Grounded     |
| 5     | Green video                |
| 6     | Green video return         |
| 7     | Sense ID #2 - Open         |
| 8     | (not used)                 |
| 9     | Blue video                 |
| 10    | Sense ID #3 - Grounded     |
| 11    | Csync return               |
| 12    | (not used)                 |
| 13    | Blue video return          |
| 14    | (not used)                 |
| 15    | (not used)                 |
| Shell | Shield ground              |

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# Tech Info Library

## Macintosh Classic: RAM Upgrades and 1MB Memory Expansion Card

Revised: 6/18/92  
Security: Everyone

Macintosh Classic: RAM Upgrades and 1MB Memory Expansion Card

Article Created: 16 October 1990  
Article Last Reviewed: 16 June 1992  
Article Last Updated:

TOPIC -----

How do I upgrade the RAM in my Macintosh Classic? What are the possible configurations and do I have to use the 1MB Memory Expansion Card?

DISCUSSION -----

With the Macintosh Classic, Apple introduced a new memory expansion module called the Macintosh Classic 1MB Memory Expansion Card. This card is necessary to add additional RAM to a Macintosh Classic. A 2MB Macintosh Classic comes with this card installed.

Apple's memory expansion card has 1MB of memory soldered on. In addition, it carries two SIMM sockets to allow expansion with 150ns (or faster) 256K or 1MB SIMM strips (Macintosh Plus or Macintosh SE SIMMs or better). Both SIMMs must be populated at the same time with the same size RAM SIMMs in both sockets. Either low- or high-profile SIMMs can be used. A jumper must be changed if the SIMM sockets are used. You cannot use 4MB RAM SIMMs.

The following are valid memory configurations:

- 1 MB - Using 1MB on main logic board (MLB) only
- 2 MB - 1MB on MLB plus 1MB memory expansion card with no SIMMs
- 2.5 MB - 1MB on MLB plus 1MB memory expansion card with two 256K SIMMs
- 4 MB - 1MB on MLB plus a 1MB memory expansion card with two 1MB SIMMs

As with the Macintosh Plus and SE, the Classic's system memory can be extended only to 4MB. In the memory map, after the 4MB RAM space, there is the system ROM.

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Tech Info Library Article Number:6176



# Tech Info Library

## Macintosh LC: Expansion Slot

Revised: 7/23/92  
Security: Everyone

Macintosh LC: Expansion Slot

=====  
Article Created: 16 October 1990  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

This article is about the Macintosh LC's PDS (processor-direct slot) expansion slot.

DISCUSSION -----

You can expand the Macintosh LC via a 96-pin expansion connector located on the main logic board. This is Apple's first 68020 PDS, requiring a new slot definition. Expansion cards will be approximately 3-inches by 7-inches in size and will lie horizontally above the logic board within the Macintosh LC. An opening in the back of the Macintosh LC accommodates a connector the size of a DB-15. The expansion connector is supplied with the following voltages, and must be limited to the following current load:

| Voltage | Current |
|---------|---------|
| -----   | -----   |
| +5      | 800 mA  |
| -5      | 20 mA   |
| +12     | 200 mA  |

Power limitations allow dissipation of no more than 4 watts, all of which can be taken from +5, or from any combination of the three voltages -- but the total cannot exceed 4 watts.

Here are the pinouts for the Macintosh LC PDS connector for columns A, B, and C:

A1 - Sound  
A2 - /SLOTIRQ  
A3 - /AS

A4 - /DSACK1  
A5 - /HALT 68020 Halt  
A6 - FC2  
A7 - FC0  
A8 - /RMC  
A9 - D31 Data bit 31  
A10 - D28 Data bit 28  
A11 - D25 Data bit 25  
A12 - D22 Data bit 22  
A13 - D19 Data bit 19  
A14 - D16 Data bit 16  
A15 - D13 Data bit 13  
A16 - D10 Data bit 10  
A17 - /BGACK  
A18 - A1 address bit 1  
A19 - A26 address bit 26  
A20 - A23 address bit 23  
A21 - A20 address bit 20  
A22 - /  
A23 - D2 Data bit 2  
A24 - D1 Data bit 1  
A25 - A4 address bit 4  
A26 - A6 address bit 6  
A27 - A11 address bit 11  
A28 - A9 address bit 9  
A29 - A16 address bit 16  
A30 - A18 address bit 18  
A31 - FAN  
A32 - +12V

B1 - Analog Ground  
B2 - R/W  
B3 - +5V  
B4 - +5V  
B5 - SIZ1  
B6 - Ground  
B7 - C16M  
B8 - Ground  
B9 - D30 Data bit 30  
B10 - D27 Data bit 27  
B11 - D24 Data bit 24  
B12 - D21 Data bit 21  
B13 - D18 Data bit 18  
B14 - D15 Data bit 15  
B15 - D12 Data bit 12  
B16 - D9 Data bit 9  
B17 - /BR  
B18 - A31 address bit 31  
B19 - A25 address bit 25  
B20 - A22 address bit 22  
B21 - /IPL2  
B22 - D3 Data bit 3  
B23 - D5 Data bit 5



B24 - D0 Data bit 0  
B25 - A2 address bit 2  
B26 - A12 address bit 12  
B27 - A13 address bit 13  
B28 - A8 address bit 8  
B29 - A15 address bit 15  
B30 - A17 address bit 17  
B31 - A// Clock  
B32 - Ground

C1 - /FPU  
C2 - /DS  
C3 - /BERR  
C4 - /DSACK0  
C5 - SIZ0  
C6 - FC1  
C7 - /RESET  
C8 - /BG  
C9 - D29 Data bit 29  
C10 - D26 Data bit 26  
C11 - D23 Data bit 23  
C12 - D20 Data bit 20  
C13 - D17 Data bit 17  
C14 - D14 Data bit 14  
C15 - D11 Data bit 11  
C16 - D8 Data bit 8  
C17 - A0 address bit 0  
C18 - A27 address bit 27  
C19 - A24 address bit 24  
C20 - A21 address bit 21  
C21 - /IPL1  
C22 - D4 Data bit 4  
C23 - D6 Data bit 6  
C24 - D7 Data bit 7  
C25 - A3 address bit 3  
C26 - A5 address bit 5  
C27 - A7 address bit 7  
C28 - A10 address bit 10  
C29 - A14 address bit 14  
C30 - A19 address bit 19  
C31 - FC3  
C32 - -5V

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Tech Info Library Article Number:6177



# Tech Info Library

## Macintosh LC: Specifications (Discontinued 3/92)

Revised: 9/27/93  
Security: Everyone

Macintosh LC: Specifications (Discontinued 3/92)

Article Created: 16 October 1990  
Article Last Reviewed: 23 July 1992

TOPIC -----

This article gives technical specifications for the Macintosh LC.

DISCUSSION -----

### MICROPROCESSOR

- 16 MHz MC68020 CPU

### MEMORY

- 2, 4, or 10 MB RAM (Random Access Memory)  
100 nanosecond DRAM
- 512 Kbytes of ROM (Read-Only Memory)
- 256 bytes of settable parameter memory

### KEYBOARD

- Apple Keyboard or Apple Extended Keyboard can be connected through the Apple Desktop Bus port

### MOUSE

- Apple Desktop Bus (ADB) Mouse, mechanical tracking, optical shaft or contact encoding 100 +/- 10 pulses per inch (3.94 +/- 0.39 pulse per mm) of travel.

### DISK DRIVE

- One 1.4 MB high-density (Apple SuperDrive) internal drive. Two internal, floppy drives are supported. The unit ships with the Apple SuperDrive, but the logic board also supports an 800K drive.

### HARD DISK DRIVE

- 3.5-inch 40MB hard drive configuration is available.

### INTERFACES

- One Apple Desktop Bus (ADB) connector for keyboard, mouse, and low-speed input devices.
- Internal 020 Direct Slot through a 96-pin Euro-DIN connector.
- Two RS-232/RS-422 serial ports, 230.4K baud maximum (up to 0.920 Mbit per second if clocked externally).
- Built-In Video DB-15 pin connector, supporting the following monitors:
  - + Apple High-Resolution Monochrome Monitor at 2, 4, 16 and 256\* grays
  - + Apple Macintosh 12" Monochrome Monitor at 2, 4, 16 and 256\* grays
  - + AppleColor High-Resolution RGB Monitor at 2, 4, 16 and 256\* colors/grays
  - + Apple Macintosh 12" RGB Monitor at 2, 4, 16 and 256 colors/grays
    - \* requires 512K VRAM upgrade
- SCSI interface
- Monophonic sound port for external audio amplifier
- Sound input port for monaural sound input

#### SOUND INPUT

- Monaural 8-bit sound
- Sound samples can be made at 22 or 11 kilohertz
- Macintosh Audio Compression Expansion (MACE) sound utility, supporting 3:1 or 6:1 compression, which allows approximately half an hour of sound to stored on a single 40-megabyte hard disk.

#### SOUND GENERATION

- Monophonic 8-bit digital-analog conversion using 22-kilohertz sample rate capable of supplying the same signal to both channels of stereo headphones or other stereo equipment through the sound jack.

#### FAN

- 10 CFM axial

#### MICROPHONE

Omnidirectional electret microphone

#### ELECTRICAL REQUIREMENTS

- Line voltage: 90 to 240 volts AC, RMS automatically configured
- Line frequency: 47 to 63 hertz single-phase
- Power consumption: 50 watts maximum, not including monitor power

#### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: -40 to 116.6 degrees F
- Relative humidity: 5% to 95% (non-condensing)
- Altitude: 0 to 10,000 ft (0 to 3048 m)

#### SAFETY AND EMI QUALIFICATIONS

- FCC part 15 Class B Computing Devices
- UL 1950 Information Technology Equipment
- CSA (Canadian Standards Assn.) 950 Information Technology Equipment

#### SIZE AND WEIGHT

- Main Unit
  - Height: 3.0 inches (7.7 cm)

- Width: 12.2 inches (31.0 cm)
- Depth: 15.0 inches (38.2 cm)
- Weight: 8.8 lbs. (4.0 kg)
- Apple Keyboard (included)
  - Height: 1.8 inches (44.5 mm)
  - Width: 16.5 inches (418.3 mm)
  - Depth: 5.6 inches (142.0 mm)
  - Weight: 2 lbs. 2 oz. (1 kg)
- Apple Extended Keyboard (not included)
  - Height: 2.3 inches (56.4 mm)
  - Width: 19.1 inches (486 mm)
  - Depth: 7.4 inches (188 mm)
  - Weight: 3 lbs. 10 oz. (1.6 kg)
- Apple Mouse (ADB)
  - Height: 1.1 inches (2.8 cm)
  - Width: 2.1 inches (5.3 cm)
  - Depth: 3.8 inches (9.7 cm)
  - Weight: 6 oz. (.17 kg)

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Tech Info Library Article Number:6178



# Tech Info Library

## Macintosh LC: Video Timing

Revised: 7/23/92  
Security: Everyone

Macintosh LC: Video Timing

Article Created: 16 October 1990  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

This article gives the video timing modes for the Macintosh LC.

DISCUSSION -----

The Macintosh LC supports 3 different timing modes:

- Macintosh 12-inch RGB Display's 512x384
- Macintosh 12-inch RGB Display's 560x384 (generated by Apple IIe card, 4-bit only)
- Macintosh 12-inch Monochrome Display, Macintosh High-Resolution Monochrome, Macintosh High-Resolution RGB (640x480)

In 640x480 mode, Macintosh LC uses the CPU clock (31.3344 MHz) as the pixel clock. This is opposed to the 30.24 MHz clock that is normally specified. This results in 32 extra pixels per scan line. The 640 active pixels are centered in the active video field with 16 black pixels placed on either side. Horizontal and vertical scan rates remain the same. A visual distortion from square pixels will occur, making the pixels 3% too narrow. The Macintosh 12-inch Monochrome display will be able to correct for this distortion, but the current monochrome and RGB monitors will not.

The 560x384x4 Apple IIe mode is selectable only when an Apple IIe card is present. The card is necessary because the 17.234 MHz oscillator required for this video mode is located on the Apple IIe card itself.

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Tech Info Library Article Number:6179



# Tech Info Library

## Old HD-20 and New Macintosh SE/30

Revised: 11/1/90  
Security: Everyone

Old HD-20 and New Macintosh SE/30

=====

This article last reviewed: 31 October 1990

TOPIC -----

What must one do to access a (non-SCSI) HD20 disk drive attached to the disk drive port on the new Macintosh SE/30? I tried placing the old "HD20" file in the System Folder, but it didn't work.

DISCUSSION -----

Using the criteria of "Macintosh SE/30 AND NON-SCSI" search AppleLink's Technical Info library for the article "Macintosh SE/30: Doesn't Work with an Apple Hard Disk 20." The following is more information on this subject:

The (non-SCSI) Hard Disk 20 does not work with the Macintosh SE/30. The Macintosh SE/30 has the same logic board and ROM as the Macintosh IIX, which does not support the Hard Disk 20. Therefore, the code to support the drive is not included in the ROM of the Macintosh SE/30.

There are ways of retrieving the data from a Hard Disk 20 for use on the Macintosh SE/30. First, using a Macintosh Plus or Macintosh SE, transfer the data to another hard disk that the Macintosh SE/30 can read. The necessary equipment and steps to do this are:

To transfer data from a Hard Disk 20 to the internal drive, these items are required:

- Macintosh Plus or Macintosh SE
- Formatted, blank HD20 SC, HD40 SC, or HD80 SC and cables
- System 6.0.3 Tools Disk (included with the Macintosh SE/30)

Once you have the necessary items, follow these steps:

- 1) Hook up the Hard Disk 20 and the HD20 SC, HD40 SC, or HD80 SC to the Macintosh Plus or Macintosh SE.
- 2) Insert the System Tools disk in the internal drive.
- 3) Turn on both drives, wait 10 seconds, and then turn on the computer.
- 4) Use the Find File DA and look for a file called System on the Hard Disk 20.
- 5) There should be one file called System, and it should be located in the System Folder. If there is more than one System file, return to the desktop and trash the other System files on the Hard Disk 20.
- 6) Select all the files and folders on the Hard Disk 20 and any files that may be on the desktop and drag them to the HD20 SC, HD40 SC, or HD80 SC.
- 7) After the copy is finished, hook up the HD20 SC, HD40 SC, or HD80 SC to the Macintosh SE/30.
- 8) Select the files from the HD20 SC, HD40 SC, or HD80 SC and drag them to the internal hard drive. If there is no internal hard drive, drag them to the drive you will be using.
- 9) Update the System files to System 6.0.3 using the Installer Script (located on the System Tools Disk) for the Macintosh SE/30.

Additionally, we have included an INIT Utility that reads the data from the Hard Disk 20 and puts it on the internal hard disk of the Macintosh SE/30. As with all INITs, place it in the System Folder of the startup disk. The Hard Disk 20 will now be visible when you start up with the Hard Disk 20 turned on.

Warning: Do not try to write to the Hard Disk 20. Trying this can result in the loss or corruption of data on the Hard Disk 20.

When the Hard Disk 20 icon is visible, you can drag the files from the Hard Disk 20 onto the internal hard disk of your Macintosh SE/30.

The code for the INIT Utility is not supported by Engineering, and no changes will be made to it. Be very careful when using this Utility and do not distribute it. Once you have copied the Hard Disk 20 to your Macintosh SE/30, be sure to remove this Utility from your System Folder.

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Tech Info Library Article Number:6182



# Tech Info Library

## A/UX 2.0 and Native X11: Frequently Asked Questions (11/95)

Revised: 11/29/95  
Security: Everyone

A/UX 2.0 and Native X11: Frequently Asked Questions (11/95)

=====

Article Created: 8 October 1990  
Article Reviewed/Updated: 28 November 1995

TOPIC -----

This article contains frequently asked questions (FAQ) about A/UX 2.0 and Native X11.

DISCUSSION -----

Question: Can you configure "native" X11 to use an "azerty" keyboard?

Answer: On an "xterm" window, we think that the X client application called "xmodmap", a keyboard modifier utility for X, could be used to alter the X keyboard map and key symbol table. For example, on a standard Apple Macintosh keyboard, to change the capital letter "A" to a capital letter "Q", you would use the command: `xmodmap -e "keycode 20 = A"`.

For more details, please see the xmodmap (1) manual pages.

Question: How can I configure "native" X11 to have a 24-bit display?

Answer: The current distributed Macintosh A/UX "native" X server, which is based on X11R4, supports only 1-bit (monochrome) and 8-bit (8 bits per pixel, 256 colors) displays.

Article Change History:  
28 Nov 1995 - Updated format and added keyword.  
31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6183





# Tech Info Library

## A/UX 2.0: apropos dt

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: "apropos dt"

=====

Article Created: 8 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

"apropos dt" yields nine occurrences of the line "Mon Apr 23 xx:xx:xx PDT 1990". This is a minor annoyance, but why does it happen?

### DISCUSSION -----

The repeated time-stamped "Mon Apr 23 xx:xx:xx PDT 1990" lines displayed with the "apropos dt" command are caused by the /usr/lib/whatis database file. The "apropos dt" displays any line matched with the "dt" string (not case sensitive) from the /usr/lib/whatis file. The workaround to this minor annoyance is to remove these time stamp lines from the /usr/lib/whatis file.

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Tech Info Library Article Number:6184



# Tech Info Library

## A/UX 3.0: Configuring sendmail (10/95)

Revised: 10/16/95  
Security: Everyone

A/UX 3.0: Configuring sendmail (10/95)

Article Created: 8 October 1990  
Article Reviewed/Updated: 16 October 1995

TOPIC -----

I have some problems using mail on TCP/IP with A/UX 3.0.

I can receive messages, but I can't send them. When I use "mailq" to see the messages in the queue, I see: "Deferred: Host Name Lookup Failure" for all messages I tried to send. I haven't modified the mail configuration files. I just wrote the name of the remote host on "/etc/hosts" to use on the mail command. I know the connection works fine on the host supporting A/UX because I can use Telnet, ftp, and so on.

Can you help?

DISCUSSION -----

As shipped, A/UX 3.0 works only with local mail. To get either UUCP or network mail working, you need to reconfigure the /usr/lib/sendmail.cf file. To use the TCP/IP-based (Ethernet) mail, you must have a nameserver running on the network.

NOTE: With A/UX 3.1 these changes are not necessary.

If a fully qualified domain name is the only form of mail address that a user on the computer will generate, modify the file /usr/lib/sendmail.conf/cf/aux.mc so that it contains your Internet domain name. Here is the line to change, as installed from the standard A/UX distribution:

```
define(DOMAIN, 'DDaux.apple.com')
```

Change aux.apple.com to your Internet domain name as specified in the /etc/resolv.conf file.

After modifying aux.mc, enter this sequence of commands to make a new sendmail

configuration file:

```
cd /usr/lib/sendmail.conf/cf
```

```
make aux.cf
```

The result of the make command is a file called aux.cf. Move aux.cf to the configuration filename that sendmail uses, by entering this command:

```
mv aux.cf /usr/lib/sendmail.cf
```

Now startup sendmail by typing:

```
/usr/lib/sendmail -bd -q30m
```

The -bd option causes sendmail to run as a daemon. The -q30m option causes sendmail to process the local mail queue every 30 minutes.

Refer to the A/UX Network System Administration manual chapter on Setting Up Network Mail for further details.

#### Article Change History:

16 Oct 1995 - Changed title to reflect A/UX 3.0, and added A/UX 3.1.

12 Sep 1994 - Updated for A/UX 3.0.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6185



# Tech Info Library

## A/UX: Frequently Asked Questions (11/95)

Revised: 11/28/95  
Security: Everyone

A/UX: Frequently Asked Questions (11/95)

=====

Article Created: 8 October 1990  
Article Reviewed/Updated: 28 November 1995

TOPIC -----

This article contains frequently asked questions (FAQ) about A/UX?

DISCUSSION -----

Question: Do customers get the source code for A/UX and X Windows?

Answer: No, the source code is not included in the normal distribution of A/UX and X Windows System. However, it will be available from APDA on special request when released. As far as we know, the source for the current release of A/UX 3.0 has not been made available to APDA. The information for source won't be listed on the APDA catalog since it is a special request item and it requires lots of "License Agreement Signatures".

Question: Does the TCP/IP implementation follow "Host requirements (RFC 1122 and 1123)"?

Answer: According to A/UX Network Engineering, A/UX 3.0 TCP/IP implementation does follow the RFC 1122 and RFC 1123 (Host requirements).

Question: Does the NFS implementation have the same functionality as SunOS 4?

Answer: The NFS implementation under A/UX runs the same NFS version (protocol release 2.0 and implementation source 3.2) as SunOS 4.0.x does. However, the "mount daemon" feature (which is supported in SunOS 4.0.x) is not included.

Question: Can you give quota restrictions on users over NFS?

Answer: No disk quota on users is implemented under the A/UX Berkeley file

system.

Question: What backup system do you recommend?

Answer: A/UX supports Apple Tape Backup 40SC. You can also use Dantz Retrospect and any backup media they support.

Question: Is the X Window System 11.3 or 11.4 (I have read that some parts are 11.4)?

Answer: The current release of X Window System for A/UX 3.0 is based on 11R4.

Question: Do the GNU products run on A/UX (GNU-EMACs, gcc, g++)?

Answer: We have heard that some people on the network have run GNU products on A/UX.

Question: Do the "cdb" and "adb" debugging programs have the same functionality as "dbx"?

Answer: "cdb" and "xdb" are third-party products. We haven't tried them nor compared their functionality. However, we know that "cdb" is an interactive, source-level debugger for C and assembly-language programs, and it supports programs generated from the C compiler included with A/UX or from third-party compilers that generate Common Object File format symbol tables.

Question: Is the C implementation compliant with ANSI X3J13?

Answer: The A/UX C compiler is not compliant with ANSI X3J13.

Question: Is there a C++ (AT&T Cfront 2.0)?

Answer: Try Oasys's C++.

Question: Is there a Pascal compiler (compliant with the ISO-standard)?

Answer: This is not supported by Apple. Look for third-party solutions.

Question: Is there a Cross assembler for MC68020 systems?

Answer: This is not supported by Apple. Look for third-party solutions.

Question: Is the ADA cross compiler compliant with ANSI-83?

## ..TIL06187-A-UX-Frequently\_Asked\_Questions\_11-95\_(TA44751).pdf

Answer: This is not supported by Apple. Look for third-party solutions.

Question: Is there a system for delaying execution of processes to a later time (some sort of "batch system")?

Answer: The "cron" or "at" under A/UX allows you to schedule tasks for later time.

Question: Are there tools for distributed programming (similar to SUN ONC or Apollo NCA)?

Answer: This is not supported by Apple. Look for third-party solutions.

Article Change History:

28 Nov 1995 - Updated format and added keyword.

02 Sep 1994 - Reviewed. Changed permission to Everyone.

Support Information Services

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Tech Info Library Article Number:6187



# Tech Info Library

## A/UX 2.0: Troubleshooting AppleShare File Server Access Problem

Revised: 11/10/92  
Security: Everyone

A/UX 2.0: Troubleshooting AppleShare File Server Access Problem

Article Created: 8 October 1990

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I have A/UX 2.0 running on a Macintosh IIfx with 5MB RAM and an HD160 SC. I can access the LaserWriters on the network easily from the Chooser and CommandShell, but I'm having a problem accessing the file servers. I am using a LocalTalk-only connection. The file servers appear in the services window on the right side of the Chooser window just as they do while I'm in Macintosh OS, and I can mount those servers while in Macintosh OS.

I noticed that the bottom right area of the Chooser window did not have the normal text/buttons included--"AppleTalk; ON; OFF". When I try to mount the file servers while in A/UX, the system shows the watch cursor and gives this alert message: "No response from server. Please try again."

Can you help?

### DISCUSSION -----

Unfortunately, we can't reproduce this symptom. We are running AppleTalk via a LocalTalk-only connection without any problem. Both printing and AppleShare services work properly.

It sounds strange that you can access the LaserWriter but not the AppleShare server on the AppleTalk network.

When an AppleShare server is selected, the bottom right area of the Chooser window should show an "OK" button and a "User Name" input dialog box. We don't

see the "AppleTalk; ON; OFF" text in the window.

Here are some areas to check:

- Is the server you tried to mount up and running? Did you get the same "No response from server ..." message when you select another server?
- Is the Apple Internet Router running AppleTalk Phase 2?
- Make sure that the default port for AppleTalk via LocalTalk is the printer port (tty1), which must be set with the getty disabled.
- Make sure that the "interface = localtalk0" line in /etc/appletalkrc is set.
- When AppleTalk is shutdown via "appleTalk -d" and you try to bring it up again, the Mac 32 environment needs to be run again to make AppleTalk effective again. This can be done using the "Logout" and "mac32; screenrestore" sequences or by restarting the system.
- Use "appleTalk -s" to see the AppleTalk status.

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Tech Info Library Article Number:6188





# Tech Info Library

## MacX and xgif: Why Color Table Change Causes Slow Display

Revised: 4/20/93  
Security: Everyone

MacX and xgif: Why Color Table Change Causes Slow Display

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Article Created: 8 October 1990

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

Why is MacX so slow when a client changes the color table? The change of a single table entry seems to cause a substantial delay in the displayed pixel and is accompanied by some strange color changes in the current table (for example, color flashes).

What is the problem? Is there a way around this so that the display update is as clean and fast as the stand-alone X11 server?

### DISCUSSION -----

The problem that you are experiencing is most likely due to the way the X client application uses the Color Lookup Map. We have seen a difference between the two versions of the xgif program. The old version of xgif (which uses the default colormap) causes the most slowness. The new version (which uses the colormap routine in the Xlib) behaves much faster. Here are examples of C code used by the two versions of xgif:

Old version:

```
#define DefaultColormap(pty, scr) (((dpy)->screens[(scr)]).cmap)
theCmap = DefaultColormap(theDisp, theScreen);
```

New version:

```
theCmap = XCreateColormap(theDisp, rootW, theVisual, AllocNone);
```

We also experienced similar effects (color flashing and/or changing) on the

Native X11 server.

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Tech Info Library Article Number:6189



# Tech Info Library

## Apple GS/OS Error Messages: Where to Find Explanations

Revised: 10/29/90  
Security: Everyone

Apple GS/OS Error Messages: Where to Find Explanations

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This article last reviewed: 8 October 1990

TOPIC -----

I am trying to copy files from an Apple IIGS to an Apple HD40 SC. The Apple IIGS consistently returns the error message 8020. I cannot find this error message anywhere.

- 1) What is the error message?
- 2) Where can I find a definitive article on GS/OS error messages?

DISCUSSION -----

- 1) The error description is "invalid request." The programmer's constant is "DrvrbadReq". Since the error number is 8020 instead of 0020, the error is coming from the Finder, not directly from GS/OS. An error code directly from GS/OS would be in the format of "00xx". An error code passing through the Finder has the high bit set and produces a format of "80xx". Where "xx" is the actual error code.
- 2) Both Volume 1 and Volume 2 of the "GS/OS Reference" has an Appendix E containing the GS/OS error codes and the message related to that code. The individual system call description indicates which GS/OS errors that call may return. System Loader error messages are given within the System Loader call description section.

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Tech Info Library Article Number:6190



# Tech Info Library

## Apple IIGS: Does Not Output Serial Data to Printer Problem/Cure

Revised: 10/29/90  
Security: Everyone

Apple IIGS: Does Not Output Serial Data to Printer Problem/Cure

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This article last reviewed: 25 October 1990

Problem: Printer does not print when properly configured with an Apple IIGS and connected to the built-in serial port.

Before you start:

- Familiarize yourself with Apple IIGS technical procedures
- Perform diagnostics per technical procedures

Perform the following in the event that diagnostics did not yield a serial port failure:

Cure 1: A problem might exist with printer switch settings or Apple IIGS Control Panel settings.

Action: Check DIP switch settings on printer and built-in control settings on the computer (see note 1). Reconfigure switches and/or control settings in the computer. Test the system by printing a file to the printer.

Cure 2: A problem might exist with the serial port circuitry that is not being detected by performing diagnostics.

Action: Remove and replace the logic board with a known-good exchange module. Test by printing a file to the printer.

Note 1: The Apple IIGS Control Panel settings can be reset to their defaults by holding down the Ctrl - Command (Open Apple) keys and then pressing the reset key. When the menu appears, select option #2, which says, "Set system standards and 60Hz". The system then automatically re-boots.

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Tech Info Library Article Number:6192



# Tech Info Library

## 800K Eject INIT: Not Needed with 400K Drives

Revised: 4/18/91  
Security: Everyone

800K Eject INIT: Not Needed with 400K Drives

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This article last reviewed: 9 October 1990

TOPIC -----

Does the Apple 800K Eject INIT "park" 400K drives?

DISCUSSION -----

The 800K Eject INIT does not need to "park" the head of a 400K drive. The problem this patch is intended to fix occurs only with the upper head assembly when the disk shutter catches on the upper head as the disk lifts and ejects. Because the 400K drive has only a lower head assembly, there is no danger, and it isn't necessary to park its head. This also holds true for the patch included in System Software 6.0.4 and later Systems. The heads of 400K drives are not parked.

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Tech Info Library Article Number:6193



# Tech Info Library

## A/UX 2.0: E-Machines ROM Upgrade for T19/24 Card

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: E-Machines ROM Upgrade for T19/24 Card

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Article Created: 29 October 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

What do I need to do to make my E-Machines T19/24 card work with A/UX 2.0?

### DISCUSSION -----

E-Machines reports that they have a ROM upgrade for their T19/24 card that makes it work with A/UX 2.0.

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Tech Info Library Article Number:6194



# Tech Info Library

## HyperSpeller XCMD Available for HyperCard

Revised: 10/29/90  
Security: Everyone

HyperSpeller XCMD Available for HyperCard

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This article last reviewed: 9 October 1990

TOPIC -----

Do you know of any spell checkers that work with HyperCard?

DISCUSSION -----

HyperSpeller by Foundation Publishing is a utility that adds spell-checking and search/replace capabilities to HyperCard. HyperSpeller is implemented as two external commands (XCMDs): SpellCheck and FindChange. An installer application places the externals in the Home stack. After installation, SpellCheck and FindChange commands can be issued from HyperCard's message box or a HyperTalk script. The HyperSpeller dictionary file is approximately 164K. It must reside in the System Folder or the same folder as HyperCard.

The user can specify the checking range. For example, "SpellCheck" for the entire stack, "SpellCheck 30" for card 30 on, and "SpellCheck 12,12" for card 12 only. The dialog box clearly states where the suspect word is found. The user can then ask for suggestions, click on the Learn button, or Skip the word to ignore it. A small text box in the dialog shows a limited amount of the context in which the suspect word is found. For users with small monitors, the spelling dialog box can be "zoomed" smaller or larger, allowing the HyperCard card to be more visible.

The FindChange feature gives search and replace capabilities to HyperCard. The Find/Change dialog allows the user to specify "whole word", "match case", "change all", and "Change, then Find". As with the SpellCheck dialog, there is a zoom box that makes the dialog smaller or larger.

For more details, search the Technical Info library under "Foundation Publishing".

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# Tech Info Library

## LW IINTX ROM Upgrade: Wrong Font Utility Shipped

Revised: 10/29/90  
Security: Everyone

LW IINTX ROM Upgrade: Wrong Font Utility Shipped

=====

This article last reviewed: 9 October 1990

TOPIC -----

My LaserWriter IINTX ROM Upgrade Kits has version 1.0 of the LaserWriter Font Utility. Shouldn't I have gotten version 2.0?

DISCUSSION -----

Many of the LaserWriter IINTX ROM Upgrade Kits have been shipped with version 1.0 of the LaserWriter Font Utility. They should have included version 2.0. This is a known problem in the build process. Currently shipping units should have version 2.0. However, if you received the wrong version, version 2.0 is available on AppleLink in the Apple Software Updates board. Use this path:

Apple Software Updates  
  Macintosh  
    Peripheral System Software  
      Apple LaserWriters  
      Personal LaserWriter NT  
      Installation Disk  
      Other

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Tech Info Library Article Number:6196



# Tech Info Library

## Data Access Language (DAL) Server Compatibility

Revised: 6/30/92  
Security: Everyone

Data Access Language (DAL) Server Compatibility

=====

Article Created: 29 October 1990  
Article Last Reviewed: 30 June 1992  
Article Last Updated:

TOPIC -----

Are versions 1.1 and 1.2 of the CL/1 Server for VMS compatible with AppleTalk for VMS 3.0?

DISCUSSION -----

The existing versions of the CL/1 Server for VMS are 1.0 and 1.1, which are compatible only with AT VMS 2.0, 2.0.5, 2.0.6, and 2.1; not 3.0.

The Data Access Language Server for VMS version 1.2 is shipping as part of DEC PATHWORKS (formerly LanWORKS) for Macintosh, which includes AppleTalk for VMS 3.0. If purchased separately, DAL 1.2 is supported under ATVMS 3.0 OR any one of 2.0, 2.0.5, and 2.0.6 (but not 2.1).

Please note that the DAL Client requires a DAL Server. It will not connect successfully to an existing CL/1 Server, and a CL/1 Client will not work with a DAL Server. DAL Server/Client 1.2 will replace existing CL/1 Server/Client 1.1. The released version of PATHWORKS for Macintosh includes DAL Server/Client 1.2.

PATHWORKS for Macintosh (including AppleTalk for VMS 3.0) has been shipping since early autumn 1990 as has DAL Server/Client 1.2.

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Tech Info Library Article Number:6198



# Tech Info Library

## Macintosh-to-Tandem Connectivity: Distributed Sessions

Revised: 10/29/90  
Security: Everyone

Macintosh-to-Tandem Connectivity: Distributed Sessions

=====

This article last reviewed: 9 October 1990

TOPIC -----

I need a gateway product to give networked Macintosh computers access to Tandem computers. Essentially, I am looking for a NetWay 2000-type product for Tandem computers.

DISCUSSION -----

For terminal emulation, TCP/IP and Telnet are available from Tandem. MacMenlo, from Menlo Business Systems, won't work over TCP/IP, but you can do TTY with TCP/Connect, from Intercon, or even with NCSA's Telnet.

For message passing, we suggest, in addition to TCP/IP, a MacX25 Server. This works relatively well.

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Tech Info Library Article Number:6199



# Tech Info Library

## Macintosh-to-Sun/UNIX File Transfer

Revised: 10/30/90  
Security: Everyone

Macintosh-to-Sun/UNIX File Transfer

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This article last reviewed: 9 October 1990

TOPIC -----

We have a high-end Crossfield Studio color scanner/separation system that I am expanding to provide for a Macintosh front-end. We recommended a Macintosh IIx with an Ethernet NuBus card and K-AShare file server software to communicate with a Sun SPARCstation (K-AShare is AFP-compatible file server software for UNIX hosts and is sold by Mt. Xinu.)

The reason for the Sun is that the RIP software (StudioLink 2.0) runs only in a UNIX environment. The purpose of the RIP software is to translate the PostScript files from the Macintosh into a native bitmap file that the Crossfield Studio system can understand.

The proposed functionality of the Macintosh-to-Sun link is to provide file transfer to and from the Sun. Once a file is transferred to the Sun, it's archived on a hard disk for eventual processing by the Crossfield system. The Crossfield system is configured around a PDP mini-computer running RSX 11M Version 4.2 operating system. For tying the Sun and PDP systems together, both Digital and Crossfield recommended using DECnet over Ethernet.

Should we have DECnet connecting the Macintosh to the Sun? Is the use of K-AShare an appropriate choice, or is there a better way to connect a Macintosh to a UNIX machine for file transfer capability?

DISCUSSION -----

You should be able to do file transfer between the Macintosh and the Sun using either TCP/IP, DECnet, or the K-Ashare product.

The native networking protocol on the Sun platform is TCP/IP, so you can run MacTCP to communicate between the Macintosh and the Sun.

There are products like TSSnet that allow DECnet on the Macintosh. Sun does provide DECnet on their machines, but we believe you have to pay extra for it.

There should be no compatibility problems for the Sun running all these protocols, because they can share the same Ethernet.

More importantly, there are two things you should take into consideration:

- 1) Select the product that provides the easiest way for the Macintosh users to transfer files to the Sun. With an AFP-compatible file server, the Macintosh users can just drag the file to the server icon. Using TCP/IP or DECnet, they would need to learn FTP or DECnet COPY, which are not too complicated, but less Macintosh-like.
- 2) Once the file is transferred to the Sun, can the StudioLink/Crossfield system process the file without any problems? Remember a Macintosh file has a resource fork and a data fork. A minicomputer-based AFP-compatible server stores these as two separate files. Some tests should be done to ensure that the data fork portion file can be processed by the StudioLink/Crossfield system. Also, test to ensure that, if the file needs to be accessed by the Macintosh users afterwards, this can be done.

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Tech Info Library Article Number:6200



# Tech Info Library

## Data Access Language (DAL) Developer Issues

Revised: 7/21/92  
Security: Everyone

Data Access Language (DAL) Developer Issues

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Article Created: 30 October 1990  
Article Last Reviewed: 29 June 1992  
Article Last Udated:

TOPIC -----

We have some questions about the use of Data Access Language (DAL).

- 1) DAL can be ordered from APDA. Does this mean that there will be considerable development work needed when using DAL in the scheme of database access?
- 2) Using ClearAccess, how much programming and level of knowledge is needed to access Rdb on the VAX system? What utilities or "hooks" are available from DAL that will let me access Rdb via ClearAccess? Do I need to know DAL well before I can use ClearAccess to access the Rdb database?
- 3) Can our resellers just sell DAL like they do with other applications (like EtherTalk NB Cards, or TokenTalk NB Cards, and so on)? From what I understand, it seems that DAL is a useful tool only if the person using DAL really understands database systems and using DAL utilities to extract and update the information.
- 4) This pertains to using DAL. If I have a 4th Dimension flat file, and I want to send it to the Rdb database to have it stored as an Rdb record, what must I do and what is the prerequisite (knowledge or software/hardware requirements) before I can do this transfer? Do I, for example, need to convert this 4th Dimension file into an Rdb-readable format for it to update the Rdb record?

DISCUSSION -----

- 1) Yes, Data Access Language is a development language, and development work is involved to link desktop applications to data processing systems on mainframes and minis. However, for commercial and

custom developers, Data Access Language lowers barriers to entry for them. Thus, products and custom solutions can be developed faster/easier because less detailed technical knowledge is required.

Data Access Language is often described as a standard connectivity language that links desktop applications to host data. It is more than just a language; it is really a group of carefully inter-related elements. The elements are the Language, the API, and the Development Aids. Often, the user wants access to different systems without having to worry about protocols, systems, or anything else. Relational databases are becoming more popular because of their ease of use, ease of administration, and application independence. SQL language emerges as a convention for data access language adopted by relational database vendors. SQL, however, is still not a standard. DAL lets software developers create desktop applications with seamless connectivity to DP data and applications without leaving the desktop world. It handles physical network specifics, insulates the desktop application from the operating system, RDBMS, and SQL specifics.

- 2) The ClearAccess DAL interface provides a series of dialog boxes that let users build queries by pointing and clicking. Users do not need familiarity with all the details of DAL or SQL. End users without knowledge of programming and SQL can access the databases via the dialog boxes, which build the SQL statements for them. The amount of knowledge required really depends on how complex the database access is going to be. A background in relational databases would also help.
- 3) Again, it really depends on the solutions. For simple ad-hoc queries and databases updates, DAL with a HyperCard or ClearAccess interface will let end users do the job without a lot of training. For complex, customized business applications that need to take advantage of the Macintosh interface, some serious planning and design should be done. Large companies with an in-house MIS programming staff should be able to do this task.
- 4) You can tell 4th Dimension to export this file with certain delimiters, transfer the file to the VAX, and import it into Rdb. This can be done without using DAL. You must be familiar with the export capabilities of 4th Dimension, know how to transfer the file to the VAX, and know how to import it into VAX/Rdb.

If this is going to be done by end users on a routine basis, please note that DAL provides 4th Dimension External procedures that let 4th Dimension applications act like CL/1 clients and create distributed applications on the Macintosh. You must know how to program 4th Dimension External procedures to export the data to the DAL server on the VAX host. You should also know how to install the DAL software on both the VAX and the Macintosh and the standard network connection between the Macintosh and VAX host.

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Tech Info Library Article Number:6201



# Tech Info Library

## AppleTalk Phase 2: SNAP Encapsulation with OUI=0

Revised: 10/30/90  
Security: Everyone

AppleTalk Phase 2: SNAP Encapsulation with OUI=0

=====

This article last reviewed: 9 October 1990

TOPIC -----

My problem is that the AppleTalk Phase 2 ARP uses a SNAP encapsulation with an OUI=0 ("Organizational Unique Identifier"). Because Translating FDDI/Ethernet bridges use this OUI to pass Ethernet 2 packets to FDDI and back, an AppleTalk ARP gets converted to an Ethernet 2 packet when passed from FDDI to Ethernet. This packet format is not accepted by Apple host implementations. Therefore, it's not possible to use AppleTalk Phase 2 with FDDI with translating bridges between two AppleTalk hosts.

We need a solution.

DISCUSSION -----

The all-zeros "Organizational Unique Identifier" (OUI) was not specifically intended to be used for translating Ethernet frames to 802.2/SNAP. Its original intent was (and is) not completely clear; all that was generally agreed upon was:

- 1) The low-order 16 bits of the SNAP protocol discriminator indicated an Ethernet protocol type.
- 2) The format of the data part of the SNAP packet was the same as the format of the data part of the Ethernet packet of this protocol type.

This "general agreement," as far as we know, was never written down. AppleTalk Phase 2 and TCP/IP both adopted this convention. The unfortunate difference is that, on an Ethernet/802.3 data link, AppleTalk Phase 2 runs on top of 802.3 (and 802.2) and TCP/IP runs on top of Ethernet. Thus, for a TCP/IP Ethernet node to communicate with a TCP/IP 802.2 node (on Token Ring or FDDI, for example), some type of packet translation must be done. On the other hand, for an AppleTalk Phase 2 Ethernet node to communicate with any other AppleTalk Phase 2 802.2 node (on Ethernet, Token Ring, or FDDI), no such translation is



necessary (in fact, such translation MUST NOT occur).

This makes it somewhat difficult to build a bridge that "transparently" allows both forms of communication. However, all that really has to be done is for the bridge to contain a small table of Ethernet protocol types that either should, or shouldn't, be translated in this manner. Obviously, the smaller the table, and the less translation done, the better the overall performance. Any bridge between Ethernet and an 802 media that does not translate any OUI zero packets will prevent TCP/IP nodes (and any others using the same OUI convention) from communicating between the two media. Any bridge between Ethernet and an 802 media that translates all OUI zero packets will prevent AppleTalk nodes (and any others with an OUI of zero that don't expect translation) from communicating between the two media. In both cases, routers can, of course, be set up to accomplish the communication.

A somewhat equivalent problem could exist if two bridges are used to connect two Ethernet/802.3 data links across an 802 backbone (say, FDDI). In this case, some type of translation/encapsulation of Ethernet (non-802.3) packets must be performed to allow them to be passed across the 802 backbone. There are many ways to do this, one of which seems to be translating all Ethernet packets to OUI zero packets, shipping them across the backbone, and then converting them back. This, however, does not work for any OUI zero packets that start out on the Ethernet/802.3 data link. Such packets will not be translated on the way into the backbone, but will be incorrectly translated before being delivered on the destination Ethernet. Such packets should be forwarded entirely without translation.

In terms of actual product implementations, unfortunately, DEC is already testing an Ethernet-to-FDDI bridge that translates all OUI zero packets and, thus, does not work with AppleTalk Phase 2. They are aware of this issue. At the recent 802 meetings in Denver, it became clear that this type of translation is not part of the 802.1d (Macintosh Bridging) standard, but is something that many bridge manufacturers want to include as a non-802-standard option with their products. Most have said that they will have some type of translation (or non-translation) table to ensure that it works with all known protocols.

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Tech Info Library Article Number:6202



# Tech Info Library

## Serial Line Interface Protocol (SLIP) and MacTCP

Revised: 11/1/90  
Security: Everyone

Serial Line Interface Protocol (SLIP) and MacTCP

=====

This article last reviewed: 9 October 1990

TOPIC -----

I heard that Apple supports SLIP (Serial Line Interface Protocol) added on to MacTCP. Could you explain SLIP? Will MacTCP (future versions) support SLIP?

DISCUSSION -----

SLIP is an asynchronous, serial line protocol developed for running TCP/IP over serial communications lines in a point-to-point configuration. SLIP was developed to transmit IP packets over low-speed, sometimes noisy, asynchronous communications lines where error recovery and an efficient line protocol are needed. The SLIP protocol is now being replaced with a new serial line protocol named "PPP", which uses a more efficient means of establishing a point-to-point IP connection.

MacTCP 1.0.2 includes hooks that let third-party developers write different link-layer modules. This makes possible the development of interfaces to SLIP, PPP, and to any other link layer that someone may need, like broadband, X.25, FDDI, and so on. Apple does not provide support in MacTCP for SLIP or any other serial line protocol; these have to come from third-party developers.

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Tech Info Library Article Number:6203



# Tech Info Library

## A/UX 2.0: Display Card 8/24 in a Macintosh IIfx

Revised: 11/10/92  
Security: Everyone

A/UX 2.0: Display Card 8/24 in a Macintosh IIfx

=====

Article Created: 31 October 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I thought that the Display Card 8/24 supported the Two-Page Monochrome Monitor under A/UX 2.0, provided you use 1-bit mode. But I have an installation where this did not work. The system was a Macintosh IIfx (upgraded from a Macintosh II). A/UX was supplied as an official released seed version of 2.0. Knowing that there were some early beta cards that would not work, I checked the card. It was clearly labeled "trident" and was ordered through regular channels (no indication of being beta).

After a clean installation, the machine would freeze with a blank screen during the startup process. It appeared to go through A/UX loading, but froze when it was building the Macintosh side. After swapping the card and monitor with a regular color monitor and card, things started up fine.

Can you explain?

### DISCUSSION -----

It is not always true that the Display Card 8/24 and a Two-Page Monochrome Monitor work under A/UX 2.0 on a Macintosh IIfx set to 1-bit mode. We tested a Macintosh IIfx, running A/UX 2.0, with a Display Card 8/24 and a Two-Page Monochrome Monitor:

We did a cold start (power-off, then power-on) in 1-bit mode. A/UX 2.0 didn't start up and froze during the startup process. However, if the interrupt button (on the right side of Macintosh IIfx) was pressed, A/UX continued the

startup with no problems.

If the Autolaunch command within the #startup shell was modified to have only the "launch" command (without the -s option, load symbol table in the kernel), A/UX 2.0 started up successfully in 1-bit mode.

The Display Card 8/24 and Two-Page Monochrome Monitor seem to start up A/UX 2.0 fine on other Macintosh II machines, including the Macintosh IIx.

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Tech Info Library Article Number:6204



# Tech Info Library

## A/UX: Using dd To Copy Partitions (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: Using "dd" To Copy Partitions (9/94)

Article Created: 9 October 1990  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

One way of copying A/UX disks is to do a "dd" copy of the various partitions. This is particularly useful on large disks, or when a CD-ROM is not available. However, if you do a "dd" copy, the file system is also copied. This may cause problems on drives that do not like the way Apple has fine-tuned the file system for its files (some drives come with their own parameter files for creating file systems--so that the Generic file is not used).

- 1) Is this true?
- 2) Does it make a difference if you specify "rdsk" or "dsk"?
- 3) Are there better ways to install A/UX on large disks (in particular, allowing larger root&usr partitions), like special versions of tar?

DISCUSSION -----

- 1) Yes, "dd" is often used to do an entire image copy from one hard drive to another of the same size. For instance, to copy an Apple HD80 SC to another Apple HD80 SC, use this command:

```
dd if=/dev/dsk/c0d0s31 of=/dev/dsk/c5d0s31 bs=20k
```

It also can copy file system by file system (with the same size). For example, to copy one A/UX root file system to another, do:

```
dd if=/dev/dsk/c0d0s0 of=/dev/dsk/c5d0s0
```

Since it is an imaging copy from one hard drive to another, everything, including partition map and super block information in the file system, is copied to the destination disk or partition. Therefore, size differences are significant. If you "dd" an entire HD80 SC to an HD160

SC, only 80MB is usable on the HD160 SC.

The two hard drives do not necessarily have to be the same brand. For instance, you can copy from an Apple HD80 SC to a third-party 80MB hard drive, or copy the root file system from an A/UX CD-ROM drive to an Apple HD80 SC A/UX root file system.

- 2) There is no particular difference when specifying "dsk" or "rsk"; they give the same result. However, specifying "rdsk" (raw device I/O) seems to be much faster than "dsk" (block device I/O) because, under raw I/O, there is no block transfer size constraint by the file system logical block size--it can transfer many disk blocks per disk operations.
- 3) If the non-standard procedures section in the "A/UX Installation Guide" documentation does not meet your needs, you can install A/UX on large disks with larger Root&Usr partition than the standard size. For instance:

- Initialize and partition the large disk with the desired Root&Usr size. This can be done using the vendor formatter software or the A/UX "dp" utility.

- Make a new root file system. For example:

```
newfs -s size device-file type
```

- Mount the new root file system on a directory. For example:

```
mount /dev/dsk/c5d0s0 /big
```

- Use "cpio" to copy the standard A/UX Root&Usr file system to a new one. For example:

```
find / -depth -print | cpio -pdlmu /big
```

#### Article Change History:

23 Sep 1994 - Reviewed

31 Aug 1992 - REVIEWED For technical accuracy.

Support Information Services

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Tech Info Library Article Number:6205



# Tech Info Library

## DAL: Needs MacDFT 1.1 and MacMainFrame Network Adapter

Revised: 7/27/93  
Security: Everyone

DAL: Needs MacDFT 1.1 and MacMainFrame Network Adapter

=====

Article Created: 31 October 1990  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

I installed DAL (formerly CL/1) for VM/CMS onto an IBM 370. The installation on the host seems okay. I was able to execute the icl1 module on the host. When I tried to connect to the host using a Macintosh, the connection failed. When I tested the connection using cl1 Tester, which comes with the DAL Developer's Toolkit, I got Error -10646. What could have caused this problem?

Here is a list of the hardware and software I used:

- Apple Coax/Twinax cable with MacDFT version 1.0.
- DAL Server for VM/CMS version 1.1
- DAL Developer's Toolkit version 1.1

This is the configuration I used for the host.cl1:

```
vma:3270mac:VMCMS:CUT:A  
vma:login:1:\mRUNNING\slogoff\r\mcontinue\r\mVIRTUAL\svmexit\r:1800:6000:\^x:\M  
login\svm\r\mVIRTUAL\r\muserid\slogon\u\r\mpassword\r\r\w20\n\w20\mReady\n
```

Also, I would like to test the connection with the Avatar MacMainFrame card. I was told that I need the network adapter from DCA (formerly Avatar). What is this network adapter?

DISCUSSION -----

Error -10646 translates to "Cannot Load Network Adapter", the driver associated with the communications board in use. From your description of the problem, the most likely reason for this is that MacDFT 1.1 is required. Update the software, and everything should work as advertised.

The network adapter is DAL driver software, specific to MacMainFrame. It

is available from DCA (formerly Avatar).

As of DAL release 1.2 all DAL releases ship with all the available network adapters. You non longer need to contact the network communications companies for the individual DAL pieces.

Article Change History:

26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates).

7 July 1992 - Updated for technical accuracy.

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Tech Info Library Article Number:6206





# Tech Info Library

## APT Routers Support Device Security Across Zones

Revised: 11/1/90  
Security: Everyone

APT Routers Support Device Security Across Zones

=====

This article last reviewed: 9 October 1990

TOPIC -----

How can I get device security across AppleTalk zones?

DISCUSSION -----

APT has announced an update to their AppleTalk routers. They now support device security across zones. Users can hide a LaserWriter, file server, or shared modem from anyone not in their zone.

Users in different zones can be allowed different sets of access to different devices. For example, Zone A may have no access to your LaserWriter but still have access to a file server, while Zone B has access to all LaserWriters but not AppleTalk ImageWriters or NetModems.

APT routers connect multiple LocalTalk, Ethernet, WAN, and Serial networks, and they support AppleTalk Phase 2.

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Tech Info Library Article Number:6208



# Tech Info Library

## A/UX : Backup and Restore Functions (3/94)

Revised: 3/11/94  
Security: Everyone

A/UX : Backup and Restore Functions (3/94)

=====

Article Created: 16 October 1990  
Article Reviewed/Updated: 11 March 1994

TOPIC -----

Is special software required to back up A/UX drives? If files are restored, does UNIX need to be notified in any way?

DISCUSSION -----

All versions of A/UX come with software utilities, such as "dump.bsd" and "restore", to back up and/or restore A/UX file systems from a disk drive to a tape backup device. Third-party tape drives can be used if they support the tape driver.

You run the "rdump" and "rrestore" utilities to back up and restore a remote UNIX file system to and from the tape drive. Other utilities, like "cpio", "tar", and "dd", can also be used to back up or restore individual file(s) in different formats.

To create a backup:

```
tar cvbf 16 /dev/rmt/tc<#> <filename>
```

where <#> is the SCSI id number of the tape device and <filename> is the name of the directory or file to backup. Or use:

```
dump.bsd 0ubf 16 /dev/rmt/tc<#> /dev/dsk/c0d0s0
```

where <#> is the SCSI id number of the tape device and an entire filesystem is specified.

Note that the tar command uses a filename specification while the dump.bsd command uses a device name specification.

To check what is on a tar backup, you can get a "table of contents" with

```
tar tvf /dev/floppy0  
or  
tar tvf /dev/rmt/tc#
```

where # is the SCSI id of the tape device.

To extract files from a tar backup:

```
cd <dir where you want files to go>  
tar xvf /dev/rmt/tc#
```

When files are restored, they are automatically restored to the original format, depending on the command option(s) used.

For more information on the backup and restore functions, please refer to manual pages `rdump(1M)`, `dump.BSD(1M)`, `restore(1M)`, `rrestore(1M)`, `tar(1)`, `cpio(1)`, and `dd(1)`.

#### Article Change History:

11 Mar 1994 - Removed specific references to A/UX 2.0. This applies to all versions of A/UX. Added specific examples of commands.

Support Information Services

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Tech Info Library Article Number:6209



# Tech Info Library

## A/UX: Optimizing for Current Memory (8/93)

Revised: 8/18/93  
Security: Everyone

A/UX: Optimizing for Current Memory (8/93)

Article Created: 17 October 1990  
Article Reviewed/Updated: 18 August 1993

TOPIC -----

I have an 8MB Macintosh IIcx running A/UX that I want to optimize for performance at that memory configuration. I have read the Tech Info Library article "A/UX: How to Improve File Access Speed", and I have some questions.

If you run a "newconfig" command while under A/UX, will it automatically build a new kernel that is optimized for the current memory in the system? Will "autoconfiguration" at startup time notice that I have more physical memory than the kernel is optimized for and carry out this kconfig command for me?

DISCUSSION -----

Prior to A/UX 3.0 when a "newconfig" command is used to build a new kernel, the file "/newunix" is used as the base for the new kernel. Therefore, the new kernel (/unix) parameter values, like NBUF, NINODE, NFILE, and so on, will be reset to the default from /newunix. To keep the current kernel parameter values when the new kernel is built, use this:

```
# cp /newunix /newunix.orig    #! Save the original newunix
# kconfig -n /unix              #! Modify kernel parameters
# cp /unix /newunix             #! Copy the current kernel to newunix
# newconfig                     #! reconfig the new kernel
```

The new kernel will be built with the current kernel parameters.

If you want to build a new kernel based on the original, the /newunix.orig can be copied back any time. For example, cp /newunix.orig /newunix.

With A/UX 3.0 and higher, the above process is not necessary because the parameter values, like NBUF, NINODE, NFILE, and so on, are kept and become

part of the new kernel.

If there is new hardware (like an EtherTalk NB Card) to be added to the system, A/UX will automatically configure it when A/UX is started up. The file "/newunix" is also used as the base for the new kernel.

Here is a description of booting/launching decision:

When A/UX Startup is launched, by default, it performs:

- AutoRecovery, which checks the root file system with the command:

```
/dev/default
```

If the file system check is successful, do:

- AutoLaunch with the command: launch

The launch command first checks the default kernel against the hardware. Because no kernel is specified on the command line, the contents of file /nextunix, which is /unix, is used by launch. If the kernel matches the hardware, the /unix kernel is used to start up A/UX. If the kernel doesn't match the hardware, the launch command uses the /newunix kernel instead to build the new kernel, and the new kernel is placed on /unix.

Article Change History:

18 Aug 1993 - Updated to include A/UX 3.x, and reviewed for technical accuracy.

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Tech Info Library Article Number:6217



# Tech Info Library

## MacX: MacTCP Configuration Problem

Revised: 4/20/93  
Security: Everyone

MacX: MacTCP Configuration Problem

Article Created: 17 October 1990

### Article Change History

-----  
04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm having a problem setting up MacTCP (to use MacX). I'm trying to run MacX from the Macintosh OS (as opposed to A/UX). I have an Ethernet connection between my Macintosh IIfx and a RISC UNIX box running X/MOTIF over TCP/IP. The entire Ethernet consists of the UNIX box, two TCP/IP X-stations, and three Macintoshes. There are no routers, gateways, Domain name servers, RARP, or BootP servers on the Ethernet. The Macintoshes can talk to each other via EtherTalk just fine. Also, I can see the UNIX box and X-stations communicate by running EtherPeek on one of the Macintoshes.

I installed the Communications Toolbox, moved the MacTCP Tool (that came with MacX) into the "System Folder:Communications Folder", and moved the MacTCP CDEV files into the System Folder. I also followed the advice in the "MacTCP Setup Tips".

I configured MacTCP (the CDEV) by bringing it up in the Control Panel. I selected:

- Ethernet (as opposed to LocalTalk)
- Address "Manual" (and entered 192.0.0.4)
- No Routing
- No Domain Name information

I restarted. (The AppleTalk connection is set to LocalTalk.)

When launched, MacX displays an alert with the message: "None of the connection

tools are working at the moment--check that they are properly installed and restart MacX. Until this is done, no incoming X-client connections can be accepted."

I tried this with both the MacTCP files that came with MacX and those I got separately from APDA, and had the same results.

#### Specific Questions

- 1) How do I tell MacX what the address of the UNIX box is, or if MacX is really a network "server" on Ethernet, how do I tell it what its name is?
- 2) Is the MacTCP host file needed?
- 3) Does the Communications Toolbox tool MacTCP expect anything special of the MacTCP CDEV?

#### Additional Information

I have a copy of NCSA Telnet (for MacTCP) that will not run on the Macintosh IIX described above. Unfortunately, it doesn't display an error message; it just displays its initial banner and quits after about 5 seconds.

Can you help?

#### DISCUSSION -----

According to the information that you provided, the MacX and MacTCP installation procedure seems to be correct. One thing that should be made more clear is the "MacTCP Tool" must be put in the "System Folder:Communications Folder" folder.

We found that there is a problem using the IP address 192.0.0.4 in the MacTCP configuration, which we think is not a valid class C network number. In a class C network, 192.0.0 is a reserved network number, and it should not be used by any MacTCP configuration. This might be the reason that MacX is displaying the warning message. IP address 192.0.1.4, for instance, can be used as a valid IP number.

Make sure that the network number specified in the MacTCP IP address is valid and is the same network number as the other UNIX machine on the Ethernet.

If MacX and the UNIX box are configured correctly and connected on the network, their IP addresses should be known to each other. Also, on a UNIX box, you can issue the "ping" utility to send an ICMP packet to a MacX server to see if it is up or not. On the MacX server side, you can run the "MacTCP Spy" to see if the MacTCP is up running.

MacX is just a network "display" server, not a network server, in general, like an NFS. If your MacTCP is configured with a Domain name server, all name inquiries can be via the Domain name server. The host file is not necessarily needed. The "MacTCP Tool" does not need a "special" version of the MacTCP CDEV.

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Tech Info Library Article Number:6218





# Tech Info Library

## A/UX: File System Limits

Revised: 9/29/92  
Security: Everyone

A/UX: File System Limits

=====

Article Created: 1 November 1990

### Article Change History

-----

10/17/90 - REVIEWED

- For technical accuracy.

### TOPIC -----

What is the limit of the A/UX file system?

### DISCUSSION -----

The total size of an A/UX file system (both UFS and SVFS) is measured in blocks. The number of blocks is stored in each file system's super block with the declaration of "long fs\_size". This value can be stored up to  $2^{32}$  blocks. The block size of the file system in UFS, for instance, can be 512 bytes, 1K, 2K, 4K, or 8K. In SVFS, the default file system block size is 1K.

From the number of blocks and the file system block size, the maximum size of an A/UX file system ranges from  $2^{32}$  Kbytes to  $8 \times 2^{32}$  KB.

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Tech Info Library Article Number:6220



# Tech Info Library

## Printers: Difficulties With 9-Part Forms

Revised: 11/1/90  
Security: Everyone

Printers: Difficulties With 9-Part Forms

=====

This article last reviewed: 17 October 1990

TOPIC -----

Can you recommend a third-party printer product that prints a 9-part tractor feed form?

DISCUSSION -----

We were unable to find a printer on the market that prints a 9-part form. The closest we found was one manufactured by Toshiba that prints up to 6-part forms.

The problems encountered with 9-part forms concern the print head. To put enough power behind the pins of a dot matrix to print on the ninth part of the form, the pins will penetrate the first and probably the second part of the form, leaving holes. Also, the pins often get caught in the form as it moves and are bent and the print head needs to be replaced. Unfortunately, printers designed for microcomputer use just aren't up to the task of printing 9-part forms.

Daisy-wheel printers have similar problems. The energy demanded to print through nine layers would break a plastic print wheel and bend metal print wheels out of shape.

Even heavy-duty Printronix line printers are rated only to 6-part forms.

We suggest that you contact the paper company that makes the 9-part forms and ask what printers they recommend for use with these forms.

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Tech Info Library Article Number:6222



# Tech Info Library

## AlisaTerminal: Now Supports More Zones

Revised: 11/1/90  
Security: Everyone

AlisaTerminal: Now Supports More Zones

=====

This article last reviewed: 17 October 1990

TOPIC -----

We have had a problem with a WAN. The backbone is connected via cisco routers. They are still mostly at Phase 1. The network worked flawlessly, except for AlisaTerminal. It would look for the DECnet gateway and then hang. After numerous attempts to resolve the problem with Alisa, Alisa agreed that AlisaTerminal had "problems" negotiating with more than 39 zones. (We had a little over 100.)

DISCUSSION -----

Alisa now has an updated AlisaTerminal, available from their Technical Support. We tested the new AlisaTerminal, and it appears to work with 100 zones. The new AlisaTerminal has an added function--you can force additional queries of the network by pressing the Command key and clicking on the Host dialog box.

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Tech Info Library Article Number:6223



# Tech Info Library

## A/UX 2.0: Restricted Login Problem (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX 2.0: Restricted Login Problem (9/94)

Article Created: 17 October 1990  
Article Reviewed/Updated: 20 September 1994

TOPIC -----

I want to set up a restricted account through the chroot command. The man pages for login say that you should be able to do this by using a "\*/etc/passwd" in the place of a shell to be executed at startup. I tried to duplicate the problem and documented it below. If this is a bug that is not fixable in the near future, can you suggest a way to set up a restricted account, so that it has no way of getting to /? How is this done on the patch server?

Man page excerpt from login:

If the last field is \*, then a chroot(2) is done to the directory named in the directory field of the entry. At that point, login is re-executed at the new level, which must have its own root structure, including /etc/login and /etc/passwd.

User toad's login sequence, it looks like it is trying to execute "\*".

Apple Computer A/UX (ebc\_A/UX)

```
login: toad
*: No such file or directory
No shell
```

Entry for user toad in /etc/passwd

```
toad::1009:1002:,,,:/users/toad:*
```

Directory structure for users/toad. The files are all linked rather than exact copies. The shared library file was set up in case there was a problem, given the problems I had with anonymous ftp.

```
ebc_aux.root # cd /users/toad
```

```
ebc_aux.root # ls
README
bin
etc
shlib
ebc_aux.root # cd bin
ebc_aux.root # ls -la
total 110
drwxr-xr-x  2 root      gp1002      512 Aug 27 17:34 .
drwxr-x---  5 toad      gp1002      512 Aug 27 17:35 ..
-rwsr-xr-x  2 root      root        53468 Apr 10 06:49 login
ebc_aux.root # cd ../etc
../etc: bad directory
ebc_aux.root # cd ..
ebc_aux.root # cd etc
ebc_aux.root # ls -la
total 8
drwxr-xr-x  2 root      gp1002      512 Aug 27 17:32 .
drwxr-x---  5 toad      gp1002      512 Aug 27 17:35 ..
-rwxr--r--  2 root      sys         1068 Aug 27 18:37 passwd
ebc_aux.root # cd ..
ebc_aux.root # cd shlib
ebc_aux.root # ls -la
total 164
drwxr-xr-x  2 root      gp1002      512 Aug 27 17:35 .
drwxr-x---  5 toad      gp1002      512 Aug 27 17:35 ..
-rwxr-xr-x  2 root      root        81684 Apr 10 05:48 libc_s
```

#### DISCUSSION -----

This is a bug in the A/UX 2.0 login(1) command. You would not be able to reproduce this by logging in to the console under A/UX 2.0. This feature is a part of the System V login(1) command, which is not executed when logging in to the A/UX console. Instead the /mac/bin/Login program is called, and it does not understand the "\*" syntax in the /etc/passwd file. Even when logging into the serial ports or the console when /mac/bin/Login is not present, the chroot does not work. This is one reason why the patch server is still running A/UX 1.1.1.

You should use rsh(1) as a replacement for the functionality that has been lost in the A/UX 2.0 login command until a fix is provided. rsh would normally be the way to accomplish restricted login anyway.

#### Article Change History:

20 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6224



# Tech Info Library

## MacTCP: Gateway Address; TokenTalk Support

Revised: 11/1/90  
Security: Everyone

MacTCP: Gateway Address; TokenTalk Support

=====

This article last reviewed: 17 October 1990

TOPIC -----

Here are two MacTCP questions:

- 1) What is the "gateway address" box? I know that this is not the address box for a DDP/IP gateway (like a FastPath) for providing server-based addressing. The MacTCP Admin manual mentions that this "gateway address" has something to do with network access when full RIP support is not available.
- 2) I've seen that MacTCP works with "TokenTalk" (not native TCP support for Token Ring). Is this an "officially supported" configuration?

DISCUSSION -----

- 1) The MacTCP Control Panel setting for the "gateway address" does not have any function in relation to the DDP/IP gateway used for TCP/IP encapsulation in AppleTalk. The "gateway address" is used when MacTCP is talking native TCP/IP over Ethernet. If your network does not have a RIP (Route Information Protocol) process running on a router connected to the network, the default gateway address is used to locate routes to "smart" gateways, which might be connected to much larger outside networks, like the Internet. Most BSD UNIX systems are capable of running a RIP process.
- 2) Yes, we support running TCP/IP encapsulated in AppleTalk over Ethernet, Token Ring, or LocalTalk. The physical media does not play a large part in the ability of an encapsulating protocol to function properly.

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Tech Info Library Article Number:6225



# Tech Info Library

## TokenTalk Support For Novell Token Ring

Revised: 11/1/90  
Security: Everyone

TokenTalk Support For Novell Token Ring

=====

This article last reviewed: 17 October 1990

TOPIC -----

I understand that there is still no driver available that lets Netware for the Macintosh support Apple's TokenTalk NB Card in Novell's Token Ring environment. Is there a workaround to this problem?

I am running Novell Netware (version 2.15, revision C) on a Token Ring with a PS/2 as server. They have both the compact and modular Macintoshes.

An article mentioned a workaround using an Macintosh IIcx, running as a router between the Macintoshes on TokenTalk and the PS/2 server.

"The router will consist of a TokenTalk NB Card and an EtherTalk Card running to the PS/2 Model 80 running whatever Ethernet card they choose that will work with EtherTalk (that is, 3COM, and so on)."

What I'm not clear about is whether the PS/2 server running Netware automatically supports routing between Ethernet packets and Token Ring packets (on the Novell Token Ring side). Is there additional software required on the PS/2 server?

Will this configuration support transparent file and print services for the Macintoshes as well as electronic mail between the Macintoshes and Novell Token Ring machines?

DISCUSSION -----

Novell has stated that TokenTalk support can be ordered. This will be a new version of VAP (Value-Added Process), which supports AFP (Apple Filing Protocol) 2.0 and TokenTalk.

All Netware operating systems provide an internal router that lets a Netware

server connect to four different networks. No additional software is required. Note that the routing service can also be moved out of the server and into a non-dedicated workstation.

Macintosh, DOS, and OS/2 workstations can share data and resources. Macintosh users should see information stored on the network server as icons. Other workstations on the network (PCs running DOS, OS/2, or Windows 386) should see the folders and file icons from the Macintosh listed as directories and subdirectories in their workstation formats. DOS, OS/2, and Macintosh users can share Apple LaserWriters and other Apple printers. Using an E-mail package that supports Netware Message Handling Service (MHS), the back-end store-and-forward messaging server, you should be able to send E-mail messages and text, data, binary files between different LANs, and wide area networks.

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Tech Info Library Article Number:6227





# Tech Info Library

## TokenTalk NB Card: Compatibility of RasterOps Video Card

Revised: 11/1/90  
Security: Everyone

TokenTalk NB Card: Compatibility of RasterOps Video Card

=====

This article last reviewed: 17 October 1990

TOPIC -----

I have been having compatibility problems with RasterOps video cards and Apple's TokenTalk NB Card.

DISCUSSION -----

RasterOps identified and corrected some problems with their 224/724 cards. The problems occurred on Macintoshes with a 224/724 card and TokenTalk NB Card.

- 1) No video on the 224/724 card at powerup.
- 2) Selecting 24 bits/pixel on the 224/724 card causes pixels to change color under the cursor (and at random on the startup screen).
- 3) Zones and servers appear and disappear.
- 4) In all of the above cases, eventually a bus error (ID=1, sometimes ID=28) system bomb occurs.

The fixes are hardware rework. All finished goods and cards shipped since early May 1990 should contain this fix. Customers with problems should contact the RasterOps Technical Support department.

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Tech Info Library Article Number:6228



# Tech Info Library

## Foundation Publishing

Revised: 9/3/93  
Security: Everyone

Foundation Publishing

=====

Article Created: 1 November 1990  
Article Reviewed/Updated: 5 November 1992

Foundation Publishing

-----

14228 Shore Lane  
Prior Lake, MN 55372

612-445-8860

612-445-8961 Fax:

### Company Profile:

Foundation Publishing, software, specializing in a HyperCard utility that provides spell-checking and search/replace capabilities and comic strip clip art software.

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Tech Info Library Article Number:6229



# Tech Info Library

## A/UX: Limited Macintosh OS Disk Space

Revised: 9/29/92  
Security: Everyone

A/UX: Limited Macintosh OS Disk Space

=====

Article Created: 10 October 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

My A/UX hard drive doesn't have any of the usual Macintosh software like Font/DA Mover, HD SC Setup, and so on.

### DISCUSSION -----

Because most of the drive is taken by A/UX, the Macintosh partition is very small. A lot of the usual Macintosh utilities just don't fit.

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Tech Info Library Article Number:6231



# Tech Info Library

## A/UX: The /bin Folder

Revised: 10/1/92  
Security: Everyone

A/UX: The /bin Folder

=====

Article Created: 10 October 1990

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What does the /bin folder do on the Macintosh partition and what happens if I throw it out?

### DISCUSSION -----

The /bin folder is used by the SASH application. Without it, SASH can't execute some commands. You can backup /bin and take it off the hard drive, then if SASH tries to find a command and can't find it, replace it from /bin.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6232



# Tech Info Library

## A/UX: X11R3 without EtherTalk Card

Revised: 11/6/92  
Security: Everyone

A/UX: X11R3 without EtherTalk Card

=====

Article Created: 9 November 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I run X11R3 without an EtherTalk card?

### DISCUSSION -----

Yes, if you have the client/server software in the local system,  
X doesn't use the board at all to execute the server/client routines.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6233



# Tech Info Library

## A/UX and Macintosh OS Coexistence (4/95)

Revised: 4/26/95  
Security: Everyone

A/UX and Macintosh OS Coexistence (4/95)

=====

Article Created: 9 November 1990  
Article Last Reviewed/Updated: 26 April 1995

TOPIC -----

I thought A/UX and Macintosh OS could coexist.

DISCUSSION -----

They can. Both operating systems exist on the same physical disk. To switch operating systems, restart the Macintosh.

Macintosh applications can be run under the A/UX Finder: a Mac OS environment running on top of A/UX. Further, A/UX applications can be written to look like Macintosh applications if they use the A/UX Toolbox, with windows, icons, and so on.

Article Change History:  
26 Apr 1995 - Made correction of typographical errors.

Support Information Services

Copyright 1990-95, Apple Computer, Inc.

Tech Info Library Article Number:6235



# Tech Info Library

## A/UX: The FILES file

Revised: 11/9/92  
Security: Everyone

A/UX: The FILES file

=====

Article Created: 9 November 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I remove the FILES file from the root directory?

### DISCUSSION -----

Yes, you can. The FILES file contains a list of all the files on the disk.  
You can delete it or back it up to a floppy.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6236



# Tech Info Library

## A/UX: Launching from a Non-Root Directory (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Launching from a Non-Root Directory (8/94)

=====

Article Created: 10 October 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

Can I launch A/UX from a kernel on an external disk drive in a directory other than root?

DISCUSSION -----

You should be able to launch a kernel from anywhere--including a floppy disk.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1999-94 Apple Computer, Inc.

Tech Info Library Article Number:6237





# Tech Info Library

## A/UX: Use Control-C for Break Key

Revised: 2/16/93  
Security: Everyone

A/UX: Use Control-C for Break Key

=====

Article Created: 9 November 1990

### Article Change History

-----

10/10/90 - REVIEWED

- For technical accuracy.

### TOPIC -----

Where's the break key in A/UX?

### DISCUSSION -----

There is none. Use Control-C instead.

Copyright 1990, 1993 Apple Computer, Inc.

Tech Info Library Article Number:6239



# Tech Info Library

## A/UX: PMMU Use

Revised: 11/9/92  
Security: Everyone

A/UX: PMMU Use

=====

Article Created: 9 November 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How does A/UX use the PMMU?

### DISCUSSION -----

The PMMU is used to handle virtual memory, by translating between virtual addresses and physical addresses.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6240



# Tech Info Library

## A/UX: /etc/newunix: /etc/uninstall.d/ae6: not found Error

Revised: 10/1/92  
Security: Everyone

A/UX: "/etc/newunix: /etc/uninstall.d/ae6: not found" Error

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I got the error: "/etc/newunix: /etc/uninstall.d/ae6: not found".

### DISCUSSION -----

Enter the command: `ls /usr/uninstall.d/ae6`

The output should be: `/etc/uninstall.d/ae6`

If it isn't, then the directory is missing. Re-create the directory and replace the files from your system backups.

- 1) Enter the command: `mkdir /etc/uninstall.d`
- 2) Enter the command: `chmod 755 /etc/uninstall.d`
- 3) Enter the command: `chown bin /etc/uninstall.d`
- 4) Enter the command: `chgrp bin /etc/uninstall.d`
- 5) Replace the files from your system backups or A/UX distribution disk.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6241



# Tech Info Library

## **A/UX: /etc/newunix: /etc/uninstall.d/toolbox: not found Error**

Revised: 11/11/92  
Security: Everyone

A/UX: "/etc/newunix: /etc/uninstall.d/toolbox: not found" Error

=====

Article Created: 9 November 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I got the error: "/etc/newunix: /etc/uninstall.d/toolbox: not found"?

### DISCUSSION -----

Enter the command: `ls -d /etc/uninstall.d`

The output should be: `/etc/uninstall.d`

Look for a file named "toolbox" in the directory. If the directory is there, but the file isn't, replace the file toolbox from your system backups.

If the directory is missing, re-create the directory and replace the directories files from your system backups.

- 1) Enter the command: `mkdir /etc/uninstall.d`
- 2) Enter the command: `chmod 755 /etc/uninstall.d`
- 3) Enter the command: `chown bin /etc/uninstall.d`
- 4) Enter the command: `chgrp bin /etc/uninstall.d`
- 5) Replace the files from your system backups or A/UX distribution disk.

Copyright 1990 Apple Computer, Inc.





# Tech Info Library

## A/UX: System requests initlevel

Revised: 10/1/92  
Security: Everyone

A/UX: System requests "initlevel"

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Why does the system ask for initlevel when I boot?

### DISCUSSION -----

A request for initlevel means the file /etc/inittab was empty. Somehow, you lost its contents. Mount one of the Eschatology partitions and copy the file from there. Remember to unmount the Eschatology partition when you are done. Test your work by rebooting the system. By the way, in A/UX 2.0, Eschatology becomes AutoRecovery.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6243



# Tech Info Library

## A/UX: LaserWriter typescript...log Installation Problem

Revised: 10/1/92  
Security: Everyone

A/UX: LaserWriter "typescript...log" Installation Problem

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I am having problems installing a LaserWriter under A/UX. Why does it seem to think that "typescript...log" is the device?

### DISCUSSION -----

There is a link between typescript...log (that whole line of stuff) and the actual LaserWriter device. Reinstall the LaserWriter, without other printers installed. Then type ADD\_LW and it'll work fine.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6246



# Tech Info Library

## A/UX: Autoconfig Cannot Find Drivers Error

Revised: 10/1/92  
Security: Everyone

A/UX: Autoconfig Cannot Find Drivers Error

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I got the error: "Warning cannot find driver(s) for device ID XX Version X.X".

### DISCUSSION -----

For any slot card that Autoconfig cannot find a module in the kernel with a matching board and version number, Autoconfig prints a warning message to the system console.

For example, if autoconfig cannot find the driver for an Ethernet card you have installed, it prints a message similar to the following:

```
Warning cannot find driver(s) for device ID 5 Version 7.0
```

It is just an informational warning and does not signify any real error.

If the card is a monitor card, then the error is irrelevant, since the card will work with the default monitor kernel driver.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6247





# Tech Info Library

## A/UX: How to Boot Into Single-user Mode

Revised: 10/1/92  
Security: Everyone

A/UX: How to Boot Into Single-user Mode

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

When booting into single-user mode, I got the error:

```
initiate single-user mode, unknown id root
```

### DISCUSSION -----

You need to replace your /etc/passwd file. Somehow, the entry for root has been removed from /etc/passwd file.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6249



# Tech Info Library

## A/UX: Where to Find Startup Script Files

Revised: 10/1/92  
Security: Everyone

A/UX: Where to Find Startup Script Files

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What directory is searched, by default, for startup script files?

### DISCUSSION -----

By default, the /etc/master.d directory is searched for script files.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6250



# Tech Info Library

## A/UX: Specifying the Startup Program File

Revised: 10/1/92  
Security: Everyone

A/UX: Specifying the Startup Program File

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do you specify the file in which startup programs are listed?

### DISCUSSION -----

The Autoconfig command's "-S" flag option puts a list of startup programs in the specified file.

Example command line: autoconfig -S /etc/startups.list

This command line will cause Autoconfig to put a list of the startup programs into the file /etc/startups.list.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6252



# Tech Info Library

## A/UX: Automatic Startup

Revised: 10/1/92  
Security: Everyone

A/UX: Automatic Startup

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I get A/UX to boot automatically when I start up the hardware?

### DISCUSSION -----

Follow these steps:

- 1) From the Macintosh OS, select the A/UX icon.
- 2) Pull down the Special menu and select the command Set Startup.
- 3) Set the startup to A/UX Startup. Click OK.
- 4) Restart the machine.

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Tech Info Library Article Number:6253



# Tech Info Library

## A/UX: How to Start Up in Macintosh OS, System 6

Revised: 10/1/92  
Security: Everyone

A/UX: How to Start Up in Macintosh OS, System 6

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is there any way to change the startup application, so that my system does NOT start up in A/UX?

### DISCUSSION -----

To set startup to JUST the Macintosh OS in System 6, do the following steps:

- 1) If A/UX already launches automatically, then cancel the automatic launch sequence.
- 2) Quit from the A/UX Startup.
- 3) Make sure nothing is selected; click in the open desktop area.
- 4) Pull down the Special menu and select the Set Startup command.
- 5) Click the OK button.

Conversely, to set startup to A/UX Stand-alone shell automatically, and hence have A/UX boot automatically, do the following steps:

- 1) Make sure you are at the Finder level.
- 2) Click the A/UX Startup icon.

3) Pull down the Special menu and select the Set Startup command.

4) Click on the OK button.

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Tech Info Library Article Number:6254



# Tech Info Library

## A/UX: Discovering Which Drivers Are in the Kernel (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Discovering Which Drivers Are in the Kernel (9/94)

Article Created: 11 October 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

How do you find out what drivers were built into the A/UX kernel?

DISCUSSION -----

The "module\_dump" command displays a list of the modules built into the specified kernel file.

Example: module\_dump /unix

This command line will display a list of the modules built into the kernel file "/unix".

The output looks similar to this:

| Name    | Major | Flags  | Board_ID | Version             | Prefix | #Dev | #Cont | Addresses |
|---------|-------|--------|----------|---------------------|--------|------|-------|-----------|
| scc     | 0     | 0x0001 | 0        | 00000000-00000000   |        | 0    | 0     |           |
| scsi    | 24    | 0x0001 | 0        | 00000000-00000000   |        | 0    | 0     |           |
| tty     | 0     | 0x0001 | 0        | 00000000-00000000   |        | 0    | 0     |           |
| streams | 0     | 0x0001 | 0        | 00000000-00000000   |        | 0    | 0     |           |
| slots   | 0     | 0x0002 | 0        | 00000000-00000000   | slots  | 0    | 0     |           |
| toolbox | 4     | 0x0002 | 0        | 00000000-00000000   | ui_    | 0    | 0     |           |
| BNET    | 0     | 0x0002 | 0        | 00000000-00000000   | BNET   | 0    | 0     |           |
| ae6     | 0     | 0x0008 | 8        | 00000000-2147483647 | ae6    | 1    | 2     | <b> <d>   |
| nfs     | 0     | 0x0002 | 0        | 00000000-00000000   | nfs    | 0    | 0     |           |

Support Information Services

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Tech Info Library Article Number:6255



# Tech Info Library

## A/UX: Where to Find Startup Programs

Revised: 10/1/92  
Security: Everyone

A/UX: Where to Find Startup Programs

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What directory is searched, by default, for startup programs?

### DISCUSSION -----

By default, the /etc/startup.d directory is searched for startup programs.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6259





# Tech Info Library

## A/UX: About /etc/startup

Revised: 10/1/92  
Security: Everyone

A/UX: About /etc/startup

=====

Article Created: 11 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What does the text in /etc/startup mean?

### DISCUSSION -----

Each line in the file /etc/startup lists the startup program to be executed at system boot time and the arguments to be passed.

The options are as follows:

"-M" followed by a number specifies the major device number.

"-C" followed by a number specifies the number of controllers associated with this module in the system.

"-D" followed by a number specifies the number of devices per controller.

"-S" specifies the NuBus slot in which the controller exists.

For example, the line:

```
/etc/startup/TEST -M 9 -C 1 -D 1 -S 11
```

within the /etc/startup file indicates that the TEST module has a major device number of 9, has one slot associated with it in the system, has one device per slot card, and is installed in slot 11.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6260



# Tech Info Library

## A/UX: About the newunix Command (8/94)

Revised: 8/23/94  
Security: Everyone

A/UX: About the newunix Command (8/94)

=====

Article Created: 11 October 1990  
Article Reviewed/Updated: 22 August 1994

TOPIC -----

What is newunix?

DISCUSSION -----

The newunix command begins the process of configuring a new kernel by installing or uninstalling the appropriate scripts and driver object files needed by the Autoconfig(1M) command.

The newunix command is replaced and updated by the newconfig command in A/UX 2.0 and 3.0.

Article Change History:

22 Aug 1994 - Reviewed and changed title.

31 Aug 1992 - REVIEWED for technical accuracy and updated to include A/UX 3.0.

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Tech Info Library Article Number:6262



# Tech Info Library

## A/UX: How to Create an NFS Kernel (9/94)

Revised: 9/6/94  
Security: Everyone

A/UX: How to Create an NFS Kernel (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

How do you create an NFS kernel?

DISCUSSION -----

For A/UX 3.0, to make a kernel that supports NFS, open the Command Shell window and enter this command:

```
newconfig nfs
```

If this is the first time that the Ethernet driver has been included in a kernel on this computer, newconfig displays the prompts that allow you to define the TCP/IP connection for this machine. Regardless of whether the computer has already been configured to connect to a TCP/IP network, the newconfig command also prompts you for information about NIS.

In addition to making a new kernel, the newconfig command enables nfsd, biod, mount, rpc.statd, and rpc.lockd in the /etc/inittab file. Enabling nfsd is required for the computer to be an NFS client.

When newconfig is done, increase the number of kernel memory buffers by running the kconfig command:

```
kconfig /unix
```

```
NMBUFS=1000
```

```
(CONTROL-D)
```

If the computer has 8 MB or less of physical memory, you should also increase the value of MAXCORE by entering this command while running kconfig:

MAXCORE=0x60000

If the computer has more than 8 MB of physical memory, the memory allocation routines in the kernel dynamically adjust the value of MAXCORE. The new values for MAXCORE and NMBUFS cause the allocation of more of the kernel memory buffers that NFS uses, which improves server performance.

Choose Restart from the Finder's Special menu. When A/UX is up, the computer should be an NFS file server.

To verify, log in and run ps to see that the appropriate number of nfsd processes are running. You can determine that number by checking the nfsd entry in the /etc/inittab file. The default number is 4.

If the nfsd processes are not running, check the nfsd entry in /etc/inittab and restart your computer again. Next, verify that the pathnames specified in /etc/exports can be mounted. To do so, enter this command:

```
showmount -e
```

This is an example of the response, assuming that the entry is /etc/exports on hostname1 is

```
/usr/catman -access=hostname2
```

The response would be

```
export list for hostname1:  
/usr/catman -access=hostname2
```

Finally, check /etc/inittab to verify that the entries in your file match the entries shown here:

```
nfs3:2:wait:/etc/nfsd 4          # set to "wait" for NFS server  
nfs4:2:wait:/etc/biod 4          # set to "wait" for NFS client  
nfs5:2:wait:/etc/rpc.statd      # set to "wait" for NFS status monitor  
nfs6:2:once:/etc/rpc.lockd      # set to "once" for NFS lock manager  
nfs8:2:once:/etc/mount -at nfs > /dev/syscon 2>&1 # set to "once" for NFS
```

For additional information, refer to the A/UX Network System Administration manual.

#### Article Change History:

06 Sep 1994 - Major changes to article to describe process for A/UX 3.0.  
31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6263



# Tech Info Library

## A/UX: How to Build a Kernel Without Networking

Revised: 8/16/93  
Security: Everyone

A/UX: How to Build a Kernel Without Networking

Article Created: 12 October 1990  
Article Reviewed/Updated: 31 August 1992

TOPIC -----

How do you build a kernel without networking?

DISCUSSION -----

To build a kernel using the Autoconfig command:

- 1) Log on to the system as "root".
- 2) Enter the command: /etc/newunix nonet
- 3) Enter the command: autoconfig

The output of the Autoconfig command might look similar to this:

Warning cannot find driver(s) for device ID 5 Version 7.0 Ignore the message: 'ld warning: file /tmp/kernAAAA02712 has no relocation info' if it appears. ld warning: file /tmp/kernAAAA02712 has no relocation information

|    | Module  | Board | Prefix | Major | Flags                             |
|----|---------|-------|--------|-------|-----------------------------------|
|    | =====   | ===== | =====  | ===== | =====                             |
| 0: | scc     |       |        | 0     | init-??? present char             |
| 1: | scsi    |       |        | 24    | init-??? present block            |
| 2: | tty     |       |        |       | init-??? present                  |
| 3: | streams |       |        |       | init-??? present                  |
| 4: | slots   |       | slots  |       | init-normal included lib          |
| 5: | toolbox |       | ui_    | 4     | init-normal included char fork ex |

The last few lines of information sorted by columns describe the modules currently included in the kernel. You should not see any lines in the output that contain "nfs", "bnet", or "ae6".

Note: To make use of the new kernel, you must reboot the system.

Article Change History:

31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6264





# Tech Info Library

## A/UX: How to Reset Baud

Revised: 10/1/92  
Security: Everyone

A/UX: How to Reset Baud

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How do I reset the baud rate to 9600 on a particular port?

### DISCUSSION -----

Type the line:

```
stty 9600 < /dev/tty{port number}
```

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6265



# Tech Info Library

## A/UX: How to Control Baud Rates and Other Serial Port Settings

Revised: 10/1/92  
Security: Everyone

A/UX: How to Control Baud Rates and Other Serial Port Settings

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

When I set up baud rates and control serial port parameters, the settings revert to default values on boot up and at random times. I want to know how to control the baud rate setting and other serial port parameters. Is there a file that has these default values?

### DISCUSSION -----

For printer ports, you should use a printer interface script, as in /usr/spool/lp/model, to set port speed. For applications, set port speed via termio or ioctl.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6266



# Tech Info Library

## A/UX: How to Connect a Node to a Host

Revised: 10/1/92  
Security: Everyone

A/UX: How to Connect a Node to a Host

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Do I have to have any software running to connect a node to a host? I want to run my Macintosh Plus as a node.

### DISCUSSION -----

Just make sure that a getty is running at the appropriate speed on the port the node is connected to. The getty is set up in the file /etc/inittab, and must be turned on to "respawn".

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6268



# Tech Info Library

## A/UX: How to Turn Off the Bell in Kermit

Revised: 10/1/92  
Security: Everyone

A/UX: How to Turn Off the Bell in Kermit

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How can I turn off the bell in kermit?

### DISCUSSION -----

You must modify kermit source code under A/UX. Just comment out all occurrences of "putchar(BEL)" in the code and recompile.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6269



# Tech Info Library

## A/UX: NFS Client, NFS Server Defined (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS Client, NFS Server Defined (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

What is an NFS client? An NFS server?

DISCUSSION -----

An NFS client is a UNIX system that has mounted file systems of another UNIX system. The UNIX system which lets these file systems be mounted over the network by clients is called the NFS server.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6270



# Tech Info Library

## A/UX: Configuring the Kernel for an NFS Server (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: Configuring the Kernel for an NFS Server (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 1 September 1994

TOPIC -----

How do I install NFS (configure the kernel) for an NFS server?

DISCUSSION -----

If you are using A/UX 2.0 or 3.0, bring the system to single-user mode and type the command:

```
newconfig nfs
```

Then, follow the steps below:

- 1) Edit /etc/exports to specify hosts eligible to mount file systems from this server. In this file, you will specify what partitions you will allow to be mounted and what systems may be mounted.

For example: to let anyone on the system "hostname1" mount a file partition named "/u1", you would enter the line to /etc/exports:

```
/u1 hostname1
```

- 2) Check that a file system has been exported to this system; enter the command-line: `showmount -e`

The output should look similar to the following:

```
/ hostname1  
/users hostname1 hostname2
```

Article Change History:

1 Sept 1994 - Reviewed. Removed A/UX 1.0 information.

31 Aug 1992 - REVIEWED for technical accuracy. Included A/UX 3.0  
information.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:6271



# Tech Info Library

## A/UX: How to Mount a Remote NFS System Manually (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: How to Mount a Remote NFS System Manually (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

How do I manually mount a remote NFS file system?

DISCUSSION -----

The following steps use fictional directory and system names to give an example of how to manually mount a remote file system.

- 1) Log on the system as "root".
- 2) You will need a directory on which you will mount the remote file partition. Let's call the directory "mntdir".
- 3) Enter the line: `mkdir /mntdir`

This creates the directory mntdir in "/".

- 4) Next, we need the name of the remote file partition. We'll use the `/usr/catman` directory on the remote system "my\_system\_name" as an example.
- 5) Enter the line: `mount my_system_name:/usr/catman /mntdir`

This command line mounts the `/usr/catman` from the system "my\_system\_name" onto the `/mntdir` on the local system.

- 6) To check that the partition is actually mounted, type the command "mount" and press Return. Among the output, you should find one line for the remote partition just mounted:

`my_system_name:/usr/catman on /mntdir`



Support Information Services

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Tech Info Library Article Number:6272



# Tech Info Library

## A/UX: How to Mount a Remote NFS System Automatically (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Mount a Remote NFS System Automatically (9/94)

=====

Article Created: 12 October 1992  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

How do I make a remote NFS file system mount automatically at startup?

DISCUSSION -----

- 1) Log on the system as "root".
- 2) First, remember that you will need a directory on which you will mount the remote file partition. Let's call the directory "mntdir".
- 3) Create the directory mntdir in "/"; enter the command-line:  
mkdir /mntdir
- 4) You need the name of the remote file partition. Use the  
/usr/catman directory on the remote system "my\_system\_name" as an example.
- 5) Edit the file /etc/fstab. This file contains a list of file partitions that will automatically be mounted at boot time.
- 6) Add the line: my\_system\_name:/usr/catman /mntdir nfs rw,soft 0 0
- 7) Save the file and exit the editor.
- 8) Shut the system down.
- 9) Bring the system back up into multi-user mode.
- 10) The names of the local and remote partitions will be listed as they are automatically mounted.

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:6273



# Tech Info Library

## A/UX: The /etc/biod Daemon Defined (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: The /etc/biod Daemon Defined (9/94)

=====

Article Created: 12 october 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

What is /etc/biod?

DISCUSSION -----

/etc/biod is a Network File System (NFS) daemon. The biod daemon starts a number of asynchronous block I/O daemons. This daemon is used on an NFS client to handle the read-ahead and write-behind of buffer cached blocks.

Support Information Services

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Tech Info Library Article Number:6274



# Tech Info Library

## A/UX: The /etc/nfsd Daemon Defined

Revised: 9/28/92  
Security: Everyone

A/UX: The /etc/nfsd Daemon Defined

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What's /etc/nfsd?

### DISCUSSION -----

/etc/nfsd is a Network File System (NFS) daemon. The nfsd daemon starts the NFS server daemons that handle client file system requests.

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Tech Info Library Article Number:6275



# Tech Info Library

## A/UX: Daemons Needed for NFS (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: Daemons Needed for NFS (9/94)

Article Created: 12 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

What daemons need to be running for NFS?

DISCUSSION -----

By using the "ps" command, you can determine if all the NFS daemons necessary for an NFS server are running.

- 1) Log on to the system as "root".
- 2) Enter the line: ps -ef
- 3) If all the necessary daemons are running, you should find these lines within the output:

|      |     |     |   |           |      |              |
|------|-----|-----|---|-----------|------|--------------|
| root | 98  | 1   | 0 | 09:42:27? | 0:00 | /etc/portmap |
| root | 100 | 100 | 0 | 09:42:28? | 0:00 | /etc/nfsd 4  |
| root | 102 | 100 | 0 | 09:42:29? | 0:00 | /etc/nfsd 4  |
| root | 103 | 100 | 0 | 09:42:29? | 0:00 | /etc/nfsd 4  |
| root | 104 | 100 | 0 | 09:42:29? | 0:00 | /etc/nfsd 4  |
| root | 116 | 1   | 0 | 09:42:37? | 0:00 | /etc/inetd   |

The above lines may not appear together, and the numbers in the columns may differ on your system.

If you don't have the nfsd 4 lines appear, you may try the following procedure to start the /etc/biod daemon.

- 1) Log on as "root".

2) Edit the file /etc/inittab

3) Enter these changes:

- Change this line: nfs4:2:off:/etc/biod 4

- To this line: nfs4:2:wait:/etc/biod 4

- Change this line: nfs8:2:off:/etc/mount -at nfs > /dev/syscon 2>&1

- To this line: nfs8:2:once:/etc/mount -at nfs > /dev/syscon 2>&1

4) Now, when your system is booted into multi-user mode, the daemon will automatically be started.

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1994 - Reviewed.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:6276



# Tech Info Library

## A/UX: How to Use showmount

Revised: 9/15/92  
Security: Everyone

A/UX: How to Use showmount

=====

Article Created: 12 October 1990  
Article Last Reviewed: 31 August 1992  
Article Last Updated : 31 August 1992

TOPIC -----

How do I use showmount?

DISCUSSION -----

The "showmount" command lists remotely mounted or exported file systems. The showmount command executed with no options lists the systems which have file systems remotely mounted from your system. Here is some example output from "showmount":

```
my_system_name
grumpy
```

This output tells us that the systems "my\_system\_name" and "grumpy" have partitions mounted from your system.

The showmount command has three options:

"-d" This option displays a list of the directories being remotely mounted from your system.

"-e" Prints a list of exported file systems.

"-a" Displays a list of hosts/remotely mounted directories sorted by hostname.

By using the "-a" option with the /usr/etc/showmount command, you can get a list of directories remotely-mounted from your system, sorted by the hostnames on which they are mounted.

Example output from the command line "showmount -a":



```
machen: /  
machen: /users  
redpony: /usr  
redpony: /usr/catman
```

This example shows that the system "machen" has the "/" and "/users" partition mounted on his system while the system "redpony" has "/usr" and "/usr/catman" remotely mounted.

Copyright 1990, 1992 Apple Computer, Inc.

Tech Info Library Article Number:6278



# Tech Info Library

## A/UX: Specifying a Terminal as VT-100

Revised: 9/25/92  
Security: Everyone

A/UX: Specifying a Terminal as VT-100

=====

Article Created: 12 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

How do I specify my terminal as VT-100?

### DISCUSSION -----

In the Bourne shell (sh), type

```
set TERM=vt100
export TERM
```

In the C shell (csh), type

```
setenv TERM vt100
```

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6279



# Tech Info Library

## A/UX: nfsstat Defined (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: nfsstat Defined (9/94)

Article Created: 12 October 1990  
Article Last Reviewed: 6 September 1994

TOPIC -----

What's nfsstat?

DISCUSSION -----

The nfsstat command displays or initializes information about the Network File System (NFS) and Remote Procedure Call (RPC) interface to the kernel.

The nfsstat command executed without any options will give you a complete output of NFS, RPC, server and client statistical information.

For more information, see the manual page for nfsstat or the A/UX Network System Administration manual chapter on Configuring and Managing the Network File System.

Here is example output displayed from the command line "nfsstat":

Server rpc:

| calls | badcalls | nullrecv | badlen | xdrCALL |
|-------|----------|----------|--------|---------|
| 27018 | 0        | 0        | 0      | 0       |

Server nfs:

| calls   | badcalls |         |        |           |          |         |  |
|---------|----------|---------|--------|-----------|----------|---------|--|
| 27018   | 0        |         |        |           |          |         |  |
| null    | getattr  | setattr | root   | lookup    | readlink | read    |  |
| 0 0%    | 94 0%    | 0 0%    | 0 0%   | 25604 94% | 0 0%     | 10 0%   |  |
| wrCache | write    | create  | remove | rename    | link     | symlink |  |
| 0 0%    | 0 0%     | 0 0%    | 0 0%   | 0 0%      | 0 0%     | 0 0%    |  |
| mkdir   | rmdir    | readdir | fsstat |           |          |         |  |
| 0 0%    | 0 0%     | 1293 4% | 17 0%  |           |          |         |  |

Client rpc:

|       |          |         |        |         |      |         |
|-------|----------|---------|--------|---------|------|---------|
| calls | badcalls | retrans | badxid | timeout | wait | newcred |
| 4526  | 0        | 0       | 0      | 0       | 0    | 0       |

Client nfs:

|         |          |         |          |          |          |         |
|---------|----------|---------|----------|----------|----------|---------|
| calls   | badcalls | nclget  | nclsleep |          |          |         |
| 4526    | 0        | 4526    | 0        |          |          |         |
| null    | getattr  | setattr | root     | lookup   | readlink | read    |
| 0 0%    | 4 0%     | 0 0%    | 0 0%     | 4266 94% | 0 0%     | 0 0%    |
| wrcache | write    | create  | remove   | rename   | link     | symlink |
| 0 0%    | 0 0%     | 0 0%    | 0 0%     | 0 0%     | 0 0%     | 0 0%    |
| mkdir   | rmdir    | readdir | fsstat   |          |          |         |
| 0 0%    | 0 0%     | 252 5%  | 4 0%     |          |          |         |

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6280



# Tech Info Library

## A/UX: How to Initialize NFS RPC Statistics (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Initialize NFS RPC Statistics (9/94)

=====

Article Created: 12 October 1990  
Article Last Reviewed: 6 September 1994

TOPIC -----

How do I initialize NFS RPC statistics?

DISCUSSION -----

The output of the nfsstat command is cumulative; statistics are added to the existing total since boot time. By using the "-z" flag option, these statistics can be zeroed. Zeroing the statistics makes it easier to troubleshoot NFS from a known point.

Refer to the A/UX Network System Administration manual chapter on Configuring and Managing the Network File System for more information on nfsstat.

Article Change History:  
06 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6281



# Tech Info Library

## A/UX: RPC Defined (10/95)

Revised: 10/31/95  
Security: Everyone

A/UX: RPC Defined (10/95)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated : 30 October 1995

TOPIC -----

What's RPC?

DISCUSSION -----

RPC is the acronym for "Remote Procedure Call". RPC is a collection of library routines that lets a program make procedure invocations on other machines across the network.

Article Change History:  
30 Oct 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6282



# Tech Info Library

## A/UX: NFS and AppleShare Volumes on LocalTalk (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS and AppleShare Volumes on LocalTalk (9/94)

=====

Article Created: 12 October 1990  
Article Last Reviewed: 6 September 1994

TOPIC -----

What applications are available that let an A/UX system serve as a file server for a Macintosh network over EtherTalk?

DISCUSSION -----

In A/UX 3.0, System 7's FileSharing is completely supported and allows this kind of access.

Here are some systems that make it possible to mount NFS volumes (whether A/UX or UNIX) as AppleShare volumes on a LocalTalk network:

uShare from Information Presentation Technologies

GatorShare CS from Cayman.

Article Change History:  
06 Sep 1994 - Reviewed.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:6283



# Tech Info Library

## A/UX: How to Mount a Berkeley File System (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Mount a Berkeley File System (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

Can I mount a Berkeley File System?

DISCUSSION -----

If you do not have A/UX 2.0 or 3.0, the only way to mount a Berkley File System is using NFS; you can't mount directly to a physically-connected drive.

With A/UX 2.0 and 3.0, you can mount Berkeley, System V, and NFS volumes locally and across the network.

Refer to the A/UX Network System Administration manual chapter on Configuring and Managing the Network File system.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:6284





# Tech Info Library

## A/UX: Location of Ethernet Card device File (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Location of Ethernet Card device File (8/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

Where is the device file for the Ethernet card located?

DISCUSSION -----

It's in the kernel. A/UX is based on System V and does not use device files as Berkeley does.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990-94 Apple Computer, Inc.

Tech Info Library Article Number:6285



# Tech Info Library

## A/UX: Accessing TCP/IP from Macintosh OS

Revised: 8/16/93  
Security: Everyone

A/UX: Accessing TCP/IP from Macintosh OS

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 5 April 1993

TOPIC -----

Can I use a Macintosh II and Ethernet card to access a TCP/IP network from the Macintosh OS?

DISCUSSION -----

Yes, with NCSA Telnet (version 2.5). For more information, search the Tech Info Library under "NCSA Telnet".

Article Change History:  
5 Apr 1993 - New version of Telnet.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6286



# Tech Info Library

## A/UX 3.0: How to Set tty to Work With cu (8/94)

Revised: 8/23/94  
Security: Everyone

A/UX 3.0: How to Set tty to Work With cu (8/94)

Article Created: 12 October 1990  
Article Reviewed/Updated: 22 August 1994

TOPIC -----

What tty do I use with cu?

DISCUSSION -----

The Macintosh has two serial ports called tty0 and tty1. The cu command is used to dial out and requires complete control of the serial port you tell it to use. That means that the getty process, which runs on serial ports waiting for users to dial in, must not be active on a serial port that is being used for dial-out purposes.

To set up the serial port so that it can be used for either dial-in or dial-out purposes, modify the /etc/inittab file so that the value of the action field of the serial port is respawn. Here is an entry for tty0:

```
00:2:respawn:/etc/getty tty0 mo_2400    # Port 0 (modem)
```

When you are finished editing /etc/inittab, run init q to stop any getty process that may currently be running on the port.

The cu command uses the /usr/lib/uucp/Devices file to get the information it needs about the device to use when establishing the connection. Here is an entry in the Devices file for a Hayes 2400 baud modem attached to tty0:

```
ACU      tty0 - 2400 hayes
```

Here is an example of a minimal cu command line that specifies a telephone number:

```
cu 4155551212
```

When a telephone number appears on the cu command line, cu searches the Devices

file for an entry that begins with ACU. Since we set up the Devices file with a line that starts with ACU, it will attempt to dial through serial port 0 (modem) at 2400 baud.

NOTE: The A/UX Network System Administration manual chapter on "Setting Up the UUCP System" contains complete descriptions of the procedures outlined above.

22 Aug 1994 - Updated for A/UX 3.0 and /usr/lib/uucp/Devices file.

08 Aug 1992 - REVIEWED For technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6287



# Tech Info Library

## A/UX: How To take and put With cu (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: How To take and put With cu (6/93)

=====

Article Created: 7 September 1989  
Article Reviewed/Updated: 23 June 1993

TOPIC -----

How do I take and put files with cu?

DISCUSSION -----

Use the ~%take and ~%put commands.

Once you have made a successful connection with cu from local\_machine to remote\_machine, you may take & put files with the following commands:

~%take filename

This command takes the file filename from remote\_machine and puts it in the current directory on local\_machine. The command:

~%put filename

puts the file filename from local\_machine to the current directory on remote\_machine.

If you do not want the file filename to be put in the current directory, specify an absolute pathname (although this is not recommended).

Article Change History:  
23 Jun 1993 - Revised to give more detail about commands.  
31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6288



# Tech Info Library

## A/UX: How to Login via a Serial Port (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: How to Login via a Serial Port (9/94)

Article Created: 12 October 1990  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

How do I login via a serial port?

DISCUSSION -----

- 1) With the power to the system off, connect a straight-through serial cable from your A/UX system to the terminal or system that will be acting as a terminal.
- 2) Boot A/UX to multi-user mode. To put the system into multi-user mode, you can either type "init 2" at the command line or edit the file /etc/inittab to change default run level from "s" (single user mode) to "2" (multi-user mode).
- 3) Start a getty on the port used for login. Do this by editing one of the bottom two lines in /etc/inittab. One line changes the settings for the modem port, while the other one changes the settings for the printer port. The default entry for the modem port reads:

```
00:2:off:/etc/getty tty0 at_9600 # Port 0 (modem); set to 'respawn'
```

Change the word "off" to "respawn", so that it looks like:

```
00:2:respawn:/etc/getty tty0 at_9600 # Port 0 (modem); set to 'respawn'
```

Article Change History:  
23 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

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# Tech Info Library

## A/UX: How to Do Remote Printing (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: How to Do Remote Printing (9/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

How can I do remote printing?

DISCUSSION -----

On A/UX 2.0

You can run remsh, using cat in the local system and lp through the remote shell on the system where the printer is connected. Here is an example in which "mysys" is the host name:

```
cat file1 | remsh mysys lp
```

On A/UX 3.0

The operating system recognizes remote printer indications in the file /etc/printcap. /etc/printcap contains configuration information used by the lpr print spooler. If you plan to connect a printer directly to a remote computer on the network, a user on the local Macintosh can print on that printer by using the -P remotehost option to lpr if the /etc/printcap file on the Macintosh is set up. Edit the file /etc/printcap and find these lines:

```
# Remote UNIX line printer
```

```
# Change 'RemoteHost' to actual name of the remote UNIX host
```

```
remote|remote line printer:\
```

```
:lp=:rp=lp:rm=RemoteHost:sd=/usr/spool/lpd/Remote:
```

Change RemoteHost to the host name of the computer to which the printer is



directly connected.

Article Change History:

08 Sep 1994 - Reviewed.

31 Aug 1992 - Added info about A/UX 3.0.

Support Information Services

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Tech Info Library Article Number:6291



# Tech Info Library

## A/UX: The /etc/exports File

Revised: 9/14/92  
Security: Everyone

A/UX: The /etc/exports File

=====

Article Created: 15 October 1990

Article Change History

-----  
08/31/92 - REVIEWED  
•For technical accuracy

TOPIC -----

What's the file /etc/exports used for? What is its format?

DISCUSSION -----

NFS file servers use the /etc/exports file to control which file systems can be mounted by which systems on the network. Entries in /etc/exports specify a file system name that can be remotely mounted. The file system name is left justified and may be followed by a list of hostnames or netgroup names separated by spaces or tab characters.

If a hostname or netgroup name follows the file system name, export permissions are limited to the host(s) or netgroup(s) specified. Otherwise, it is open to everyone.

A number sign (#) anywhere on a line begins a comment that remains in effect to the end of the line.

An example /etc/exports file could look like:

```
/
/usr/catman my_system_name
```

In this example, the "/" partition is exported to any system on the network. The "/usr/catman" partition, however, is only exported to the system named "my\_system\_name".

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6292



# Tech Info Library

## A/UX: The /etc/fstab File

Revised: 9/14/92  
Security: Everyone

A/UX: The /etc/fstab File

=====

Article Created: 15 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

What's the file /etc/fstab used for?

### DISCUSSION -----

The file /etc/fstab contains a list of local and remote partitions that are used by the local system. The mount command uses this list to mount those partitions when the system boots up into multi-user mode.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6293



# Tech Info Library

## A/UX: /etc/inittab Defined (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: /etc/inittab Defined (9/94)

=====

Article Created: 19 November 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

What's /etc/inittab?

DISCUSSION -----

The /etc/inittab file is read by init, the first process started by an A/UX system when it starts up. Init looks at /etc/inittab to see which processes to execute at startup time. Examples include the Macintosh Finder environment with A/UX 3.0, NFS capability, and networking daemons.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:6295



# Tech Info Library

## A/UX:/etc/nfsd Defined (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX:/etc/nfsd Defined (9/94)

=====

Article Created: 19 November 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

What's /etc/nfsd?

DISCUSSION -----

/etc/nfsd is a Network File System (NFS) daemon. The nfsd daemon starts the NFS server daemons that handle client file system requests.

Support Information Services

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Tech Info Library Article Number:6298



# Tech Info Library

## A/UX: How to Determine Which Partitions Are Being Exported

Revised: 11/10/92  
Security: Everyone

A/UX: How to Determine Which Partitions Are Being Exported

=====

Article Created: 19 November 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How do I find out which partitions are being exported from another system on the network?

### DISCUSSION -----

By using the "-e" options with the /usr/etc/showmount command and specifying a hostname, you can get a list of the partitions that are being exported from another system on the network.

For example, to get a list of exported directories from the system "macaux," enter the line:

```
showmount -e macaux
```

The output could look like this:

```
export list for macaux:
/s1      everyone
/        everyone
```

This output tells us that the "/" and "/s1" directories from the system "macaux" are being exported to everyone.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6299



# Tech Info Library

## A/UX: How to Print a List of Exported File Systems

Revised: 9/14/92  
Security: Everyone

A/UX: How to Print a List of Exported File Systems

=====

Article Created: 15 October 1990  
Article Last Reviewed: 31 August 1992  
Article Last Updated : 31 August 1992

TOPIC -----

How do I print a list of exported file systems?

DISCUSSION -----

By using the "-e" option with the /usr/etc/showmount command, you can quickly list the directories you have exported to other systems on the network.

Example output from the command line "showmount -e" executed the command line from the system "my\_system\_name":

```
export list for my_system_name:
/users      machen redpony
/           machen redpony
```

This example says that the directories "/" and "/users" are exported to the systems "machén" and "redpony" only.

In A/UX 3.0, /etc/exportfs can be used. With no options, all exported file systems are listed.

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Tech Info Library Article Number:6300



# Tech Info Library

## A/UX: How to Monitor NFS Activity (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Monitor NFS Activity (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

How can I monitor NFS activity?

DISCUSSION -----

The nfsstat command displays or initializes information about the Network File System (NFS) and Remote Procedure Call (RPC) interface to the kernel. It is a good way to monitor NFS activity and load.

The nfsstat command executed without any options gives you a complete output, displaying the NFS, RPC, server and client statistical information.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:6301





# Tech Info Library

## A/UX: NFS Configuration (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS Configuration (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

What files are modified when configuring a system to be an NFS server?

DISCUSSION -----

The following files are modified in some way when installing NFS:

- /etc/inittab
- /unix
- /etc/fstab
- /etc exports

The /etc/inittab file must be modified to start the BNET and NFS daemons.

The kernel, /unix, must be recreated to include the NFS modules.

The /etc/fstab file is a list of the local and remote partitions which are to be mounted automatically at boot time.

The file /etc/exports contains a list of the file partition which the server system will allow to be remotely mounted by other systems on the network.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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# Tech Info Library

## A/UX: The nobody Login Account (9/94)

Revised: 9/6/94  
Security: Everyone

A/UX: The "nobody" Login Account (9/94)

Article Created: 15 October 1990  
Article Last Reviewed: 6 September 1994

TOPIC -----

How do I modify /etc/passwd for NFS? What's the "nobody" login account for?

DISCUSSION -----

The /etc/passwd file must contain a login account for "nobody".

Enter the line: `grep nobody /etc/passwd`

The response should be:

```
nobody:*:65534:65534::/:
```

If this line does not appear, modify the /etc/passwd file to include it. This account is used by NFS to disallow root access via NFS.

For system security reasons, the super-user does not have access permissions on remote file systems. This is implemented by mapping UID 0 ("root") to UID 65534 (unsigned representation of -2 in 2's complement notation) on all NFS client systems. The super-user on an NFS client has the same permissions as a user with the UID -2.

The login account "nobody" has the UID 65534 (-2).

Article Change History:  
06 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6304



# Tech Info Library

## A/UX: Fields in /etc/fstab (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: Fields in /etc/fstab (9/94)

Article Created: 20 November 1990  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

What are the fields in the file /etc/fstab?

DISCUSSION -----

The file /etc/fstab consists of a number of lines like:

```
/dev/dsk/c0d0s0      /          5.2 rw      1 1
hostname1:/usr/catman /usr/catman nfs ro,soft 2 2
```

Fields are separated by blanks or tabs. A number sign (#), as the first non-space character, begins a comment.

The first field in each line specifies the device on which the local partition to be mounted exists. For a remote file partition, it contains the hostname of the system on which the remotely-mounted file system really exists, and then a colon (:), followed by the absolute path name of the file partition as it exists on the server system.

The second field is the local mount-point. For a local system file partition, the device pathname is specified. For a remote file partition, you should see the remote host's name and the full pathname of the file partition to be mounted.

The third field is the type of file system. This may be 4.2, 5.2, nfs, or ignore. If this field is ignore, the entire line is ignored. This feature lets you keep remote mounts that you do not want to mount routinely in /etc/fstab when you boot the system.

The fourth field contains options that are passed to the mount command. Some of the valid options include:

- "rw" specifying that the mounted file system is readable and writable.
- "ro" specifying that the mounted file sytem is read-only.
- "soft" If a file system is mounted read-only, this option lets the client system keep running using only local data, when the server system goes down.

The fifth field is a dump-level parameter used by the dumpfs command.

The last field is the fsck pass number; this number indicates in what order the partition will be checked by fsck. Partitions on different physical drives may be checked at the same time. This field value is not used on remote file systems.

Support Information Services

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Tech Info Library Article Number:6305



# Tech Info Library

## A/UX: Solution to RPC\_PROG\_NOT\_REGISTERD Error

Revised: 9/28/92  
Security: Everyone

A/UX: Solution to "RPC\_PROG\_NOT\_REGISTERD" Error

=====

Article Created: 15 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I tried to mount a remote file system and got the error:

```
mount: <hostname> server not responding: RPC_PROG_NOT_REGISTERD
```

### DISCUSSION -----

Check to see that the /etc/initd daemon is running.

1) Log on to the system as "root".

2) Enter the line:

```
ps -ef | grep mount
```

The output should look like this:

```
root  317   107   0  Apr 25 ?      0:05 rpc.mountd
```

If you did not get this output, do these steps:

1) Enter the line:

```
grep inetd /etc/inittab
```

You should see this output:

```
net9:2:respawn:/etc/inetd
```

The inetd daemon starts the rpc.mountd daemon. If the output does not match the above output, edit the file /etc/inittab and change that line so that it does.

2) Shut the system down into single-user mode;

```
# sync; sync
# init 1.
```

3) Bring the system back up into multi-user mode

```
# init 2
```

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Tech Info Library Article Number:6306



# Tech Info Library

## A/UX: Solution to mount:<fileSystem> no such file or directory

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "mount:<fileSystem> no such file or directory"

=====

This article last reviewed: 15 October 1990

TOPIC -----

I'm trying to mount a file system and keep getting the error:

mount: <file system> no such file or directory

DISCUSSION -----

Be sure that the file system you specify really exists.

- 1) Is the file system pathname spelled correctly?
- 2) Is the directory pathname you specified actually there?

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Tech Info Library Article Number:6307





# Tech Info Library

## A/UX: Solution to mount: not in export list for <host> Error

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "mount: not in export list for <host>" Error

=====

This article last reviewed: 15 October 1990

TOPIC -----

I tried to mount a file system and got the error:

```
mount: not in export list for <host>
```

DISCUSSION -----

Enter the line:

```
showmount -e
```

followed by a space and the name of the of the host from which the file system you are mounting exists.

The output displayed lists all the file systems that the remote host has exported and to which systems it has exported them.

Here is example output from the command line, "showmount -e macaux":

```
export list for macaux
/cmd/src    everyone
/s1         my_system_name sleepy grumpy
```

In this example, "my\_system\_name", "sleepy", and "grumpy" systems have permission to mount the file system "/s1". No other system has permission. However, "/cmd/src" can be mounted remotely by any system on the network.

If the name of your system is not included in the export list for a particular file system, you cannot mount that file partition. Consult with the system administrator of that host to have your system added to the export list.

Here is another example output from the command line, "showmount -e macaux":

```
export list for macaux
/cmd/src      everyone
/s1           my_system_name sleepy mispeled
```

In this example, "my\_system\_name", "sleepy", and "mispeled" systems have permission to mount the file system "/s1". No other system has permission. However, "/cmd/src" can be mounted remotely by any system on the network.

The system "misspelled" is not spelled correctly in the export file, so that system cannot mount that partition. Consult with the system administrator of that host to have your system correctly spelled in the export list.

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Tech Info Library Article Number:6308



# Tech Info Library

## A/UX: Solution to network unreachable Error

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "network unreachable" Error

=====

This article last reviewed: 15 October 1990

TOPIC -----

I tried to mount a remote file system and got the error:

network unreachable

DISCUSSION -----

This could be because the Ethernet card or cable connection is not working correctly. Here are four trouble-shooting steps:

- 1) Make sure that the Ethernet cable from the Ethernet card to the rest of the network is connected and seated properly and snugly.
- 2) Check that there is not a broken connection in the main network cable itself.
- 3) Check that cables do not show any physical signs of damage. Ethernet cables should not be crimped, bent, or squished.
- 4) Replaced all cables that show excessive wear.

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Tech Info Library Article Number:6309



# Tech Info Library

## A/UX: Solution to mount: <directory>: Not owner Error

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "mount: <directory>: Not owner" Error

=====

This article last reviewed: 15 October 1990

TOPIC -----

I tried to mount a file system and got the error:

mount: <directory>: Not owner

DISCUSSION -----

You must be logged in as "root" when mounting partitions.

Enter the line:

whoami

The output should be: "root". If it isn't, log in as "root" and try the mount again.

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Tech Info Library Article Number:6310



# Tech Info Library

## A/UX: NFS server <hostname> not responding... Error (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: "NFS server <hostname> not responding..." Error (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

I tried to mount a file system and got the error:

NFS server <hostname> not responding, still trying

DISCUSSION -----

Check to see that the remote system (the one with the file system you're trying to mount) is available.

Enter the line:

ruptime

Here is an example of the kind of output you might see:

|        |      |          |
|--------|------|----------|
| grumpy | down | 0:11     |
| sleepy | up   | 36+00:41 |
| snow   | up   | 21:54    |

The system "grumpy" is down. Because the host is down, the NFS file systems aren't available and won't be available until the host comes back online.

Article Change History:  
06 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6311



# Tech Info Library

## A/UX: How to Make an NFS Daemon Run (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Make an NFS Daemon Run (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

My NFS daemon isn't running. Why not?

DISCUSSION -----

Was the nfs daemon started in /etc/inittab? If not, follow these steps:

1) Log on as "root".

2) Edit the file /etc/inittab

3) Change the line

```
nfs3:2:off:/etc/nfsd 4      # set to "wait" for NFS server
```

to:

```
nfs3:2:wait:/etc/nfsd 4     # set to "wait" for NFS server
```

4) Enter the line: telinit q

5) Enter the line: ps -ef | grep nfsd (or, ps-a | grep nfsd in the C shell)

The output should resemble the following:

```
root  93 1  0 10:00:34?    0:00 /etc/nfsd 4
root  94 1  0 10:00:35?    0:00 /etc/nfsd 4
root  95 1  0 10:00:35?    0:00 /etc/nfsd 4
root  96 1  0 10:00:35?    0:00 /etc/nfsd 4
```

Note that the numbers in the columns may differ on your system.

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6312



# Tech Info Library

## A/UX: NFS Defined (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: NFS Defined (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

What is NFS?

DISCUSSION -----

NFS is the abbreviation for "Network File System".

NFS lets UNIX systems, connected by an Ethernet network, share file systems or partitions remotely (that is, over the network); it lets one UNIX system on the network share and access the disk space of another system on the network. This helps conserve disk space and allows the sharing of resources. For example, printers, or the on-line manual pages are often placed on an NFS volume for global access by everyone on the network.

An NFS client (the remote system) may mount a file partition of the NFS server (the system on which the actual disk space for the partition exists). This is all transparent to the user. The user can access the remote file system as though it were a local disk.

Article Change History:  
06 Sep 1994 - Reviewed.  
31 Aug 1992 - REVIEWED for technical accuracy

Support Information Services

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Tech Info Library Article Number:6313





# Tech Info Library

## A/UX: Solution to /etc/fstab: No such file or directory Error

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "/etc/fstab: No such file or directory" Error

=====

This article last reviewed: 15 October 1990

TOPIC -----

I tried to mount a file system and got the error:

`/etc/fstab: No such file or directory`

DISCUSSION -----

The name of the file system that you are trying to mount does not exist in the file /etc/fstab.

- 1) Log onto the system as "root".
- 2) Edit the file /etc/fstab.
- 3) Add an entry for the file system that you are mounting.

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Tech Info Library Article Number:6314



# Tech Info Library

## A/UX: Solution to mount: <file system> already mounted Error

Revised: 11/20/90  
Security: Everyone

A/UX: Solution to "mount: <file system> already mounted" Error

=====

This article last reviewed: 15 October 1990

TOPIC -----

I tried to mount a file system and got the error:

```
mount: <file system> already mounted
```

DISCUSSION -----

Follow these steps:

- 1) Log onto the system as "root".
- 2) Enter the line: mount

A list of the currently mounted file systems will be displayed.

Example output:

```
/dev/dsk/c0d0s0 on / type 5.2 (rw,noquota)
/dev/dsk/c0d5s0 on /users type 5.2 (rw)
macaux:/s1 on /earlwl type nfs (rw,soft)
```

If the file system you trying to mount is listed, then it is already mounted. You may unmount the file system and mount it again to be sure.

- 1) Enter the command

```
umount
```

followed by a space and the absolute pathname of the file system directory. For example, the command "umount /users" unmounts the /user partition.

2) Enter the command

```
mount
```

followed by a space and the device name of the file system to be mounted, a space, and the absolute pathname of the directory on which the file system will be mounted. For example, the command

```
mount /dev/dsk/c5d0s0 /users
```

mounts the file system associated with the device "/dev/dsk/c5d0s0" on the directory /users.

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Tech Info Library Article Number:6315



# Tech Info Library

## Token Ring Packet Format (9/94)

Revised: 9/26/94  
Security: Everyone

Token Ring Packet Format (9/94)

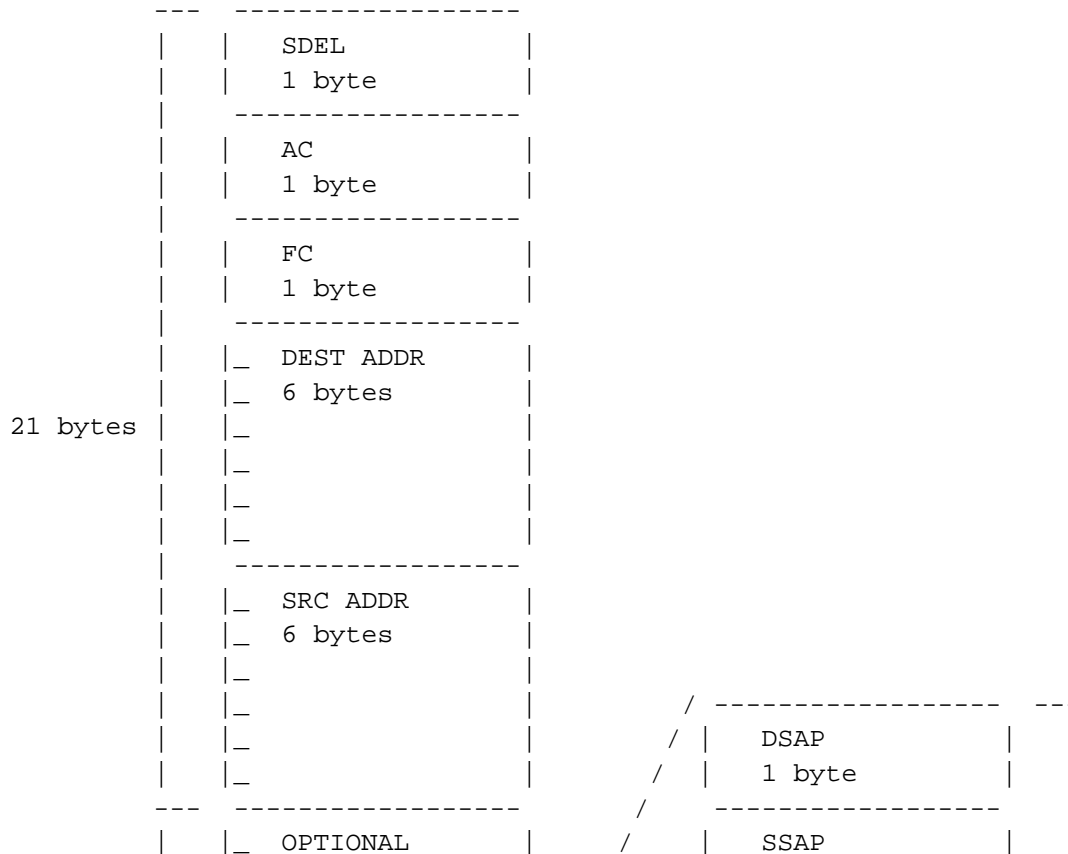
Article Created: 19 November 1990  
Article Reviewed/Updated: 26 September 1994

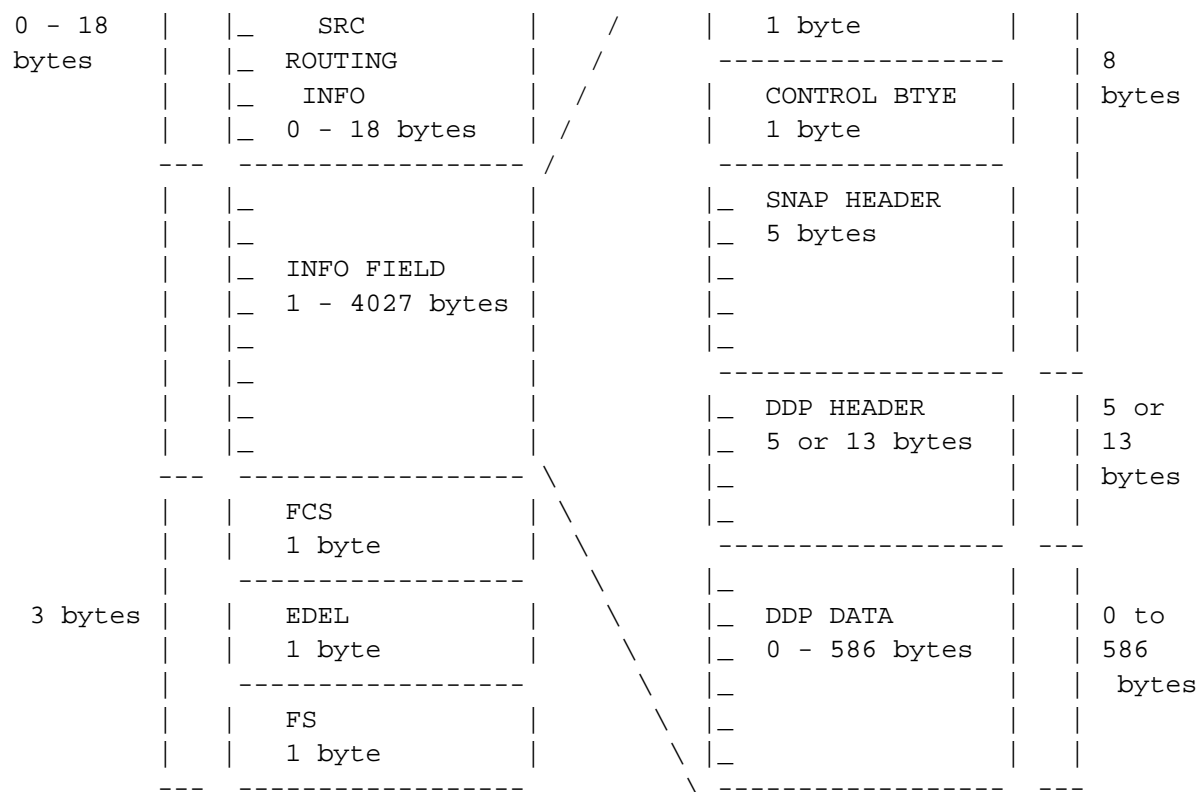
TOPIC -----

This is a drawing of the Token Ring Packet Format.

DISCUSSION -----

Token Ring Packet Format





Token Ring Packet Data Information

Maximum Token Ring Packet Size: 4051 bytes  
Minimum Token Ring Packet Size: 4 bytes  
Maximum TokenTalk Packet Size: 649 bytes  
Minimum TokenTalk Packet Size: 37 bytes

Support Information Services

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Tech Info Library Article Number:6317



# Tech Info Library

## LaserWriter IINTX: Dual Connection to Macintosh and PC (2/95)

Revised: 2/23/95  
Security: Everyone

LaserWriter IINTX: Dual Connection to Macintosh and PC (2/95)

=====

Article Created: 10 October 1990  
Article Reviewed/Updated: 22 February 1995

TOPIC -----

Is it possible to connect a LaserWriter IINTX (with rev 2.0 ROMs) to a Macintosh, through an AppleTalk connection AND to an IBM PC, through a serial connection?

I want to have both cables connected at the same time and select the appropriate port to print from. How do I change from HP LaserJet mode to PostScript mode without changing the DIP switches?

And can I simultaneously have a serial connection and an AppleTalk connection with a LaserWriter IINTX?

DISCUSSION -----

The LaserWriter IINTX will not support simultaneous serial and LocalTalk connections. We recommend that if you are switching between both kinds connections you should disconnect the cable you're not using.

However, it is possible to connect a LaserWriter to an AppleTalk network and to an IBM PC, using software switching to change between the two.

- You must have the LaserWriter IINTX ROM upgrade to switch both ways.
- The following instructions assume that there is a LocalTalk connection to the LaserWriter through the RS-422 port, a serial connection to the IBM PC through the RS-232 port, and all DIP switches are up (default AppleTalk PostScript).
- Remember that the LaserWriter will need some time to respond to the procedures outlined below. Its Ready light flashes while the LaserWriter is setting each of these parameters. Wait for this light to stop flashing before you send another command, or the LaserWriter may not receive all of the next command.

Caution:

-----

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

To Switch From an AppleTalk Connection To a Serial Connection

=====

Step 1:

-----

To disable the RS-422 port, set its baud rate to 0. Send this PostScript file to the LaserWriter:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
9 0 0 setsccbatch
9 0 0 setsccinteractive
<Control-D> %(if in interactive mode)
%
% end PostScript Code
%=====
```

This prevents the printer from sending serial information over the AppleTalk network, causing unpredictable results.

Step 2

-----

To set the LaserWriter to work in LaserJet Plus mode through the serial (RS-232) port, send this PostScript file to the LaserWriter:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
5 setsoftwareiomode
0 sethardwareiomode
<Control-D> %(if in interactive mode)
%
% end PostScript Code
%=====
```

The LaserWriter now uses the RS-232 port, as if it were a LaserJet Plus. The LaserWriter no longer understands PostScript, is not available over the network, and does not appear in the Chooser.

But the IBM PC can now talk to the LaserWriter. To confirm this, type this command at the DOS prompt:

```
MODE COM1:96,n,8,1,p
```

This tells the IBM PC to send information at 9600 baud, the default for the LaserWriter through the serial port. You can now print as though you were connected to a LaserJet Plus.

To Return To a PostScript LaserWriter Over an AppleTalk Network

=====

Step 1

-----

Send a file containing the characters Escape, Delete, 0, and Control-D. The best way to do this is to use BASIC to explicitly put these characters in a file.

For example, use this BASIC program:

```
open "psreturn.txt" for output as #1
print #1,chr$(27);chr$(127);"0";chr$(4)
close #1
```

and send this file to the LaserWriter using this command from the DOS prompt:

```
TYPE PSRETURN.TXT > COM1
```

whenever you want to switch to a PostScript LaserWriter.

The LaserWriter is now in PostScript mode and using serial communication. You can send PostScript programs from the IBM PC through the RS-232 port, and the LaserWriter will respond.

To Switch Back to AppleTalk Communication Through the RS-422 Port

=====

Step 1

-----

At the DOS prompt, create this PostScript program:

```
COPY CON SET.MOD
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
0 setsoftwareiomode
2 sethardwareiomode
<control-Z>
%
% end PostScript Code
%=====
```

Step 2

-----



Send the program to the LaserWriter with the DOS command:

```
TYPE SET.MOD > COM1
```

(this will take some time).

The LaserWriter is now back in AppleTalk PostScript mode, using the RS-422 port.

### Step 3

-----

Set the baud rate of the RS-422 port back to what it was. This can be done from your Macintosh using this PostScript program:

```
%=====
% Begin PostScript Code
%
serverdict begin 0 exitserver
statusdict begin
  9 9600 0 setsccbatch
  9 9600 0 setsccinteractive
%
% end PostScript Code
%=====
```

This assumes that you want to set the baud rate to 9600. Change this number if you want another rate.

This is not the LocalTalk baud rate; it is the baud rate that would be used if you connected serially to the RS-422 port. You are not required to set this number back to what it was to work over LocalTalk, but it is the default number set in the printer.

The LaserWriter's settings should now be what they were when you started.

### Article Change History:

22 Feb 1995 - Added PostScript caution and reformatted.

18 Sep 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6318



# Tech Info Library

## MacTerminal 3.0: How To Send Break

Revised: 11/29/90  
Security: Everyone

MacTerminal 3.0: How To Send "Break"

=====

This article last reviewed: 12 November 1990

TOPIC -----

A customer wants multisession support from MacTerminal 3.0 running on a Macintosh connected to a DEC terminal server. He needs to be connected to the LocalTalk network to print during sessions.

His terminals let him use a "break" key to switch between different sessions that the terminal server is maintaining for the particular terminal.

He wants to be able to watch three sessions at the same time in different windows on a two-page display.

What is the ASCII code to put a DEC terminal server into a new session?

DISCUSSION -----

There is no ASCII code for the BREAK signal. The data line can be in two conditions:

- MARK (negative voltage, binary 1), or
- SPACE (positive voltage, binary 0).

The data line is normally in MARK condition; it is in the SPACE condition only while a frame is being transmitted. A longer-than-normal SPACE condition, around 100 to 600 milliseconds, is used as a special signal known as a BREAK.

The "Send Break" command in MacTerminal 3.0 sends a long break (3.5 seconds) across the open connection, which has the same effect as choosing the corresponding Break key from the keyboard. The "Send Break" command in MacTerminal 3.0 is under the Sessions menu; its keyboard equivalent is Command-Y.

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Tech Info Library Article Number:6319



# Tech Info Library

## A/UX: How Users Can Shut Down Without Root Access (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: How Users Can Shut Down Without Root Access (9/94)

=====

Article Created: 29 November 1990  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

A system administrator at an A/UX site wants to give users the ability to power off their machines, but without giving them root access. Is the following procedure a suitable way to power down the machine? Here is what he did:

1) He modified the /mac/bin/Login file with ResEdit, changed the string Guest to poweroff (STR# resource), and modified the dialogs accordingly.

2) He compiled the following C program and named the executable poweroff:

```
poweroff.c
#include <stdio.h>

main(argc, argv)
int      argc;
char     *argv[];

{
    setuid(0);
    argv[0] = "reboot";
    execl("/etc/reboot", "reboot", "-h", 0); /* -- run reboot */
    /* -- NOTREACHED */
}
```

3) Poweroff\* was put in the /root directory and given these permissions:

```
# ls -l /root/poweroff
-rwsr-xr-x  1 root    root      2373 Aug 17 18:20 /root/poweroff
```

4) An account called "poweroff" was added to /etc/passwd that executes /root/poweroff when a user logs in under that name (or selects the power-off radio button in the Login screen). For example:

```
# grep poweroff /etc/passwd
poweroff::8:1000:user shutdown account:/root:/root/poweroff
```

The only possible problem with this is that a user could log on to another user's machine and shut it down. Giving the user a power-off password makes this unsuitable for installations where there is limited network discipline.

#### DISCUSSION -----

Your C code seems to meet the customer's need: shutting down A/UX without being root.

This additional code can be included in the poweroff.c to prevent a remote user from shutting down the system:

```
char *ttyname();
char *p;
char *d="/dev/ttyC";

p=ttyname(0);
if (strncmp(p, d, 9) != 0) {
    fprintf(stderr, "%s: not a CommandShell type of window\n", argv[0]);
    exit(1);
}
```

#### Article Change History:

23 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6320



# Tech Info Library

## LaserWriter: No Backup Utility for Non-Composite Fonts

Revised: 11/29/90  
Security: Everyone

LaserWriter: No Backup Utility for Non-Composite Fonts

=====

This article last reviewed: 13 November 1990

TOPIC -----

The documentation with the LaserWriter IINTX I/O board revision 3.0 upgrade tells users to back up the fonts stored on a hard disk connected to the LaserWriter IINTX before doing the upgrade. How do I make a backup of the fonts disk?

DISCUSSION -----

At present, there are no utilities specifically for backing up fonts stored on a LaserWriter hard disk.

Before installing the ROM upgrade, use the LaserWriter Font Utility (it comes with the LaserWriter IINTX) to reformat the hard disk. After installing the ROM upgrade and restarting the system, re-install fonts from the original floppy disks. (If you purchased your fonts from Adobe, already installed on a hard disk, contact Adobe for the procedure.)

Composite fonts are an exception: with the new version of the LaserWriter Font Utility (version 2.0.1, shipping with upgraded printers), you can back up composite fonts to floppy disks. (Composite fonts are small fonts hooked together to support Kanji and Chinese characters, which require more than the 256 characters supported in a single PostScript font.)

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Tech Info Library Article Number:6321



# Tech Info Library

## LaserWriter: Printing Non-PostScript Files from a PC

Revised: 11/29/90  
Security: Everyone

LaserWriter: Printing Non-PostScript Files from a PC

=====

This article last reviewed: 12 November 1990

TOPIC -----

Some customers report problems printing to a PostScript LaserWriter from MS-DOS PCs equipped with LocalTalk PC Cards. From the PC, the printer appears in the Chooser and can be selected -- but it won't print such files as AUTOEXEC.BAT.

DISCUSSION -----

The problem may be that the LaserWriter was connected for use with PostScript files instead of plain text files. When AppleShare PC connects to a LaserWriter for PostScript use, it sends the raw data directly to the LaserWriter without modification. This doesn't work for typical DOS text files because they aren't in PostScript format.

The Epson emulation mode accepts standard text files and converts them to PostScript format before sending them to the LaserWriter. This is the mode you should use for printing AUTOEXEC.BAT and other non-PostScript files created by applications that support PostScript printing.

For most users, the best way to set up AppleShare PC is to make two connections to the LaserWriter: one for PostScript and the other for plain text. For instance, use LPT2 as the Epson connection and LPT3 as the PostScript connection. This uses slightly more conventional memory, but it allows you to print either type of document without altering configurations.

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Tech Info Library Article Number:6322



# Tech Info Library

## Ethernet: DDP Client With DDP Type=69 ID

Revised: 11/29/90  
Security: Everyone

Ethernet: DDP Client With DDP Type=69 ID

=====

This article last reviewed: 12 November 1990

TOPIC -----

While checking Ethernet traffic, we noticed a large number of short (60-byte) EtherTalk packets (Phase 1) of an unknown protocol type. We opened the packet and found that they were DDP Type=69. The Ethernet is heavily loaded, especially with LAVC (Local Area VAX Cluster) traffic, and the apparently exclusive use of minimum size packets is a concern.

Can you identify the application that uses/produces these packets? We use 3COM servers and the older 3+Share Macintosh client software.

DISCUSSION -----

There is no way to tell which vendor creates packets with DDP Type=69 because Apple does not assign or control the use of DDP Type beyond \$0F.

We don't know if the packets come from the 3COM server, but you could try to find the Ethernet node by matching the 48-bit Ethernet source address in the 802.3 header and the Ethernet adapter hardware address.

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Tech Info Library Article Number:6323





# Tech Info Library

## MultiGate Mac: General Information

Revised: 12/18/91  
Security: Everyone

MultiGate Mac: General Information

=====

Article Created: 5 October 1990  
Article Last Reviewed: 10 August 1992  
Article Last Updated:

TOPIC -----

MultiGate Mac is a software router/gateway for Macintosh II computers from Network Resources Corporation. It supports

- AppleTalk and TCP/IP routing
- IP in DDP encapsulation (MacIP support for MacTCP clients)
- Up to five Ethernet cards and one LocalTalk.

DISCUSSION -----

MultiGate Mac can run as a concurrent AppleShare application, or under MultiFinder or System 7 with a mail gateway. The only requirement is that an additional Ethernet card be used for other services besides the gateway, because MultiGate Mac requires dedicated cards for routing.

MacIP support lets MacTCP clients on LocalTalk access TCP/IP host computers. MultiGate Mac can be used to connect an AppleTalk internetwork to a TCP/IP backbone and provide IP in DDP encapsulation for up to 254 Macintosh computers anywhere on the AppleTalk internetwork. Flexible IP support allows for static addressing via MacTCP, MacTCP server mode, or a combination of the two.

MultiGate Mac also supports an alternative host access scheme, based on the MultiGate Stream Protocol. This user-friendly protocol is highly efficient on limited-bandwidth networks (LocalTalk, for example).

MultiGate Mac supports full TCP/IP interior gateway routing between Ethernet segments. This includes support for RIP, proxy-ARP, and RFC-950 subnetting.

SNMP support is also provided.

## Configuration

-----  
ConfigureIt!, a HyperCard stack, makes it easy to configure the gateway. ConfigureIt! builds a text file that is read by the gateway at startup. (This file can also be edited using TeachText.)

When MultiGate Mac reads the configuration file, it does extensive error checking to make sure the configuration is valid. It checks for syntax errors in the configuration file, and when the network protocols are initialized, it checks for such items as valid network numbers, consistent subnet masks, duplicate addresses, etc. If it detects an error, the gateway logs a message to the monitor, detailing the problem. The user can then correct the problem and try again.

Once the gateway is running, it continues to monitor the network. It shuts down only if it encounters a serious network error. In such a case, it logs a message to the monitor.

## Operations Interface

-----  
A password-protected Operations Interface is accessible via any computer capable of establishing a Telnet session. This powerful interface provides detailed information on gateway status, port statistics, and gateway configuration. It also provides detailed network information, including AppleTalk routing information, with statistics on network usage, IP routing, encapsulation mapping tables and activity, ARP and AARP tables, "pinging" of AppleTalk or IP devices, tracking and logging of network error packets, and so on.

The error tracking feature is useful for isolating network faults; it lets the user view the first 100 bytes of each protocol layer in an error packet that has been saved. This information can be used to pinpoint the offending entity. Over 100 network errors on the AppleTalk and IP networks are tracked.

## Features of the Telnet Interface

- 
- Prints AARP tables (AT->EN mapping tables).
  - Prints ARP tables (IP->EN mapping tables).
  - Prints the gateway configuration.
  - Evaluates expressions in octal, decimal, and hex.
  - DNS lookups of names.
  - Can dump specific portions of router memory (like MacsBug).
  - Prints a summary of various errors and events recorded by the router including: packets dropped due to unknown AT network, packets dropped due

to unknown EN address (via AARP), hop count overflow, error packets saved by router. Over 100 types of error packets are saved. The first 100 bytes of each protocol layer can be dumped for analysis to determine originating device, destination, type of packet, etc. Many events other than those listed above are recorded by the gateway.

- Logs errors to your screen in real time.
- Can define the format packets are logged with.
- Can log packets to/from a given address of given type in real time.
- Can shut down the gateway.
- Dumps address mapping for IP-in-DDP encapsulation.
- Prints summary of each TCP<->MSP connection.
- Prints the detailed state of a specific connection.
- Dumps the entire AT<->IP mapping tables.
- Dumps NBP address tables.
- Does an NBP lookup and prints the results.
- Dumps info about packet buffer at a given address.
- Sends and times Echo packets to the named host (AppleTalk or IP).
- Can restart the gateway.
- Dumps the RTMP tables for all AppleTalk nets.
- Dumps the RIP tables for all IP nets.
- Gives the RTMP or RIP entry for a defined network#.
- Prints the status of the gateway and detailed statistics on each port.
- Traces connections.
- Displays current software version.
- Flushes the ARP/AARP entry for a particular address.
- Dumps the RTMP table for each net in that zone.

#### Security

-----

The current version of MultiGate Mac provides the following:

- Filtering of inbound Telnet sessions to connected networks

- The ability to declare a network insecure. This means that the gateway won't respond to RTMP tables and RIP tables on a given network, unless the router providing the tables is statically configured in the gateway configuration file.

#### MultiGate 2000

-----

The functionality of MultiGate Mac is also available with NRC's dedicated LocalTalk-to-Ethernet hardware router, MultiGate 2000. The software module, called IPGate, provides all the features of MultiGate Mac other than Ethernet-to-Ethernet routing. Instead of logging start-up errors to the screen, IPGate logs them to NVRAM and then reboots from PROM code (ensuring that the router will come back up). MultiGate Manager Jr. can then be used to retrieve the error code from NVRAM. Users can then analyze the error, make the appropriate corrections to the router configuration, and then download a new image to the router.

For more information, search on "Network Resources".

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Tech Info Library Article Number:6324



# Tech Info Library

## Macintosh IIci: Built-in Video Memory Usage

Revised: 7/10/92  
Security: Everyone

Macintosh IIci: Built-in Video Memory Usage

Article Created: 14 November 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

I have a problem with a Macintosh IIci with 1MB of RAM, which allows only the Black/White option in the control panel -- even though the monitor is RGB. Is there a way to increase the RAM video to allow using 256 colors?

DISCUSSION -----

A Macintosh IIci system with 1MB RAM supports up to 256 colors or grays, using RAM-based video (RBV). This chart details how much memory is used:

|                          |      |
|--------------------------|------|
| 2 Colors/Grays (1-bit)   | 64K  |
| 4 Colors/Grays (2-bit)   | 96K  |
| 16 Colors/Grays (4-bit)  | 160K |
| 256 Colors/Grays (8-bit) | 320K |

A 1MB Macintosh IIci system using 8-bit video would, in effect, be a 704K system. This is not recommended, because it doesn't leave much memory for the System software and application programs.

A 1MB Macintosh IIci system defaults to 64K of memory allocated for video. A Macintosh IIci system with more than 1MB defaults to 320K of memory allocated for video.

Here's how to adjust the amount of memory allocated to video:

- 1) In the Control Panel, select the Monitors CDEV.
- 2) Hold down the Option key. The icon that represents the built-in video will contain a very small Macintosh in addition to the monitor number.

3) Click on the "Options..." button.

The setting in the top half of the dialog allows the user to select the gamma table that is to be used to compensate for phosphor luminosity characteristics of specific monitors. This setting is not unique to the Macintosh IIci and has nothing to do with the amount of memory that is allocated to video RAM.

The bottom half of the dialog, labeled "Memory Allocation For Built-In Video", contains the radio buttons for setting how much memory is allocated to video. This setting limits the maximum number of colors/grays that will be supported.

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Tech Info Library Article Number:6325



# Tech Info Library

## A/UX 2.0: How To Turn Off 32-Bit Clean Warning Message

Revised: 8/17/93  
Security: Everyone

A/UX 2.0: How To Turn Off 32-Bit Clean Warning Message

=====

Article Created:13 November 1990  
Article Reviewed/Updated: 17 August 1993

TOPIC -----

How do I remove the 32-bit clean warning that appears when I launch an application? I know A/UX checks a certain bit within the application, but I don't know which one.

DISCUSSION -----

In A/UX 2.0, there are two ways to set the bit:

- From an A/UX CommandShell window, issue the command:

```
/mac/bin/changesize +32BitCompatible 'Pathname:Application'
```

For example:

```
/mac/bin/changesize +32BitCompatible 'MacPartition:MS Word:Microsoft Word'
```

- From A/UX MultiFinder Desktop, open the Macintosh application with the ResEdit program, open the SIZE resource, look for the "32 Bit Compatible" flag, and set it to 1.

Article Change History:  
17 Aug 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6326



# Tech Info Library

## AutoCAD Rel 10: Macintosh IIci and IIfx Require Version C5b

Revised: 11/29/90  
Security: Everyone

AutoCAD Rel 10: Macintosh IIci and IIfx Require Version C5b

=====

This article last reviewed: 13 November 1990

There are several versions of AutoCAD Rel 10. The version that was shipping before the announcement of the Macintosh IIci was Version C5. With the release of the Macintosh IIci, certain incompatibilities appeared. Autodesk released Version C5b to accommodate the Macintosh IIci and Macintosh IIfx. Contact your AutoCAD distributor for the new version.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6328





# Tech Info Library

## AppleCD SC: Device Driver Status Calls

Revised: 11/29/90  
Security: Everyone

AppleCD SC: Device Driver Status Calls

=====

This article last reviewed: 14 November 1990

TOPIC -----

My questions concern the AppleCD SC's SCSI driver. In my application (written in C), I do a Status Call #98 (called GET SIZE). I receive back 11 words (22 bytes):

```
08 00 00 4A DA
23 00 3C 85 C8
00 4A F9 B8 20
00 00 4B 01 1A
20 24
```

- 1) Is this the standard size to be returned by this call?
- 2) Is there a minimum and maximum size?
- 3) What is the format of this response?

DISCUSSION -----

The information you're looking for is in the AppleCD SC Developer's Guide, available from APDA. It describes all of the device driver Status calls for the AppleCD SC, including the inputs and the outputs for each Status call.

In response to your specific questions about Status call 98 (GetSize):

- 1) The default block size is 2048 bytes.
- 2) The legal block sizes (in bytes) for the AppleCD SC driver are:  
512, 256, 1024, 2048, 2336, and 2340
- 3) The GetSize Status call will return in scParam + 0 the currently assigned

logical block size of the AppleCD SC. In other words, in the first two bytes (one word) it returns the logical block size, which by default is 2048.

In your example, the first two bytes are 08 00. 0800 in hex translates to decimal 2048 -- the default size set for the AppleCD SC. The remaining 20 bytes are not used for this call.

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Tech Info Library Article Number:6329



# Tech Info Library

## HyperCard 2.0: Link to Problem on 68000-Based Systems

Revised: 11/29/90  
Security: Everyone

HyperCard 2.0: "Link to" Problem on 68000-Based Systems

=====

This article last reviewed: 13 November 1990

TOPIC -----

I'm having a problem with HyperCard 2.0. I get an ID=02 bomb when I do the following:

- Create a new stack.
- Create a new button.
- Use "Link to" to link the button to this card.
- Use "Link to" to link the button to this card.

It's the second LinkTo function that causes the bomb.

DISCUSSION -----

This is a known problem that seems to occur only on 68000-based Macintosh systems.

As a workaround, delete the line "go to card xxxx" from the button's script before modifying the link.

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Tech Info Library Article Number:6330



# Tech Info Library

## TLC

Revised: 7/20/93  
Security: Everyone

TLC

=====  
Article Created: 29 November 1990  
Article Reviewed/Updated: 20 July 1993

TLC  
---

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Company Profile:  
Software, specializing in terminal emulation products and Omnis database development.

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Tech Info Library Article Number:6331



# Tech Info Library

## EtherTalk NB Card: Revisions L and M Are Functionally Identical

Revised: 7/2/92  
Security: Everyone

EtherTalk NB Card: Revisions L and M Are Functionally Identical

=====

Article Created: 15 November 1990  
Article Last Reviewed: 26 June 1992  
Article Last Updated:

TOPIC -----

What are the differences between revision L and revision M of the Apple  
EtherTalk NB Card?

DISCUSSION -----

As of November 14, 1990, the Apple EtherTalk NB Card started shipping as revision "M". The revision M EtherTalk NB Card has no functional modifications or differences from the revision L EtherTalk NB Card. The revision from "L" to "M" was made because of a process change in manufacturing and not because of any bug fixes or enhancements to the card.

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Tech Info Library Article Number:6332



# Tech Info Library

## A/UX: Solution to /etc/mtab: No such file or directory Error

Revised: 9/14/92  
Security: Everyone

A/UX: Solution to "/etc/mtab: No such file or directory" Error

=====

Article Created: 29 November 1990

### Article Change History

-----

08/31/92 - REVIEWED  
•For technical accuracy

### TOPIC -----

I tried to mount a file system and got the error:

/etc/mtab: No such file or directory

### DISCUSSION -----

(A) Check for /etc/mtab. The file /etc/mtab must exist for the mount command to work.

- 1) Log onto the system as "root".
- 2) Enter the line, "ls -l /etc/mtab".

The output displayed should look like this:

```
-rwxr-xr-x  1 root    sys      147  Apr 25 14:07 /etc/mtab
```

The size and modification date of this file will differ on your system.

If the output is "/etc/mtab not found", then, the file /etc/mtab is missing and must be created. This series of command lines will create the file /etc/mtab with the correct permissions and ownerships:

- 1) Enter the line: touch /etc/mtab

2) Enter the line: `chgrp sys /etc/mtab`

3) Enter the line: `chmod 755 /etc/mtab`

(B) Check Permissions on the file `/etc/mtab`.

Incorrect permissions on the file `/etc/mtab` could cause this error.

1) Log onto the system as "root".

2) Enter the line: `ls -l /etc/mtab`

The output displayed should look like this:

```
-rwxr-xr-x  1 root    sys      147  Apr 25 14:07 /etc/mtab
```

The size and modification date of this file will differ on your system.

3) If the first column of the output displayed does not equal:

```
-rwzr-xr-x
```

enter the line: `chmod 755 /etc/mtab`

This will correct the file permissions.

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Tech Info Library Article Number:6333



# Tech Info Library

## Denon CD-ROM Problem Solved with System Software Upgrade

Revised: 12/14/90  
Security: Everyone

Denon CD-ROM Problem Solved with System Software Upgrade

=====

This article last reviewed: 11 December 1990

TOPIC -----

My Denon CD-ROM doesn't seem to work with my Macintosh (running System Software 6.0). I have driver version 1.2.

DISCUSSION -----

Your Denon CD driver, version 1.2, is incompatible with System 6.0. Upgrading to System Software 6.0.3 or later should solve the problem.

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Tech Info Library Article Number:6335





# Tech Info Library

## Macintosh Plus: SCSI Device and Driver Support Limits

Revised: 7/24/92  
Security: Everyone

Macintosh Plus: SCSI Device and Driver Support Limits

=====

Article Created: 3 December 1990  
Article Last Reviewed: 24 July 1992  
Article Last Updated:

TOPIC -----

How many SCSI drivers does the Macintosh Plus support according to Apple's specifications? Are there any restrictions on the type or nature of those drivers?

DISCUSSION -----

There are no "published" specifications regarding how many SCSI drivers the Macintosh Plus can have loaded into memory at one time. A typical SCSI driver uses about 5K of memory. If you attached seven SCSI devices, you would use around 35K of memory for their drivers. This 35K or even 50K does not pose a problem. The real problem you have with the Macintosh Plus and SCSI devices is the electrical limitation. Four to five devices is probably the maximum that you can put on the SCSI bus due to the load placed on the SCSI bus by the SCSI devices.

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Tech Info Library Article Number:6339



# Tech Info Library

## LaserWriter IINTX: Printing HPGL Files from a PC

Revised: 12/14/90  
Security: Everyone

LaserWriter IINTX: Printing HPGL Files from a PC

=====

This article last reviewed: 3 December 1990

TOPIC -----

Can I write HPGL files from a PC to a Macintosh LaserWriter IINTX without converting them to PICT or PostScript?

DISCUSSION -----

Briefly, the LaserWriter IINTX emulates an HP LaserJet Plus. LaserJets use PCL, not HPGL. A PC printing an HPGL print job cannot print to a LaserWriter IINTX.

Hewlett-Packard uses different printer control languages, including HPGL and PCL, for their different printers. HPGL is commonly used by CAD/CAM type programs for outputting to plotters. PCL is used by more common, generic programs for outputting to HP LaserJets and similar printers.

Apple's PostScript LaserWriters emulate Diablo 630s. Additionally, the LaserWriter IINTX emulates an HP LaserJet Plus; therefore, a program that uses PCL and is LaserJet-Plus-compatible can print to the LaserWriter IINTX when the LaserWriter IINTX is in its LaserJet Plus emulation mode. Again, you cannot print an HPGL print file directly (without file translation) on the LaserWriter IINTX.

If you want to print to an Apple LaserWriter, you must use a program that supports a Diablo 630, LaserJet Plus, or PostScript-compatible printer. If your program and drivers do not support these types of printers, you need to export and, possibly, translate the data before importing the data to a program that does--whether that program runs on a PC, Macintosh, or another system. Software that might help you includes PlotView and CADMOVER.

PlotView (formerly called MacHP) from Stevens Creek Software allows you to open and display Macintosh HPGL files on a Macintosh, and copy and paste them into other Macintosh programs for embellishment before printing to a

LaserWriter. If you can use Apple File Exchange or a similar program and perform a generic text translation on the PC HPGL file, you can then open it with PlotView. This may work, but may require a little experimentation and manipulation with ResEdit or similar programs. Another option is to write your own AFE translator.

Another program that may work is called CADMOVER from Kandou, which is a 2-D/3-D Macintosh-based vector graphics translation utility, with bidirectional IGES, DXF, PICT, MacDraw, Minicad+, MacConcept, HPGL, Minicad+, Dimensions, Hyperspace, and Space Edit.

We feel the easiest solution would have been to select a program on the PC that also prints to a PostScript printer or, at least, use a program that can save the file in a format (not just an HPGL print file) that can also be read by other Macintosh or PC programs that can print to a PostScript printer. There may be PC programs that open HPGL files and save in a more commonly used file format.

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Tech Info Library Article Number:6340



# Tech Info Library

## MacX25 Is Fully Compatible with Tymnet

Revised: 12/14/90  
Security: Everyone

MacX25 Is Fully Compatible with Tymnet

=====

This article last reviewed: 13 November 1990

TOPIC -----

Can MacX25 be used with the Tymnet public network? Are there any limitations?

DISCUSSION -----

MacX25 is fully compatible and certified with Tymnet. We don't know of any limitations regarding MacX25 running with Tymnet.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6341



# Tech Info Library

## Internet Router: Local Net Setup Conflict

Revised: 12/14/90  
Security: Everyone

Internet Router: Local Net Setup Conflict

=====

This article last reviewed: 13 November 1990

TOPIC -----

Regarding the AppleTalk Internet Router, what conditions cause the Local Net Setup Conflict statistic (shown in the Port Statistics window)? How do you locate and correct the problem?

DISCUSSION -----

The AppleTalk Internet Router manual states:

"A Local Net Setup Conflict error is reported if another router on a network that is directly connected to this router lists a conflicting network number or range for that network."

This statement indicates that there is another router on the same physical cable as the AppleTalk Internet Router that is advertising a network number or range for that physical cable that is different from the network number or range in use by the AppleTalk Internet Router. The key to correcting the problem is to locate the routers that are attached to the physical cable with the problem and verify that they all are using the same network number or range for that physical cable.

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Tech Info Library Article Number:6342



# Tech Info Library

## A/UX 2.0: TeX Format Software

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: TeX Format Software

=====

Article Created: 3 December 1990

### Article Change History

-----

08/31/92 - REVIEWED  
•For technical accuracy.

### TOPIC -----

What is your suggestion for TeX format software for A/UX 2.0?

### DISCUSSION -----

TeXtures is available from Blue Sky Research. It is not A/UX-specific, but it seems to work with A/UX 2.0. For more details, search the Technical Info library under "Blue Sky Research."

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Tech Info Library Article Number:6343



# Tech Info Library

## A/UX: Troubleshooting Tape Backup Problems

Revised: 9/29/92  
Security: Everyone

A/UX: Troubleshooting Tape Backup Problems

=====

Article Created: 13 November 1990

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I haven't been able to back up much of anything. I tried to back up my X11R4 source disk (about 72MB), and "tar" keeps failing on the second tape. I tried:

```
tar clvBf 16 72000 - | tcb > /dev/rmt/tc1
```

and tcb failed with an I/O error after about seven files were written to the second tape.

I tried:

```
tar clvBf 72000 - | tcb > /dev/rmt/tc1
```

and got the same error in the same place.

I also tried:

```
tar clvBf 16 72000 /dev/rmt/tc1
```

This command backed up well into the second tape (but very slowly) and failed with a memory fault error.

The cmdo dialog for tar (using the tape cartridge) generates a command line:

```
tar clvBf 16 4500 /dev/rmt/tc1
```

which writes only 4500 512-byte blocks to the tape.

Express Tape (a commercial backup product) fails on the third tape, when I try to back up the root partition.

I noticed the "time slice" parameter has dropped from 60 ticks to 5 ticks. If I run the "plaid" demo and a few more xdemos, things grind to a halt much more quickly than in version 1.1. (I have not yet received the A/UX driver that turns on the cache for the accelerator.)

Can you help?

#### DISCUSSION -----

The first thing we noticed was a minor typo in each of the above command--they lack the input file(s) or directories. The first one, for example, should have an input file (/source-tree, for instance) specified in the command line:

```
tar clvbBf 16 72000 - /source-tree | tcb > /dev/rmt/tc1
```

We can't reproduce the problem. We used the command below to back up the entire root (/) directory onto two tape cartridges without any I/O error.

```
tar clvbBf 16 72000 - / | tcb > /dev/rmt/tc1
```

The problem with the "tar" command failing on the second tape cartridge may be bad spots on the second tape cartridge. Try replacing that tape cartridge with a new one.

The time slice parameter SLICE is set to 5 by default. However, the kconfig(1M) still states 60. This is an inconsistency. Try adjusting to a different value to fit your needs.

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Tech Info Library Article Number:6344





# Tech Info Library

## A/UX 2.0: NBUF Values

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: NBUF Values

=====

Article Created: 14 December 1990

### Article Change History

-----

08/31/92 - REVIEWED

•For technical accuracy.

### TOPIC -----

I have an 8MB Macintosh. NBUF has a value of 337. The buffer size appears to have doubled since the last release--I was running with NBUF=1000 in A/UX 1.1. Should NBUF be increased? Do you have any tuning suggestions?

### DISCUSSION -----

In A/UX 2.0, the default NBUF value is 10% of the available memory after A/UX is booted, and the SBUFSIZE now is 2048 instead of 1024. The value of NBUF can be adjusted to fit your environmental needs via the "kconfig -n /unix" command. Increasing the number of buffers reduces the memory available for applications and may cause more paging.

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Tech Info Library Article Number:6347



# Tech Info Library

## Printing: High-Volume Solutions from Printronix

Revised: 12/14/90  
Security: Everyone

Printing: High-Volume Solutions from Printronix

=====  
This article last reviewed: 14 November 1990

TOPIC -----

My company does high-volume printing (about 50,000 pages a month). Do you have a solution fthat can handle this volume? The printer should be a 300 to 400 lpm printer. Can you help?

DISCUSSION -----

We have seen Printronix P300-XQ and P600-XQ line printers working with Macintosh computers. This particular configuration used a serial-to-parallel converter to attach the Macintosh serial port to the parallel port of the Printronix. An ImageWriter driver with "Draft" selected was used as the printer driver. Again, this is not a support solution although it seems to work.

An alternative (although still unsupported) could include any mini/mainframe line printer that works with ASCII-based systems and a printer driver construction set, from DataPak Software, called Printer Interface II. Printer Interface II lets the user customize several aspects of the printer driver providing a method to send the correct printer control codes to the mini/mainframe line printer.

The Printronix P300-XQ does 300 to 400 lpm. The Printronix P600-XQ does 600 to 800 lpm. The lower numbers represent compressed printing; the higher numbers represent standard draft mode.

For more details, search the Technical Info library under "Printronix" and "DataPak Software"

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Tech Info Library Article Number:6350



# Tech Info Library

## B-trieve: There's No Equivalent for the Macintosh

Revised: 12/14/90  
Security: Everyone

B-trieve: There's No Equivalent for the Macintosh

=====

This article last reviewed: 19 November 1990

TOPIC -----

Do you know of a B-trieve equivalent for the Macintosh? I would like to port DOS applications to the Macintosh using B-trieve. Whatever version they use must be able to co-exist on Netware and share the same database. Can you help?

DISCUSSION -----

We haven't found a solution that is compatible with B-trieve files. We spoke with Novell and found that they have nothing planned and don't know of any compatible Macintosh solutions. There are b-tree libraries for Macintosh, but they aren't compatible with B-trieve files.

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Tech Info Library Article Number:6352



# Tech Info Library

## Personal LaserWriter NT: Upgrading RAM to 8MB

Revised: 7/27/93  
Security: Everyone

Personal LaserWriter NT: Upgrading RAM to 8MB

=====

Article Created: 19 November 1990  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

The Personal LaserWriter NT literature states that you can upgrade the RAM in the printer to 8MB. How is this done?

DISCUSSION -----

The Personal LaserWriter NT has two SIMM sockets that can accept either 1MB or 4MB SIMMs. Because both SIMMs must be of the same density, the total RAM can be either 2MB or 8MB. The Personal LaserWriter NT ships with two 1MB SIMMs. Therefore, the only upgrade path is to replace the two 1MB SIMMs with two 4MB SIMMs.

The requirements for the 4MB SIMMs are the same as for standard Macintosh II SIMMs, but they must be rated at 100ns or faster. They must also fit in a significantly smaller space than the Macintosh II family allows. This eliminates 4MB SIMMs made from lots of 1MB DRAM chips.

Here are several vendors that advertise compatible 4MB SIMMs:

The Chip Merchant  
MacCenter  
MacSystems/Lifetime Memory Products  
Memory Plus  
Stratum Technologies

To locate a vendor's address and phone numbers, use the vendor name as a search string.

### Article Change History

23 July 1993 - Company title updated from MacSystems to MacSystems/Lifetime Memory products.  
14 September 1992 - Reviewed. for technical accuracy.

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Tech Info Library Article Number:6353



# Tech Info Library

## A/UX: AppleShare, GatorBox and Oracle (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: AppleShare, GatorBox and Oracle (8/94)

Article Created: 19 November 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I have an existing LocalTalk-based network currently accessing an AppleShare File Server. I want to set up an Oracle database under A/UX and would like to be able to access the database from existing Macintoshes on LocalTalk. At the same time, I want to be able to access the A/UX system as an AppleShare file server.

I think I can use a GatorBox with GatorShare to set up the A/UX system as a server. Can the workstations talk to the Oracle database with this type of setup?

DISCUSSION -----

You are correct that you need the GatorBox. However, GatorShare lets Macintoshes access an NFS server as if it were an AFP server. Oracle supports MacTCP connection via both LocalTalk and straight over Ethernet. The A/UX Macintosh does not have to be an NFS file server.

Also, you should be able to access the Oracle database and use the NFS server mounted on your desktop simultaneously.

The Macintosh running A/UX should have the full Oracle database software for A/UX. All other Macintoshes that need to access the server should be running MacTCP and the Network Station Oracle software. This Network Station software includes SQLNET for TCP and other utilities minus the database. In this case, your workstations communicate with the server via TCP/IP and SQLNET (not using AFP or NFS protocols), so you don't need GatorShare.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:6354



# Tech Info Library

## Canon Fax to Macintosh Connectivity Solution (11/94)

Revised: 11/28/94  
Security: Everyone

Canon Fax to Macintosh Connectivity Solution (11/94)

Article Created: 05 November 1990  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

I'm trying to interface my Canon Laser Fax machines models L770 and L920 to a Macintosh II. The Canon machines feature RS-232 interfaces. Has anyone heard of Fax software for the Macintosh that lets these machines work with a Macintosh?

DISCUSSION -----

We don't know of any Fax software that lets you interface a Macintosh with a Canon laser printer/Fax machine. Some manufacturers that design Fax machines license their interfaces to other Fax manufacturers. If the Canon laser printer/Fax machine was designed to interface to a computer, and if the interfacing logic is similar to an existing Fax machine, perhaps some existing software for another Fax machine might also work with the Canon laser printer/Fax.

Some third-party products support fax machines that use interfaces similar to the TE Fax (Relisys), AppleFax (Apple Computer), Flex Fax (Circuit Research), Orchid Modem (Orchid), and ProModem (Prometheus Products). However, we don't know of any specific software available for the Macintosh that lets you interface to this product from Canon.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.  
02 Sep 1993 - Removed reference to BackFax as company is out of business.

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Tech Info Library Article Number:6358



# Tech Info Library

## Macintosh-to-Siemens/Nixdorf Connectivity

Revised: 12/18/90  
Security: Everyone

Macintosh-to-Siemens/Nixdorf Connectivity

=====

This article last reviewed: 5 November 1990

TOPIC -----

I need to connect a Macintosh to a Siemens mainframe H60, running the PS2000 Operating System. I also need to connect a Macintosh to a Nixdorf M15-8870, running under UNIX.

Can you help?

DISCUSSION -----

We contacted Siemens in the U.S., and they don't know of a solution for the Macintosh to connect to their H60 mainframe running BS2000 Operating System. In general, their H60 supports TCP/IP and RS-232, communication protocols and interfaces for terminals, modems, and IBM PCs connections. Because MacTCP and RS-232/422 are supported by Macintosh, you can make a simple connection between a Macintosh and the Siemens H60 mainframe. However, we don't have any specific connectivity solutions for a Macintosh and the H60 mainframe.

According to Nixdorf, there is no 8870 model running under UNIX, but their Targon/31/35 series does run UNIX. The 8870 models run under Nixdorf's proprietary operating system called NIROS. The 8870 models support multi-users, RS-232, CCITT V.24 interfaces, SDLC, BSC, asynchronous and synchronous protocols, and IBM 2780/3780/3740/3270 protocols.

Again, you can connect to the two machines, provided the underlying protocols and/or interfaces are supported by both machines (Macintoshes and third parties).

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Tech Info Library Article Number:6360



# Tech Info Library

## MacX & MacTCP: unimplemented co-routine error 12 (11/94)

Revised: 11/7/94  
Security: Everyone

MacX & MacTCP: "unimplemented co-routine error 12" (11/94)

=====

Article Created: 5 November 1990  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I am running a Macintosh Portable with MacTCP and MacX. When starting up MacX, I get the error message "unimplemented co-routine error 12." I get the same error message when I try to use NCSA Telnet without MacTCP. The same configuration worked on other Macintoshes.

Do you know of any problems using these two software components on a Macintosh Portable?

DISCUSSION -----

The problem may be improper installation of CommToolbox, MacTCP, and/or MacX. We tested both MacX and NCSA Telnet 2.3 on a Macintosh Portable and didn't have any problem. Here are some things to check:

- Make sure that the CommToolbox is properly installed and that the "Communications Folder" folder was created in the "System Folder".
- Make sure that the "MacTCP" and "AdminTCP" CDEVs are in "System Folder" and that the "MacTCP Tool" comm tool is in the "Communications Folder" folder.
- Make sure that all MacX fonts are installed in the "MacX Fonts" folder.
- Make sure that MacTCP is properly configured on the network.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6361



# Tech Info Library

## A/UX 2.0: settc and daiw Commands

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: "settc" and daiw" Commands

Article Created: 5 November 1990

### Article Change History

-----  
08/31/92 - REVIEWED  
•For technical accuracy.

### TOPIC -----

I cannot find two programs: "daiw" (the TROFF output formatter for the ImageWriter) and "settc" (set type and creator) commands under A/UX 2.0. I checked a "known good" master of A/UX 2.0, and I got this:

```
grep -i daiw /FILES
/mac/lib/cmdo/d/daiw      Commando dialog source script for the daiw command
/usr/catman/u_man/man1/daiw.1.z    formatted manual entry for daiw(1)
```

This indicates that there is a Commando dialog and a man page, but no executable daiw command. A "find" on the entire file system produced similar results.

Likewise, I searched for "settc":

```
grep -i settc /FILES
/usr/catman/u_man/man1/settc.1.z    formatted manual entry for settc(1)
```

As you can see, there is a man page, but nothing else. Have these commands been removed from A/UX 2.0? Will they be replaced?

### DISCUSSION -----

We verified that neither the /usr/bin/daiw command (and its associated fonts /usr/lib/font/devi/\*) nor the /mac/bin/settc program is present in the

released version of A/UX 2.0. Manual pages for settc (1) and daiw(1) are still available though.

The missing "settc" had been reported by others; "settc" has been replaced by the "setfile" command in the /mac/bin directory in A/UX 2.0. However, there is no manual page entry for "setfile". According to A/UX Engineering, the "setfile" command syntax is the same as MPW:

```
setfile [options] file
```

options include:

```
-a attributes    # attributes (lowercase = 0, uppercase = 1)
-c creator       # file creator
-d date          # creation date (mm/dd/yy [hh:mm[:ssIIAM|PM]])
-l h,v          # ICON location (horizontal, vertical)
-m date          # modification date (mm/dd/yy [hh:mm[:ssIIAM|PM]])
-t type          # file type
```

Note: Period (.) represents the current date and time.

The following attributes may be used with the -a option:

```
L   Locked
V   Invisible
B   Bundle
S   System
I   Initd
D   Desktop
M   Shared (can run multiple times)
A   Always switch launch (if possible)
```

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Tech Info Library Article Number:6363



# Tech Info Library

## Personal LaserWriter NT: PageMaker 4.0 APD Workaround (8/95)

Revised: 8/23/95  
Security: Everyone

Personal LaserWriter NT: PageMaker 4.0 APD Workaround (8/95)

Article Created: 18 December 1990  
Article Reviewed/Updated: 23 August 1995

TOPIC -----

Where can I get the APD file that's needed by a Personal LaserWriter NT running PageMaker 4.0? (Evidently, the LaserWriter II version of APD works, but it displays spurious messages while you use it.)

DISCUSSION -----

APD (Aldus Printer Definition) are files that Aldus provides primarily to their PageMaker customers. Apple does not supply Aldus Printer Definition files to PageMaker customers. Apple and third-party printer manufacturers do provide information to Aldus, so they can create their APD file for the specific printers.

Aldus Technical Support indicated that a Personal LaserWriter NT APD would be available sometime in the future. In the meantime, they provided a workaround for the only known issue when using the LaserWriter IINT APD with the Personal LaserWriter. A dialog box appears after the Print menu item has been selected. The dialog states:

Check printer type.

If you have trouble printing to  
"{name of printer}" change "Printer:" from  
"{current APD}" to "{printer type}"  
in the Print dialog box.

For the described situation, it would read:

Check printer type.  
If you have trouble printing to  
"{name of printer}" change "Printer:" from  
"LaserWriter IINT" to "LaserWriter

Personal NT" in the Print dialog box.

To eliminate this dialog box from the printing process, do these steps:

- 1) Copy the exact names in the "{current APD}" field and in the "{printer type}" field of the "Check printer type" dialog. In this case:

```
"{current APD}" = "LaserWriter IINT"  
"{printer type}" = "LaserWriter Personal NT"
```

and Quit PageMaker.

- 2) Make a copy of the "LaserWriter IINT.apd" file.
- 3) Open the copy with a word processor or text editor.
- 4) Locate all occurrences of "LaserWriter IINT" and change to "LaserWriter Personal NT".
- 5) Save the copied and modified file in text format with the name "LaserWriter Personal NT.apd". Be sure the .apd extension is included.
- 6) Exit the word processor/text editor and restart the Macintosh.
- 7) Launch PageMaker, go to the Print dialog box, and select "LaserWriter Personal NT" from the "Printer:" popup menu.

This article provides information about a non-Apple product. Apple Computer, Inc. is not responsible for its content. Please contact the vendor for additional information.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

#### Article Change History:

23 Aug 1995 - Made minor corrections.

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Tech Info Library Article Number:6364





# Tech Info Library

## AppleShare PC: 3COM EtherLink MC Card Problems

Revised: 12/18/90  
Security: Everyone

AppleShare PC: 3COM EtherLink MC Card Problems

=====

This article last reviewed: 5 November 1990

TOPIC -----

I have an IBM PS/2 model 55SX with 1MB RAM, 3COM EtherLink/MC card, MS-DOS 3.3, and AppleShare PC 2.01. The server is a Macintosh IIcx with HD80 SC and 4MB RAM with AppleShare 2.0, Internet Router 2.0, and a 3COM Ethernet card. The printer is a LaserWriter IINT. I can reach the printer. The PS/2 recognizes the server on the network, but can't mount it. For example, the F2 button is not enabled in the Chooser on the PS/2. The system asks me to run REDIR, but when I do, I get a Divide Error.

Here is the CONFIG.SYS file:

```
buffers=8
country=047, 865, c:\dos\country.sys
device=c:\dos\ANSI.sys
device=c:\dos\display.sys con:=(ega,865,1)
```

```
files=20
lastdrive=g
device=pro.sys 8 2 2
device=eth523.sys
device=buf.sys
device=idp.sys
device=spp.sys
device.lgl.sys
devise=epath.sys
```

DISCUSSION -----

After unsuccessfully trying to duplicate the problem, I noticed what you entered for the CONFIG.SYS file. It looks like the 3COM installer was used at some time before trying AppleShare PC. All 3COM software must be inactive for AppleShare PC to operate. The 3COM software and the AppleShare PC drivers

conflict with each other.

Remove the following lines from the CONFIG.SYS file:

```
device=pro.sys  
device=eth523.sys  
device=buf.sys  
device=idp.sys  
device=spp.sys  
device=lgl.sys  
device=epath.sys
```

It is also a good idea to remove any lines from the AUTOEXEC.BAT file that reference 3COM software. These lines will begin with runminds, msredir, or nb.

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Tech Info Library Article Number:6365



# Tech Info Library

## Teradata DB and DAL Support

Revised: 2/16/93  
Security: Everyone

Teradata DB and DAL Support

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Article Created: 18 December 1990

### Article Change History

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02/16/93 - UPDATED

- Teradata now NCR/Teradata Corp.

06/30/92 - REVIEWED

- For accuracy.

### TOPIC -----

I want to buy Teradata equipment, and I want an ad hoc query tool. Teradata offers something I haven't seen yet--EQT. Is there any relationship between that and the EQT for DAL (formerly CL/1)? Because we are interested in ClearAccess, when can we expect a DAL driver for the Teradata?

### DISCUSSION -----

We don't know of EQT from Teradata (now NCR/Teradata Corp.). From what we understand, the datamodels provided by Teradata database machines, like DBC/1012 models 2 and 3, are relational, and they are SQL-based. So it is possible to write a Data Access Language adapter for it.

As of release 1.3 DAL for MVS servers (TSO and VTAM) also support Teradata access.

EQT (Executive Query Tool) is a query tool developed by Red Brick Systems. It provides point-and-click access to relational databases, regardless of the workstation platform, the database server, or the server hardware. It runs on Macintosh and DOS Windows. Future releases will run on the OS/2 Presentation Manager, and UNIX workstations. It can retrieve data from Teradata, Oracle, Ingres, Sybase, DB2, Informix, and Rdb databases.

EQT for CL/1 is an old name for an announced product called Claris Query Tool, which uses three mechanisms to access databases: Data Access Language

## ..TIL06366-Teradata\_DB\_and\_DAL\_Support.pdf

(DAL from Network Innovations), DB Library (Sybase), and SQL-Net (Oracle). The Claris Query Tool will be shipped in 1991. For more information about Claris Query Tool, please contact Dennis Ryan, Product Manager at Claris.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6366



# Tech Info Library

## Folder Cannot Be Deleted: How to Fix

Revised: 12/18/90  
Security: Everyone

Folder Cannot Be Deleted: How to Fix

=====

Article Created: 5 November 1990

### Article Change History

-----

08/25/92 - REVIEWED

- For technical accuracy and edited.

### TOPIC -----

There is a folder that I cannot delete from an AppleShare server. I have rebuilt the desktop, reinstalled system software and AppleShare, and even started the server without AppleShare, so I could try to throw the folder away directly. Also, any file that is put into this folder disappears.

What is causing this to happen? Could it be bad sectors on the disk? How can it be most easily fixed?

### DISCUSSION -----

The most likely cause of the problem you describe is a corrupted directory structure. This type of problem could happen either on an AppleShare server or an individual Macintosh. Here is what we suggest:

- 1) Use Disk First Aid on the volume; this will sometimes repair slightly damaged directories.
- 2) Run "The Norton Utilities for the Macintosh", "Symantec Utilities for the Macintosh", or equivalent package to try to repair the volume. These utilities can repair damaged directories that Disk First Aid cannot.
- 3) Back up all the data on the hard disk and reformat it. This will solve the problem if all else fails.

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Tech Info Library Article Number:6369



# Tech Info Library

## Macintosh: Connecting NTSC Devices to the Macintosh

Revised: 6/8/92  
Security: Everyone

Macintosh: Connecting NTSC Devices to the Macintosh

=====  
Article Created: 18 December 1990  
Article Last Reviewed: 1 June 1992  
Article Last Updated: 1 June 1992

### TOPIC -----

I have a 25-Inch Sony Trinitron KX-2501A, a 40-Inch Mitsubishi VS-4003R and a Sony high-resolution projector, Model VPH722Q1.

I want to be able to use them for a presentation.

How can I tie these displays (RGB and/or composite) into a Macintosh II?  
Eventually, I want a capability for all three displays.

### DISCUSSION -----

We have been unable to track down any information on the Sony Trinitron KX-2501A. Generally, when a Sony product has the Trinitron title it is a consumer-level display unit. Extrapolated from that, it most likely provides NTSC input rather than RGB input.

The Sony VPH722Q1 is an NTSC composite projector. To provide the high-quality Macintosh images to which people are accustomed, a video projector that accepts RGB input at a horizontal scan rate of 22 MHz should be used. Generally, these projectors are known as having data projection capabilities. The Sony VPH722Q1 is not considered by Sony as a data projection unit.

The Mitsubishi VS-4003R accepts only NTSC input. Using the above assumption concerning the Sonys and the fact that the Mitsubishi is NTSC, the following information applies to connecting NTSC devices to the Macintosh.

The Macintosh standard video output is RGB. To display this video output on a NTSC device certain things need to take place:

- The typical scan rates for RGB are much higher than that of NTSC; this scan

rate must be lowered to meet the NTSC RS-170-A specifications.

- RGB is a component video signal, NTSC is a composite video signal; the RGB signal must be converted to the composite signal.
- The RGB cable is a multi-conductor cable. The NTSC cable is a two-conductor cable. The device that does the RGB-to-NTSC conversion typically provides the correct output connector for NTSC, and sometimes provides a pass-through for RGB.

The scan rates are determined by the video card residing in the Macintosh. Therefore, the first item to address is the video card to be used. Some video cards are designed as RGB scan rates only. Some can be configured to the appropriate rate. Others can output NTSC scan rates only. If you have a video card that can be configured to the correct rate, the addition of the converter and cable is all that is required. If your current card is RGB only, then you need a new card.

Once a video card configurable to NTSC scan rates is present in the Macintosh, the next step is to locate a converter box that works with the particular video card in use. Sometimes this box is available only from the manufacturer of the video card, other times third parties provide a selection to choose from. This depends on the card.

When a converter box that works with the video card is located, the remaining step is to plug the NTSC output of the box into the NTSC input of the monitor. This is exactly like plugging a VCR into a television. Most often this is a RCA-type phono plug to RCA-type phono plug cable.

The other common connector is the BNC connector. Adapters are available to convert the connectors from one style to the other. The newer converter boxes appearing on the market also offer an S-Video connection. These connectors are mini-4 connectors (similar to Apple's Mini-8 connectors). They are found on newer televisions, monitors, Hi-8mm/Super-VHS/EdBeta video cassette recorders, and camcorders. The S-Video connection yields a higher-quality image than the usual NTSC signal. S-Video, however, is still an NTSC signal.

There are image issues when sending the Macintosh screen to NTSC devices, due to the lower-quality image of the NTSC environment. The simplest rule is "develop your presentation on an NTSC monitor". Most of the other issues fall into place if this rule is followed.

You can minimize other issues facing NTSC images with these tips:

- Use larger font sizes -- 24 points minimum.
- Use color palettes designed for the NTSC environment (MacroMind Director includes an NTSC palette).
- Use larger graphic images, small details disappear.
- Use two-pixel-wide horizontal lines to avoid flicker.



## ..TIL06370-Macintosh-Connecting\_NTSC\_Devices\_to\_the\_Macintosh.pdf

- Centering the information, outer edges disappear from display (known as NTSC safe area or TV safe area).

The Macintosh Display Card 4/8, 8/24, and 8/24 GC can be used with NTSC/S-Video devices by including either RasterOps' Video Expander Box or Truevision's VIDI/O Box. Both of these RGB-to-NTSC converters let the new Macintosh Display Cards' signal be sent to NTSC/S-Video televisions and video recorders. For additional information about the details of connecting the Macintosh Display Cards to NTSC, search under "Macintosh and NTSC".

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Tech Info Library Article Number:6370



# Tech Info Library

## LaserWriter IINTX: Serial Connection Parameters

Revised: 12/18/90  
Security: Everyone

LaserWriter IINTX: Serial Connection Parameters

=====

This article last reviewed: 5 November 1990

TOPIC -----

I have a LaserWriter IINTX attached serially to a Novell Netware server and am trying to print PostScript files. But it's not working.

The LaserWriter is configured for PostScript, serial interface, and DSR/DTR handshaking. The port settings are 9600 baud, no parity, 7 data bits, 1 stop bit, and no XON/XOFF. The server settings match and the cable is a full handshake cable.

DISCUSSION -----

Check the data bits setting; the default LaserWriter IINTX setting is for 8 data bits. Switching the server to 8 data bits, or the LaserWriter to 7 data bits should solve the problem. The new "LaserWriter IINT/NTX Owner's Guide" correctly states that 8 data bits is the default. Also, check the following to be sure all settings are correct.

It sounds like you have the server connected permanently to the serial port. We are assuming that the DIP switches are set for this configuration. The DIP switches should be set to:

- Switch 1: Down
- Switch 2: Down
- Switch 3: Up
- Switch 4: Up
- Switch 5: Up
- Switch 6: Down

This sets the LaserWriter IINTX RS-232 port to 9600 baud and the RS-422 port to 0 baud and sets the LaserWriter to PostScript batch mode and DSR/DTR handshaking. These will remain as the default settings for the LaserWriter until the switches are changed.

The other default settings that you cannot set with the DIP switches are no parity check, 8 data bits, and 1 stop bit. You change these parameters and those set with the DIP switches by using PostScript.

The PostScript code that you need to send to the LaserWriter IINTX to change these parameters is:

```
serverdict begin 0 exitserver
statusdict begin PORT BAUD OPTIONS setsccbatch
```

In place of PORT, you need to put the number of the port you want to change. Replace PORT with 9 for the RS-422 port and with 25 for the RS-232 port. The BAUD parameter is simply the data transfer rate you want to use.

The OPTIONS parameter is a little more difficult. You need to know what kind of parity you want to use, what kind of handshaking you want to use, how many data bits, and how many stop bits. Use Table C-1 on page 121 of the LaserWriter IINT/NTX Owner's manual (Table C-5 on page 153 of the new manual) to find the option numbers.

In your case, for the RS-232 port at 9600 baud with no parity, DSR/DTR handshaking, 7 data bits, and 1 stop bit, this is the PostScript program:

```
serverdict begin 0 exitserver
statusdict begin 25 9600 36 setsccbatch
```

Download this PostScript program to the LaserWriter IINTX to see if setting the data bits to 7 fixes the problem.

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Tech Info Library Article Number:6371



# Tech Info Library

## Lanier WP Systems: File Transfer to/from Macintosh

Revised: 12/18/90  
Security: Everyone

Lanier WP Systems: File Transfer to/from Macintosh

=====

This article last reviewed: 5 November 1990

TOPIC -----

I am looking for a file transfer solution between the Macintosh and a stand-alone Lanier word processing system. Do you have any ideas?

DISCUSSION -----

There are a couple of possible solutions. However, they are really good only for infrequent or one-shot transfers. If you want to consistently transfer the files, there isn't a really good solution like Apple File Exchange translators, because it is unlikely that the Lanier word processor uses a format for its disks that could be read by AFE. The other matter is the format of Lanier word processing files.

The first possibility for transferring the files from the Lanier would be to print the files out of a Lanier serial port directly into a terminal program like MacTerminal running on the Macintosh. This would require that the Lanier has a serial port and can print to that serial port. It would also require that you have the appropriate cable to connect the Macintosh to the Lanier. A drawback to this method is that you lose all of the formatting of the Lanier files.

The second possibility is to use a data conversion service. One that we know of that can work with Lanier and Macintosh formats is Pivar Computing Services. Search the Technical Info library under "Pivar" for details.

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Tech Info Library Article Number:6372



# Tech Info Library

## MacTerminal 3.0 Availability and Upgrade Information

Revised: 3/11/94  
Security: Everyone

MacTerminal 3.0 Availability and Upgrade Information

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Article Created: 5 November 1990  
Article Reviewed/Updated: 10 March 1994

TOPIC -----

What is the availability of MacTerminal 3.0?

DISCUSSION -----

MacTerminal 3.0 is the current version of MacTerminal, and you should be able to order it through your Apple dealer or a software mail order catalog service.

There is no upgrade path for upgrading earlier versions of MacTerminal to version 3.0. Customers will have to purchase the latest copy of MacTerminal to get the 3.0 version.

Article Change History:  
10 March 1994; Changed to include update Information.

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Tech Info Library Article Number:6374



# Tech Info Library

## HyperCard 1.2.5: Using find Command To Search Specific Field

Revised: 12/19/90  
Security: Everyone

HyperCard 1.2.5: Using "find" Command To Search Specific Field

=====

Article Created: 5 November 1990  
Article Last Reviewed: 4 June 1992  
Article Last Updated:

TOPIC -----

When I use the find command in HyperCard 1.2.5 to locate a string in a specific field, I get matches in all fields. It works correctly in HyperCard 2.0.

DISCUSSION -----

The HyperCard 1.2.5 "Find" command is documented on pages 106 and 107 of the "HyperCard Script Language Guide: The HyperTalk Language". Using the "Find" command to search on a specific field works only for background fields. If you do a search on a card field, the string will be found in all fields with the text that matches the search criterion.

The find command is more flexible and powerful in HyperCard 2.0.

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Tech Info Library Article Number:6376



# Tech Info Library

## MultiFinder: Background Print Monitor Errors

Revised: 1/20/93  
Security: Everyone

MultiFinder: Background Print Monitor Errors

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Article Created: 5 November 1990

### Article Change History

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- 1/20/93 - UPDATED
- Vendor information.
- 2/02/91 - REVIEWED
- For accuracy.

### TOPIC -----

I have two problems that involve MultiFinder Background Printing. The problems show up on multiple Macintosh computers running Macintosh System Software Version 6.0.5 and LaserWriter Driver Version 6.0.

- 1) After printing a document, the Print Monitor window shows that the print job is "Processing". However, nothing happens (for several hours, if left alone). Only by going into the System Folder and double-clicking Print Monitor will the job finally be released.
- 2) When trying to print a document, a dialogue box comes up and says "Print Monitor found an internal problem, where=6; why=-37." Replacing Print Monitor and reinstalling the system did not correct this situation.

### DISCUSSION -----

These problems are probably related.

- "where=6" is a Print Monitor error: open working directory failed.
- "why=-37" is a System error: dNmErr, a bad name error.

We recommend the workarounds below; do them in the listed order. We advise printing after each step or every couple of steps to see when the problem is

eliminated.

- 1) Throw away the Spool Folder (a new one will be created automatically next time you use Print Monitor).
- 2) Repair the volume with Disk First Aid.
- 3) Repair the volume with Norton Utilities from Peter Norton Computing, (acquired by Symantec Corp and/or SUM Tools from Symantec, or perhaps PC Tools/Macintosh from Central Point Software. (For address and phone information, search the Tech Info Library under the company names.)
- 4) Check for and eliminate any viruses.
- 5) If none of the above works, backup any information you wish to save and then reformat the drive.

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Tech Info Library Article Number:6377





# Tech Info Library

## Using MacX under Macintosh OS With DECwindows on VAX (1/95)

Revised: 1/30/95  
Security: Everyone

Using MacX under Macintosh OS With DECwindows on VAX (1/95)

Article Created: 6 January 1991  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

To use DECwindows clients using MacX under the Macintosh OS, what files need to be on the VAX and what files need to be on the Macintosh?

DISCUSSION -----

On the Macintosh side, for the MacX server to work properly, the Macintosh should be installed and configured with MacX, MacTCP, and CommToolbox. You should have the MacTCP tool in the Communication Folder within the System Folder. On the VAX site, if the DECwindows client is running under VMS, you need to get the "PATHWORKS for Macintosh" software from DEC, which includes some fonts and communications tools for both Macintosh OS and VAX/VMS. If the VAX is running under Ultrix or UNIX, no special files are needed, because TCP/IP transport is usually supported in UNIX OS.

Note: The READ ME file that comes with the MacX lists a few known problems/reasons/solutions for MacX and X11 client applications and troubleshooting tips.

Article Change History:  
30 Jan 1995 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6378



# Tech Info Library

## A/UX: POP (Post Office Protocol) Information (9/94)

Revised: 9/13/94  
Security: Everyone

A/UX: POP (Post Office Protocol) Information (9/94)

Article Created: 19 December 1990  
Article Reviewed/Updated: 12 September 1994

TOPIC -----

I want to use TCP/Connect II with smtp and A/UX. It needs software called POP. Do you have this software? What are its functions? Is it standard on other UNIX systems?

DISCUSSION -----

There are three versions of POP (Post Office Protocol): POP, POP2, and POP3. The detailed specification of POP is described in RFC 918 (obsolete), RFC 937, RFC 1081, and RFC 1082.

Basically, the intent of the original Post Office Protocol (POP) was to let a user's workstation access mail from a mailbox server. It uses the Simple Mail Transfer Protocol (SMTP) to post mail from the workstation to the mailbox server. The POP protocol is dependent on TCP (Transmission Control Protocol). Below is the POP protocol:

The server is listening for a connection with the protocol. When a connection is opened, the server sends a greeting message and waits for commands. When commands are received, the server acts on them and responds with replies.

The client opens a connection, waits for the greeting, then sends the USER and then the PASS commands to establish authorization to access mailboxes. The client begins a mail reading transaction with either an RDEL (to read and delete all messages from a mailbox) or a RETR (to simply read all messages from a mailbox). The server opens and locks the mailbox and responds with the number of characters in the mailbox. Then, the client asks for the data to be sent by issuing the RCEV command. The server responds by sending the mail data.

When all the data has been received, the client sends the RCVD command. If the transaction started with the RDEL command, the server now deletes the mail data from the mailbox. In any case, the server closes and unlocks the mailbox. The client terminates the session with the QUIT command. POP2 is designed for an

environment of workstations and servers on a low-delay, high-throughput, local networks (like Ethernets). The POP2 server is listening on TCP port 109.

POP3 lets a workstation dynamically access a maildrop on a server host. Usually, this means the POP3 is the means a workstation (client) uses to retrieve mail from the server. The POP3 server listens on TCP port 110.

Any UNIX system (like A/UX) that supports TCP can implement a POP server. There is public domain POP server software available from UC Berkeley at the following Internet address (via ftp "anonymous" and any password):

lilac.berkeley.edu 128.32.136.12

or

jagubox.gsfc.nasa.gov

#### Article Change History:

12 Sep 1994 - Reviewed. Added info on jagubox.

31 Aug 1992 - Reivewed.

Support Information Services

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Tech Info Library Article Number:6379



# Tech Info Library

## AppleTalk for VMS 2.0.6 Fixes Error Message Problems

Revised: 2/1/91  
Security: Everyone

AppleTalk for VMS 2.0.6 Fixes Error Message Problems

=====

This article last reviewed: 14 January 1991

TOPIC -----

I get error messages (one every 10 secs.) generated on the VAX/VMS coming from AppleTalk. I am using AppleTalk for VMS 2.0 on one machine and AppleTalk for VMS 2.0.5 on another one. Is this allowed? The error messages are related to the exchange of RTMP packets. The errors are on the operator.log files or via the reply/enable command. This is the error message:

```
%ATK-W-INVPACREC, Invalid packet received  
DETECTED IN ROUTINE RTMPSktListener 1
```

DISCUSSION -----

One of the major changes between AppleTalk for VMS 2.0 and 2.0.5 is that the definition of an invalid packet was changed to exclude a large number of packets that had previously been accepted as valid. This was done because a number of the packets that were previously being accepted were actually very badly-formed packets and were causing the bridge process to crash.

However, things were tightened up so much that packets that valid were rejected. Version 2.0.6 resolves this, and you should get it from the same source from which you got version 2.0.5.

Using version 2.0.6 may resolve your problems. It is also possible that there are bad RTMP packets being generated on the network. In this case, you will continue to receive the warning messages. The ATKBRIDGE.LOG file will contain the actual packets that are being rejected, and you can often identify the sender from the data in this log file.

Either way, you should be using the latest version (2.0.6) on both VAX systems. Version 2.0 has a large number of problems, so the machine running that version should be upgraded.

Finally, if at all possible, you should move everything to AppleTalk Phase 2 and PATHWORKS (formerly LanWORKS). That is the direction we are headed, and you should use AppleTalk for VMS 2.0.6 and 2.1 only as interim releases, until you are ready to install PATHWORKS.

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Tech Info Library Article Number:6380



# Tech Info Library

## LaserWriter: Toner Cartridge Guidelines (2/95)

Revised: 2/21/95  
Security: Everyone

LaserWriter: Toner Cartridge Guidelines (2/95)

Article Created: 19 November 1990  
Article Reviewed/Updated: 21 February 1995

TOPIC -----

Does Apple publish guidelines concerning remanufacturing of toner cartridges?

DISCUSSION -----

Apple recommends using remanufactured or reconditioned instead of refilled toner cartridges.

### Refilled Cartridges =====

Refilled cartridges are merely refilled with toner, usually of a different kind than the original equipment manufacturer toner. The parts inside are not touched. Refilled cartridges may include worn parts, which do not yield the high level of print quality expected of laser printers. In addition, the printer warranty may be void if the printer is damaged due to the use of poor-quality recycled toner cartridges.

### Remanufactured Cartridges =====

Reconditioned or remanufactured cartridges, on the other hand, can be used safely if certain steps are taken in the remanufacturing process. There is the added advantage that these cartridges get recycled, reducing the amount of solid waste that goes into landfills. The minimum recommended guidelines for remanufactured toner cartridges are:

Photo-Conductive Image Drum Inspection/Replacement

-----  
Inspection, and, if necessary, replacement of the photo-conductive image drum.

This is probably the most important part in the cartridge. It is the one most likely to suffer from abrasion and scratches after normal use. A damaged photo drum does not yield good print quality.

#### Urethane Wiper Blade Inspection/Replacement

---

Inspection, and, if necessary, replacement of the urethane wiper blade on the photo drum. This part scrapes toner from the drum. It is subject to heat degradation over time, making it hard and brittle and more likely to damage the photo drum.

#### Internal Parts Cleaning and Inspection

---

Cleaning and inspection of internal parts. There are many small plastic parts, including gears and springs, that should be inspected and cleaned in the remanufacturing process to ensure that they are not faulty.

#### Toner Powder Quality

---

Use of good-quality toner powder.

Apple cannot endorse or certify the products of recycled toner cartridge vendors, because we cannot maintain a program of regular testing of their products to ensure consistent quality control.

#### Article Change History:

21 Feb 1995 - Added keyword; made minor technical updates.  
28 Nov 1994 - Reviewed for technical accuracy.  
23 Jun 1993 - Updated vendor name.

#### Support Information Services

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Tech Info Library Article Number:6381



# Tech Info Library

## Monitor Cables: Pinout Information (4/97)

Revised: 4/18/97  
Security: Everyone

Monitor Cables: Pinout Information (4/97)

Article Created: 19 December 1990  
Article Reviewed/Updated: 18 April 1997

TOPIC -----

From time to time, I need pin-out details for various Apple monitor cables.  
Do you have a chart of this information?

DISCUSSION -----

Here is the pin-out information for various Apple monitor cables. The Apple part number is molded into the connector housing of all Apple monitor cables. For additional information on signal descriptions see the "Guide To The Macintosh Family Hardware" available from APDA and Addison Wesley.

Cable Part #: 590-0161  
Used On: Hi-Res Monochrome Monitor, Hi-Res RGB Monitor

Begin\_Table

| DB-15 | Description     | DB-15 |
|-------|-----------------|-------|
| ===== | =====           | ===== |
| 1     | Red Video Gnd   | 1     |
| 2     | Red Video       | 2     |
| 3     | Comp. sync      | 3     |
| 4     | Comp. sync Gnd  | 4     |
| 5     | Green Video     | 5     |
| 6     | Green Video Gnd | 6     |
| 7     | N/C             | 7     |
| 8     | N/C             | 8     |
| 9     | Blue Video      | 9     |
| 10    | N/C             | 10    |
| 11    | N/C             | 11    |
| 12    | N/C             | 12    |
| 13    | Blue Video Gnd  | 13    |
| 14    | N/C             | 14    |



|       |            |       |
|-------|------------|-------|
| 15    | N/C        | 15    |
| Shell | Shield Gnd | Shell |

Cable Part #: 590-4161

Used on: Hi-Res Monochrome Monitor, Hi-Res RGB Monitor, and future monitors

| DB-15 | Description     | DB-15 |
|-------|-----------------|-------|
| ===== | =====           | ===== |
| 1     | Red Video Gnd   | 1     |
| 2     | Red Video       | 2     |
| 3     | Comp. sync      | 3     |
| 4     | Sense ID 1      | 4     |
| 5     | Green Video     | 5     |
| 6     | Green Video Gnd | 6     |
| 7     | Sense ID 2      | 7     |
| 8     | N/C             | 8     |
| 9     | Blue Video      | 9     |
| 10    | Sense ID 3      | 10    |
| 11    | Comp. sync Gnd  | 11    |
| 12    | N/C             | 12    |
| 13    | Blue Video Gnd  | 13    |
| 14    | N/C             | 14    |
| 15    | N/C             | 15    |
| Shell | Shield Gnd      | Shell |

Cable Part #: 590-0615

Used on: Portrait Display, Two-Page Display

| DB-15   | Description     | DB-25 |
|---------|-----------------|-------|
| =====   | =====           | ===== |
| 1       | H. sync Gnd     | 14    |
| 2       | V. sync Gnd     | 12    |
| 3       | Sense ID 3      | 10    |
| 4       | Sense ID Gnd    | *     |
| 5       | C. sync         | 3     |
| 6       | H. sync         | 15    |
| 7       | V. sync Gnd     | 11    |
| 8       | Sense ID 2      | 7     |
| 9       | Sense ID 1      | 4     |
| 10      | C. sync Gnd     | N/C   |
| A1(in)  | Blue Video      | 9     |
| A1(out) | Blue Video Gnd  | 13    |
| A2(in)  | Green Video     | 5     |
| A2(out) | Green Video Gnd | 6     |
| A3(in)  | Red Video       | 2     |
| A3(out) | Red Video Gnd   | 1     |
| Shell   | Shield Gnd      | Shell |

\* Note that pins 4, 7, 10 are tied together on the DB-15 side

Cable Part #: 590-0574

Used on: Portrait Display, Two-Page Monochrome Display

| DB-25   | Description    | DB-25   |
|---------|----------------|---------|
| =====   | =====          | =====   |
| A1(in)  | Mono Video     | A1(in)  |
| A1(out) | Mono Video Gnd | A1(out) |
| 1       | H. sync Gnd    | 1       |
| 2       | V. sync        | 2       |
| 3       | Sense ID 3     | 3       |
| 4       | Sense ID Gnd   | 4       |
| 5       | C. sync        | 5       |
| 6       | H. sync        | 6       |
| 7       | V. sync Gnd    | 7       |
| 8       | Sense ID 2     | 8       |
| 9       | Sense ID 1     | 9       |
| 10      | C. sync Gnd    | 10      |
| Shell   | Shield Gnd     | Shell   |

Cable Part #: 590-0562

Used on: Two Page Display

| DB-25 | Description     | DB-25 |
|-------|-----------------|-------|
| ===== | =====           | ===== |
| A1    | Mono Video      | A1    |
| A2    | 75• termination | A2    |
| A3    | 75 termination  | A3    |
| 1     | H. sync Gnd     | 1     |
| 2     | V. sync         | 2     |
| 3     | Sense ID 3      | 3     |
| 4     | Sense ID Gnd    | 4     |
| 5     | C. sync         | 5     |
| 6     | H. sync         | 6     |
| 7     | V. sync Gnd     | 7     |
| 8     | Sense ID 2      | 8     |
| 9     | Sense ID 1      | 9     |
| 10    | C. sync Gnd     | 10    |
| Shell | Shield Gnd      | Shell |

Cable Part #: 590-0536

Used On: AppleColor RGB, AppleColor 100 (replaces original cable)

| DB-15 | Description     | DB-15 |
|-------|-----------------|-------|
| ===== | =====           | ===== |
| 1     | Red Video Gnd   | 1     |
| 2     | Red Video       | 2     |
| 3     | Comp. sync      | 3     |
| 4     | N/C             | 4     |
| 5     | Green Video     | 5     |
| 6     | Green Video Gnd | 6     |
| 7     | N/C             | 7     |

|       |                   |       |
|-------|-------------------|-------|
| 8     | N/C               | 8     |
| 9     | Blue Video        | 9     |
| 10    | XRGB8 (Apple ///) | 10    |
| 11    | N/C               | 11    |
| 12    | N/C               | 12    |
| 13    | Blue Video Gnd    | 13    |
| 14    | N/C               | 14    |
| 15    | N/C               | 15    |
| Shell | Shield Gnd        | Shell |

End\_Table

Article Change History:

18 Apr 1997 - Corrected 590-0615 cable information.

14 Aug 1995 - Added formatting for improved viewing on the Internet.

14 Feb 1995 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:6382



# Tech Info Library

## Mouse Compatibility: Macintosh Plus and Apple II Computers

Revised: 7/27/92  
Security: Everyone

Mouse Compatibility: Macintosh Plus and Apple II Computers

=====

Article Created: 19 November 1990  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

My official Apple mouse works on my Macintosh Plus, but not on my Apple II computer. What does this mean?

DISCUSSION -----

There are two vendors for the mouse that works with the Macintosh Plus and Apple II line. If you switch mice between systems, the mouse may not work.

One vendor's mouse works with both lines, and the other works only with the Macintosh Plus:

- The mouse identified as "Made in the US" works on both computers.
- The other is identified as "Made in Japan".

All service stock is of the compatible version (P/N 661-0400).

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Tech Info Library Article Number:6383



# Tech Info Library

## IINTX w/Rev 3 ROMs: Format HD w/LW Font Utility 2.0.2

Revised: 4/1/94  
Security: Everyone

IINTX w/Rev 3 ROMs: Format HD w/LW Font Utility 2.0.2

=====

This article last reviewed: 19 November 1990

TOPIC -----

I recently upgraded my LaserWriter IINTX logic board with revision 3 ROMs. The third-party fonts cause initialization errors when printing. However, if I move the same external hard disk to a non-upgraded LaserWriter IINTX, these fonts print just fine. Where's the problem?

DISCUSSION -----

The LaserWriter IINTX with Rev 3 ROMs does not work properly with a hard disk formatted with the LaserWriter Font Utility 1.x. You need to reformat the disk and copy the fonts back onto the hard disk using the LaserWriter Font Utility 2.0.2. There is no way to make this procedure easier.

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Tech Info Library Article Number:6384



# Tech Info Library

## Macintosh Portable: TCP/Connect & NCSA Telnet Compatibility

Revised: 1/10/91  
Security: Everyone

Macintosh Portable: TCP/Connect & NCSA Telnet Compatibility

=====

This article last reviewed: 20 November 1990

TOPIC -----

I recently read that versions of NCSA Telnet, including NCSA Telnet 2.3 and the current version of TCP/Connect, do not work with the Macintosh Portable.

Is this a MacTCP (driver) problem or is it purely application-based? Should TCP/Connect II offer a solution?

DISCUSSION -----

The incompatibility is with the applications, not with MacTCP. InterCon told us that the latest version of TCP/Connect (version 1.0.1) does work properly with the Macintosh Portable. As of November, NCSA was preparing version 2.4 of NCSA Telnet. Version 2.4 will work with the Macintosh Portable. For more information, please contact: NCSA and InterCon Corp. Both are listed in the Technical Info library.

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Tech Info Library Article Number:6385



# Tech Info Library

## Macintosh SE 2/40 Upgrade: SIMM Requirements

Revised: 1/10/91  
Security: Everyone

Macintosh SE 2/40 Upgrade: SIMM Requirements

=====

This article last reviewed: 20 November 1990

TOPIC -----

To upgrade a Macintosh SE 2/40, do the two additional 1MB SIMMs need to be the same speed as the original 2MB SIMMs?

If so, is there any way to determine the speed of the installed RAM without opening the Macintosh SE case?

DISCUSSION -----

The Macintosh SE 2/40 requires SIMMs that are 150ns or faster. If the SIMMs already in the Macintosh SE are 120ns, you can add two more that are 150ns. The important thing is that the SIMMs in each group (group A is SIMM slot 1 and 2; group B is SIMM slot 3 and 4) must be the same speed.

The only way to tell the speed of the RAM installed is to look at the RAM chips themselves. Typically the 120ns RAM chips will have a "12" printed on them and the 150ns RAM chips will have a "15".

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Tech Info Library Article Number:6386



# Tech Info Library

## Serial NuBus Card: Pinout Information (7/93)

Revised: 7/12/93  
Security: Everyone

Serial NuBus Card: Pinout Information (7/93)

Article Created: 20 November 1990

### Article Change History

07/21/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I need pin-out information for the Serial NuBus (NB) Card.

### DISCUSSION -----

Here are Apple Serial NB Card D-62 Connector Pinouts. There are two types of cables, the Hydra cable with four RS-232-C connectors, and the V.35 cable with one RS-232-C connector and one V.35 connector.

The term "RS-232" as used here refers to a signal that is single-ended and driven between +/-12V.

The terms "RS-422" and "X.21" as used here refer to a signal that is differential and driven +/-, measured differentially.

| Pin # | Signal     | Function                                                    |
|-------|------------|-------------------------------------------------------------|
| ----- | -----      | -----                                                       |
| 1     | +CA1F      | X.21 Control, +CHA1, OUTPUT                                 |
| 3     | -CA1F      | X.21 Control, -CHA1, OUTPUT                                 |
| 6     | +CB1F      | X.21 Control, +CHB1, OUTPUT                                 |
| 8     | -CB1F      | X.21 Control, -CHB1, OUTPUT                                 |
| 16    | +IA1       | X.21 INDICATION, +CHA1, INPUT                               |
| 44    | 1DCDA/-IA1 | RS-232 Data Carrier Detect/X.21<br>INDICATION, -CHA1, INPUT |



|    |            |                                                             |
|----|------------|-------------------------------------------------------------|
| 11 | +IB1       | X.21 INDICATION, +CHB1, INPUT                               |
| 49 | 1DCDB/-IB1 | RS-232 Data Carrier Detect/X.21<br>INDICATION, -CHB1, INPUT |
| 62 | GND_1      | CHA1 GND                                                    |
| 57 | GND_2      | CHB1 GND                                                    |
| 52 | GMD_3      | CHA2 GND                                                    |
| 47 | GND_4      | CHB2 GND                                                    |
| 41 | GND_5      | EXTRA GND                                                   |
| 37 | GND_6      | EXTRA GND                                                   |
| 2  | 232TXDA1   | TX DATA, CHA1, RS-232, OUTPUT                               |
| 7  | 232TXDB1   | TX DATA, CHB1, RS-232, OUTPUT                               |
| 12 | 232TXDA2   | TX DATA, CHA2, RS-232, OUTPUT                               |
| 17 | 232TXDB2   | TX DATA, CHB2, RS-232, OUTPUT                               |
| 4  | 1RTSA      | READY TO SEND, CHA1, RS-232, OUTPUT                         |
| 9  | 1RTSB      | READY TO SEND, CHB1, RS-232, OUTPUT                         |
| 14 | 2RTSA      | READY TO SEND, CHA2, RS-232, OUTPUT                         |
| 19 | 2RTSB      | READY TO SEND, CHB2, RS-232, OUTPUT                         |
| 5  | 1CTSA      | CLEAR TO SEND, CHA1, RS-232, INPUT                          |
| 10 | 1CTSB      | CLEAR TO SEND, CHB1, RS-232, INPUT                          |
| 15 | 2CTSA      | CLEAR TO SEND, CHA2, RS-232, INPUT                          |
| 20 | 2CTSB      | CLEAR TO SEND, CHB2, RS-232, INPUT                          |
| 43 | 1DSRA      | DATA SET READY, CHA1, RS-232, INPUT                         |
| 48 | 1DSRB      | DATA SET READY, CHB1, RS-232, INPUT                         |
| 53 | 2DSRA      | DATA SET READY, CHA2, RS-232, INPUT                         |
| 58 | 2DSRB      | DATA SET READY, CHB2, RS-232, INPUT                         |
| 45 | 1DTRA      | DATA TERMINAL READY, CHA1, RS-232, OUTPUT                   |
| 50 | 1DTRB      | DATA TERMINAL READY, CHB1, RS-232, OUTPUT                   |
| 55 | 2DTRA      | DATA TERMINAL READY, CHA2, RS-232, OUTPUT                   |
| 60 | 2DTRB      | DATA TERMINAL READY, CHB2, RS-232, OUTPUT                   |
| 46 | 1RIA       | RING INDICATOR, CHA1, RS-232, INPUT                         |
| 51 | 1RIB       | RING INDICATOR, CHB1, RS-232, INPUT                         |
| 56 | 2RIA       | RING INDICATOR, CHA2, RS-232, INPUT                         |
| 61 | 2RIB       | RING INDICATOR, CHB2, RS-232, INPUT                         |
| 54 | 2DCDA      | DATA CARRIER DETECT, CHA2, RS-232, INPUT                    |
| 59 | 2DCDB      | DATA CARRIER DETECT, CHB2, RS-232, INPUT                    |
| 39 | 2RXCA      | RECEIVE CLOCK, CHA2, RS-232, INPUT                          |
| 40 | 2RXCB      | RECEIVE CLOCK, CHB2, RS-232, INPUT                          |
| 38 | 2TXCA      | TRANSMIT CLOCK, CHA2, RS-232, INPUT                         |
| 42 | 2TXCB      | TRANSMIT CLOCK, CHB2, RS-232, INPUT                         |
| 13 | 2TXDA      | RECEIVE DATA, CHA2, RS-232, INPUT                           |
| 18 | 2TXDB      | RECEIVE DATA, CHB2, RS-232, INPUT                           |

|    |           |                                      |
|----|-----------|--------------------------------------|
| 21 | +422TXCA1 | +TRANSMIT CLOCK, CHA1, RS-422, INPUT |
| 22 | -422TXCA1 | -TRANSMIT CLOCK, CHA1, RS-422, INPUT |
| 29 | +422TXCB1 | +TRANSMIT CLOCK, CHB1, RS-422, INPUT |
| 30 | -422TXCB1 | -TRANSMIT CLOCK, CHB1, RS-422, INPUT |
|    |           |                                      |
| 25 | +422RXCA1 | +RECEIVE CLOCK, CHA1, RS-422, INPUT  |
| 26 | -422RXCA1 | -RECEIVE CLOCK, CHA1, RS-422, INPUT  |
| 33 | +422RXCB1 | +RECEIVE CLOCK, CHB1, RS-422, INPUT  |
| 34 | -422RXCB1 | -RECEIVE CLOCK, CHB1, RS-422, INPUT  |
|    |           |                                      |
| 27 | +422TXDA1 | +TRANSMIT DATA, CHA1, RS-422, OUTPUT |
| 28 | -422TXDA1 | -TRANSMIT DATA, CHA1, RS-422, OUTPUT |
| 35 | +422TXDB1 | +TRANSMIT DATA, CHB1, RS-422, OUTPUT |
| 36 | -422TXDB1 | -TRANSMIT DATA, CHB1, RS-422, OUTPUT |
|    |           |                                      |
| 23 | +422RXDA1 | +RECEIVE DATA, CHA1, RS-422, INPUT   |
| 24 | -422RXDA1 | -RECEIVE DATA, CHA1, RS-422, INPUT   |
| 31 | +422RXDB1 | +RECEIVE DATA, CHB1, RS-422, INPUT   |
| 32 | -422RXDB1 | -RECEIVE DATA, CHB1, RS-422, INPUT   |

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Tech Info Library Article Number:6391



# Tech Info Library

## Serial NB Card: Custom versus Extender Cable

Revised: 7/16/92  
Security: Everyone

Serial NB Card: Custom versus Extender Cable

=====

Article Created: 20 November 1990  
Article Last Reviewed: 10 June 1992  
Article Last Updated:

TOPIC -----

I am using MacX25 and a Serial NB card. The synchronous modem is located in a different room from the Macintosh, about 10 meters away. Is it possible to get a connecting cable? What is the maximum length we can reach with RS-232 cable between Macintosh and modem?

If this cable doesn't exist yet, we need specifications to build such cable with a J-62 on one side and one RS-232-C on the other.

DISCUSSION -----

We recommend contacting a cable distributor like Black Box and ordering one of their straight-through extender cables. This is far less expensive than having a custom "62-25"-pin cable built. It is also a faster solution, as this cable is fairly common and available in a variety of lengths. Request a cable with all pins attached, with one male and one female connector. You might want to describe the cable length (10 meters plus 3 feet, the length of the "Hydra" cable, which is within RS-232-C specification of 50 feet), and the data rates you intend to use.

For more details, search the Technical Info library under "Black Box".

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Tech Info Library Article Number:6392



# Tech Info Library

## A/UX and SGML (Standard Generalized Makeup Language)

Revised: 11/10/92  
Security: Everyone

A/UX and SGML (Standard Generalized Makeup Language)

=====

Article Created: 10 January 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is there a version of SGML (Standard Generalized Makeup Language) for A/UX 2.0?

### DISCUSSION -----

We don't know if SGML runs under A/UX. However, SoftQuad, Inc. does have some software products related to SGML for the Macintosh OS. Their products include:

- SoftQuad RulesBuilder is an Interactive editor for creating SGML DTDs (Document Type Definitions), which, when compiled, also acts as a SoftQuad Author/Editor rules files.
- SoftQuad Author/Editor CALS is a text entry system that provides easy access to the power of structured editing based on SGML, the U.S Government's publishing standard for the Computer-Aided Acquisition and Logistics Support Initiative (CALS).
- SoftQuad Author/Editor is a context-sensitive text entry system that meets the requirements of the Standard Generalized Markup Language (SGML).

For more details, search the Technical Info library under "SoftQuad."

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Tech Info Library Article Number:6395



# Tech Info Library

## Pinnacle 650 Optical Drive works with A/UX 2.0

Revised: 11/10/92  
Security: Everyone

Pinnacle 650 Optical Drive works with A/UX 2.0

=====

Article Created: 10 January 1991

### Article Change History

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10/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is the Pinnacle 650 drive supported by the A/UX 2.0 drivers?

### DISCUSSION -----

According to Pinnacle Micro Technical Support, the Pinnacle 650 read-write optical disk drive and its accompanying driver work with A/UX 2.0. For more details, search the Technical Info library under "Pinnacle Micro."

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Tech Info Library Article Number:6396



# Tech Info Library

## Apple IIGS: DOS 3.3 and Hard Drives

Revised: 1/10/91  
Security: Everyone

Apple IIGS: DOS 3.3 and Hard Drives

=====

This article last reviewed: 20 November 1990

TOPIC -----

Is it possible to partition the hard drive of a Apple IIGS, so one partition contains DOS 3.3 and applications and the other contains GS/OS? I tried it, and now the IIGS can't recognize DOS 3.3 floppy disks.

DISCUSSION -----

DOS 3.3 was created when hard disk drives were only a dream for microcomputers. Thus, DOS 3.3 and previous versions understand only the 140K 5.25-inch disks. DOS 3.3 does not understand the 3.5-inch disk and hard-disk environments. When hard disks did appear for the Apple II family and DOS 3.3 was still the operating system of choice, individual hard-drive manufacturers devised independent schemes for dividing their products into multiple 140K volumes so DOS 3.3 could work with the hard drives. ProDOS was created to overcome the limits that DOS 3.3 imposed on storage volumes.

GS/OS would require a File System Translator (FST) to recognize the 5.25-inch disks of the DOS 3.3 operating system. However, the FST would be of no assistance in providing DOS 3.3 partitions on a hard disk, because the lack of hard-disk support is a limitation of DOS 3.3 itself, not the FST. To use DOS 3.3 applications on an Apple IIGS requires restarting from a 5.25-inch DOS 3.3 disk.

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Tech Info Library Article Number:6397



# Tech Info Library

## A/UX: Moniterm Monitor Compatibility Issue

Revised: 11/10/92  
Security: Everyone

A/UX: Moniterm Monitor Compatibility Issue

Article Created: 10 January 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

My group just received ten copies of A/UX 2.0 and ten Macintosh IIci systems. We are using Moniterm 21-inch color monitors. The Macintosh OS boots fine. When the system switches to A/UX, the monitor goes blank during the boot process. Is this a known Moniterm problem? Is there a workaround? Tech support at Moniterm didn't have a clue what A/UX was and had never heard of a problem.

### DISCUSSION -----

Typically, third-party video cards have had incompatibilities with A/UX. This goes back to A/UX 1.0. The manufacturers of the cards have had to release new ROMs to get their video cards (and therefore displays) to function properly with A/UX. SuperMac, RasterOps, and other manufacturers have done this.

Because there is no software workaround possibility, the burden of compatibility with the A/UX video drivers rests with the hardware manufacturer.

We will contact Moniterm's tech support and bring the issue up with them again. We suggest that the customer do the same if they want to use these monitors with A/UX 2.0. There may not be too much hope of a solution, if they are not even aware of A/UX. Furthermore, it would be unlikely that there would be a quick solution since ROM upgrades typically take a while.

The other route would be to try similar video cards and monitors from a third-party company that supports A/UX, and this may be the only solution

depending on Moniterm's response.

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Tech Info Library Article Number:6398





# Tech Info Library

## Using British Keyboard on U.S. Macintosh

Revised: 7/2/92  
Security: Everyone

Using British Keyboard on U.S. Macintosh

=====

Article Created: 26 November 1990  
Article Last Reviewed: 26 June 1992  
Article Last Updated:

TOPIC -----

Can I use my British keyboard with an American Macintosh?

DISCUSSION -----

There are a couple of ways to use the Apple Desktop Bus British keyboard with a United States system. Both involve modifying the System Software running on the Macintosh.

The first method is to install the British System software on the Macintosh. This makes all of the necessary resources available, so you can use the machine exactly as you would in the UK.

The second method is to take the necessary resources from a British System Tools disk and install them in the System file on the Macintosh in question. If all you want is to map your keyboard properly, then you need the British 'KCHR' resource. You can use ResEdit to transfer a copy of this resource from the British System to the System file on the Macintosh. Once you've done this, choose the British keyboard mapping through the use of the Keyboard CDEV in the Control Panel.

If you want British sorting as well as British numerical and date formats, then you must copy all the British "itlX" resources too, where the "X" includes b,k,1,2,3,4. At this point, you would probably do better installing the British software, because the international software typically includes keyboard mapping for US keyboards, too.

Either way, the keyboard will function properly with a Macintosh manufactured in the United States.

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Tech Info Library Article Number:6402



# Tech Info Library

## HyperCard 2.0: Compatibility with Earlier XCMDs and XFCNs

Revised: 1/15/91  
Security: Everyone

HyperCard 2.0: Compatibility with Earlier XCMDs and XFCNs

=====

This article last reviewed: 26 November 1990

TOPIC -----

Is there a list of XCMDs and XFCNs that are known to work with HyperCard 2.0? I am converting a mission-critical application from HyperCard 1.2.5 to HyperCard 2.0. The application uses a lot of WindowIt XCMDs and MitemView.

DISCUSSION -----

As of October, 1990, there was no published list of external routines compatible with HyperCard 2.0. Because the list of available routines changes every day, we doubt that there will ever be such a list. Testing results have shown that better than 80 percent of the tested externals work fine with HyperCard 2.0. We know this is not the answer you're looking for, but it's all we have.

For information on specific XCMDs and XFCNs, we suggest you contact the developer directly.

WindowIt, originally from Third Wave Computing and then Heizer Software has been returned to the original developer. As far as we know, it will not be modified to support HyperCard 2.0.

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Tech Info Library Article Number:6403



# Tech Info Library

## Shared Access to Rdb Database under DAL

Revised: 7/21/92  
Security: Everyone

Shared Access to Rdb Database under DAL

=====

Article Created: 15 January 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am having a problem with shared access to an Rdb database under DAL. Here are commands from the VMS \$ prompt and their results:

```
$ icl1
Network Innovations Interactive CL/1 Demo
Execution begins...
  CL/1 version 1.11
Execution Completed Successfully

begin> OPEN RDB DBMS ;
more>  USE LOCATION "CL1$SYSTEM" ;
more>  OPEN RDB DATABASE "CL1DEMO" FOR SHARED READONLY ;
more>  GO
begin> SELECT * FROM OFFICES; PRINTALL ;
more>  GO
.
.
.
data from above database displayed
.
.
.
```

Meanwhile, from another process (once the above user has attached to the database and started a transaction), the following command:

```
$ RMU/DUMP/USERS CL1$SYSTEM:CL1DEMO
```

shows that the above DAL commands produced a read/write transaction on the RDB

database. From all the tests I have done, no read-only transaction is possible on an Rdb database using DAL.

DISCUSSION -----

The symptom you described is one of the restrictions and limitations with DAL and Rdb. Basically, DAL provides protection using a model based on databases and tables, while Rdb uses a model based on protection. We checked with Network Innovations, and they have provided the DAL 1.2 Technical Notes, in which item #10 describes the restrictions and limitations with DAL and Rdb. The following is the text for that note.

----

DAL Technical Note # 010  
Data Access Language (DAL) and Rdb

This tech note discusses restrictions and limitations with DAL and Rdb.

The Rdb DBMS adapter for the DAL Server is best viewed as a VAX/VMS C application which uses Rdb's Dynamic SQL interface to access Rdb databases. Accordingly, any DAL user who intends to access Rdb databases should ensure that his or her account is set up with the proper VMS privileges and quotas required by Rdb. DAL users should also note that any current restrictions or problems in Digital's Rdb and Dynamic SQL will also affect the DAL Rdb DBMS adapter.

For example, when Rdb performs arithmetic operations on floating point data types such as the SQL aggregate function AVG(), Rdb rounds any decimal result to a whole number. Consequently, DAL client queries containing aggregate functions on decimal or float datatypes will return rounded numbers when executed in Rdb.

Listed below are some specific Rdb related problems and their workarounds or explanations:

- Problem #1: Referring to multiple databases by dbaliasname (AuthID)

To support multiple Rdb databases, the DAL Server Rdb Database Adapter uses the DECLARE SCHEMA statement in Rdb's Dynamic SQL for each database opened. In Rdb, each database or schema is referenced by an "authorization identifier" or AuthID. DAL uses the dbaliasname specified in an OPEN DATABASE statement as the AuthID. (Or when a dbaliasname is not specified, the database name is used as the alias and AuthID by default). For example:

| dbaliasname | AuthID |
|-------------|--------|
|-------------|--------|

- |                                              |        |        |
|----------------------------------------------|--------|--------|
| - open database "sample";                    | sample | sample |
| - open database "reservations" alias "test"; | test   | test   |

Normally, the DAL Server keeps track of the AuthID for you. However, if you mix normal DAL statements with Rdb statements (via the DAL EXECUTE IMMEDIATE statement), you may need to use the AuthID when referring to tables, views, and indexes or when using the Rdb SET TRANSACTION statement. When referring to

tables by the dbaliasname in DAL, the correct syntax is:

```
dbaliasname!table_name           sample!offices
```

Rdb uses a period "." instead of an exclamation point "!" when referencing a table by the schema's AuthID:

```
AuthID.table_name                sample.offices
```

(Note: DAL uses the period "." to prepend an owner name to a table. For example, sample!mark.offices in DAL indicates the table offices owned by mark in the database whose dbaliasname is sample.)

So, when using DAL's EXECUTE IMMEDIATE statement to set a transaction mode for a database or to reference a table, be sure to use the database's dbaliasname as the AuthID. For example:

```
open rdb dbms;
open rdb database "daldemo" alias test in location "msad$system";
execute immediate "create table small (text char(20))";
commit;
insert into test!small values ("xyz");
execute immediate "update small set text = 'small fails' where text = 'xyz' ";
rollback;
insert into test!small values ("xyz");
execute immediate "update test.small set text = 'test.small works' where text = 'xyz' ";
commit;
```

## - Problem #2: Table Locking with DAL and Rdb

DAL provides a model for specifying the type of "protection" or "locking" desired when using a database or specific table. Both the OPEN DATABASE and OPEN TABLE statements allow for update modes (READONLY/UPDATE) and sharing modes (SHARED/PROTECTED/EXCLUSIVE). The default mode is UPDATE and PROTECTED. Typically this would mean that the user has a "READ/WRITE" lock on the particular table or database. The sharing and update modes are advisory and are passed on to the DBMS only WHEN APPROPRIATE.

Rdb provides a some what different model for specifying protections that does not map well with the DAL model. Rdb uses an extension to SQL transactions – the SET TRANSACTION statement – to signal the type of locking mechanism desired for that transaction. SET TRANSACTION modes are not persistent across subsequent transactions; they must be specified at the beginning of each new transaction or the default mode of "READ WRITE" and "SHARED" will be used.

DAL update and shared modes are not transaction based; that is, in the DAL model, update and shared modes are "global" session modes and are independent of beginning and committing sessions. Consequently, when a DAL user opens a Rdb database or table, specifying a particular update or shared mode, the Rdb transaction modes are NOT changed. The DAL Server does not alter the Rdb transaction modes because they CANNOT be changed in the middle of a Rdb transaction. One would have to commit the current transaction and begin a new

transaction, setting the transaction modes as desired.

There are two possible problems:

1) PROBLEM: Lock Conflicts caused inserts and updates while using the Rdb default transaction modes.

SOLUTION: Commit as early and often as possible. Generic DAL applications should commit often to free any locks against tables and indexes accessed. Otherwise, other users might be locked out of one or more tables.

2) PROBLEM: User wants to specify READ ONLY to prevent locking.

SOLUTION: Applications tailored to Rdb can explicitly begin new transactions with the desired locking and update modes by using the Rdb SET TRANSACTION statement via the DAL EXECUTE IMMEDIATE statement. Below are examples:

```
open rdb dbms;
open rdb database "daldemo";
execute immediate "SET TRANSACTION READ ONLY;" in Rdb;
...queries....
commit;          /* ends this transaction with READ ONLY */
insert into ....
commit;
```

- Problem #3: Attempting to query directly against the Rdb System Relations occasionally fails. For example, the following query fails:

```
SELECT RDB$RELATION_NAME FROM RDB$RELATIONS;
```

Explanation: When DAL is asked to do a query, it checks the syntax and content of the query statement to ensure that the columns and tables asked for exist in the database and to determine the data types of the results. Certain system relations contain columns with a "SEGMENTED STRING" data type (seg\_str). This data type is not supported in SQL interface for Rdb 3.xxx (but will be supported in Rdb 4.0). Even though the column queried is not of the type seg\_str, DAL looks at the entire structure (column names, data types, and lengths) to check for correct syntax and content. And in doing so, Rdb generates the following error code when it encounters a column with a seg\_str: SQL-F-INVSSCONV, Invalid conversion for segmented string column RDB\$VIEW\_BLR.

WORKAROUND: Use the execute statement to create a view that specifies the non-seg\_str columns desired. Then use DAL to query the view. This way, the DAL server's table look-up won't stumble on columns with the data type seg\_str. The following example does this:

```
Execute immediate "create view temp as
  select rdb$relation_name from rdb$relations";
commit ;          /* don't forget to commit */
Select rdb$relation_name from temp;
```

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# Tech Info Library

## Macintosh: Connecting to LAN-Based SQL Servers

Revised: 12/18/91  
Security: Everyone

Macintosh: Connecting to LAN-Based SQL Servers

=====

Article Created: 26 November 1990  
Article Last Reviewed: 11 August 1992  
Article Last Updated:

TOPIC -----

I am implementing LAN-based SQL servers and would like to connect a Macintosh into that environment. I am looking at three products to run on an OS2/LAN Manager machine: Sybase, SQL Server, and Gupta. What can you tell me about connecting a Macintosh into these products?

DISCUSSION -----

Sybase confirmed that a Macintosh can access SQL Server, if you have the DB Library and HyperDB Library for the Macintosh. These libraries are extra and not part of the basic SQL Server product. Connections are TCP/IP over Ethernet.

SQL Server is the name of the Database Server by Microsoft-Sybase. The Server runs on OS/2, and uses Named Pipes as the network protocol. Named Pipes is a network extension to OS/2--Microsoft's answer for interprocess communications on DOS or OS/2 PC LANs.

Gupta Technologies' SQL Base servers run on either DOS or OS/2, and uses NetBIOS as the network protocol. Gupta told us that there is no way to connect a Macintosh to SQL BASE.

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Tech Info Library Article Number:6406





# Tech Info Library

## A/UX 2.0.1: tunefs Patch on A/UX Info and Update Server

Revised: 9/29/92  
Security: Everyone

A/UX 2.0.1: "tunefs" Patch on A/UX Info and Update Server

=====

Article Created: 26 November 1990

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I am trying to maximize free space on my A/UX root file system with tunefs, but the changes do not stay in effect as they should after re-booting.

I enter

```
tunefs -m 0 -o space /dev/dsk/c0d0s0
```

Then, I can check and see the new values with

```
tunefs -p /dev/dsk/c0d0s0
```

Any suggestions?

### DISCUSSION -----

You have found a known problem with tunefs(1). We have a patch for the program available on the A/UX patch server ([aux.support.apple.com](http://aux.support.apple.com)) which can be downloaded via the Internet using anonymous ftp or by dialing into one of the V.32 Telebit modems and transferring the patch via Kermit, XModem, or the like.

The A/UX Information and Update server can be reached at 408-559-3066, login aux, or via the Internet at 130.43.6.2 ([aux.support.apple.com](http://aux.support.apple.com)), login ftp.

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Tech Info Library Article Number:6407



# Tech Info Library

## Router Security Features

Revised: 1/15/91  
Security: Everyone

Router Security Features

=====

This article last reviewed: 26 November 1990

TOPIC -----

My company is having problems with our Ethernet backbone. Everyone is on the Ethernet, but one division controls all access to the net.

People from different divisions can see into the corporate office's zone and services. They can also print on corporate's LaserWriters. The corporate office wants to block transmission into their area but let everyone in the corporate office see services outside of their area. The corporate office needs access to the IBM hosts and VAX systems which are all on the backbone but in different divisions. Thus, total isolation is out of the question.

Right now, we connect our local divisions together with VitaLink boxes and T1 lines. I thought the VitaLink could do some of the above. But, even if they could, the one division controls them. The best solution for corporate is to find a router/bridge that has the above blocking/filtering features. If this is not possible, is there a device that at least allows controlled access to LaserWriters?

DISCUSSION -----

There are several options available to allow zone and device hiding, but most of these products are LocalTalk to Ethernet routers like the Shiva FastPath or the Cayman GatorBox. There is one product that may provide the type of security you require; the NRC Macintosh-based Multigate router provides Ethernet-to-Ethernet routing and provides the ability to define parts of your network as insecure.

See the explanation below for a complete description of the options available for each device. Here is a summary of AppleTalk router security features:

LOCALTALK TO ETHERNET ROUTERS  
-----

Cayman Systems GatorBox

-----

#### Zone Filtering:

Zone filtering prevents users in the filtered zone from seeing other zones on the network to which they are connected. This also prevents users in zones outside of the filtered zone from seeing devices in the filtered zone.

#### Laser Filtering:

Laser filtering is, in a sense, a subset of zone filtering. Where the zone filtering shields all of the devices from the outside, laser filtering lets you hide just the LaserWriters from anyone outside of its AppleTalk zone. This also prevents users in the filtered zone from seeing LaserWriters in other zones.

#### Tilde Filtering:

Tilde filtering lets you hide any device with a tilde character at the end of its name, so that it cannot be seen by anyone outside of its zone.

#### Shiva FastPath

-----

#### Stay in Zone:

The stay-in-zone option prevents users in the filtered zone from seeing other zones on the network to which they are connected. This also prevents users in zones outside of the filtered zone from seeing devices in the filtered zone.

#### LaserWriter Security:

LaserWriter security is, in a sense, a subset of zone filtering. Where the zone filtering shields all of the devices from the outside, laser filtering lets you hide just the LaserWriters from anyone outside of its AppleTalk zone. This also prevents users in the filtered zone from seeing LaserWriters in other zones.

#### Tilde Security:

Tilde filtering lets you hide any device with a tilde character at the end of its name, so that it cannot be seen by anyone outside of its zone.

#### NRC 2000

-----

#### Insecure:

The insecure option lets you define sections of your Internet as "insecure." An insecure network's routing information is not propagated to any other section of the network, thus providing a way to control who can access the secure sections of the Internet.

#### APT

---

APT has announced an update to their AppleTalk routers. They now support device security across zones. Users can, for example, hide their LaserWriter from anyone not in their zone. You can also hide other devices, like file servers and NetModems.

The user can let other users on different zones and create different sets of

access to different devices. For example, Zone A may have no access to your LaserWriter, but still have access to a File Server, while Zone B has access to all LaserWriters, but not AppleTalk ImageWriters or NetModems.

APT routers connect multiple LocalTalk, Ethernet, WAN, and Serial networks together, and supports Phase II AppleTalk. DDP/IP encapsulation is in the works.

#### ETHERNET TO ETHERNET ROUTERS

##### ----- NRC Multigate Macintosh -----

##### Insecure:

The insecure option lets you define sections of your Internet as "insecure." An insecure network's routing information is not propagated to any other section of the network, thus providing a way to control who can access the secure sections of the Internet.

##### Cisco (CGS/MB/AGS) -----

The cisco router offers the ability to set up access lists that permit controlled access to your network. Access lists are set up to filter all in-bound network traffic from any network listed in the access list. Only traffic from networks not listed in the access lists is permitted into your network. Traffic from your network is still propagated to all other segments of your Internet.

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Tech Info Library Article Number:6408



# Tech Info Library

## LaserWriter: Source of Multi-bin Sheet Feeders

Revised: 1/18/91  
Security: Everyone

LaserWriter: Source of Multi-bin Sheet Feeders

=====

This article last reviewed: 26 November 1990

TOPIC -----

Is there a multiple-bin paper tray (holds 8 1/2 x 11, 8 1/2 x 14, and envelopes) for the LaserWriter IINTX?

DISCUSSION -----

BDT Products, Inc. makes a multibin sheet feeder for the LaserWriter IINT/NTX. It's called LaserFeeder. They have two models.

- The Model 880 LaserFeeder has two paper bins and an envelope bin.
- The Model 890 LaserFeeder has three paper bins and an envelope bin.

The paper bins adjust to anywhere between 7.5 inches and 14 inches. Each bin holds 220 sheets. For more details, search the Technical Info library under "BDT Products."

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Tech Info Library Article Number:6416



# Tech Info Library

## HyperCard 2.0 Tour: forward Handler Bug and Workaround

Revised: 1/18/91  
Security: Everyone

HyperCard 2.0 Tour: "forward" Handler Bug and Workaround

=====

This article last reviewed: 26 November 1990

TOPIC -----

I cannot navigate through the whole HyperCard 2.0 Tour stack. When I get to card 56 of the tour, I cannot use the button for card movement forward. All other buttons function properly. The same thing happens if you are on card 58 and try to go back a card to the previous card.

DISCUSSION -----

Clicking on the "Next" button or pressing the right-arrow key on card 56 calls a handler named "forward". "Forward" calls a SysEnvirons XFCN and bases its choice of which card to go to on the value returned.

The XFCN is aware of all released Apple keyboards. However, the only options for the version of the stack we have are "Macintosh Plus Keyboard", "Standard ADB Keyboard" (includes the Apple IIGS Keyboard), and "Apple Extended Keyboard" (includes both domestic versions). You will encounter problems if you use any keyboard not listed above.

We don't know whether the tour stack will be localized to correct this problem. As a workaround, you can replace the existing "forward" handler with the one below.

```
on forward
  hide message box
  put SysEnv() into mySys

  visual effect wipe left
  if item 6 of mySys = "Macintosh Plus Keyboard"
  or item 6 of mySys = "Standard ADB Keyboard"
  or item 6 of mySys = "Apple Extended Keyboard"
  then
    go card item 6 of mySys
```

```
    else
      go card "Apple Extended Keyboard"
    end if
  end forward
```

Before modifying the script, you must set `userLevel` to 5 to do scripting.

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Tech Info Library Article Number:6418





# Tech Info Library

## Macintosh SE/30 Versus Macintosh IIfx: Video Speed

Revised: 6/18/92  
Security: Everyone

Macintosh SE/30 Versus Macintosh IIfx: Video Speed

=====

Article Created: 18 January 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

I have written code in Lightspeed C that makes many QuickDraw calls. When I run it on my Macintosh SE/30 with an external 19-inch mono monitor attached to a video card in the PDS, I notice that it runs significantly faster than when I run the same program on my Macintosh IIfx with either the Apple 4•8 card and the Apple 21-inch mono or an emachines 19-inch monitor also in black and white mode.

Is this because the PDS slot is faster than the NuBus slots or are there other factors? It seems that the 40 MHz Macintosh IIfx should be faster than the 16MHz Macintosh SE/30.

DISCUSSION -----

Your assumption is correct. The Macintosh SE/30 PDS (processor direct slot) runs at 16MHz, while NuBus slots are limited to 10MHz. The increased bandwidth available to the PDS due to the 60 percent greater clock lets much more data pass than is possible with NuBus. NuBus overhead and arbitration widens this speed difference.

While the Macintosh IIfx itself runs much faster than the Macintosh SE/30, it cannot move data to the video RAM as quickly, because of this bus limitation. Programs which are calculation-intensive run much faster on the Macintosh IIfx, whereas programs that perform high-speed graphical operations can display faster on the Macintosh SE/30. The deciding factor is a matter of how many bits are being pushed across the bus to video RAM.

The current Macintosh II family shares the 10MHz NuBus speed. To alleviate this shortcoming caused by NuBus compatibility requirements, the Macintosh IIfx has its own PDS that is even faster than the Macintosh SE/30 PDS. It runs at

the full speed of the Macintosh IIfx I/O bus, which is 20MHz, and is, therefore, capable of twice the bandwidth of NuBus, and 25 percent more than the Macintosh SE/30 PDS.

Unfortunately, we do not yet know of any compatible video cards. Although the Macintosh IIfx PDS looks similar to the Macintosh SE/30 PDS, the two slots are not at all compatible. We do not know of any cards in development and wouldn't think that this would be in any company's priorities. Macintosh graphics acceleration is tending toward specialized, dedicated graphics processors, like our 8/24GC card, that are NuBus cards and compatible across the Macintosh II family.

If you require faster video than the Macintosh IIfx can provide, your best alternative is to evaluate graphics accelerator cards. Two sources for such cards are Radius and SuperMac Technology. The Apple 8•24GC card is another option.

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Tech Info Library Article Number:6421



# Tech Info Library

## Connecting to ABANET via Telenet

Revised: 4/18/91  
Security: Everyone

Connecting to ABANET via Telenet

=====

This article last reviewed: 27 November 1990

TOPIC -----

I need to connect to ABANET. According to the information I received from ABANET they can be reached through Telenet. How can I reach ABANET via Telenet. I have a connection to the Belgian DCS network (Packet network, X.25).

DISCUSSION -----

It sounds like ABANET has subscribed with Telenet, a X.25 Public Data Network provider, to get access to the X.25 PDN via Telenet. As a subscriber on a PDN, ABANET would have been given a unique address, not unlike your telephone number, that could be broken down into the world zone, country zone, a network digit and network terminal number.

Therefore, to reach ABANET from another X.25 PAD, like MacX25, you just need their address. From MacX25 you enter that address in the "Host Address" or "Called Address" field. Then, open the connection via a terminal communication tool (MacTerminal 3.0, White Pines Mac241, or the like). Their address will be understood by your local PDN provider's packet-switching equipment and your call request will be routed through whatever PDN networks are required to reach ABANET.

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Tech Info Library Article Number:6422



# Tech Info Library

## AppleShare: Processors, RAM, and User Limits

Revised: 1/18/91  
Security: Everyone

AppleShare: Processors, RAM, and User Limits

=====

This article last reviewed: 27 November 1990

TOPIC -----

I understand that AppleShare is limited to 50 concurrent users in its current version, but what is the technical reason behind this seemingly arbitrary limit? I've heard something having to do with the number of sockets allowed per node and that each AppleShare user requires the use of two socket addresses? Can you explain?

DISCUSSION -----

The AppleShare concurrent user limit is hard-coded, based on performance assumptions made about the number of users a given type of server could support. Depending on what type of Macintosh you have and its quantity of RAM, a certain amount of memory is allocated to support that number of users.

A 68000- or 68020-based server with 1MB of RAM supports up to 25 users -- but a 68020 or "higher" CPU with 2MB or more of RAM lets AppleShare support up to 50 users.

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Tech Info Library Article Number:6423



# Tech Info Library

## A/UX 2.0: In -f Problem (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX 2.0: "In -f" Problem (8/94)

=====  
Article Created: 27 November 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I have a problem with the `ln -f` command. Logged in as root in console mode, I created a directory `/usr/users`, did an `ln -f /usr /usr/users`, and got a Kernel bus error, `!Double panic: kernel memory management error`, some hex addresses and a crashed file system. I was unable to recover, but a friend's system was okay after restarting and doing an `fsck` from A/UX Startup.

DISCUSSION -----

We have verified the problem. The `'ln -f'` is buggy and has also been found in the A/UX Engineering SPR database.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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=====  
Created: 1/18/91  
Author: WK  
Source: PTS  
Library: TECHINFO

Tech Info Library Article Number:6426



# Tech Info Library

## A/UX: Monitoring Memory Use (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Monitoring Memory Use (8/94)

=====

Article Created: 27 November 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

How can I see the MEMORY usage that is being given to UNIX background tasks, UNIX command shell tasks, the Macintosh Finder shell, and the Macintosh applications running within it?

I am trying to find the optimum amount of RAM to reduce the amount of paging and swapping.

For example, when configuring a system for 16MB of virtual memory, with 8MB of physical RAM, it is difficult to predict when swapping occurs. Running SoftPC in these conditions sometimes brings the machine to a halt because the Finder seems to be "swapped out".

DISCUSSION -----

Currently, we don't know of any particular memory monitoring program for A/UX. However, in a CommandShell window the "pstat -m; sleep 5" in a "do while loop" may constantly report the current available memory.

From the Finder desktop, the "About This Macintosh..." DA from Apple Menu will display memory allocation information for all Finder Desktop programs including CommandShell.

To monitor the memory use for each component--like UNIX tasks, CommandShell, Macintosh applications, and so on under A/UX--you need a program that understands the A/UX kernel memory management, that can support simultaneous access by both 24- and 32-bit applications, and is compatible with the existing Macintosh OS Memory Manager. Such a program probably needs to hack /dev/kmem, /mac/bin/{mac24, mac32}, /mac/bin/startmac, and so on.

Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:6429



# Tech Info Library

## MacDFT: Frozen Screen and LOGMODE Frame Sizes

Revised: 1/18/91  
Security: Everyone

MacDFT: Frozen Screen and LOGMODE Frame Sizes

=====  
This article last reviewed: 28 November 1990

TOPIC -----

I have a Token Ring problem related to MacDFT. When configuration on the host changes, MacDFT doesn't work.

### Configuration

Macintosh IIcx with Token Ring Card  
AROSE Prep 1.1.1  
Macintosh DFT 1.1

I am using my own LOGMODE table on the host. The following is copied from the file TCBMODE ASSEMBLE R1. Here is the default logmode that works:

```
M2SDLCQ MODEENT LOGMODE=M2SDLCQ
      FMPROF=X'03'
      TSPROF=X"03'
      PRIPROT=X'B1'
      SECPROT=X'90'
      COMPROT=X'3080'
      RUSIZES=X'8587'
      PSERVIC=X'028000000000185000007E00'
```

This is IBM's mode. Here is a different logmode that is unique to my site.

```
TBR3180 MODEENT LOGMODE=TBR3180

      FMPROF=X'03'
      TSPROF=X"03'
      PRIPROT=X'B1'
      SECPROT=X'90'
      COMPROT=X'3080'
      RUSIZES=X'87C7'
      PSERVIC=X'0280000000000000000000300'
```



The problem is that when I use my own logmode, the screen freezes the session, and the user has to do a terminal reset to return to normal. This problem is consistently reproducible. The same problem does not occur when using Avatar or MacIrma products.

DISCUSSION -----

The system network administrator asked for the "I" and "T" frame sizes supported on our TokenTalk NB card, and this turns out to be the source of the problem. The frame sizes are fixed at 256 and can't be modified. You chose to provide multiple configurations for the frame sizes depending upon the user's needs. If you make the change to Apple's supported size, your system should work fine on the released version of MacDFT.

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Tech Info Library Article Number:6432



# Tech Info Library

## AppleShare PC: Minimum Files Needed for File Services

Revised: 1/18/91  
Security: Everyone

AppleShare PC: Minimum Files Needed for File Services

=====

This article last reviewed: 28 November 1990

TOPIC -----

What is the bare minimum for AppleShare/PC files needed to access FILE SHARING only? The following is the list of files I am currently loading, and I need to free up at least 60K of RAM:echo off.

```
C:\ASPC\LSL
C:\ASPC\ENET3CII /NAME=ETHER$
C:\ASPC\AARP
C:\ASPC\ATALK
C:\ASPC\ASP_WS
C:\ASPC\AppleShare
C:\ASPC\MINSES
C:\ASPC\REDIR
C:\ASPC\ANET AUTO
```

Any chance I could take some of these out?

DISCUSSION -----

You have the minimum files necessary for what you want. Depending on the type of hardware you are using, it may be possible to load some parts of AppleShare PC into high memory (you need a 386 machine with a minimum of 1MB of RAM). This would free up more than the 60K that you are looking for.

If you want to check the files you do have, you could re-run the Installer and specify file services only, that will install the minimum set.

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Tech Info Library Article Number:6433



# Tech Info Library

## MacX Under A/UX: When xcalc Doesn't Accept Keystrokes (4/93)

Revised: 4/26/93  
Security: Everyone

MacX Under A/UX: When xcalc Doesn't Accept Keystrokes (4/93)

=====

Article Created: 18 November 1990

### Article Change History

-----

04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

When running MacX under A/UX I noticed that I couldn't type to the xcalc client running under A/UX. However, both X for A/UX and eXodus handled the keystrokes.

### DISCUSSION -----

xcalc doesn't accept keystrokes when displayed in rootless style. This has been reported to A/UX Engineering. A workaround is to display xcalc in a rooted window, as you were doing with native X and eXodus.

Instead of this:

```
xcalc -display <yourmac>:0.0
```

Use this:

```
xcalc -display <yourmac>:0.1
```

The ".1" causes xcalc to be displayed in the rooted monochrome window. In this style, it seems to work fine. For more information on rooted versus rootless windows, refer to chapter 1, page 12, of the Apple MacX manual from the A/UX manual set.

This has been fixed in A/UX 3.0 and MacX 1.2.

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Tech Info Library Article Number:6434



# Tech Info Library

## Macintosh-to-HP/UX Connectivity

Revised: 1/18/91  
Security: Everyone

Macintosh-to-HP/UX Connectivity

=====

This article last reviewed: 28 November 1990

TOPIC -----

I have an HP9000 running HP/UX and a LocalTalk network with many Macintosh systems and connected by Farallon's PhoneNET StarController system. I would like to convert the LocalTalk system to run Ethernet (Farallon has the PhoneNET StarController EN, which should do the job).

However, HP's implementation of TCP/IP runs across 802.3 networks and not Ethernet. Our TCP/IP implementation (via MacTCP) pumps out Ethernet packets and not 802.3. I want to connect the Macintoshes to the HP/UX system to do file transfer (no file conversion necessary), terminal emulation, and SMTP.

Can you suggest any third-party gateways that can convert Ethernet packets to 802.3 on an Ethernet-based StarController EN network? Do you see any potential problem to implementation based on the PhoneNET StarController EN to HP/UX?

DISCUSSION -----

The product of choice for this type of conversion seems to be the cisco router. If you want to translate HP 802.3 to Ethernet on the same cable, you can configure the cisco to do that. It's been in the product for three or four years. 802.3 to Ethernet was one of their original design goals.

If you want or need a bridge, HP bridges work fine with both Ethernet and HP 802.3 encapsulation. For more details, search the Technical Info library under "cisco."

Tech Info Library Article Number:6435



# Tech Info Library

## LaserWriter: Printing on Heavy Paper

Revised: 1/18/91  
Security: Everyone

LaserWriter: Printing on Heavy Paper

=====

This article last reviewed: 28 November 1990

TOPIC -----

Can any LaserWriter print on 65-pound paper (card stock used on shelves)?

DISCUSSION -----

The "LaserWriter II Owner's Guide" specifies the paper at:

16-lb. to 20-lb. photocopy or typewriter bond (60 to 80 g/m2) in normal mode; up to 36-lb. (135 g/m2) stock in manual mode with face-up tray open.

We don't know of a way to use a LaserWriter to print on 65-pound paper. The LaserWriter paper path will not support paper of that thickness, nor is there enough heat to fuse the toner through paper that thick.

You can, of course, use the LaserWriter to print labels and stick them to any thickness of paper. Labels as large as 8.5 X 11 are available.

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Tech Info Library Article Number:6437



# Tech Info Library

## Personal LaserWriter NT Software Switching

Revised: 1/18/91  
Security: Everyone

Personal LaserWriter NT Software Switching

=====

This article last reviewed: 28 November 1990

TOPIC -----

Is it possible to soft switch the Personal LaserWriter NT between PostScript and HP Emulation? The PostScript code for the LaserWriter IINTX doesn't seem to work.

DISCUSSION -----

You are correct, the PostScript code for the LaserWriter IINTX for software mode switching does not work on the Personal LaserWriter NT. The "setsoftwareiomode" value, which is used in the LaserWriter IINTX to set the mode, is not defined in the Personal LaserWriter NT.

However, you can use software switching to switch the Personal LaserWriter NT temporarily from PostScript to HP LaserJet+ or Diablo emulation. To emulate the HP LaserJet+, send the following PostScript to the Personal LaserWriter NT:

```
statusdict begin
currentfile /hpcl emulate
```

To emulate the Diablo, send the following PostScript to the Personal LaserWriter NT:

```
statusdict begin
currentfile /Diablo emulate
```

This DOES NOT work the same way software switching to set the mode on a LaserWriter IINTX works. As soon as this job is completed, the Personal LaserWriter NT will change back to PostScript mode. Therefore, you must send this code at the beginning of each job with the job appended to it. To do this, you could put the previous PostScript code in a file, say "hpcl.ps". Then, to print a job in HP LaserJet+ mode from a PC, type:

```
copy hpcl.ps+filename.txt lpt
```

This would send the file you want printed in the same job as the PostScript code that switches the Personal LaserWriter NT to HP LaserJet+ mode. If these files are sent separately, the Personal LaserWriter NT will have already reset back to PostScript mode before the file to be printed reaches the printer.

As this PostScript must be sent with every job, a file cannot be printed straight from a program to the Personal LaserWriter NT. The file would have to be saved to disk, and then sent to the Personal LaserWriter NT as specified above.

You can also set the pushwheel switch on the Personal LaserWriter NT for HP LaserJet+ or Diablo emulation. Switch position 2 sets it to HP LaserJet+ mode, and switch position 3 sets it to Diablo mode.

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Tech Info Library Article Number:6438





# Tech Info Library

## Personal LaserWriter NT: How to Print IBM ECS Characters

Revised: 5/19/93  
Security: Everyone

Personal LaserWriter NT: How to Print IBM ECS Characters

Article Created: 28 November 1990

### Article Change History

-----  
05/18/93 - CORRECTED

- To correct PostScript code found in the article

### TOPIC -----

Please give me some information about the use of the IBM Extended Character Set ECS in the Personal LaserWriter NT.

- Can you use ECS with standard Macintosh software (e.g., word processing)?
- Can you use ECS with SoftPC?
- How can we use ECS from a PC running AppleShare PC?

### DISCUSSION -----

The ECS character set in the Personal LaserWriter NT is implemented as an extension to Diablo emulation, as opposed to an independent PostScript font. In fact, it is designed to behave like the IBM PC Graphics ECS print wheel for Diablo 630 daisy wheel printers. This creates some interesting requirements for its use with different host computer environments and also imposes some limitations on how the special characters can be used.

Each of the three scenarios you list requires its own sequence of steps to print documents using ECS characters. Although the setup for each is different, the basic procedure is the same. It follows these basic steps:

- 1) Connect to the LaserWriter in PostScript mode.
- 2) Send code that enables ECS.

- 3) Switch to Diablo emulation.
- 4) Print the desired characters.

Unfortunately, Diablo emulation is not documented well in the "Personal LaserWriter NT Owner's Guide." Although code is provided to enable ECS, no mention is given of software mode-switching or the other options available for the DiabloDefaults dictionary. We'll cover the required basics here, and also provide a list of the different dictionary values and their meanings.

Setting the Personal LaserWriter NT to Diablo mode with the thumb-wheel switch requires disabling network access. Because of this, we'll avoid hardware switching in our examples and stick with software switching. We're assuming a Macintosh and Personal LaserWriter NT connected to an AppleTalk network along with an IBM PC using AppleShare PC.

Enabling ECS in the LaserWriter requires the following code. It can be entered in a text file and then downloaded using the psdump utility.

```
serverdict begin 0 exitserver
statusdict begin
DiabloDefaults /ecs true put
saveDiabloDefaults
```

This will persist, until it is forced back by the same code using "/ecs false" in place of "/ecs true". You needn't repeat this step, unless it has been intentionally reversed.

Now, we switch to Diablo emulation and send the desired text to be printed. Software switching of the Personal LaserWriter NT differs from hardware switching (and from software switching of the LaserWriter IINTX) in that it only persists until the end of the print job. Any Diablo text or ECS characters must be appended to the switching code or be treated as a separate print job:

```
statusdict begin currentfile /diablo emulate
This text will be printed as if the Personal LaserWriter NT
were a Diablo 630.
```

If the above lines were downloaded to the LaserWriter with psdump, the second two lines would be printed verbatim. If there were special ECS characters, those would be printed as well.

We can't show any of the actual ECS characters in this article, but we can show you how to generate them. The ECS character set is essentially an expanded version of the standard Diablo character set. The special characters lie in the ASCII ranges below 31 and above 126. The following Microsoft BASIC program creates a text file with the special characters in the high range of 127 through 255.

```
10 open "ECS_STUF.TXT" for output as #1
20 for i=127 to 255
30 print #1, chr$(i);
```

```
40 if (i-126)/70 = int((i-126)/70) then print #1, ""
50 next i
60 close #1
```

A similar HyperCard script could be used to create the file on a Macintosh.

```
on mouseDown
  put "High ASCII ECS Chars" into filename
  open file filename
  repeat with i = 127 to 255
    write numToChar(i) to file filename
    if (i-126)/70 = (i-126) div 70 then write return to file filename
  end repeat
  close file filename
end mouseDown
```

To print these files, prefix them with the Diablo emulation PostScript code from above and download the result with psdump. The result should be a page with two lines of the high ASCII ECS characters.

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Tech Info Library Article Number:6439



# Tech Info Library

## A/UX 2.0: No TCP/IP Protocol on LocalTalk Cable

Revised: 8/25/92  
Security: Everyone

A/UX 2.0: No TCP/IP Protocol on LocalTalk Cable

=====

This article last reviewed: 28 November 1990

TOPIC -----

I'm running A/UX 2.0 and want to use TCP/IP protocol on LocalTalk cable  
(TCP/IP embedded DDP)?

DISCUSSION -----

A/UX 2.0 does not support TCP/IP protocol via LocalTalk cable. This means that  
no TCP/IP packets would go through the LocalTalk cable from or to an A/UX  
machine.

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Tech Info Library Article Number:6443



# Tech Info Library

## A/UX: System Software Folders Under /mac/sys (8/93)

Revised: 8/18/93  
Security: Everyone

A/UX: System Software Folders Under /mac/sys (8/93)

=====

Article Created: 28 November 1990  
Article Reviewed/Updated: 18 August 1993

TOPIC -----

There are three different folders for System Software under /mac/sys. What are the corresponding roles of each?

DISCUSSION -----

- The "Login System Folder" is where the A/UX Login Dialog resource is kept.
- The "Startup System Folder" is where the "A/UX Startup" initialization resource (the environment to start up, mac24 or mac32 and so on) is kept.
- The "System Folder" is where System Software (like CDEVs, INITs, and so on) is stored, much like the Macintosh OS System Folder.

Article Change History:  
18 Aug 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6444



# Tech Info Library

## A/UX 2.0: How to Customize Session Types

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: How to Customize Session Types

=====

Article Created: 1 January 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

During the login phase, you can choose different logins (Session Type). How can I customize this environment -- to launch X, for instance?

### DISCUSSION -----

When the X11 Window System is installed, the X11 session automatically will be created in the /mac/lib/sessiontypes directory.

The code below shows how the X11 session is created from an X11.r resource file. The X11.r file is as follows:

```
/*
 * description file for X11 session type.
 */

resource 'STR#' (128) {
{
/* The name that the user selects in the list box. */

    "X11";

/* The description of this session type. */

    "X11 is Apple's adaptation of the industry standard "
    "X Window System for A/UX. X11 is a pure X environment, "
```

```
"and no Macintosh compatibility is provided.";  
  
/* The command that gets executed for this session type. */  
  
"/usr/lib/X11/X";  
  
/* Name of file to look for in user's home directory to run */  
/* instead of command given above. */  
  
".X11"  
  
}  
};
```

Then the following commands create the X11 resource file:

```
/mac/bin/rez -i /:mac:lib:rincludes types.r X11.r  
fcvt -f -s Rez.out X11  
rm -f Rez.out
```

With the above example, you can create your own session.

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Tech Info Library Article Number:6445



# Tech Info Library

## Macintosh Portable: Use the Sound Manager From 6.0.7

Revised: 1/18/91  
Security: Everyone

Macintosh Portable: Use the Sound Manager From 6.0.7

=====

This article last reviewed: 30 November 1990

TOPIC -----

I have developed an application in C through which I can connect a Portable to one of a phone switches and establish a session with the switch and then play some background music on the Portable. This code has worked on numerous Macintosh II systems, but fails on the Portable (quits the application, returning to Finder without a warning).

The Portable has 2MB of RAM and System 6.0.5. I am using identical pieces of code on both machines and the toolbox calls are the same. Some have suggested that there may be a difference in the sound architectures of the Macintosh II family and the Portable family that requires different calls to the Sound Manager for the Portable.

DISCUSSION -----

The Sound Manager prior to System Software 6.0.7 was known to have problems. Our first suggestion is to install 6.0.7 on the Portable. The new Sound Manager does have additional functionality. However, all previous interface calls are still valid. The new Sound Manager has been totally rewritten, providing a more robust tool.

Because the application appears to be working in certain environments, it would seem one of the problems of the old Sound Manager becomes obvious when used on the Portable. Using the new Sound Manager shipped with 6.0.7 should provide a solution.

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Tech Info Library Article Number:6448





# Tech Info Library

## LaserWriter: Macintosh SE Connection with ImageWriter Cable

Revised: 1/18/91  
Security: Everyone

LaserWriter: Macintosh SE Connection with ImageWriter Cable

=====

This article last reviewed: 30 November 1990

TOPIC -----

I hooked up a LaserWriter IINT to a Macintosh SE for local printing using an ImageWriter cable, and it worked! Is this okay?

DISCUSSION -----

When you connect to a LaserWriter in this fashion, you are in reality still running LocalTalk between the Macintosh and the LaserWriter. Although this works in most cases, it is not a supported configuration, and we do not recommend using it. Instead, use the proper cabling necessary to implement a LocalTalk connection between the LaserWriter and the Macintosh.

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Tech Info Library Article Number:6449



# Tech Info Library

## LaserWriter: Problem with Heat-Sensitive Adhesive on Envelopes

Revised: 2/12/93  
Security: Everyone

LaserWriter: Problem with Heat-Sensitive Adhesive on Envelopes

=====

Article Created: 24 January 1991

### Article Change History

-----

02/12/93 - UPDATED  
• Vendor information.

### TOPIC -----

Why does Personal LaserWriter SC seal envelopes as they pass through it? Is there a fix or a workaround?

### DISCUSSION -----

The mechanism used in the Personal LaserWriter NT and SC may seal envelopes that are not rated for laser printer or copier use. Any laser printer that uses the Canon P-110 engine behaves similarly. This is caused by heat-sensitive adhesive. We have seen it occur with various envelopes, though some that are not labeled as "laser rated" don't have the problem. The deciding factor is the kind of adhesive used.

You may notice a difference between the LaserWriter II and Personal LaserWriter series. The major difference is the slower paper speed of the Personal LaserWriter engine. The Personal LaserWriter moves material over the drum at half the speed of the LaserWriter II, giving the paper or envelope twice as long to absorb heat.

One method of preventing sealing is to separate the envelope flap the moment it ejects from the LaserWriter, but the real solution is to use envelopes that have been designed for compatibility with laser printers or copiers. Two suppliers you might contact are James River Corporation and Avery.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6451



# Tech Info Library

## ISDN NuBus Card: Supports 2- and 4-Wire Circuit (11/94)

Revised: 11/28/94  
Security: Everyone

ISDN NuBus Card: Supports 2- and 4-Wire Circuit (11/94)

Article Created: 30 November 1990  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Regarding the ISDN Developer Platform product, does the Apple card support two or four wire connection?

DISCUSSION -----

The BRI (Basic Rate Interface) is a 4-wire circuit to the switch (Northern Telecom or AT&T). Apple's ISDN card, in addition to the BRI, provides a 2-wire POTS (Plain Old Telephone Service) interface enabling you to connect a standard telephone to the switch via our board for analog services.

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6452



# Tech Info Library

## LaserWriter 6.0.1: Changes that Address Timeout Problems

Revised: 1/24/91  
Security: Everyone

LaserWriter 6.0.1: Changes that Address Timeout Problems

=====

This article last reviewed: 30 November 1990

TOPIC -----

When LaserWriter 6.0.1 driver came out, there was a specification sheet describing what was in 6.0.1 and how it helped resolve network timeout problems with LaserWriter IINTs and LaserWriter IINTXs. Can you summarize what it said about timeouts?

DISCUSSION -----

The LaserWriter 6.0.1 driver changed two timer settings:

Previously, if part of a print job, a packet, intended for the LaserWriter got lost and wasn't resent in time to reach the LaserWriter within 30 seconds, the print job would be flushed. This low-level timer was eliminated. (Now the PostScript job will timeout after 5 minutes if a packet is "permanently" lost.)

Additionally, if the printer was busy printing something, like multiple copies of a complex document, the connection timer could time out. Now, the Macintosh waits for 3 minutes (previously 2) for the printer to respond before timing out.

The first job is much more likely to occur on large networks where routers are used. The second problem is more prevalent with printing complex documents on the slower LaserWriters (e.g., a LaserWriter IINT as compared to a LaserWriter IINTX).

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Tech Info Library Article Number:6453



# Tech Info Library

## Macintosh Portable: Touchbase External 9600-Baud Modem

Revised: 1/24/91  
Security: Everyone

Macintosh Portable: Touchbase External 9600-Baud Modem

=====

This article last reviewed: 30 November 1990

TOPIC -----

I'm seeking a 9600 baud internal modem for the Macintosh Portable that is compatible with the Shiva NetModem v.32.

DISCUSSION -----

As of October, 1990, we haven't heard of any internal 9600 baud modems for the Macintosh Portable. However, Touchbase Systems just announced an external portable modem, the WorldPort 9600.

The WorldPort 9600 is a portable V.32, 9.6Kb self-powered modem for laptop computers. The WorldPort 9600 supports full-duplex synchronous and asynchronous communications. The 8-ounce modem contains an EIA-232 port for direct connection to a laptop. It runs under its own 9V battery or via an optional external AC adapter

The 9600 features Trellis coding, echo cancellation, fallback speeds from 300 bits to 4.8 bits and MNP Class 4 error correction. It supports the Hayes AT command set and CCITT V.21, V.22, B.22bis, V.23, and Bell 103 and 212A standards.

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Tech Info Library Article Number:6454



# Tech Info Library

## MacDFT: To Print Screen, Turn Background Printing Off

Revised: 1/24/91  
Security: Everyone

MacDFT: To Print Screen, Turn Background Printing Off

=====

This article last reviewed: 30 November 1990

TOPIC -----

I am having problems printing screens with MacDFT 1.1. No matter what I do, the "Print Screen" option remains dimmed.

DISCUSSION -----

To work around a bug in the Print Monitor, MacDFT does not allow "Print Screen" to be selected when background printing is on. To print screens with MacDFT, turn background printing off.

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Tech Info Library Article Number:6455



# Tech Info Library

## A/UX: vn\_rele Panic Message (9/94)

Revised: 9/22/94  
Security: Everyone

A/UX: "vn\_rele" Panic Message (9/94)

=====  
Article Created: 24 January 1991  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

When I log out of a session on A/UX, I get the message:

```
panic: vn_rele
```

This happens on a Macintosh IIfx with miroGRAPH graphics board, Ethernet NB Card, 200MB Conner Drive (one UNIX partition, c0d0s0, partitioned with SilverLining).

What does the above panic message mean, what are its causes, and what do I do about them? These other panic messages were encountered when doing an "fsck" on the file system after the above panic message: "panic: free freeing free block" and "panic: ialloc\_dup alloc".

The display on the above machine changes its size on booting A/UX (the menu bar gets squeezed downwards). Is this just a problem with the third-party monitor card? Does A/UX reset the monitor card on booting the kernel?

DISCUSSION -----

It seems that you had a UFS root file system problem on the Conner hard drive.

The above "panic: vn\_rele" message occurs when the A/UX UFS file system tries to do a vn\_rele function (release a vnode and decrement the reference count) to maintain its file system data structure. Panic occurs when the reference count reaches to 0. Both the "free freeing free block" and "ialloc\_dup alloc" panic messages indicate that there is a bad free-block list and duplicate inode allocations in the UFS super block.

We don't know the parameters used when the UFS root file system was created on the Conner drive. These parameters (like the number of sectors, tracks, and cylinders) must be specific to the Conner drive.



If the parameters used to create a UFS file system do not match the drive, we suggest that you rebuild the UFS file system with the correct values. Otherwise, try to "fsck" the root file system (you can do the "fsck" in #startup mode) to make a clean root file system.

We haven't seen the menu bar squeezed problem on our third-party monitor while A/UX is booting. Check with the vendor about this problem. Yes, A/UX does a reset on the monitor card when the A/UX kernel is loaded.

Article Change History:

22 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6457



# Tech Info Library

## HyperCom 2.0 Allows HyperAppleTalk Access across Zones (11/94)

Revised: 11/8/94  
Security: Everyone

HyperCom 2.0 Allows HyperAppleTalk Access across Zones (11/94)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

Is there a new version of HyperAppleTalk that supports multiple zones? Or is there another product that can support multiple zones in a network?

We have a system developed in HyperCard and HyperAppleTalk. When we changed our network configuration, the system didn't work, because HyperAppleTalk could not "see" different zones.

DISCUSSION -----

There are no revisions planned to HyperAppleTalk. You can use a commercial product or create your own configurations with the Communications Toolbox Toolkit.

The commercial product that does allow HyperAppleTalk access across zones is "HyperCom 2.0" by GAVA Corporation.

Here is an excerpt from the "Read Me" file for the Communications Toolbox Toolkit that should effectively replace HyperAppleTalk. Use the following path to find the toolkit:

Developer Support  
  Developer Services  
    Development Platforms  
      HyperCard Related  
        HyperCard ToolKits  
          Communication Toolbox Toolkit

"A license from Apple is required if source code, XCMDs, or XFCNs supplied with this product is to be used in commercial applications. Contact Apple Software Licensing for more information.

This toolkit contains everything you need to access the facilities of the Communications Toolbox from HyperCard. Besides the XCMDs and XFCNs needed, the toolkit also provides a complete set of documentation, and the full source code for the XCMDs and XFCNs.

The toolkit disk includes:

- CTB Toolkit Docs--A HyperCard stack describing the Communications Toolbox XCMDs and XFCNs.
- CTB Configuration Docs--A HyperCard stack which lists the configuration string parameters for the basic Communications Toolbox tools. These strings are used to configure a tool from within a script.
- CTB Toolkit Example--A HyperCard stack that uses the toolkit. This should serve as an example of how to get started using these facilities.
- Net Looker--An example of using the name binding protocol (NBP) XCMDs included with the toolkit. This stack lists zones and names on the local network.
- Source Code--A folder containing the complete source code for the toolkit."

Article Change History:

08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6460



# Tech Info Library

## DAL: Model 204 and IMS Databases Not Supported (11/94)

Revised: 11/7/94  
Security: Everyone

DAL: Model 204 and IMS Databases Not Supported (11/94)

=====

Article Created: 3 December 1990  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

Is there a database product called "Model 204" which runs on IBM mainframes? If so, is there any way for Data Access Language (DAL) to connect to it now or in the future? Can (or will) DAL interact with IMS data bases?

DISCUSSION -----

Model 204 is an on-line and batch DBMS built on a proprietary inverted file access method. The system includes an integrated data dictionary for flexibility in defining and protecting data acquisition. An inverted file, relational system, like Model 204, can support applications that require very large data bases, high transaction volumes, and a large number of concurrent users--all with a high degree of flexibility and efficiency. In that respect, it differs significantly from the standard relational DBMSs that are notoriously slower and more cumbersome to manipulate.

The Model 204 system is fully integrated, with its own query language and communications interfaces to CICS, CMS, and Thorn EMI's Shadow II. It comes with its own 4GL and can support most popular third-generation languages.

Model 204 can also be configured in a mainframe-microcomputer environment with its PC/Workshop product. It also supports a LAN environment.

Currently, DAL supports neither Model 204 or IMS database. There is no plan in the near future for supporting these two products.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6462



# Tech Info Library

## Macintosh LC: PDS-Based Coax Card

Revised: 7/23/92  
Security: Everyone

Macintosh LC: PDS-Based Coax Card

=====  
Article Created: 3 December 1990  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

### TOPIC -----

Is there a coax board for the Macintosh LC? With its new form factor of 3 X 7 inches, none of the earlier cards fits. (Tri-Data Netways won't be used.)

### DISCUSSION -----

We assume that many vendors are looking into this, including Avatar as in the following article from "Apple Intro News". With Avatar Corporation's new MacMainFrame Series, Macintosh LC computer users can connect with IBM 3270 mainframes.

"The MacMainFrame Series for the Macintosh LC includes the MacMainFrame Coax Workstation, which offers a Coax-attached internal card that fits into your Macintosh LC 020 Processor Direct Slot for direct connection to an IBM 3270 network. It provides either 1-session CUT or 5-session DFT emulation. The MacMainFrame Coax Gateway provides Macintosh work groups with access to up to five IBM host sessions.

"The MacMainFrame Token Ring Workstation provides a direct connection to a Token Ring network giving you access to up to 8 IBM 3270 sessions. The MacMainFrame Token Ring Gateway allows Macintosh users in an AppleTalk environment to run host applications on an IBM host that resides on a Token Ring network.

"The MacMainFrame SDLC Workstation allows you to directly access host information over a local or remote Synchronous Data Link Control (SDLC) connection. The MacMainFrame SDLC Gateway provides a Macintosh work group in an AppleTalk environment with local or remote access to an IBM host over an SDLC connection."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6463



# Tech Info Library

## FTP Servers for the Macintosh

Revised: 1/24/91  
Security: Everyone

FTP Servers for the Macintosh

=====

This article last reviewed: 3 December 1990

TOPIC -----

Is there a product that supports an FTP server on the Macintosh that runs in the background? We have a requirement to send files from TCP/IP equipped VAX and UNIX machines to a Macintosh in the background. Does the Apple Comm Toolbox support this? Does the Comm toolbox support socket-level programming? What other products support socket-level programming?

DISCUSSION -----

The CommToolBox does not provide support for socket-style programming while using MacTCP. There are currently no commercial products that provide a socket-style interface for MacTCP.

There are two commercial products that provide an FTP server for the Macintosh. They are:

- Advanced Software's TCPack. It supports Telnet and ftp (client and server) protocols.
- InterCon's TCP/Connect II. It supports Telnet, snmp, SLIP, nntp, POP2, finger, smtp, and ftp (client and server) protocols.

There is a non-commercial (public domain) product that provides an FTP server for the Macintosh. That is NCSA Telnet from the University of Illinois at Champaign. It supports telnet and ftp (client and server) protocols.

The University of Toronto has a MacTCP-based socket library. This is a public-domain, non-supported product.

Novell also provides a socket-level interface to their TCP/IP product (LAN workplace). This product is not based on MacTCP, but on their own TCP/IP implementation.



Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6464



# Tech Info Library

## A/UX: How to Rebuild Desktop (5/95)

Revised: 5/8/95  
Security: Everyone

A/UX: How to Rebuild Desktop (5/95)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 8 May 1995

TOPIC -----

How do you rebuild the desktop under A/UX?

DISCUSSION -----

Follow these steps to rebuild the desktop:

- 1) Login to the A/UX Command Shell as root user.
- 2) `rm /mac/sys/'System Folder'/.fs_cache`
- 3) `rm /mac/sys/'System Folder'/*Desk*`
- 4) Logout and Login to the A/UX Finder environment.
- 5) When you see a dialog asking "Are you sure you want the desktop rebuilt..." click OK to rebuild the Desktop Database. Rebuilding the desktop may take some time, depending on the amount of local disk space attached.

An alternative to this method follows:

- 1) Logout and Login to the A/UX Finder environment
- 2) After the "Starting session for username..." dialog disappears, press and hold both the "Option" and "Command" keys until you see a dialog asking "Are you sure you want the desktop rebuilt...".
- 3) Click OK to rebuild the Desktop Database. Rebuilding the desktop may take some time, depending on the amount of local disk space attached.

Article Change History:

# ..TIL06466-A-UX-How\_to\_Rebuild\_Desktop\_5-95\_(TA45000).pdf

08 May 1995 - Revised article for more complete information.  
23 Feb 1995 - Made correction.  
17 Jun 1993 - Revised and Retitled to change focus of article.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

=====

Created: 1/24/91  
Author: FW  
Source: SIS  
Library: TECHINFO

Tech Info Library Article Number:6466



# Tech Info Library

## Black & White Displays: Bibliography

Revised: 1/24/91  
Security: Everyone

Black & White Displays: Bibliography

=====

This article last reviewed: 3 December 1990

TOPIC -----

When the Macintosh first came out, Apple cited studies indicating that a black on white display was superior to white/green/amber on black ones. The reasoning had to do with easier focusing due to a brighter screen closing the iris, and less adjustment required of the eye when looking between paper and screen. Can you cite the references we used to support these conclusions?

DISCUSSION -----

There were two studies in 1980, and the information can be found in the following books:

- Radl. "Ergonomic Aspects of Visual Display Terminals"; London Taylor and Francis, 1980.
- Bauer and Cavonius. "Improving the Legibility of Visual Display Units through Contrast Reversal"; 1980.

There is also a newer book that summarizes the information in the other two books:

- Etienne Grandjean. "Ergonomics in Computerized Offices"; 1987.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6468



# Tech Info Library

## AppleTalk Network: Remote Dial-In Access from MS-DOS

Revised: 7/23/92  
Security: Everyone

AppleTalk Network: Remote Dial-In Access from MS-DOS

=====

Article Created: 24 January 1992  
Article Last Reviewed: 4 December 1990  
Article Last Updated: 22 June 1992

TOPIC -----

I want to add a remote on-campus PC-compatible to our AppleTalk network, via a Northern Telecom SL-1. We're planning to install a Liaison router on the LocalTalk side. Is there an MS-DOS-based, asynchronous, dial-up Liaison client product available for the PC (like the Macintosh version)?

DISCUSSION -----

With DOS Dial-In (a Shiva product) a remote PC can dial into a LocalTalk network and access files on a TOPS server or print to a LaserWriter. You will need the following at the remote site:

- PC with a COM port
- a modem (9600 bps recommended)
- DOS Dial-In software
- TOPS/DOS 3.0 software (FlashCard not needed)

On the network you need:

- a Macintosh or PC running with a TOPS volume published and either
  - a Shiva TeleBridge or EtherGate with the same make and model modem; or
  - IF you are using a V.32 Hayes-compatible modem on PC, a Shiva NetModem V.32

As of October, 1990, DOS Dial-In supports TOPS file-sharing only. AppleShare will be added very shortly. You can currently access E-mail with DOS Dial-In

as well. You should use QuickMail, Microsoft Mail, or InBox. You need to use the TOPS drivers on the remote PC to use these mail packages with DOS Dial-In.

Solana also has a product, "PC NetAccess," through which MS-DOS computers can dial-in to an AppleTalk network via their R-Servers.

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

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Tech Info Library Article Number:6469



# Tech Info Library

## Printronic

Revised: 7/15/93  
Security: Everyone

Printronic

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Article Created: 24 January 1991  
Article Reviewed/Updated: 15 July 1993

Printronic  
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17500 Cartwright Rd.  
P.O. Box 19559  
Irvine, CA 92713-9559

714-863-1900

714-660-8682 Fax

Company Profile:  
Hardware, specializing in high-volume printers.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6470



# Tech Info Library

## Woodenfrog Printer Products (formerly Laser's Edge)

Revised: 7/20/93  
Security: Everyone

Woodenfrog Printer Products (formerly Laser's Edge)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 20 July 1993

Woodenfrog Printer Products (formerly Laser's Edge)

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519 N. 78th St.  
Omaha, NE 68114

800-635-8088

402-392-1517

402-392-2421 Fax

Company Profile:  
Hardware, specializing in rebuilding LaserWriter toner cartridges.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6471





# Tech Info Library

## Macintosh LC: Compatibility W/ Selected Software (1 of 3) 1/93

Revised: 3/15/93  
Security: Everyone

Macintosh LC: Compatibility W/ Selected Software (1 of 3) 1/93

Article Created: 8 January 1991

### Article Change History

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1/15/93 - UPDATED  
• Vendor names.

To help ensure that you have an appropriate version of the application program you intend to use, Apple Computer, Inc., has compiled this list from information received from certain software developers. These developers have recommended certain versions of their software for use with the Macintosh LC computer. This is by no means a comprehensive list of programs or versions of programs that are compatible with the Macintosh LC.

Please contact your dealer or the software developer if you have any questions. They can help you identify the newest version of a particular program or tell you how to upgrade your current version if necessary. For best results, we recommend you use the latest versions of software and hardware products with your Macintosh LC.

| Developer             | Application Program     | Versions | Phone Number |
|-----------------------|-------------------------|----------|--------------|
| -----                 | -----                   | -----    | -----        |
| Abacus Concepts, Inc. | StatView SE+Graphics    | 1.0.3    | 800-666-7828 |
| Abacus Concepts, Inc. | SuperANOVA for Mac+     | 1.1      | 800-666-7828 |
| ABC News Interactive  | Health: AIDS            | 2.0      | 800-524-2481 |
| ABC News Interactive  | In The Holy Land        | 1.0, 2.0 | 800-524-2481 |
| ABC News Interactive  | Martin Luther King, Jr. | 1.0, 2.0 | 800-524-2481 |
| ABC News Interactive  | The '88 Vote            | 2.0, 2.1 | 800-524-2481 |
| ACI US, Inc.          | 4th Dimension           | 2.1      | 408-252-4444 |

ext. 220

|                         |                    |                      |                          |
|-------------------------|--------------------|----------------------|--------------------------|
| ACI US, Inc.            | File Force         | 1.0                  | 408-252-4444<br>ext. 220 |
| Adobe Systems, Inc.     | Adobe Illustrator  | 3.0                  | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Photoshop    | 1.0 and above        | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Streamline   | 1.0 and above        | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Type Align   | 1.0 and above        | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Type Library | All versions         | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Type Manager | 2.0                  | 415-961-0911             |
| Adobe Systems, Inc.     | Adobe Type Reunion | 1.0 and above        | 415-961-0911             |
| Adobe Systems, Inc.     | Font Downloader    | 1.0 and above        | 415-961-0911             |
| Adobe Systems, Inc.     | Font Porter        | 1.0                  | 415-961-0911             |
| Adobe Systems, Inc.     | TrueForm           | 2.0 and above        | 415-961-0911             |
| Aldus Consumer Division | Apache Strike      | 1.1                  | 619-695-6956             |
| Aldus Consumer Division | Beyond Dark Castle | 1.1                  | 619-695-6956             |
| Aldus Consumer Division | Dark Castle        | 1.1                  | 619-695-6956             |
| Aldus Consumer Division | Digital Darkroom   | 1.1a, 2.0*           | 619-695-6956             |
| Aldus Consumer Division | Enchanted Scepter  | 1.1                  | 619-695-6956             |
| Aldus Consumer Division | Personal Press     | 1.0*                 | 619-695-6956             |
| Aldus Consumer Division | Silicon Press      | 1.1                  | 619-695-6956             |
| Aldus Consumer Division | Super 3D           | 2.1bw, 2.1a*         | 619-695-6956             |
| Aldus Consumer Division | SuperCard          | 1.5                  | 619-695-6956             |
| Aldus Consumer Division | SuperPaint         | 2.0a                 | 619-695-6956             |
| Aldus Consumer Division | World Builder      | 1.1                  | 619-695-6956             |
| Aldus Corporation       | FreeHand           | 2.02                 | 206-628-2320             |
| Aldus Corporation       | PageMaker          | 3.02, 3.02CE,<br>4.0 | 206-628-2320             |
| Aldus Corporation       | Persuasion         | 2.0                  | 206-628-2320             |

|                          |                         |               |              |
|--------------------------|-------------------------|---------------|--------------|
| Altsys, Inc.             | Family Builder          | 3.2           | 214-680-2093 |
| Altsys, Inc.             | FONTastic Plus          | 2.02          | 214-680-2093 |
| Altsys, Inc.             | Fontographer            | 3.1 and above | 214-680-2093 |
| Altsys, Inc.             | Metamorphosis           | 1.5 and above | 214-680-2093 |
| Altsys, Inc.             | The Art Importer        | 2.0 and above | 214-680-2093 |
| Apple Computer, Inc.     | AppleLink               | 5.1.1         | 800-776-2333 |
| Apple Computer, Inc.     | Font/DA Mover           | 3.8           | 800-776-2333 |
| Apple Computer, Inc.     | MacTerminal             | 2.3.1         | 800-776-2333 |
| Articulate Systems, Inc. | Desktop Mike            | 1.1           | 800-443-7077 |
| Articulate Systems, Inc. | Voice Link              | 1.1           | 800-443-7077 |
| Articulate Systems, Inc. | Voice Navigator         | 2.0           | 800-443-7077 |
| Authorware, Inc.         | Authorware Professional | 1.5.3, 1.6*   | 612-921-8555 |
| Authorware, Inc.         | SoundWave               | 1.2*          | 612-921-8555 |
| Borland                  | Full Impact             | 2.0           | 408-438-7436 |
| Borland                  | FullWrite Professional  | 1.5           | 408-438-7436 |
| Broderbund               | BannerMania             | 1.0           | 800-521-6263 |
| Broderbund               | Calculus                | 1.2           | 800-521-6263 |
| Broderbund               | Drawing Table           | 1.0           | 800-521-6263 |
| Broderbund               | DTP Advisor             | 1.0           | 800-521-6263 |
| Broderbund               | Geometry                | 1.2           | 800-521-6263 |
| Broderbund               | Jam Session             | 1.1.1         | 800-521-6263 |
| Broderbund               | Printshop               | 1.3.2         | 800-521-6263 |
| Broderbund               | Physics                 | 1.2           | 800-521-6263 |
| Broderbund               | PlayMaker Football      | 1.1           | 800-521-6263 |
| Broderbund               | Playroom                | 1.0, 1.1      | 800-521-6263 |
| Broderbund               | Shufflepuck Cafe        | 1.0           | 800-521-6263 |

|            |                                           |           |              |
|------------|-------------------------------------------|-----------|--------------|
| Broderbund | Type                                      | 1.0       | 800-521-6263 |
| Broderbund | TypeStyler                                | 1.02, 1.5 | 800-521-6263 |
| Broderbund | Where in Europe is<br>Carmen Sandiego?    | 1.1       | 800-521-6263 |
| Broderbund | Where in the USA is<br>Carmen Sandiego?   | 1.1       | 800-521-6263 |
| Broderbund | Where in the World is<br>Carmen Sandiego? | 1.2       | 800-521-6263 |
| Broderbund | Where in Time is<br>Carmen Sandiego?      | 1.0       | 800-521-6263 |

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\*Application scheduled to ship fourth quarter 1990.

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Compiled in October 1990.

031-0720-A

Editor's note 18 June 1992: Borland Full Impact and Borland Full/Write Professional were previously listed as Ashton-Tate products.

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Tech Info Library Article Number:6472



# Tech Info Library

## Macintosh LC: Compatibility W/ Selected Software (2 of 3) 3/93

Revised: 3/15/93  
Security: Everyone

Macintosh LC: Compatibility W/ Selected Software (2 of 3) 3/93

Article Created: 18 December 1990

### Article Change History

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03/15/93 - UPDATED  
• Vendor names.

To help ensure that you have an appropriate version of the application program you intend to use, Apple Computer, Inc., has compiled this list from information received from certain software developers. These developers have recommended certain versions of their software for use with the Macintosh LC computer. This is by no means a comprehensive list of programs or versions of programs that are compatible with the Macintosh LC.

Please contact your dealer or the software developer if you have any questions. They can help you identify the newest version of a particular program or tell you how to upgrade your current version if necessary. For best results, we recommend you use the latest versions of software and hardware products with your Macintosh LC.

| Developer         | Application Program           | Versions | Phone Number |
|-------------------|-------------------------------|----------|--------------|
| -----             | -----                         | -----    | -----        |
| CE Software, Inc. | Alarming Events               | 1.0.1    | 515-224-1995 |
| CE Software, Inc. | Amazing Paint                 | 1.0      | 515-224-1995 |
| CE Software, Inc. | Calendar Maker                | 3.0.1    | 515-224-1995 |
| CE Software, Inc. | DiskTop                       | 4.0      | 515-224-1995 |
| CE Software, Inc. | In/Out                        | 1.0.1    | 515-224-1995 |
| CE Software, Inc. | MockPackage Plus<br>Utilities |          | 515-224-1995 |

|                              |                                           |       |              |
|------------------------------|-------------------------------------------|-------|--------------|
| CE Software, Inc.            | QuicKeys 2                                | 2.0   | 515-224-1995 |
| CE Software, Inc.            | QuickMail                                 | 2.2.3 | 515-224-1995 |
| CE Software, Inc.            | Vaccine                                   | 1.0.1 | 515-224-1995 |
| Chancery Software            | Mac School District<br>System             | 1.0   | 800-999-9931 |
| Chancery Software            | Mac School Student<br>Information Systems | 3.0   | 800-999-9931 |
| Claris Corp.                 | Claris CAD                                | 2.0v1 | 408-727-9054 |
| Claris Corp.                 | FileMaker Pro                             | 1.0v1 | 408-727-9054 |
| Claris Corp.                 | HyperCard                                 | 2.0   | 408-727-9054 |
| Claris Corp.                 | MacDraw II                                | 1.1v2 | 408-727-9054 |
| Claris Corp.                 | MacPaint                                  | 2.0   | 408-727-9054 |
| Claris Corp.                 | MacProject II                             | 2.1v3 | 408-727-9054 |
| Claris Corp.                 | MacWrite II                               | 1.1v1 | 408-727-9054 |
| Claris Corp.                 | SmartForm Assistant                       | 1.1v2 | 408-727-9054 |
| Claris Corp.                 | SmartForm Designer                        | 1.1v2 | 408-727-9054 |
| Dayna Communications<br>Inc. | DOS Mounter                               | 1.2   | 801-531-0600 |
| Discis Knowledge<br>Research | Discis Books<br>(application)             | 1.01  | 800-567-4321 |
| Discis Knowledge<br>Research | A Long Hard Day On<br>The Ranch           | 1.02  | 800-567-4321 |
| Discis Knowledge<br>Research | Cinderella, The<br>Original Fairy Tale    | 1.02  | 800-567-4321 |
| Discis Knowledge<br>Research | Heather Hits Her<br>First Home Run        | 1.02  | 800-567-4321 |
| Discis Knowledge<br>Research | Moving Gives Me<br>a Stomach Ache         | 1.02  | 800-567-4321 |
| Discis Knowledge<br>Research | Mud Puddle                                | 1.02  | 800-567-4321 |
| Discis Knowledge<br>Research | Scary Poems<br>For Rotten Kids            | 1.02  | 800-567-4321 |

|                              |                                  |        |              |
|------------------------------|----------------------------------|--------|--------------|
| Discis Knowledge<br>Research | The Paper Bag Princess           | 1.02   | 800-567-4321 |
| Discis Knowledge<br>Research | The Tale of<br>Benjamin Bunny    | 1.02   | 800-567-4321 |
| Discis Knowledge<br>Research | The Tale of<br>Peter Rabbit      | 1.02   | 800-567-4321 |
| Discis Knowledge<br>Research | Thomas' Snowsuit                 | 1.02   | 800-567-4321 |
| Don Johnston Dev. Equip.     | Ke:nx                            | 1.0*   | 800-999-4660 |
| Electronic Arts              | Studio/1                         | 1.0    | 800-245-4525 |
| Electronic Arts              | Studio/8                         | 2.0    | 800-245-4525 |
| Electronic Arts              | Studio/32                        | 1.0    | 800-245-4525 |
| Farallon Computing           | Checknet                         | 1.0.2  | 415-596-9000 |
| Farallon Computing           | Farallon MacRecorder<br>Driver   | 1.0    | 415-596-9000 |
| Farallon Computing           | Farallon Sound Driver            | 1.2    | 415-596-9000 |
| Farallon Computing           | Farallon Sound<br>Expansion Init | 1.0.1  | 415-596-9000 |
| Farallon Computing           | MacRecorder Sound<br>System      | 2.0.3* | 415-596-9000 |
| Farallon Computing           | MediaTracks                      | 1.0.1  | 415-596-9000 |
| Farallon Computing           | NodeHint                         | 1.0.2  | 415-596-9000 |
| Farallon Computing           | RegisterName                     | 9.0    | 415-596-9000 |
| Farallon Computing           | StarCommand                      | 2.2    | 415-596-9000 |
| Farallon Computing           | Timbuktu                         | 3.1.2  | 415-596-9000 |
| Farallon Computing           | Timbuktu/Remote                  | 2.0.1  | 415-596-9000 |
| Farallon Computing           | TrafficWatch                     | 1.0.8  | 415-596-9000 |
| Informix Software, Inc.      | Wingz                            | 1.1a   | 800-438-7627 |
| Intuit, Inc.                 | Quicken                          | 1.5    | 800-624-8742 |

|          |               |      |              |
|----------|---------------|------|--------------|
| LetraSet | DesignStudio  | 1.01 | 800-343-8973 |
| LetraSet | ImageStudio   | 1.7  | 800-343-8973 |
| LetraSet | LetraStudio   | 1.53 | 800-343-8973 |
| LetraSet | Ready,Set,Go! | 4.5a | 800-343-8973 |

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\*Application scheduled to ship fourth quarter 1990.

In California, call 415-572-2787.

This partial list of third parties and third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation by Apple Computer, Inc. All product specifications and descriptions were supplied by the products' vendors or suppliers. Apple Computer, Inc., has no information about the testing procedures and compatibility verification conducted by the products' vendors and suppliers. Apple Computer, Inc., assumes no responsibility with regard to the selection, performance, or use of these products or the actions of the vendors. All understandings, agreements, or warranties with respect to the software in this list, if any, take place directly between the vendors and the prospective users. Apple Computer, Inc., makes no warranties as to the completeness or accuracy of this list.

Compiled in October 1990.

031-0720-A

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Tech Info Library Article Number:6473





# Tech Info Library

## Macintosh LC: Compatibility W/ Selected Software (3 of 3) 2/95

Revised: 2/10/95  
Security: Everyone

Macintosh LC: Compatibility W/ Selected Software (3 of 3) 2/95

Article Created: 6 February 1991  
Article Reviewed/Updated: 10 February 1995

Article Created: 8 January 1991

To help ensure that you have an appropriate version of the application program you intend to use, Apple Computer, Inc., has compiled this list from information received from certain software developers. These developers have recommended certain versions of their software for use with the Macintosh LC computer. This is by no means a comprehensive list of programs or versions of programs that are compatible with the Macintosh LC.

Please contact your dealer or the software developer if you have any questions. They can help you identify the newest version of a particular program or tell you how to upgrade your current version if necessary. For best results, we recommend you use the latest versions of software and hardware products with your Macintosh LC.

| Developer       | Application Program     | Versions | Phone Number |
|-----------------|-------------------------|----------|--------------|
| -----           | -----                   | -----    | -----        |
| MacroMind, Inc. | Director                | 2.0.1    | 415-442-0200 |
| MacroMind, Inc. | Player                  | 2.0.1    | 415-442-0200 |
| MacroMind, Inc. | MediaMaker              | 1.0      | 415-442-0200 |
| Maxis           | SimCity Supreme (color) | 1.2c     | 415-376-6434 |
| Maxis           | SimEarth B & W          | 1.0      | 415-376-6434 |
| Maxis           | SimEarth Color          | 1.0c     | 415-376-6434 |
| MECC            | NumberMunchers          | 1.0      | 612-481-3660 |
| MECC            | WordMunchers            | 1.0      | 612-481-3660 |

|                       |                                                |                 |              |
|-----------------------|------------------------------------------------|-----------------|--------------|
| Microsoft Corporation | Excel                                          | 2.2a            | 206-454-2030 |
| Microsoft Corporation | File                                           | 2.0a            | 206-454-2030 |
| Microsoft Corporation | Mail                                           | 2.0             | 206-454-2030 |
| Microsoft Corporation | Powerpoint                                     | 2.01            | 206-454-2030 |
| Microsoft Corporation | QuickBASIC                                     | 1.00b           | 206-454-2030 |
| Microsoft Corporation | Word                                           | 4.0a,b,c        | 206-454-2030 |
| Microsoft Corporation | Works                                          | 2.0d            | 206-454-2030 |
| Oracle                | Oracle for 4D                                  | 1.1             | 800-672-2531 |
| Oracle                | Oracle for Macintosh                           | 1.2             | 800-672-2531 |
| Scholastic            | Algebra Shop                                   | 1.0             | 800-541-5513 |
| Scholastic            | Hidden Agenda                                  | 1.0             | 800-541-5513 |
| Scholastic            | Interactive NOVA:<br>Animal Pathfinders        | 1.0             | 800-541-5513 |
| Scholastic            | Math Shop (series)                             | 1.0             | 800-541-5513 |
| Scholastic            | Point of View: Civil<br>War & Reconstruction   | 1.1             | 800-541-5513 |
| Scholastic            | Point of View: Overview<br>of American History | 1.1             | 800-541-5513 |
| Scholastic            | Scholastic AI                                  | 1.0             | 800-541-5513 |
| Scholastic            | Springboard Publisher<br>II                    | 1.0             | 800-541-5513 |
| Scholastic            | Success with Writing                           | 1.0             | 800-541-5513 |
| Softsync/BLOC         | Accountant, Inc.<br>Professional               | 1.0.5, 2.0      | 800-933-2537 |
| SuperMac Technology   | DiskFit                                        | 1.5.1 and above | 408-245-2202 |
| SuperMac Technology   | Network DiskFit                                | 1.5.1 and above | 408-245-2202 |
| SuperMac Technology   | PixelPaint Professional                        | 2.0             | 408-245-2202 |
| SuperMac Technology   | Sentinel                                       | 2.2             | 408-245-2202 |

|                         |                                      |                |              |
|-------------------------|--------------------------------------|----------------|--------------|
| Symantec Corporation    | MORE                                 | 3.0            | 800-441-7234 |
| Symantec Corporation    | THINK C                              | 4.02           | 800-441-7234 |
| Symantec Corporation    | THINK Pascal                         | 3.01           | 800-441-7234 |
| Symantec Corp.          | SmartWorks                           | 1.0            | 904-464-0016 |
| Symmetry Software Corp. | Acta Advantage                       | 1.02 and above | 800-624-2485 |
| Symmetry Software Corp. | atOnce!                              | 1.10           | 800-624-2485 |
| Symmetry Software Corp. | HyperDA                              | 1.2.3          | 800-624-2485 |
| Symmetry Software Corp. | KeyPlan                              | 1.02 and above | 800-624-2485 |
| Symmetry Software Corp. | PictureBase                          | 1.2.3          | 800-624-2485 |
| T/Maker Company         | WriteNow                             | 2.2            | 415-962-0195 |
| Wings For Learning      | Blockers and Finders                 | 1.0            | 800-321-7511 |
| Wings For Learning      | Physics Explorer:<br>Gravity         | 1.0            | 800-321-7511 |
| Wings For Learning      | Physics Explorer:<br>Harmonic Motion | 1.0            | 800-321-7511 |
| Wolfram Research        | Mathematica Standard                 | 1.2.2          | 217-398-6500 |
| WordPerfect Corporation | WordPerfect for the<br>Macintosh     | 2.0            | 800-451-5151 |

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Article Change History:

10 Feb 1995 - Formatting updated and removed 3pty keyword.

15 Jan 1993 - Updated Vendor names.

Support Information Services

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Tech Info Library Article Number:6474



# Tech Info Library

## A/UX: Setup for Modem Autoanswer (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Setup for Modem Autoanswer (8/94)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

What setting is necessary to have a 1200 baud modem autoanswer from the modem port?

DISCUSSION -----

In A/UX, if you have a problem talking with the modem, first try running `stty -g /dev/tty0 -modem`. This will disable modem control on the modem port. In the `/etc/inittab` subdirectory, make two changes to the line for the modem port as follows:

change the "off" to "respawn"

change the "at\_9600" to "mo\_1200"

Note: If you have a 2400 baud modem, the last expression should be "mo\_2400".

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6476



# Tech Info Library

## A/UX: Giving the System its Domain Name (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Giving the System its Domain Name (6/93)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 23 June 1993

TOPIC -----

Why doesn't my system know its domain name?

DISCUSSION -----

This is a consequence of having an empty /etc/inittab file. It happens because the /etc/sysinitrc file is not being executed. Once you recover the /etc/inittab file, the system domain name will be defined correctly.

Article Change History:  
23 Jun 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6477



# Tech Info Library

## A/UX: How to Adjust the Kernel Parameter NUBUFS

Revised: 9/30/92  
Security: Everyone

A/UX: How to Adjust the Kernel Parameter NUBUFS

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I want to connect to Ethernet. The figures for a 5MB configuration were typed in. Running the command

```
netstat -r
```

brings up the message

```
mexpand returning 0
```

### DISCUSSION -----

A request to allocate memory to use for memory buffer space was denied. Wait a short while, and see if the condition clears up before rebooting. You may also consider increasing the size of the buffers available; adjust the kernel parameter NUBUFS. To do this, follow these steps:

- 1) Log in as "root" and bring the system down into single-user mode.
- 2) Execute "kconfig -av | grep NMBUFS". It should return the network memory buffers configured in the kernel. A/UX is distributed with NMBUFS=500.
- 3) Type "kconfig -n /unix"
- 4) Type "NMBUFS=" followed by the number you would like to increase it to

followed by a carriage return. Try increasing the number of mbufs to 1000; type "NMBUFS=1000"

5) Type a Ctrl-D to exit kconfig. The shell prompt will reappear.

6) Execute "sync; sync; sync; reboot". The system will sync and reboot itself. Bring it back up.

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Tech Info Library Article Number:6478





# Tech Info Library

## **cc:Mail, Inc. (A division of Lotus Development)**

Revised: 7/7/93  
Security: Everyone

cc:Mail, Inc. (A division of Lotus Development)

=====  
Article Created: 02/01/91  
Article Reviewed: 07/07/93  
Article Updated:

cc:Mail, Inc. (A division of Lotus Development)  
-----

2141 Landings Dr.  
Mountain View, CA 94043

800-448-2500 (Sales)

415-961-8800  
415-966-4900 (Tech. Support)

415-961-8400 Fax  
415-961-0215 (Sales) Fax

Company Profile:  
Specializing in LAN-based electronic mail systems for the Macintosh and PC.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6479



# Tech Info Library

## A/UX: The mount: <directory>: Not owner Mount Error

Revised: 11/9/92  
Security: Everyone

A/UX: The "mount: <directory>: Not owner" Mount Error

=====

Article Created: 28 January 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I tried to mount a file system and got the error:

```
mount: <directory>: Not owner
```

### DISCUSSION -----

Do these two steps:

- 1) You must be logged in as "root" when mounting partitions.
- 2) Enter the line: whoami

The output should be: "root". If it isn't, log in as "root" and try the mount again.

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Tech Info Library Article Number:6480



# Tech Info Library

## A/UX: ae0 Interrupt Errors

Revised: 11/10/92  
Security: Everyone

A/UX: ae0 Interrupt Errors

=====

Article Created: 19 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I am getting various ae0 interrupt errors a few minutes after system boot. NFS and BNET work fine until then.

### DISCUSSION -----

Try another slot or try another EtherTalk board. The errors indicate an EtherTalk hardware problem or connection problem.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6481



# Tech Info Library

## A/UX: Problems with rlogin and rcopy Commands (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Problems with rlogin and rcopy Commands (8/94)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I am having trouble with rcopy command. I can't rlogin either; the system says permission denied.

DISCUSSION -----

Make sure that .rhosts are set up correctly on the Sun system and that you aren't logged in as root.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6482



# Tech Info Library

## A/UX: Network Reads Take Longer than Writes

Revised: 11/9/92  
Security: Everyone

A/UX: Network Reads Take Longer than Writes

=====

Article Created: 18 January 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Reading data over a network takes longer than writing. The code writes data from a Macintosh II over a dedicated network to another Macintosh II running A/UX. By the time the write is done on the server, the client is only about 80% done.

### DISCUSSION -----

Engineering believes that reading takes longer because after the data is taken from the network, it has to go through the IP, TCP, or UDP translation and then to the system read buffer. As a solution, try increasing NBUFS size.

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Tech Info Library Article Number:6484



# Tech Info Library

## 800K Macintosh Disk: Sector and Track Info

Revised: 6/18/92  
Security: Everyone

800K Macintosh Disk: Sector and Track Info

Article Created: 13 December 1990  
Article Last Reviewed: 18 June 1992  
Article Last Updated:

TOPIC -----

I have three questions about 800K Macintosh disks:

- 1) How many sectors are there per side?
- 2) Is the top or the bottom of the disk used first for data storage?
- 3) What are the sync lengths of the tracks?

DISCUSSION -----

- 1) The table below states the formatted capacity of the 800K media:

### 800K Disk Specifications

|                   |               |
|-------------------|---------------|
| Bytes per Sector  | 512           |
| Tracks per Side   | 80            |
| Sectors per Track |               |
| Tracks 00-15      | 12            |
| Tracks 16-31      | 11            |
| Tracks 32-47      | 10            |
| Tracks 48-63      | 9             |
| Tracks 64-79      | 8             |
| Sectors per Side  | 800           |
| Sectors per Disk  | 1600          |
| Bytes per Side    | 409600 (400K) |
| Bytes per Disk    | 819200 (800K) |

- 2) The bottom of the disk is side 0; the top of the disk is side 1. The first sector, block 0, is on track 0 of side 0. The last sector, block 1599,

is on track 79 of side 1.

- 3) A sector can be divided into four major sections. These are the header sync field, the header field, the data sync field, and the data field. These fields combined add up to 733.5 code bytes minimum.

Header Sync Field (6.25 bytes + sync overhead):

5 bit slip FF's minimum (FF,3F,CF,F3,FC,FF)

The header sync fields contain a pattern of ones and zeros that synchronizes the hardware state machine with the data on the disk. The header sync and headers field are written only when the disk is formatted. The formatter should make this field as large as possible, because this field buffers expansion of the previous sector's data field due to speed variation of the drive.

Header Fields (11 bytes):

The header field identifies the sector. The sub-fields are:

|          |                                                                                                                                                                                                           |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D5 AA 96 | address marks: this identifies the fields as a header field                                                                                                                                               |
| Track    | encoded low 6 bits of track number                                                                                                                                                                        |
| Sector   | encoded sector number                                                                                                                                                                                     |
| Side     | encoded high 2 bits of track number and side bit:<br>decoded bit 5=0 for side 0, 1 for side 1<br>decoded bit 0 is the high-order bit of the track number<br>decoded bits 1-4 are reserved and should be 0 |
| Format   | encoded format specifications:<br>decoded bit 5=0 for single-sided formats<br>decoded bits 0-4 define format interleave:<br>standard 2:1 interleave formats have 2 in the field                           |
| Checksum | checksum formed by exclusive 'or' in the track, sector side, and format fields                                                                                                                            |
| DE AA    | bit slip marks: this identifies the end of the field                                                                                                                                                      |
| Off      | pad byte where the write electronics were turned off                                                                                                                                                      |

Data Sync Field (6.25 bytes):

5 bit slip FF's (FF,3F,CF,F3,FC,FF)

The data sync field contains a pattern of ones and zeros that synchronizes the state machine with the data on the disk. This field is written whenever the data field is written.

Data Field (710 bytes):

The data field contains the actual data in the sector. The sub-fields are:

|              |                                                          |
|--------------|----------------------------------------------------------|
| D5 AA AD     | data marks: this identifies the field as a data field    |
| Sector       | encoded sector number                                    |
| Encoded Data | 524 bytes encoded into 699 code bytes; the first 12 data |

bytes are typically used as a sector tag by the operating system, and the remaining 512 bytes are used for actual data.

|          |                                                      |
|----------|------------------------------------------------------|
| Checksum | a 24-bit checksum encoded into 4 code byte           |
| DE AA    | bit slip marks: this identifies the end of the field |
| Off      | pad byte where the write electronics were turned off |

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Tech Info Library Article Number:6486





# Tech Info Library

## AppleTalk for VMS 2.1 and 3.0: Compatibility with VMS 5.4

Revised: 1/28/91  
Security: Everyone

AppleTalk for VMS 2.1 and 3.0: Compatibility with VMS 5.4

=====

This article last reviewed: 28 November 1990

TOPIC -----

Has AppleTalk for VMS 2.1 & 3.0 been tested for compatibility with VMS 5.4?

DISCUSSION -----

AppleTalk for VMS 2.1 was not tested with VMS 5.4, because VMS 5.4 was not released at the time version 2.1 was tested. However, AppleTalk for VMS 2.1 should work under VMS 5.4.

There is a larger issue here that ties into your question about AppleTalk for VMS 3.0. In fact, there is only one choice, and that is AppleTalk for VMS 3.0 (as part of PATHWORKS, formerly DEC LanWORKS). Version 2.1 was an interim release intended solely to provide AppleTalk Phase 2 compatibility until version 3.0 was released. AppleTalk for VMS 3.0 works under VMS 5.4, and that is the current VMS product superseding all other releases.

If you're running older, AppleTalk Phase 1, versions of AppleTalk for VMS, you should start moving toward AppleTalk Phase 2 and AppleTalk for VMS 3.0. The only potential difficulty here is if you have products that require the AppleTalk for VMS 2.x API. In this case, you can go to AppleTalk for VMS 2.1 until those products have been revised to support the new API of AppleTalk for VMS 3.0.

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Tech Info Library Article Number:6487



# Tech Info Library

## DAL: Using \$maxrows and SELECT Statement

Revised: 6/30/92  
Security: Everyone

DAL: Using \$maxrows and SELECT Statement

=====

Article Created: 28 January 1992  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

TOPIC -----

I have PATHWORKS (LanWORKS BL/4) running on our MicroVAX 3400. The DAL server is version 1.2. If I go into IDAL, and set \$maxrows to 0, a select statement returns nothing. My understanding is that the \$maxrows is supposed to enable an an return unlimited amount of data.

DISCUSSION -----

We assume that you also issued the "printall;" statement after the "select" statement. Otherwise, you will not see anything printed.

The System Variables \$maxrows is initially set to null. Null is not 0 (zero). To set \$maxrows to the initial value of null, you should set it to \$null.

When \$maxrows is set to a non-null value, the SELECT and FETCH statements stop fetching data from the database when they reach the number of rows specified by \$maxrows. Setting \$maxrows to 24, for example, yields a 24 rows of database results without waiting for an entire query to complete. Setting it to 0 will result in zero rows.

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Tech Info Library Article Number:6488



# Tech Info Library

## Vinyl-Cutting Signmakers for Macintosh

Revised: 1/28/91  
Security: Everyone

Vinyl-Cutting Signmakers for Macintosh

=====

This article last reviewed: 12 December 1990

TOPIC -----

Is there such a thing as a vinyl-cutting signmaker for the Macintosh?

DISCUSSION -----

We have two sources for you. The Roland Digital Group makes a machine that does precisely what you want.

Also, Mesac's "Epsi" product drives various vinyl cutters. Epsi converts PostScript to commands that cutters understand. Search the Technical Info library (under "Roland" or "Mesac" for contact information on these two companies.

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Tech Info Library Article Number:6490



# Tech Info Library

## How to Clean a Mouse: Instructions Are in the Manual

Revised: 1/28/91  
Security: Everyone

How to Clean a Mouse: Instructions Are in the Manual

=====

This article last reviewed: 12 December 1990

TOPIC -----

I am having a problem cleaning my mouse. I thought I did everything correctly, but the mouse is still "jumpy" (usually a sign of a dirty mouse). Where can I find a document explaining the cleaning procedure?

DISCUSSION -----

The directions on how to clean the Macintosh mouse is in one of the manuals that comes with each Macintosh system. For example, look in the index of the "Macintosh Plus Owner's Guide" under "cleaning." You should see an entry for the mouse (pages 196 and 197). For the Macintosh IIx, look in the "Macintosh Reference" manual that comes with it. In the index under "cleaning", there is an entry for the mouse (pages 294 through 296).

If cleaning the mouse as described in the manual does not correct the problem, the mouse may need to be replaced. Have a service technician check it.

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Tech Info Library Article Number:6491



# Tech Info Library

## Same-Size Images Not Possible with Different Resolutions

Revised: 1/28/91  
Security: Everyone

Same-Size Images Not Possible with Different Resolutions

=====

This article last reviewed: 13 December 1990

TOPIC -----

I am writing medical-imaging software and want to connect two 19-inch monitors with different resolutions.

I have assumed that if one monitor has twice the resolution as the other, the object will be half the size on the higher-resolution monitor. Is there is a way, within the Macintosh OS or via a third-party utility, to have an object display the same size on both screens despite twice the resolution on one monitor?

DISCUSSION -----

The QuickDraw graphics model does not provide a mechanism that allows for display systems (card and monitor) with different dots per inch (dpi) resolutions to display an image at the same size. QuickDraw assumes a display system has a resolution of 72 dpi. This means that a 2-inch square (144 by 144 dpi) on a Macintosh Plus screen (72 dpi) will be an 2.09-inch square on the AppleColor High-Resolution RGB Monitor (69 dpi).

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Tech Info Library Article Number:6492



# Tech Info Library

## OfficeVision and Macintosh Connectivity: PIXI

Revised: 1/28/91  
Security: Everyone

OfficeVision and Macintosh Connectivity: PIXI

=====

This article last reviewed: 13 December 1990

TOPIC -----

I am looking for information on Macintosh-to-OfficeVision connectivity.

DISCUSSION -----

There is a product for Macintosh-to-OfficeVision (and DISOSS) connectivity called PIXI (Personal Services Import Export) from IMI Computing. The product reportedly works in conjunction with DCA's MacIrma product. Its features include:

- Uploading and downloading Personal Services in-basket or filing cabinet entry(s) to the Macintosh. It also provides file transfer with both OfficeVision/MVS and Personal Services/CICS.
- Binary files can be transferred in native form for filing or distribution through Personal Services or DISOSS.
- PIXI MacIrma determines the document type as either RFT, EDITABLE, or PC FILE depending on the contents of the data. Macintosh ASCII files are automatically converted to EDITABLE if required. Macintosh RFT files are shared with other users unchanged (as RFT).

The product requires DCA's MacIrma hardware and APIs. On the host, you must also install the standard PIXI host component.

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Tech Info Library Article Number:6497



# Tech Info Library

## Multiple System Files on One Macintosh: An Update (12/94)

Revised: 12/9/94  
Security: Everyone

Multiple System Files on One Macintosh: An Update (12/94)

=====

Article Created: 13 December 1990  
Article Reviewed/Updated: 9 December 1994

TOPIC -----

Under Macintosh Operating Systems 5.x and 6.x, multiple system files on a single volume virtually guaranteed file structure and performance problems. However, under 7.x it doesn't seem so demonstrable. Moreover, utilities like System Switcher suggest that there are now toggles to enable and disable a system file. I've seen a number of users who archive, sometimes deliberately, multiple system files on a volume, with or without such utilities. Are there known risks in doing this, and does Apple have a position regarding this practice?

DISCUSSION -----

We still recommend only one System Folder per volume. We are aware of some potential risks involved with multiple System Folders on one volume. They are:

- Confusion - It is very easy to become confused, either for the user or for a third party application, with the presence of more than one System Folder on the hard drive.
- Disk Cache - In rare instances, information in the Disk Cache may not get written to the hard disk before restarting. If you were blessing a System Folder before restarting, then your Macintosh may not recognize that it has a System Folder.
- Hard Disk Problems - In some instances, users have experienced low level hard disk directory problems, which were heightened by having multiple System Folders. In these cases, a Macintosh typically tried to load Extensions, Control Panels, and Preferences from an unblessed folder, and not from the blessed System Folder.
- Third Party Utilities - Third party utilities for blessing or unblessing multiple System Folders alter information in the hard disk directory's boot blocks. This is not supported by Apple and may cause problems.

If a user, for whatever reason, needs to have multiple System Folders, it is critical that the other System Folders be deblessed correctly, as follows:

- 1) With System 7.0 and later, move the System file to the Preferences Folder (hiding the System file in this way deblesses the System Folder).
- 2) Close the System Folder and verify its state before restarting. A blessed System Folder has a Macintosh in its icon. A non-blessed System Folder does not.
- 3) Rename the deblessed System Folder to any name other than "System Folder".

Article Change History:

09 Dec 1994 - Complete rewrite of article.

Support Information Services

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Tech Info Library Article Number:6498





# Tech Info Library

## Macintosh Chooser: How It Displays Names

Revised: 1/28/91  
Security: Everyone

Macintosh Chooser: How It Displays Names

=====

Article Created: 13 December 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated: 30 July 1992

TOPIC -----

I am designing some AppleTalk-based services and need to know how the Chooser "sorts" these items:

- 1) For a network "object" (like LaserWriter or AppleShare), the display of network resources accessible to you.
- 2) For a specific AppleShare server, the display of Volumes accessible to a user.

It appears that none of these lists is alphabetical (though life would be simpler for network designers if they were). I'm hoping that by better understanding how it DOES work, we can choose our assortment of network and volume names more intelligently so the appearance to users is more consistent.

DISCUSSION -----

- 1) For System 6 and earlier, the Chooser does not sort the names at all; they are displayed in the order that they are received by the NBP lookup request. Under System 7, the list is alphabetical.
- 2) At the server, devices are displayed in Finder order: startup volume first, followed by SCSI drives in descending order of SCSI address, followed by devices connected via the drive port in the order returned by the getVolInfo call. At the workstation, the devices are displayed in exactly the opposite order, with the startup volume at the bottom of the list.

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Tech Info Library Article Number:6499



# Tech Info Library

## Macintosh Serial Port Voltage (12/95)

Revised: 12/2/95  
Security: Everyone

Macintosh Serial Port Voltage (12/95)

=====  
Macintosh Serial Port Voltage (12/95)  
Article Created: 13 December 1990  
Article Reviewed/Updated: 2 December 1995

TOPIC -----

I want to connect equipment to the serial port on a Macintosh IICx, but my product leaves a signal that's 15 volts high.

Is that too much? What is the maximum voltage that the modem or printer port can handle on the "receiving data" pin?

DISCUSSION -----

Engineering (and the manuals describing the receivers) indicates that the serial ports should be able to handle voltage ranges of +/- 25V.

The Quad Differential Line Receiver used on the Power Macintosh 6100, 7100, 8100, 9150 and the Quadra 630 family is rated to a maximum of +/- 25V on any differential input.

Article Change History:  
02 Dec 1995 - Updated article with newer Macintosh models.

Support Information Services

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Tech Info Library Article Number:6500



# Tech Info Library

## Macintosh Portable: PDS Manual Correction

Revised: 11/30/92  
Security: Everyone

Macintosh Portable: PDS Manual Correction

Article Created: 1 February 1991

### Article Change History

10/29/92 - REVIEWED

- To indicate that problem has been corrected in the manual

### TOPIC -----

Is there a problem with figure 13-5 (a diagram of the Macintosh Portable 68000 Direct Slot) on page 280 of "Designing Cards and Drivers for the Macintosh Family"? In a real Macintosh Portable, the PDS connector is soldered on the board rotated 180 degrees.

I've heard the connector should be soldered as described in the book, which is the official way. Which one is correct, the book or the Macintosh?

### DISCUSSION -----

The manuals ("Guide to the Macintosh Family Hardware", second and third editions, and "Designing Cards and Drivers for the Macintosh Family", second edition) are in error. The signals and signal descriptions are correct, but the key for the slot is off by 180 degrees (that is, columns A and C should be swapped, as should be rows 1 and 32).

The manual "Designing Cards and Drivers for the Macintosh Family", third edition, has been updated and the Macintosh Portable PDS diagram has been corrected.

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Tech Info Library Article Number:6501



# Tech Info Library

## HyperCard: HFSCopy External

Revised: 2/10/93  
Security: Everyone

HyperCard: HFSCopy External

=====

Article Created: 13 December 1990

### Article Change History

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09/01/92 - REVIEWED

- For technical accuracy

### TOPIC -----

I am developing a HyperCard front end for software distribution via AppleShare servers and using the HFSCopy XFCN to copy files from servers to users' hard drives. I have also made stacks that do validation and audit trails (including MS Mail API) and log the user onto the server, based on certain access privileges. After logging on the user has to drag down the folders from the server manually. This may have to be the solution if the stack can automate the "copy."

HFSCopy works great the first time, but the next time it is executed, it won't work with a duplicate folder name on the user's hard disk. Is there a simple solution to this? Or do I have to verify the user's folders every time and/or rename the existing folder to "<folder name> old" or something like that?

How can I use HFSCopy without knowing the name of the destination hard drive? I don't want to require users to enter the name of their hard drive or the script to search for the volume name. A wildcard does not seem to work. I would like HyperCard to do the HFS Copy to the HyperCard launch volume. HyperCard knows where it is being launched from, so I need to tell the script this information. How can I access this information?

### DISCUSSION -----

You're right: the HFSCopy XFCN does not replace a folder with the same name. It does, however, return an error that you can check, as a way to work around

this. Error -48 indicates a duplicate filename. You could write a script that uses a few XFCNs to index through the folder that you want to replace, deleting each of the files in the folder until the folder is empty, and then deleting the folder. Once this is done, you could then call the HFSCopy XFCN again, asking for the original folder. Because the folder no longer exists on your local disk, it will be copied successfully.

There are two XFCNs beyond HFSCopy that would help: FolderContents and DeleteFile.

The FolderContents XFCN returns the files and/or folders contained in a specified folder. Its syntax is:

```
FolderContents(Pathname, «,"Files"|"Folders"|"Both"» «"noDialog:"errorGlobal»)
```

where Pathname is a path to a folder to examine and parameter 2 is the literal string "Files", "Folders", or "Both".

This XFCN returns a carriage return delimited list (one file/folder per line) of all files, folders, or both files and folders (as per parameter 2) within the specified directory. The names of all folders will end in ":". The default is to list "both" files and folders. (The next version will be A/UX compatible.)

The third XFCN is DeleteFile, which deletes the file you specify. Specify the full pathname, as with the other two XFCNs. To delete a folder, that folder must be empty and you must trick the XCFN into thinking that the folder is a file. Therefore, delete everything in the folder, then call this XCFN once more using the folder name as a file name. In other words, where you would usually specify a folder name like "Hard Disk:folder1:", in this case, you omit the last colon and pass the parameter "Hard Disk:folder1". Thus, DeleteFile will think the folder is a file, and--as long as the folder is empty--will delete it. Remember that if there are folders within folders you must work your way from the deepest folder out, deleting files and folders as you go.

To get HyperCard's full pathname, use the HyperCard command "the long name of stack home". From the result, you can derive the information you need.

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Tech Info Library Article Number:6503



# Tech Info Library

## A/UX: X Window System, MacX Performance Help (4/95)

Revised: 4/3/95  
Security: Everyone

A/UX: X Window System, MacX Performance Help (4/95)

=====

Article Created: 17 October 1990  
Article Reviewed/Updated: 03 April 1995

TOPIC -----

I am running some performance benchmarks on the A/UX implementation of the native X Window System and MacX. I cannot reproduce some favorable benchmarks that I read about in "Digital Review." I need some specific, concrete steps that I can take to optimize A/UX for running native X Window System applications as a client and server.

I'm running A/UX on a Macintosh IIfx with 8MB RAM on a Hammer 330MB drive (formatted with LaCie's Silverlining).

Also, is there anything I can do other than increase the memory or select "faster bitmap graphics" for the MacX performance benchmarks?

DISCUSSION -----

First, make sure that you are running the current release of "X Window System for A/UX". It includes "MacX for A/UX" and "Native X11 Window System for A/UX".

This software comes standard with A/UX 3.0. Here are some notes about these two products:

For "MacX for A/UX", the display server and the included "xcalc" client application are based on X11R3.

For "Native X11 Window System for A/UX", the display server and the "xstdcmap" client application are based on X11R4. The Xlib, the Xtoolkit, and other client applications are based on X11R3.

Because the Native X11 server for A/UX is based on X11R4, the performance behavior on the display server should be much improved over the X11R3 server.

To run X Window System with A/UX efficiently, some kernel parameters need to be adjusted, because of the number of processes and amount of memory space required

by both the display server and client applications in a network environment.

Use the command "kconfig -av" to display the current kernel parameters, and adjust these parameters, if necessary:

NBUF  
NFILE  
NINODE  
NPROC  
MAXUP  
NMBUFS

For an A/UX with 8MB RAM, the suggested values for these parameters are:

NBUF=1000  
NINODE=600  
NFILE=400  
NPROC=100  
MAXUP=100  
NMBUFS=1000

NMBUFS is allocated buffers for the network. You can adjust them, if necessary. The above can be done via the "kconfig -n /unix" command. Then use "sync;sync;sync;reboot" to effect the change.

For MacX, other than increasing the memory size of the MacX application (default is 1500K), we are not aware any other way to improve the performance. The suggested memory size of MacX is 2500K. Use "Get Info" to change the size under A/UX Finder.

If physical memory is your concern, you can use the "TBMEMORY" environment variable to increase your virtual memory under A/UX. For instance, to make a 16MB virtual memory, put these two lines in your .profile file, then logout and login to effect the change:

TBMEMORY=16m  
export TBMEMORY

#### Article Change History:

03 Apr 1995 - Corrected wording of Silverlining.  
19 Sep 1994 - Reviewed for technical accuracy.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6504



# Tech Info Library

## Apple SuperDrive and 800K Disk Drive Compatibility

Revised: 6/18/92  
Security: Everyone

Apple SuperDrive and 800K Disk Drive Compatibility

=====

Article Created: 5 February 1991  
Article Last Reviewed: 18 June 1992  
Article Last Updated: 23 August 1991

TOPIC -----

I have a Macintosh II with an 800K floppy drive. I want to upgrade to an Apple SuperDrive (formerly Apple FDHD). Can I still use the 800K drive and have a system with two floppy drives?

DISCUSSION -----

When upgrading a Macintosh II system to include a SuperDrive, new ROMs (Macintosh IIX ROMs) and a SWIM chip (replaces the IWM) are installed. The 800K disk drive from the Macintosh II is supported and will continue to work as before. For more information, search under "Macintosh II 800K Drive".

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Tech Info Library Article Number:6512





# Tech Info Library

## LaserWriter and LaserWriter II: How to Minimize Smudging

Revised: 2/5/91  
Security: Everyone

LaserWriter and LaserWriter II: How to Minimize Smudging

=====

This article last reviewed: 14 December 1990

TOPIC -----

I am seeing a lot of smudging with the LaserWriter and LaserWriter II printers in our office. What's wrong? What can I do to minimize this?

DISCUSSION -----

In most cases, smudging is due to the operation of the printer below the stated minimum 20 percent relative humidity. This often occurs in the winter when dry, cool air is brought inside and warmed up. Because of the latent humidity in the printer, paper, and toner cartridge, it takes approximately 24 hours for a change in humidity to reflect in the results. The condition of the printer, paper, and toner can all have a significant impact on the print quality. Changing parts or modules has no effect on a humidity-related problem.

Here are some suggestions for minimizing smudging:

- Use a humidifier in the vicinity of the printer and its paper. Try to maintain the humidity at a level of 40 to 70 percent.
- Place a moist sponge with the paper supply in a closed container (like sealed cabinet.) This does not control the humidity level within the printer or toner. This method, therefore, has limited effectiveness.
- Before inserting paper into the paper cassette, use a static-dissipating spray (e.g., Static Guard™.)
- Clean the printer regularly to reduce toner deposits in accordance with the "Owner's Guide" recommendations.

In conclusion, the best solution is to operate the printer within its specified humidity range.

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Tech Info Library Article Number:6513



# Tech Info Library

## Using Shiva NetSerials to Manage Shared Serial Ports

Revised: 2/5/91  
Security: Everyone

Using Shiva NetSerials to Manage Shared Serial Ports

=====

This article last reviewed: 14 December 1990

TOPIC -----

I have a decent-sized AppleTalk network (40 workstations, two servers, bridge, and so on). I need to add about 10 share-able serial ports to bridge into an existing Wang system. Ideally, I'd like to find some device like a com-port server, something with up to ten ports, that would manage the allocation of the ports. I have considered using ten Shiva NetSerials, but I don't like the "trial and error" method of finding an available NetSerial. Does anyone make a device like this?

DISCUSSION -----

From your description it sounds as if you want a network communication "hunt group"-like service, that will automatically hunt for the next available communication server when the first communication server is busy. You can do this now with the Shiva NetSerials.

Just choose all of NetSerials you want in your "hunt group" through the Chooser and your call will be routed through whichever NetSerial is available. Because the NetSerial is an independent (after initial configuration) network device, you won't need to dedicate a computer to manage it.

For more details, search the Technical Info library under "Shiva."

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Tech Info Library Article Number:6514



# Tech Info Library

## DBF Files: Accessing from Macintosh

Revised: 2/5/91  
Security: Everyone

DBF Files: Accessing from Macintosh

=====

This article last reviewed: 20 November 1990

TOPIC -----

Several people in my department are interested in using their dBASEIII+ or Clipper data files in the normal DBF file format by both MS-DOS users and Macintosh users. I'm thinking of solutions like FoxBASE+/Mac, dBFast/Mac, or 4th Dimension with dB\_Interface from CT-DATA.

Could you summarize all the possible solutions that we could implement? Some of these people are looking for solutions with the DBF files on a file server somewhere in the network. Others just want to take the DBF files and transfer them from a PC to a Macintosh. One of them is specifically interested in a HyperCard solution.

Are there any HyperCard externals available that make direct access to DBF files possible? Is there a similar feature like the dB\_Interface with 4th Dimension, for Omnis 5 from Blyth Software?

DISCUSSION -----

We have a number of suggestions on how to access DBF files from a Macintosh.

The first solution is, as you mentioned, FoxBASE+/Mac. FoxBASE+/Mac Multi-User works together FoxBASE+/LAN to allow concurrent operation on a network that supports both MS-DOS and Macintosh users. Data on the network is available to both machines at the same time, and access and manipulation operations are done identically. If you want to transfer DBF files from a DOS machine to a Macintosh, conversion is required. The index files for FoxBASE+/Mac are different, however. The first time you use an index in FoxBASE+/Mac on a DBF file from a DOS machine, a new index file will be created.

HyperCard can also be used as a front end to DBF files. Nittany Development Group has a product called DBF-Access Tools for HyperCard. This is a set of XCMDs for HyperCard used to import and export data in a variety of different

ways to and from DBF files. This is not multi-user, nor does it update any of the DBF index files. If data was exported from HyperCard to the DBF file, and you wanted to use dBASEIII PLUS with this DBF file again, you would need to reindex the database. Using DBF-Access Tools for HyperCard, the data in a DBF file could easily be read into HyperCard and manipulated.

Another HyperCard approach is a product called DashBoard from Symmetry. With DashBoard you can again read and write to DBF files. It updates the indexes of dBASE III files. Other applications, like FoxBASE or Clipper, will not have their indexes updated. This product is currently in beta form.

4th Dimension can access DBF files by using dBinterface Rapid from CTDATA. This is a set of externals for 4th Dimension that does high-speed, data conversion. Use it to move data between DBF files and 4th Dimension and the dBASE format. CTDATA also has a product called dBinterface Interactive. This gives you index support for DBF files and record-by-record access. It supports shared access via any AFP-compatible network, though the dBASE-compatible database must support multi-user access.

DbFast/Mac from Bumblebee Software will also read DBF files. This is a dBASE language development environment. It is a single-user database.

Finally, you can use Omnis 5 from Blyth Software. Omnis can import and export data from DBF files. The DBF files cannot be accessed by more than one user at a time, though. You can create a transaction where you import data, manipulate it, and then export the data back out to the DBF file. When exporting data from Omnis to the DBF files, the indexes are not updated.

People looking for multi-user solutions using DOS machines and Macintoshes at the same time should look into FoxBASE+/Mac and 4th Dimension using dB\_Interface from CTDATA. Converting data from DBF files on a DOS machine to a Macintosh is much easier, and you have quite a few options to choose from. The deciding point seems to be what application you want to run on the Macintosh.

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Tech Info Library Article Number:6515



# Tech Info Library

## 80MB Hard Drive: External to Internal Conversion

Revised: 4/11/91  
Security: Everyone

80MB Hard Drive: External to Internal Conversion

=====

This article last reviewed: 11 October 1990

TOPIC -----

My 80MB external hard drive worked fine upon arrival. However, after I took it out of its case and made it an internal drive, it won't boot.

DISCUSSION -----

The modified drive is probably not terminated automatically. To see if this is the problem, put a SCSI system cable with a SCSI Terminator on the external SCSI port. If it boots with the external terminator, then you need to have the jumpers on the bottom of the drive set to terminate it. Contact your authorized Apple service provider for this.

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Tech Info Library Article Number:6518



# Tech Info Library

## A/UX: How to Share a LaserWriter with an Apollo Workstation

Revised: 2/6/91  
Security: Everyone

A/UX: How to Share a LaserWriter with an Apollo Workstation

=====

This article last reviewed: 12 October 1990

TOPIC -----

I have a Macintosh II, Apollo workstation (with Interleaf), and a LaserWriter. What do I need to print Apollo files on the printer?

Also, what can you tell me about Information Technologies' UShare software for networking Macintoshes and Apollos?

DISCUSSION -----

One way to print Apollo files is to transfer the files to the Macintosh and then print from the Macintosh. To transfer files, make a direct, serial connection and then use Kermit or EtherNet and NCSA Telnet. The transferred files could then be printed.

UShare makes an AppleTalk board for the Apollo. With this board and Apollo host software, the Apollo becomes a host. Add print server software and you can spool files. You need the AppleTalk board for Apollo, UShare host software, and UShare print-server software. There is also an option for a mail program, if you need it.

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Tech Info Library Article Number:6519



# Tech Info Library

## VAX to Macintosh: File Transfer

Revised: 2/6/91  
Security: Everyone

VAX to Macintosh: File Transfer

=====

This article last reviewed: 12 October 1990

TOPIC -----

How do I download files from a VAX to a Macintosh?

DISCUSSION -----

You can retrieve files from the VAX using either KERMIT or XMODEM.

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Tech Info Library Article Number:6520





# Tech Info Library

## A/UX: How to List Remotely-Mounted Directories (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: How to List Remotely-Mounted Directories (8/94)

=====

Article Created: 12 October 1990  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

How can I find out which directories are remotely mounted?

DISCUSSION -----

By using the "-d" option with the /usr/etc/showmount command, you can get a list of the directories that are remotely mounted on other systems on the network. It does not list the system hostnames, just the directories.

Example output from the command line "showmount -d":

```
/
/users
/usr
/usr/catman
```

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:6523



# Tech Info Library

## A/UX: How to Avoid Timeouts on an NFS Server

Revised: 2/6/91  
Security: Everyone

A/UX: How to Avoid Timeouts on an NFS Server

=====

This article last reviewed: 12 October 1990

TOPIC -----

Heavy usage of the NFS server creates an NFS timeout. It happens, for example, when a heavy compilation is occurring on the server. Is there any way to avoid this?

DISCUSSION -----

Try increasing the timeo variable for NFS when the NFS systems are mounted at startup.

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Tech Info Library Article Number:6525



# Tech Info Library

## A/UX: How to Make an NFS File System Mount Automatically (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: How to Make an NFS File System Mount Automatically (9/94)

=====

Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

My NFS file systems aren't mounting automatically.

DISCUSSION -----

Usually, one of two things cause this. The first is that the NFS entry in /etc/fstab is incorrect. To check this, follow these steps:

- 1) Log on as "root".
- 2) Edit the file /etc/fstab. This file lists all of the partitions which should be automatically mounted when the system is booted into multi-user mode.
- 3) As needed, add an entry for each NFS partition that you would like mounted automatically. The format needed is displayed in /etc/fstab:

```
rhost_1:/filename /mnt          ignore    rw        0 0
```

rhost\_1 is the name of the repote host. "filename" is the file system to be mounted. /mnt is the mount point, the directory to which the file system will be attached.

The other reason is that NFS file systems are mounted at startup only if the appropriate line has been altered in /etc/inittab. To see if yours is correct, follow these steps:

- 1) Log on as "root".
- 2) Enter the command:

```
grep mount /etc/inittab
```

You should see:

```
nfs8:2:once:/etc/mount -at nfs > /dev/syscon 2>&1
```

If this is not displayed, do these steps:

1) Edit the file /etc/inittab

2) Change the line

```
nfs8:2:off:/etc/mount -at nfs > /dev/syscon 2>&1
```

to

```
nfs8:2:once:/etc/mount -at nfs > /dev/syscon 2>&1
```

3) Save the file and quit the editor.

4) Shut the system down into single-user mode.

5) Bring the system back up into multi-user mode. The system will display the names of the local and NFS partitions as they are mounted.

The other reason that this happens is because you are in single-user mode. To find your run level, type

```
who -r
```

This should be displayed:

```
run-level 2 Apr 14 09:59 2 0 S
```

The number in the second column of the output should be a "2".

If it is an "S", your system is in single-user mode and must be booted into multi-user mode. To boot into multi-user mode:

1) Enter the command:

```
init 2
```

This will start the system booting into multi-user mode. During the booting process, it will ask if you'd like "the rest of the partitions" checked by fsck.

2) Press "Y" and Return.

When the system is up in multi-user mode:

1) Log on as "root".

2) Enter the command: df

The output will list all currently-mounted partitions, both local and remote.

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6527



# Tech Info Library

## A/UX: Reasons Why NFS File Systems Don't Mount (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: Reasons Why NFS File Systems Don't Mount (9/94)

=====  
Article Created: 15 October 1990  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

My /etc/inittab, /etc/fstab are configured correctly, and I'm in multi-user mode, but my NFS file systems still don't mount.

DISCUSSION -----

There are two common reasons for this. The first is that the file /usr/etc/rpc.mountd is missing or corrupted. To check, enter the line:

```
ls /usr/etc/rpc.mountd
```

It should display:

```
/usr/etc/rpc.mountd
```

If it doesn't, the file /usr/etc/rpc.mountd must be restored from your backups or the A/UX CD-ROM.

A second reason is an incorrect entry in /etc/servers. To check this,

1) Log on as "root".

2) Enter the line:

```
grep mount /etc/servers
```

You should see:

```
rpc  udp  /usr/etc/rpc.mountd  100005  1
```

If you don't, follow these steps:

1) Edit the file /etc/servers by adding this line:

```
rpc    udp    /usr/etc/rpc.mountd    100005    1
```

2) Save the file and exit the editor.

3) Shut the system down into single-user mode.

4) Boot into multi-user mode. The names of the local and NFS partitions appear as they are mounted.

Article Change History:

06 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6528



# Tech Info Library

## A/UX: Solution to RPC\_MAP\_FAILURE Error

Revised: 10/1/92  
Security: Everyone

A/UX: Solution to "RPC\_MAP\_FAILURE" Error

=====

Article Created: 15 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I tried to mount a remote file system and got the error:

```
mount: <hostname> server not responding: RPC_MAP_FAILURE
```

### DISCUSSION -----

There are four, common reasons for this. First, check that you do not have an incomplete or marginal Ethernet connection. Follow these steps:

- 1) Are cables correctly seated on connectors?
- 2) Are cable in good condition physically? There should not be crimps or bends in the cable.
- 3) Check that all cables attached; make sure that none has been accidentally disconnected.

A second reason is that the remote host from which you are mounting a file partition may be down. Check with the administrator of the system. You will not be able to mount any file system from that system until the remote host is up and running.

A third reason is that the /etc/portmap daemon may not be running. Check this by following these steps:



1) Enter the line:

```
ps -ef | grep portmap
```

The output displayed should look like this:

```
root  90  1 0  Apr 25 ?          0:04 /etc/portmap
```

The numbers in the output may differ on your system. If you do not receive this output, do these steps:

1) Log onto the system as "root".

2) Enter the line:

```
grep portmap /etc/inittab
```

The output should look like this:

```
nfs0:2:wait:/etc/portmap
```

If it doesn't, edit the file /etc/inittab and modify it to look this way.

3) Shut the system down into single-user mode; run-level S.

4) Reboot the system into multi-user mode; run-level 2.

A fourth reason is that the /etc/portmap daemon on the remote host isn't running. To check this, follow these steps:

1) Log onto the system as "root".

2) Enter the command

```
rpcinfo -p
```

followed by a space and the name of the hostname you wish to check. You should get a list of registered program numbers. If you don't:

3) Shut the system down into single-user mode; run-level S.

4) Bring the system back up into multi-user mode; run-level 2.

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Tech Info Library Article Number:6529



# Tech Info Library

## PLI's CD-ROM Drive Works with Macintosh and PCs

Revised: 2/11/91  
Security: Everyone

PLI's CD-ROM Drive Works with Macintosh and PCs

=====

This article last reviewed: 20 December 1990

TOPIC -----

Do you know of a CD-ROM drive that can connect to both a stand-alone PC and Macintosh?

DISCUSSION -----

Although computer-oriented CD-ROM periodicals list many such solutions, we haven't had ready access to most of them. We have tested the PLI CD-ROM drive and it worked as advertised:

"The PLI CD-ROM Drive is both compatible with the Macintosh and PCs; it reads CD-ROMs in all standard formats and plays audio CDs too. Headphone, analog, and digital audio output as well as external termination and SCSI ID switching are standard."

Check with computer dealers near you and read appropriate magazines for other products.

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Tech Info Library Article Number:6530



# Tech Info Library

## Macintosh IIsi/LC: Sound CDEV Problem and Fix

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi/LC: Sound CDEV Problem and Fix

=====

Article Created: 20 December 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

If I open the Control Panel and select the Sound CDEV, then move the Control Panel window to the edge of the screen (either left or right), then click the "Add..." button to record a sound, the modal dialog window that opens is almost entirely off the screen. Because I'm unable to click a button to make this dialog go away, I'm stuck.

DISCUSSION -----

There is a problem with the Sound CDEV. The only configurations affected are:

Macintosh LC or Macintosh IIsi, running System 6.0.7 and MultiFinder  
(there is no problem under Finder).

Press Command-Period and you will return to the sound CDEV.

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Tech Info Library Article Number:6531



# Tech Info Library

## Macintosh Classic: Internal Power Connector Pin-outs

Revised: 7/16/92  
Security: Everyone

Macintosh Classic: Internal Power Connector Pin-outs

Article Created: 20 December 1990  
Article Last Reviewed: 10 June 1992  
Article Last Updated:

TOPIC -----

What are the pinouts for the internal power connector at location J12 on the Macintosh Classic logic board?

DISCUSSION -----

Following are the pinouts:

| Pin | Description                     |
|-----|---------------------------------|
| --- | -----                           |
| 1   | +12 volts                       |
| 2   | + 5 volts                       |
| 3   | + 5 volts                       |
| 4   | /VSYNC                          |
| 5   | /HSYNC                          |
| 6   | VIDOUT                          |
| 7   | Sound                           |
| 8   | -12 volts                       |
| 9   | PWM (Brightness control signal) |
| 10  | Ground                          |
| 11  | Ground                          |
| 12  | Ground                          |
| 13  | Ground                          |
| 14  | Ground                          |

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Tech Info Library Article Number:6532



# Tech Info Library

## Macintosh IIsi: NuBus Adapter Card Slot Number is 9

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi: NuBus Adapter Card Slot Number is 9

=====

Article Created: 20 December 1990  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

What is the NuBus slot ID for the Macintosh IIsi?

DISCUSSION -----

The slot number for a Macintosh IIsi NuBus Adapter Card is 9. This corresponds to the first slot number on other NuBus-equipped Macintosh models.

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Tech Info Library Article Number:6533



# Tech Info Library

## Texas Instruments 928 Emulates VT320, VT220, VT52

Revised: 2/11/91  
Security: Everyone

Texas Instruments 928 Emulates VT320, VT220, VT52

=====

This article last reviewed: 20 December 1990

TOPIC -----

For a Macintosh user, is there a substitute for the Texas Instruments TI928 terminal?

DISCUSSION -----

The Texas Instruments TI928 terminal emulates VT320, VT220, and VT52 terminal types. It has RS-232-C and RS-423 capability and includes a printer port for a direct-connect printer.

Any Macintosh terminal emulation package capable of supporting the above terminal types should be a viable substitute for this terminal.

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Tech Info Library Article Number:6535



# Tech Info Library

## Personal LaserWriter SC: Scaling Options Not User-Adjustable

Revised: 2/11/91  
Security: Everyone

Personal LaserWriter SC: Scaling Options Not User-Adjustable

=====

This article last reviewed: 20 December 1990

TOPIC -----

In the Personal LaserWriter SC print dialog, scaling options are presented as radio buttons in 25% increments. How can I choose some other scale, say 89%? Can I use someone else's drivers?

DISCUSSION -----

The scaling options provided by the Personal LaserWriter SC driver are hard-coded.

We don't know of any compatible third-party drivers for the Personal LaserWriter SC. Current drivers from other LaserWriters will not work; the Personal LaserWriter SC is not software-compatible with third-party printers.

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Tech Info Library Article Number:6537



# Tech Info Library

## Internet Router & 6.0.7: Coprocessor not installed error

Revised: 11/6/92  
Security: Everyone

Internet Router & 6.0.7: "Coprocessor not installed" error

=====

Article Created: 20 December 1990  
Article Last Reviewed: 8 October 1991  
Article Last Updated: 8 October 1991

TOPIC -----

I'm having a problem with System Software 6.0.7 and the AppleTalk Internet Router software 2.0. When installed on a Macintosh IIsi with a NuBus Adapter and a TokenTalk card (TokenTalk version 2.0 Arose Prep version 1.1) I receive a system error "Coprocessor not installed". When I install the Internet Router software on a Macintosh IICx, the system does not recognize the router software.

DISCUSSION -----

We tested the same configuration on a Macintosh IIsi acting as a router, and had no trouble installing or running the software.

We've heard complaints about the "Coprocessor not installed" message in varied situations with several different applications. Please see an article titled "Macintosh System Software 6.0.7: Troubleshooting (1 of 3) for more information on this error.

If you can't get the router software to run on the Macintosh IICx, there may be a problem with the way you're installing or configuring it. We recommend you start the installation from scratch using the correct system installer disks to install System software, and the Apple Networks Product installer disk to install the network drivers and the router software. The router should load successfully after re-installation in a clean system.

Copyright 1990, 1991 Apple Computer, Inc.

Tech Info Library Article Number:6538





# Tech Info Library

## LaserWriter 6.0.1: Defaults to Black and White (11/94)

Revised: 11/28/94  
Security: Everyone

LaserWriter 6.0.1: Defaults to Black and White (11/94)

=====

Article Created: 20 December 1990  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

I want to change the default setting in LaserWriter 6.0.1 to black and white printing, because a customer does all of his printing is black and white. Can you help?

DISCUSSION -----

Without going into the code of the print driver, it is not possible to alter the default setting. Subsequent versions of the driver now default to Black and White. If you require this for your default, it is recommended that you upgrade to a later version of the driver.

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc.

Tech Info Library Article Number:6539



# Tech Info Library

## Closing the Gap

Revised: 7/6/93  
Security: Everyone

Closing the Gap

=====

Article Created: 02/11/91  
Article Reviewed: 07/06/93  
Article Updated: 08/21/91

Closing the Gap

-----

P.O. Box 68  
Henderson, MN 56044

612-248-3294

612-248-3810 Fax

### Company Profile:

A national organization devoted to adaptive computer technology, to the needs of special education and individuals with disabilities. Products: Bimonthly newsletter, resource directory, and annual conference.

Copyright 1990-93, Apple Computer, Inc.

Tech Info Library Article Number:6543



# Tech Info Library

## Microlytics

Revised: 7/13/93  
Security: Everyone

Microlytics

=====

Article Created: 02/11/91  
Article Reviewed: 07/13/93  
Article Updated: 06/21/93

Microlytics

-----

2 Tobey Village Office Park  
Pittsford, NY 14534

716-248-9150 (Contact for Sales: Mike Kamm: x2111)

716-248-3868 Fax

Company Profile:

Division of SelecTronics, Inc., specializing in search-and-retrieval and linguistic software for Macintosh, MS-DOS, and Windows.

Products: INFODESK - OEM system for publishing electronic reference material. Writers, Suggestions and Reminders (WSR) - style and grammar checker. MultiTrans - multi-language translation software. Elements of Style - electronic guide for writers. Based o

Copyright 1991-93 Apple Computer, Inc.

Tech Info Library Article Number:6546



# Tech Info Library

## Intelligent Print Spoolers

Revised: 2/11/91  
Security: Everyone

Intelligent Print Spoolers

=====

This article last reviewed: 04 January 1991

TOPIC -----

I need an intelligent print server that can:

- 1) Sense the media in each printer and assign the right printer to the job coming in.
- 2) Automatically reassign print jobs to make optimum use of available resources.

DISCUSSION -----

At this date, we are aware of no products that meet your requirements completely. For information on third-party products that may meet some of your requirements, search the Tech Info Library and the Redgate Buyer's Guide for products from Mt. Xinu (K-Spool), Alisa, Pacer, Cooperative Printing Solutions (PServe), and Watcon (MacJanet).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6547



# Tech Info Library

## Spark International Inc.

Revised: 7/19/93  
Security: Everyone

Spark International Inc.

=====

Article Created: 11 February 1991  
Article Reviewed/Updated: 19 July 1993

Spark International Inc.

-----

P.O. Box 314  
Glenview, IL 60025

708-998-6640

Fax: 708-998-8840

Company Profile:  
Specializing in peripheral devices for the Macintosh family.

Products:  
Color Video Card - color video card for the Macintosh SE/30's processor  
direct slot.  
24-bit color cards for Quadra's PDS slot  
24-bit scanners 2400 dpi color and 4800 dpi line art  
Cordless Mouse - for all Macintosh models

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6548



# Tech Info Library

## Chooser: Zone List Time-Out Values

Revised: 12/18/91  
Security: Everyone

Chooser: Zone List Time-Out Values

=====

Article Created: 4 January 1991  
Article Last Reviewed: 14 May 1991  
Article Last Updated:

TOPIC -----

I have 53 zones on the Northern Telecom Internet. It appears that the Chooser zone list display times out after approximately 40 zones have been displayed, when a single user is connected to the network at 2400 baud. (This timeout doesn't occur at 19,200 baud.) The site has a pair of Shiva TeleBridges and a pair of Hayes V Series 9600 V.42 modems on the network.

Can we use ResEdit to modify the Chooser's zone list time-out values?

DISCUSSION -----

Here is some information about the Chooser that may be of help.

When the Macintosh Chooser is opened, several things happen.

The Macintosh first sends a ZIP GetZoneList request to whatever AppleTalk router it has stored as its "A-ROUTER" value (the last router this Macintosh received an RTMP packet from).

The GetZoneList command is sent to the router with the zone list index set to 1. This tells the router to return the zone list to the requesting workstation, starting with the first entry.

The ZIP GetZoneList command is sent using the ATP at-least-once (ALO) protocol.

The time-out value used for the ATP request is set to 1 second; the number of retries for this transaction is set to 5.

The Macintosh sends out the GetZoneList command and expects to hear back

from a router within one second. This is reasonable, because the router is usually connected directly to the same cable that the requesting Macintosh is attached to.

The router replies to the GetZoneList command by sending a ZIP GetZoneList reply with the current zone list. If the zone list does not fit in one ZIP reply packet, the router indicates that there are more zones by setting a flag in the reply packet. The Macintosh requesting the zone list would then send another GetZoneList request to the router with the zone list index set to the number of the last zone name in the current reply packet plus one. This tells the router to then send the next chunk of zone names starting at index number X. A ZIP GetZoneList reply packet can usually hold around 40 zone names, but the exact number of zone names you will get into a single ZIP reply packet varies, depending on the length of the zone names themselves.

This may offer an explanation to why you have seen the symptoms you described.

The user opens the Chooser:

```
ZIP GetZoneList(index=1)      ----->    router
      wait 1 second
re-transmit 2nd attempt
ZIP GetZoneList(index=1)      ----->    router
      wait 1 second
re-transmit 3rd attempt
ZIP GetZoneList(index=1)      ----->    router
      wait 1 second
re-transmit 4th attempt
ZIP GetZoneList(index=1)      ----->    router
      wait 1 second
re-transmit 5th and last attempt
ZIP GetZoneList(index=1)      ----->    router

                                <-----    router responds with a GetZoneList()
                                with the more to come flag set.

ZIP GetZoneList(index=40)     ----->    router
      wait 1 second
                                no response
ZIP GetZoneList(index=40)     ----->    router
      wait 1 second
                                no response
ZIP GetZoneList(index=40)     ----->    router
      wait 1 second
                                no response
ZIP GetZoneList(index=40)     ----->    router
      wait 1 second
                                no response
ZIP GetZoneList(index=40)     ----->    router
      wait 1 second
                                no response
```

No response, so we give up and display the zones we've received so far in

the Chooser. The user ends up seeing only 39 zones.

In summary, if the router does not respond back to the first GetZoneList request within one second, we re-send the request. If, at the end of five requests, we still haven't received a reply, we give up and display no zone list in the Chooser window. If we receive the initial zone list, and the router has marked the "more to come" flag, we will request the next set of zone names with the same time-out and retry values as used previously (1 and 5). This is how you can end up with partial zone lists.

There is no easy way to change the retry or time-out values associated with this ZIP transaction. The AppleTalk protocol suite was developed to be used on a local area network where high reliability and low round-trip delays are prevalent. Apple has no plans to change or adopt the protocol to suit every physical data link on which AppleTalk may be implemented. Several third-party companies have developed products that push the AppleTalk protocol to its limits when used with their asynchronous or wide-area network products.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6549





# Tech Info Library

## A/UX: MicroCom Modem Switch Settings

Revised: 9/24/92  
Security: Everyone

A/UX: MicroCom Modem Switch Settings

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I am trying to attach a high-speed modem directly to A/UX, but it won't answer the phone. When I attach to the Macintosh OS and run Kermit, the modem answers the phone. If I attach it to a Xenix system, it answers the phone. We've got a MicroCom 9600+ and a MicroCom 2400+. AutoAnswer, Carrier Detect, and DTR active. Macintosh Plus to RS-232 (not Apple cable).

### DISCUSSION -----

The MicroCom modem Front Switch settings should be:

|               |                 |                 |               |
|---------------|-----------------|-----------------|---------------|
| Switch 1 : Up | Switch 2 : Down | Switch 3 : Down | Switch 4 : Up |
| Switch 5 : Up | Switch 6 : Up   | Switch 7 : Up   | Switch 8 : Up |

Rear Switch Settings should be:

Switch 1,2 : Down-Up  
Switch 3,4 : Down-Up  
Switch 5 : Down  
Switch 6 : Up  
Switch 7 : Down

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Tech Info Library Article Number:6550



# Tech Info Library

## A/UX: How to Use mail in the term Program (9/94)

Revised: 9/14/94  
Security: Everyone

A/UX: How to Use mail in the term Program (9/94)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

When I try to use mail from the term program, mail doesn't ask me for a subject or anything.

DISCUSSION -----

The mail function is not exported, so instead of calling mail, term calls mailx. When in the term program, use the mailx command instead.

Article Change History:  
13 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1990, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6551



# Tech Info Library

## A/UX: The network unreachable Remote Mount Error (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: The "network unreachable" Remote Mount Error (8/94)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

I tried to mount a remote file system and got the error:

network unreachable

DISCUSSION -----

This could be because the Ethernet card or cable connection is not working correctly. Here are four troubleshooting steps:

- 1) Make sure that the Ethernet cable from the Ethernet card to the rest of the network is connected and seated properly and snugly.
- 2) Check that there is not a broken connection in the main network cable itself.
- 3) Check that cables do not show any physical signs of damage. Ethernet cables should not be crimped, bent, or squished.
- 4) Replaced all cables that show excessive wear.

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6552



# Tech Info Library

## A/UX: How to Avoid VAX-to-Macintosh File Transfer Problems

Revised: 9/14/92  
Security: Everyone

A/UX: How to Avoid VAX-to-Macintosh File Transfer Problems

=====

Article Created: 29 October 1990

Article Change History

-----

08/31/92 - REVIEWED  
•For technical accuracy

TOPIC -----

I transferred some files as text files from a VAX to a Macintosh using Kermit.  
About every 10 files, I see garbage.

DISCUSSION -----

The best way to do the transfer is to set the file type on both systems as  
binary, not as text. It works with no problem that way.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6555



# Tech Info Library

## A/UX: Diagnostics for a ping Error

Revised: 10/2/92  
Security: Everyone

A/UX: Diagnostics for a "ping" Error

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

After executing ping on a remote Sun system, I got the error

```
ping:send to: network is down
```

and was logged off. I had all correct daemons running. When I run ruptime, it shows no systems up.

### DISCUSSION -----

Assuming that the systems were indeed up and running, do these diagnostic steps:

- 1) Reboot the system.
- 2) Check that cabling is correct.
- 3) Try another system to see if other systems can be seen.
- 4) Check that terminating resistors are in place.
- 5) Try reseating the Ethernet board. If that doesn't work, try a new board.
- 6) Check your IP address to see if it's valid.
- 7) Also, check your domain name.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6556



# Tech Info Library

## A/UX: Telnet and ftp in Problem Solved

Revised: 9/25/92  
Security: Everyone

A/UX: Telnet and "ftp in" Problem Solved

Article Created: 29 October 1990

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I have a Macintosh IIX and an EtherTalk board. Telnet and "ftp out" work fine. Telnet and "ftp in" cause the following messages on the screen:

```
ae0: overflow NIC reset failed
ae6_intr: receive overflow warning
```

### DISCUSSION -----

Don't worry about it. It appears only on very high-traffic networks and won't crash the system. You can reduce the frequency of messages by doing some network tuning. If you want, you can increase the number of NMBUFS in the kernel with

```
kconfig -n /unix.
```

You can list your kernel parameters with

```
kconfig -avn /unix.
```

--- WARNING ---

Whenever changing kernel parameters, be sure to save a known-good working /unix file to another name. You can then use this kernel as a backup in case you create a non-functioning kernel.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6557





# Tech Info Library

## A/UX 2.0: What who Returns

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: What "who" Returns

=====

Article Created: 11 February 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

When I do a who, it always says I am on console and on /dev/ttyp0.

### DISCUSSION -----

When you are using term (or Command Shell in 2.0), the multi-window terminal emulator, whoever launched term (or Command Shell in 2.0) is logged in on the console. The login windows generated by term (or Command Shell in 2.0) each have their own pttty (pseudo tty) port. That is why the who command shows two active login sessions even though only one person is actually using the system.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6558



# Tech Info Library

## A/UX: Unwanted Logoff with Ctrl-C

Revised: 10/1/92  
Security: Everyone

A/UX: Unwanted Logoff with Ctrl-C

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

When using telnet or rlogin to log in to another system from the Bourne shell, the system logs me off when I hit Ctrl-C to interrupt a process.

### DISCUSSION -----

Use the C-shell (csh) and set the ignoreeof flag.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6560



# Tech Info Library

## A/UX: When kterm Command Doesn't Connect

Revised: 10/1/92  
Security: Everyone

A/UX: When "kterm" Command Doesn't Connect

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

The "kterm" command doesn't connect on a particular Macintosh II through a serial line. This same Macintosh has faster displays than our other machines. The same software worked okay on other machines.

### DISCUSSION -----

Here are some general diagnostic steps:

- 1) Try clearing PRAM and then reset the serial ports (turn them off and then on again).
- 2) Try different ports on the network.
- 3) Check hardware and see if the motherboard has a problem.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6561



# Tech Info Library

## A/UX: deferred hostname lookup failure

Revised: 9/28/92  
Security: Everyone

A/UX: "deferred hostname lookup failure"

=====

Article Created: 29 October 1990

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Often, I get the message in the sendmail queue

deferred hostname lookup failure

when sending mail from a Macintosh to a Sun. Sending from the Sun to a Macintosh always works. The Sun can receive mail from other machines over the same net.

### DISCUSSION -----

A nameserver on the network that doesn't have the Macintosh II in its hosts file can cause this problem.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6563



# Tech Info Library

## A/UX: Terminal Hanging under cu (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Terminal Hanging under cu (8/94)

=====

Article Created: 29 October 1990  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

My terminal hung while using using cu.

DISCUSSION -----

Try typing tilde period ( ~.) to close the current connection. If that doesn't work, type ~%cd

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6564



# Tech Info Library

## Two Mirrored Backup Products

Revised: 4/11/91  
Security: Everyone

Two Mirrored Backup Products

=====

This article last reviewed: 7 January 1991

TOPIC -----

Is there a mirrored backup capability for the Macintosh in the Reflections software from Profyle Computers, Ltd in Oxon, England.

DISCUSSION -----

Yes. For contact information, see the listing under "Profyle" in the Technical Info library. A similar type of backup utility was recently announced. Natural Intelligence publishes a product called Shadow that does automatic backup. They state that:

Shadow periodically copies the documents that have changed since they were last backed up. Shadow can backup onto any floppy disk, hard disk, removable disk, network server, or Finder-mountable tape drive.

Also, Golden Triangle has DiskTwin, a fault-tolerant, disk storage device for Macintosh II family computers. Golden Triangle states:

"DiskTwin is a Macintosh software package, facilitated by a proprietary NuBus add-in card, that automatically and transparently uses a second SCSI bus to make a real time copy of the contents of a primary hard drive onto a secondary hard drive. Technically, this operation is known as disk duplexing."

To the question "What is disk duplexing?", Golden Triangle responds:

"Disk duplexing is a technology today widely used in the mainframe and minicomputer world and in large microcomputer networks to ensure continuous operation. It is vital where end users simply cannot afford to lose any data or afford for a system to be down any amount of time. Now Golden Triangle uses proprietary software and hardware to bring this technology within economic reach of even a single Macintosh user."

Golden Triangle answers "How does DiskTwin work?" as follows:

"Drop the DiskTwin control panel device (CDEV) into your System Folder. Place the DiskTwin NuBus card into your Macintosh II. Attach a drive of the same kind as your primary disk onto the DiskTwin card. For example, if you have an Apple Quantum 80 internal, connect an Apple Quantum 80 external to the DiskTwin card. Restart your computer, and select the drive you want to twin. The twin is invisible to the Macintosh DeskTop, so it can't be used accidentally. When you do need it, you can immediately mount the twin onto the DeskTop from the DiskTwin CDEV. You won't even notice DiskTwin is working, so you can forget about it.

"But DiskTwin doesn't forget about you. DiskTwin runs continuously, creating a twin of your primary disk as often as you save to disk. Unlike software-only mirroring solutions, DiskTwin won't slow your system to a crawl. When your hard disk fails, mount the twin and you're back in business. Should the Macintosh SCSI hardware fail, your DiskTwin SCSI port remains operational."

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6565



# Tech Info Library

## **Trendware Corp.**

Revised: 4/13/92  
Security: Everyone

Trendware Corp.

=====

Article Created: 12 February 1991  
Article Last Reviewed: 13 April 1992  
Article Last Updated:

Trendware Corp., software, specializing in XCAL, an XCMD that adds spreadsheet capability to HyperCard stacks.

Trendware Corp.  
P.O. Box 2285  
Huntington, CT 06484  
203-926-1116  
Fax: 203-926-9423

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6566





# Tech Info Library

## Macintosh IIfx: DCA MacIrma 1.7 Incompatibility

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: DCA MacIrma 1.7 Incompatibility

=====

Article Created: 7 January 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I find that the DCA MacIrma Entry Emulator does not work with the Macintosh IIfx. Is there a fix to this problem?

DISCUSSION -----

MacIrma Entry Emulator version 1.22 and later is compatible with the Macintosh IIfx. Accompanying the MacIrma Entry Emulator version 1.26 is MacIRMA Workstation software and API.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6567



# Tech Info Library

## HyperCard: Dragging Over Text with Command Key Down

Revised: 2/12/91  
Security: Everyone

HyperCard: Dragging Over Text with Command Key Down

=====

Article Created: 08 January 1991  
Article Last Reviewed: 4 June 1992  
Article Last Updated:

TOPIC -----

In HyperCard, when I hold down the command key while the pointer is over a text field (it doesn't matter whether the field is locked), the pointer changes from an insertion point to a hand. If I then drag this hand pointer over the field (still holding down the command key), up to one entire line of text is immediately copied into the message box. What is this feature called and what is it for?

DISCUSSION -----

This feature has been a part of HyperCard for some time, but is not documented. Here's one way to take advantage of it:

You can write a handler that builds a find command in the message box, then "types" return to execute the command. For example, here's a handler that finds the next occurrence of whatever text has just been copied into the message box:

```
on mouseUp
  put "find whole"&&quote&message&quote into message
  repeat 2
    -- The first find will be the text you just copied into the message box;
    -- the second find will be the next one, if any.
    type return
  end repeat
end mouseUp
```

Each time you then press the return key (without changing the content of the message box), you'll go to the next occurrence of the same search string.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6568



# Tech Info Library

## HyperCard 2.0: Bypassing Dialog Boxes

Revised: 2/12/91  
Security: Everyone

HyperCard 2.0: Bypassing Dialog Boxes

=====

This article last reviewed: 08 January 1991

TOPIC -----

When I use certain HyperCard 2.0 commands, either from the menu bar or from a script, I get a dialog box that must be responded to. Examples:

| command         | dialog box              |
|-----------------|-------------------------|
| -----           | -----                   |
| Import Paint... | Import Paint from...    |
| Export Paint... | Save Paint document as: |

Is it possible to execute these commands from scripts, or from the message box, without having to respond to the dialog boxes? And is it possible to open a stack in new window from a HyperTalk script, also without dealing with a dialog box?

DISCUSSION -----

Here are some commands that do what you want. In the examples, "stackname" represents either a stack name, or the path to a given stack.

The first one imports a bitmap from the specified MacPaint file to the card picture. It starts with the top-left corner of the MacPaint file, and clips to HyperCard's current card size. It requires that one of HyperCard's paint tools (such as the line tool) is first chosen.

```
choose line tool
import paint from file "stackname"
```

The next one creates a new MacPaint file, to which it exports the card image. This is the equivalent of doing a screen dump from HyperCard, but you get to choose the name of the output file in advance.

```
choose line tool
export paint to file "stackname"
```

Here's a command that opens a specified stack in a new window:

```
go "stackname" in new window
```

And one that creates a new stack and gives it a name:

```
create stack "stackname" <with backgroundname> <in new window>
```

The card size of the current stack becomes the card size of the new stack. If no background is specified, the new stack is created with a blank background. Otherwise, a copy of the specified background becomes the background of the new stack. If "new window" is specified, the new stack is created in a new window -- in other words, the old card window remains on-screen.

This one saves a copy of the specified stack under the new name you specify in advance:

```
save stack "stackname1" as "stackname2"
```

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Tech Info Library Article Number:6569



# Tech Info Library

## NDG Phoenix

Revised: 4/4/97  
Security: Everyone

NDG Phoenix

=====

Article Created: 12 February 1991  
Article Reviewed/Updated: 4 April 1997

NDG Phoenix

-----

4641 Montgomery Ave.  
Suite 415  
Bethesda, MD 20814

301-718-8880

301-718-8883 Fax

Company Profile:  
Software, specializing in software development, vertical market applications,  
and systems integration.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6570



# Tech Info Library

## Apple IIe Card: Hardware Specifications (7/93)

Revised: 7/12/93  
Security: Everyone

Apple IIe Card: Hardware Specifications (7/93)

Article Created: 7 March 1991

### Article Change History

-----  
07/12/93 - REVISED  
    • To include Performa  
06/08/92 - REVIEWED  
    • For technical accuracy

### TOPIC -----

This article gives the specifications for the Apple IIe Card for the Macintosh LC and Performa 400, 405, 430, and 450 computers. For a description of the Apple IIe Card software, search under "Apple IIe Card" and "software".

### DISCUSSION -----

#### OVERVIEW

-----  
The Apple IIe Card lets the Apple Macintosh LC computer and Performa 400 series run the more than 10,000 Apple IIe programs. To assure compatibility with virtually all Apple IIe applications, the Apple IIe Card contains a 65C02 microprocessor -- the same one that's built in to the Apple IIe personal computer. The card comes with 128K RAM standard and can use up to 1MB of Macintosh LC RAM. A floppy-drive controller and connector ports for a 5.25-inch floppy disk drive and an Apple Joystick II are also included.

The Apple IIe Card takes full advantage of the Macintosh LC Performa 400 series' components, including the monitor, keyboard, mouse, and internal disk drives. With the superior resolution offered by Macintosh monitors, text and graphics generated by Apple IIe applications appear crisp and clear in all Apple IIe video modes. Regardless of the video mode, Apple IIe applications run at normal Apple IIe speeds -- or, using an optional mode of

the Apple IIe Card, they can be run up to twice as fast.

## SPECIFICATIONS

### Central Processing Unit

- Processor: 65C02
- Clock Speed: 1.02MHz or 1.9MHz
- Address Bus: 16 bits
- Address Range: 2 banks of 65,536 bytes (128K total)
- Data Bus: 8 bits - Registers: Accumulator, two index registers, stack pointer, processor status, and program counter

### Memory

- 256K of RAM (Apple IIe uses 128K of this RAM) on Apple IIe Card
- Ability to access up to 1MB of Macintosh LC RAM
- Apple IIe ROM in write-protected portions of Apple IIe Card memory

### Text Display Modes

- 80 columns, 24 lines, 5x7 dot matrix
- 40 columns, 24 lines, 5x7 dot matrix
- All text can appear on the screen as normal, inverse, or MouseText characters

### Graphics Display Modes

- Low-resolution color: 16 colors, 40x48
- High-resolution color: 6 colors, 280x192
- Double high-resolution color: 16 colors, 140x192
- Double high-resolution monochrome: 560x192

### Compatible Operating Systems

- ProDOS
- DOS 3.3
- Pascal

### Drives Supported

- Two Apple 5.25 Drives (Platinum 5.25 Drive is the only 5.25-inch drive supported)
- One UniDisk 3.5 Drive (White 3.5-inch external)
- Internal SuperDrive

### Monitors Supported

All Macintosh LC monitors are supported (12- and 13-inch)

Copyright 1991, 1992, 1993, Apple Computer, Inc.

Tech Info Library Article Number:6571





# Tech Info Library

## Uniplex Inegration Systems (formerly IMI Computing, Inc.)

Revised: 7/20/93  
Security: Everyone

Uniplex Inegration Systems (formerly IMI Computing, Inc.)

=====

Article Created: 12 February 1991  
Article Reviewed/Updated: 20 July 1993

Uniplex Integration Systems

-----

Greenwich Office Park  
Building 1  
Greenwich, CT 06831

203-661-4404

203-661-9263 Fax

### Company Profile:

Datacomm, specializing in PIXI (Personal Services Import Export), a Macintosh to OfficeVision and DISOSS connectivity product to be used in conjunction with MacIrma.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6573



# Tech Info Library

## A/UX: How to Copy Eschatology Partition

Revised: 11/9/92  
Security: Everyone

A/UX: How to Copy Eschatology Partition

Article Created: 12 February 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I need to copy an A/UX system from one drive to another, but I have a problem with the A/UX Eschatology partition. I set up the partitions on the new drive as on the first drive, except for some free space, which I have configured as usr space. I did a dd copy of the root partition.

I then hoped that by doing an eupdate I would be able to update the Eschatology partition. When I try this (I am able to boot from the new drive without any problem), I get messages about the inability to mount s3 and attempt to unmount slice 3. (I have not defined any slice 3.) Further messages refer to typewriter problems and the like.

What is the problem? Why is eupdate attempting to mount a slice that doesn't exist?

### DISCUSSION -----

From what you described above, you copied only the root file system. You did not copy the Eschatology partition to the new drive. To copy the Eschatology partition, do the following (assuming X is the source disk SCSI ID and Y is the target disk SCSI ID), and assign slice 3 for the Eschatology partition:

```
# pname -cX -s3 "Eschatology 1"
==> /dev/dsk/cXd0s3
# pname -cY -s3 "Eschatology 1"
==> /dev/dsk/cYd0s3
```

```
# dd if=/dev/dsk/cXd0s3 of=/dev/dsk/cYd0s3 bs=20k
# pname -u /dev/dsk/cXd0s3
# pname -u /dev/dsk/cYd0s3
```

Then, you can issue the "eupdate" command, which updates /unix and network files like /etc/HOSTNAME, /etc/NETADDRES, ... for Eschatology partition. Make sure that before doing "eupdate" that the Eschatology partition is not pnamed or mounted, because the "eu" program automatically does all the "pname", "pname -u", "mount", and "umount" on the Eschatology partition.

You might have got the error message from "eupdate", because the Eschatology partition was still pnamed or mounted. "umount" and "pname -u" the Eschatology partition and do "eupdate" again. Other similar error message like

```
Can't mount...:No space left on device
```

might occur if the Eschatology file system is almost full. In that case, remove some of the files like /mnt/unix from the Eschatology file system and do "eupdate" again.

To remove file(s) from the Eschatology partition, you have to "pname" and "mount" the Eschatology partition first. For example, to remove "unix" from Eschatology partition then "eupdate":

```
# pname -cY -s3 "Eschatology 1"
==> /dev/dsk/cYd0s3
# mount /dev/dsk/cYd0s3 /mnt
# rm /mnt/unix
# umount /dev/dsk/cYd0s3
# pname -u /dev/dsk/cYd0s3
# eupdate
```

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6574



# Tech Info Library

## A/UX 2.0 ftime() and open()

Revised: 9/16/92  
Security: Everyone

A/UX 2.0 ftime() and open()

Article Created: 7 January 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I am doing some A/UX 2.0 benchmarks and am having problems in two areas that involve C code. First, I need the equivalent of the ftime function on a Sun for timing execution time. The second is how to do a synchronous write to disk. The usual "write (o\_sync)" command doesn't seem to be working.

### DISCUSSION -----

- 1) As far as we can tell, the ftime() function call that appears in most BSD UNIX systems (including Sun UNIX) is obsolete and now replaced by the gettimeofday() function call. A/UX has gettimeofday() but not ftime().

From the structure returned by ftime() and the new structures used by gettimeofday(), it should not be difficult to use the new gettimeofday() instead of the obsoleted ftime(). The structure returned by ftime() is defined in <sys/timeb.h> of BSD UNIX as:

```
struct timeb
{
    time_t      time;
    unsigned short millitm;
    short       timezone;
    short       dstflag;
};
```

The structures used by gettimeofday() are defined in <sys/time.h> as:

```
struct timeval {
    long    tv_sec;      /* seconds since Jan. 1, 1970 */
    long    tv_usec;     /* and microseconds */
};

struct timezone {
    int     tz_minuteswest; /* Greenwich */
    int     tz_dsttime;     /* type of dst correct to apply */
};
```

2) To do a synchronous write to DISK, the fsync (2) system call should be used after the write(2) or writev (2) system call. The fsync (2) system call causes all in-core copies of buffers for the associated file to be written to a DISK. See fsync (2) manual page for more information.

Note that the use of the O\_NDELAY and O\_NONBLOCK flags in the open() system call for controlling I/O applies only to FIFOs and communication lines like tty's. See open (2) manual pages for more information.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6575



# Tech Info Library

## Macintosh and CD-I Development (11/94)

Revised: 11/7/94  
Security: Everyone

Macintosh and CD-I Development (11/94)

Article Created: 12 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I am interested in using the Macintosh to develop CD-I (compact disc interactive) applications. What can and cannot be done in this field?

- Is there a CD-I compatible player for the Macintosh?
- How would one develop an animation on the Macintosh and then transfer it to CD-I?
- Can sounds be created and manipulated on the Macintosh and then used on the CD-I?

DISCUSSION -----

Currently, Macintosh is being used as a front-end device for assembling certain elements of CD-I. This is about the extent of what can be done with the Macintosh. Since the CD-I system is an alternative computer system to the Macintosh, we cannot duplicate a CD-I system exactly without accommodating the OS9 operating system.

The video portion of CD-I is compressed from analog video sources. Thus, preparing Macintosh animations for this format is the same as preparing animations for videotape. Using a program like MacroMind Director and an NTSC output video NuBus card, and recording the output onto videotape, would be the simplest way to provide video.

The quality of the compressed video coming from the CD-I compression methods is low compared to VHS tape. Generally, the playback of the video is around 12 frames per second for one quarter screen. The proposal provides for only 30,000 colors in the video image--far short of the Macintosh 24-bit capability.

Because CD-I uses digital audio, digital audio products from companies like

Digidesign and New England Digital can be used for mastering the audio portion of the CD-I system. However, this master audio would then need to be sent through the CD-I compression method.

Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1990-94, Apple Computer, Inc. .

Tech Info Library Article Number:6576



# Tech Info Library

## ADB Detection of TTL Signals for Network Shutdown (1/95)

Revised: 1/6/95  
Security: Everyone

ADB Detection of TTL Signals for Network Shutdown (1/95)

=====

Article Created: 12 February 1991  
Article Reviewed/Updated: 6 January 1995

TOPIC -----

I'm looking for an ADB device that lets me monitor at least three TTL signals and control one TTL signal. I want to implement a Macintosh program that will handle a number of uninterruptible power supplies (UPSs). The intention is that the program can shut down a Macintosh network gracefully.

Using an ADB device will free a serial port from being dedicated to monitoring a few lines for a change of state. Is there a device able to handle the above TTL signals?

DISCUSSION -----

We have not been able to find an ADB-based product that has these abilities. The Apple Desktop Bus is typically used for products such as keyboards, trackballs, mice, and so on, and it isn't likely that someone has worked on something of this nature.

Article Change History:  
06 Jan 1995 - Reviewed and updated.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:6578





# Tech Info Library

## Retrospect: Incompatible with ADIC MacBack 4000/8000

Revised: 8/24/93  
Security: Everyone

Retrospect: Incompatible with ADIC MacBack 4000/8000

=====

This article last reviewed: 7 January 1991

TOPIC -----

Why doesn't my copy of Retrospect work with the ADIC MacBack 4000/8000 models?

DISCUSSION -----

Retrospect from Dantz doesn't work with the ADIC MacBack 4000/8000 models,  
because they are special tape jukeboxes.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6581



# Tech Info Library

## Macintosh Portable: Charging from 12-Volt Battery

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Charging from 12-Volt Battery

=====

Article Created: 12 December 1990  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

Can the Macintosh Portable be charged from a 12-volt battery?

DISCUSSION -----

Yes. One product that makes this possible is the Automobile Power Adapter from Lind Electronic Design. As we understand it, with the Adaptor, you can operate a Macintosh Portable while charging its battery from the 12-volt DC battery in an automobile, van, or boat. The adapter unit contains a voltage regulator and current-limit circuits that ensure safe computer operation and battery charging from a mobile power source. Lind includes cords for an automobile cigarette lighter and for the computer's power adapter jack with the adapter.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1990 Apple Computer, Inc.

Tech Info Library Article Number:6585



# Tech Info Library

## AppleShare PC and LaserWriter Drivers

Revised: 2/13/91  
Security: Everyone

AppleShare PC and LaserWriter Drivers

=====

This article last reviewed: 30 November 1990

TOPIC -----

I installed AppleShare PC 2.01 on a PC on a mixed LocalTalk network. The Macintoshes in the workgroup use LaserWriter drivers version 6.0.1. It seems that AppleShare PC is not compatible with these drivers, and we get LaserWriter wars. Is there a fix or workaround?

DISCUSSION -----

While the Macintosh LaserWriter drivers require a PostScript dictionary to be present in the LaserWriter, AppleShare PC does not. Printing from AppleShare PC to a LaserWriter connected as a PostScript device doesn't download anything other than the file being printed.

It does download an Epson emulation dictionary for each Epson job, but this persists only for the length of that job. It does not require or replace md (The Macintosh Laser Prep dictionary), and, therefore, won't cause any LaserWriter wars.

Theoretically, PC application that prints PostScript can wipe out md, or download its own dictionary that conflicts with 6.0.1. This is entirely dependent on the applications being used and could be tested by printing from each in turn until a conflict occurs.

We would first confirm that all of the Macintosh computers have LaserWriter and Laser Prep 6.0.1 installed. If so, check to see if one of the PC applications is causing the problem.

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Tech Info Library Article Number:6586



# Tech Info Library

## A/UX: AppleTalk lpr Problem (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: AppleTalk "lpr" Problem (9/94)

=====

Article Created: 13 February 1991  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

At the UNIX prompt, I type: lpr /etc/hosts

The file does not print, and I repeatedly get the following messages on the console:

```
/usr/spool/lpd/AppleTalk/ofilter: pipe: cannot open
/usr/spool/lpd/AppleTalk/ofilter: pipe: cannot create
```

I guess I should add that the lpr command uses the default entry in /etc/printcap file. In the unmodified version (as distributed) it is the AppleTalk entry, which should print on whatever printer is currently selected by the Chooser.

DISCUSSION -----

To let the AppleTalk printing service run correctly under the A/UX BSD printer spooler (/usr/lib/lpd, lpr, ...), the following files under each printer directory (for example /usr/spool/lpd/AppleTalk) should be owned by user "daemon" and group "daemon":

|            |   |        |        |         |
|------------|---|--------|--------|---------|
| drwxrwxr-x | 2 | daemon | daemon | .       |
| drwxrwxr-x | 7 | daemon | daemon | ..      |
| -rwxr-xr-x | 3 | daemon | daemon | ifilter |
| -rwxr-xr-x | 3 | daemon | daemon | ofilter |
| -rwxr-xr-x | 3 | daemon | daemon | nfilter |
| prw-rw---- | 1 | daemon | daemon | pipe    |

The error message "...: pipe: cannot open" most likely indicates that the ownership or groupship of any of the above files might have been incorrectly set. Check yours, correct them, then restart the "lpr" command.

Because "lp" is the default printer in the BSD printer spooler system, the "lp|at|AppleTalk" entry in /etc/printcap is chosen by the printer daemon (/usr/lib/lpd). /usr/lib/lpd then passes all input file(s) to be printed to a remote PAP (Printer Access Protocol) server for printing. This is done by the input/output filter programs (ifilter, ofilter) provided under individual printer directory (/usr/spool/lpd/AppleTalk), which is in turn invoked by the "atprint" program which directly copies data to a remote PAP server.

Under "lpr", the destination PAP server is chosen as follows:

If the -Pprinter option of "lpr" command or the environment variable PRINTER is used or set, then the output goes to a specific printer. Otherwise, the system-wide default printer, the "lp" entry in /etc/printcap, is chosen, which is also the AppleTalk printer. The default AppleTalk printer is then chosen via the Chooser, from the Control Panel, or through the at\_cho\_prn utility.

We assume that you have correctly configured and set the AppleTalk in A/UX kernel.

#### Article Change History:

09 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6587



# Tech Info Library

## A/UX 2.0.1: General Information

Revised: 2/11/93  
Security: Everyone

A/UX 2.0.1: General Information

=====

Article Created: 13 February 1991

### Article Change History

-----

01/15/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

A/UX 2.0.1: General Information

### DISCUSSION -----

A/UX 2.0.1 is an incremental upgrade release to A/UX 2.0. It was produced primarily to add support for the Macintosh IIsi. A/UX 2.0.1 runs on all Macintosh models that support A/UX. There is no CD version of the upgrade, however there is a CD available that contains the full A/UX 2.0.1 release

### Benefits and Features

- 
- Supports the Macintosh IIsi (with FPU installed)
  - Supports multiple monitors on one Macintosh via the "Monitors" CDEV
  - Supports adjustable mouse tracking via the "Mouse" CDEV
  - Includes MacX 1.1
  - Includes new version of the awk programming language
  - Includes new version of the Korn shell, ksh-88
  - Supports Macintosh System Software 6.0.7
  - Is IEEE standard POSIX 1003.1-1990-compliant
  - Includes version 5.65 of sendmail
  - Includes changes to the A/UX header files, which provide function prototypes and ANSI symbol definitions for third-party ANSI C compilers
  - Has asynchronous serial support

- Supports the use of function keys in CommandShell
- Mounts Macintosh HFS CD-ROM volumes to the desktop while logged in

#### CD-ROM Note

-----

To properly operate an AppleCD SC, the Apple CD-ROM INIT must be installed in the System Folder of the Macintosh startup volume, and the AppleCD SC must be powered on at startup.

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Tech Info Library Article Number:6588



# Tech Info Library

## Graphics Tablet DB-9 and Stylus Pen Pinouts (RFI Version)

Revised: 2/13/91  
Security: Everyone

Graphics Tablet DB-9 and Stylus Pen Pinouts (RFI Version)

=====

This article last reviewed: 17 January 1991

DB-9 Connector (RFI Version)

| Pin | Description   |
|-----|---------------|
| --- | -----         |
| 1   | N.C.          |
| 2   | N.C.          |
| 3   | Signal ground |
| 4   | Y-Drive       |
| 5   | X-Drive       |
| 6   | Reset         |
| 7   | N.C.          |
| 8   | N.C.          |
| 9   | -12 Volts     |

Stylus Pen (RFI Version)

| Pin | Description               |
|-----|---------------------------|
| --- | -----                     |
| 1   | N.C. (Pin in Place)       |
| 2   | Switch Low End (Red)      |
| 3   | Inner Shield Wire (Black) |
| 4   | Inner Shield (Brown)      |
| 5   | Switch (Orange)           |
| 6   | N.C.                      |
| 7   | Pen Coil High (Yellow)    |
| 8   | Pen Coil Low (Green)      |
| 9   | Inner Shield (Blue)       |

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Tech Info Library Article Number:6589





# Tech Info Library

## Macintosh Classic Disk Errors May Be WDEF Virus

Revised: 6/18/92  
Security: Everyone

Macintosh Classic Disk Errors May Be WDEF Virus

=====

Article Created: 21 January 1991  
Article Last Reviewed: 22 July 1992  
Article Last Updated:

TOPIC -----

We have seen some strange error messages when inserting 800K diskettes, which have been formatted in a Macintosh SE or Macintosh Plus, into a Macintosh Classic. When the disk icon appears on the desktop, and the user double-clicks on it, errors like "this is not a Macintosh Disk", "Error reading this diskette", and "Address error" appear.

DISCUSSION -----

We have had reports of a variety of problems when users double-click on icons. The only situation that has been reproducible was traced back to the WDEF virus. Apparently, the WDEF virus causes this problem with System 6.0.7. (In earlier version of the system software, WDEF could be in the system, yet not create any major problems.)

Our suggestion is to use Disinfectant 2.4 or higher, or any of the other virus protection programs on the market, to check the Macintosh Classic for WDEF and eliminate the virus.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6592



# Tech Info Library

## A/UX and 5.25-Inch Floppy Drives (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX and 5.25-Inch Floppy Drives (8/94)

=====

Article Created: 21 January 1991  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

Is there a 5.25-inch UNIX floppy drive that can be used with A/UX? A customer, who is interested in A/UX, must be able to read floppies from a 386 SCO/UNIX machine with 5.25-inch floppy drives.

DISCUSSION -----

We know of no 5.25-inch UNIX floppy drives for A/UX.

Dayna Communication has a 5.25-inch floppy drive for the Macintosh OS that recognizes MS-DOS format only.

The 5.25-inch floppy drive in HFSI's (Honeywell Federal Systems Inc.) WIS A/UX workstation, works only under A/UX 1.1.

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6595



# Tech Info Library

## Apple Pascal 1.3: Startup Slot

Revised: 2/13/91  
Security: Everyone

Apple Pascal 1.3: Startup Slot

=====

This article last reviewed: 21 January 1991

TOPIC -----

What is the memory location for the slot number of the drive that Apple Pascal starts up from? How can I change that information or location so the computer will think it was booted from the RAM disk (to which I've already copied the appropriate system files)?

DISCUSSION -----

The internals of Apple II Pascal are proprietary and confidential and we cannot divulge such information.

However, it is possible to completely load Apple II Pascal into an Apple II RAM Expansion card and start up from it. Here's how:

- 1) Once you have started Apple Pascal and you are at the command line, type F(ile.
- 2) At the second command line, type V(ols. Write down the volume number with 2048 blocks. This is your RAM Expansion Card volume number.
- 3) Format the RAM Expansion Card. Type Q(uit and then X(ecute. This will prompt you for a file name. Type "Formatter" and press Return. Formatter will ask you for a volume to format: type the volume number you wrote down in step 2, and press Return.
- 4) Do a wild card copy of all the files on Volume 4 to the volume number of your RAM Expansion Card. Type F(ile then T(rans. When you're asked "Transfer What File?", type "#4:=" and press Return. At the "to where?" prompt, type your RAM Expansion Card volume number followed by ":= " and press Return.
- 5) When the copying is finished, make your RAM Expansion Card the startup

## ..TIL06596-Apple\_Pascal\_1-3-Startup\_Slot\_(TA45092).pdf

volume. Type Q(uit followed by another Q and Y. Finally, type Control-Reset.

- 6) At the Applesoft BASIC prompt, type "PR#" followed by the slot number of your RAM Expansion Card. Pascal should start up.

Apple Pascal supports a maximum of 128K RAM for system memory use, and the remaining RAM may be used as a RAM disk only.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6596



# Tech Info Library

## Macintosh IIsi/IIci/LC Built-in Video: No NTSC Output (11/94)

Revised: 11/7/94  
Security: Everyone

Macintosh IIsi/IIci/LC Built-in Video: No NTSC Output (11/94)

=====

Article Created: 12 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

Can I display the Macintosh LC's output on an NTSC monitor? I looked into RGB-to-NTSC converters and found that the RasterOps Video Expander only works off a NuBus display card. My guess is that ComputerVideo's Video NTSC Encoder works the same way.

I know you can make a cable to pull black and white NTSC off Macintosh display cards. Given that, is there a way to pull NTSC off the built-in video on a Macintosh?

DISCUSSION -----

While you can generate an RS-170 signal by shorting together pins on Apple's NuBus video cards, an NTSC compatible (not NTSC standard) signal cannot be generated by the built-in video ports of the Macintosh IIci, Macintosh IIsi, or Macintosh LC.

Lapis Technology produced a video adapter to allow the Macintosh LC to generate NTSC compatible video. Contact them for further information on pricing and availability.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:6597



# Tech Info Library

## Videotaping Apple RGB Monitor in PAL

Revised: 2/13/91  
Security: Everyone

Videotaping Apple RGB Monitor in PAL

=====

This article last reviewed: 22 January 1991

TOPIC -----

Is it possible to videotape the Apple RGB monitor using a professional PAL video camera and VideoSync?

DISCUSSION -----

Here's one solution:

- 1) Use VideoSync, and set it to stable scan rate.
- 2) Tape with a Sony BVP-7 professional Betacam SP PAL video camera.
- 3) Set the camera's built-in shutter to 1/100.

The picture should be quite stable. The only drawback is a very slight loss of exposure due to the shorter exposure time using the shutter.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6598



# Tech Info Library

## ARDIS

Revised: 7/1/93  
Security: Everyone

ARDIS

=====

Article Created: 02/14/91  
Article Reviewed: 07/01/93  
Article Updated: 08/21/91

ARDIS

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300 Knightsbridge Parkway  
Suite 500  
Lincolnshire, IL 60069

708-913-1215

708-913-1453 Fax

Company Profile:  
(Advanced Radio Data Information Service) MacKDT - Macintosh, E-mail and telecommunications program that sends and receives messages over the ARDIS radio network.

Copyright 1991-93 Apple Computer, Inc.

Tech Info Library Article Number:6600



# Tech Info Library

## Lisa: Converting Documents to Macintosh

Revised: 2/14/91  
Security: Everyone

Lisa: Converting Documents to Macintosh

=====

This article last reviewed: 22 January 1991

TOPIC -----

Is there a product that converts Lisa documents to Macintosh format?

DISCUSSION -----

You need the Lisa to Macintosh Migration Kit, available from Sun Remarketing. It converts LisaDraw, LisaWrite, LisaProject, and LisaCalc files to their Macintosh counterparts.

For the address of Sun Remarketing, search this library under "Sun Remarketing".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6601





# Tech Info Library

## ASD Software, Inc.

Revised: 4/4/97  
Security: Everyone

ASD Software, Inc.

=====

Article Created: 15 February 1991  
Article Reviewed/Updated: 4 April 1997

ASD Software, Inc.

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4650 Arrow Highway  
Suite E-6  
Montclair, CA 91763

909-624-2594

909-624-9574 Fax

Company Profile:  
Software, specializing in schedule managing and security software for  
individuals, groups, and resources.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6604



# Tech Info Library

## BDT Products, Inc.

Revised: 7/6/93  
Security: Everyone

BDT Products, Inc.

=====

Article Created: 02/15/91  
Article Reviewed: 07/06/93  
Article Updated: 03/31/92

BDT Products, Inc.

-----

17152 Armstrong Ave.  
Irvine, CA 92714

800-346-3238 (Sales)

714-660-1386

714-474-0480 Fax

AppleLink: D1176

Company Profile:  
Supplies, specializing in multi-bin sheetfeeders for the LaserWriter.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6605



# Tech Info Library

## CD Technology, Inc.

Revised: 4/4/97  
Security: Everyone

CD Technology, Inc.

=====

Article Created: 02/15/91  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

CD Technology, Inc.

-----

766 San Aleso Ave  
Sunnyvale, CA 94086

408-752-8500

408-752-8501 Fax

Company Profile:  
Hardware, specializing in CD-ROMs.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6606



# Tech Info Library

## Performance Partners (formerly Daniels and Mara)

Revised: 4/4/97  
Security: Everyone

Performance Partners (formerly Daniels and Mara)

=====

Article Created: 15 February 91  
Article Reviewed/Updated: 4 April 1997

Performance Partners  
-----

6034 West Courtyard Dr.  
Suite 305  
Austin, TX 78730

512-338-2121

Fax: 512-343-2612

Company Profile:  
Performance training and development.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6607



# Tech Info Library

## Red Brick Systems

Revised: 7/19/93  
Security: Everyone

Red Brick Systems

=====

Article Created: 15 February 1991  
Article Reviewed/Updated: 16 July 1993

Red Brick Systems

-----

485 Alberto Way  
Los Gatos, CA 95032

408-354-7214

408-399-3277 Fax

Company Profile:  
Software, specializing in high-performance business query tools.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6608



# Tech Info Library

## genSoft Development Corporation

Revised: 7/8/93  
Security: Everyone

genSoft Development Corporation

=====

Article Created: 02/15/91  
Article Reviewed: 07/08/93  
Article Updated: 04/03/92

genSoft Development Corporation

-----

4122-128th Ave. S.E.  
Suite 200  
Bellevue, WA 98006

206-562-1157

206-562-0690 Fax

Company Profile:  
Software, specializing in Windows utilities, and audio software.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6609



# Tech Info Library

## Chatham Township Data Corporation (CTDATA)

Revised: 7/16/93  
Security: Everyone

Chatham Township Data Corporation (CTDATA)

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Article Created: 15 February 1991  
Article Reviewed/Updated: 16 July 1993

Chatham Township Data Corporation (CTDATA)

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31 Birchwood Road  
Denville, NJ 07834-1224

201-586-0700

Fax: 201-586-1837

### Company Profile:

Software, specializing in dBinterface Interactive, producing and developing and consulting 4th Dimension, 4D externals, sybase connectivity, network and client server, Apple Partner Programs

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Tech Info Library Article Number:6610



# Tech Info Library

## Lind Electronic Design Co., Inc.

Revised: 7/13/93  
Security: Everyone

Lind Electronic Design Co., Inc.

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Article Created: 02/15/91  
Article Reviewed: 07/12/93  
Article Updated: 07/12/93

Lind Electronic Design Co., Inc.

-----

6414 Cambridge St.  
St. Louis Park, MN 55426

612-927-6303

612-927-7740 Fax

Company Profile:  
Accessories, including automobile power adapters for the Macintosh Portable,  
battery charging equipment

Article Change History: 07/12/93 New product information added

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Tech Info Library Article Number:6611





# Tech Info Library

## GAVA Corporation

Revised: 4/4/97  
Security: Everyone

GAVA Corporation

=====

Article Created: 15 February 1991  
Article Reviewed/Updated: 4 April 1997

GAVA Corporation

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1001 4th Avenue Plaza  
Suite 3200  
Seattle, WA 98154

206-784-4736

206-784-5603 Fax

Company Profile:  
Software, specializing in network software development.

Article Change History:  
08 Nov 1994 - Phone number corrected.  
07 Aug 1993 - Phone number information added.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6613



# Tech Info Library

## Gupta Technologies, Inc.

Revised: 7/8/93  
Security: Everyone

Gupta Technologies, Inc.

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Article Created: 02/15/91  
Article Reviewed: 07/08/93  
Article Updated: 11/30/92

Gupta Technologies, Inc.

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1060 Marsh Road  
Menlo Park, CA 94025

800-876-3267

415-321-9500

415-321-5471 Fax

### Company Profile:

Software, specializing in graphical client/server, PC LAN, mini-to mainframe environments, and SQL servers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6615



# Tech Info Library

## Sybase, Inc.

Revised: 7/19/93  
Security: Everyone

Sybase, Inc.

=====

Article Created: 15 February 1991  
Article Reviewed/Updated: 19 July 1993

Sybase, Inc.

-----

6475 Christie Avenue  
Emeryville, CA 94608

510-596-3500

Fax: 510-658-9441

Company Profile:  
Software, specializing in marketing and developing a relational database  
software package.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6618



# Tech Info Library

## VMS ENQLM Quota Requirement for DAL/VAX/Rdb

Revised: 6/29/92  
Security: Everyone

VMS ENQLM Quota Requirement for DAL/VAX/Rdb

=====

Article Created: 26 February 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

### TOPIC -----

I have problems while trying to use DAL with VAX/Rdb. I'm using DAL 1.2 (from DEC LanWORKS for Macintosh) with VAX/Rdb 3.1 under VMS 5.3. My connection (and associated processes) were killed when I try to use the IDAL utility with an account different than SYSTEM (or a copy of it). Some commands worked, (like DESCRIBE DATABASES) and some others (like SELECT) ended up with the connection terminated. I experimented and found that the solution was to set the ENQLM parameter for the user to a minimum value of 250.

I did not find any information about this in my documentation, and I know it's not a VAX/Rdb problem, because I can use VAX/Rdb SQL\$ utility with the same ENQLM value without any problem. I have been able to reproduce the same problem on two CPUs, one MicroVAX 2000, and one 3300.

### DISCUSSION -----

As you might already know, on VMS, the Enqueue Quota (ENQLM) limits the number of locks a process (and its subprocesses) can own. VAX/Rdb uses RMS, which in turn uses the Lock Management Facility, to synchronize shared file access. One lock is used for every shared file, local buffer, global buffer section, and outstanding record lock. Users doing large amounts of file sharing should set the ENQLM to a large value. Typically, this number is recommended at 200. The DEFAULT account ENQLM is set at 100, so all accounts begin with a limit of 100 unless explicitly changed.

It is understandable why you need to increase ENQLM when selecting a large number of records from a database. Commands like DESCRIBE DATABASE do not require many locks and, therefore, worked with the low ENQLM. We don't

know why Rdb SQL\$ utility worked except for the speculation that IDAL might add the extra locking.

DAL support engineering told us that although they do not specify account quota requirements, in the documentation, they recommend changing user accounts quota to the VAX/Rdb requirements. The following are from VAX Rdb/VMS Installation Manual:

BYTLM (Byte Limit): at least 18,000 bytes  
FILLM (Open File Quota): around 50 is an acceptable value  
ENQLM (Enqueue Limit): at least 600 locks

The account should also have TMPMBX privilege.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6622



# Tech Info Library

## Mac IICI: EtherTalk & Apple Internet Router Problem (11/94)

Revised: 11/29/94  
Security: Everyone

Mac IICI: EtherTalk & Apple Internet Router Problem (11/94)

=====

Article Created: 10 January 1991

TOPIC -----

Macintosh IICI systems running the AppleTalk Internet Router and EtherTalk have been found to "freeze up" in certain high-traffic situations. What can I do?

DISCUSSION -----

The solution is to install EtherTalk on the Macintosh IICI using the Network Products Installer that was released with System 6.0.7. This installs a new version of the .ENET driver in the System file that resolves the problem.

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:6623



# Tech Info Library

## Cache Cards for Macintosh IIfx

Revised: 2/10/93  
Security: Everyone

Cache Cards for Macintosh IIfx

Article Created: 10 January 1991

### Article Change History

-----  
02/09/93 - UPDATED  
    • Micron Technology acquired by Xceed Technologies  
07/10/92 - REVIEWED  
    • For accuracy.

### TOPIC -----

I need a cache card that plugs into the cache connector of the Macintosh IIfx. What products are available besides the DayStar Fast Cache IIfx?

### DISCUSSION -----

The only cache card for the Macintosh IIfx that we know of, other than the Apple and DayStar cards, is the Micron Technology (acquired by Xceed Technologies) MBXC1. This card contains 128K of cache memory.

NOTE: As of September 1991, the Apple Macintosh IIfx Cache Card is included with all Macintosh IIfx computers.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6624



# Tech Info Library

## A/UX: cpio Does Not Support Symbolic Link Backups (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: "cpio" Does Not Support Symbolic Link Backups (8/94)

=====

Article Created: 10 January 1991  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

I have a question about cpio. I'm trying to back up the Macintosh System Folder under A/UX and the following command will back up only the unique files in the folder. The main problem is that an symbolic links in that folder do not get backed up.

Here is the command I'm using from the Command Shell:

```
cd /mac/sys/"System Folder"  
ls -a | cpio -ovF > /dev/rfloppy0
```

This command installs the unique files on two successive floppies, but ignores the others. How can I get these files to be recognized by the cpio command?

DISCUSSION -----

Symbolic links are analogous to aliases in the Macintosh OS. Neither the "cpio" nor "tar" commands under A/UX back up symbolic links. Rather, they copy only the symbolic names, not the actual data files.

In this case, you also need to copy the directories (/mac/lib/SystemFiles, for example) that contain the actual data files.

Article Change History:  
25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:6625





# Tech Info Library

## MacX and X Window System for A/UX Are ICCCM Compliant (9/94)

Revised: 9/22/94  
Security: Everyone

MacX and X Window System for A/UX Are ICCCM Compliant (9/94)

Article Created: 10 January 1991  
Article Reviewed/Updated: 22 September 1994

TOPIC -----

Is the MacX v1.0 server and X Windows for A/UX ICCCM compliant?

DISCUSSION -----

ICCCM stands for "Inter-Client Communication Conventions Manual." Yes, MacX and X Window for A/UX are both ICCCM compliant. Most of X11R3 and later client applications and Window Managers are designed to meet the ICCCM conventions. The ICCCM really has nothing to do with the X server; the convention is to make sure that all applications running X cooperate properly with the Window Manager and share the system resources politely.

Although MacX is a server, it has a built-in Window Manager, the functionality of which is designed to conform to the ICCCM conventions.

Article Change History:  
22 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6626



# Tech Info Library

## Macintosh IIsi: Use Excel 2.2a or Later

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi: Use Excel 2.2a or Later

=====

Article Created: 10 January 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

The Macintosh IIsi bombs when trying to use Excel 2.2. Does System 6.07 fix the problem? Is there a way to trick the Macintosh IIsi so that it doesn't assume it has a math coprocessor and lets you run Excel?

DISCUSSION -----

There are known problems with Excel versions prior to 2.2a running on the Macintosh IIsi. Microsoft knows of the problem and suggests that affected customers upgrade to 2.2a or higher.

System 6.0.7 does not fix the problem with Excel, but is required for the Macintosh IIsi anyway. Be sure that you are using System 6.0.7 before troubleshooting further.

There is a way to make older versions of Excel ignore the FPU, or in the case of the Macintosh IIsi, not look for what isn't there. Hold down the Command, Shift, and Option keys at launch time (when double-clicking the Excel icon).

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Tech Info Library Article Number:6627



# Tech Info Library

## Teradata Database Does Not Support DAL Access

Revised: 6/30/92  
Security: Everyone

Teradata Database Does Not Support DAL Access

=====

Article Created: 26 February 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

TOPIC -----

I have a Teradata Database Server (Model 1012) attached to an IBM Host Environment running VM/CMS.

I've been involved in a few VAX VMS DAL installations, but never one on the IBM side. What pieces are needed for the Macintoshes to be able to access the Teradata DBMS through the IBM Host?

My guess is:

- A Macintosh Client DAL Application or DA (ClearAccess, WingZ, HyperCard, and so on).
- On the Host, DAL for VM/CMS.
- A product called EQT.
- 3270 support on the workstation (IRMA, Avatar, Tri-Data, and so on).
- Correct 3270 API to support the hardware used.

That's where I am confused. EQT lets you do SQL queries through DAL on an IBM Host. Because Teradata is not one of the "supported" databases (Ingres, Informix, Sybase, and so on), it requires its own adapter. Is this correct?

If I go with the EQT Product, do I even need DAL on the Host? If EQT supports DAL, can I use products like WingZ to access?

DISCUSSION -----

Before we answer your questions, let's look at what EQT does:

EQT (Executive Query Tool) is a Query Tool developed by Red Brick Systems. It provides point-and-click access to relational databases, regardless of workstation platform, the database server, or the server hardware. It runs on Macintosh and DOS Windows. Future releases will run on OS/2 Presentation Manager, and on UNIX workstations. It can retrieve data from Teradata, Oracle, Ingres, Sybase, DB2, Informix, and Rdb databases.

EQT for CL/1 is an old name for an announced product called Claris Query Tool which uses three mechanism to access databases: Data Access Language (DAL from Network Innovations), DB Library (Sybase), and SQL-Net (Oracle). Claris Query Tool will be shipped in 1991 but will not be able to access Teradata database machines. For more information about Claris Query Tool, contact Claris.

Red Brick Systems retains the right to market and support EQT for the Teradata Systems. For more information, contact Red Brick.

Claris Query Tool uses DAL as one of its mechanism to access databases. You have to use the EQT version from Red Brick Systems to access the Teradata databases. Red Brick uses Teradata's access mechanism.

EQT is a Query Tool to access databases. To our knowledge, you cannot use WingZ to access the Teradata database directly, because Teradata does not support the DAL access. You can, however, access the database using Red Brick's EQT and import the data (cut and paste) into the spreadsheet.

As of release 1.3 DAL supported access to Teradata's DBC/1012 DBMS but only under an MVS operating system.

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Tech Info Library Article Number:6628



# Tech Info Library

## Worldwide Network: Missing Servers Problem (8/93)

Revised: 8/26/93  
Security: Everyone

Worldwide Network: Missing Servers Problem (8/93)

Article Created: 26 February 1991  
Article Reviewed/Updated: 25 August 1993

TOPIC -----

I have questions regarding the performance of a worldwide Liaison network. Servers are dropping off the network, and it seems to be a result of the network configuration.

I need to know what happens when I do a read of a file on an AppleShare server in a remote location over a slow link. In brief, I have a program in Toronto, London, Madrid, Zurich, Frankfurt, and Paris that reads a file from an AppleShare server in New York.

Sometimes the link (Liaison over an asynchronous line into the Tymnet packet Switched network) "breaks" and other times, we seem to "lose" the server. When we try to reconnect to the server, the branch locations sometimes do not "see" the server in the Chooser window for a long enough period to select the server physically. We cannot, therefore, restart the application. Their observation has been 15 seconds of availability. This does not always happen, but it happens too often to not lodge a complaint.

The application checks on and reports all sorts of errors on a read, and it does know when it cannot open a file, because a server is unavailable. I am doing PBHOpenDeny opens and PBRead calls. We have asked the Tymnet network people to look into this, and they have asked the following questions:

- 1) When you open the Chooser window and select a zone, how do the lists of servers appear?

How long does it take to get the list up?

Why do some servers come into and disappear from the list?

Why do some servers never appear in the Chooser window? Is this because

the servers' response time is very slow, and, therefore, the response is ignored until the next request is broadcast? If so, how long is this window? (What is the maximum round-trip delay from the branch Macintosh to the AppleShare server and back?)

- 2) On a read, when a read request is sent to the remote AppleShare file server (from branch to New York) what is the timeout period before the packet is determined to be lost, and is thus retransmitted?
- 3) On a normal AppleShare read, if a data packet times out, how many retries are made before AppleShare decides that the link to the server is dead? Or, how long does AppleShare continue trying before it gives up?
- 4) If I do a read, should I always get back a response, or is it possible that if the Macintosh has lost the file server, AppleShare will be unable to respond, and that the reading application will appear to hang? This seems to happen sometimes, from what the branch people say. Sometimes, if we lose the link to New York, the whole Macintosh hangs and must be restarted.

#### DISCUSSION -----

What version of Liaison are you using? Versions before 3.0 are no longer supported. Farallon purchased the product from InfoSphere and is offering support only for version 3.0 and later (3.0.5 is compatible with System 7.1), which fixed several bugs and added support for AppleTalk phase 2.

One problem in versions before 3.0 was the inability of Liaison to display zone lists when the zone list transverses more than one ZIP packet (around 40 zones depending on the size of the name). We would also suggest a call to Farallon to discuss the current problems the account is experiencing with the product. We cannot control how third-parties choose to implement routers and other such products based around AppleTalk. This can cause problems if the product was implemented in a way that the protocols were never designed to accommodate.

Because the AppleTalk protocols were never designed to work over slow asynchronous links or over wide-area networks, there are several issues that need to be addressed before AppleTalk can become a valid protocol for use in these types of environments.

Here are direct answers to your questions:

- 1) This is how it really works in a nutshell:

The Chooser sends out a Name Binding Protocol (NBP) packet looking for all devices of type XXXXXX, for example, type LaserWriter. It sets up a buffer of 512 bytes for the responses. The responses look like:

|                    |                |                        |
|--------------------|----------------|------------------------|
| device name length | 1 byte         |                        |
| device name        | variable bytes | e.g. MyLaser-Hands off |
| type name length   | 1 byte         |                        |

|                   |                |                  |
|-------------------|----------------|------------------|
| type name         | variable bytes | e.g. LaserWriter |
| zone field length | 1 byte         |                  |
| zone name field   | variable bytes | probably *       |

The Chooser gets a packet back for each device, i.e., each LaserWriter. When the 512-byte buffer is full of these packets, it stops looking for device names to display. This means that some LaserWriters might not be displayed immediately. If you leave the Chooser window open, however, the Chooser will continue to send out NBP lookups every 1.47 seconds. Different LaserWriters could respond more quickly each time. In this case, you may see the Chooser show and hide various devices.

You can see from this that the number of devices Chooser can show depends on how long the type name is (like "LaserWriter") and how long the device names are. The number 18 is an average number, based on the device type being about 13 or 14 characters long and the device name being about 10 or 11 characters long. In System 7.0, the buffer size the Chooser will use will be increased to 1024. This means, on average, the Chooser can display about 36 devices.

- 2) This depends on the direction of the transfer. Workstation to Server copy takes 6 seconds and server to Workstation copy about 2 seconds.
- 3) Retries are set to infinite. The session timer for the connection is set to 2 minutes. This is really what dictates how long the reads are attempted before the transaction is aborted. The session timer is restarted each time a tickle packet is received by either the workstation or the server. Tickle packets are sent out every 60 seconds by both the server and the workstation to allow a way of detecting if the other end of the connection has gone down.
- 4) No, you aren't guaranteed a response, but the session timer should expire after 2 minutes and pop up a dialog telling you that the server has unexpectedly quit.

#### Article Change History:

25 August 1993 - Revised to add Farallon support for Liaison versions later than 3.0.

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Tech Info Library Article Number:6629



# Tech Info Library

## LaserWriter Driver 6.0.2: Resource for Printing Envelopes

Revised: 2/26/91  
Security: Everyone

LaserWriter Driver 6.0.2: Resource for Printing Envelopes

=====

This article last reviewed: 10 January 1991

TOPIC -----

What are the advantages of LaserWriter driver 6.0.2 over LaserWriter driver 6.0.1?

DISCUSSION -----

LaserWriter driver 6.0.2 is included with System Software 6.0.7, in the Apple Color folder on the Printing Tools disk. The only difference between LaserWriter driver 6.0.1 and LaserWriter driver 6.0.2 is that LaserWriter driver 6.0.2 has an added resource for printing envelopes.

In Page Setup, you now have the options of either printing envelopes from the edge or from the center. This was done for the Personal LaserWriter.

Manual feed on a LaserWriter II has two paper guides which move in and out together, allowing you to print from the center. Manual feed on the Personal LaserWriter has only one paper guide, which moves from the edge out. You would, therefore, want to put the envelope all the way over to the edge. LaserWriter driver 6.0.2 gives you the option to do this.

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Tech Info Library Article Number:6630





# Tech Info Library

## AppleShare PC: No Support For Digital's DEC Network Card LC

Revised: 2/26/91  
Security: Everyone

AppleShare PC: No Support For Digital's DEC Network Card LC

=====

This article last reviewed: 10 January 1991

TOPIC -----

Does Apple support Digital's DEC Etherworks LC card for the PC with AppleShare PC 2.0?

DISCUSSION -----

AppleShare PC can work with any network card that has an ODI (Open Data-Link Interface) compliant MLID. However, the only MLIDs we know of are those supplied with AppleShare PC. We haven't heard of anyone writing one for a DEC Ethernet card, although it could be done.

If you know of someone interested in developing an MLID for a specific card, information is available from APDA in the form of the Open Data-Link Interface Developer's Guide, part number M0355LL/A. This document details the specification, and provides example source code for a working driver. For more details, search the Technical Info library under "APDA."

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Tech Info Library Article Number:6631



# Tech Info Library

## How to Remove AppleShare PC Code from PC Memory

Revised: 2/26/91  
Security: Everyone

How to Remove AppleShare PC Code from PC Memory

=====

This article last reviewed: 10 January 1991

TOPIC -----

I am running AppleShare PC (2.01). Currently, WordPerfect runs on the PC (with 512K RAM) until I start AppleShare using ABOTH. After checking E-mail, which is the main reason I use AppleShare PC, I type AOFF to kill AppleShare, but WordPerfect no longer has enough room to fully execute. Only a warm reboot with Control-Alt-Del frees up the memory. Is there any way (short of rebooting) I can free ALL memory after typing AOFF?

DISCUSSION -----

There is a way to remove all AppleShare PC code without rebooting. It requires the use of mark/release utilities. This kind of program is used to mark a position in memory so that TSR programs and drivers loaded later, like AppleShare PC, can be removed with the companion release program.

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Tech Info Library Article Number:6632



# Tech Info Library

## Macintosh: Viewing CCITT Group IV Images

Revised: 6/1/92  
Security: Everyone

Macintosh: Viewing CCITT Group IV Images

=====  
Article Created: 26 February 1991  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

I understand that one or more vendors have products that let CCITT Group IV images be decompressed and viewed (pan, zoom, scan, and so on) on the Macintosh. What are the supporting products and companies?

The images we have are large 2-bit images of engineering drawings. They conform to the DOD CALS raster Specification, which is essentially 200 DPI CCITT G4.

DISCUSSION -----

We found the following information concerning Creative Solutions' Compression, Expression and Rotation Board.

"A NuBus board that provides compression, expansion and rotation on image data.

"The Compression/Expansion/Rotation board performs all of the above functions on image data. The board features: compression or expansion throughput in excess of 16 million pixel elements per second; ROM with standard half duplex Macintosh device drivers that are installed automatically at startup; CCITT input driver reads data to a supplied buffer and returns the actual count read; conversion modes set via control calls to either input or output drivers; and accelerated hardware rotation of 32 by 32 pixel tiles."

For more vendor information, search under "Creative Solutions."

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Tech Info Library Article Number:6634



# Tech Info Library

## Macintosh IIsi and NuBus Card Power Draw

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi and NuBus Card Power Draw

=====  
Article Created: 11 January 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

Apple data sheets state that the Macintosh IIsi NuBus cards should not draw more than 13.3 watts of power. I'm interested in putting some Macintosh IIsi computers into a Token Ring environment where the TokenTalk NB Card draws 15 watts. Has this combination been tested, and if so what was the result?

DISCUSSION -----

Because of the low-power design of many Macintosh IIsi components, the computer should be able to handle cards requiring up to 20 watts. Although this exceeds the normal, single-slot, NuBus specification, there is adequate power available in Apple supplied configurations. However, if you use third-party internal hard drives or other components that draw additional power, the power available to the NuBus card may be lower.

All Macintosh IIsi configurations we ship can handle the 15-Watt requirement of a TokenTalk NB Card. It has been tested, and is fully supported with the Macintosh IIsi.

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Tech Info Library Article Number:6635



# Tech Info Library

## Macintosh IIsi: SCSI Connector

Revised: 6/24/92  
Security: Everyone

Macintosh IIsi: SCSI Connector

=====

Article Created: 11 January 1991  
Article Last Reviewed: 23 June 1992  
Article Last Updated:

TOPIC -----

What is the power specification for the Macintosh IIsi SCSI connector?

DISCUSSION -----

The only power provided by the Macintosh IIsi SCSI connector, besides logic levels, is the TPWR (Termination power) line. It cannot be used for anything besides supplying termination power for devices on the SCSI bus.

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Tech Info Library Article Number:6637



# Tech Info Library

## DAL: New XCMDs and XFCNs for HyperCard 2.0

Revised: 6/29/92  
Security: Everyone

DAL: New XCMDs and XFCNs for HyperCard 2.0

=====

Article Created: 27 February 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

### TOPIC -----

With the advent of HyperCard 2.0, does the DAL toolkit have new XCMDs and XFCNs? If I remember correctly, HyperCard 2.0 has a more powerful XCMD structure. Could the DAL HyperCard toolkit take advantage of these new features?

### DISCUSSION -----

According to DAL Technical Support, release 1.2, available from APDA, takes advantage of HyperCard 2.0 features. For more information about what's new and fixed in version 1.2, please read the file Read Me DAL 1.2 on the Install diskette.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6639



# Tech Info Library

## LaserWriter ROMs: PostScript Versions Explained

Revised: 5/20/91  
Security: Everyone

LaserWriter ROMs: PostScript Versions Explained

Article Created: 11 January 1991  
Article Last Reviewed: 26 April 1991  
Article Last Updated: 26 April 1991

TOPIC -----

I have some technical questions about different versions of PostScript:

- 1) I thought that LaserWriter ROM versions 1.0, 2.0, and 3.0 correspond to versions 23, 38, and 47 of PostScript. However, in LaserWriter Plus printers the ROM contains 42.2. What happened to 47.0?
- 2) Also, when extracting information from a printer, CE Software's Widgets reports version 47.0 (1) for a LaserWriter IINT and a LaserWriter IINT which was upgraded to a LaserWriter IINTX. It also reports 51.8 (3) for a LaserWriter IINTX. What do the numbers in parentheses really stand for?
- 3) What is the difference between 47.0 and 51.8?

Adobe Technical Support said that these versions are functionally identical, which doesn't really answer my question.

DISCUSSION -----

- 1) There is a an error in the LaserWriter Plus ROMs that gives the version number 42.2 if read from PostScript, even though the ROMs contain Version 47 of PostScript.

PostScript version 47 is different than PostScript version 38 in the following ways:

- It is slightly faster.
- It contained miscellaneous bug fixes.

- It added code to support SCSI hard disks (as in the LaserWriter IINTX).

The Rev 47, PostScript-code-equipped LaserWriters can function up to 25 percent faster when printing text or up to 40 percent faster printing bit-mapped graphics. PostScript version 38 is functionally equivalent to PostScript version 47 except for the above details.

2) CE Software's Widgets 3.0.4 issues two PostScript commands to get the "51.8(3)" from the LaserWriter IINTX with the latest ROMs. The first is the "version" command. This command returns a string that identifies the version of the PostScript language and interpreter being used. The second is the "revision" command. This command returns an integer designating the current revision level of the machine-dependent portion of the PostScript interpreter.

3) PostScript version 51.8 allows for the following enhancements:

- The entire font list is no longer searched when looking for a font. The search stops as soon as the font is found. This can save a lot of time if there is a hard disk attached and the font is a ROM font.
- Full support of software switching between emulations and ports. It is now possible to both switch into and out of an emulation mode via software.
- Improved support of multiple SCSI disks. You can now connect up to 8 SCSI hard disk drives to the LaserWriter IINTX SCSI port. Up to 80 percent of the hard disk with the lowest SCSI ID is used for font caching with the remainder of that disk and all of any other connected hard disks used for downloaded fonts. Each hard disk is now formatted as a separate volume, which lets a user move a disk (other than the startup disk) between systems without needing to reformat.
- Additional characters in the HP Laser Jet+ emulation. Four characters have been added that had been left out of the original implementation of HP Laser Jet+ emulation.
- Improved default settings for HP Laser Jet+ bit map printing. Previously, bitmaps in HP Laser Jet+ mode were interpreted at 7-bit, thus ignoring a significant bit. The new ROMs default to 8-bit serial communications.

Note: These new ROMs are in all LaserWriter IINTX printers with a part number ending in 6004/A.

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Tech Info Library Article Number:6640





# Tech Info Library

## Personal LaserWriter NT: PostScript Version 51.8

Revised: 2/27/91  
Security: Everyone

Personal LaserWriter NT: PostScript Version 51.8

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This article last reviewed: 11 January 1991

TOPIC -----

What version of PostScript is used by the Personal LaserWriter NT?

DISCUSSION -----

The Personal LaserWriter NT uses PostScript version 51.8.

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Tech Info Library Article Number:6641



# Tech Info Library

## HyperCard 2.0: LaserWriter Driver 5.2 Print Problem (11/94)

Revised: 11/7/94  
Security: Everyone

HyperCard 2.0: LaserWriter Driver 5.2 Print Problem (11/94)

=====

Article Created: 01 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I have been trying to resolve a HyperCard 2.0 printing problem. My system includes System 6.0.5, Finder 6.1.5, LaserWriter Version 5.2, AppleTalk driver version 53, and no INITs.

I'm unable to print cards from a stack that I have developed. When I try to "Print Card" from the File menu, I get a message "Processing Job" that stays on the screen indefinitely. The printer still thinks it is connected to this job, even after I cancel printing, so I have to restart the printer.

Oddly enough, this stack does print to a QMS PS2200 Laser Printer.

DISCUSSION -----

We were able to reproduce the problem with the stack you sent. However, using LaserWriter driver version 6.x the card printed fine. Try upgrading to newer drivers; that may well solve the problem.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6642



# Tech Info Library

## DeskWriter Printer & Macintosh: Service Notice from Apple, H-P

Revised: 5/23/95  
Security: Everyone

DeskWriter Printer & Macintosh: Service Notice from Apple, H-P

Article Created: 1 March 1991  
Article Reviewed/Updated: 23 May 1995

TOPIC -----

This article contains an Apple Service Notice and its Hewlett-Packard counterpart sent out to Hewlett-Packard service providers on November 1, 1990.

DISCUSSION -----

APPLE SERVICE NOTICE

Some Macintosh Serial Ports Affect Hewlett-Packard DeskWriter Printer Operation

Overview

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It has come to Apple's attention that some customers have been experiencing print problems when using a Hewlett-Packard DeskWriter printer and a Macintosh computer. Typically, the customer has purchased the computer and the printer at the same time. The customer connects the DeskWriter to the Macintosh printer port and configures the printer for serial mode. Usually the system works properly for several weeks or even several months; suddenly the printer will not print the selected text. When the DeskWriter will not print the selected text, the printer lights will flash, and the printer sometimes prints "Error Trap 10864".

If the cable is moved from the Macintosh printer port to the modem port, the DeskWriter prints properly; however, it may fail in a similar manner after a few weeks of use.

It is important to note that the Macintosh printer port may still be operational and may pass a diagnostic test or work normally with other print devices.

Customers have reported this when using a Macintosh II, Macintosh IIfx, Macintosh IICx, Macintosh IIcx, Macintosh IIfx, or Macintosh SE computer. The problem appears to be limited to a small number of these systems.

## Solution

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Both Apple and Hewlett-Packard have conducted separate investigations and have isolated the cause to a component failure on the Macintosh logic board. When this failure occurs the sensing circuit in the DeskWriter causes the printer to switch to AppleTalk mode, thereby prohibiting further communication with the computer in serial mode.

To correct the problem Service Providers should replace the logic board on the Macintosh system. Systems within the warranty or AppleCare period should be repaired under these programs. For systems outside the warranty or AppleCare period contact Technical Operations for further instructions.

## HEWLETT-PACKARD ANNOUNCEMENT

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### Some Macintosh Serial Ports Affect DeskWriter Printer Operation

For the past few months, Hewlett-Packard has been receiving a small number of customer reports that DeskWriter printers won't print on Macintosh computers. Typically, the customer has purchased both computer and printer at the same time. The customer connects the DeskWriter to the Macintoshes Printer port and configures it for serial mode. The system works properly for a few weeks or even a few months; then the printer does not print the selected text. The DeskWriter's lights flash, and the printer sometimes prints "Error Trap 10864." If the cable is moved to the Macintoshes Modem port, the DeskWriter works properly; however, it may fail in a similar manner after a few weeks have passed. This has occurred on Macintosh II, Macintosh IIci, Macintosh IICx, Macintosh IIfx, and Macintosh SE computers.

Both Apple and Hewlett-Packard have conducted separate investigations and have isolated the cause to a component failure on the Macintosh logic board. We have determined that on a small number of Macintosh computers the resistances of the I/O lines degrade over time and eventually fall below the RS-422 specification. When this occurs, the sensing circuit in the DeskWriter causes the printer to switch to AppleTalk mode, thereby prohibiting further communication with the computer in serial mode.

It is important to note that the Macintoshes Printer Port may still be operational and may pass a diagnostic test or work normally with some other print devices. Hewlett-Packard's and Apple's joint recommendation is that any DeskWriter user who experiences this problem should return the Macintosh to an Apple- authorized service provider for repair, according to Apple's recommended procedures.

Apple will soon be issuing a statement (Apple's Statement is above) that further describes this problem, along with their technical recommendations. Until that time, service providers should contact their Apple Service Representative for instructions. In closing, Hewlett-Packard would like to thank Apple for their cooperation and prompt response in this matter and express our regret for the inconvenience this has caused our mutual customers.

IMPORTANT NOTES (5/95)

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This problem is limited to the Macintosh models listed above. If you have another model other than the one's listed above, your problem is not necessarily a hardware failure. In most cases, when you get an error message generated by the DeskWriter software mentioning that the serial port is in use, it is caused by using the serial DeskWriter printer driver, and having AppleTalk turned on.

In order to print using the serial DeskWriter printer driver, you must have AppleTalk turned off. If you need to use AppleTalk, use the AppleTalk DeskWriter printer driver.

Article Change History:

23 May 1995 - Added important notes.

Support Information Services

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Tech Info Library Article Number:6645



# Tech Info Library

## AppleShare PC and Memory Allocation

Revised: 3/1/91  
Security: Everyone

AppleShare PC and Memory Allocation

=====

This article last reviewed: 21 January 1991

TOPIC -----

I am using AppleShare PC and when I "convert printer" (F2), the memory is not being allocated. I'm running a PS/2 with DOS 3.3 and a Digital DayStar LT200 LocalTalk card.

DISCUSSION -----

It sounds like you need to increase the AppleShare PC memory pool. At boot time, AppleShare PC sets aside an amount of memory for protocol stacks and connections to file and print servers. Each printer connection consumes 7K, so it is easy to exceed the default memory-pool size if you make more than one connection.

The amount of memory that AppleShare PC allocates is defined in the NET.CFG file, generally located in the directory with the other AppleShare PC files. The important line will be near the top of the file and should look something like this:

```
MEMPOOL 23K
```

Use EDLIN, or (preferably) a text editor you like, to increase the number. First, try making it 7K larger than its current setting. Save the changed file and reboot. The extra memory allocated should let you make the printer connection. Note that this additional memory will be taken from your available conventional memory, so it should not be larger than needed.

You may want to make sure you're not making unnecessary connections to printers that aren't being used. A leftover automatic connection may be using up your default memory pool when you don't need it. If possible, use the DA to "Review Auto-Connections" and remove those you don't use.

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# Tech Info Library

## AppleShare PC and Zone Limits

Revised: 3/1/91  
Security: Everyone

AppleShare PC and Zone Limits

=====

This article last reviewed: 21 January 1991

TOPIC -----

Does AppleShare PC have a 100-zone limit?

DISCUSSION -----

AppleShare PC's only limit with respect to the number of zones it can work with involves the memory available in its memory pool when DA is run. This only affects making network connections using DA, and has no effect once those connections are made. Even then, the connections could still be made using manual ANET commands, even with thousands of zones. We use default installations of AppleShare PC here at Apple, where there are over 140 zones, and have no trouble using DA to make connections.

Problems can occur if the AppleShare PC memory pool is almost full. This is the memory that AppleShare PC allocates at startup and is configurable by changing the MEMPOOL setting in the NET.CFG file. If you are experiencing the "Not Enough Memory" message, increase this number by 1 or 2K and the problem should be eliminated. Because the NET.CFG file is read when AppleShare PC loads, the user must edit the file and then reboot the PC before the change can take effect.

Current versions of AppleShare PC actually require Phase 2 networks. This is frequently a problem when people upgrade from an old version (pre 2.0) and haven't upgraded all their services to be Phase-2-compliant. The AppleShare PC node cannot see Phase 1 services like AppleShare File servers running EtherTalk 1.x.

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Tech Info Library Article Number:6647





# Tech Info Library

## MacX25: Problem Reports and Enhancement Request

Revised: 3/1/91  
Security: Everyone

MacX25: Problem Reports and Enhancement Request

=====

This article last reviewed: 11 January 1991

TOPIC -----

We've noted the following problems with MacX25:

- 1) To use MacPAD, MacTerminal needs more than 512K of RAM free.
- 2) If you have a session open, and have disabled the PAD command mode, typing a Control-P seems to indicate that your session is closed, yet the MacPAD status still shows you as connected. Nothing could be found that would let the session be re-used again without doing an Open Connection.
- 3) MacX25 apparently cannot insert a calling address. At least, we can't find any option for this setting. We had to patch our network to make this work, as we validate the calling nua before the call is directed to its destination. We need the ability to trace a call for accounting purposes and for troubleshooting problems.

Its implementation should be based on the user ID and assigning each user an nua or sub-address (i.e., unique address). The sub-address would be easier to maintain, because the administrator would have to type only two digits instead of the whole nua. When using the sub-address scheme, the server would be assigned an nua like 10498001%%, where %% is replaced by the sub-address from the user ID.

- 4) MacTerminal seems to hang quite frequently, at least on a Macintosh IIci, when trying to change the PAD command mode while a connection is open (actually a "stuck" connection as described in question 2).
- 5) The installation of MacTerminal puts an INIT in the System file that seems incompatible with other INITs, namely with INITPicker (when using override). This INIT should be a separate file from the System file, so the user can control when and if the INIT should run.

DISCUSSION -----

- 1) The minimum suggested memory size for MacPAD (MacTerminal or CommToolBox) is 1MB, though 2MB is recommended. The MultiFinder "Suggested Memory Size" is 560K for MacTerminal itself.
- 2) Questions 2 and 4 are related:

The "MacX25 User's Manual" (page 110) suggests you can go into the PAD command mode by entering Control-P. That means if you checked "enabled PAD command mode" (see "Connection Settings" on page 97), you can escape from data transfer (page 99), then enter any of your CCITT PAD commands from the keyboard. When you have checked "enabled MacPAD command mode", you can "escape" into MacPAD command mode by entering Control-P or by choosing Command Mode from the MacPAD menu.

However, if you have NOT checked "enable MacPAD command mode", you cannot enter a PAD command mode with the Escape key sequence or menu to escape to data transfer mode after starting a session. The host will interpret anything you enter through the keyboard as data. If you try to escape to command mode with a Control-P (Command Mode in the MacPAD menu is not available), the system may appear to hang. If you check Status in the MacPAD menu, it will show that you still have a live session. If you are patient, some hosts will time out (the ones we tested did so after 1 minute) and resume the data transfer.

During this time, the session menu gives you the option to open a connection, but doing so will hang your system. If your host never times you out, we recommend you quit MacTerminal, reboot, and restart your session.

- 3) We passed this enhancement request along. Thanks.
- 4) See the second item above.
- 5) We haven't had any conflicts with INITPicker 2.0 (or other INITs) and the INIT that the Communications Toolbox installs into the System file. We have used this combination on various systems including a Macintosh Portable, Macintosh IIci, Macintosh IICx, and Macintosh IIX, running various versions of System Software including 6.0.4, 6.0.5, and 6.0.7. It is true, however, that INITPicker 2.0 cannot control the state of the INIT when it is installed in the System Folder. However, it is one less variable a user must monitor to conduct a successful communication session.

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Tech Info Library Article Number:6649



# Tech Info Library

## A/UX: YP and MacTCP Tool Problem (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: YP and MacTCP Tool Problem (9/94)

Article Created: 11 January 1991  
Article Reviewed/Updated: 2 September 1994

TOPIC -----

I am using A/UX with Yellow Pages in an all-Sun environment to maintain my home directory on a remote Sun server. When I launch MacX, I get the message that "Connection Tool Cannot be Found". Thinking that the connection tool needs to be in the Extensions Folder within the Macintosh System Folder on the Home directory (on the remote Sun server), I ran "Systemfolder" from the command line. Upon logging off and back on, I was unable to complete the YPbind process.

I conclude that Macintosh System Folders are illegal on a Sun file system, or that YPbind cannot reconcile the Macintosh system resources with the home directory. In any case, I cannot think of any way to have MacX use the communications tool (MacTCP) from Root, or from any other local users.

DISCUSSION -----

When executing a "systemfolder" command to create a personal System Folder under the user's home directory, it creates a "System Folder" under the user's home directory, copies files from /mac/lib/SystemFiles directory but not from the default /mac/sys/'System Folder' directory. The communication tools, which were stored in the /mac/sys/'System Folder'/Extensions directory, are not copied to the user's newly-created Extensions folder.

For users with their home directory on the remote YP and/or NFS server to launch MacX successfully, the MacTCP Tool must be manually copied into their own Communication Folder under the user's \$home/'System Folder' directory. Otherwise, MacX complains with the following message:

An unexpected error has occurred: The Macintosh Communication Toolbox could not be initialized because there are no communication tools installed.

We have tested launching MacX in one A/UX without any problem from an account whose home directory resides (via nfs mount) in another A/UX YP and NFS server. We do not think there is a problem between Macintosh System Folders and Sun YP and NFS file system.

Regarding being unable to complete the YPbind process, was there any message indicating that you were unable to complete the YPbind process? Was the YPserv (YP server) running before YPbind (YP client) was started? We do not think that your problem (launching MacX) has anything to do with the YPbind or YPserver, unless the YP server and client were not up and running.

Try to copy the MacTCP Tool manually into the user's System Folder/Extensions folder, logout and login, then launch MacX again.

#### Article Change History:

2 Sept 1994 - Reviewed. Updated for A/UX 3.0.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6651



# Tech Info Library

## HyperCard 2.0: Using HyperDialer (8/95)

Revised: 8/24/95  
Security: Everyone

HyperCard 2.0: Using HyperDialer (8/95)

Article Created: 1 March 1991  
Article Reviewed/Updated: 24 August 1995

TOPIC -----

I have a stack that was designed to use the HyperDialer as part of our office mail system. I recently began using HyperCard 2.0 and found that when HyperCard dials the tones to the speaker, they are either too fast or corrupted. This causes the dialing procedure to fail.

Is there a reason for this? If so, are there provisions in HyperCard 2.0 for greater control over dialing through the speaker?

DISCUSSION -----

DataDesk International, manufacturer of HyperDialer, was unaware of any inconsistencies between HyperCard 2.0 and their product. They did say that if the numbers are dialed too quickly, the phone system will interpret them as trash and not dial appropriately.

While there are no new controls for HyperCard's "dial" command, we found that dialing each number in a separate command caused approximately a 10 percent delay in the dialed string.

Begin\_Table

| Fast | 10% Slower |
|------|------------|
|------|------------|

|                   |            |
|-------------------|------------|
| on mouseUp        | on mouseUp |
| dial "1234567890" | dial "1"   |
| end mouseUp       | dial "2"   |
|                   | dial "3"   |
|                   | dial "4"   |
|                   | dial "5"   |
|                   | dial "6"   |
|                   | dial "7"   |

```
dial "8"  
dial "9"  
dial "0"  
end mouseUp
```

End\_Table

You can further slow the dialed string by placing commas or semicolons between the numbers. A comma causes a one-second pause; a semicolon results in a ten-second pause.

```
on mouseUp  
dial "1,2,3,4,5,6,7,8,9,0"  
end mouseUp
```

For more information on HyperDialer, contact DataDesk International. For more details, search the Technical Info library under "DataDesk."

Article Change History:

24 Aug 1995 - Corrected formatting errors, reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6652



# Tech Info Library

## Personal LaserWriter: Printing Envelopes

Revised: 2/12/93  
Security: Everyone

Personal LaserWriter: Printing Envelopes

=====

Article Created: 1 March 1991

### Article Change History

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02/12/93 - REVIEWED

- Vendor information.

### TOPIC -----

I'm trying to print envelopes with a Personal LaserWriter, but can't get a clean feed when using envelopes.

### DISCUSSION -----

The Personal LaserWriter models have a somewhat more complex paper path than that of the LaserWriter II models. We have heard reports of problems with some envelopes, especially those made from a heavy stock.

Handling can be improved by using envelopes that are approved for use in laser printers and copiers, and by feeding to the face-up delivery tray. The recommended envelopes are No. 10 (standard business envelopes) or those specially made to withstand use in laser printers and copiers. Two manufacturers of such envelopes are James River Corporation (Groveton Division) and Avery. Check with your local office supply dealer or with the manufacturer.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:6653



# Tech Info Library

## LaserWriter IINTX: RAM Allocation

Revised: 3/1/91  
Security: Everyone

LaserWriter IINTX: RAM Allocation

=====

This article last reviewed: 21 January 1991

TOPIC -----

How much RAM is needed to get a second page buffer with legal-size paper on LaserWriter IINTX?

DISCUSSION -----

Additional RAM does not provide space for a "second page buffer" in the LaserWriter IINTX. We found the following information on page 122 of the "LaserWriter IINT/NTX Owner's Guide" (ROM revision 3.0 version):

### Memory Upgrades

You can install up to 12MB of RAM in the LaserWriter IINTX. You can also add a font expansion card. These memory upgrades are not possible on the LaserWriter IINT.

RAM upgrades for the LaserWriter IINTX provide the following benefits:

- the ability to print very complex documents (graphics and CAD documents, for example) that might not print on printers with less memory
- faster performance on complex documents
- faster performance when using downloaded fonts
- faster performance when printing documents that have been scaled down from larger originals (organization charts, maps, flow charts, for example)
- The ability to increase the imageable area of a document (you can use more of a sheet of legal paper, for example)



Adding more RAM provides these benefits in three ways:

- More RAM allows more fonts to be downloaded (sent over the network) to the printer at any one time. The printer is less likely to need to retrieve large font files over busy network cables, saving you time and improving the performance of the entire network.
- More RAM increases the space available for font caching. Before the LaserWriter IINTX can print, it converts the PostScript outline fonts into bitmaps, which it stores (caches) in RAM. When the demand for RAM exceeds the supply, the printer discards the less recently used bitmaps in favor of the newer ones. When the discarded bitmaps are needed again, the printer must rebuild them. With additional RAM, the printer will need to rebuild bitmaps less often.
- Finally, more RAM gives your printer more space to store the calculations it uses to compute large or complex page layouts. This is why you can print more complex documents and use a larger imageable area when you install more RAM.

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Tech Info Library Article Number:6655



# Tech Info Library

## A/UX: Installing/Deinstalling AppleTalk (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Installing/Deinstalling AppleTalk (9/94)

Article Created: 1 March 1991  
Article Last Reviewed: 8 September 1994

TOPIC -----

I have a problem with AppleTalk on A/UX:

- 1) AppleTalk is installed, and if I choose a LaserWriter in the Chooser, all is okay.
- 2) If I de-install AppleTalk with "newconfig appletalk" and then reboot, at the login dialog box, a message appears several times indicating that the system cannot find the LaserWriter I recently chose.

Is there anything else needed to de-install AppleTalk?

DISCUSSION -----

The following are notes for installing and/or de-installing AppleTalk on A/UX:

- The "appletalk" module is configured with the standard A/UX kernel. You don't have to actually do "newconfig appletalk" in the first place. However, if you suspect that some modules of AppleTalk might be corrupted for some reason, you may de-install AppleTalk by doing "newconfig noappletalk", then re-install it by doing "newconfig appletalk".
- You may choose either EtherTalk or LocalTalk for printing on an AppleTalk network. This is controlled by the /etc/appletalkrc file with a line indicating which interface is used. For instance, to use LocalTalk, the following line needs to be specified:  
  
interface = localtalk0
- The default LocalTalk printing port is the printer port (/dev/tty1). This port must be set to getty "off" in the /etc/inittab file.

- The following commands should be initiated whenever the interface is changed:

```
appletalk -d          # bring AppleTalk down
modify the /etc/appletalkrc  # choose AppleTalk interface
appletalk -u          # bring AppleTalk up
```

- The "appletalk -s" command is useful to see if the AppleTalk interface is active, and to display LAP and DDP statistics.
- You may use "Chooser" from the Apple menu or use the "at\_cho\_prn" command from A/UX CommandShell window to choose your favorite printer.
- Two printer spoolers, Berkeley printer spooler (lpd) and AT&T System V printer spooler (lp), are available under A/UX. The default is "lpd".

For more information, refer to Chapter 3 "Connecting to an AppleTalk Network" in the A/UX Network System Administration documentation.

For the error messages appearing on the Login Dialog, you might check if both LaserWriter and Laser Prep are installed in A/UX or the Personal System Folder, and if it is compatible with the one currently used by that LaserWriter.

Article Change History:  
08 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6656



# Tech Info Library

## MacX and Extended Keyboard Mapping (5/95)

Revised: 5/1/95  
Security: Everyone

MacX and Extended Keyboard Mapping (5/95)

Article Created: 21 January 1991  
Article Reviewed/Updated: 1 May 1995

TOPIC -----

Can you give me some information about MacX and extended keyboard mapping?

DISCUSSION -----

Unfortunately, there is no information on extended keyboard mapping in the "MacX User's Guide." However, according to MacX engineering, the PATHWORKS "MacX User's Guide" shows such a map in Chapter 1, Section "Mouse and Keyboard Differences". For example, the "Page Up" key is used to scroll to the beginning of a text field or to the top of a list.

Also, the user can use "xev", an X11 client to print contents of X events, to determine the keyboard mapping. "xev" is normally found in X11 client distribution. It is available in A/UX X11 Window System. The "xev" program creates a window and then asks the X server to send "events" whenever anything happens to the window. Events may include move, resize window, mouse clicked in, and keyboard typed in, and so forth. These reports can be displayed from the "Command Output" menu of the "Remote" menu in MacX.

Article Change History:  
01 May 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6659



# Tech Info Library

## A/UX: AppleTalk Phase 2 and Ethernet Card Compatibility (8/94)

Revised: 8/26/94  
Security: Everyone

A/UX: AppleTalk Phase 2 and Ethernet Card Compatibility (8/94)

=====

Article Created: 21 January 1991  
Article Reviewed/Updated: 26 August 1994

TOPIC -----

My group is having problems with third-party NuBus Ethernet cards and Phase 2 networks running on Macintosh II-class machines with A/UX 2.0. Is there a compatibility list of which cards support Phase 2 AppleTalk protocol? Is Apple's card fully compatible with EtherTalk 2.0 drivers using A/UX 2.0?

DISCUSSION -----

We don't have a compatibility list of third-party Ethernet cards which support or don't support the AppleTalk Phase 2 protocols. Apple has left it to the developers to decide whether to write and implement a Phase 2 complaint driver for their cards. There is no conformity testing for third-party cards. This makes it difficult to compile a list of cards with known compatibility problems.

We would suggest working closely with the manufacturer to ensure that any bugs in their drivers can be discovered and repaired.

The Apple Ethernet NB card is fully compatible with Phase 2 protocols when running under all versions of A/UX.

Article Change History:  
26 Aug 1994 - Updated and reviewed.

Support Information Services

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Tech Info Library Article Number:6660



# Tech Info Library

## A/UX 2.0: Unsupported Status csCode 8 (3/93)

Revised: 3/3/93  
Security: Everyone

A/UX 2.0: Unsupported Status csCode 8 (3/93)

Article Created: 1 March 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
    • For technical accuracy  
03/02/93 - REVISED  
    • Added note about After Dark compatibility with A/UX 3.0.

### TOPIC -----

I am getting the message "unsupported status csCode 8" under the A/UX 2.0 32-bit Finder. Do you have any suggestions?

Here's a copy of the console log:

```
Running on mc68020
mc68881 Floating Point Coprocessor ID 1
Onboard SCC serial driver.
fd:floppy driver ver 1.9; IWM chip, d0 is 800K (2 head)
mc68020 caching enabled
tc:Apple 40SC tape driver ver 1.4
Motherboard LocalTalk
total memory size: 8388608 bytes
available memory: 6033408 bytes
I/O Acceleration: version g21, maxba=7, maxwb=7
unsupported status csCode: 8
```

.  
.  
.

Scroll up in this window to see old console messages.

### DISCUSSION -----

It's been reported that the "unsupported status csCode: 8" error message is caused by applications that try to write a "SCRN 0" resource to the System file.

Further research reveals that the csCode: 8 is not included in the current supported control status code list (video.h) of the A/UX toolbox video driver. The following status codes are supported under A/UX 2.0:

```
#define cscGetMode 2
#define cscGetEntries 3
#define cscGetPages 4
#define cscGetBaseAddr 5
#define cscGetGray 6
#define cscGetVideoDefault 9
```

If any Macintosh application, like "After Dark 2.0", tries to use some video features not supported in the above list, it might have this problem too.

Note: After Dark is compatible with A/UX 3.0 because A/UX 3.0 supports the needed video calls.

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Tech Info Library Article Number:6661



# Tech Info Library

## AppleTalk Traffic When Launching Local Application

Revised: 3/1/91  
Security: Everyone

AppleTalk Traffic When Launching Local Application

=====

This article last reviewed: 21 January 1991

TOPIC -----

I have a problem for which I have no explanation. If I have one or more file server volumes mounted (but none of the directory windows are open), and I try to launch a local file with a local application, there is a delay of several seconds during which the AppleTalk traffic indicators blink.

This delay does not always occur and its occurrence does not appear to be tied to any specific condition on the Macintosh. I don't understand why there should be any AppleTalk traffic when launching a local application.

DISCUSSION -----

Any time an application is launched, all of the information about any changes that have taken place on any currently-mounted volumes needs to be written out. This is done by flushing each of the mounted volumes. This operation normally happens very quickly. However, updating volumes over a network can sometimes take time if the network is busy. This is not something that AppleTalk or AppleShare takes care of, but a job that the Finder does.

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Tech Info Library Article Number:6662





# Tech Info Library

## MacTCP: BOOTP/RARP Server Priority

Revised: 3/1/91  
Security: Everyone

MacTCP: BOOTP/RARP Server Priority

=====

This article last reviewed: 21 January 1991

TOPIC -----

Can I change the order that MacTCP looks for server addresses? My problem is that MacTCP uses RARP first (which then times out after 8 seconds) before then using the BOOTP protocol. Is there a way I can rearrange the order so that BOOTP comes up first before having an 8-second delay?

DISCUSSION -----

According to MacTCP Engineering, MacTCP remembers what protocol was successful in acquiring its IP address over startups, so that the successful protocol is tried first. In other words, once MacTCP has located and acquired an IP address from a BOOTP server it then uses the BOOTP server before trying the RARP server the next time MacTCP is used. The first time MacTCP is used, the RARP server may be tried first. However, this should not continue once the BOOTP server is located.

There is currently no way to configure MacTCP to select server priority via a control-panel device or by using ResEdit.

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Tech Info Library Article Number:6665



# Tech Info Library

## A/UX: UFS Subdirectory Limit (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: UFS Subdirectory Limit (9/94)

=====

Article Created: 21 January 1991  
Article Reviewed/Updated: 2 September 1994

TOPIC -----

I came across an interesting limitation problem of A/UX 2.0: You can create only 1000 subdirectories within a directory. After that, mkdir won't make any more subdirectories. Instead, you get the message:

```
mkdir: another: Too many links
```

We need to create more than 1000 subdirectories inside one directory because the software we are porting to A/UX creates a directory for each department at the University, and there are more than 1000 departments.

DISCUSSION -----

We have verified that there is a limitation on the number of subdirectories created within a directory under A/UX 2.0 UFS file system. The maximum is 1000. This is defined in the /usr/include/sys/param.h file with a line:

```
#define MAXLINK 1000 /* max links */
```

The maximum number of subdirectories under A/UX 3.0 is 32,767.

Article Change History:  
2 Sept 1994 - Added information about A/UX 3.0.  
26 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:6666



# Tech Info Library

## A/UX: uucp and Mail Questions (9/94)

Revised: 9/14/94  
Security: Everyone

A/UX: uucp and Mail Questions (9/94)

Article Created: 21 January 1991  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

I am trying to write a script for an L.sys file that will let me connect to a 3B2/1000 machine via ISN using uucp. The beginning of the script looks like this:

```
" ATD555-1212,\015 expect nothing send dial string
2400 \r\r expect 2400 send two carriage returns
```

This is where the confusion starts. The carriage returns must be sent to set the line characteristics (autobaud). When I manually use cu to connect, the two carriage returns typed are not echoed, but a 4- or 5-line banner is sent back.

When I call with the line

```
uucico -r1 -sLAB -x9
```

the chat dialog cranks up and the number is dialed. However, when the modem answers, the 2400 is picked up by the script. The modem then flashes the TX light. I assume this means the carriage returns are being sent. However, the RX light never flashes and uucico hangs and eventually times out.

I don't believe the Welcome header is being sent. I have tried

```
\r,,\r
```

and several variations, i.e., more carriage returns and a variety of commas in various positions. I have a feeling that only one carriage return is being sent. This carriage return does not echo, and the program waits forever, because the header will not be sent.

- 1) Does uucico send characters one at a time and wait for the echo before sending the next one? This would account for the hang, because the first two carriage returns are munched by the autobaud mechanism.
- 2) If the answer to the above is yes, is there any workaround? I tried `\e\r\r` but got the same results.
- 3) Assuming I can finally get the carriage returns processed and cause the header to be sent, do I have to process each line of the header with an "expect-send" pair, or can I simply "expect" the tail of the last line of the header?

I solved the problem of the autobaud not echoing characters. Recall that I have to send several carriage returns to get the attention of the system after I get the connect message from the modem. Instead of sending `\r\r\r` (only one of the carriage returns evidently get sent), I now send

```
\r\c "" \r\c "" \r\c
```

It looks like the above line sends one carriage return and expects nothing, sends another carriage return and expects nothing, and sends one more carriage return.

This seems to do the trick. The header comes flying by and I can then negotiate into the nuucp login. Because I can send files to the machine without any problem, uucp seems to work okay. However, mail does not seem to work. I have tried:

```
mail name!user and
mailx name!user and
rmail name!user
```

After I exit the mail programs, nothing happens. There are no log files created in the spool area, and the phone never goes off hook. It seems like the letter drops into a black hole! If uucp works, why doesn't mail work? (I am using ksh.)

#### DISCUSSION -----

Usually, people play trial-and-error on the "expect" and "send" strings in the L.sys to find communication line (modem or other device) characteristics, like "Connect", "Online", and other message outputs from the modem. uucico sends the "expect-send" pair of strings to the remote uucp host via the communication line. It depends on how the underlying communication device behaves itself. For example, does it require a carriage return or a new line or a couple of delays while in conversation mode? Below are special characters often used in the "expect-send" string:

```
\r    CARRIAGE RETURN
\d    DELAY for one second
\c    NO NL (No New Line)
```

A delay (`\d`) is sometimes needed for uucico to wait for the communication

line to complete its task before process the next string.

The "expected" and "send" string pairs are processed in that order. Yes, you may grab the last line of the display message as the "expected" string. For autobaud to work, you can try the "" \r\c "" \r\c "expect-send" sequences.

If uucp works, it does not necessarily mean that the "mail" should work. It depends on how the "sendmail" system is set up and configured. Is the "sendmail" program up and running on both machines?

The /usr/spool/mqueue/syslog file should record the reason for the mail problem. However, the /etc/syslogd daemon must be running to show the sendmail activity.

#### Article Change History:

13 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

#### Support Information Services

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Tech Info Library Article Number:6667



# Tech Info Library

## Mesac

Revised: 4/4/97  
Security: Everyone

Mesac

=====

Article Created: 02/18/91  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Mesac

-----

655 Crawford Circle  
Longmont, CO 80501

800-634-5762

303-776-2420

303-753-0406 Fax

### Company Profile:

Software, specializing in the conversion of PostScript code to a code that drives vinyl cutters, Macintosh and PC based sign design and production

Article Change History: 07/13/93 New product information added, fax number changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6669



# Tech Info Library

## PLI

Revised: 7/15/93  
Security: Everyone

PLI

=====

Article Created: 1 March 1991  
Article Reviewed/Updated: 15 July 1993

PLI

---

47421 Bayside Parkway  
Fremont, CA 94538

800-288-8754

510-657-2211

510-683-9713 Fax

Company Profile:

PLI, hardware, specializing in CD-ROM drives, and all Macintosh storage devices - drives, CD, DAT, etc.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6670



# Tech Info Library

## Roland Digital Group

Revised: 7/16/93  
Security: Everyone

Roland Digital Group

=====

Article Created: 1 March 1991  
Article Reviewed/Updated: 16 July 1993

Roland Digital Group

-----

1961 McGaw Avenue  
Irvine, CA 92714

714-975-0560

Fax: 714-975-0569

Company Profile:  
Hardware, specializing in a vinyl-cutting signmaker for the Macintosh and a line of pen plotters.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number: 6671





# Tech Info Library

## Ecological Linguistics

Revised: 7/8/93  
Security: Everyone

Ecological Linguistics

=====

Article Created: 03/01/91  
Article Reviewed: 07/08/93  
Article Updated:

Ecological Linguistics

-----

P.O. Box 15156  
Washington, DC 20003

202-546-5862  
202-547-7678 (Tech. Support)

Company Profile:  
Software, specializing in alphabet fonts for various languages for the  
Macintosh. They have a catalog of ready-made fonts and also do custom work.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6672



# Tech Info Library

## MacX: Adding X Fonts (5/95)

Revised: 5/1/95  
Security: Everyone

MacX: Adding X Fonts (5/95)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 1 May 1995

TOPIC -----

How and in what form are additional fonts added to MacX under A/UX and the Mac OS?

DISCUSSION -----

The procedure is identical for adding X fonts for both A/UX and Mac OS to the MacX Font Director list. The Font Director is built in MacX, which can be invoked by selecting "Fonts..." from the Edit menu. The Font Director lets you view, add, and remove existing Macintosh fonts to and from the font directory list. It also compiles fonts from the BDF (Bitmap Distribution Format) files.

To add "X fonts" into the MacX Font Directory list, the X font must be converted into a BDF file, so that it can be compiled by the Font Director and added into the font directory list.

The public domain software called "snftobdf" converts a SNF font file into a BDF font file.

Article Change History:  
01 May 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:6674



# Tech Info Library

## A/UX 2.0: Screen Dimmer Enhancement Request (6/92)

Revised: 8/13/93  
Security: Everyone

A/UX 2.0: Screen Dimmer Enhancement Request (6/92)

=====

Article Created: 24 January 1991  
Article Review/Updated: 31 June 1992

TOPIC -----

I am looking for A/UX-compatible screen-dimming software. I want it to be active once logged in and while at the login screen. For that to take place, will the application have to reside in multiple System folders?

DISCUSSION -----

We know of some screen dimmers, like "Blackout v1.21" and "Pyro 4.0", that work under A/UX 2.0. "AfterDark" seems to have a problem with "unsupported status csCode ..." if the SCRn resource is not removed.

"Blackout v1.21" seems to work under both "before" Login screen and "after" Login screen. For "Blackout v1.21" to work on both "before" and "after" Login dialog screens, the "Blackout v1.21" puts both folders (/mac/sys/'Login System Folder' and the /mac/sys/'System Folder') in the System folder.

Article Change History:  
31 Jun 1992 - Reviewed for technical accuracy.

Copyright 1991-92, Apple Computer, Inc.

Tech Info Library Article Number:6675



# Tech Info Library

## RGB Cable Pinouts

Revised: 3/1/91  
Security: Everyone

RGB Cable Pinouts

=====

This article last reviewed: 24 January 1991

TOPIC -----

I need the pinouts for the RGB video cable 590-4161-A.

DISCUSSION -----

Here are the pinouts you are looking for:

| Pin   | Function        |
|-------|-----------------|
| ----- |                 |
| 1     | Red Video GND   |
| 2     | Red Video       |
| 3     | CSynch          |
| 4     | Mon. ID 1       |
| 5     | Green Video     |
| 6     | Green Video GND |
| 7     | Mon. ID 2       |
| 8     | N.C.            |
| 9     | Blue Video      |
| 10    | Mon. ID 3       |
| 11    | CSynch GND      |
| 12    | N.C.            |
| 13    | Blue Video GND  |
| 14    | N.C.            |
| 15    | N.C.            |
| Shell | Shield GND      |

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Tech Info Library Article Number:6676



# Tech Info Library

## A/UX 2.0: 3270 Terminal Emulation

Revised: 11/10/92  
Security: Everyone

A/UX 2.0: 3270 Terminal Emulation

Article Created: 24 January 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

1) I am working on a Macintosh IIX with A/UX 2.0 and a Kinetics EtherPort II. The company where I work has lots of Sun systems, DOS machines, and IBM mainframes (even a few Crays). TCP/IP is the prevalent Comm protocol.

Using Telnet, we have no problem logging into IBM mainframes running TCP/IP. A/UX does not seem to have a 3270 terminal entry, so the 3270 screens don't appear as they should. Is there a 3270 type of term entry that will let the screens appear correctly under CommandShell?

2) I tried to use Intercon's TCP Connect II. This package does provide 3270 terminal types via Telnet. Running from A/UX, the program lets you log into a local Sun, but I can't seem to get across the router. The Intercon tech support engineer didn't have an answer other than running under Macintosh OS and setting the gateway address in the "Admin TCP" CDEV. Looking at the "MacTCP" CDEV under A/UX, the gateway field is 0.0.0.0 even though the route command has been run. Do you know why I can't get past the router from TCP Connect while running under A/UX?

### DISCUSSION -----

1) There is currently no 3270 termcap entry for a 3270 session in A/UX 2.0 /etc/termcap file.

However, there is a software package called tn3270, which, we believe, came with

the 4.3BSD distribution. It provides a solution for talking to IBM hosts running VM/CMS with the University of Wisconsin who developed TCP/IP codes. The tn3270 also includes a file called "map3270", which contains mapping between characters entered from the keyboard and 3270 keys used by the "tn3270" program doing 3270 emulation from UNIX. Tn3270 requires the 4.3BSD curses to run.

Porting 4.3BSD tn3270 to A/UX or using the third-party tn3270 product would be the ideal solution.

"Admin TCP" is not needed by A/UX 2.0 MacTCP since TCP/IP is configured by A/UX "ifconfig" and other network services, like Domain nameserver and/or gateway. You only need "MacTCP" in the System Folder.

2) We have no experience with the TCP/Connect II software. Is there any control file provided by TCP/Connect II to specify the gateway and/or the domain name server to be used? Like in NCSA Telnet 2.3, the "config.tel" file may contain information on gateways and name servers. We have tested the NCSA Telnet 2.3 with MacTCP in A/UX 2.0 to a remote host via a gateway (router) without any problem. The gateway information is generated by the A/UX "/usr/etc/route" or the /etc/in.routed" process as all information in A/UX MacTCP is disabled and can't be changed.

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Tech Info Library Article Number:6677



# Tech Info Library

## AppleTalk: Configuring under A/UX (8/94)

Revised: 8/26/94  
Security: Everyone

AppleTalk: Configuring under A/UX (8/94)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 26 August 1994

TOPIC -----

To configure AppleTalk under A/UX, must bnet be configured? If yes, is it a bug or are the protocols stacks linked?

DISCUSSION -----

Yes, to run AppleTalk you should have the "bnet" configured in the A/UX kernel. That means before doing "newconfig appletalk", the A/UX kernel must have been configured with "bnet". The reason is that AppleTalk modules link some modules from "bnet". The linked bnet modules include "m\_get", "m\_freem", and so on. In short, AppleTalk uses B-Net socket system calls to do inter-process communication for AppleTalk printing service. Note that the default A/UX 3.0 distribution is configured with "bnet" and "appletalk" driver modules.

It is not a bug; as you stated, the protocol stacks are linked.

Article Change History:  
26 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:6678



# Tech Info Library

## AppleShare Workstation Server Limit

Revised: 11/7/91  
Security: Everyone

AppleShare Workstation Server Limit

=====

Article Created: 1 March 1991  
Article Last Reviewed: 7 November 1991  
Article Last Updated: 7 November 1991

TOPIC -----

I have a program that automatically backs up our server volumes from a workstation. The problem is that I need all the volumes to be mounted on the workstation for the automatic back up to work. I want to run the software on a 2.5MB Macintosh Plus with an 80MB hard drive running System 6.0.3. I am trying to mount 8 volumes. When I try to mount the fourth volume, I get a message about not being able to open any more volumes.

What is the limitation? RAM? System software? Would a different computer help: Macintosh SE, Macintosh II? How many volumes should a workstation be able to mount?

DISCUSSION -----

There is a limitation in the number of servers that a given Macintosh computer can be logged on to at one time. The number of servers by machine is as follows:

| Computer           | Number of Servers |
|--------------------|-------------------|
| -----              | -----             |
| Macintosh Plus     | 3                 |
| Macintosh SE       | 8                 |
| Macintosh Classic  | 8                 |
| Macintosh Portable | 8                 |
| Macintosh LC       | 18                |
| Macintosh SE/30    | 18                |
| Macintosh II       | 18                |
| Macintosh IIX      | 18                |
| Macintosh IICx     | 18                |
| Macintosh IISi     | 18                |



|                         |    |
|-------------------------|----|
| Macintosh IIci          | 18 |
| Macintosh IIfx          | 18 |
| Macintosh PowerBook 100 | 18 |
| Macintosh PowerBook 140 | 18 |
| Macintosh PowerBook 170 | 18 |
| Macintosh Quadra 700    | 18 |
| Macintosh Quadra 900    | 18 |
| Macintosh Classic II    | 18 |

There is also a limit in the number of volumes you can have mounted. When a volume is mounted, information about that volume is loaded into System and Finder memory. The amount of memory needed to mount a volume is dependent on the size of and the number of files on that volume.

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Tech Info Library Article Number:6679



# Tech Info Library

## Monitors: Effect of Variations in Earth's Magnetic Field (11/94)

Revised: 11/7/94  
Security: Everyone

Monitors: Effect of Variations in Earth's Magnetic Field (11/94)

=====

Article Created: 01 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I am planning to take a Macintosh monitor to Indonesia. An Apple Sales Representative told me I would have trouble with the monitor, if I took it South of the Equator. Is there any truth to this, and, if so, how could the monitor be readjusted?

DISCUSSION -----

Variations in the Earth's magnetic field will cause some problems when moving a monitor intended for use in the Northern hemisphere to the Southern hemisphere.

If you buy the monitor in the Northern hemisphere, you will probably see rounded corners and curves where straight lines should be. There is no service procedure for re-adjusting the display to correct these problems. Your best bet is to buy or borrow a monitor for use South of the Equator.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6682



# Tech Info Library

## DAL 1.0, 1.1: Incompatibility with HyperCard 2.0

Revised: 6/29/92  
Security: Everyone

DAL 1.0, 1.1: Incompatibility with HyperCard 2.0

=====

Article Created: 4 March 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I found a bug with HyperCard 2.0 and DAL (formerly called CL/1). Evidently, the cllputval XCMD does not actually return data to HyperCard 2.0. The cllgetlist XCMD does, however. I am running DAL 1.0, because we have a VMS 4.7 system and cannot upgrade for a variety of reasons.

DISCUSSION -----

The DAL Support group told us that there were known incompatibilities between DAL version 1.0 or 1.1 with HyperCard 2.0. Because you cannot upgrade to a later VMS release to run DAL 1.2, we suggest you not use HyperCard 2.0 with DAL 1.0.

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Tech Info Library Article Number:6683



# Tech Info Library

## A/UX and Raw Sockets (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX and Raw Sockets (8/94)

Article Created: 24 January 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

I want to use raw sockets in A/UX so that I can set up a TCP/IP address server. I want to use the raw sockets to check dynamically on the availability of a TCP/IP address and load an available address into a particular platform.

DISCUSSION -----

This sounds like a developer programming issue. The "A/UX Network Application Programming" documentation is a good reference for writing sockets which include Stream, Datagram, and Raw sockets. It also includes some sample C code. Section 11 of 4.3BSD "Networking Implementation Notes" describes details on what raw sockets are, what their control block structure is, and how the input and output raw sockets are processed. These notes regarding how raw socket addresses are handled might be of interest:

A raw socket interface is datagram oriented. That is, each send or receive on the socket requires a destination address. This address may be supplied by the user or stored in the control block and automatically installed in the outgoing packet by the output routine. Since it is not possible to determine whether an address is present or not in the control block, two flags, RAW\_LADDR and RAW\_FADDR, indicate if a local and foreign address are present. Routing is expected to be performed by the underlying protocol if necessary.

You should also examine the rules of raw socket input and output processing and see if the rules fit their TCP/IP applications.

The "A/UX Network Applications Programming" document and "A/UX Development Sources" Version 2.0 on CD-ROM are available from APDA. If you need immediate assistance on developing their socket codes, we suggest that, as a developer, you contact MacDTS (Macintosh Developer Technical Support).

Article Change History:

29 Aug 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6684



# Tech Info Library

## Macintosh Classic, Macintosh LC: Power Supply Specs

Revised: 6/24/92  
Security: Everyone

Macintosh Classic, Macintosh LC: Power Supply Specs

Article Created: 24 January 1991  
Article Last Reviewed: 23 June 1992  
Article Last Updated:

TOPIC -----

Would you please supply the specifications for the Macintosh Classic and Macintosh LC power supplies, showing the maximum currents which can be drawn from the different voltage sources (+5, +12, etc).

DISCUSSION -----

Here is the information you requested:

### MACINTOSH CLASSIC

| Load Condition | +5 V    | +12 V   | -12 V   |
|----------------|---------|---------|---------|
| -----          | ----    | -----   | -----   |
| Minimum load:  | 0.5 A   | .010 A  | 0.010 A |
| Maximum load:  | 3.489 A | 0.550 A | 0.060 A |
| Peak load:     | 3.717 A | 1.070 A | 0.080 A |

### MACINTOSH LC

| Load Condition | +5 V   | +12 V  | -5 V | Total Power |
|----------------|--------|--------|------|-------------|
| -----          | ----   | -----  | ---- | -----       |
| Minimum load:  | 0.5 A  | 80mA   | 0mA  | 3.46 W      |
| Maximum load:  | 3.25 A | 0.75 A | 75mA | 25.625 W    |

|            |         |          |      |          |
|------------|---------|----------|------|----------|
| Peak load: | 3.50 A* | 1.40 A** | 75mA | 34.675 W |
|------------|---------|----------|------|----------|

\*\* At turn-on: For a period of 5 seconds maximum, Duty cycle to be 10%, the +12 V supply may drop to 11.0 volts during the +12V peak load.

\* During normal operation: For a period of 1 second maximum, duty cycle to be 20%, +5V output to remain within 5.05V +/- 5% during the +5V peak load.

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Tech Info Library Article Number:6685



# Tech Info Library

## MacDFT: Problem with Apple 12-Inch RGB Monitor

Revised: 3/4/91  
Security: Everyone

MacDFT: Problem with Apple 12-Inch RGB Monitor

=====

This article last reviewed: 25 January 1991

TOPIC -----

Is MacDFT 1.1.1 compatible with the new Apple 12-inch color monitor?

If I open a dialog like Display or Keyboard, I don't get the whole box in the picture. If I then open and close it repeatedly, the whole text moves upwards, so after a few tries I don't see any text at all.

If I check Resize Fonts, nothing changes. How is that supposed to work? I thought that if I checked that, MacDFT would change the font size, if you changed the window size.

DISCUSSION -----

We found there are some display problems when using MacDFT with an Apple 12-inch RGB monitor, for example the menu items Display and Keyboard aren't fully displayed on the screen. However, we didn't find limitations so severe as to prevent you from using this combination. We reported this problem to Engineering.

When you check the Resize Fonts option, the text on the screen will not change point size as you shrink or enlarge the window. Instead your options are:

Resize font: unselected

-----

If you use this default setting, the window changes to accommodate the rows and columns. The font size remains the same size chosen from the Font size menu. This choice lets you display the full column width associated with each model type, except for Model 5, where you must use the horizontal scroll bar to see all 132 columns.

Resize font: selected



-----

If you select this option, MacDFT changes the font size to fit the terminal model you have selected. If you choose this option, you can see all your columns and rows. In some cases, the window may not be able to display all the rows and columns, and you must use the scroll bars to display some data. The window size also changes to accommodate the extra rows and columns.

Both of these options are described and illustrated in the "MacDFT User's Guide."

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Tech Info Library Article Number:6688



# Tech Info Library

## System Software: Availability of Localized Versions (11/94)

Revised: 11/28/94  
Security: Everyone

System Software: Availability of Localized Versions (11/94)

=====

Article Created: 24 January 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Is there a French version of System Software? If so, how do I get a copy?

DISCUSSION -----

Localized versions of System Software are available in the country the software is localized for, and, in the past, they were available from APDA. APDA has not distributed versions since 6.0.3. However, later versions will become available to "Develop" subscribers in the form of a CD called "Developer Essentials." "Develop" subscription information is available in the APDA catalog.

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:6689



# Tech Info Library

## SMB: AFE Window Shows Only 8 Entries

Revised: 4/4/91  
Security: Everyone

SMB: AFE Window Shows Only 8 Entries

=====

Article Created: 24 January 1991  
Article Last Reviewed: 3 April 1991  
Article Last Updated: 3 April 1991

TOPIC -----

Since updating our SMB file server with OS/2 LAN Server software v1.2 we've had a problem with Apple's SMB File Transfer (v1.0). With SMB File Transfer software we can log onto the server, display and transfer files; however, only the first eight entries (files or folders) for a particular directory are displayed.

DISCUSSION -----

What you have described is a known limitation of using SMB File Transfer with OS/2 LAN Server versions 1.2 or later. Alternatives include using third party products on the Macintosh such as MacLAN Connect from Miramar to access the OS/2 LAN Server. Otherwise, at this time you will be required to limit directories to no more than 8 items.

For more information on MacLAN Connect, go to the Tech Info Library and search under "Miramar".

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Tech Info Library Article Number:6690



# Tech Info Library

## ImageWriter Emulator: Requires EOF Character

Revised: 3/4/91  
Security: Everyone

ImageWriter Emulator: Requires EOF Character

=====

This article last reviewed: 25 January 1991

TOPIC -----

We are having difficulty printing to a LaserWriter using an Apple IIGS and the ImageWriter emulator.

The school system for which I work is using DB Master Professional from Stone Edge Technologies and is trying to print out reports to an Apple LaserWriter using the ImageWriter Emulator. My original problem was that I could get one copy to print out, but when I tried printing again, all I would get was blank paper.

I think the problem may be is with the EOF character. Does the LaserWriter require an EOF character? If so, does the ImageWriter Emulator supply the EOF character, or is that the responsibility of the software package?

DISCUSSION -----

The LaserWriter requires an EOF character (in this case Form Feed, ASCII 12). The ImageWriter Emulator does not supply this character; it must be supplied by the application doing the printing. Stone Edge should be able to help you configure the software to do this.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6694



# Tech Info Library

## MacPAD: Changing Default Parameters

Revised: 3/4/91  
Security: Everyone

MacPAD: Changing Default Parameters

=====

This article last reviewed: 25 January 1991

TOPIC -----

I need to change the MacPAD parameter 3: "Data Forwarding Character" to "after each character" but the software doesn't offer a menu for this. I'm assuming the defaults are stored somewhere in the resources of MacPAD. I need to know where and how these PAD parameters are stored in the resources, so I can change the default parameters.

DISCUSSION -----

Because of the way the parameters like "Send data on every alpha-numeric character" are stored in MacPAD, they cannot be modified easily with ResEdit. Furthermore, as soon as a connection is established, the other side might use X.29 to modify the parameter anyway.

Macintosh Communications Toolbox applications, like MacTerminal 3.0, can save Settings or MacPAD parameters when you choose "Save Changes". Looking at the "Comm Toolbox Reference" manual, config and oldConfig point to the MacPAD private data block, which is called automatically when you create a connection record (CMNew automatically makes two calls to CMDefault to fill in config and oldConfig). Your program needs to store the contents of config to save the state of the connection tool.

The above assumes you are using MacPAD at all. Perhaps the program writes directly to the X.25 Interface Library? If so, your program then must assume more responsibility in setting up and tearing down the call. Lastly, the CCITT X.28 allows for only certain PAD profiles and to impose other profiles that may violate the specification.

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Tech Info Library Article Number:6695



# Tech Info Library

## MacX: Repainting Rooted and Rootless Windows

Revised: 3/4/91  
Security: Everyone

MacX: Repainting Rooted and Rootless Windows

=====

This article last reviewed: 25 January 1991

TOPIC -----

Does our Apple X11 server (MacX) store the window image locally, so the window can be repainted locally if it is clipped, or does the host have to send down the image to repaint the screen?

DISCUSSION -----

There are three possible scenarios involved in this question, depending on the window types you have specified.

If you have rootless windows (in other words, each X-client application is running in a separate Macintosh window), then each window's image is stored locally in an offscreen bitmap. This prevents the necessity of having the client application redraw the information.

The next two scenarios involve rooted windows, which are two different issues.

The first issue is what happens to the entire rooted window when it is forced to update itself. In this case, the currently-displayed rooted window's image is stored in an offscreen bitmap, and the updates are done locally and not by the client applications. This is consistent with the method used by the rootless windows as mentioned above and is necessary, because X client applications are typically not prepared to deal with changes to the root window itself.

The second issue is involved with multiple X-client windows within the single Macintosh root window. In the situation where you have overlapping X windows within the rooted window, and you are switching between the windows, the client applications are responsible for updating the clipped regions just as they should be.

Perhaps the best way to think of this is that the images contained within Macintosh-style windows are stored locally.

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Tech Info Library Article Number:6699



# Tech Info Library

## Macintosh Classic: Boot ROM Option Is Not a Supported Feature

Revised: 6/18/92  
Security: Everyone

Macintosh Classic: Boot ROM Option Is Not a Supported Feature

=====

Article Created: 25 January 1991  
Article Last Reviewed: 16 June 1992  
Article Last Updated:

TOPIC -----

I'm testing some features of the Macintosh Classic; in particular, the Boot ROM option (Command-Option-X-O). It's really fantastic, but we (outside the U.S.) have a problem with the International Resources such as keyboard resources. When booting from ROM, you are automatically in QWERTY mode. It's "normal," but what can be done for people who are using AZERTY or something other than a QWERTY keyboard?

DISCUSSION -----

The Boot ROM option isn't a supported feature in either domestic or international versions of the Macintosh Classic. The code was part of an experiment in future directions and wasn't taken out before the ROMs were finalized.

Because the software in use was not fully tested with the Macintosh Classic, we don't recommend its use in any way.

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Tech Info Library Article Number:6702





# Tech Info Library

## Macintosh RS-422-to-RS-232-C Adapter

Revised: 7/16/92  
Security: Everyone

Macintosh RS-422-to-RS-232-C Adapter

=====  
Article Created: 25 January 1991  
Article Last Reviewed: 10 June 1992  
Article Last Updated: 10 June 1992

### TOPIC -----

I am trying to attach some Macintosh computers to a AT&T ISN network. The ISN requires an RJ-45 connector. We are having two problems.

- 1) According to the article "Macintosh Mini-8-to-RJ-45 Connection", "To do this, you need some kind of adapter." Is there a way to build a RS-422-RJ-45 cable without an RS-232 adapter in the middle?
- 2) Is there a consistent difference between computers in the Macintosh II family and Macintosh SE computers in terms of distance tolerance for RS-422? We get a Macintosh SE to work in situations where a Macintosh IIfx will not. My thought was similar to that in another article on serial port cable length specifications. That is, we were a little over the distance spec and the Macintosh SE seems to be able to handle that. Word on the Internet is that people have to make different cables for the Macintosh II than for the Macintosh SE in these situations.

### DISCUSSION -----

Because the built-in Macintosh serial ports are based on RS-422, which uses differential signals, a simple rule should be followed to assure compatibility with RS-232-C devices. Ground the RD+ line and leave the TD+ line disconnected. This converts the port to RS-423, which is compatible with almost all RS-232-C equipment.

The adapter spoken of in the article you referenced merely adapts the different connector types: RJ-45 to DB-25. The grounding of RD+ was done by the Mini-8 to DB-25 adapter. The following diagram shows the proper cable configuration for connecting a Macintosh serial port to an RS-232 device:

| Macintosh Mini-8 Port |        |     | 25 Pin RS-232 DTE Device |           |                             |
|-----------------------|--------|-----|--------------------------|-----------|-----------------------------|
| Signal Name           | Signal | Pin | Pin*                     | Signal    | Signal Name                 |
| -----                 | -----  | --- | ---                      | -----     | -----                       |
| Handshake Out         | HSKo   | 1   | ----                     | if needed | ----> 6 DSR Data Set Ready  |
| Handshake In          | HSKi   | 2   | <----                    | if needed | ---- 20 DTR Data Term Ready |
| Transmit -            | TD-    | 3   | -----                    | ----->    | 3 RD Receive                |
| Receive -             | RD-    | 5   | <-----                   | -----     | 2 TD Transmit               |
| Transmit +            | TD+    | 6   | Not connected            |           |                             |
| Signal Ground         | SG     | 4 | -----\| | ----- | 7 SG Signal Ground          |
| Receive +             | RD+    | 8 | -----\| |  |  |

\*Note that the pin assignments shown may be wrong if the RS-232 device is wired as DCE instead of DTE. Since we don't know how the RJ-45 connectors are wired, we can't provide pin assignments for them. However, the signal assignments will be the same, so you can translate pin numbers from the signal names.

Although both Macintosh ports usually work with RS-232-C equipment without the considerations mentioned above, their maximum cable lengths and resistance to noise and interference are reduced. The approximate 50-foot length limitation may be reduced drastically and reliability can be impaired.

We have noticed that the Macintosh SE and earlier models are slightly more tolerant of cable design. While the Macintosh II family serial ports are capable of the 50-foot maximum cable length RS-232-C specification, this requires the cable to be designed as shown above. If RD+ is not grounded, the maximum length will be reduced. The Internet community discussions you mention are probably based on a partial understanding of these factors.

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Tech Info Library Article Number:6703



# Tech Info Library

## System 6.0.7: Localized for KanjiTalk and ChineseTalk

Revised: 5/16/91  
Security: Everyone

System 6.0.7: Localized for KanjiTalk and ChineseTalk

=====

This article last reviewed: 25 January 1991

TOPIC -----

When will KanjiTalk and ChineseTalk for the Macintosh Classic, LC, and IIsi be available?

DISCUSSION -----

System Software 6.0.7 localized for Chinese-Simplified and KanjiTalk have been released. Chinese-Traditional was released for 6.0.6 software and will not be localized in 6.0.7 (note that many countries used 6.0.6 software with patches to work with the new models until 6.0.7 was localized).

You may wish to check on the availability of these localized versions of System Software with your local distribution center.

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Tech Info Library Article Number:6704



# Tech Info Library

## A/UX: MacX and Native X Performance (9/94)

Revised: 9/20/94  
Security: Everyone

A/UX: MacX and Native X Performance (9/94)

Article Created: 25 January 1991  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

I need to optimize an A/UX system for running X Window System applications in the following environments:

- 1) Running Native X Window System under A/UX on a Macintosh IIfx, running with 16MB or 32MB of physical RAM.
- 2) Running MacX in the Finder under A/UX on Macintosh IIfx, running with 16MB or 32MB of physical RAM.

The applications are X based, using pull-down menus extensively. Of the two, running under MacX is going to be weighed most heavily. I will be using the MacX 1.2 that comes with A/UX.

Does running the same application in a rooted color window versus rootless color window affect performance one way or the other?

I've used the following method to optimize A/UX for Native X Window System under 8MB of memory:

For systems with 8MB, bring A/UX up as single-user, then run these commands:

```
# kconfig -n /unix
NBUF=2500
NINODE=600
NFILE=400
<Control-D>
# sync
# sync
# sync
```

# reboot

When doing this though, MacX performance under A/UX on the same machine crawls slower than before.

#### DISCUSSION -----

Performance should not be affected when selecting a rootless color window or a rooted color window when running the same X client application.

The above kernel parameters, especially NBUF=2500, seems to be too high for an A/UX 8MB system. The "NBUF=2500" itself takes up 5MB (2500 x 2K) of existing memory. When you add the other kernel parameters, there is not much available physical memory left for applications. This will cause more paging activity and, in turn, degrade the performance.

If you have 16MB or 32MB of physical memory on a Macintosh IIx running A/UX 3.0, the same kernel parameters configuration should be feasible to run either X11 Window System or MacX under A/UX.

The system performance will really depend on how many X client applications and other applications, including Macintosh applications and UNIX processes, are running at the same time in A/UX and the underlying network environment in which A/UX resides. The following kernel parameters should be adjusted accordingly to fit your running environment:

NBUF    If NBUF=0, it allocates about 10% of free memory for disk block I/O buffers.

NFILE   is the size for system file-table pool (600 seems fair enough).

NINODE   is the size for system inode-table pool (400 seems fair enough).

NPROC   is the maximum number of processes allowed in the system.

MAXUP   is the maximum number of processes per user allowed in the system.

NMBUFS   is the maximum number of buffers allocated for networking.

Each NMBUFS buffer requires 256 bytes. The more network daemons running, the more mbufs are needed for memory allocation.

Since both MacX and X11 must be run at least in an A/UX B-Net kernel, the NMBUFS must be set fair enough for the network buffering. By default, 500 mbufs are allocated. For an A/UX with NFS and/or YP A/UX kernel, the NMBUFS needs to be increased significantly, say 1000 or 1500.

The "netstat -m" can be used to display the number of mbufs currently in use.

Also, the "pstat -m" command can be used to display information about the current memory allocations, which include the number of I/O buffers (NBUF) allocated, the number of inodes (NINODE), and the file (NFILE) currently active.

Article Change History:

19 Sep 1994 - Reviewed for technical accuracy.

31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6706



# Tech Info Library

## A/UX 2.0: fcnvt May Create Bad MacBinary Header (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX 2.0: "fcnvt" May Create Bad MacBinary Header (8/94)

=====

Article Created: 25 January 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

The 'fcnvt' tool supplied with A/UX 2.0 sometimes creates a MacBinary file with a bad header. Attempts to download this file to a program that receives MacBinaries (like Microphone) fails, in that it does not recognize the file as a MacBinary file. This seems to occur usually when converting a BinHex file (like one downloaded off of USENET) to MacBinary with the following command:

```
fcnvt -i hex -m filename
```

DISCUSSION -----

Look at the MacBinary file that is created, and you'll notice that byte \$4A is non-zero, which is incorrect, according to the MacBinary Standard. Also, byte \$49, which should contain some of the Finder flags, usually seems to contain incorrect information. Setting byte \$4A to zero seems to fix the problem--the file will then successfully download. Note that when creating a MacBinary from an AppleSingle file, these two bytes seem to be okay and the file downloads okay.

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6707



# Tech Info Library

## EtherPort Series Cards Now Supported by Dayna

Revised: 11/10/92  
Security: Everyone

EtherPort Series Cards Now Supported by Dayna

=====

Article Created: 19 March 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Where can I get an upgraded driver for A/UX 2.0 for my EtherPort Series card?

### DISCUSSION -----

Dayna Communications has licensed some of the Ethernet technology from Novell/Kinetics/Excelan. Specifically, the EtherPort Series of cards are now supported by Dayna. If you already have the card and want to upgrade to A/UX 2.0, Dayna supplies the driver.

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Tech Info Library Article Number:6708





# Tech Info Library

## Applesoft BASIC: Moving a Listing to a Macintosh and Back

Revised: 8/14/92  
Security: Everyone

Applesoft BASIC: Moving a Listing to a Macintosh and Back

=====

Article Created: 25 January 1991  
Article Last Reviewed: 11 August 1992  
Article Last Updated:

TOPIC -----

I would like to use a Macintosh word processor to edit Applesoft BASIC files from the Apple II environment. Is there a translator to take "tokenized" Applesoft BASIC files and have them appear on the Macintosh? The tokens (PRINT, DISPLAY...) don't seem to get translated when files are moved to the Macintosh. The original version of Passport (Apple File Exchange) had that capability.

DISCUSSION -----

We don't know of an AFE Translator for Applesoft BASIC files to Macintosh text files. You can get around this limitation by "printing" the Applesoft program files to a disk file before the AFE conversion. After editing on the Macintosh, transfer the files back to the Apple II. Then, EXEC each file to make it an Applesoft file. To do this, add the following code to the existing Applesoft program:

```
1 D$ = CHR$(4)
2 PRINT D$; "OPEN PGM.LIST"
3 PRINT D$; "LIST"
4 GOTO 32766
.
.
add the existing Applesoft program here
.
.
32766 PRINT D$; "CLOSE PGM.LIST"
```

The entire Applesoft program will be saved in a text file called "PGM.LIST" and can be converted to a Macintosh format for editing.

After editing is complete, transfer the file back to Apple II text format using the file name "EDITED.FILE". Use the EXEC command to turn the text listing into an Applesoft program in memory.

```
] EXEC EDITED.FILE
```

Be sure to SAVE the program to disk or the EXEC step will have to be repeated each time the user wants to run the program.

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Tech Info Library Article Number:6710



# Tech Info Library

## Macros: Alternatives to MacroMaker

Revised: 3/19/91  
Security: Everyone

Macros: Alternatives to MacroMaker

=====

This article last reviewed: 28 January 1991

TOPIC -----

Are there other Macintosh programs, besides MacroMaker, for creating macros?

DISCUSSION -----

Affinity's Tempo II and CE Software's QuicKeys 2 both offer extensive macro capabilities. Some people use them in combination. For contact information, search the Technical Info library under "Affinity Microsystems" and "CE Software."

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Tech Info Library Article Number:6711



# Tech Info Library

## MacTCP: Using DDP/IP Gateway to Get Dynamic IP Address

Revised: 3/19/91  
Security: Everyone

MacTCP: Using DDP/IP Gateway to Get Dynamic IP Address

=====

This article last reviewed: 28 January 1991

TOPIC -----

In MacTCP, you can choose to set the addresses dynamically. If you do this, when does the server let go of that address? My problem is that every node that logs on never lets go of an address--so in a short time, all addresses are taken although only a few people are logged on.

DISCUSSION -----

When you choose to have MacTCP use a DDP/IP gateway to get a dynamic IP address, the address assignment is completely controlled by the DDP/IP gateway. Each DDP/IP gateway may work slightly differently in its address allocation and de-allocation schemes.

For example, the Shiva FastPath running KIP will de-allocate an allocated IP address if it cannot contact the AppleTalk based Macintosh for 5 minutes. It keeps an NBP ARP table which contains one AppleTalk net/node number entry for each dynamic IP address for which it has allocated an address. It then uses this list to contact the AppleTalk-based Macintosh once every 2 minutes to find out if it's still alive and active. If it cannot contact the AppleTalk-based Macintosh, it then frees the IP address for reuse.

I'm not sure what DDP/IP gateway you're using, but it should not be acting the way you describe.

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Tech Info Library Article Number:6714



# Tech Info Library

## AppleTalk: Worldwide Network Issues

Revised: 3/19/91  
Security: Everyone

AppleTalk: Worldwide Network Issues

=====

This article last reviewed: 28 January 1991

TOPIC -----

I have three questions involving AppleTalk on a worldwide network at a top investment bank:

- 1) Are file accesses across the net controlled by AppleShare, or is something else controlling the file access?
- 2) When the packet-switched network re-routes lines, we can experience delays of 5 minutes or more. The connections re-route, but usually we seem to lose our network file connection. What happens to an AppleShare request when its response is delayed for that long? We saw (using a datascope on the line) that if the request for servers timed out, the response was ignored. Does a similar situation take place in the case of a read?
- 3) Does the modification to the GNRL resource affect only the initial call? If the server becomes available quickly, does that shorten the time-out that AppleShare will use for all server access while the server is mounted?

DISCUSSION -----

- 1) AppleShare (AFP calls) controls all access to the remote files, including the handling any time-out values associated with the function of accessing a file. By "controlled", we assume you mean any function that pertains to successfully opening, reading, or writing to a file stored on an AFP server. There are many AppleTalk protocol functions associated with AFP transactions that are not directly considered a controlling aspect of manipulating a remote file. These functions do not control access to the individual files so much as they control access to the media being using to transport the AFP calls.

If you are using standard file system calls and if the file you're trying to access is located on an AFP server, all local file system calls such as PBOpen, PBRead, FSRead, etc. are filtered out and transformed into equivalent AFP calls.

- 2) The 5-minute delay is going to present a real problem to AppleShare, or to be more precise to the ASP protocol. The session timer for an AppleShare file server connection is set to 2 minutes. Once this timer expires, the session will terminate, and you will lose your server connection. The retry count for the read request is set to infinite, so a read request never really times out.

The session timer is restarted each time a tickle packet is received by either the workstation or the server. Tickle packets are sent out every 60 seconds by both the server and the workstation as part of the ASP protocol, to allow a way of detecting that the other end of the connection has gone down. There is no easy way to reset this timer value.

- 3) If you modify the GNRL resource in the AppleShare chooser document, it will affect every NBP lookup that is done from the Chooser. The Chooser uses these values to determine the NBP lookup interval and retry values for the current NBP transaction. The default of 0705 tells the chooser to send 5 NBP lookup requests at an interval of 7/8 second. This process is repeated in an infinite loop until the user closes the Chooser.

#### Chooser Event Flow Example:

User opens chooser and selects the AppleShare CDEV  
GNRL resource -4096 loaded = (5002)  
NBP look up mechanism started

#### NBP Loop:

Get NBP ID for this transaction  
(Note: All NBP request and replies for this loop will use this ID)

Send first look up (NBP ID = "New")  
Collect and display responses from the NBP look up ID "New"  
Wait 10.6 seconds

Send second look up (NBP ID still = "New")  
Collect and display responses from the NBP look up ID "New"  
Wait 10.6 seconds

Discard all buffers and data associated with NBP ID "New"  
(Note: If a response is received for NBP lookup ID = "New" after this point the reply data would be discarded and the device would not be added to the list in the Chooser.)  
Do some other misc. cleanup (approximate time, 1 second)

goto NBP Loop

End NBP Loop:

With the retry timer set to such a large value, the multiple retry count is really not necessary. On the other hand, it doesn't hurt anything either, and it effectively increases the time you'll wait for NBP replies to over 20 seconds for the current transaction. The idea behind the retry count is to send several lookup requests in quick succession (default is less than 1 second) in case there are devices which cannot respond, because they are busy or because the previous packet never reached them.

The reason that increasing the interval timer helps in the case of remote servers is directly tied to the way the NBP mechanism works. The chooser maintains only 1 NBP lookup request at a time, tracking all replies to that request by way of the NBP ID mechanism. Replies that are received that do not match the current request ID are discarded. The request ID is maintained only for the current NBP request; the interval and retry counters for this request can be tuned via the GNRL resource. In other words, if you set the retry counter to 10 and the interval timer to 50, the NBP ID would be maintained for 10 requests at an interval of 10.6 seconds. The GNRL resource is documented in "Inside Macintosh, Volume 4," page 216.

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Tech Info Library Article Number:6715



# Tech Info Library

## System Software 6.0.7 Works With Mobius Accelerators

Revised: 3/19/91  
Security: Everyone

System Software 6.0.7 Works With Mobius Accelerators

=====

This article last reviewed: 28 January 1991

TOPIC -----

Does System Software 6.0.7 work with the Mobius accelerators?

DISCUSSION -----

According to the Technical Support people at Mobius, yes, System Software 6.0.7 does work properly with their Mobius accelerators. For contact information, search the Technical Info library under "Mobius Technologies, Inc."

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Tech Info Library Article Number:6717





# Tech Info Library

## Font Substitution Disabled with Fractional Widths On

Revised: 3/19/91  
Security: Everyone

Font Substitution Disabled with "Fractional Widths" On

=====

Article Created: 28 January 1991  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

My PostScript printer won't print using Font Substitution when printing from a Macintosh Plus. "Fractional Widths" are set to on, thus preventing Font Substitution from occurring.

I need a way to turn off Fractional Widths without using some program like Microsoft Word. Our office uses MacWrite versions 4.5 and 5.0. We want to compose documents in Geneva and print with a PostScript font (Helvetica).

Is there some INIT or small program that turns off Fractional Widths to allow Font Substitution? Alternatively, is there a good, readable, public-domain, bit-mapped Font that will substitute for the bit-mapped Helvetica? With it, can I create documents in this font and print them in Helvetica with Fractional Widths on?

DISCUSSION -----

You raise a couple of issues we'll attempt to address below.

You mention a problem that your print job won't "print" when you use Font Substitution. During our experimentation, we encountered an intermittent bug with MacWrite. Text imported to it via the Clipboard (copy and paste) didn't always print, regardless of whether font substitution is on or off.

The print job would appear to download to the printer OK, but the job would flush without printing (blank paper comes out of the printer). This is a problem Claris is aware of, and they recommend saving the document to a text format from whatever application you are using, then opening the file from within MacWrite.

You state that when Fractional Widths is enabled, font substitution will not occur. This is a correct response. Font substitution is disabled in all cases where fractional pixel widths are enabled. The default for Fractional Widths is disabled. It is the domain of the application to enable it if desired.

We don't recall ever seeing a utility that will toggle SetFractEnable on and off, but such a program doesn't make a lot of sense to us, as each program needs to call SetFractEnable in the Macintosh ROM. One application's setting will have no effect on another program's setting.

We don't think substituting a bitmapped LaserWriter font will help here. Aside from the printing problem you report, one possible workaround is to select Helvetica as a screen font, so no font substitution will be required at all when printing. To this end, Claris made Helvetica the default font in MacWrite II. MacWrite has no provision for turning off fractional widths. However, MacWrite II does have this ability. Upgrading to MacWrite II may be another option.

Another alternative is to change the document's font to Helvetica prior to printing, perhaps using a program like QuicKeys to streamline the operation if desired.

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Tech Info Library Article Number:6718



# Tech Info Library

## AppleShare: Product to Limit Concurrent Launches

Revised: 8/13/91  
Security: Everyone

AppleShare: Product to Limit Concurrent Launches

=====

Article Created: 28 January 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a question about shared applications on an AppleShare server. I want the ability to restrict the number of concurrent launches of an application to the number licensed from the application's vendor. We know that AppleShare doesn't do this now, and the Macintosh OS doesn't necessarily support this function either.

OS/2 LAN Manager has this capability, and people are using this function to save money and reduce support costs by having only one copy of the application to update for all of its DOS users on the network.

Do you know of any third-party utilities that will restrict the number of concurrent launches to an application on a server? Granted, application vendors don't normally license their software this way. However, I could still purchase x number of copies of an application and then impose the limit of x concurrent launches of the application and still save money on the support costs and the reduce the total number of copies that would be needed.

DISCUSSION -----

You are correct that AppleShare doesn't now limit the concurrent number of times an application is launched.

AppleShare Product Management brought to our attention a product described in the following article (by Eric J. Adams) from the March 13, 1990, issue of MacWEEK:

"Hanover, N.H.--A Dartmouth College math professor has developed a network-based software-management program that solves several problems

associated with distribution and piracy prevention.

"The program, called KeyServer, is now in use at Dartmouth, and its developer, Dr. Denis Devlin, hopes to begin commercial marketing later this year.

"KeyServer's installation program lets administrators modify popular applications, based on the provisions of their site license, so they will run only after receiving a "launch enable" message over the network. To launch copies of modified programs from a local hard disk, each user must have a "network pass," which is installed as a Startup document (INIT) in the user's system folder.

"If the maximum number of users allowed by the site license is using the program simultaneously, KeyServer will not give access to a prospective user. Instead, it passes a message that "All licensed copies are currently in use." When the program is freed, KeyServer returns a pop-up message to the prospective user, indicating that a launch is possible.

"KeyServer also allows network administrators to monitor current software access and generates a usage log, which can be used to negotiate or renegotiate site licenses with vendors, Devlin said. Several large vendors have expressed interest in the program, he added.

"It allows us to make a wide variety of software available without having to put a lot of money down for a site license on a bet that the program will be used," said Larry Levine, director of user services for the more than 5,000 Macintoshes on-line at Dartmouth. "We can freely distribute copies of programs without giving away control of their use."

"KeyServer differs from other Macintosh software management programs because "Only the command to launch comes over the network," Devlin said. "The programs reside on the user's hard disk, cutting down on network traffic tremendously."

"KeyServer also allows the administrator to turn access to a program on or off for any length of time or to shut off access to old versions of software. The program does not require a dedicated server.

"Devlin is currently beta testing KeyServer at industry sites and negotiating licensing agreements with vendors. Through his company, Sassafras, Devlin hopes to have shrink-wrapped versions ready by summer. Though pricing has not been set, Devlin said it will be tied to the number of nodes per network."

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Tech Info Library Article Number:6719



# Tech Info Library

## Display Card 8•24GC Works with the 12-Inch RGB Monitor

Revised: 5/1/95  
Security: Everyone

Display Card 8•24GC Works with the 12-Inch RGB Monitor

=====

Article Created: 10 January 1991  
Article Reviewed/Updated: 1 May 1995

TOPIC -----

Does the 8•24GC card support the 12-inch RGB monitor?

DISCUSSION -----

The 12-inch RGB monitor and the 8•24GC card work very well together.

For several weeks now, we have used the Macintosh 12-inch RGB Display with both the 8•24 and the 8•24GC cards. We have had no difficulty in using either card with this monitor. I have tried different 12-inch RGB Displays, all with complete success.

Article Change History:  
01 May 1995 - Reviewed for technical accuracy.

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Tech Info Library Article Number:6722



# Tech Info Library

## PUBLIX

Revised: 7/15/93  
Security: Everyone

PUBLIX

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Article Created: 19 March 1991  
Article Reviewed/Updated: 15 July 1993

PUBLIX

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Specializing in publications for educational computing.

Syllabus for the Macintosh, a bimonthly newsletter covering higher education curriculum solutions.  
QUERY: An Information Source for Administrative Computing in Higher Education, quarterly publication.

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Tech Info Library Article Number:6723



# Tech Info Library

## DAL 1.2: Working with VAX Rdb/VMS Run-Time Version

Revised: 6/29/92  
Security: Everyone

DAL 1.2: Working with VAX Rdb/VMS Run-Time Version

=====

This article last reviewed: 29 June 1992

TOPIC -----

Will DAL (Data Access Language) 1.2 work with a run-time version of VAX Rdb/VMS? Or does it require the full development version?

DISCUSSION -----

Data Access Language 1.2 should work with either version of VAX Rdb/VMS, whether run-time or full-development version. The full-development version of VAX Rdb/VMS lets you design and maintain Rdb databases while the run-time version lets end-users use (query, update) Rdb databases only.

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Tech Info Library Article Number:6726



# Tech Info Library

## Relisys

Revised: 7/16/93  
Security: Everyone

Relisys

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 30 November 1992

Relisys  
-----

320 S. Milpitas Blvd.  
Milpitas, CA 95035

408-945-9000

408-945-0587 Fax

Company Profile:  
Hardware, specializing in the Tefax facsimile transceiver that integrates fax  
with other communications capabilities.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6727





# Tech Info Library

## **Boston Companies, Inc. (BCI)**

Revised: 4/4/97  
Security: Everyone

Boston Companies, Inc. (BCI)

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 4 April 1997

Boston Companies, Inc. (BCI)

-----

15 Wake Robin Rd.  
Sudbury, MA 01776

508-443-0075

Fax: 508-443-0079

Company Profile:  
Software, specializing in database and accounting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6728



# Tech Info Library

## Data Access Language: Union Command Not Supported

Revised: 6/30/92  
Security: Everyone

Data Access Language: Union Command Not Supported

=====

Article Created: 19 March 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

### TOPIC -----

I have found a problem with the DAL "Union" command. A query returns a syntax error, requesting that I enclose the "Union" keyword in semicolons. When I do this, I get another error that the procedure "Union" is not defined. Any suggestions?

### DISCUSSION -----

As of release 1.3.5 of the DAL servers the SQL "Union" statement is supported for all DBMSes which allow it.

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Tech Info Library Article Number:6730



# Tech Info Library

## A/UX 2.0: Commando Problem (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX 2.0: Commando Problem (8/94)

=====

Article Created: 14 February 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

I am running A/UX 2.0 on a Macintosh IIfx. If I invoke Commando using Command-K on a period, the command shell crashes and disappears.

DISCUSSION -----

This problem has been resolved in A/UX 3.0 and later.

Article Change History:  
29 Aug 1994 - Added info about A/UX 3.0.

Support Information Services

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Created: 3/19/91  
Author: WK  
Source: PTS  
Library: TECHINFO

Tech Info Library Article Number:6731



# Tech Info Library

## A/UX: Problem Printing to ImageWriter from Mac OS (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Problem Printing to ImageWriter from Mac OS (9/94)

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 8 September 1994

### TOPIC -----

I am running A/UX on a Macintosh IIfx. If I switch from A/UX to the Macintosh OS and try to print from a Macintosh application to the ImageWriter (connected via the printer port) the system won't print.

### DISCUSSION -----

If the system prints in A/UX but not in Macintosh OS, make sure that the direct, serial-printer driver for the ImageWriter is installed and configured properly.

If the printer does not print in A/UX either, we know of a problem when the printer is directly connected to the PRINTER port under either mac32 or mac24 environment (print from a Macintosh application). However, there is no problem on the direct connect MODEM port.

Article Change History:  
08 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6732



# Tech Info Library

## AppleShare PC: How to Print Color

Revised: 3/19/91  
Security: Everyone

AppleShare PC: How to Print Color

=====

This article last reviewed: 1 February 1991

TOPIC -----

Is it possible to print to a color printer through AppleShare PC? I am running a PS/2 with AppleShare PC 2.01, Windows 3.0, and Paintbrush from Windows connected to an NEC Colormate printer. If I configure the Paintbrush from Windows to print black and white, I can get a printout, but it doesn't work in color mode.

DISCUSSION -----

As you know, the two types of printing that AppleShare PC supports are PostScript and Epson LQ2500 emulation. The PostScript mode assumes your application knows how to communicate correctly using PostScript and just passes the data to the printer without modification. This is called pass-through mode.

Epson LQ2500 emulation works a bit differently, in that AppleShare PC must translate the plain text and Epson printer control codes into text and codes for the printer being used; PostScript LaserWriters and ImageWriters are supported.

In the case of LaserWriter Epson emulation, an Epson emulation dictionary is downloaded at the start of each job. Once this is done, the print data is sent to the emulation dictionary for interpretation and printing. Because ImageWriters have essentially no processing abilities, they require AppleShare PC to do all the translation for them. Unfortunately, no color emulation features are provided in either mode.

The only way we can think of to get color printing from AppleShare PC would be to use a color PostScript printer with software that supported it. Since AppleShare PC just passes the PostScript print data to the printer, it will let any PostScript data, color commands included, be sent.

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Tech Info Library Article Number:6735



# Tech Info Library

## VAX/VMS: How to Set Up Dial-Up Port for DAL

Revised: 6/29/92  
Security: Everyone

VAX/VMS: How to Set Up Dial-Up Port for DAL

=====  
Article Created: 19 March 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

What is the configuration on MicroVAX 3100 for setting up remote login through a modem?

I need dial into the VAX at my office from a customer site to demo Data Access Language. I have tried to set up terminal TTA2 as remote terminal without success.

DISCUSSION -----

The procedure to set up a dial-up port is the same on VAX/VMS operating system, independent of what processor you have. The difference is the name of the terminal port you are going to use. For the process to work, the terminal port must support modem control.

On the MicroVAX 3100, terminal port TTA2 supports modem control. The following command should work:

```
$ SET TERMINAL/PERMANENT/DEVICE=VT100/MODEM/HANGUP/SPEED=2400 TTA2:
```

You may substitute the device name and the speed to whatever values you are using.

Also, make sure that the cable to the modem has the correct pins wired to support modem signals. One such modem cable is the Digital BC22E-xx where xx is the cable length in feet. It is a round, 16-wire, fully shielded, EIA-232-C/CCITT V.28, male-to-female molded connectors cable for connection of asynchronous modems.

If after trying this solution, it still does not work, you might want to

have Digital Field Service check to see if your terminal port is bad.

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Tech Info Library Article Number:6736





# Tech Info Library

## IBM 8209/AppleTalk: Support Alert Information

Revised: 3/19/91  
Security: Everyone

IBM 8209/AppleTalk: Support Alert Information

=====

This article last reviewed: 1 February 1991

TOPIC -----

IBM has a relatively new product, model 8209, that is a media access control (MAC) sub-layer bridge. Most likely encountered in a Token-Ring to Token-Ring bridging configuration, it also can be configured for Token Ring to Ethernet. Do you have any details?

DISCUSSION -----

We recently had the opportunity of observing/troubleshooting such an environment involving an 8209, an IBM mainframe on Token Ring supporting TCP/IP, Macintoshes running both Phase 1 and Phase 2 AppleTalk on Ethernet, Macintoshes on Token Ring, and a variety of TCP/IP hosts on Ethernet. This leads to several interesting discoveries.

IBM 8209 and AppleTalk

-----

Ideally, with the 8209 providing Token-Ring-to-Ethernet bridging services, Macintoshes on both transports would see the bridged network as a single logical network. Unfortunately, for a number of reasons, this is not true.

The first problem stems from the 8209's generosity in forwarding all datalink (MAC) broadcasts and multicasts. If you are running ANY Phase 1 EtherTalk, adding an 8209 into the net automatically generates Phase 1 TokenTalk. This is useless traffic, because the TokenTalk drivers expect Phase 2 protocols. As far as we can tell, it is not dangerous traffic--it is safely ignored by all nodes. But it does take up bandwidth, and if the Phase 1 Ethernet is large and has many routers, there can be significant broadcast traffic forwarded onto the Token Ring.

The answer here would be to filter Phase 1 EtherTalk at the 8209.

Token Ring and Ethernet do not agree on the order of bits. So, the 8209

flips the bits of the (MAC) datalink-level addresses when it forwards the packets. Normally, this affects only the destination and source addresses in the packet header. However, address resolution protocols like TCP/IP ARP and AppleTalk's AARP also carry MAC-level addresses as a part of their data portion of the packet.

The 8209 is specially programmed to look for TCP's ARP and to go down inside the data, flipping the bits of the embedded MAC address. Later, when a Token Ring host wants to talk with an Ethernet node, it uses the flipped version of the MAC address, which, when encountered by the 8209, is flipped back and thus delivered correctly.

The 8209 is NOT specially programmed to assist AARP. Thus, the AARP address is stored in the Token Ring AppleTalk node in its "unflipped" form. Then, should it be used later to address a packet, the 8209 will flip the bits when forwarding back to Ethernet. Now, the packet is incorrectly addressed, and cannot be delivered.

The long and short of this is that when using an IBM 8209 to bridge Token Ring and Ethernet, AppleTalk nodes on the ring and Ethernet cannot communicate, because they can never AARP correctly.

Curiously, if the Token Ring is used only as a backbone, and a Macintosh on Ethernet wants to talk to a Macintosh on another Ethernet, with both Ethernets attached by 8209s, this connection will work. In fact, as long as you go through an even number (2,4,6,8...) of 8209 bridges, connection is possible. When there is an odd number, connection will fail. Note that this makes some extremely bizarre network configurations possible, like a system of alternating Token Rings and Ethernets connected by 8209s, where:

- All the Ethernets would have AppleTalk connectivity.
- All the Token Rings would have AppleTalk connectivity.
- The rings and Enets would have AppleTalk connectivity between them.

You may remember that under AppleTalk Phase 2, Apple uses multicast addressing for all protocol "overhead" packets, like RTMPs, NBPs, and ZIPs. You may also recall that Apple has a range of 254 addresses used in Ethernet and 19 (different) addresses in Token Ring available for multicasts.

The fact that we use different ranges of addresses (in addition to the bit flipping described above) ensures that AppleTalk nodes cannot interoperate across an 8209 bridging Ethernet and Token Ring. Just look at the boot process.

A node begins by AARP'ing for a protocol address (multicast). This AARP is forwarded by the 8209, but because the bits are flipped, a response to the AARP probe would be lost on the return trip. So, the node assumes that its protocol address is unique, and then proceeds to check for a router by multicasting (protocol broadcasting) a ZIP GetNetInfo request. If there is an AppleTalk router present on my cable (whether we are on Ethernet or

Token Ring), we are okay. The router hears my request, provides the needed information about the cable, and I re-AARP if necessary.

However, if the router is on the other side of the 8209, the multicast is forwarded. Even if the bit-flipping wasn't a problem (say, if IBM were to change the 8209 software to support AARP), it will still not make connection with the router, because a TokenTalk router expects multicast addresses in a different range than a EtherTalk node can send, and vice versa.

The only answer is to use an AppleTalk router, which manages protocol and zone multicast addresses for each data link appropriately.

In short, AppleTalk and 8209s don't mix. Don't use bridging strategies between AppleTalk Token Ring and Ethernet networks.

There are additional problems with 8209 and AppleTalk described in a separate article "IBM 8209/MacTCP: Support Alert Information."

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Tech Info Library Article Number:6737



# Tech Info Library

## Macintosh IICI, IISI, LC, and LC II: Video Pinouts

Revised: 2/3/93  
Security: Everyone

Macintosh IICI, IISI, LC, and LC II: Video Pinouts

=====

Article Created: 19 March 1991

### Article Change History

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02/03/93 - CORRECTED

- The IICI and IISI do support the Apple Portrait Display with built-in video.

02/03/93 - UPDATED

- Added information from article titled "Macintosh IISI, IICI, LC: Monitor Compatibility"

09/15/92 - REVISED

- To clarify what monitors the IICI & IISI video port supports.

### TOPIC -----

What are the differences between the Macintosh IICI on-board video pinouts and signals versus the Macintosh IISI, Macintosh LC, and Macintosh LC II? What pin can I "sense" to see a 13-inch RGB monitor connected when there is none connected (that is, testing a projector connected but with no monitor attached)?

### DISCUSSION -----

#### Pinouts

-----

The Macintosh IICI, Macintosh IISI, Macintosh LC, and Macintosh LC II have the same pinouts for their built-in video ports:

| Pin | Function      |
|-----|---------------|
| --- | -----         |
| 1   | Red Video GND |
| 2   | Red Video     |

|       |                       |
|-------|-----------------------|
| 3     | CSynch                |
| 4     | Mon. ID 1             |
| 5     | Green Video           |
| 6     | Green Video GND       |
| 7     | Mon. ID 2             |
| 8     | N.C.                  |
| 9     | Blue Video            |
| 10    | Mon. ID 3             |
| 11    | CSynch and VSynch GND |
| 12    | VSynch                |
| 13    | Blue Video GND        |
| 14    | HSynch GND            |
| 15    | HSynch                |
| Shell | Shield GND            |

Sense Codes

-----

| Sense Pins |   |   |                              | Hor x Vert<br>Pixels | Band-<br>width<br>(MHz) | Vert<br>Refresh<br>(Hz) | Horiz<br>Scan<br>(KHz) |
|------------|---|---|------------------------------|----------------------|-------------------------|-------------------------|------------------------|
| 10         | 7 | 4 | Display                      |                      |                         |                         |                        |
| 0          | 0 | 1 | Apple Portrait Display       | 640 x 870            | 57.2832                 | 75                      | 68.9                   |
| 0          | 1 | 1 | Apple Two-Page Mono Monitor  | 1152 x 870           | 100                     | 75                      | 68.7                   |
| 0          | 0 | 0 | Macintosh 21" Color Display  | 1152 x 870           | 100                     | 75                      | 68.7                   |
| 1          | 1 | 0 | 12" Apple Monochrome Monitor | 640 x 480            | 30.24                   | 66.7                    | 35.0                   |
| 1          | 1 | 0 | 13" AppleColor RGB Monitor   | 640 x 480            | 30.24                   | 66.7                    | 35.0                   |
| 0          | 1 | 0 | 12" AppleColor RGB Monitor   | 512 x 384            | 15.6672                 | 60.15                   | 24.48                  |
| 1          | 0 | 0 | Interlaced display           | -                    | 12.2727                 | -                       | 15.7                   |

0 - Grounded    1 - Not Connected

Extended Sense Codes

-----

| Sense Pins |   |  |                             | Hor x Vert<br>Pixels | Band-<br>width<br>(MHz) | Vert<br>Refresh<br>(Hz) | Horiz<br>Scan<br>(KHz) |
|------------|---|--|-----------------------------|----------------------|-------------------------|-------------------------|------------------------|
| 4-10       | 7 |  | Display                     |                      |                         |                         |                        |
| 0          | 1 |  | Macintosh 16" Color Display | 832 x 624            | 57.63                   | 75                      | 49.7                   |

0 - Tied Together    1 - Not Connected

Configurations

-----

|                 | Macintosh<br>LC/LC II | Macintosh<br>IIsi | Macintosh<br>IIci |
|-----------------|-----------------------|-------------------|-------------------|
| 12" RGB Display | X                     | X                 | X                 |

|                     |   |   |   |
|---------------------|---|---|---|
| 12" Monochrome      | X | X | X |
| High-Resolution RGB | X | X | X |
| Portrait Display    | - | X | X |
| Two-Page Display    | - | * | * |
| 16" Color Display   | - | * | * |
| 21" Color Display   | - | * | * |

(X indicates compatibility, \* indicates the need for a NuBus interface)

In the case of the Macintosh IIsi, you need to install a NuBus Adapter Card first.

#### VGA Compatibility

-----

To connect a VGA monitor to the Macintosh LC or LC II video port, a cable with the following configuration is required. Third-party cable vendors should have these cables available for purchase.

#### Macintosh LC/LC II

DB-15

VGA Connector

-----

-----

|    |       |                                                     |       |    |
|----|-------|-----------------------------------------------------|-------|----|
| 2  | ----- | Red Video                                           | ----- | 1  |
| 1  | ----- | Red Ground                                          | ----- | 6  |
| 9  | ----- | Blue Video                                          | ----- | 3  |
| 13 | ----- | Blue Ground                                         | ----- | 8  |
| 5  | ----- | Green Video                                         | ----- | 2  |
| 6  | ----- | Green Ground                                        | ----- | 7  |
| 15 | ----- | Hsync                                               | ----- | 13 |
| 12 | ----- | Vsync                                               | ----- | 14 |
| 14 | ----- | Sync Ground                                         | ----- | 10 |
| 10 | ----- | \| |  |  |
| 7 | ----- | \|Connect 7 and 10 so the sense pin ID will equal VGA |       |    |

A few issues to remember when connecting VGA monitors to the Macintosh LC or LC II:

- VGA monitors may have variances when purchased from different VGA monitor vendors. It is suggested that a particular monitor be tested for compatibility with the Macintosh LC or LC II before making a purchase decision.
- VGA monitors from different vendors have different image quality specifications. There may be significant differences between the Apple logo monitors and the VGA monitors. A side-by-side review of the monitors should be done before deciding which monitor to buy.
- When a VGA monitor is connected as described above, the resolution is 640 x 480. The bit-depth supported depends on the amount of VRAM installed. If the Macintosh LC 256K VRAM SIMM is installed, 4-bit color

(16 colors) is supported. With the Macintosh LC 512K VRAM SIMM installed, 8-bit color (256 colors) is supported.

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Tech Info Library Article Number:6741



# Tech Info Library

## AppleTalk Phase 2: Upgrade Utility

Revised: 3/21/91  
Security: Everyone

AppleTalk Phase 2: Upgrade Utility

=====  
  
Article Created: 15 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

What is the AppleTalk Phase 2 Upgrade Utility? What does it do?

DISCUSSION -----

The AppleTalk Phase 2 Upgrade Utility makes it possible for AppleTalk Phase 1 routers to operate concurrently in an Internet with the AppleTalk Internet Router. The AppleTalk Phase 2 Upgrade Utility is an INIT that is installed in the System Folder of the Macintosh running the AppleTalk Internet Router software.

Why the AppleTalk Phase 2 Upgrade Utility Is Necessary

-----  
The AppleTalk Internet Router sends out AppleTalk Phase 2-style Routing Table Maintenance Protocol (RTMP), Name Binding Protocol (NBP), and Zone Information Protocol (ZIP) packets. AppleTalk Phase 1 routers cannot interpret the data within these packets.

With the AppleTalk Phase 2 Upgrade Utility installed, any RTMP, NBP, or ZIP packet about to be sent out over a cable with an AppleTalk Phase 1 router on it, will be sent as an AppleTalk Phase 2-style packet and will be converted by the AppleTalk Phase 2 Upgrade Utility and sent out as an AppleTalk Phase 1-style packet as well.

Note: Only RTMP, NBP, and ZIP packets are converted to AppleTalk Phase 1-style packets. No other packets types need to be converted.

The AppleTalk Phase 2 Upgrade Utility also makes it possible for the AppleTalk Internet Router to receive AppleTalk Phase 1-style RTMP, NBP, and ZIP packets. When the AppleTalk Phase 2 Upgrade Utility INIT is installed,



it throws a switch in the AppleTalk Internet Router that lets the router accept and process AppleTalk Phase-1-style RTMP, NBP, and ZIP packets. The AppleTalk Phase 2 Upgrade Utility does not convert these packets. The AppleTalk Internet Router has code built into it that lets it interpret these packets properly.

What the AppleTalk Phase 2 Upgrade Utility Does Not Do

-----  
It does not convert all outgoing AppleTalk Phase 2 packets to AppleTalk Phase 1 packets. This is not necessary--only RTMP, NBP, and ZIP packets need to be converted.

The AppleTalk Phase 2 Upgrade Utility does not work with any third-party router; it works only with the AppleTalk Internet Router.

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Tech Info Library Article Number:6743



# Tech Info Library

## StyleWriter Printer: Specifications (Discontinued)

Revised: 7/23/96  
Security: Everyone

StyleWriter Printer: Specifications (Discontinued)

=====

Article Created: 14 March 1991  
Article Reviewed/Updated: 12 October 1993

TOPIC -----

This article gives specifications for the Apple StyleWriter printer.

DISCUSSION -----

Marking Engine

-----  
Thermal ink jet

RAM

---  
64KB

Resolution

-----  
- 360 dots per inch  
- 180 dots per inch (in Draft mode)

Interface

-----  
Apple serial

Ink Cartridge

-----  
Cartridge capacity: up to 500 pages, user-replaceable

Font Families

-----  
Times, Helvetica, Courier, and Symbol (TrueType fonts) and any new TrueType fonts developed

Type Styles

-----

Regular, bold, italic, and bold italic

Speed

-----

Normal mode: 1/2 page per minute (average)

Draft mode: 1 page per minute (maximum)

Paper Feed

-----

- Detachable cut-sheet feeder accurately feeds up to 50 sheets automatically
- Rear manual-feed slot ideal for printing on materials like envelopes, labels, transparencies, and heavy paper
- Front manual-feed slot provides easy access for standard paper

Recommended Paper

-----

- 20-lb. cotton bond paper (16- to 28-lb. paper acceptable)
- #10 business envelopes
- 3M brand CG3480 transparency film
- Labels

Printable Surface

-----

- Maximum printable line: 8 inches (203.2mm)
- Minimum top and bottom: 0.25 inch (6.35mm)
- Minimum left and right: 0.25 inch (6.35mm)

Weight and Dimensions

-----

- Height: 12.5 inches (32cm)
- Width: 13.25 inches (33.6cm)
- Depth (with output tray closed): 5.6 inches (14.2cm)
- Weight: 7.5 lbs. (3.4kg)

Environment

-----

- Temperature: 59 to 86 degrees F (15 to 30 degrees C)
- Humidity: 20% to 70%

Power Requirements

-----

- U.S./Japan: 100 to 120Vac, 48 to 62Hz
- Europe/Australia: 220 to 240Vac, 46 to 62Hz

Power Adapter specs

-----

- Minimum Voltage 7.5 VDC
- Nominal Voltage 9.5 VDC
- Maximum Voltage 16.0 VDC

The adapter usually reads around the 9.5 volt DC value but they may read

anywhere between 7.5 and 16 volts DC and be fine.

#### Image Utility

-----  
The Image Utility, included with the StyleWriter, lets you convert 300-dpi half-tone images (PICT format) to 360-dpi printable images.

#### System Requirements

- 
- Macintosh personal computer with at least 1MB RAM
  - System software 6.0.7 or later

#### Article Change History:

23 Jul 1996 - Added System requirements.

12 Oct 1993 - Added voltage specs for the power adapter

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Tech Info Library Article Number:6744



# Tech Info Library

## Personal LaserWriter LS: Specifications (Discontinued 5/93)

Revised: 9/27/93  
Security: Everyone

Personal LaserWriter LS: Specifications (Discontinued 5/93)

Article Created: 14 March 1991

TOPIC -----

This article gives specifications for the Apple Personal LaserWriter LS printer.

DISCUSSION -----

Marking Engine

-----  
Canon LPBP-LX laserxerographic

RAM

---  
512KB, upgradeable to 1MB

Controller

-----  
Application-Specific Integrated Circuit (ASIC)  
- 512KB of RAM and RS-422 serial interface

Resolution

-----  
300 dots per inch

Interface

-----  
High-speed RS-422 serial interface, externally clocked (909Kb/sec.)

Font Families

-----  
Times, Helvetica, Courier, and Symbol (TrueType fonts) and any new TrueType fonts developed

Type Styles

-----

Regular, bold, italic, and bold italic

Speed

-----

4 pages per minute (maximum)

Recommended Paper

-----

- 20-lb. photocopy paper or typewriter bond (16- to 28-lb. paper acceptable)
- Envelopes (3.5x7 to 7.4x10.5)
- Medium-weight transparency film
- Labels

Paper Sizes

-----

- U.S. letter
- U.S. legal
- A4
- B5

Paper Feed

-----

- Multipurpose tray, manual or automatic: up to 50 sheets or 5 envelopes
- Optional paper cassette: 250 sheets of 20-lb. paper
- Optional legal cassette: 250 sheets of legal-size paper
- Optional envelope cassette: 15 envelopes

For labels, the multipurpose tray and manual feed must be used.

Printable Surface

-----

- Maximum printable line: 8 inches (203.2mm)
- Minimum top and bottom: 0.25 inch (6.35mm)
- Minimum left and right: 0.25 inch (6.35mm)

Actual printable area may vary depending on the application.

Weight and Dimensions

-----

- Height: 8 inches (20.3cm)
- Width: 15 inches (38cm)
- Depth: 18.3 inches (46.4cm)
- Weight: 31 lbs. (14.5kg)

Environment

-----

- Temperature: 50 to 90 degrees F (10 to 32 degrees C)
- Humidity: 20% to 80%

Power Requirements

-----

- U.S./Japan: 100 to 115Vac, 50 to 60Hz
- Europe/Australia: 220 to 240Vac, 50 to 60Hz

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Tech Info Library Article Number:6745



# Tech Info Library

## Apple Access II 1.3.1: Description and Compat (Discontinued)

Revised: 6/24/94  
Security: Everyone

Apple Access II 1.3.1: Description and Compat (Discontinued)

Article Created: 6 February 1991

TOPIC -----

I need a product description for Access II v1.3.1, which differs from version 1.2.

DISCUSSION -----

Here are the specs for Apple Access II, Version 1.3.1 (A2D2013).

Description  
-----

Apple Access II turns an Apple IIc, IIc Plus, IIe, or Apple IIGS personal computer into an intelligent terminal that can communicate with a variety of computers and on-line information services.

You can use Apple Access II with any modem that operates through an RS-232 port or by direct connection to another computer with an asynchronous port.

Features  
-----

The software supports transmission speeds of up to 9600 baud. Other features of Apple Access II include:

- All features of the Apple Modems including automatic dialing
- Automatic login to remote computers
- Emulation of TTY, ANSI VT100(TM), and VT-52(TM) terminals
- Support for special keyboard features of VT100 and VT-52 terminals including the four PF (programmable function) keys
- The ability to upload and download ASCII files to and from other computers



- Support for 40- and 80-column video displays
- Processing of downloaded data from remote systems and working with it off-line, significantly reducing timesharing costs
- Sending or receiving any type of ProDOS file
- Support for XMODEM and Binary II file transfer protocols
- The AppleWorks user interface
- Automatic communications and full disk support, including file transfer
- A command-file, programming language for development of logon scripts
- Preconfigured scripts for the following online information services:
  - Dow Jones
  - CompuServe
  - The Source
  - Delphi
  - Genie
  - Dialog Information Services
- For the IIGS, the ability to capture text directly to the printer and 64K serial buffer

#### Requirements

-----

To use Apple Access II, you need the following components:

- An Apple IIc, IIc Plus, IIe, or IIGS personal computer with at least 64K of RAM (128K recommended)
- For the Apple IIe, an Apple Super Serial Card in Slot 2
- An Apple Modem or another modem with RS-232 interface
- An RS-232 cable
- A compatible video display device
- An external disk drive or hard disk (optional)
- An 80-column card for the IIe (optional)
- A compatible printer (optional).

#### Apple Access II Kit

-----

The Apple Access II kit includes:

- Access II program disks in both 5.25-inch and 3.5-inch formats
- An interactive tutorial disk
- A user's guide.

#### Incompatibilities

-----

Apple Access II does NOT work with the following equipment:

- Apple II or II Plus
- Apple III in Apple II emulation mode
- A modem for the Apple IIe that has its own interface card.

Note: Apple Access II does NOT support split-speed transmissions (sending at one rate and receiving at another).

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Tech Info Library Article Number:6747



# Tech Info Library

## SCSI Terminator: Black Terminator Schematic

Revised: 3/25/91  
Security: Everyone

SCSI Terminator: Black Terminator Schematic

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

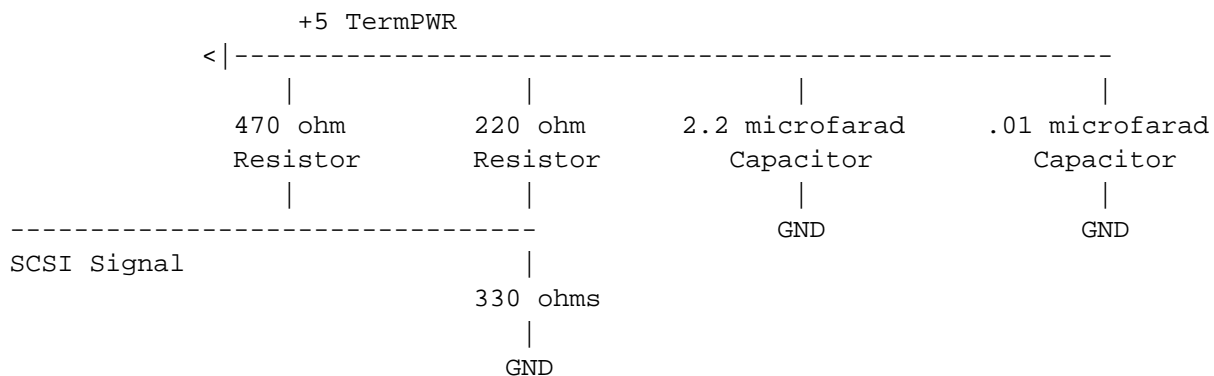
TOPIC -----

I need specifications on the black terminator 590-0705. I want to know which pin is connected and at what Ohm rate.

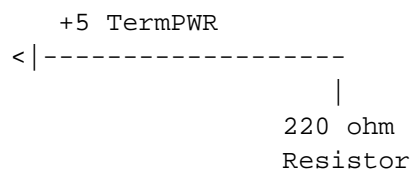
DISCUSSION -----

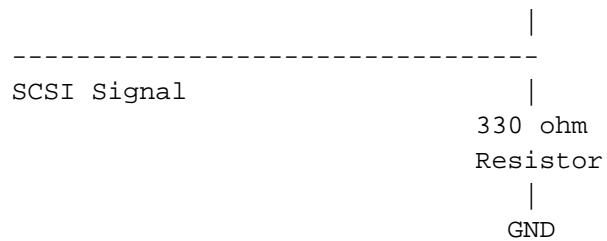
Here is the Black Terminator (590-0705-A) Schematic:

REQ and ACK lines only:



All other lines:





Note: The 2.2 and .01 microfarad capacitors are applied to the TermPWR line at one place only.

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Tech Info Library Article Number:6748



# Tech Info Library

## A/UX 2.0: Header File Problem/Fix

Revised: 11/10/92  
Security: Everyone

A/UX 2.0: "Header File" Problem/Fix

=====

Article Created: 6 February 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I've encountered a compilation problem recently while porting a program (tcsh, from OSU) to the A/UX 2.0 environment. The problem seems to be that some of the system's header files aren't compiling properly. The sample code below demonstrates the problem I've experienced:

-----

```
/* test file, called tsts.c */

/* these are well-knowns that should work */
#include <sys/errno.h>
#include <stdio.h>

/* these don't work */
#include <sys/stat.h>
#include <sys/times.h>

main()
{

}
```

Now, take a look at what I did. On the first try, I used the command:

```
cc tsts.c
```

Here is the output:

```
"/usr/include/sys/stat.h", line 48: syntax error
"/usr/include/sys/stat.h", line 48: cannot recover from earlier errors:
goodbye!
```

On the second try, I used the command:

```
gcc tst.c
```

Here is the output:

```
In file included from tst.c:7:
/usr/include/sys/stat.h:48: parse error before `dev_t'
/usr/include/sys/stat.h:54: parse error before `dev_t'
/usr/include/sys/stat.h:64: parse error before `time_t'
In file included from tst.c:8:
/usr/include/sys/times.h:29: parse error before `time_t'
```

Is there something amiss? I'm assuming the header files stat.h and times.h are identical to the header files available to you, so I've not copied them here.

DISCUSSION -----

Put the following line before the #include <sys/stat.h> line. It should work, because some of the declarations in <sys/stat.h> were defined in <sys/types.h>.

```
#include <sys/types.h>
```

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Tech Info Library Article Number:6752



# Tech Info Library

## Draw PIC Graphics: Translating to Macintosh PICT

Revised: 3/25/91  
Security: Everyone

Draw PIC Graphics: Translating to Macintosh PICT

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I translate graphical Draw PIC formats from PCs to Macintosh PICT format?

DISCUSSION -----

We do not know of a file-conversion utility that translates Draw PIC formats to Macintosh PICT.

"PICTure This" can translate Lotus PIC formats to Macintosh PICT2 format. It can also translate the following formats to Macintosh PICT2:

|       |      |              |         |            |
|-------|------|--------------|---------|------------|
| Targa | TIFF | Sun Raster   | Gem IMG | PixelPaint |
| CGM   | RIFF | X11 Bitmap   | GIF     | Lotus PIC  |
| PCX   | IFF  | Dr. Halo CUT | RLE     | Lotus BIT  |

A possible solution would be to check if the application that produces the Draw PIC format can save the documents to any of the above formats, and then use "PICTure This" to translate it to the Macintosh. Alternatively, any other PC application that can read Draw PIC formats and can write out the document in one of the above formats will work.

The company that wrote the application that produces Draw PIC formats may also be able to provide some information above what the Draw PIC format is, and how to translate it to some other format.

For contact information, search the Technical Info library under "FGM Inc."

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Tech Info Library Article Number:6754



# Tech Info Library

## Macintosh Portable: Dialing an Internal Modem

Revised: 3/25/91  
Security: Everyone

Macintosh Portable: Dialing an Internal Modem

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am having problems using the Communications Toolbox, the Apple Modem Tool, and MacTerminal 3.0 on a Macintosh Portable. I am unable to establish connection to the Macintosh Portable's internal modem when I select "Open Connection" from the menu. However, when I leave the phone number field blank in the Apple Modem Tool's connection dialog box, I have no problems establishing a connection with the internal modem.

DISCUSSION -----

We suspect that your problem is caused by an improper setting in the connection dialog box of the Apple Modem Tool. Be sure you've selected the Macintosh Portable Data Modem 2400 in the "Modem:" popup menu at the bottom of the "Connection Settings" dialog box. When we chose a different modem type under this popup menu, we duplicated the problem you describe.

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Tech Info Library Article Number:6755





# Tech Info Library

## BAD 1.1 INIT Is Shareware

Revised: 3/25/91  
Security: Everyone

BAD 1.1 INIT Is Shareware

=====

This article last reviewed: 6 February 1991

TOPIC -----

Logging onto AppleLink (with "reseller privileges") I notice the INIT BAD 1.1 is located under the User Groups icon (path: Product Questions and Answers/ Macintosh/ System Software). I have done a fairly detailed analysis of this INIT and I believe it could be useful to some of my customers.

Can I freely distribute this INIT to my resellers? Can my resellers freely distribute this to their end-users? I assume the answer is "Yes." Otherwise, I would not expect it under the User Group icon.

DISCUSSION -----

BAD 1.1 is not an Apple product. Rather, it is a shareware program by Giuseppe Carnevale from Italy. As such, it can be freely copied and distributed, but should not be distributed as an Apple-supported program. If you do distribute it, it must be made clear that the author expects payment for each station where it is actively used.

More information can be obtained from the program's documentation, or by opening the program's "About" window. This is done as follows:

- 1) With BAD active, select an already-formatted disk.
- 2) Select Erase Disk from the Finder's Special menu. Instead of the normal initialization dialog, you should be presented with BAD's own "The disk '<name>' is already initialized." dialog.
- 3) Click the BAD disk icon at the left of the dialog window and the author's address will appear.

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# Tech Info Library

## LocalTalk: IBM PC-to-VAX Connectivity

Revised: 4/8/91  
Security: Everyone

LocalTalk: IBM PC-to-VAX Connectivity

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How does an IBM PC with an Apple LocalTalk PC card and a Shiva FastPath access a VAX for terminal emulation?

DISCUSSION -----

InterCon Systems Corp. offers the "TCP/Connect" package that provides this capability. There are versions for both Macintoshes and PCs. For contact information, search the Technical Info library under "InterCon Systems Group."

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Tech Info Library Article Number:6757



# Tech Info Library

## Macintosh: Printing to DEC ScriptPrinter LN03R

Revised: 3/27/91  
Security: Everyone

Macintosh: Printing to DEC ScriptPrinter LN03R

=====

This article last reviewed: 6 February 1991

TOPIC -----

Do you know of a way to print from a Macintosh to a LN03R? I have a driver that supports modem communication, but I need something that supports a direct serial connection.

DISCUSSION -----

To our knowledge, there is no driver that lets a Macintosh print directly to the Digital ScriptPrinter LN03R. One alternative is to print to a disk file from the application and then send the file to the printer using a terminal emulation program. With the correct cable, you can communicate to the printer using a terminal emulation program like MacTerminal over the serial port. Needless to say, this is not very convenient.

Another alternative is to use the printer on the network:

- DEC LanWORKS for Macintosh offers this capability. The service is called VAXshare Print Server, and it supports Digital's LPS20, LPS40, ScriptPrinter LN03R, and Apple's LaserWriter, LaserWriter Plus, LaserWriter IINT, and LaserWriter IINTX.
- With Alisa Digital Printer Support System (ADP), an option for AlisaTalk for VAX/VMS, Macintosh users can print to Digital PostScript devices like the LN03R ScriptPrinter and the PrintServer 40. The Digital PostScript device looks like an Apple LaserWriter to the Macintosh user.

ADP makes use of VMS system queuing and printing. Features include forms and paper type control, optional job flag and trailer pages for job identification, paper tray selection, and support for the Adobe system typeface pack. Once VMS receiver process handles all Macintosh users, a new process for each job is not necessary. The software uses

standard Digital Print symbionts and automatically loads the Laser Prep dictionary at the front of each Macintosh job that is submitted.

- PacerPrint from Pacer Software, Inc., offers similar features. For more information on Alisa Digital Printer support system or PacerPrint, search the Technical Info Library using keyword "Alisa" or "PACER."

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Tech Info Library Article Number:6758



# Tech Info Library

## Novell Token Ring Network: Access from Macintosh

Revised: 3/26/91  
Security: Everyone

Novell Token Ring Network: Access from Macintosh

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I access Novell Token Ring network and its server using the existing Apple Token Ring card and also Netware for Macintosh?

DISCUSSION -----

The Novell TokenTalk support is orderable and was delivered in September 1990. This is a new version of VAP (Value-Added Process) that supports AFP (Apple Filing Protocol) 2.0 and TokenTalk.

All Netware operating systems provide an internal router that lets a Netware server connect to four different networks. No additional software is required. Note that the routing service can also be moved out of the server and into a non-dedicated workstation.

Macintosh, DOS, and OS/2 workstations can share data and resources. Macintosh users should see information stored on the network server as icons. Other workstations on the network (PCs running DOS, OS/2, or Windows/386) should see the folders and file icons from the Macintosh listed as directories and subdirectories in their workstation formats.

DOS, OS/2, and Macintosh users can share Apple LaserWriters and other Apple printers. Using an E-mail package that supports Netware Message Handling Service (MHS), the back-end store-and-forward messaging server, you can send E-mail messages, text, data, and binary files between different LANs and between wide-area networks.

For contact information, search the Technical Info library under "Novell" and the Enhancement Products Division of the Netware Products Division.

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Tech Info Library Article Number:6759



# Tech Info Library

## EtherTalk NB and EtherLink NB: Revision Numbers

Revised: 3/26/91  
Security: Everyone

EtherTalk NB and EtherLink NB: Revision Numbers

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I understand that AppleTalk Phase 2 and the Macintosh IIci require Rev. J or Rev. K of the EtherTalk NB Card, while the Macintosh IIfx requires the EtherTalk NB Card Rev. L (Rev. L is not merely an upgrade to a Rev. J or Rev. K). If this is the case, why are brand new 3Com EtherLink NB Cards (with 1990 labels on their diskettes) Rev. B?

DISCUSSION -----

3Com uses a different assembly numbering scheme for the Ethernet cards that they sell under their own label, as the 3Com EtherLink NB Card, than it does for the Ethernet cards Apple buys from 3Com and sells under its own (Apple) label as the Apple EtherTalk NB Card. The chart below shows how the 3Com EtherLink NB Cards relate to the Apple EtherTalk NB Cards:

| Apple EtherTalk NB Card<br>Assembly Number | 3Com EtherLink NB Card<br>Assembly Number |
|--------------------------------------------|-------------------------------------------|
| 2680-06 Rev. J                             | 4042-02 Rev. 09                           |
| 2680-07 Rev. K                             | 4042-03 Rev. 0A                           |
| 2680-08 Rev. L                             | 4042-04 Rev. 0A                           |
| 2680-08 Rev. M                             | 4042-04 Rev. 0B                           |

Note: The Rev. M EtherTalk NB Card has no functional modifications or differences from the Rev. L EtherTalk NB Card. The revision from "L" to "M" was made because of a process change in manufacturing and not because of any enhancements to the card. Here is a compatibility list of Macintosh systems and Apple EtherTalk NB Cards:

|                     |                |                            |
|---------------------|----------------|----------------------------|
| Macintosh II or IIX | Macintosh IICx | Macintosh IIfx, IIsi, IIci |
|---------------------|----------------|----------------------------|



-----  
Rev J, K, L or M

Rev K, L or M

Rev L or M

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Tech Info Library Article Number:6760



# Tech Info Library

## LaserWriter IINTX and Hard Disk Space Available

Revised: 3/26/91  
Security: Everyone

LaserWriter IINTX and Hard Disk "Space Available"

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a question concerning hard-drive formatting when an Apple hard drive is attached to a LaserWriter IINTX.

It seems that you never get the same "space available" amount when formatting two same-sized hard drives. This is true even if you reformat the same hard drive more than once. The second time you format the drive, you may get more, or even less, space available. The third time you format it, you may get an entirely different number, sometimes more, sometimes less.

DISCUSSION -----

We tried to duplicate the problem you described on a LaserWriter IINTX with the old 1.0 ROMs and a LaserWriter IINTX with the new 3.0 ROMs. For the LaserWriter with the 1.0 ROMs, we used the "LaserWriter Font Utility 1.0" program. For the LaserWriter with the 3.0 ROMs we used the "LaserWriter Font Utility 2.0" program.

In both cases, the LaserWriter IINTX printers reported that the hard disk had the same amount of total space and the same amount of space available. Could it be that the hard disk may have some problem with it? Try a different hard disk. Also, try a different LaserWriter.

We wrote the following PostScript program that returns information on the total space and the total free space of the hard disk connected to a LaserWriter IINTX:

```
serverdict begin 0 exitserver
/Times-Roman findfont
15 scalefont
```

```
setfont
72 700 moveto
/str 20 string def
/str1 20 string def
(Hard Disk Usage; total space in K: ) show
statusdict begin diskstatus str cvs show
72 670 moveto
(Hard Disk Usage; total free space in K: ) show
str1 cvs show
showpage
```

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Tech Info Library Article Number:6761



# Tech Info Library

## Macintosh IIsi, Macintosh LC: Power Limits & Thermal Shutdown

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi, Macintosh LC: Power Limits & Thermal Shutdown

=====

Article Created: 11 February 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 5 August 1991

TOPIC -----

What can you tell me about the Macintosh LC and the Macintosh IIsi concerning their power supplies and power ratings for their slots? At what temperature will the thermal shutdown circuits shut down the power supply?

DISCUSSION -----

The power limit for the NuBus slot in the Macintosh IIsi is 15 watts (the same for any Macintosh II NuBus slot). The power limit for the Direct slot in the Macintosh LC is 4 watts.

Both the Macintosh LC and the Macintosh IIsi have a thermal shutdown circuit which will shut down the power supply in the event of possible overheating from excess power draw. The maximum operating temperature is approximately 105 degrees Fahrenheit.

The Macintosh LC will cycle off-and-on until the temperature reaches a safe operating level (It will make a motorboating sound). At that point, it will resume operation.

In the event of overheating, the Macintosh IIsi acts as if you had chosen Shut Down and will let you power up it up again only when the temperature drops to a safe level. Pressing the keyboard Power On key has no effect in this condition. If the Macintosh IIsi power switch is locked on, it will behave like the Macintosh LC.

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Tech Info Library Article Number:6765



# Tech Info Library

## A/UX 2.0: Fitting It on a 40MB Disk (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX 2.0: Fitting It on a 40MB Disk (9/94)

=====

Article Created: 11 February 1991  
Article Last Reviewed: 6 September 1994

TOPIC -----

Can a usable A/UX 2.0 be squeezed onto a 40MB disk? Is there a suggested configuration or list of directories to remove to "shoehorn" it into that size? What is the minimum, suggested swap space?

DISCUSSION -----

The following is a list of "du" (disk usage) from the A/UX 2.0 Root system, which tells the size of each directory in 512-byte blocks.

|              |               |
|--------------|---------------|
| /*UNIX*      | 2900          |
| /bin         | 5122          |
| /dev         | 38            |
| /etc         | 12874         |
| /shlib       | 458           |
| /usr/bin     | 8926          |
| /usr/adm     | 28            |
| /usr/catman  | 6218          |
| /usr/dict    | 410           |
| /usr/etc     | 1928          |
| /usr/games   | 1400          |
| /usr/include | 2882          |
| /usr/lib     | 12394         |
| /usr/spool   | 448           |
| /usr/ucb     | 3296          |
| /lib         | 4464          |
| /mac/bin     | 4594          |
| /mac/lib     | 7344          |
| /mac/src     | 504           |
| /mac/sys     | 6238          |
| -----        |               |
| Total        | 82,466 blocks |

If A/UX 2.0 is purely used for NFS purposes only, it might be possible to squeeze the size and fit it on a 40MB disk. However, it might take some time to go through each of the files and/or directories and determine which to keep or to remove.

In general, a lot of files and/or directories like /usr/catman, /usr/games, /usr/dict, /mac/src, may be removed.

The default Swap size in A/UX 2.0 is about 18MB. 14MB was the default swap size used in A/UX 1.1.1 and before. This increase is mainly for A/UX 2.0 MultiFinder activities. If you do not have many Macintosh applications and/or specifically A/UX applications like C language compilations running on the system, it may be reduced to below 10MB. Furthermore, if you have plenty of physical RAM, 16MB or 32MB for example, you may reduce more swap space.

Again, this is still the "It depends..." type of question. We can't give an exact number on the size of Swap area and also, which files/directories should be kept or removed. You probably need to play the "try and error" game to knock the system below 40MB.

Article Change History:  
06 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:6766



# Tech Info Library

## PacerLink Support for PC over Token Ring

Revised: 3/26/91  
Security: Everyone

PacerLink Support for PC over Token Ring

=====

Article Created: 11 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to access PacerLink terminal services on a VAX from a PC connected on a Token Ring Network? I am running:

|                |      |
|----------------|------|
| PacerLink PC   | 5.3  |
| PacerShare VMS | 5.5  |
| DOS Version    | 3.31 |

DISCUSSION -----

PacerLink does not support terminal services to a VAX over Token Ring. Pacer Software told us that they are considering this option some time in the far future; you won't see the implementation in the next release.

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Tech Info Library Article Number:6767



# Tech Info Library

## Macintosh IIsi: EtherPort Compatibility Issues

Revised: 3/26/91  
Security: Everyone

Macintosh IIsi: EtherPort Compatibility Issues

=====

Article Created: 11 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there any known compatibility problems with the Kinetics/Excelan/Novell EtherPort II cards and the Macintosh IIsi?

Has this card has been tested, and, if so, could you provide the hardware and software versions, and the results of your test? If not, have any other issues surfaced?

DISCUSSION -----

This is what we learned from Novell: Any software incompatibilities would reveal problems between the driver and the operating system. The card itself would not be the cause of a software conflict.

If the driver installer disk has an old System folder, boot from the System Tools disk, then put in the EtherPort Installer disk and run the Installer as you would normally. You'll have to do some disk swapping, but it should work. Past the OS question, there should be no other software problems.

Because the Macintosh IIsi is rather new, we have not been able to verify that there are NO incompatibilities. When Shiva Corporation bought the EtherPort line of Macintosh-to-Ethernet interface boards from Novell, Inc. (in December 1990), they made a commitment to support the EtherPort and driver with all of the appropriate Macintosh computers. So, in the future, they might be able to provide more detailed information on the compatibility issues concerning the newer Macintoshes.

My guess is that Shiva is making a very safe statement saying that because the EtherPort II has not been thoroughly tested with the Macintosh IIsi or the Macintosh LC, they cannot (and neither can we) say the card will work



with those computers. So, at this point customers just have to try the combination to see if it works. Probably they are also saying that if some problem is found, they will release new hardware and/or software to provide solutions.

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Tech Info Library Article Number:6769



# Tech Info Library

## MacTCP: RFC Conformance

Revised: 3/26/91  
Security: Everyone

MacTCP: RFC Conformance

=====

Article Created: 11 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'd like to know what RFCs and MIL-STDs MacTCP follows.

DISCUSSION -----

MacTCP is a complete implementation of the TCP/IP protocol suite and is fully compliant with the appropriate MIL-STDs (1777 and 1778) and RFCs (768, 791, 792, 793, 826, 894, 950, 1034, and 1035) and comprises TCP, UDP, IP, ICMP, DNR and for broadcast networks, ARP. The product will operate with gateways that comply with RFC 1009.

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Tech Info Library Article Number:6770



# Tech Info Library

## Internet Router: How to Save Zone Name Changes

Revised: 3/26/91  
Security: Everyone

Internet Router: How to Save Zone Name Changes

=====

Article Created: 11 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I tried to change the name of one our LocalTalk segments. After the change was made, I saved the changes in the Internet router. Then, I re-loaded the router, but the router would not accept the change of name. It kept on referring to the old name of the zone. There were no other routers loaded at the time. The router let me change all the other zone names including EtherTalk and TokenTalk zones. This is a total Phase 2 network.

DISCUSSION -----

There is no reason for the router to exhibit the symptoms you described. When you change a non-extended networks zone name you must follow these steps:

- 1) Set the current status to off.
- 2) Click the Zone name box for the network you want to change.
- 3) Select the zone name from the zone names list, there should be only one for non-extended networks.
- 4) Click the Delete button to remove the zone name from the list.
- 5) Type the new zone name into text box and click on the Add button.
- 6) Save the changes and restart the Macintosh.

It's easy to open the dialog box to change the zone name. Select the old name, change it in the text box and click Done without ever deleting the old zone name from the list. This causes the zone name for the network to

not be updated, and the old zone name would be used the next time the router is loaded.

The only way this could fail is if there is another router that still has the old zone name or a different zone name configured for this network. The newly-configured router would then fail with a conflicting zone name message the next time it loads. It would not fall back to the old zone name, but would fail and ask you to reconfigure and restart.

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Tech Info Library Article Number:6771



# Tech Info Library

## HyperCard 2.0: Print Report Procedure

Revised: 3/26/91  
Security: Everyone

HyperCard 2.0: Print Report Procedure

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have switched over to HyperCard 2.0. In earlier versions, I used the "column format" in which you could drag the dashed separation lines to print out a report. How do I do this in HyperCard 2.0?

DISCUSSION -----

The Print Report functions of HyperCard 2.0 has many more features than previous version. Unfortunately, laying out a report the first time requires more work than before. One of the main differences that may be confusing you is that you must specify the items to print by using menu items that come up when you select Print Report. These items are no longer in the Print Report's dialog box as in previous versions.

Creating a report template is described in the "HyperCard Reference" manual in the Chapter on Printing (presently chapter 7, page 380).

In brief:

- 1) Choose Print Report.
- 2) Choose New Report from the Reports menu; name your report.
- 3) In the Print Report dialog box, set up the layout for your report. Resize cells, add a header if desired, and set your options.
- 4) Choose Report Items from the Edit menu.
- 5) Choose new Item from the Item menu; while the item is selected, resize and reposition if desired.

- 6) While the item is selected (step 5), choose Item Info from the Items menu (or double-click it).
- 7) Specify the contents of the item, and its characteristics like font and size, alignment, and so on.
- 8) Click OK.
- 9) Repeat steps 5 through 8 if desired.
- 10) When you've added all of the items you want, click OK to return to the Print Report dialog box.
- 11) Click Print.

Many more options are available than what is covered here. However, this should be a reasonable primer on the Print Report function. HyperCard 2.0 lets you create and save up to 16 reports per stack, and is much more capable and versatile than earlier versions.

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Tech Info Library Article Number:6773



# Tech Info Library

## Macintosh LC: RAM Configurations and Limits

Revised: 7/23/92  
Security: Everyone

Macintosh LC: RAM Configurations and Limits

Article Created: 14 February 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated: 8 October 1991

### TOPIC -----

What is the maximum amount of memory possible in the Macintosh LC? Is 10MB an absolute limit? Will a future Macintosh LC be able to use 34MB with the addition of two 16MB SIMMs?

### DISCUSSION -----

There is a limit of 10MB of RAM on the Macintosh LC when running under System 7. It will not be possible to use 16M SIMMs to achieve 34MB. This is because the memory map for the Macintosh LC reserves only 10MB of address space for RAM, regardless of if it is in 24-bit mode or 32-bit mode. The memory map is as follows:

| Function<br>----- | 24-bit mode<br>----- | 32-bit mode<br>-----    |
|-------------------|----------------------|-------------------------|
| RAM               | \$00 0000-\$9F FFFF  | \$0000 0000-\$009F FFFF |
| ROM               | \$A0 0000-\$DF FFFF  | \$40A0 0000-\$40DF FFFF |
| Expansion space   | \$E0 0000-\$EF FFFF  | \$FE00 0000-\$FEFF FFFF |
| I/O space         | \$F0 0000-\$FF FFFF  | \$50F0 0000-\$50FF FFFF |
| VRAM              | \$FC 0000-\$FF FFFF  | \$50FC 0000-\$50FF FFFF |

It is also not possible to use 256K or 512K SIMMs. The possible RAM configurations, using 1MB, 2MB, and 4MB SIMMs, for the Macintosh LC are:

- 2MB -- soldered on the motherboard
- 4MB -- add two 1Mbit SIMMs in each of the SIMM connectors
- 6MB -- add two 2Mbit SIMMs in each of the SIMM connectors
- 10MB -- add two 4Mbit SIMMs in each of the SIMM connectors

The Macintosh LC requires 100ns or faster SIMMs.

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Tech Info Library Article Number:6775





# Tech Info Library

## Apple Scanner: 8-Pin Port Is Non-Functional

Revised: 3/26/91  
Security: Everyone

Apple Scanner: 8-Pin Port Is Non-Functional

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need information regarding the 8-Pin port that is next to SCSI port on the Apple Scanner. What is it for? (The icon indicates LocalTalk.) How can developers find out more about implementing it?

DISCUSSION -----

The port was originally intended to allow the scanner to be connected to the network. This capability was eventually dropped, so the port is essentially connected to nothing. There is no way for developers to use the port.

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Tech Info Library Article Number:6776



# Tech Info Library

## 3270 Async Terminal Emulation and File Transfer Needed

Revised: 7/27/93  
Security: Everyone

3270 Async Terminal Emulation and File Transfer Needed

Article Created: 14 February 1991  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

I am looking for a package to duplicate the capabilities of IBM's FT Term. It runs on PCs and includes 3270 terminal emulation running over async lines with support for 5 DFT sessions and file transfer on a single call. Does any package for the Macintosh duplicate this functionality?

DISCUSSION -----

The PC/HOST File Transfer and Terminal Emulator Program (FTTERM) provides 3270, DEC VT100, DEC VT220 and 3101 terminal emulators, along with 3270 and ASCII file transfer capabilities. In addition, FTTERM Version 2.1 expands its connectivity options to let an IBM Personal Computer or Personal System/2 operate on an IBM Token-Ring Network or a Broadband IBM PC Network local area network (LAN).

When operating on the LAN, it uses the Enhanced Bios Interface Programs and communicates through the IBM Local Area Network Asynchronous Connection Server Program (LANACS), to connect to ASCII Hosts, dial Information Providers, and obtain the use of Protocol Converters to allow access to IBM hosts. File transfer is supported to ASCII hosts or IBM Hosts. FTTERM Version 2.1 also supports an asynchronous connection for IBM Professional Office System (PROFS) (TM) Applications Support Feature (PASF) Version 2.2.2 (non-Token-Ring LAN configurations) and GDDM-PCLK 1.1 through the FTHLLAPI (FTTERM High Level Language Application Program Interface) facility.

The actual session management is controlled at the 3174 and not by FTTERM.DFT emulators like Personal Communications/3270 control sessions within the PC. In previous microcode levels, an ASCII display connected to the Async Emulation Adapter (AEA) was able to have only two sessions, although Coax-type CUT terminals were allowed up to 5 sessions. Microcode level B2 has extended that support to ASCII displays and the AEA.

We have not found a similar application with these functions on the Macintosh. Simware offers a multi-session 3270 terminal emulators and file transfer over asynchronous lines, if used in conjunction with their host software Sim3278 VM or VTAM. RELAY provides only file transfer over async lines to a mainframe running RELAY Communications' RELAY/VM or RELAY/TSO. MacBLAST software for IBM mainframe also transfers text or binary files via async ports or protocol converters. DCA (formerly Avatar) MacMainFrame DX provides only single-session terminal emulation and file transfer over asynchronous lines.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:

26 July 1993 - Company title changed from Avatar to DCA (Digital Communication Associates).

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Tech Info Library Article Number:6778



# Tech Info Library

## Apple II SCSI Card: ROM Upgrade (2/97)

Revised: 3/3/97  
Security: Everyone

Apple II SCSI Card: ROM Upgrade (2/97)

Article Created: 14 February 1991  
Article Reviewed/Updated: 28 February 1997

TOPIC -----

This article describes how to obtain the Apple II SCSI Card ROM upgrade.

DISCUSSION -----

There is a repair extension that covers your on this. Contact your dealer about getting the cards upgraded. Here is the information the dealer will need:

SCSI INTERFACE CARD IIE & IIGS ROM UPGRADE--OLC123  
(Announced March 88)

Users who upgrade to Apple IIGS Operating System Version 4.0 or greater must use the latest revisions of both the SCSI Interface Card and the ProFile Interface Card. You can determine the latest version of these interface cards by checking the part number of their ROM. As of March 88, ROM part number 341-0437, Revision A, is the latest version of the SCSI Interface Card. All SCSI and ProFile Interface Cards now shipped by Apple are the latest revisions.

Apple has revised the ROM on the Apple II SCSI Interface Card to make the card compatible with the Apple-CD SC and the Apple IIGS Operating System. When other products requiring the new ROM are introduced, you will be notified by a Service mailing. The ROM on the card can be identified by the new part number, 341-0437. All Service Stock and Finished Goods inventory has been upgraded to the new ROM.

Article Change History:  
28 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:6781



# Tech Info Library

## Some Macintosh Applications Ignore Inserted Diskettes

Revised: 3/26/91  
Security: Everyone

Some Macintosh Applications Ignore Inserted Diskettes

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

With Persuasion or PowerPoint (or both of them) open, when I insert a new unformatted diskette, there is no dialog box asking to initialize the diskette. Even after I quit from the application(s), the system does not acknowledge that a diskette has been inserted. One has to eject the diskette and re-insert it before the initialize dialog box pops up.

This anomaly occurs even under System Software 6.0.7. It does not help to clear the System of INITs or to work under Finder instead of MultiFinder. What could be the reason for it?

DISCUSSION -----

This is not really an anomaly. We will try to explain why:

When a disk is inserted into a disk drive, a disk-inserted event is generated by the Event Manager. It is the responsibility of the application (the active application if MultiFinder is running) to respond to this event. Applications don't have to respond to all possible events. Some applications, like Persuasion and PowerPoint, completely ignore disk-inserted events.

The exception to this is when the SFPutFile or SFGetFile dialog is active for saving or retrieving files. Disk-inserted events are automatically handled when these dialogs are active. The only time this is a problem is when the disk inserted is a disk that must be formatted to be recognized by the system.

All it would take to support disk-inserted events (for initializing) in

most applications is code, in the application's event loop, that looked something like this:

```
diskEvt:
  IF HiWrd(myEvent.message) <> noErr THEN
    BEGIN
      SetPt(aPoint, $70, $50);
      theError := DIBadMount(aPoint, myEvent.message);
    END;
```

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Tech Info Library Article Number:6782



# Tech Info Library

## A/UX 2.0: Eschatology and dp (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX 2.0: Eschatology and dp (8/94)

=====

Article Created: 14 February 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

Here is my configuration:

- A/UX 2.0
- Macintosh IIfx
- 80MB hard drive
- Macintosh OS 6.0.5

Doing an installation on a SuperMac drive with

XP100  
XP150  
A/UX 2.0

sets up the partition sizes using the 4.1 manager for SuperMac (the size for each partition is stated in the manual). I do the initial installation which is the stand-alone shell, A/UX Startup.

While in the shell, I run the UNIX DP software. I use DP to designate the partitions as Root, User, Swap, and Eschatology. I quit DP and then follow the manual for installation. When the program gets to the Eschatology partition, I get a message that it will skip the Eschatology partition, because it cannot be found.

Doesn't the DP program assign the proper slice number for the Eschatology partition?

DISCUSSION -----

The following are the standard A/UX file-system, partition names and slice numbers assigned when installing A/UX 2.0:

"A/UX Root"      slice 0

```
"Swap"           slice 1
"Eschatology 1"
"Unreserved 1"   slice 3
```

There is no fixed slice number assigned to "Eschatology 1", but it was pnamed when copying essential files into that partition during installation process. "Usr" will be assigned with slice 2, if it was customized as a separate partition from the A/UX Root partition.

The problem is most likely the use of the name and the type of the "Eschatology" partition when you use "dp" to customize the third-party hard drive. The following is the printout for "Eschatology 1" partition from "dp". Pay attention to the name ("Eschatology 1") and type ("EFS").

```
DPM Index: 6
Name: "Eschatology 1", Type: "Apple_UNIX_SVR2"
Physical: 6144 @ 146126, Logical: 6144 @ 0
Status:
      valid      alloc      in_use  not boot
      read      write
No slice specified
Eschatology File System (2) (critical)
Cluster:  0      Type:  EFS          Inode:  1
Made: [634871576] Mon Feb 12 17:12:42 1990
Mount: [649605218] Thu Aug  2 06:53:24 1990
Umount: [649605254] Thu Aug  2:06:54:00 1990
No AltBlk map
```

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

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```
=====
Created:      3/26/91
Author:       WK
Source:       PTS
Library:      TECHINFO
```

Tech Info Library Article Number:6783





Revised: 11/12/96  
Security: Everyone

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TOPIC -----

DISCUSSION -----

```
"Memory Configurations: Power Macintosh (1 of 4)"
"Memory Configurations: Servers (2 of 4)"
"Memory Configurations: Portables & PowerBook (3 of 4)"
```

\* Memory interleaving is supported in the Macintosh Quadra 800 and 650 computers when SIMMs are installed in pairs.

## Macintosh RAM Configurations

| Sold-                           | # of |  |  |  | In-<br>stall |
|---------------------------------|------|--|--|--|--------------|
| <b>Compact Macintosh Models</b> |      |  |  |  |              |

| Computer                      | Sold-<br>RAM<br>(MB) | # of<br>DIMM<br>Slots | Supported<br>SIMM/DIMM<br>Sizes (MB) | Supported<br>DRAM Configs<br>(MB) | RAM<br>Speed<br>(ns) | RAM<br>Type    | Max.<br>RAM<br>(MB) | In-<br>stall<br>Groups<br>of |
|-------------------------------|----------------------|-----------------------|--------------------------------------|-----------------------------------|----------------------|----------------|---------------------|------------------------------|
| 128                           | 128K                 | 0                     | N/A                                  | 128K                              | N/A                  | N/A            | N/A                 |                              |
| 512K/512KE                    | 512K                 | 0                     | N/A                                  | 512K                              | N/A                  | N/A            | N/A                 | 2                            |
| Plus                          | 0                    | 4                     | 256K,1                               | 1,2.5,4                           | 150                  | 30-pin<br>SIMM | 4                   | 2                            |
| SE                            | 0                    | 4                     | 256K,1                               | 1,2,2.5,4                         | 150                  | 30-pin<br>SIMM | 4                   | 2                            |
| SE/30                         | 0                    | 8                     | 256K,1,4                             | 1,2,4,5,8,16<br>17,20,32          | 120                  | 30-pin<br>SIMM | 32                  | 4                            |
| Classic                       | 1                    | 2                     | 256K,1                               | 1,2,2.5,4                         | 150                  | 30-pin<br>SIMM | 4                   | 2                            |
| Classic II<br>Performa<br>200 | 2                    | 2                     | 1,2,4                                | 2,4,6,10                          | 100                  | 30-pin<br>SIMM | 10                  | 2                            |
| Color<br>Classic              | 4                    | 2                     | 1,2,4                                | 4,6,8,10                          | 100                  | 30-pin<br>SIMM | 10                  | 2                            |

| Macintosh II Models |                      |                       |                                      |                                                           |                      |                |                     |                              |
|---------------------|----------------------|-----------------------|--------------------------------------|-----------------------------------------------------------|----------------------|----------------|---------------------|------------------------------|
| Computer            | Sold-<br>RAM<br>(MB) | # of<br>DIMM<br>Slots | Supported<br>SIMM/DIMM<br>Sizes (MB) | Supported<br>DRAM Configs<br>(MB)                         | RAM<br>Speed<br>(ns) | RAM<br>Type    | Max.<br>RAM<br>(MB) | In-<br>stall<br>Groups<br>of |
| II                  | 0                    | 8                     | 256K,1,4,16                          | 1,2,4,5,8,16<br>17,20,32,64,<br>65,68,80,128              | 120                  | 30-pin<br>SIMM | 128                 | 4                            |
| IIx                 | 0                    | 8                     | 256K,1,4,16                          | 1,2,4,5,8,16<br>17,20,32,64,<br>65,68,80,128              | 120                  | 30-pin<br>SIMM | 128                 | 4                            |
| IIcx                | 0                    | 8                     | 256K,1,4,16                          | 1,2,4,5,8,16<br>17,20,32,64,<br>65,68,80,128              | 120                  | 30-pin<br>SIMM | 128                 | 4                            |
| IIci                | 0                    | 8                     | 256K,512K<br>1,2,4,16                | 1,2,3,4,5,6,<br>8,9,10,12,16<br>17,18,20,24,<br>32 to 128 | 80                   | 30-pin<br>SIMM | 128                 | 4                            |

|                                    |                      |                       |                                      |                                              |                      |                |                     |                                   |
|------------------------------------|----------------------|-----------------------|--------------------------------------|----------------------------------------------|----------------------|----------------|---------------------|-----------------------------------|
| IIIfx                              | 0                    | 8                     | 1,4,16                               | 4,8,16,20<br>32 to 128                       | 80                   | 64-pin<br>SIMM | 128                 | 4                                 |
| IIIsi                              | 1                    | 4                     | 256K,512K,<br>1,2,4                  | 1,2,3,5,9,17                                 | 100                  | 30-pin<br>SIMM | 17                  | 4                                 |
| IIvi, IIvx<br>Performa<br>600      | 4                    | 4                     | 256K,1,2,4<br>16                     | 4,5,8,12,20,<br>68                           | 80                   | 30-pin<br>SIMM | 68                  | 4                                 |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| \| LC & Performa Models               |                      |                       |                                      |                                              |                      |                |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| Computer                           | Sold-<br>RAM<br>(MB) | # of<br>DIMM<br>Slots | Supported<br>SIMM/DIMM<br>Sizes (MB) | DRAM Configs<br>(MB)                         | RAM<br>Speed<br>(ns) | RAM<br>Type    | Max.<br>RAM<br>(MB) | In-<br>stall<br>in<br>Group<br>of |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC                                 | 2                    | 2                     | 1,2,4                                | 2,4,6,10                                     | 100                  | 30-pin<br>SIMM | 10                  | 2                                 |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC II                              | 2                    | 2                     | 1,2,4                                | 2,4,6,10                                     | 100                  | 30-pin         | 10                  | 2                                 |
| Performa<br>400, 405,<br>410, 430  | 4                    | 2                     | 1,2,4                                | 4,6,8,10                                     | 100                  | SIMM           |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC III                             | 4                    | 1                     | 1,2,4,8,16,<br>32                    | 4,5,6,8,12,<br>20,36                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                 |
| Performa<br>450, 460,<br>466, 467  |                      |                       |                                      |                                              |                      |                |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC 475                             | 4                    | 1                     | 1,2,4,8,16,<br>32                    | 4,5,6,8,12,<br>20,36                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                 |
| Quadra 605<br>Performa<br>475, 476 |                      |                       |                                      |                                              |                      |                |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC 520                             | 4                    | 1                     | 1,2,4,8,16,<br>32                    | 4,5,6,8,12,<br>20,36                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                 |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC 550                             | 4                    | 1                     | 1,2,4,8,16,<br>32                    | 4,5,6,8,12,<br>20,36                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                 |
| Performa<br>550, 560               |                      |                       |                                      |                                              |                      |                |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC 575                             | 4                    | 1                     | 1,2,4,8,16,<br>32                    | 4,5,6,8,12,<br>20,36                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                 |
| Performa<br>575, 577,<br>578       |                      |                       |                                      |                                              |                      |                |                     |                                   |
| +=====+                            |                      |                       |                                      |                                              |                      |                |                     |                                   |
| LC 580                             | 4                    | 2                     | Inside slot<br>1,4,16<br>Outside     | 6,7,9,10,12,<br>13,21,22,24,<br>28,36,37,40, | 80                   | 72-pin<br>SIMM | 52                  | 1                                 |
| Performa<br>580                    |                      |                       |                                      |                                              |                      |                |                     |                                   |

|                                                                    |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
|--------------------------------------------------------------------|----------------------|--------------------------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------------------|----------------|---------------------|------------------------------------|--|
| Performa 631                                                       |                      |                                | slot:<br>1,2,4,8,16<br>32            | 46,52                                                                                                             |                      |                |                     |                                    |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| LC 630,<br>Quadra 630<br>Performa<br>630, 635,<br>636, 637,<br>638 | 4                    | 1                              | 1,2,4,8,16                           | 4,8,20,36                                                                                                         | 80                   | 72-pin<br>SIMM | 36                  | 1                                  |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| LC 630 DOS<br>Compatible<br>Performa<br>640 DOS                    | 4                    | 2 +<br>(1 on<br>DOS<br>card)   | 1,2,4,8,16<br>32                     | 4,5,6,8,<br>12,20,36,<br>52                                                                                       | 80                   | 72-pin<br>SIMM | 52                  | 1                                  |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| =====+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| \| Macintosh Quadra & Centris<br>\| Models |  |  |  |  |  |  |  |  | \| |
| =====+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Computer                                                           | Sold-<br>RAM<br>(MB) | # of<br>SIMM/<br>DIMM<br>Slots | Supported<br>SIMM/DIMM<br>Sizes (MB) | DRAM Configs<br>(MB)                                                                                              | RAM<br>Speed<br>(ns) | RAM<br>Type    | Max.<br>RAM<br>(MB) | In-<br>stall<br>in<br>Groups<br>of |  |
| =====+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Centris<br>610                                                     | 4                    | 2                              | 4,8,16,32                            | 4,8,12,20,28<br>36,40,44,52,<br>68                                                                                | 80                   | 72-pin<br>SIMM | 68                  | 1,2                                |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Quadra<br>610                                                      | 4                    | 2                              | 4,8,16,32<br>non-                    | 4,8,12,20,28<br>36,40,44,52,<br>68                                                                                | 80                   | 72-pin<br>SIMM | 68                  | 1,2                                |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Centris<br>650                                                     | 4<br>or<br>8         | 4                              | 4,8,16,32                            | 4,8,12,16,20<br>24,28,32,36,<br>40,44,48,52,<br>56,60,64,68,<br>72,76,80,84,<br>88,92,100,<br>104,108,116,<br>132 | 80                   | 72-pin<br>SIMM | 132                 | 1,2                                |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Quadra<br>650                                                      | 8                    | 4                              | 4,8,16,32                            | 8,12,16,20,<br>24,28,32,36,<br>40,48,52,56,<br>60,64,68,72,<br>76,80,84,88,<br>108,112,120,<br>136-169            | 80                   | 72-pin<br>SIMM | 169                 | 1,2                                |  |
| -----+                                                             |                      |                                |                                      |                                                                                                                   |                      |                |                     |                                    |  |
| Centris/<br>Quadra                                                 | 8                    | 2                              | 4,8,16,32                            | 4,8,12,20,36<br>68                                                                                                | 70                   | 72-pin<br>SIMM | 68                  | 1,2                                |  |

|              |   |    |           |                                                                                                                                            |    |                |     |     |
|--------------|---|----|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|----|----------------|-----|-----|
| 660AV        |   |    |           |                                                                                                                                            |    |                |     |     |
| Quadra 700   | 4 | 4  | 1,4       | 4,8,20                                                                                                                                     | 80 | 30-pin<br>SIMM | 20  | 4   |
| Quadra 900   | 0 | 16 | 1,4       | 4,8,12,16,20<br>24,28,32,36,<br>40,48,52,64                                                                                                | 80 | 30-pin<br>SIMM | 64  | 4   |
| Quadra 950   | 0 | 16 | 1,4       | 4,8,12,16,20<br>24,28,32,36,<br>40,48,52,64                                                                                                | 80 | 30-pin<br>SIMM | 64  | 4   |
| Quadra 800   | 8 | 4  | 4,8,16,32 | 8,12,16,20,<br>24,28,32,36,<br>40,42,48,52,<br>56,60,64,68,<br>72,76,80,84,<br>88,92,96,104<br>108,112,120<br>136                          | 60 | 72-pin<br>SIMM | 136 | 1,2 |
| Quadra 840AV | 0 | 4  | 4,8,16,32 | 4,8,12,16,20<br>20,24,28,32,<br>32,36,40,44,<br>48,52,56,60,<br>64,68,72,76,<br>80,84,88,92,<br>96,100,104,<br>108,112,116,<br>120,124,128 | 60 | 72-pin<br>SIMM | 128 | 1,2 |

End\_Table

#### Article Change History:

23 Sep 1996 - Reformatted, reviewed, and updated.

27 Jun 1996 - Added additional computers.

02 Jan 1996 - Updated Quadra 840AV information.

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Tech Info Library Article Number:6784



# Tech Info Library

## Graphtec MP3100: Connection to Macintosh

Revised: 3/26/91  
Security: Everyone

Graphtec MP3100: Connection to Macintosh

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to connect a Graphtec MP3100 plotter to a Macintosh, but I don't have the right cable. Do you know what this cable should look like (from the 8-pin serial port on the Macintosh to the DB-25 port on the plotter)?

DISCUSSION -----

The Graphtec plotter can be connected to a Macintosh 8-pin serial port using M0199; the Macintosh-to-ImageWriter cable (pn 590-0553).

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Tech Info Library Article Number:6785



# Tech Info Library

## Macintosh LC: VRAM Upgrade Procedure

Revised: 7/23/92  
Security: Everyone

Macintosh LC: VRAM Upgrade Procedure

=====

Article Created: 26 March 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

How do you complete the VRAM Upgrade Installation for the Macintosh LC?  
The documentation in the Upgrade Kit says that the technician should consult the Macintosh Technical Procedures for information on how to complete the upgrade installation, yet there isn't anything in the Tech Procedures to cover this installation.

DISCUSSION -----

Before you begin, familiarize yourself with the Take Apart section of Technical Procedures--especially those sections pertaining to safety and Electrostatic Discharge prevention.

When upgrading the Video RAM (VRAM) of the Macintosh LC, it is important to refer to the note on page 1.2 of the Technical Procedures for the Macintosh Family (Volume Two, Macintosh LC tab), which states that the 512K VRAM SIMM replaces rather than augments the 256K VRAM SIMM on the logic board.

For identification of which SIMM is the VRAM SIMM, you are encouraged to refer to the illustration in the same binder on page 1.4 or the illustrated parts list on page IPL.2, item number 21. The VRAM SIMM is located on the logic board immediately next to the system RAM SIMM connectors. The VRAM differs from system RAM by using a physically larger SIMM connector and more and denser signal leads.

The RAM exchange would be identical to the Macintosh Display Card Upgrade procedure (refer to page 2.10 of the Macintosh Family Cards tab in the Macintosh Family Technical Procedures, Volume Four), except that only one VRAM SIMM is required.

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Tech Info Library Article Number:6786





# Tech Info Library

## StyleWriter: Using it with the Macintosh Portable

Revised: 7/28/92  
Security: Everyone

StyleWriter: Using it with the Macintosh Portable

=====

Article Created: 3 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

The Apple StyleWriter and the Macintosh Portable appear to have similar power adapters. Can they be interchanged?

DISCUSSION -----

Extreme care should be taken when using a StyleWriter with the Macintosh Portable.

The Apple StyleWriter and the Macintosh Portable have physically identical power adaptor connectors. However, they are NOT electrically identical. If you connect a StyleWriter power adaptor (while unplugged from a wall outlet) to the Macintosh Portable, the 3.15 amp fuse inside the StyleWriter power adaptor blows.

The problem is that the Portable power adaptor is center positive, 7.5V, and the StyleWriter unit is center negative, 9.5V.

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Tech Info Library Article Number:6787



# Tech Info Library

## Apple Computer, Inc. Trademark List 1 of 2 (10/96)

Revised: 10/17/96  
Security: Everyone

Apple Computer, Inc. Trademark List 1 of 2 (10/96)

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| APPLE'S TRADEMARKS<br>=====             | GENERIC TERM(S)<br>=====                      |
|-----------------------------------------|-----------------------------------------------|
| llGS(R)                                 | computer                                      |
| All great software wears this face.(TM) | slogan                                        |
| A-NET(R)                                | application program                           |
| APDA(R)                                 | developers association                        |
| Apple(R)                                | computers, computer<br>peripherals, etc.      |
| Apple(R) (striped or solid logo)        | logo design                                   |
| Apple IIGS(R)                           | computer                                      |
| AppleCAT(R)                             | application program                           |
| AppleCD(TM)                             | CD-ROM drive                                  |
| AppleCD SC(R)                           | CD-ROM drive                                  |
| AppleDesign(R)                          | computer peripherals                          |
| AppleFax(TM)                            | modem                                         |
| AppleFund(TM)                           | reimbursement program                         |
| AppleGram(TM)                           | newsletter                                    |
| AppleLAN(TM)                            | application program                           |
| AppleLink(R)                            | communication network/<br>computer software   |
| AppleMail(R)                            | application program                           |
| AppleNet(TM)                            | application program                           |
| AppleOrder(TM)                          | sales support program                         |
| Apple Press(TM)                         | publications                                  |
| Apple Restore(TM)                       | software utility                              |
| AppleScript(R)                          | application program                           |
| AppleSearch(R)                          | application program                           |
| AppleShare(R)                           | network server                                |
| AppleSoft(R)                            | operating system software                     |
| Apple SuperDrive(R)                     | application program                           |
| AppleTalk(R)                            | computer disk drive                           |
| Apple TechStep(TM)                      | network system                                |
| AppleVision(R)                          | diagnostic software                           |
| AppleWriter(TM)                         | computer display                              |
| Aristotle(TM)                           | application program                           |
| A/ROSE(TM)                              | application program                           |
| At Ease(TM)                             | application program                           |
| AudioVision(TM)                         | application program                           |
| Author's Solution(TM)                   | computer display/<br>operating system program |
| A/UX(R)                                 | software bundle                               |
| Balloon Help(TM)                        | operating system                              |
| Balloon Writer(TM)                      | application program                           |
| Bento(R)                                | application program                           |
| Bicycle logo(R)                         | application program                           |
| Bring Learning Home(TM)                 | university logo                               |
| CADoc(R)                                | software and printed materials                |
| CD ROM Explorer(R)                      | application program                           |
| Chicago(R)                              | application program                           |
| Cocoa(TM)                               | computer font                                 |
| Colearning Logo(R)                      | developer tool                                |
| ColorShare(R)                           | application program logo                      |
|                                         | application program                           |

|                                |                                          |
|--------------------------------|------------------------------------------|
| ColorSync(R)                   | application program                      |
| ColorSync logo(R)              | application program logo                 |
| ConnectTest(TM)                | application program                      |
| CyberArcade(TM)                | CD-ROM bundle                            |
| Cyberdog(TM)                   | Internet software                        |
| Develop(TM)                    | developer publication                    |
| Developer Resource Kit(TM)     | developer self-help product              |
| DialAssist(TM)                 | application program                      |
| DigiSign(R)                    | digital signature technology             |
| Digital Explorer(TM)           | CD-ROM bundle                            |
| Discipline(R)                  | application program                      |
| Disk First Aid(TM)             | application program                      |
| Disk II(R) (and design)        | computer disk drive                      |
| Diskware(R)                    | application program                      |
| DocViewer(TM)                  | application program                      |
| DoubleVision(TM)               | application program                      |
| DuoDisk(R)                     | computer disk drive                      |
| DuoFile(R)                     | computer disk drive                      |
| Dylan(TM)                      | development program                      |
| Early Language Connections(TM) | hardware/software curriculum package     |
| E-Box(TM)                      | application program                      |
| Educator Advantage(TM)         | marketing program                        |
| Encyclomedia(R)                | CD-ROM bundle                            |
| En Passant(R)                  | application program                      |
| Espy(R)                        | fonts                                    |
| EtherTalk(R)                   | interface card/network                   |
| EverWatch(TM)                  | battery technology                       |
| eWorld(TM)                     | on-line information service              |
| eWorld logo(TM)                | logo for on-line information service     |
| Extensions Manager(TM)         | system software                          |
| Fax Extension(TM)              | application program                      |
| FaxSender(TM)                  | application program                      |
| FDHD(R)                        | computer disk drive                      |
| FileWare(R)                    | application program                      |
| FinanceTech(R)                 | growth funding service                   |
| Finder(TM)                     | operating system software                |
| FinePrint(TM)                  | application program                      |
| FireWire(R)                    | serial bus                               |
| FireWire logo(TM)              | logo for serial bus                      |
| Foreign File Access(TM)        | application program                      |
| Geneva(TM)                     | computer font                            |
| GeoPort(R)                     | telecommunications architecture          |
| GeoPort logo(TM)               | logo for telecommunications architecture |
| GrayShare(R)                   | application program                      |
| GrayShare logo(R)              | application program logo                 |
| Great Meetings(TM)             | application program                      |
| GS(TM)                         | computer                                 |
| GS/OS(R)                       | operating system software                |
| HangulTalk(TM)                 | application program                      |
| HotSauce(TM)                   | application program                      |

|                                                   |                                 |
|---------------------------------------------------|---------------------------------|
| HyperAgent(R)                                     | application program             |
| HyperBrowser(R)                                   | application program             |
| HyperCard(R)                                      | application program             |
| HyperClient(R)                                    | application program             |
| HyperKiosk(TM)                                    | conference information database |
| HyperKnowledge(R)                                 | application program             |
| HyperLearning(R)                                  | application program             |
| HyperMover(TM)                                    | application program             |
| HyperReader(R)                                    | application program             |
| HyperTalk(R)                                      | application program             |
| HyperTelevision(R)                                | application program             |
| HyperTV(R)                                        | application program             |
| IconMaker(TM)                                     | application program             |
| ImageWriter(R)                                    | printer                         |
| Imagine:The Apple Education TV Series(TM)         | education television series     |
| Information Alley(R)                              | technical publication           |
| Inter*Poll(R)                                     | application program             |
| It does more. It costs less.                      | slogan                          |
| It's that simple.(TM)                             |                                 |
| It's there when you need it(TM)                   | marketing slogan for Newton     |
| It's Not What the Computer Can Do,                | marketing slogan                |
| It's What You Can Do(TM)                          |                                 |
| KanjiTalk(TM)                                     | Japanese operating system       |
| LaserShare(TM)                                    | print spooling software         |
| LaserWriter(R)                                    | printer                         |
| LaserWriter Select(R)                             | printer                         |
| (composite trademark; do not use "Select" alone)  |                                 |
| LC(R)                                             | computer                        |
| Light bulb logo(R)                                | logo for Newton products        |
| Likewise(R)                                       | application program             |
| LinkSaver(TM)                                     | application program             |
| Lisa(R)                                           | scomputer                       |
| Localizer(TM)                                     | application program             |
| LocalTalk(R)                                      | computer cable system/network   |
| Mac(R)                                            | computer                        |
| MacApp(R)                                         | application program             |
| MacAPPC(TM)                                       | application program             |
| Macaroni(R)                                       | application program             |
| MacBrowser(R)                                     | application program             |
| MacCheck(R)                                       | application program             |
| MacClient(R)                                      | application program             |
| MacDFT(R)                                         | application program             |
| MacDNS(TM)                                        | application program             |
| MacDSS(R)                                         | application program             |
| MacinTalk(TM)                                     | application program             |
| Macintosh(R)                                      | computer                        |
| Macintosh Centris(R)                              | computer                        |
| (composite trademark; do not use "Centris" alone) |                                 |
| Macintosh Coprocessor Platform(TM)                | application program             |
| Macintosh Duo(R)                                  | computer                        |
| (composite trademark; do not use "Duo" alone)     |                                 |
| Macintosh logo(TM)                                | computer logo                   |
|                                                   | (Picasso design)                |

|                                                  |                                          |
|--------------------------------------------------|------------------------------------------|
| Macintosh PC Exchange(TM)                        | application program                      |
| Macintosh(R)                                     | computer                                 |
| Macintosh Quadra(R)                              | computer                                 |
| (composite trademark; do not use "Quadra" alone) |                                          |
| MacISDN(TM)                                      | application program                      |
| MacMenu(R)                                       | mail order catalog                       |
| MacODA(TM)                                       | application program                      |
| Mac(R) OS                                        | operating system software                |
| MacOSI(R)                                        | application program                      |
| Mac OS logo(R)                                   | operating system software logo           |
| MacPAD(R)                                        | application program                      |
| MacPS(R)                                         | application program                      |
| MacroMaker(TM)                                   | application program                      |
| MacShare(TM)                                     | application program                      |
| MacSMB(R)                                        | application program                      |
| MacSNMP(TM)                                      | software utility                         |
| MacStacks(R)                                     | application program                      |
| MacTCP(R)                                        | application program                      |
| MacTerminal(R)                                   | application program                      |
| MacTest(TM)                                      | application program                      |
| MacUpdate(R)                                     | magazine                                 |
| MacVentures(R)                                   | publication                              |
| MacWorkStation(TM)                               | application program                      |
| MacX(R)                                          | application program                      |
| MacX25(R)                                        | application program                      |
| MacX.400(TM)                                     | application program                      |
| MCP Test(TM)                                     | diagnostic software                      |
| MessagePad(R)                                    | personal digital assistant               |
| MM(R) logo (New Media New Markets logo)          | logo design                              |
| Monaco(TM)                                       | computer font                            |
| "Moof" and Dogcow logo(R)                        | logo design for developer CD-ROM         |
| "Moof" and Dogcow Productions(R)                 | application program and developer CD-ROM |
| Mouse Basics(TM)                                 | application program                      |
| MousePaint(TM)                                   | application program                      |
| Mouse Practice(TM)                               | application program                      |
| MovieShop(R)                                     | application program                      |
| MovieTalk(R)                                     | application program                      |
| MPW(R)                                           | application program                      |
| MultiFinder(R)                                   | operating system software                |
| NetTrax(TM)                                      | application program                      |
| NewMath(R)                                       | application program                      |
| New Media/New Markets design(TM)                 | logo                                     |
| NeWorld(R)                                       | application program                      |
| NewPort(R)                                       | application program                      |
| NewTalk(R)                                       | application program                      |
| Newton(R)                                        | operating system software                |
| Newton Intelligence(TM)                          | personal digital assistant technology    |
| NewtonMail(R)                                    | application program                      |
| Newton Press(TM)                                 | application program                      |
| NewtonScript(TM)                                 | scripting language                       |
| NewTools(R)                                      | application program                      |

|                                               |                                                       |
|-----------------------------------------------|-------------------------------------------------------|
| New York(R)                                   | computer font                                         |
| NodeCheck(TM)                                 | diagnostic program                                    |
| Noiro(TM)                                     | font                                                  |
| OneScanner(TM)                                | computer scanner                                      |
| OpenDoc(R)                                    | computer program                                      |
| Performa(R)                                   | computer                                              |
| PhotoFlash(R)                                 | application program                                   |
| Pippin(TM)                                    | interactive media player and system software          |
| Pippin logo(TM)                               | logo for interactive media player and system software |
| PlainTalk(R)                                  | application program                                   |
| Power Beyond Speed(TM)                        | slogan                                                |
| PowerBook(R)                                  | computer                                              |
| PowerBook/DOS Companion(TM)                   | hardware/software package                             |
| PowerBook Duo(R)                              | computer                                              |
| (composite trademark; do not use "Duo" alone) |                                                       |
| PowerLatch(TM)                                | docking technology                                    |
| Power Mac(TM)                                 | computer                                              |
| Power Macintosh(R)                            | computer                                              |
| PowerShare(R)                                 | application program                                   |
| PowerTalk(R)                                  | application program                                   |
| PrintRecordSpy(TM)                            | developer tool                                        |
| PrizeFest(TM)                                 | marketing theme                                       |
| ProDOS(R)                                     | operating system software                             |
| Progress Windoid(R)                           | "x" command                                           |
| Projector(R)                                  | application program                                   |
| QStack(TM)                                    | application program                                   |
| QuickClips(TM)                                | multimedia content/CD-ROM                             |
| QuickDraw(TM)                                 | application program                                   |
| QuickFile(R)                                  | application program                                   |
| QuickRing(R)                                  | data transfer system                                  |
| QuickStart(TM)                                | VAR program                                           |
| QuickTake(R)                                  | digital camera                                        |
| QuickTime(R)                                  | application program                                   |
| QuickTime logo(TM)                            | logo for application program                          |
| ResEdit(TM)                                   | application program                                   |
| SADE(R)                                       | application program                                   |
| SalesWriter(TM)                               | application program                                   |
| SANE(R)                                       | application program                                   |
| ScanTest(R)                                   | application program                                   |
| Setting the Pace(TM)                          | logo for Apple education                              |
| SmartStack(R)                                 | application program                                   |
| SNA*ps(TM)                                    | application program                                   |
| Software Dispatch(R)                          | software on CD business                               |
| Software Dispatch logo(R)                     | logo for software on CD business                      |
| Sound Manager(TM)                             | application program                                   |
| SourceBug(TM)                                 | application program                                   |
| SpeedStart(TM)                                | application program                                   |
| STAKCopy(TM)                                  | application program                                   |
| STAKNode(TM)                                  | application program                                   |
| StarCore(R)                                   | publishing division                                   |
| StartingLine(TM)                              | marketing program and catalogs                        |

|                                    |                                          |
|------------------------------------|------------------------------------------|
| StyleWriter(R)                     | printer                                  |
| Switcher(TM)                       | application program                      |
| synthLAB(TM)                       | application program                      |
| System 7 logo(TM)                  | operating system software<br>logo design |
| The Apple Collection(TM)           | catalogue                                |
| The Education Dealer(TM)           | logo                                     |
| The Macintosh Right Now Rebate(TM) | promotion                                |
| The Meeting of the Minds(TM)       | slogan                                   |
| The power to be your best.(R)      | slogan                                   |
| The Universal Client(TM)           | application program/<br>marketing theme  |
| TokenTalk(R)                       | application program                      |
| Tools Advisor(TM)                  | application program                      |
| ToolServer(TM)                     | application program                      |
| TrueType(R)                        | font technology                          |
| VideoSync(R)                       | software utility                         |
| ViewEdit(TM)                       | application program                      |
| VirusRX(TM)                        | application program                      |
| WorldScript(R)                     | application program                      |
| You, a Mac, the world(TM)          | slogan                                   |
| Zeal(R)                            | fonts                                    |
| Zhong-Wen Talk(R)                  | Chinese operating system                 |

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Tech Info Library Article Number:6789





# Tech Info Library

## Japanese Macintosh Products: Support in the U.S.

Revised: 9/23/92  
Security: Everyone

Japanese Macintosh Products: Support in the U.S.

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Article Created: 24 April 1991

### Article Change History

-----

09/22/92 - REVISED

- To include reseller referral phone number.

09/22/92 - UPDATED

- To include information on the Kanji TrueType product.

### TOPIC -----

On April 23, 1991, Apple USA announced a program to sell and support Japanese-language Macintosh System Software in the United States. This is an extension of a program currently being piloted in Hawaii. To find a reseller for this product, call 1-800-882-8856.

### DISCUSSION -----

These Japanese products will be available only through a limited number of Apple-authorized dealers and VARS (Value Added Resellers). These resellers are required to have a Japanese-speaking System Engineer who has attended a special class for Japanese product support and who provides support before and after the sale. Inquires concerning these Japanese products should be directed only to these authorized dealerships.

The following products are being offered:

- The KanjiTalk Upgrade kit, which includes
  - the KanjiTalk operating system version 6.0.7, and
  - HyperCard-J version 2.0J ("lite" HyperCard localized in Japanese).
- Kanji TrueType - A Japanese font extension that allows high quality, low cost printing solution. It includes two complete fonts.

- HyperCard 2.0J, which includes Japanese manuals.
- The extended Kana character-based keyboard.

Price pages for these products will be available only to specially authorized resellers.

#### Service

-----

Only Kanji-authorized resellers will be allowed to service Apple's Japanese systems.

#### Support

-----

A special support program will handle the Japanese products. Customers will be supported by specially trained bilingual dealer System Engineers. These dealer SEs will escalate their questions to a third party vendor, in essence filling in the role of the Apple field Systems Engineer.

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Tech Info Library Article Number:6791



# Tech Info Library

## Japanese Macintosh System Software: Overview

Revised: 9/29/92  
Security: Everyone

Japanese Macintosh System Software: Overview

=====

Article Created: 24 April 1991

Article Change History:

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09/29/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Could you please give me an overview of Japanese system software that is now available in the United States?

DISCUSSION -----

The text resources and special features of Japanese Macintosh system software have been translated to fit the Japanese dates, sorting system, and so on. Otherwise, the Japanese system software works like Roman-alphabet system software, and troubleshooting is very similar.

On the other hand, Japanese system software must deal with a total of over 6800 characters in four different character sets. An INIT called KanjiTalk manages this large set; it takes keystrokes and converts them into Japanese. Along with this INIT, a variety of input modules, dictionaries, and fonts files are necessary to support KanjiTalk.

Japanese Macintosh 6.0 system software can be used on any Macintosh system with 2MB of RAM (a hard disk is strongly recommended). However, no special hardware is necessary. Although there is a localized version of the keyboard, KanjiTalk can accept input from a U.S. keyboard. In fact, the only difference between the U.S. keyboard and the Kana keyboard is the addition of the Kana characters silk-screened on the key caps.

Macintosh hardware products were originally made specifically for the Japanese market, with Kanji fonts in ROM. These products have been discontinued.

U.S. applications that abide by the Script Manager interface (TeachText, for example) generally work with Japanese Macintosh system software, but there is no guarantee of full functionality. It takes two bytes (not just one) to represent a Kanji character, and applications that don't take this into account typically don't work without some problems.

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Tech Info Library Article Number:6792



# Tech Info Library

## System 7: How to Revert to System 6 after Installing System 7

Revised: 6/2/92  
Security: Everyone

System 7: How to Revert to System 6 after Installing System 7

=====

Article Created: 28 February 1991  
Article Last Reviewed: 2 June 1992  
Article Last Updated: 2 June 1992

TOPIC -----

How do I revert to System 6 after installing System 7?

DISCUSSION -----

Before upgrading to System 7, back up your hard disk using any of backup and restore products available for the Macintosh. At a minimum, back up your System folder.

Please do not try to install System 6 over System 7. Instead, follow these steps:

- 1) To remove System 7 from your hard disk, boot from a System 6 "System Tools" floppy disk and drag the System 7 "System Folder" from your hard disk into the Trash can.
- 2) Restore your System 6 "System Folder" from a backup, or install from the System 6 "System Tools" floppy disk.

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Tech Info Library Article Number:6801



# Tech Info Library

## System 7: Sharing LaserWriters with System 6 Computers (5/94)

Revised: 5/12/94  
Security: Everyone

System 7: Sharing LaserWriters with System 6 Computers (5/94)

Article Created: 28 February 1991  
Article Reviewed/Updated: 12 May 1994

TOPIC -----

Can users running System 7 and users running System 6 share the same LaserWriter? Does the 6.0 LaserWriter driver work with System 7?

DISCUSSION -----

The System 7 printer drivers operate on Macintosh computers running System 6 and on Macintosh computers running System 7. When all computers printing to the same printer use System 7 printer drivers, they can compatibly share a printer.

Apple recommends that you upgrade System 6 Macintosh computers that are on a network with System 7 Macintosh computers to System 7 printer software. This will allow LaserWriter compatibility between both systems.

Early versions of the LaserWriter Drivers for System 7 were tested with all System 6 versions. Later LaserWriter Driver versions were only tested with System 6.0.8, and is the only System 6.x version now officially supported by Apple.

To install the LaserWriter 7 driver on a System 6 machine, follow the set of steps appropriate to your computer:

From floppy disks, follow these steps:

- 1) Insert the System 7 "Printing" disk (800K and 1.4MB). You do not need to boot from this disk. Place it in the drive of the currently running Macintosh you wish to update. This installation occurs "live" on your current system.
- 2) Double click the "Printer Update" icon.
- 3) Double click "Install". The System 7 printing software is now being

installed on your system

- 4) Choose Quit. Your system has been updated to the System 7 printing software and is immediately ready to print in a System 7 environment.

Over a network, follow these steps:

- 1) Ask your network administrator where the "Printer Update" installer is located on your network and open that folder.
- 2) Locate and double click on the "Printer Update" icon.
- 3) Double Click "Install". The System 7 printing software is now being installed on your system
- 4) Choose Quit. Your system has been updated to the System 7 printing software and is immediately ready to print in a System 7 environment.

After installation, open the Chooser and select the appropriate printer. If a dialog box appears asking if you want to initialize the printer, click "Yes". Make sure that all users on the network using this printer are running either System 7 or have updated their printing software to System 7.

Alternatively, you can simply drag the System 6 LaserWriter driver and the Laser Prep file to the trash. Then drag the System 7 LaserWriter driver to the System Folder.

#### Article Change History:

- 11 May 1994 - Added section on System 6.0.8.
- 11 May 1992 - Reviewed for technical accuracy.
- 01 Sep 1992 - Rewrote for clarity and with additional information.

Support Information Services

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Tech Info Library Article Number:6803



# Tech Info Library

## System 7: Diagnosing System Bombs

Revised: 5/23/91  
Security: Everyone

System 7: Diagnosing System Bombs

=====

Article Created: 28 February 1991  
Article Last Reviewed: 22 July 1992  
Article Last Updated: 22 July 1992

TOPIC -----

I've installed System 7 and it bombs. What should I do?

DISCUSSION -----

If your system bombs, proceed as follows:

- 1) Restart your Macintosh while holding down the Shift key, and release it when the desktop appears. This action causes most of your system extensions (INITs) and control panels not to load when the system boots. (Note: In System 7, INITs are referred to as "system extensions.") After you have removed your INITs and control panels, take each one, one-by-one, and drag it to the System Folder and restart. If the system bombs again, you will be able to tell which INIT, control panel, or combination of them is causing the crash.
- 2) Open your System folder and remove all of your extensions and control panels by placing them in a separate folder outside the System Folder. Examine the system extensions and verify that you are using the current version. If necessary, contact the product developer to determine which is the current version.

If your Macintosh computer still does not start up, continue to step 3.

- 3) Restart from one of the System 7 floppies. In the System 7 disk suite, the bootable floppy is the "Disk Tools" disk (both 800K and 1.4M).
- 4) Move any fonts, desk accessories, extensions, control panels, and preference files that you want to keep from the System Folder to another folder on your hard disk. Drag the remainder of the System Folder to the



trash and empty the trash.

- 5) Do a "clean" install of the software by following the installation guidelines in your "Macintosh User's Guide."

If your Macintosh computer still does not start up, contact your dealer.

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Tech Info Library Article Number:6805



# Tech Info Library

## System 7: Virtual Memory and Third-party Accelerators

Revised: 9/22/92  
Security: Everyone

System 7: Virtual Memory and Third-party Accelerators

=====

Article Created: 1 March 1991

### Article Change History

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09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can customers use the Virtual Memory feature of System 7, if they have third-party accelerators for the Macintosh Plus, SE, or Classic?

### DISCUSSION -----

No. The virtual memory feature of System 7 is available only on the Macintosh II family of computers that are equipped with a 68030 microprocessor or equivalent. System 7 Virtual Memory was written for the Macintosh II family (and more specifically, for the Macintosh II ROMs). Please contact the developer of your accelerator for additional information.

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Tech Info Library Article Number:6808



# Tech Info Library

## System 7: Compatibility of Third-Party Hard Disks (4/95)

Revised: 4/3/95  
Security: Everyone

System 7: Compatibility of Third-Party Hard Disks (4/95)

Article Created: 1 March 1991  
Article Reviewed/Updated: 03 April 1995

TOPIC -----

Are third-party hard disks compatible with System 7?

DISCUSSION -----

Yes. Virtually all of the third-party hard disks tested by Apple are compatible with System 7.

However, you may run into problems if your hard disk driver software (also called formatting software) is out of date. Most hard disk vendors revised their formatting software for System 7. Alternatively, you may try a third-party driver utility like Silverlining or Drive 7. Apple's utility, HD SC Setup, works only with Apple hard disks. Version 7.0 of HD SC Setup comes with System 7.

If you have a question about a specific third-party hard disk or driver version, contact the vendor.

### Article Change History

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03 Apr 1995 - Corrected wording of Silverlining.  
01 Sep 1992 - Revised to add more detail about drivers.

Support Information Services

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Tech Info Library Article Number:6809



# Tech Info Library

## System 7: Compatibility of Suitcase

Revised: 7/27/93  
Security: Everyone

System 7: Compatibility of Suitcase

=====

Article Created: 1 March 1991  
Article Reviewed/Updated: 1 September 1992

TOPIC -----

Can I use Suitcase II with System 7?

DISCUSSION -----

You will need at least version 1.2.11 of Suitcase II for use with System 7.  
You should contact Fifth Generation Systems, Inc. for more information.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:  
1 September 1992 - Updated, to include version information.

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Tech Info Library Article Number:6810



# Tech Info Library

## System 7: Compatible Version of the Apple CD-ROM INIT

Revised: 9/2/92  
Security: Everyone

System 7: Compatible Version of the Apple CD-ROM INIT

=====

Article Created: 1 March 1991

### Article Change History

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09/01/92 - UPDATED

- To describe version scheme more fully.

### TOPIC -----

What is the System 7-compatible version of the Apple CD-ROM INIT?

### DISCUSSION -----

Use version 3.0.2 (or later) of the Apple CD-ROM system extension (or INIT) when using System 7.

Note that the CD-ROM Software version as a whole may be a different version number than the CD-ROM extension by itself. For example, CD-ROM Software v3.2 comes with Apple CD-ROM system extension 3.1.

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Tech Info Library Article Number:6811



# Tech Info Library

## System 7: A Multitasking Operating System

Revised: 3/21/91  
Security: Everyone

System 7: A Multitasking Operating System

=====

Article Created: 1 March 1991

### Article Change History

-----

08/25/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Is System 7 a multitasking operating system?

### DISCUSSION -----

Yes. Multitasking (previously known as MultiFinder) has been integrated into the system, so that System 7 is a multitasking operating system. With multitasking, people can work with several programs at the same time and even do some operations concurrently, like working while printing or copying files or recalculating a spreadsheet. With several programs running and available, people get more effective use from the computer.

In System 7, background printing and background copying of files are standard features. Consult your software developer for details on other multitasking capabilities.

At a more technical level, multitasking is the ability to do a number of tasks concurrently. System 7 uses a cooperative multitasking implementation to run several applications concurrently while doing tasks in the background.

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Tech Info Library Article Number:6812



# Tech Info Library

## System 7: When an Application from System 6 Won't Open

Revised: 5/23/91  
Security: Everyone

System 7: When an Application from System 6 Won't Open

=====

Article Created: 1 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why can't I open a document under System 7 that I opened under System 6?

DISCUSSION -----

Because applications share available memory, your application may not have enough memory to open your document. You can easily increase the amount of memory that your application uses with System 7, so that you can open and work with any of your existing documents.

Here is a procedure to increase application memory:

- 1) Quit the application.
- 2) Find and select the application.
- 3) Choose Get Info from the File menu in the Finder.
- 4) At the bottom of the Info box is a field labeled "Application Memory Size." The number in this box is the amount of memory (like 1024K) used by the application when you run it.
- 5) To increase the memory for this application, change the number in the Application Memory Size field. For example, if you are running a Macintosh computer with 4MB of RAM, you might increase the number to as much as about 3000K. Consult your application's manual for specific recommendations.

Of course, you can always add more RAM memory to the computer.

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Tech Info Library Article Number:6813





# Tech Info Library

## System 7: Not Enough Memory... Message (10/94)

Revised: 10/11/94  
Security: Everyone

System 7: "Not Enough Memory..." Message (10/94)

Article Created: 1 March 1991  
Article Reviewed/Updated: 10 October 1994

TOPIC -----

When it's difficult to open applications or print, these tips will help you use Macintosh memory more efficiently. For more information about managing memory, see the "Macintosh User's Guide".

DISCUSSION -----

To use System 7, your Macintosh needs at least 2MB of memory (4MB is recommended). If you customarily work with several programs at a time, you may wish to install more memory.

Use the Available Memory  
=====

If you get a message asking if you'd like to open a program using the available memory, click OK, and the program will open. This message appears when the available memory is greater than the minimum memory required to open the program, but less than the recommended amount. In rare cases, you may be unable to use some features of the program.

Quit Some Open Programs  
=====

When you open an application and see the "not enough memory" message, you should quit one or more open programs. Open the Application menu (right end of the menu bar) to see which programs are open. This message appears when the available memory is less than the minimum required to open the program.

Change a Program's Memory Size  
=====

You can often avoid memory problems by reducing or sometimes increasing a

program's current memory size. In rare cases, reducing a program's memory size degrades performance.

Sometimes the "not enough memory" error is telling you that your system may have enough RAM available, but the application's "preferred memory size" is set too low. Check About This Macintosh in the Apple menu for the largest free block size to ensure that you have enough free space; increase the Preferred Size (Step 4 in the following table) to a larger amount (you may need to experiment). Follow these steps to change a program's memory size:

| STEP | ACTION                                                                 |
|------|------------------------------------------------------------------------|
| 1    | Quit the program.                                                      |
| 2    | In the Finder, select the program's icon.                              |
| 3    | Choose Get Info from the File menu. The program's Info window appears. |
| 4    | Reset the memory size in the Preferred Size field.                     |
| 5    | Close the Info window                                                  |
| 6    | Try again to open the program.                                         |

#### Turn Off Background Printing

=====

When background printing is on, you can print while using the computer for other work. If you don't need background printing, you can reduce the amount of memory required to print by turning it off. Follow these steps to turn off background printing:

| STEP | ACTION                                            |
|------|---------------------------------------------------|
| 1    | Choose the Chooser from the Apple menu.           |
| 2    | In the Chooser window, select a LaserWriter icon. |
| 3    | Click the Background Printing: Off button.        |

#### Quit Some Programs Before Printing

=====

When you print, you'll sometimes see the Application menu begin to blink. When this happens, follow these steps to quit a program and make more memory available for printing:

| STEP | ACTION                                                                                       |
|------|----------------------------------------------------------------------------------------------|
| 1    | Choose Finder from the Application menu. You'll see an alert box.                            |
| 2    | Click OK to close the alert box.                                                             |
| 3    | From the Application menu, choose the program you want to close. The program becomes active. |
| 4    | Choose Quit from the File menu.                                                              |

After quitting one or more programs, try printing again.

Set the Disk Cache to the Smallest Size

=====

The disk cache is a portion of the computer's memory set aside to limit how often the computer must read from a disk. This speeds up the computer's performance. By reducing the size of the disk cache, you can make more memory available for application programs. Follow these steps to adjust the disk cache:

| STEP  | ACTION                                                                                                           |
|-------|------------------------------------------------------------------------------------------------------------------|
| ----- | -----                                                                                                            |
| 1     | Choose Control Panels from the Apple menu.                                                                       |
| 2     | Open the Memory control panel (double-click the Memory icon).                                                    |
| 3     | In the Memory control panel, click the down arrow repeatedly until the disk cache is the smallest possible size. |
| 4     | Choose Restart from the Special menu to restart the Macintosh.                                                   |

#### Drag Optional Extensions Out of the Appropriate Folders

=====

Extensions (also known as INITs) compete with application programs for memory. (System extension icons are often displayed in the bottom-left portion of the screen when the computer starts up.) There are three types of extensions:

- Control Panels
- System Extensions
- Chooser Extensions

These extensions may be located in any of these folders:

- Control Panels folder
- System Folder
- Extensions folder

You can conserve memory by removing system extensions that you don't need. For instance, if your Macintosh is not connected to a host database, you can remove the DAL (Data Access Language) system extension. Likewise, if your Macintosh is not connected to a network, you can remove the AppleShare system extension. Follow these steps to remove system extensions:

| STEP  | ACTION                                                                                         |
|-------|------------------------------------------------------------------------------------------------|
| ----- | -----                                                                                          |
| 1     | Open the System Folder.                                                                        |
| 2     | Open the appropriate folders                                                                   |
| 3     | Drag the system extension icon out of the System Folder to another location on your hard disk. |
| 4     | Restart the computer.                                                                          |

#### Turn Off File Sharing

=====

When file sharing is turned on, you can share information on your computer's hard disk with other users on a network. If you don't currently use file sharing, you can conserve memory by turning it off or removing it from the

Extensions folder. Follow these steps to turn off file sharing:

| STEP | ACTION                                                                                                                                                                          |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Choose Control Panels from the Apple menu.                                                                                                                                      |
| 2    | Open the Sharing Setup control panel (double-click the Sharing Setup icon).                                                                                                     |
| 3    | Click Stop in the File Sharing section of the Sharing Setup control panel. A message appears asking how many minutes the computer should wait until file sharing is turned off. |
| 4    | Type a number and click OK.                                                                                                                                                     |

Restart the Computer

=====

If you have opened and closed a number of programs, your Macintosh memory can become fragmented so that you can't open a large program. When this happens, quit all the open programs, and restart the computer and then open the program.

Article Change History:

10 October 1994 - Added steps to take in different situations

Support Information Services

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Tech Info Library Article Number:6814



# Tech Info Library

## System 7: Extensions Folder

Revised: 9/13/95  
Security: Everyone

System 7: Extensions Folder

=====

Article Created: 1 March 1991  
Article Reviewed/Updated: 13 September 1995

TOPIC -----

What is the role of the Extensions folder?

DISCUSSION -----

The Extensions folder inside the System 7.x System Folder contains "system extensions" (previously known as "INITs"), and miscellaneous software additions to your Macintosh computer, such as printer drivers and network drivers.

The Extensions folder is the first place that the System looks when loading system extensions at startup.

System 7.x implements a new capability for automatic installation for system resources. When you drag a system extension (INIT), control panel, font, or a desk accessory onto the icon of the System folder, the system automatically determines where the resource should go and places it there. If you drag a system extension (INIT) onto the icon of the System Folder, it gets placed in the Extensions folder.

Article Change History:  
13 Sep 1995 - Updated format, reviewed for technical accuracy.  
09 Sep 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6815



# Tech Info Library

## System 7: Preferences Folder

Revised: 9/17/92  
Security: Everyone

System 7: Preferences Folder

=====

Article Created: 1 March 1991

### Article Change History

-----

09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the role of the Preferences folder?

### DISCUSSION -----

The Preferences Folder is a folder inside the System Folder. It provides a standard place for applications to store their special files, such as dictionaries, preference files, option files, settings files, resume files, and so on. You shouldn't often need to access this folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6816



# Tech Info Library

## System 7: Sharing a Hard Disk with a System 6 Macintosh

Revised: 5/23/91  
Security: Everyone

System 7: Sharing a Hard Disk with a System 6 Macintosh

=====

Article Created: 1 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I move a hard disk between a Macintosh computer running System 6 and a Macintosh computer running System 7?

DISCUSSION -----

Yes. You can move hard drives between Macintosh computers running System 6 and System 7. When a hard disk is moved from System 6 to System 7, you will see a dialog box when you start stating that "This disk is being updated for new system software". This process does not affect any data on your disk. Rather, it means the system is creating a new System 7 Desktop file on the hard disk. Afterwards, you may use your hard disk as usual.

When a hard disk is moved from System 7 back to System 6, you will notice a few differences under System 6. First, you should rebuild the Desktop of the hard disk by holding down the Command and Option keys, while starting the Finder. If you don't do this, the first time you go back to System 6, some icons may not appear properly.

You may also notice two new folders which appear on your hard disk under System 6 which were not present under System 7. The first of these is the Desktop folder which will contain any items which you placed on the desktop under System 7. The second folder you will see under System 6 is the Trash folder. This folder will contain any items which were dragged to the Trash (but not emptied) under System 7.

Moving a disk between System 6 and System 7 is safe and will not damage any data.

Note: Locked media created under System 7 cannot be mounted under System 6

until they are unlocked.

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Tech Info Library Article Number:6817





# Tech Info Library

## System 7: Compatibility of System 6 Desk Accessories

Revised: 9/2/92  
Security: Everyone

System 7: Compatibility of System 6 Desk Accessories

=====

Article Created: 1 March 1991

### Article Change History

-----

09/01/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

Will my System 6 desk accessories work under System 7?

### DISCUSSION -----

Yes. Most all desk accessories (DAs) written for System 6 run under System 7. To use a System 6 desk accessory, you must first take it out of its "suitcase". Follow these steps:

- 1) Locate the desk accessory. It should appear in a file that has a suitcase icon. (Unless it was already part of the System 6 System file - in which case it would be in the System 7 System file.)
- 2) Open the suitcase icon by selecting it and choosing Open from the File menu, or by double-clicking on the suitcase. The suitcase will open into a window and show the desk accessory inside.
- 3) Drag the desk accessory out of the window and onto your hard drive. You can put the desk accessory anywhere on your hard drive. If you want to access the desk accessory from the Apple Menu, put the desk accessory in the Apple Menu Items folder.

Some desk accessories, like spell checkers and art effects, will need special installation procedures to work properly with System 7 (they may need to be installed in the System file, though Apple does not endorse or

recommend this method). Check with the software developer for additional details on using these DAs with System 7.

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Tech Info Library Article Number:6818



# Tech Info Library

## System 7: Desk Accessories and the Apple Menu Items Folder

Revised: 9/15/92  
Security: Everyone

System 7: Desk Accessories and the Apple Menu Items Folder

=====

Article Created: 1 March 1991

### Article Change History

-----

09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Do Desk Accessories have to be in the Apple Menu Items folder?

### DISCUSSION -----

No. You may put and use your desk accessories anywhere on your hard disk (including the desktop or in the Apple Menu Items folder).

### Putting a Desk Accessory into the Apple Menu

-----

If you want to put a desk accessory into the Apple menu, drag the desk accessory onto the System Folder icon. Your desk accessory will automatically get placed in the Apple Menu Items folder.

### Moving a Desk Accessory from The Apple Menu to the Desktop

-----

If you want to remove a desk accessory from the Apple Menu and put it on the desktop instead, follow these steps:

- 1) Open your System folder.
- 2) Locate and open the Apple Menu Items folder.
- 3) Locate the desired desk accessory and drag it out of the Apple Menu Items folder and onto the desktop.

Using a Desk Accessory from System 6

-----  
You may find that older desk accessories appear in desk accessory suitcases. To use such a desk accessory, open the suitcase by double-clicking it. Then, drag the desk accessory out of the suitcase window. You can now use the desk accessory.

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Tech Info Library Article Number:6819



# Tech Info Library

## System 7.x: Apple Menu Items Limit (2/95)

Revised: 2/21/95  
Security: Everyone

System 7.x: Apple Menu Items Limit (2/95)

Article Created: 1 March 1991  
Article Reviewed/Updated: 21 February 1995

TOPIC -----

Is there a limit to the number of items in the Apple Menu?

DISCUSSION -----

System 7.x has a defined limit of no more than 52 items displayed in the Apple Menu Items Folder.

The value of 52 was set for performance reasons. Basically, when more than 52 items are in the Apple Menu Items Folder, the amount of available RAM for processing is limited (especially when the menu items has color icons), drastically slowing the display of menus. Thus, a decision was made to take into account what "acceptable" performance was, and the value of approximately 52 menu items was the threshold amount.

You can still place more than 52 items in the Apple Menu Items Folder, but only the first 52 (alphabetically by name) are displayed. Refer to the article titled "System 7.x: Changing Sequence of Apple Menu Items" to ensure the menu items you want are alphabetically in the first 52 menu items.

Here are a couple of workarounds:

- Have folder aliases in the Apple Menu Items Folder.
- Use the hierarchical menus in System 7.5 (or a third-party software that provides hierarchical menus). Hierarchical menus in System 7.5 are controlled through the Apple Menu Options Control Panel.

Article Change History:  
21 Feb 1995 - Added keyword; made minor updates.  
15 Feb 1995 - Reviewed for technical accuracy.

# ..TIL06820-System\_7-xApple\_Menu\_Items\_Limit\_2-95.pdf

10 Nov 1994 - Added System 7.5 and Apple Menu Options Control Panel.

Support Information Services

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Tech Info Library Article Number:6820



# Tech Info Library

## System 7: INITs or System Extensions in System 7

Revised: 9/25/92  
Security: Everyone

System 7: INITs or System Extensions in System 7

=====

Article Created: 1 March 1991

### Article Change History

-----

09/25/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How are INITs loaded in System 7?

### DISCUSSION -----

In System 7, INITs are referred to as "system extensions." The system looks for extensions in three places when loading them at boot time:

- First, it looks in the Extensions folder (located in the System Folder). This is the proper place to put your compatible INITs or system extensions.
- Second, it looks in the Control Panels folder (also inside the System Folder).
- Third, it loads any extensions it finds at the root level of the System Folder itself.

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Tech Info Library Article Number:6821



# Tech Info Library

## System 7: How to Disable System Extensions (8/95)

Revised: 8/17/95  
Security: Everyone

System 7: How to Disable System Extensions (8/95)

Article Created: 1 March 1991  
Article Reviewed/Updated: 17 August 1995

TOPIC -----

Can I disable system extensions (previously called INITs) under System 7?

DISCUSSION -----

Yes. If your system crashes when you first turn it on, or if you are experiencing unexpected behavior with an application or in the Finder itself, you may have one or more system extensions (INITs) that are incompatible with System 7 or with each other.

If you suspect that problems you are experiencing with your system are due to extensions loaded in your System Folder, Extensions folder, or Control Panels folder, you can temporarily disable them by holding down the Shift key as you start your computer.

After you have started your Macintosh while holding down the Shift key, you can remove any extensions that may be causing problems. The next time you restart, all of your extensions will load as usual.

Holding down the Shift key when you start the computer turns off all extensions that may cause other things on your system not to work. You should do this only when you think a newly-added extension is the cause of your problems. Some system extensions are needed to do essential things like share files, access file servers, access CD-ROMs, and so on. However, you can continue to print even with the extensions disabled.

### Article Change History:

17 Aug 1995 - Reformatted and reviewed for technical accuracy.  
08 Aug 1992 - Reviewed for technical accuracy.

Support Information Services



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Tech Info Library Article Number:6822



# Tech Info Library

## System 7: INIT Does Not Work in the Extensions Folder

Revised: 3/21/91  
Security: Everyone

System 7: INIT Does Not Work in the Extensions Folder

=====

Article Created: 4 March 1991

### Article Change History

-----

08/20/92 - REVISED

- To make more clear; edited.

### TOPIC -----

What should I do if an INIT does not work in the Extensions folder?

### DISCUSSION -----

INITs (called "system extensions" in System 7) that do not work when loaded to the Extensions folder should be moved to the root level of the System folder. Some INITs written for System 6 expect to be at the same folder level as the System file.

To put an INIT into the root level of the System folder without having it automatically routed to the Extensions folder, open the System Folder and drag the INIT into the folder's open window, rather than onto the icon of the System Folder. Automatic routing only occurs when you drop something onto the icon of the System folder.

If the INIT still doesn't work at the root level of the System Folder, check with the source to make sure the INIT is compatible with System 7.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6824



# Tech Info Library

## System 7: No Aliases in System 6

Revised: 3/21/91  
Security: Everyone

System 7: No Aliases in System 6

=====

Article Created: 4 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do aliases work in System 6?

DISCUSSION -----

No. Aliases are not supported under System 6. You can see the Alias file under System 6, but not use it.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6829



# Tech Info Library

## System 7: One View per Shared Folder

Revised: 9/4/92  
Security: Everyone

System 7: One View per Shared Folder

=====

Article Created: 4 March 1991

### Article Change History

-----

09/03/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can different users have their own view of a shared folder?

### DISCUSSION -----

No. The view of shared folder is controlled by the owner of that folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6832



# Tech Info Library

## System 7: How to Find with Multiple Criteria

Revised: 3/21/91  
Security: Everyone

System 7: How to Find with Multiple Criteria

=====

Article Created: 4 March 1991

### Article Change History

-----

08/21/92 - UPDATED

- To add information about "cannot display all items" message.

### TOPIC -----

How can I do a Find with multiple criteria?

### DISCUSSION -----

Do this through the "Find..." dialog in the Finder:

- 1) Click on the "More Options" button.
- 2) Select the first criterion you want to search and check "all at once".
- 3) Click the Find button.
- 4) After all the files meeting the first criterion are found and selected, choose "Find, More Options", enter the second criteria, and select "Search: the selected items".
- 5) Click the Find button.

Only those items that meet both criteria remain selected. You can repeat this procedure to narrow the search as much as you need.

If you get a message that not all items meeting the criteria could be displayed at once, the most likely reason is that some items are at the desktop level and could not be displayed in the window. Try moving those

items from the desktop into the root level window of the volume. The other possible reason for the message is that you have run out of memory due to too large a search result. Try quitting any open applications to free up more memory.

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Tech Info Library Article Number:6833



# Tech Info Library

## System 7: How to Install FKEY Resources

Revised: 9/15/92  
Security: Everyone

System 7: How to Install FKEY Resources

=====

Article Created: 4 March 1991

### Article Change History

-----

09/14/92 - REVISED

- To provide more information.

### TOPIC -----

How do I install FKEY resources to be used with System 7?

### DISCUSSION -----

As in System 6, FKEYs must be installed using a "resource moving" utility like ResEdit (version 2.0 or later).

Installing System 7 over a previous system does not remove FKEYs that were already installed in your system.

Note: The screen-capture FKEY (invoked by pressing Command-Shift-3) has been much improved in System 7. When you press Command-Shift-3, the system takes a "snapshot" of your screen and creates a TeachText file of the image. The resulting file contains an accurate image of your screen, even displaying colors and the image from multiple attached monitors.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6835



# Tech Info Library

## System 7: The Little Triangle Beside Each Folder

Revised: 3/21/91  
Security: Everyone

System 7: The Little Triangle Beside Each Folder

=====

Article Created: 4 March 1991

### Article Change History

-----

08/21/92 - UPDATED

- To include keyboard shortcut.

### TOPIC -----

When I'm in View by Name, Size, or Date, I see a little triangle beside each folder. What does it do?

### DISCUSSION -----

When you are in a list view (View by Name, Size, Kind, Label, Date), notice that each folder has a small triangle just to its left. Clicking this triangle displays the contents of that folder in the same window.

With the icon of a folder selected, Command-right arrow will flip the triangle down and display the contents of the folder just like clicking on the triangle; Command-left arrow will flip the triangle back up and hide the contents of the folder.

If you want to view the contents of that folder in a separate window, double-click the folder icon, or select the icon and choose Open from the File menu.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6836





# Tech Info Library

## System 7: How to Rename File and Folder Icons

Revised: 3/21/91  
Security: Everyone

System 7: How to Rename File and Folder Icons

=====

Article Created: 4 March 1991

### Article Change History

-----

08/21/92 - UPDATED

- With additional tips on renaming.

### TOPIC -----

How do I rename file and folder icons in System 7?

### DISCUSSION -----

In Finder 7.0, renaming icons is slightly different from System 6. To rename an icon you must click directly on the name of the icon and wait for the cursor to change to an I-beam. A box will appear around the name of the icon and you can then edit the name. The speed at which the box appears, making the file or folder name editable, is dependent on the double-click speed in the Mouse control panel.

But if you don't want to wait for the cursor to change to an I-beam, you can click once on the file or folder name and drag the cursor off the name. This will make the name immediately editable. Alternately, click anywhere on the icon and press Return to make the name immediately editable.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6837



# Tech Info Library

## System 7: How to Customize an Icon

Revised: 8/22/91  
Security: Everyone

System 7: How to Customize an Icon

=====

Article Created: 4 March 1991

### Article Change History

-----

08/16/91 - UPDATED  
    • For accuracy.  
08/24/92 - REVIEWED  
    • For technical accuracy.

### TOPIC -----

Can I customize an icon in System 7?

### DISCUSSION -----

Yes. Here's how to customize an icon in System 7:

- 1) Select the graphic you want to use for an icon. An icon in the Get Info window of any document is a possible source.
- 2) Copy the graphic to the Clipboard by choosing Copy from the Edit menu.
- 3) In the Finder, select the icon you want to change.
- 4) Choose Get Info from the File menu.
- 5) Ensure that the Locked box in the lower-left corner of the Get Info window is not checked. You cannot customize the icon of a locked file.
- 6) Click the icon at the upper left of the Get Info window to select it.
- 7) Choose Paste from the Edit menu.

8) Click the close box to close the Get Info window.

You can change an icon back by clicking the icon in the upper-left corner of the Get Info window and choosing Cut or Clear from the Edit menu.

#### Notes

-----

- If the selected graphic is bigger than the icon in the Get Info window, it automatically shrinks to fit.
- Some icons cannot be customized, including those for locked items, control panels, and other parts of the system software.

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Tech Info Library Article Number:6838



# Tech Info Library

## System 7: How to Change Color of a Window or Dialog Box

Revised: 3/21/91  
Security: Everyone

System 7: How to Change Color of a Window or Dialog Box

=====

Article Created: 4 March 1991

### Article Change History

-----

08/24/92 - REVIEWED  
• For accuracy.

### TOPIC -----

Can I change the colors of windows and dialog boxes?

### DISCUSSION -----

Yes. The System 7 Color Control Panel lets you change both the color used for highlighting text and the color scheme used for windows, scroll bars, and dialog boxes.

To do this, open the Color Control Panel and click the "window color" pop-up menu. From this menu you can select various color schemes or black-and-white.

You may also choose from several color desktop patterns in the General Controls Control Panel.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6839



# Tech Info Library

## System 7: How to Use Balloon Help

Revised: 3/21/91  
Security: Everyone

System 7: How to Use Balloon Help

=====

Article Created: 4 March 1991

### Article Change History

-----

08/24/92 - REVIEWED  
• For accuracy.

### TOPIC -----

How does Balloon Help work? Will I be able to do work when Help is turned on?

### DISCUSSION -----

When Balloon Help is on, balloons will appear which tell you about anything you point to on the screen. You don't need to click, just point. When help is turned on, every point, click, and drag works exactly as it normally does.

To turn Balloon Help ON chose "Show Balloon" in the Help menu.

To turn Balloon Help OFF chose "Hide Balloon" in the Help menu.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6840



# Tech Info Library

## System 7: What the Find Command Beep Means

Revised: 3/21/91  
Security: Everyone

System 7: What the Find Command Beep Means

=====

Article Created: 4 March 1991

### Article Change History

-----

08/24/92 - REVISED

- To give additional information.

### TOPIC -----

Why do I only get a beep sound when I try to use the Find command?

### DISCUSSION -----

The beep sound means that Find could not find any more files with the search criteria you specified. When an icon is found, the Find command opens the window where that icon resides and selects it for you.

When the Find command fails to locate a single item that fits your search criteria, it displays the message "No matching items were found."

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6841



# Tech Info Library

## System 7: What Happened to the Set Startup Menu Item

Revised: 3/21/91  
Security: Everyone

System 7: What Happened to the "Set Startup" Menu Item

=====

Article Created: 4 March 1991

### Article Change History

-----

08/24/92 - REVISED

- To give more details.

### TOPIC -----

What happened to the "Set Startup" menu item that was in System 6?

### DISCUSSION -----

"Set Startup" under System 6 lets you switch between the Finder and MultiFinder and set certain applications and desk accessories to open automatically when you turn on your Macintosh.

System 7 has added more flexibility to this feature. Using System 7, you can have applications, documents, control panels, desk accessories, or aliases open automatically when you start you Macintosh.

To do this, just put the items you want opened into the Startup Items folder inside the System folder. If you want an application to open at startup but you don't want to move it from its current location, just make an alias of it and put that into the Startup Items folder.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6843



# Tech Info Library

## System 7.x: PrintMonitor Documents Folder (7/93)

Revised: 7/9/93  
Security: Everyone

System 7.x: PrintMonitor Documents Folder (7/93)

Article Created: 4 March 1991

### Article Change History

07/08/93 - UPDATED

- To mention host computers that use Grayshare for some direct-connect printers.

09/16/92 - UPDATED

- With information about ImageWriter and StyleWriter.

### TOPIC

What does the PrintMonitor Documents folder do?

### DISCUSSION

With System 7, you can print to a LaserWriter or a StyleWriter while you do other work with your Macintosh. For instance, you can print and continue working on a document at the same time. This is called "background printing."

When background printing is turned on for printers in the Chooser, files waiting to be printed are temporarily stored in the PrintMonitor Documents folder until the printer is ready to print them. This is all done in the background.

Direct-connect printers that use Grayshare, such as the Apple Color Printer, the StyleWriter II, the Personal LaserWriter 300, also use the PrintMonitor documents folder. The host computer handles the printer spooling, and temporarily stores files in the PrintMonitor Documents folder.

The ImageWriter does not support background printing.

Copyright 1991, 1992, 1993, Apple Computer, Inc.



Tech Info Library Article Number:6844



# Tech Info Library

## System 7: Views Control Panel

Revised: 9/17/92  
Security: Everyone

System 7: Views Control Panel

Article Created: 4 March 1991

### Article Change History

09/16/92 - REVISED

- To show additional display tip about putting icons in order.

### TOPIC -----

What does the Views control panel do?

### DISCUSSION -----

The Views control panel in System 7 controls how the files and windows on your desktop are displayed.

You can change the font and font size the Finder uses to display icons, and how icons are arranged when you select Clean Up from the Special menu.

Another option is selecting how information is displayed in various list views (View by Name, Date, Kind, Size, Label). You can also change things like icon size, space available display, and what type of information should appear.

If you want to arrange your files in an icon view but in order of name, date, kind, size or label, first display the files by the view by which you want to sort (using the View menu. Then, change your view to one of the icon views, hold down the Option key, and choose Clean Up by... from the Special menu. Your last chosen view will be the parameter by which the icons are sorted.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6845



# Tech Info Library

## System 7: Why Trash Icon Expands When a Floppy Is Mounted

Revised: 9/17/92  
Security: Everyone

System 7: Why Trash Icon Expands When a Floppy Is Mounted

=====

Article Created: 4 March 1991

### Article Change History

-----

09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Why does the trash icon expand when I insert a disk?

### DISCUSSION -----

In System 7, items dragged to the Trash are not deleted until you select Empty Trash from the Special menu. If you drag items from a floppy to the Trash, those items will appear in the Trash whenever that disk is inserted, until you empty the Trash.

If you insert a disk that has some items in the Trash, the Trash icon will bulge when you insert the disk to let you know this disk has items in the Trash.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6846



# Tech Info Library

## System 7: The Some items could not be opened Message

Revised: 3/21/91  
Security: Everyone

System 7: The "Some items could not be opened" Message

=====

Article Created: 4 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why do I get the message "Some items could not be opened" when I start my Macintosh?

DISCUSSION -----

When a Macintosh starts, it looks inside the folder "Startup Items" inside the System folder and tries to open all of the icons it finds in that folder. This is useful when you have applications, documents, desk accessories, and control panels that you want to have opened automatically at startup.

If you see the message "Some items could not be opened" you have probably placed an icon that cannot be opened (like an INIT, system extension, printer driver, and so on) inside your Startup Items folder.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6847



# Tech Info Library

## System 7: All items could not be displayed in this window

Revised: 3/21/91  
Security: Everyone

System 7: "All items could not be displayed in this window"

=====

Article Created: 4 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why do I get the message "All items could not be displayed in this window"  
when I do a "Find-All At Once?"

DISCUSSION -----

This message is displayed when you find more items than the Finder can  
display at one time.

A partial list of the items meeting your "Find" criteria will be shown. To  
see the remaining items, select "Find Again" from the File menu.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6848



# Tech Info Library

## System 7: Balloon Help for Applications

Revised: 3/21/91  
Security: Everyone

System 7: Balloon Help for Applications

=====

Article Created: 4 March 1991

### Article Change History

-----

08/24/92 - REVISED  
• For clarity.

### TOPIC -----

Can I get Balloon Help for my current application?

### DISCUSSION -----

To get Balloon Help for an application you were using under System 6, you need to obtain a version of the application that supports Balloon Help under System 7. Most new or updated applications that came out after May 1991 support Balloon Help.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6849



# Tech Info Library

## System 7: Sharing Setup Control Panel

Revised: 9/4/92  
Security: Everyone

System 7: Sharing Setup Control Panel

=====

Article Created: 4 March 1991

### Article Change History

-----

09/04/92 - REVISED

- To add more information.

### TOPIC -----

What is the role of Sharing Setup?

### DISCUSSION -----

The Sharing Setup control panel lets you set up file sharing and network communication for your Macintosh. With this, you identify yourself and give yourself a password for authentication when you remotely access your Macintosh. You also name your Macintosh computer, so it can be identified when other users want to connect to your shared resources.

### How to Turn on File Sharing

-----

Follow these steps:

- 1) Open your Control Panel folder.
- 2) Open Sharing Setup Control Panel.
- 3) Type in your name, your password, and your computer's name.
- 4) Click the start button for File sharing.
- 5) Click the start button for Program Linking if you will be using that feature.

More information is contained in the Macintosh User's Guide.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6851





# Tech Info Library

## System 7: Users and Groups Control Panel

Revised: 9/4/92  
Security: Everyone

System 7: Users and Groups Control Panel

=====

Article Created: 4 March 1991

### Article Change History

-----

09/04/92 - EDITED

- For clarity and technical accuracy.

### TOPIC -----

What is the role of Users and Groups in System 7?

### DISCUSSION -----

The Users and Groups control panel lets you identify the names and passwords of users with whom you want to share specific folders or applications. With this, you can also set certain abilities regarding whether or not the user can connect to shared resources, or whether they change their connection password. User Setup also lets you create group icons and put multiple users into these groups.

### How to Create a User

-----

Follow these steps:

- 1) Open your Control Panels folder.
- 2) Open the Users & Groups control panel.
- 3) Select New User from the File menu.
- 4) Type the name of the new user and press the Return key.

More information is contained in the Macintosh User's Guide.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6852



# Tech Info Library

## System 7: File Sharing Monitor Control Panel

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing Monitor Control Panel

=====

Article Created: 4 March 1991

### Article Change History

-----

09/04/92 - EDITED

- For clarity and with more complete information.

### TOPIC -----

What is the role of the "File Sharing Monitor" in System 7?

### DISCUSSION -----

The File Sharing Monitor Control Panel lets you monitor file sharing activity. It shows you the name of any connected users (actually the names you have allowed users to connect with) and the total time that the user has been connected in the current session.

This monitor also lets you disconnect any connected users. A thermometer-style meter indicates the amount of access by all connected users.

### How to View File-Sharing Status

-----

Follow these steps:

- 1) Open your Control Panels folder.
- 2) Open the File Sharing Monitor control panel.

### How to Disconnect a File-Sharing User

-----

Follow these steps:

- 1) Open the File Sharing Monitor control panel.
- 2) Click on (select) the user you want to disconnect from the Connected Users list.
- 3) Click Disconnect.
- 4) Type the number of minutes before the user is disconnected, and click OK.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6853



# Tech Info Library

## System 7: File Sharing Performance Compared with AppleShare

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing Performance Compared with AppleShare

=====

Article Created: 4 March 1991

### Article Change History

-----

09/04/92 - REVISED

- To clarify and provide additional information and numbers from other sources.

### TOPIC -----

How does file sharing differ from the AppleShare File Server?

### DISCUSSION -----

AppleShare File Servers are designed to perform much better than Macintosh computers using file sharing when large numbers of users with heavy load requirements are involved. Service from a Macintosh with AppleShare File server software performs approximately 25 percent better than a Macintosh using file sharing for the same configuration.

File sharing lets an individual directly share and control sharing of folders of information with a small group of individuals. An AppleShare file server provides centralized control of sharing by an Administrator for a large group of individuals. File sharing is built around the Macintosh user with the focus and emphasis on personal control of sharing local folders. The distinguishing marks of centralized file service includes issues regarding administration for large workgroups, performance, and central access. System 7's file sharing is a form of distributed file sharing.

Performance and access needs will determine which approach provides the best service. File sharing is best suited for small workgroup focus, with optimal performance for low sharing load situations. Centralized file servers like AppleShare are designed for high traffic with large numbers of

users and are designed for continuous operation with no interruptions.

Using file sharing, up to 10 folders per machine can be shared, each having an unlimited number of enclosed folders. Up to 10 guest users can be connected to a networked hard disk, with up to 50 guest users identified in the Users and Groups file. This contrasts with 120 concurrent users for AppleShare 3.0.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6854



# Tech Info Library

## System 7: Sharing Files with a System 6 Macintosh

Revised: 9/4/92  
Security: Everyone

System 7: Sharing Files with a System 6 Macintosh

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - EDITED  
• For clarity and technical accuracy.

### TOPIC -----

If I am running System 7, can I share files, documents, or folders with a Macintosh running System 6?

### DISCUSSION -----

Yes. To set up your Macintosh computer to share files, documents, or folders, follow the instructions on setting up file sharing in the Macintosh User's Guide or search for other articles on the subject. You can share folders with any Macintosh (from the 512k enhanced and up), the Apple II, and any MS-DOS computer that uses AppleShare workstation software. Apple II and MS-DOS computers require special software and, in some cases, hardware.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6856



# Tech Info Library

## System 7: How to Use File Sharing

Revised: 9/4/92  
Security: Everyone

System 7: How to Use File Sharing

=====

Article Created: 5 March 1991

### Article Change History

-----

07/25/91 - REVIEWED

09/04/92 - REVISED

- To include additional information from other articles and correct other information.

### TOPIC -----

What is file sharing? How do I turn file sharing on? How can I use file sharing to share files between my portable and my desktop Macintosh?

### DISCUSSION -----

Macintosh file sharing is a powerful feature of Macintosh System 7 that lets you share your folders (and their files) with other people on a network. File sharing operates on any Macintosh that can run System 7 and is connected to an AppleTalk network. With your permission, others can view and even edit documents on your hard drive from their machines. Macintosh file sharing works between two or more Macintosh computers and you don't need to dedicate a Macintosh as a file server. Macintosh file sharing includes powerful security features, so that you may control access to your information through the specification of passwords privileges people have, for example read or write privileges.

Ten users can be connected to a shared volume at one time. You can directly share up to ten folders. Once a folder is shared the folders contained within the shared folder are automatically shared as well, and they do not get counted as part of the ten directly shared folders.

Before you can share files, you must turn on the file sharing capability.



Doing so takes an extra 268K of memory. Once you turn it on, it stays on until you turn it off again, including when you later restart your computer.

## How to Turn on File Sharing

-----

- 1) Choose Control Panels from the Apple menu and double-click the Sharing Setup control panel.
- 2) Make sure that you have identified your computer to the network. You have to give an Owner Name, an Owner Password, and a Macintosh Name.
- 3) Click the Start button. Its label changes to "Cancel" and the status line describes what is happening while file sharing is starting up. It may take a minute or so to complete. When the status line says "File sharing is on" and the button is labeled "Stop," your computer is ready to share files. If you start file sharing when AppleTalk is not active, it will be automatically turned on for you.
- 4) Close the Sharing Setup control panel and the Control Panels folder.

## How to Share a Folder

-----

Follow these steps:

- 1) Select the folder.
- 2) Choose Sharing from the File menu.
- 3) Click Share This Item And Its Contents.
- 4) Close the Privileges Window.
- 5) When asked for confirmation, click Save.

## How to Log on as Owner

-----

As the owner or administrator of two Macintosh systems - a desktop and a portable model for example - file sharing can be even easier. An AppleTalk network can be as small as two Macintosh computers connected together with LocalTalk (or compatible) cabling. Once connected together, either Macintosh computer can turn on file sharing. There is no need to share folders, because the owner can access everything. From the other Macintosh, you can connect with the AppleShare workstation software as the owner. Follow these steps to connect remotely as the owner:

- 1) Open the Chooser.
- 2) Select AppleShare.
- 3) Select your Macintosh computer.

- 4) Type your name, as you typed it in Owner Name field in the Sharing Setup dialog on the Macintosh you are connecting to.
- 5) Type your password, as you typed it in Owner Password field in the Sharing Setup dialog on the Macintosh you are connecting to.

You will see all the disk resources connected to the remote Macintosh as if you are looking directly at its desktop. Make an alias of the volume for even easier future access.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6859



# Tech Info Library

## System 7: How to Disable File Sharing

Revised: 9/4/92  
Security: Everyone

System 7: How to Disable File Sharing

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVISED

- To provide additional information.

### TOPIC -----

Can file sharing be disabled?

### DISCUSSION -----

Yes. File sharing can be disabled in two ways:

- By not enabling the sharing functionality with the Sharing Setup control panel (the button next to File Sharing should say "Start").
- By not installing the file sharing software. Either choose the Custom option in the system software Installer program, or simply drag the File Sharing extension out of the Extensions folder in the System Folder.

Here are the steps for turning off File sharing:

- 1) Open your Control Panel folder.
- 2) Open Sharing Setup Control Panel.
- 3) Click the "Stop" button for file sharing. The button name should change to "Start".

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Tech Info Library Article Number:6860



# Tech Info Library

## System 7: File Sharing Maximum Shared Users & Folders

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing Maximum Shared Users & Folders

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVISED

- With information for both folders and users.

### TOPIC -----

How many people can connect to my Macintosh computer via file sharing?

How many folders can I share?

### DISCUSSION -----

Up to 10 users can be concurrently connected to folders that you are sharing. You can name as many as 100 users and groups of users combined, but for optimal performance, it is recommended that you name no more than 50.

Up to 10 folders per machine can be shared, each having an unlimited number of enclosed folders.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6862



# Tech Info Library

## System 7: Sharing Applications

Revised: 8/24/92  
Security: Everyone

System 7: Sharing Applications

=====

Article Created: 5 March 1991

### Article Change History

-----

08/24/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I share applications with System 7?

### DISCUSSION -----

Yes. You can share applications in two ways:

- by sharing the folder that contains the application, so that multiple users can access it; and
- by sharing the program directly for access by remote program linking.

If you share the program by sharing the folder that it is in, then you must be aware of two issues:

- Some applications are not multi-user or AppleShare-aware and so cannot be used by more than one person at a time.
- You must adhere to the software license agreement provided with the application. Most applications only allow one user per copy.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6863



# Tech Info Library

## System 7: Sharing Files with PCs

Revised: 9/2/92  
Security: Everyone

System 7: Sharing Files with PCs

=====

Article Created: 5 March 1991

### Article Change History

-----

09/01/92 - UPDATED

- To include search information for Farallon.

### TOPIC -----

Can I use File sharing with PCs?

### DISCUSSION -----

MS-DOS-based computers can access folders and files shared by Macintosh computers by using the AppleShare PC software available from Farallon Computing. This software provides the same capabilities that Macintosh computers have when connecting to shared folders with the AppleShare workstation software.

The Farallon product is PhoneNET Talk software, formerly AppleShare PC. With it, any MS-DOS or Windows personal computer can share networked printers, file servers that support AppleTalk Filing Protocol (AFP), and AppleTalk network applications over an AppleTalk network.

For more information, search for Farallon Computing.

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Tech Info Library Article Number:6864



# Tech Info Library

## System 7: File Sharing and Multi-user Access to a Document

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing and Multi-user Access to a Document

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Does File sharing let several people access one document simultaneously?

### DISCUSSION -----

Support for multi-user access to a document depends on the application. All the major Macintosh database programs support multiple-user access to a shared data file and many other Macintosh programs are AppleShare-aware to the point that they also support multi-user access to a single document. Some applications, like Microsoft Word, let a user open a shared document as "read-only." This means that other users can also open the same document as read-only.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6865



# Tech Info Library

## System 7: File Sharing and TOPS/Novell/3Com Products

Revised: 9/2/92  
Security: Everyone

System 7: File Sharing and TOPS/Novell/3Com Products

=====

Article Created: 5 March 1991

### Article Change History

-----

09/01/92 - UPDATED

- To provide contact information.

### TOPIC -----

Does File sharing work with TOPS/Novell/3Com products?

### DISCUSSION -----

Yes. Users can connect to shared information through a variety of means. Using the AppleShare workstation software yields the most consistent results. File sharing, Novell, 3Com, and other vendors support the AppleShare workstation software. Other vendors that don't support the AppleShare workstation software can coexist with AppleShare solutions.

However, once shared, folders accessed with the AppleShare workstation software cannot be "re-shared" with Macintosh File sharing. Macintosh File sharing only lets you share locally connected folders.

For more information, contact the individual vendors of your network setup.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6866





# Tech Info Library

## System 7: File Sharing and Floppy Disks

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing and Floppy Disks

Article Created: 5 March 1991

### Article Change History

-----  
09/04/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I share a floppy disk through File sharing?

### DISCUSSION -----

No. File sharing only lets you share devices like hard disks and CD-ROMs.  
If you want to share information on a floppy disk, follow these steps:

- 1) Copy the data onto a hard disk.
- 2) Set up the sharing parameters.
- 3) Share your information.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6868



# Tech Info Library

## System 7: Cannot Share Tape Backup Units

Revised: 9/4/92  
Security: Everyone

System 7: Cannot Share Tape Backup Units

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I share TapeBackup units with File sharing?

### DISCUSSION -----

No. File sharing only lets you share devices like hard disks and CD-ROMs.

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Tech Info Library Article Number:6870



# Tech Info Library

## System 7: How to Change a File Sharing Password Remotely

Revised: 9/4/92  
Security: Everyone

System 7: How to Change a File Sharing Password Remotely

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVISED  
• For clarity.

### TOPIC -----

Can I change my file sharing password from a remote location?

### DISCUSSION -----

Yes. You can connect to one Macintosh from another Macintosh on the same AppleTalk network and change your password with the Set Password button, provided that file sharing is enabled on your Macintosh. You must be using AppleShare workstation software 2.0 or greater (included any System 6 versions) to access your System 7 Macintosh.

Follow these steps to change your password remotely:

- 1) Open the Chooser.
- 2) Select your Macintosh with the AppleShare workstation software.
- 3) Click the Set Password button.
- 4) Type your new password.
- 5) Press Tab and type the current password.
- 6) Click OK.

7) Type your new password to reconfirm your change.

6) Click OK.

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Tech Info Library Article Number:6872



# Tech Info Library

## System 7: Heavy File Sharing Can Slow Macintosh

Revised: 9/4/92  
Security: Everyone

System 7: Heavy File Sharing Can Slow Macintosh

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Will File sharing slow down my Macintosh when someone logs onto it?

### DISCUSSION -----

File sharing operates during the idle cycles on a user's machine. How often it uses those idle cycles or makes a higher-level request for more cycles depends on how heavy the requests are from the remote users connected to your Macintosh computer. During heavy access requests for files from remote users, the Macintosh manifests mouse jumping and varying degrees of slowness.

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Tech Info Library Article Number:6873



# Tech Info Library

## System 7: File Sharing and Desktop Items

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing and Desktop Items

=====

Article Created: 5 March 1991

### Article Change History

-----

09/04/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

While accessing my system via file sharing, I don't see my desktop items.  
Where are they?

### DISCUSSION -----

The items can be found in a folder called "Desktop Folder". This folder appears in the root of the volume to which you are remotely connected.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6875



# Tech Info Library

## System 7: Outline Fonts

Revised: 9/17/92  
Security: Everyone

System 7: Outline Fonts

=====

Article Created: 5 March 1991

### Article Change History

-----

09/16/92 - UPDATED  
• With information about TrueType.

### TOPIC -----

What are outline fonts?

### DISCUSSION -----

Outline fonts consist of mathematical descriptions of each character. Each character is defined by a series of lines and curves, and can be scaled to any size. Examples of outline fonts are PostScript and TrueType. You can find PostScript outline fonts in several of Apple's LaserWriter printers. Outline fonts give smooth, sharp text at any size when printed and (with TrueType) on the screen.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6879



# Tech Info Library

## System 7: Includes Bitmap Versions of TrueType Fonts

Revised: 6/10/91  
Security: Everyone

System 7: Includes Bitmap Versions of TrueType Fonts

=====

Article Created: 6 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Do I need Bitmap versions of TrueType fonts?

DISCUSSION -----

No. However, System 7 ships with the same component of bitmap fonts as System 6. This is to ensure that documents do not change line endings when moved from System 6 to System 7. This is the only reason that bitmap fonts are included.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6885





# Tech Info Library

## System 7: Reasons for Including TrueType

Revised: 3/22/91  
Security: Everyone

System 7: Reasons for Including TrueType

=====

Article Created: 6 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why do people need TrueType when they already have ATM (Adobe Type Manager) and Type 1 fonts?

DISCUSSION -----

Apple wants to offer more functionality at more affordable prices. TrueType provides consistent quality and interactive performance on all Macintosh computers. Outline font technology is something that needs to be an integrated part of the operating system, not a bolted-on solution. Software developers can do great things with type when they can count on outline fonts in the system.

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Tech Info Library Article Number:6886



# Tech Info Library

## System 7: TrueType Fonts Available at System 7 Launch

Revised: 3/22/91  
Security: Everyone

System 7: TrueType Fonts Available at System 7 Launch

=====

Article Created: 6 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How many TrueType fonts will be available when System 7 ships?

DISCUSSION -----

Most of the major type vendors have the TrueType technology well in hand, and are mainly trying to coordinate their production ramp with the introduction of System 7. We expect that each major type vendor will offer a minimum of 100 typefaces when System 7 ships, with a few offering several hundred.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:6888



# Tech Info Library

## System 7: No Need for Font/DA Mover

Revised: 3/22/91  
Security: Everyone

System 7: No Need for Font/DA Mover

=====

Article Created: 6 March 1991

### Article Change History

-----

08/19/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Will the Font/DA Mover work with System 7?

### DISCUSSION -----

Apple does not recommend that customers use the Font/DA Mover to install fonts or desk accessories in System 7. To install fonts or desk accessories in System 7, simply drag them onto the System Folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6893



# Tech Info Library

## System 7: The Edition Manager

Revised: 9/17/92  
Security: Everyone

System 7: The Edition Manager

=====

Article Created: 6 March 1991

### Article Change History

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09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the Edition Manager?

### DISCUSSION -----

The Edition Manager is a new feature in System 7 that provides the ability to automatically update documents. New Edit menu commands let users "Publish" data as "editions" to other documents, and "Subscribe" to editions that remain linked to the original source document. When the published data (the edition) is edited, the changes are copied automatically to all its subscribers, on the same machine or across the network.

Applications must be updated to take advantage of the Edition Manager. Contact each application's publisher for details.

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Tech Info Library Article Number:6894



# Tech Info Library

## System 7: Using Publish and Subscribe

Revised: 9/22/92  
Security: Everyone

System 7: Using Publish and Subscribe

=====

Article Created: 6 March 1991

### Article Change History

-----

09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How does Publish and Subscribe work?

### DISCUSSION -----

Publish and Subscribe work only with applications that have been revised to take advantage of this feature in System 7.

To use Publish and Subscribe, follow these steps:

- 1) Select some data you want to place in another application or document as a "live" copy.
- 2) From the Edit menu, select "Create Publisher". This brings up a dialog box asking you to name the Edition file that will connect the Publisher to the other documents subscribing to this data.
- 3) After you have created the Edition file, go to the document or application where you want to use this data and select "Subscribe To..." from the Edit menu.

This places a live copy of the data in your document. From this point on, whenever you modify the original publisher data, the Subscriber is automatically updated, too.

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# Tech Info Library

## System 7: Why Upgrade

Revised: 9/17/92  
Security: Everyone

System 7: Why Upgrade

=====

Article Created: 28 February 1991

### Article Change History

-----

09/16/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Why should I upgrade to System 7?

### DISCUSSION -----

Apple recommends that all Macintosh users upgrade to System 7. Finder 7.0 offers powerful new capabilities and greater ease of use. Its features include:

- Fast access to your information. System 7 offers a fast file-find, so you can locate your files quickly and easily. You can also access your most frequently-used files, applications, and folders from the Apple Menu.
- More flexible ways to view files. For example, by selecting the Outline view, you can see several folders in one window simultaneously. Another facility called "aliases" helps you organize your hard disk the way you want.
- Virtual Memory with System 7. Without adding more RAM, you can have more memory to run more applications through virtual memory and 32-bit addressing. With virtual memory, the computer uses part of the hard disk to increase the amount of physical memory. For example, a 4MB Macintosh computer appears to have 8MB. With this additional memory, you can run more applications. 32-bit addressing makes it possible to access more than 8MB of memory in their system.

- Share files on your Macintosh with others. You can share your files with other people on the same network without dedicating a computer to act as a file server.
- The ability to access information regardless of where it's located.
- Multitasking. You can run several applications simultaneously for greater productivity. For example, you can work on a memo while printing a spreadsheet.
- Improved window handling.
- Improved text with TrueType fonts. You will see sharper-looking text on both your screen and your printer.
- A color interface for Macintoshes supporting color.
- A complete on-line Help system using System 7's new Balloon Help.

All of the things mentioned above work without you having to buy a new application. System 7 maintains and enhances your investment in your computer and your applications. In addition, software developers are working on many new and powerful applications that take full advantage of System 7 features.

See the "What's New in System 7" guide for more details.

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Tech Info Library Article Number:6896





# Tech Info Library

## System 7: Runs on all Macintoshes

Revised: 3/22/91  
Security: Everyone

System 7: Runs on all Macintoshes

=====

Article Created: 28 February 1991

Article Change History

-----

08/17/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Does System 7 run on the Macintosh Plus, SE, Classic and Portable (the ones with a Motorola 68000 microprocessor)?

DISCUSSION -----

Yes. System 7 runs on all Macintosh computers that have at least 2MB of RAM, though 4MB of RAM is recommended. With the exception of the expanded memory capabilities, System 7 runs in its entirety on Macintosh Plus, SE, Classic, and Portable.

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Tech Info Library Article Number:6898



# Tech Info Library

## System 7: How to Install It

Revised: 9/15/92  
Security: Everyone

System 7: How to Install It

=====

Article Created: 28 February 1991

### Article Change History

-----

09/14/92 - REVISED

- To provide additional information.

### TOPIC -----

How do I install System 7?

### DISCUSSION -----

System 7 ships with an application named "Installer" that installs System 7 onto your Macintosh computer. You can run Installer from a set of floppy disks or from a file server.

IMPORTANT: You cannot "drag-install" System 7. You must use the System 7 Installer to install system software.

### Installing from Floppy Disks

-----

To upgrade your Macintosh to System 7 using floppy disks, follow these steps:

- 1) Shut down your Macintosh computer.
- 2) Insert System 7's "Install 1" disk into your Macintosh computer.
- 3) Turn on your Macintosh computer and push in the "Install 1" disk.
- 4) After reading the "Welcome to the Installer" notice, click OK.

- 5) If you have more than one hard disk, use the "Switch Disk" button to select the hard disk of your choice.
- 6) Click the Easy Install button.
- 7) The Installer will instruct you to insert the remaining System 7 floppy disks.

#### Installing from a File Server

-----  
To upgrade your Macintosh computer to System 7 using an AppleShare File Server, follow these steps:

- 1) Connect to an AppleShare File Server containing System 7.
- 2) Double-click on the Installer application in the "Install 1" folder.
- 3) After reading the "Welcome to the Installer" notice, click OK.
- 4) If you have more than one hard disk, use the "Switch Disk" button to select the hard disk of your choice.
- 5) Click the Easy Install button.

By using the Easy Install button, the Installer will automatically update your Macintosh computer to System 7. Easy Install also checks to see what printer drivers and EtherTalk/TokenTalk drivers are present in your System folder. If it locates a printer driver and/or network driver that should be updated, it will do so automatically.

For more information about installing System 7, especially if you are having a difficult time or are experiencing compatibility problems, search for "System 7" and "Clean Install".

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Tech Info Library Article Number:6899



# Tech Info Library

## System 7: How to Upgrade over a Network

Revised: 9/15/92  
Security: Everyone

System 7: How to Upgrade over a Network

=====

Article Created: 28 February 1991

### Article Change History

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09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I upgrade my Macintosh computer to System 7 over a network?

### DISCUSSION -----

Yes. You can upgrade your Macintosh computer over an AppleTalk network. Your network administrator needs to have loaded the System 7 installation software onto a file server and made that software available to you. To upgrade your Macintosh computer to System 7, run the Installer from the server. It is not possible to upgrade all Macintosh computers remotely on a network from one central Macintosh computer.

### Requirements

-----

To upgrade your Macintosh computer over the network, you must have the AppleShare Workstation Client software installed on your machine. The Client software is a standard part of System 6.0.7. You can tell whether the Client software is installed on your machine by opening the Chooser and confirming that the AppleShare icon is available in the upper-left panel of the Chooser window. Check with your network administrator for additional details.

### Procedure

-----

Follow these steps:

- 1) Ask your network administrator the name of the file server and volume where the installation software is located.
- 2) Use the Chooser desk accessory to connect to the file server/volume in step 1.
- 3) On the server volume, locate the folder containing the Installer program.
- 4) Open the Installer program.
- 5) In the Installer program, choose your hard disk and click Install.

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Tech Info Library Article Number:6900



# Tech Info Library

## System 7: No Concurrent Upgrades over a Network

Revised: 9/15/92  
Security: Everyone

System 7: No Concurrent Upgrades over a Network

=====

Article Created: 28 February 1991

### Article Change History

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09/14/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I upgrade another Macintosh from my own machine over the network?

### DISCUSSION -----

No. While it is possible to install System 7 on a Macintosh computer over the network, it is not possible to force the installation of System 7 on all other Macintosh computers on the network. To upgrade multiple Macintosh computers concurrently, it is necessary to initiate the installation from each Macintosh computer.

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Tech Info Library Article Number:6901



# Tech Info Library

## System 7: Publish & Subscribe Requires Upgraded Applications

Revised: 9/22/92  
Security: Everyone

System 7: Publish & Subscribe Requires Upgraded Applications

=====

Article Created: 7 March 1991

### Article Change History

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09/22/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does Publish and Subscribe work with existing applications?

### DISCUSSION -----

No. Applications must be revised to take advantage of the publish and subscribe functionality provided by the Edition Manager in System 7.

You'll know that an application offers the publish and subscribe features when you find the items "Create Publisher" and "Subscribe To...." in the Edit menu.

Contact your vendor or your Apple Dealer to find out if your current application can be upgraded to a new version that uses the publish and subscribe capabilities.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6902



# Tech Info Library

## System 7: Publish and Subscribe vs. Copy and Paste

Revised: 9/22/92  
Security: Everyone

System 7: Publish and Subscribe vs. Copy and Paste

Article Created: 7 March 1991

### Article Change History

-----  
09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How is publish and subscribe different from Copy and Paste?

### DISCUSSION -----

Copy and Paste are useful when you want to move data between documents and applications and you want separate copies (versions) of the data in each place. Publish and subscribe maintains a connection, so that the "subscribers" always reflect the current data in the "publisher."

For example, if you want a fixed version of a document, like a "Report-Draft 3," then you could copy and paste into your document. However, if you want your document to always reflect the most recent version of "Report," then you would choose publish and subscribe.

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Tech Info Library Article Number:6903





# Tech Info Library

## System 7: File Sharing vs. Publish and Subscribe on a Network

Revised: 9/22/92  
Security: Everyone

System 7: File Sharing vs. Publish and Subscribe on a Network

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Article Created: 7 March 1991

### Article Change History

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09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What's the difference between file sharing and publish and subscribe across a network?

### DISCUSSION -----

File sharing shares entire folders (and their contents) and hard disks between users on the network. Assuming you have been given permission, you can view and edit documents just as if they were stored on your local hard drive.

Publish and subscribe lets users share sections of documents between themselves by placing the connecting edition file on a file server.

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Tech Info Library Article Number:6904



# Tech Info Library

## System 7: How to Get the Original Document from a Subscriber

Revised: 9/22/92  
Security: Everyone

System 7: How to Get the Original Document from a Subscriber

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Article Created: 7 March 1991

### Article Change History

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09/22/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How can I find the original document from a subscriber?

### DISCUSSION -----

When you have subscribed to some information, you may want to get back to the original document to edit it.

To do this, select the subscriber from inside your document and then choose "Subscriber Options..." from the Edit menu. In the resulting dialog box, click "Open Publisher" and the document containing the original data (the publisher) will open.

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Tech Info Library Article Number:6905



# Tech Info Library

## System 7: Publish and Subscribe on a Network

Revised: 9/22/92  
Security: Everyone

System 7: Publish and Subscribe on a Network

Article Created: 7 March 1991

### Article Change History

-----  
09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I use Publish and Subscribe over a network?

### DISCUSSION -----

Yes. When an edition is created, the publisher can save the edition file on a shared file server (including your own disk if it is shared using System 7 file sharing). Other users on the network can access the edition file on the file server and subscribe to it.

For instance, Pierre needs to create a presentation using some numbers in a spreadsheet that Marie has prepared on her system. Marie can publish the numbers from her spreadsheet and save the resulting edition file to a server that she and Pierre both share. Pierre can mount the file server and subscribe to the numbers edition file in his presentation program. Whenever Marie updates the numbers in the spreadsheet, the changes appear in Pierre's copy.

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Tech Info Library Article Number:6906



# Tech Info Library

## System 7: How to Identify a Publisher or Subscriber

Revised: 9/22/92  
Security: Everyone

System 7: How to Identify a Publisher or Subscriber

Article Created: 7 March 1991

### Article Change History

-----  
09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How can I identify a publisher or subscriber within a document?

### DISCUSSION -----

When you click something in your application that has been published or subscribed to, a gray border appears.

This border is light gray for publishers and dark gray for subscribers. To find out more about a particular publisher or subscriber, choose Publisher Options or Subscriber Options from the Edit menu.

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Tech Info Library Article Number:6907



# Tech Info Library

## System 7: Moving or Deleting an Edition File

Revised: 9/22/92  
Security: Everyone

System 7: Moving or Deleting an Edition File

=====

Article Created: 7 March 1991

### Article Change History

-----

09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What happens when I move or delete an edition file?

### DISCUSSION -----

When you publish data for automatic updating by choosing "Create Publisher..." from the Edit menu, you also create an edition. An edition is a separate file that is updated when you change the original material. The edition file can be saved on a disk, in a folder, or on the desktop.

If you move or rename an edition file, the connection between the publisher and any subscribers remains intact.

If you delete the edition file, the connection between a publisher and its subscribers is broken.

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Tech Info Library Article Number:6909



# Tech Info Library

## System 7: How to Get Manual Updates to my Subscriber

Revised: 9/22/92  
Security: Everyone

System 7: How to Get Manual Updates to my Subscriber

=====

Article Created: 7 March 1991

### Article Change History

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09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What if I temporarily want to stop receiving updates to my subscriber?

### DISCUSSION -----

The default behavior is to update subscribers automatically when there is a change to the publisher. However, you can choose to receive updates only on demand.

To change the subscribers options to manual updating, follow these steps:

- 1) Select the subscriber.
- 2) Choose Subscriber Options from the Edit menu.
- 3) Click the radio button Get Editions: Manually.

To receive a manual update, follow these steps:

- 1) Select the subscriber.
- 2) Choose Subscriber Options from the Edit menu.
- 3) Click the radio button Get Editions: Now.

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# Tech Info Library

## System 7: InterApplication Communication

Revised: 9/18/92  
Security: Everyone

System 7: InterApplication Communication

Article Created: 7 March 1991

### Article Change History

-----  
09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is InterApplication Communication (IAC)?

### DISCUSSION -----

InterApplication Communication describes the way applications use new features of System 7--the Edition Manager and AppleEvents--to cooperate more closely and improve the users' work flow.

Applications that implement the Edition Manager provide the ability to automatically update documents. New Edit menu commands let users "Publish" data to other documents and "Subscribe" to data that remains linked to the original source document. When the published data is edited, the changes are copied automatically to all its subscribers on the same machine or across the network. For example, the user can subscribe to a spreadsheet table in a word processing document. When the spreadsheet changes, the word processing document gets the change automatically.

Apple events make possible even more complex interaction between applications. It provides an invisible messaging language that will let programs share data and commands. The user sees Apple event-aware applications as those that can request services from each other. For example, an accounting package can pass inventory data to a spreadsheet and retrieve a graph of that data for display in its own report.

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# Tech Info Library

## System 7: AppleEvents

Revised: 9/18/92  
Security: Everyone

System 7: AppleEvents

Article Created: 7 March 1991

### Article Change History

-----  
09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is AppleEvents? Is the implementation of AppleEvents the same for all applications?

### DISCUSSION -----

AppleEvents is the underlying messaging language that applications use for complex communication with other applications. For the user, Apple event-aware applications are applications that can use services of other applications, either on the same machine or across the network. These applications use Apple-event messages as intelligent hooks to share functionality with other applications. AppleEvent implementation is application-specific, in that different types of programs will implement different sets of AppleEvents (for example, databases will use different sets of AppleEvents than word processors). All implementations will support a set of core events, which are defined by Apple.

Here are several examples:

- An accounting package can pass inventory data to a spreadsheet and retrieve a graph of that data for display in its own report.
- Utility packages like spell checkers, thesauruses, or formula editors can work generically with Apple event-aware applications.

- An application can request that a more sophisticated program display a specialized graphics format like TIFF in the requesting application window.

Applications vary in terms of how they implement AppleEvents. Check with your specific software manual for details about how to use this feature with your chosen software.

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Tech Info Library Article Number:6912



# Tech Info Library

## System 7: Virtual Memory

Revised: 3/22/91  
Security: Everyone

System 7: Virtual Memory

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Article Created: 7 March 1991

### Article Change History

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08/19/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

What is virtual memory?

### DISCUSSION -----

Virtual memory (VM) extends the user's available, physical random access memory by treating the hard disk - transparently to the user, with the exception of a slight loss of speed - as if it were additional RAM. With virtual memory you can run more applications at once and work with larger amounts of data than you can without virtual memory.

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Tech Info Library Article Number:6913



# Tech Info Library

## System 7: Macintosh Computers That Can Use Virtual Memory (1/95)

Revised: 1/4/95  
Security: Everyone

System 7: Macintosh Computers That Can Use Virtual Memory (1/95)

Article Created: 7 March 1991  
Article Reviewed/Updated: 03 January 1995

TOPIC -----

Which Macintosh computers can use virtual memory?

DISCUSSION -----

Any Macintosh computer which uses the 68030,68040, or PowerPC microprocessor can use virtual memory. A Macintosh computer with the 68020 microprocessor is virtual memory capable with the addition of a 68851 PMMU coprocessor.

A current listing of Macintosh computers which support virtual memory follows:

| Compact Macintosh:<br>-----  | Modular Macintosh:<br>----- | PowerBook:<br>----- |
|------------------------------|-----------------------------|---------------------|
| Macintosh SE/30              | Macintosh II*               | PowerBook 140       |
| Macintosh Classic II         | Macintosh IIX               | PowerBook 145       |
| Macintosh Color Classic      | Macintosh IICx              | PowerBook 145B      |
|                              | Macintosh IICI              | PowerBook 160       |
|                              | Macintosh IISI              | PowerBook 165       |
| Macintosh Performa:<br>----- | Macintosh IIfx              | PowerBook 165c      |
|                              | Macintosh IIVI              | PowerBook 170       |
| Performa 200                 | Macintosh IIVx              | PowerBook 180       |
| Performa 400                 | Macintosh LC*               | PowerBook 180c      |
| Performa 600                 | Macintosh LC II             | PowerBook Duo 210   |
| Performa 405                 | Macintosh LC III            | PowerBook Duo 230   |
| Performa 410                 | Macintosh LC 475            | PowerBook Duo 250   |
| Performa 430                 | Macintosh LC 520            | PowerBook Duo 270c  |
| Performa 450                 | Macintosh LC 630            | PowerBook Duo 280   |
| Performa 460                 | Macintosh Centris 610       | PowerBook Duo 280c  |
| Performa 466                 | Macintosh Centris 650       | PowerBook 520       |
| Performa 467                 | Macintosh Centris 660AV     | PowerBook 520c      |
| Performa 475                 | Macintosh Quadra 605        | PowerBook 540       |
| Performa 476                 | Macintosh Quadra 610        | PowerBook 540c      |

|              |                               |
|--------------|-------------------------------|
| Performa 550 | Macintosh Quadra 630          |
| Performa 63X | Macintosh Quadra 650          |
|              | Macintosh Quadra 660AV        |
|              | Macintosh Quadra 700          |
|              | Macintosh Quadra 840AV        |
|              | Macintosh Quadra 900          |
|              | Macintosh Quadra 950          |
|              | Macintosh TV                  |
|              | All Power Macintosh computers |

\* - These computers need a 68851 PMMU coprocessor installed in order to be virtual memory capable.

#### Article Change History:

03 Jan 1995 - Noted that all Power Macintosh computers support virtual memory.  
18 Aug 1994 - Added Macintosh 630 family and Quadra 650  
26 May 1994 - Added new PowerBook and Performa models.

Support Information Services

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Tech Info Library Article Number:6914



# Tech Info Library

## System 7: Maximum Virtual Memory (8/96)

Revised: 8/8/96  
Security: Everyone

System 7: Maximum Virtual Memory (8/96)

Article Created: 7 March 1991  
Article Reviewed/Updated: 8 August 1996

TOPIC -----

How much Virtual Memory can I get?

DISCUSSION -----

The maximum amount of virtual memory available depends on the Macintosh model.

The Macintosh II, IIx, IIcx, IICi, IIsi, and IIfx models can address a maximum of 13MB of virtual memory. The maximum of 13MB assumes that the user has only a NuBus video card installed. Each additional NuBus card installed in your Macintosh will decrease your maximum amount of virtual memory by 1MB.

The Macintosh SE/30 can address a maximum of 13MB of virtual memory.

Additionally, the Macintosh IICi, IIsi, and IIfx models can operate in 32-bit addressing mode. When operated in 32-bit addressing mode, these Macintosh models can address a maximum of 1GB (one gigabyte, or 1,024MB) of virtual memory.

Note: the maximum amount of virtual memory available on your Macintosh computer is also limited by available space on your hard disk.

Article Change History:  
08 Aug 1996 - Made correction for technical accuracy.

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Tech Info Library Article Number:6915



# Tech Info Library

## System 7: How to Turn Virtual Memory On and Off

Revised: 3/22/91  
Security: Everyone

System 7: How to Turn Virtual Memory On and Off

=====

Article Created: 7 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I turn virtual memory on and off?

DISCUSSION -----

Virtual memory is controlled with the Memory Control Panel. Note: After turning virtual memory "ON", you need to restart your Macintosh computer to activate it.

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Tech Info Library Article Number:6916





# Tech Info Library

## System 7: Disk Space Needed for Virtual Memory

Revised: 3/22/91  
Security: Everyone

System 7: Disk Space Needed for Virtual Memory

=====

Article Created: 7 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How much disk space do I need to use Virtual Memory?

DISCUSSION -----

While virtual memory (VM) is running, you may notice that a portion of your hard disk is allocated to VM. The amount of space used for virtual memory depends the amount of virtual memory you request.

For example:

| Physical Memory<br>available in Mac | Virtual Memory<br>setting | Disk Space<br>used by VM |
|-------------------------------------|---------------------------|--------------------------|
| 4MB                                 | 8MB                       | 8MB                      |
| 8MB                                 | 13MB                      | 13MB                     |

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Tech Info Library Article Number:6917



# Tech Info Library

## System 7: Performance Implications of Virtual Memory

Revised: 3/22/91  
Security: Everyone

System 7: Performance Implications of Virtual Memory

=====

Article Created: 7 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Will virtual memory affect the performance of my Macintosh computer?

DISCUSSION -----

System performance is very dependent on applications. In most instances, you should not see a noticeable decrease in performance when using virtual memory.

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Tech Info Library Article Number:6918



# Tech Info Library

## System 7: 32-Bit Addressing

Revised: 12/20/93  
Security: Everyone

System 7: 32-Bit Addressing

Article Created: 7 March 1991  
Article Reviewed/Updated: 17 December 1993

TOPIC -----

1. What is 32-bit addressing?
2. How does it work?
3. Why do I get Type 1 errors?

DISCUSSION -----

1. What is 32-bit addressing?

-----  
32-bit addressing means that you can install and access more than 8MB of physical RAM in your Macintosh. This means you can work with very large data files, very large applications, or many applications concurrently. 32-bit addressing is most attractive to Macintosh users working with large memory-intensive problems. While virtually anyone can benefit from the large amount of memory offered by 32-bit addressing, it will immediately benefit database users, color-graphic users, CAD/CAM users, and programmers. While 32-bit addressing may seem to benefit a small percentage of Macintosh users today, users can expect to soon see powerful "general purpose" tools benefit from 32-bit addressing.

More technically speaking, 32-bit addressing lets most recent Macintosh models access the entire 1GB memory range of the 68030 microprocessor. The basic software and hardware of the Macintosh already support the 32-bit addressing model, but any Macintosh using System 6 is limited to using only 8MB of memory because 32-bit addressing was not yet fully implemented.

In System 7, 32-bit addressing is fully implemented allowing most Macintosh computers access to greater than 8MB of memory. This expanded memory is important for high-end users working with many applications, complex graphics documents, large databases, and so on.

The term "addressing" refers to the number of binary digits (bits) that

make up each memory address. Addressing directly determines the maximum amount of memory possibly available.

## 2. How does it work?

### ----- Binary numbers

To understand what happens with addressing, it is first necessary to understand what address bits are. The number system we're most accustomed to is the decimal system, otherwise known as the Base 10 system. In this system, all the numbers are relative to ten digits (0-9). When a number value exceeds the tenth digit, we add one to the value in the next column and start over in the first column. Hence, when 1 is added to the number 09 we get 10. When we add 1 to 099, we get 100, so forth and so on.

Base 10 relies on there being exactly ten unique values per digit. Base 10 is not the only number system around. In the early days of computers, it was realized that it is much simpler to build data storage device such as a vacuum tube or a transistor with two possible value states(0 or 1) than it was to build one with 10 possible values(0 through 9). Therefore, someone came up with the idea of defining information in Base 2 format.

With the Base 2 number system, instead of counting your digits 0,1,2,...,9 and then adding a one to the next column, you simply count your digits 0,1 and then add a one to the next column. Hence, in the binary system the number zero is represented by a 0, the number one by a 1 and the number two by a 10, so forth and so on.

Here is a short table of some more examples:

| Base 10 | Base 2 |
|---------|--------|
| -----   | -----  |
| 0       | 0000   |
| 1       | 0001   |
| 2       | 0010   |
| 3       | 0011   |
| 4       | 0100   |
| 5       | 0101   |
| 6       | 0110   |
| 7       | 0111   |
| 8       | 1000   |

If you expand this table out, you will see, the maximum number of values you can represent with 4 binary digits(bits) is 16, with 16 bits, 65,536, with 24 bits, 16,777,216 and with 32 bits, 4,294,967,296. This is identical to being able to represent 10,000 (0-9999) values with four decimal digits and 100,000,000 (0-99,999,999) values with 8 decimal digits.

### Macintosh address range

-----  
The original Macintoshes shipped with the 68000 microprocessor. While this CPU is capable of doing 32 bit operations, it has only 24 bit addressing

capability. Which limits a 68000 based computer to 16,777,216 bytes of address range. When the Macintosh II came out with the 68020 which has full 32 bit addressing capabilities, the possible address range was increased to 4,294,967,296 bytes.

Now you're probably wondering why you can only access 8MB in 24 bit mode. The truth is you can access 16mb, but only 8mb is available for user data. The other 8 is used for hardware vectors, NuBus slots, SCSI buffers etc.

#### The Problem

-----  
Since the 68000 is a true 32 bit processor, it stores 32 bits of information for each memory address, but since the 68000 physically only has 24 address lines, only the first 24 bits actually count. This of course means that 8 bits are wasted.

This is where creative programmers come in. Back when the Macintosh only had a 128k of RAM, the Operating System had to go to some extreme lengths to ensure that application have enough memory to run. The Macintosh Memory manager allows blocks of memory to move, and/or be purged if the System is having trouble fulfilling a memory request. The original designers of the Macintosh OS decided to use the last three of the unused bits in a 32 bit memory address to indicate whether a block of memory can move, be purged or if the block contains a resource item.

When System 7 was introduced, the Memory manager portion of the Macintosh Operating system was modified extensively to support full 32 bit addressing. The Memory Manager no longer stores the movable, purgeable, or resource flags in the last three bits of the memory block's address, instead, the Memory Manager stores this information elsewhere. The exact location of these flags is not documented, since an application should not attempt to manipulate these flags directly.

Setting these three magic bits are at the discretion of the programmer. The Macintosh Operating System provides the programmer with the appropriate routines to set these bits. The problem is that to set these three bits, the Operating System routines have to call other routines who have to call still others etc. The net result is that using the Operating System routines to set these bits is quite inefficient when it comes to speed. Therefore, prior the introduction of System 7, some creative programmers with a need for speed, took it upon themselves to set these bits in the memory block's addresses directly thereby bypassing the overhead associated with calling the Operating System routines. Of course, the problem with doing this is that System 7 no longer stores these three bits in the address of the block of memory. Another significant programming error involves the other 5 bits of the 32 bit address. Ordinarily, these bits should remain unused and therefore, insignificant. However, some programmers, having realized that 5 bits are wasted decided to use them for their own purposes, even though Apple Developer Technical Support began warning them against this practice a full three years prior to the introduction of System 7.

### 3. Why do I get Type 1 errors?

-----

The fundamental problem with setting the upper 8 bits of the address directly is that with System 7 all 32 bits of information are used for addressing. Changing the value of any of the 8 bits changes the address of the block of memory. When an application or an init tries to access the block of memory that now has an invalid address, the usual result is a Type 1 error. This occurs because the first 24 bits of an address are used to access memory locations between 0 and 16mb. The upper eight bits are used to access memory locations between 16mb and 4,096mb. Since most Macintoshes have less than 16mb of RAM, chances are this incorrect memory location is pointing to an address that does not physically exist, and this will yield a Type 1 (Bus Error).

In the event that the memory location does physically exist, then the application or init will then operate on whatever information it finds at the incorrect location. Depending on what the application or init is attempting to do, various errors may result.

#### Article Change History

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17 December 1993 - Updated with techshare information from Austin reps  
21 August 1993 - Revised - To include information from another article.

Copyright 1991-1993, Apple Computer, Inc.

Tech Info Library Article Number:6919



# Tech Info Library

## System 7: How to Use 32-Bit Addressing (9/94)

Revised: 9/13/94  
Security: Everyone

System 7: How to Use 32-Bit Addressing (9/94)

Article Created: 7 March 1991  
Article Reviewed/Updated: 12 September 1994

TOPIC -----

How can I use 32-bit addressing and is it available on all Macintosh models?

DISCUSSION -----

To take advantage of 32-bit addressing you must be running System 7.0 or higher. Many Macintosh models can enable 32-bit addressing in the Memory control panel.

Older Macintosh II models will need the 32-Bit System Enabler or MODE32 from Connectix to provide the capabilities of 32-bit addressing. Models that require this utility are the Macintosh II, IIX, IICX, and SE/30. Other models, like the Plus, SE, and Classic can't use 32-bit addressing.

You would use 32-bit addressing if you have more than 8MB of physical RAM installed in your computer. Alternatively, you can use 32-bit addressing in conjunction with virtual memory to expand your memory to any arbitrary amount up to the available space on your hard disk. Remember, however, that Apple recommends the amount of virtual memory not exceed double the physical memory present in your Macintosh. Setting virtual memory higher causes significant performance degradation.

The Memory Control Panel lets you select between 24-bit operation and 32-bit (addressing) operation. Changes take effect when you restart. When you run in 32-bit mode, it's important that your applications be 32-bit-compatible. Most current releases of application software are compatible. Check with your software publishers for information about a specific product.

Follow these steps to run in 32-bit mode:

- 1) Open the Memory control panel.

2) Select 32-bit addressing.

3) Restart your computer to run in 32-bit mode.

#### Article Change History

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12 Sep 1994 - Reviewed for technical accuracy, revised formatting.

02 Mar 1993 - Revised to add 32-Bit System Enabler information.

21 Aug 1992 - Revised to include information on MODE32.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:6920





# Tech Info Library

## System 7: Applications and 32-bit Addressing

Revised: 3/22/91  
Security: Everyone

System 7: Applications and 32-bit Addressing

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Article Created: 7 March 1991

### Article Change History

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08/21/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Will my applications work with 32-bit addressing?

### DISCUSSION -----

Most applications are 32-bit-compatible and should work when your Macintosh is running in 32-bit mode. In 24-bit (the default) mode, the computer can run both 32-bit compatible and non-32-bit compatible software.

Those high-end users who specify the 32-bit addressing capability (through the Memory Control Panel) should ensure that their software is 32-bit compatible. Most current releases of application software are 32-bit compatible, and those that aren't should have upgrades available before too long.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6921



# Tech Info Library

## System 7: and AppleShare File Server (v 2.0.1)

Revised: 9/18/92  
Security: Everyone

System 7: and AppleShare File Server (v 2.0.1)

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Article Created: 8 March 1991

### Article Change History

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09/15/92 - UPDATED  
• For AppleShare 3.0.

### TOPIC -----

Should I install System 7 on my AppleShare File Server (version 2.0.1)?

### DISCUSSION -----

No. Your AppleShare File Server (version 2.0.1) is ready to use as is with System 7 clients. If you want to install System 7 on your server, then upgrade to version 3.0 of AppleShare.

If your server is connected with EtherTalk, you may want to upgrade the EtherTalk driver for Phase 2.

Do not upgrade the System Software on your AppleShare File Server (version 2.0.1) to System 7 unless you are also upgrading to AppleShare 3.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6924



# Tech Info Library

## System 7: Hard Disks and AppleShare 2.0.1 File Server

Revised: 9/18/92  
Security: Everyone

System 7: Hard Disks and AppleShare 2.0.1 File Server

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Article Created: 8 March 1991

### Article Change History

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09/15/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I attach a hard disk initialized under System 7 to my AppleShare 2.0.1 file server?

### DISCUSSION -----

Yes. You can take a hard disk that you have been using under System 7 and attach it to a Macintosh running AppleShare 2.0.x file server software. However, you must first rebuild its desktop, as follows:

- 1) Attach the hard drive to a Macintosh running System 6.
- 2) Restart the Macintosh.
- 3) Hold down the Command and Option keys while you restart.
- 4) The system will ask if you want to rebuild the desktop. Click OK.

Once the system completes its work, your desktop is rebuilt, and you can attach the hard drive to the AppleShare server.

Technical note: You need to rebuild the desktop because System 7 puts a desktop database on hard drives and this desktop database is not recognized by AppleShare 2.0. Rebuilding the desktop under System 6 creates the older-style desktop file.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6925



# Tech Info Library

## System 7: Compatibility with Third-Party Routers and Gateways

Revised: 8/8/94  
Security: Everyone

System 7: Compatibility with Third-Party Routers and Gateways

Article Created: 8 March 1991  
Article Reviewed/Updated: 8 August 1994

TOPIC -----

Do third-party routers and gateways work with System 7?

DISCUSSION -----

Yes. Most third-party routers and gateways don't actually run on a Macintosh computer, so the system software version is irrelevant. What is relevant is whether the router or gateway supports AppleTalk Phase 2. In this area, all major router and gateway vendors offer products that support phase 2.

A partial list of major vendors includes 3Com, Alisa Systems, Engage Communications, Cayman Systems, Information Presentation Technologies, Focus Enhancements, Inc., Pacer Software Inc., and Shiva Corporation.

### Article Change History:

08 Aug 1994 - Removed Dove Computer from list of vendors.  
25 Aug 1993 - Removed InfoSphere from list of vendors.  
27 Jul 1993 - Company title updated from Focus Enhancements to Focus Enhancements, Inc.  
02 Sep 1992 - Reviewed for technical accuracy.  
22 Jun 1992 - Remove reference to Solano Products.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:6926



# Tech Info Library

## System 7: Setting Up an AppleShare 2.0 Print Server

Revised: 9/18/92  
Security: Everyone

System 7: Setting Up an AppleShare 2.0 Print Server

Article Created: 8 March 1991

### Article Change History

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09/15/92 - REVISED  
• For technical accuracy.

### TOPIC -----

Should I install System 7 on my AppleShare Print Server?

### DISCUSSION -----

Not unless you have upgraded to AppleShare 3.0.

To use AppleShare PrintServer 2.0 with System 7 clients, you need to update only the LaserWriter drivers on the Print Server.

- 1) Quit the AppleShare PrintServer application and return to the Finder.
- 2) Insert System 7's "Printing" disk.
- 3) Drag two files from the "Printing" disk--LaserWriter and LaserPrep--into the System folder.
- 4) Double-click the AppleShare PrintServer application.
- 5) Optional: If your server also supports the AppleTalk ImageWriter II and/or the AppleTalk ImageWriter LQ, drag these drivers over too.

Your AppleShare PrintServer is now set up to work properly with all Macintosh computers using the 7.0 version of the LaserWriter drivers.

Note: Do not upgrade the system software on your 2.0.1 AppleShare

PrintServer to System 7. If you want System 7 on the server, you will need to upgrade to AppleShare 3.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6927



# Tech Info Library

## System 7: The Data Access Manager

Revised: 9/18/92  
Security: Everyone

System 7: The Data Access Manager

=====

Article Created: 8 March 1991

### Article Change History

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06/30/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What is the Data Access Manager?

### DISCUSSION -----

The Data Access Manager is a Macintosh system interface. It gives Macintosh application developers the flexibility of using a single, unified API for accessing data from different data sources. These sources include local Macintosh databases, remote Macintosh database servers, and even other remote host database servers, like DEC VAXes and IBM mainframes.

The Data Access Language (DAL) client/server API is a database extension in System 7 which provides access to remote host database servers. Applications written to the Data Access Manager can transparently use DAL to access data from DAL servers on host computers across different networks. The Data Access Manager is included along with the DAL client software in System 7.0.

The Data Access Manager offers three benefits:

- Macintosh applications now have a standard way to access data, regardless of the location of the data or the storage mechanism.
- Transparent access to the DAL client/server protocol is a part of the Data Access Manager.
- The architecture of the Data Access Manager is tailored for future



extensibility.

The Data Access Manager provides two levels of interface for applications, a high-level interface and a low-level interface. The high-level interface is a standard way for all desktop applications, like a graphical charting package, to access data.

A new command has been added to the File menu: "Open Query". The end-user can pull down the File menu, select "Open Query", and choose a query like "Monthly Sales" to launch a request for data. This request returns the sales information for the month into an application, like a charting package.

The Data Access Manager's query builder makes it easier for in-house developers to create data-access pathways to different data sources. Thus, it delivers the flexibility to use such queries to create custom reports and presentations. The low-level interface is intended for in-house or custom developers who use tools like HyperCard and 4th Dimension to build highly-customized data-access interfaces. This low-level interface permits developers of data-intensive commercial applications, like statistical packages, to build sophisticated query interfaces for their desktop applications.

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Tech Info Library Article Number:6928



# Tech Info Library

## System 7: Data Access Language (DAL)

Revised: 7/27/93  
Security: Everyone

System 7: Data Access Language (DAL)

Article Created: 8 March 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

What is Data Access Language (DAL)?

DISCUSSION -----

Data Access Language, formerly called CL/1, is Apple's client/server protocol for remote data access and is based on ANSI standard SQL (Structured Query Language). DAL is optimized to provide decision-support applications with uniform access to data, regardless of the different brands of databases, the different host platforms, or the different types of networks.

DAL is intended for Macintosh applications that need ad-hoc access to data from multiple data sources. While performance-oriented applications, like transaction-processing applications, can use DAL, such applications, especially in a single database-vendor environment, could be better served by the many solutions available from third-party Macintosh database and tool vendors like Informix, The Ask Group, Inc./Ingres Products, Oracle, Sybase, and others.

DAL uniquely addresses the needs of customers with databases from multiple database vendors. The DAL client software is included as a part of System 7.0 and can be transparently accessed by applications written to the Data Access Manager API. These applications can access data from DAL servers running on host computers, across all DAL-supported networks. Therefore, with the Data Access Manager and the included DAL client software in System 7, applications can "speak" in an identical fashion to many different types of host databases.

Apple Computer Inc. is currently delivering DAL servers through APDA for the following environments:

- VAX/VMS (for DEC Rdb, Informix, Ingres, Oracle, and Sybase)
- MVS/TSO (for IBM DB2)
- VM/CMS (for IBM SQL/DS)

DEC also provides DAL as a part of the DEC PathWORKS product.

Apple is also working with software and hardware vendors to extend DAL client and server support to other industry platforms.

Article Change History:

23 July 1993 - Company title updated from Ingres to The Ask Group, Inc./Ingres Products

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6929



# Tech Info Library

## System 7: The Macintosh, DAL, and Database Development

Revised: 7/27/93  
Security: Everyone

System 7: The Macintosh, DAL, and Database Development

Article Created: 8 March 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

What's Apple's database story?

DISCUSSION -----

The Macintosh has always been the platform for unique and innovative applications--and this extends to the database world. Products like 4th Dimension (ACI), Omnis 5 (Blyth), Foxbase+/Mac (Microsoft Corp.) and Double Helix (Odesta) provide Macintosh users with state-of-the-art data management and application-development capability. In addition, all the major cross-platform, corporate-database, and application-tool vendors have also endorsed the Macintosh and delivered both client and server products, including ORACLE for Macintosh, ORACLE Server for A/UX (Oracle), Informix SE for A/UX (Informix), and Ingres Server for A/UX (The Ask Group, Inc./Ingres Products).

Apple intends to continue to provide all the elements needed to make the Macintosh a complete platform for stand-alone and client/server database applications. Toward this end, Apple has announced various products, targeted at making the Macintosh the ideal database client platform. The Data Access Manager and the Data Access Language (DAL) client software included with System 7.0 further reinforce this position

These two products mean that Macintosh application developers can write their applications once and use the same applications to transparently access data in local or remote locations. With this infrastructure in place, Apple is working closely with third parties to provide its customers and developers with the database tools needed to implement mission-critical applications. To complete the database story, Apple and third parties are working together to make the Macintosh an equally strong platform for server applications.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:

23 July 1993 - Company title updated from Ingres to The Ask Group, Inc./Ingres Products

12 February 1993 - Updated, vendor information.

29 June 1992 - Reviewed, for accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:6930



# Tech Info Library

## System 7: Data Access Language (DAL) vs. Data Access Manager

Revised: 7/15/92  
Security: Everyone

System 7: Data Access Language (DAL) vs. Data Access Manager

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Article Created: 8 March 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

TOPIC -----

What is the difference between Data Access Language (DAL) and Data Access Manager?

DISCUSSION -----

The Data Access Manager is a Macintosh System interface, while the Data Access Language is Apple's client/server API for ad-hoc remote data access. Applications written to the Database Access Manager API can transparently access data from remote host databases using DAL as the database extension. Both the Data Access Manager and the DAL client software are a part of System 7.0.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:6931



# Tech Info Library

## System 7: 6.0 DAL Apps Compatible with 7.0 Data Access Manager

Revised: 6/29/92  
Security: Everyone

System 7: 6.0 DAL Apps Compatible with 7.0 Data Access Manager

=====

Article Created: 8 March 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

Are my current 6.0 Data Access Language applications compatible with the  
7.0 Data Access Manager?

DISCUSSION -----

Yes. Special care was taken to ensure that current System 6 DAL  
applications will work smoothly with the Data Access Manager in System 7.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6932



# Tech Info Library

## System 7: Benefits of the Data Access Manager

Revised: 8/18/95  
Security: Everyone

System 7: Benefits of the Data Access Manager

=====

Article Created: 8 March 1991  
Article Reviewed/Updated: 18 August 1995

TOPIC -----

What can I do with Data Access Manager?

DISCUSSION -----

With the new System 7 capabilities, you can benefit from the tight integration of data-access capabilities in all your Macintosh applications. You can pull data from your organizational databases directly into applications to work with as you desire, rather than the way it was delivered prior to System 7.

Article Change History:  
18 Aug 1995 - Reformatted and reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:6933





# Tech Info Library

## System 7: Using Locked Removable System 7 Media In System 6

Revised: 9/2/92  
Security: Everyone

System 7: Using Locked Removable System 7 Media In System 6

=====

Article Created: 8 March 1991

### Article Change History

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09/02/92 - REVIEWED  
• For technical accuracy; edited.

### TOPIC -----

Will my locked, removable, System 7 volume mount under System 6?

### DISCUSSION -----

No. You must rebuild (or create) the desktop file on any cartridge not containing one from System 6 to bring it back into a System 6 environment. If this disk is locked or does not contain enough space for a resource desktop, System 6 won't mount the volume. You should unlock the volume to let a resource desktop be created.

A System 7 hard disk with not enough space could have the same problem and not mount under System 6.0. To work around this, remove some files under System 7 to let a resource desktop be created.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6935



# Tech Info Library

## System 7: How to Start System 7 from a Floppy

Revised: 5/23/91  
Security: Everyone

System 7: How to Start System 7 from a Floppy

=====

Article Created: 8 March 1991

Article Change History

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08/17/92 - REVIEWED

- For technical accuracy.

TOPIC -----

Can I start System 7 from a floppy disk?

DISCUSSION -----

System 7 will not fit on an 800K floppy. However, you can use the Installer to make a bootable 1.4MB floppy.

To create a bootable 1.4MB System 7 floppy, use the Customize option of the Installer to install the Minimum System for your Macintosh. This creates a bootable version that is very limited and contains minimal functionality for the Macintosh. Apple recommends that you not use this disk as your main system, but only as an emergency disk.

Bootable disks are also provided in both the System 7 800K and 1.4M disk suite on the "Disk Tools" disk. The 800K format contains a 6.0.X bootable system and the 1.4MB format contains a 7.0.X bootable system.

Custom installation lets you select the exact combination of system files, drivers, and other resources you want. You can use this process for initial installation, for updating to a new version of System software, for installing a single, special resource, or for saving space on your startup disk by eliminating software that isn't essential.

When you click "Customize" you have a choice of standard or minimal system files for each model of the Macintosh. Insert and select the 1.44MB floppy

where you want to install System 7, choose the option Minimal for your Macintosh, then click Install.

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Tech Info Library Article Number:6936



# Tech Info Library

## System 7: Automatic Placement of Files in System Folder

Revised: 3/22/91  
Security: Everyone

System 7: Automatic Placement of Files in System Folder

=====

Article Created: 8 March 1991

### Article Change History

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08/24/92 - EDITED  
• For clarity.

### TOPIC -----

I dropped a file on my System folder; where did it go?

### DISCUSSION -----

When you drop a file onto the System Folder, the system automatically places the file in the right place in the System Folder. As a result, you shouldn't have to worry about where different things go in your System Folder. After the System places items in their appropriate locations, a dialog box will appear with a report of which folder(s) the items were dropped into.

You must put the file onto the icon for the System Folder for this automatic placement to work. If you drop the file into the open window of the System Folder, the system will not automatically place the file in the appropriate location.

- The system puts fonts into the System file.
- Control Panels go into the Control Panels folder.
- System extensions (formerly called INITs) go into the Extensions folder.
- Desk Accessories go into the Apple Menu Items folder.

If you want to put a system extension, control panel, font, or other item in another location within the System Folder, open the System Folder and drag the items directly where you want them to be.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6937



# Tech Info Library

## System 7: New Sound Capabilities

Revised: 9/18/92  
Security: Everyone

System 7: New Sound Capabilities

Article Created: 8 March 1991

### Article Change History

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08/25/92 - UPDATED  
    • To include sound input capabilities.  
07/25/91 - REVISED

### TOPIC -----

What are the new sound capabilities in System 7?

### DISCUSSION -----

System 7 offers some exciting new sound capabilities that you will hear as software developers revise their applications for sound.

For the first time, a Macintosh with System 7 can play several sounds at once. For example, you could be playing a voice track and some other track at the same time. In addition, you can work on other things while the system plays a sound.

System 7 offers sound-input capabilities for the microphone included with recent Macintoshes. With sound-in, applications can start offering features like voice annotation of documents.

Finally, System 7 has built-in audio compression to save disk space, so you can have larger sounds than before.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:6938



# Tech Info Library

## System 7: The Desktop Button Replaces the Drive Button

Revised: 8/24/92  
Security: Everyone

System 7: The Desktop Button Replaces the "Drive" Button

=====

Article Created: 8 March 1991

### Article Change History

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08/24/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What happened to the "Drive" button in the Open and Save dialog boxes?

### DISCUSSION -----

The Drive button in the Open, Save, and Save As dialog boxes has been replaced by the "Desktop" button. When you click the Desktop button, you will see all of the hard disks, floppies, file servers, and folders that you have on your Macintosh desktop. To move to a specific disk, you can go directly to the disk you want, without having to move sequentially from one disk drive to the next.

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Tech Info Library Article Number:6940



# Tech Info Library

## ARCOM Electronics, Inc.

Revised: 4/4/97  
Security: Everyone

ARCOM Electronics, Inc.

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Article Created: 04/25/91  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

ARCOM Electronics Inc.

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### Company Profile:

Hardware, specializing in an ADB device that restarts Macintosh computers after a power failure.

Copyright 1990-97, Apple Computer, Inc.

Tech Info Library Article Number:6941





# Tech Info Library

## Macintosh SE/30 Logic Board Upgrade: Specs (Discontinued)

Revised: 10/7/93  
Security: Everyone

Macintosh SE/30 Logic Board Upgrade: Specs (Discontinued)

=====

Article Created: 14 March 1991  
Article Reviewed Only:  
Article Last Updated:

### Processor

- MC68030 32-bit internal Harvard architecture
- 15.667 MHz clock frequency
- Built-in Paged Memory Management Unit (PMMU)
- 256-byte instruction and data caches

### Coprocessor

- MC68882 floating-point unit (follows IEEE standards)

### Interfaces

- Two Apple Desktop Bus connectors for communication with keyboard, mouse, and other input devices
- 030 Direct Slot, supporting full 32-bit address and data lines through 120-pin EuroDIN connector
- Two RS-232/RS-422 serial ports, 230.4K baud maximum; use mh-8 connectors (up to 0.920 Mbit/sec, if clocked externally)
- External disk drive interface
- SCSI interface
- Stereo sound port for external audio amplifier

### Sound Generator

- Apple Sound Chip (ASC) including four-voice, wave-table synthesis and stereo sampling generator, capable of driving stereo mini-phone-jack headphones or other stereo equipment
- Mixed stereo monophonic sound output through internal speaker

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Tech Info Library Article Number:6944



# Tech Info Library

## APDA

Revised: 4/4/97  
Security: Everyone

APDA

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Article Created: 14 March 1991  
Article Reviewed/Updated: 4 April 1997

APDA

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### Company Profile:

APDA is Apple's worldwide source for over 300 development tools, technical resources, training products, and information for anyone interested in developing applications on Apple platforms. Customers receive the quarterly APDA Tools Catalog featuring all current versions of Apple and the most popular third-party development tools. Ordering is easy; there are no membership fees, and application forms are not required for most of our products. APDA offers convenient payment and shipping options, including site licensing.

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Tech Info Library Article Number:6946



# Tech Info Library

## Apple EtherTalk NB Card: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple EtherTalk NB Card: Specifications (Discontinued)

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Article Created: 14 March 1991

### Connectors

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- BNC connector for thin Ethernet (RG-58) cabling connector for connecting external transceivers
- AUI (15-pin D-style) connector for connecting external transceivers

### Transmit/Receive Data Rate

-----

- 10 Mbit/sec maximum data rate
- On-board, thin Ethernet transceiver (jumper-selectable)

### Packet Buffering

-----

- 64K of dual-ported local RAM for packet buffering
- 32K of ROM

### Power Dissipation

-----

- +5 V, 6.5 W max
- +12 V, 3.6 W max

### Environmental Requirements

-----

Operating temperature: 32 to 131 degrees F (0 to 55 C)

Humidity: 10% to 90% noncondensing

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6948



# Tech Info Library

## Apple HD 160SC: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple HD 160SC: Specifications (Discontinued)

=====

Article Created: 14 March 1991

### Capacity

- Data capacity: 160MB (formatted)
- Data surfaces: 5
- Heads, Surface: 1
- Block size: 512 bytes
- Total disk blocks: 327,780
- Blocks/Track: 32 to 54

### Characteristics

- Average seek time: 18 ms
- Rotational speed: 3,600 rpm
- Startup time: 20 sec.
- Spin-down time: 20 sec.

### Interface

Connects directly to the Macintosh Plus, SE, SE/30, II, IIcx, and IIfx via the external DB-25 SCSI connector.

### Electrical Requirements

- Line voltage: 85 to 270 VAC
- Frequency: 47 to 64 Hz
- Maximum power: 60 W

### Environmental Requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: 32 to 122 degrees F (0 to 50 C)
- Relative humidity: 20% to 80% noncondensing
- Operating altitude: 0 to 10,000 ft. (0 to 3.048 m)
- Shipping altitude: -1,000 to 40,000 ft. (-305 to 12,192 m)

Size and Weight

-----

- Height: 3.1 in. (7.8 cm)
- Depth: 10.5 in. (26.6 cm)
- width: 9.7 in. (24.6 cm)
- Weight: 9.5 lb. (4.3 kg)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6949



# Tech Info Library

## Apple III: Specifications (Discontinued 9/85)

Revised: 9/13/93  
Security: Everyone

Apple III: Specifications (Discontinued 9/85)

Article Created: 14 March 1991

### Video Display

Text and graphics may be displayed simultaneously. Using graphics commands you can display either of two screen buffers.

#### Graphics modes:

- 280 x 192, 16 colors (with some limitations)
- 280 x 192, monochromatic; -140 x 192, 16 colors
- 560 x 192, monochromatic
- All Apple II modes (in emulation)

#### Text modes:

- 80-column, 24-line monochromatic
- 40-column, 24-line, 16-color foreground and background
- 40-column, 24-line monochromatic

All text modes have a software-definable 128-character set (uppercase and lowercase) with normal or inverse display.

### Central Processing Unit (CPU)

The custom-designed microprocessor circuitry of the Apple III uses the 6502B as its major component. Other circuitry provides extended addressing capability, relocatable stack, zero page, and memory mapping.

- Type: 6502B
- Clock Speed: 1.4 MHz average; 1.8 MHz max
- Operations per Second (8-bit): up to 750,000
- Data Bus: two 8-bit formats, combined for extended addressing
- Address Bus: 19 bits
- Address Range: 262,144 bytes (256K)
- Registers:
  - Accumulator (A); Index Registers (X,Y); Stack Pointer (S); Program Counter (PC); Environmental Register (E); Bank (B); Zero Page (Z); Processor Status (P)

## Memory

-----

- 256K dynamic RAM
- 4K ROM (initialization and self-test diagnostics)

## SOS (Sophisticated Operating System)

-----

SOS handles all system I/O and can be configured to handle standard or custom I/O devices and peripherals by adding or deleting "device drivers." All languages and application programs access data through the SOS file system.

## Keyboard

-----

- 61 keys on main keyboard
- 13 keys on numeric keypad
- Full 128-Character, ASCII encoded
- All keys have automatic repeat
- Four directional-arrow keys with two-speed repeat
- Two user-definable Apple keys
- Seven other special keys: Shift, Control, Alpha Lock, Tab, Escape, Return, Enter.

## Storage Devices

-----

- One built-in 5.25-inch, floppy-disk drive, 140K (143,360 bytes) per diskette
- You can connect three additional drives by daisy-chain cable (total: 560K on-line storage)
- You can add up to four ProFile hard-disk drives (5MB each) with plug-in interface cards

## Video Output

-----

- RCA phono connector for NTSC monochromatic composite video
- DB-15 connector for:
  - NTSC-color composite video
  - NTSC monochromatic composite video
  - RGB color video
  - Composite sync signal
  - Power-supply voltages
- Color signals appear as 16-level grey scale on monochromatic displays

## Audio Output

-----

- Built-in two-inch speaker, miniature phono jack on back panel
- Driven by 6-bit D/A converter or fixed frequency "beep" generator

## Serial (Printer/Modem) Port

-----

- RS-232C compatible, DB-25 female connector
- Software-selectable baud rate and duplex mode

- You can use one port for the Silentype printer.

#### Expansion Ports

- Four 50-pin expansion slots (fully buffered, with interrupt and DMA priority structure)
- Joystick/Silentype Ports: Two DB-9 connectors

#### Languages Available

- Apple Business BASIC
- Apple III Pascal
- Apple III COBOL

#### Emulation Mode

This mode provides hardware emulation of 48K Apple II Plus. It can run most Apple II programs, with the exception of Pascal and FORTRAN, without modification.

#### Electrical Specifications

Plug the Apple III's power cord into a three-wire 110-120 VAC outlet. The Apple III meets the following agency regulations:

- UL 114, Office Appliances and Business Equipment
- CSA 22.2, No. 154-Data Processing Equipment

#### Physical Specifications

- Height: 4.8 in. (12.20 cm)
- Depth: 18.2 in. (46.22 cm)
- Width: 17.5 in. (44.45 cm)
- Weight: 26 lb. (11.8 kg)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6950





# Tech Info Library

## Apple TokenTalk NB Card: Specifications

Revised: 5/16/91  
Security: Everyone

Apple TokenTalk NB Card: Specifications

=====

Article Created: 14 March 1991  
Article Reviewed Only:  
Article Last Updated:

### Connectors

-----

- DB-9 connector for attaching to the IBM cabling system
- External adapter (available from other suppliers) for use with Type 3 cabling

### Interface

-----

NuBus plugs into any Macintosh II computer.

### Processor

-----

Motorola 68000 running at 10 MHz

### Memory

-----

512K of RAM

### Application Interface

-----

AppleTalk, Apple 3270 API, APPC

### Power Dissipation

-----

15 W

### Transmit/Receive Data Rate

-----

4 Mbit/sec, on-board transceiver

Copyright 1991, Apple Computer, Inc.





# Tech Info Library

## Apple Writer: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple Writer: Specifications (Discontinued)

=====

Article Created: 14 March 1991

### Format

-----

16-sector diskettes

### Language

-----

Written in machine language, usable with Integer BASIC or Applesoft

### Display

-----

- Up to 24 lines of 40 characters/spaces each
- Uppercase displayed in inverse video

### Storage

-----

- Up to 31,901 characters per file
- 95 pages of text per diskette

### Editing Functions

-----

- Cursor Control: Cursor can be moved up, down, left, or right one space at a time; up or down 12 lines at a time; or to the beginning or end of text.
- Free Memory shows amount of memory available.
- Disk Access to catalog or save files to diskette.
- Uppercase Conversion can change up to 15 lines of text into uppercase instantly.
- Insert/Save can insert a stored file into a new document or save a file segment to the diskette.
- Search and Replace can do automatic or manual search and replacement of user-specified strings, including single characters, words and phrases, parts of words and phrases, sentences, and so on up to a maximum of 76 characters each.
- Deletions deletes by character, word, or paragraph up to 256 characters.

- Move Block moves a block of data within a file.

#### Printing Functions

- Justify can specify centered, or fill-, right-, or left-justified lines of text.
- New Page specifies when a new page should be started.
- Margin Set sets top, bottom, left, and right margins.
- Line Spacing selects the number of spaces between lines.
- Paper provides for continuous fan-fold and single-sheet paper.

Note: Apple Writer does not provide tab, proportional spacing, or underscoring capabilities.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6952



# Tech Info Library

## Apple Writer II: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple Writer II: Specifications (Discontinued)

=====

Article Created: 14 March 1991

Format

-----

16-sector disks

Operating System Environment/Language

-----

Apple DOS 3.3 based. Written in machine language, usable with Integer BASIC or Applesoft BASIC.

Display

-----

Up to 24 lines of 40 or 80 characters.

Storage

-----

Up to 27,000 characters per file, 56 pages of text per disk

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6953



# Tech Info Library

## AppleLine: Specifications (Discontinued)

Revised: 9/15/93  
Security: Everyone

AppleLine: Specifications (Discontinued)

=====

Article Created: 14 March 1991

### Electrical/Communications

-----

- Emulation: 3278 Model 2, requiring the use of VT100 emulation software
- Serial port: RS-232-C with autobaud feature
- Data format: serial asynchronous; 7- or 8-bit selectable
- Data rate: 45.5 to 19.2K baud
- Communications: Full-duplex interface
  - Category A device requiring type A terminal adapter and BNC coaxial connector
  - 15 ft. (5 m) maximum distance between AppleLine and Apple computer (when RS-232 cable is used)
  - 5000 ft (1500 m) maximum distance between AppleLine and 3274/76 controller
- Power supply: 120 VAC, wall-mounted transformer
- Temperature range: 50 to 104 degrees F (10 to 40 C)

### Mechanical

-----

- Width: 8.62 in. (21.91 cm)
- Height: 2.22 in. (5.64 cm)
- Depth: 12.7 in. (32.26 cm)
- Weight (including packing materials): 4 lb. (1.8 kg)
- Side panel: Off/On switch
- Rear panel: DB-25-pin connector, coaxial connector, and non-shorting power jack

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6955



# Tech Info Library

## AppleTalk Personal Network: Specifications

Revised: 5/16/91  
Security: Everyone

AppleTalk Personal Network: Specifications

=====

Article Created: 14 March 1991  
Article Last Reviewed:  
Article Last Updated:

Topology

-----

Serial bus

Wiring

-----

Shielded twisted-pair

Signaling Standard

-----

EIA standard RS-422, balanced voltage

Signaling Speed

-----

230.4 Kbits/sec

Signal Encoding

-----

FMO (biphase space)

Frame Format

-----

SDLC (Synchronous Data Link Control)

Maximum Number of Connections

-----

32 for a stand-alone network (With a third-party product, it can connect more than 32 devices.)

Node Identification

-----

Self-configuring; no user action required

Architecture

-----

Open

Connection

-----

Passive drops

Link Access Protocol

-----

Carrier-sense, multiple-access with collision avoidance (CSMA/CA)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6956





# Tech Info Library

## Apple Coax/Twinax Card: Specifications

Revised: 5/16/91  
Security: Everyone

Apple Coax/Twinax Card: Specifications

=====

Article Created: 14 March 1991  
Article Reviewed Only:  
Article Last Updated:

### Connector

-----

BNC (coax) and 15-pin D-style (twinax)

### Interface

-----

NuBus; plugs into any Macintosh II

### Processor

-----

Motorola 68000 running at 10 MHz

### Memory

-----

512K of RAM, expandable to 1MB

### Application Programming Interface

-----

Apple 3270 API

### Coax Support

-----

Category A

### Power Dissipation

-----

10 W

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6957



# Tech Info Library

## Monochrome Monitor IIe: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Monochrome Monitor IIe: Specifications (Discontinued)

=====

Article Created: 15 March 1991

### Picture Tube

-----

12 in. (30.5 cm) diagonal, high-contrast, anti-glare, 90-degree diagonal deflection with green phosphor (EIA Type P31)

### Active Display Area

-----

215 mm horizontal by 160 mm vertical (remainder of area is used for border)

### Scanning

- 
- EIA stand: 525 lines
  - 30 frames; 60 fields/sec overscan

### Scan Rates

-----

Horizontal: 15.7 kHz  
Vertical: 59.9 Hz

### Input Signal

-----

Composite video, 1.0 (+-0.1), volts peak-to-peak, negative sync

### Video Bandwidth

-----

Less than 3 dB down at 10 MHz

### Display Capability

-----

With Apple IIe: 560 dots horizontally by 192 dots vertically

### Text Display

-----

Up to 80 columns by 25 lines

Horizontal Linearity

-----

Less than 10%

Vertical Linearity

-----

Less than 7%

Video Input Connector

-----

RCA-style phono jack (75 ohm)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6960



# Tech Info Library

## Macintosh II Portrait Display Card: Specs (Discontinued)

Revised: 9/27/93  
Security: Everyone

Macintosh II Portrait Display Card: Specs (Discontinued)

=====

Article Created: 15 March 1991

### Interface

-----

NuBus: plugs into any Macintosh II slot

### Output Signals

-----

- Modes: RGB (analog) and gray scale
- Video: RS-343 standard and RS-170 timing-standard interlaced video
- Sync: separate horizontal and vertical sync, negative-going, TTL

### Connector

-----

D-style with three internal coaxial connectors and 10 pins

### Display Modes

-----

- 1 or 2 bits per pixel (2 or 4 gray levels)
- Upgradable to 4 bits per pixel (16 gray levels) with the Macintosh II Video Card Expansion Kit

### Raster Rates

-----

- Vertical: 75 Hz
- Horizontal: 68.9 kHz

### Power Consumption

-----

10 W

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6961



# Tech Info Library

## Apple II Workstation Card: Specifications (2/97)

Revised: 2/12/97  
Security: Everyone

Apple II Workstation Card: Specifications (2/97)

=====

Apple II Workstation Card: Specifications (2/97)

Article Created: 03 May 1991  
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article provides technical specifications for the Apple II Workstation Card. This card has been discontinued by Apple.

DISCUSSION -----

### Processor

-----

6501; 2 MHz clock speed

### Memory

-----

16K RAM  
64K ROM

### Ports

-----

Two 8-pin, mini-circular, RS-422 ports:

- One LocalTalk port
- One Super Serial port

### Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:6962



# Tech Info Library

## Apple IIc Memory Expansion Card: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple IIc Memory Expansion Card: Specifications (Discontinued)

=====

Article Created: 15 March 1991

### Electrical

-----

- Voltage requirement: 4.75 to 5.25 VDC power consumption
- Operating: Not more than 135 mA in a 1MB configuration

### Environmental

-----

Ambient temperature: 50 to 104 degrees F (10 to 40 C)  
Relative humidity: 0% to 95% (noncondensing)

### Miscellaneous

-----

Operating system compatibility: ProDOS, DOS 3.3, or Pascal 1.3 (earlier versions of Pascal can be upgraded to Version 1.3). Apple DOS 3.3 programs cannot be booted from the Memory Expansion Card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6963



# Tech Info Library

## Apple III OEM Prototyping Card: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple III OEM Prototyping Card: Specifications (Discontinued)

=====

Article Created: 15 March 1991

Circuit Development Area (A)

-----

- 5.40-inch by 3.70-inch space
- 0.10-inch hole spacing
- Accepts up to 42 14-pin; 36 16-pin; 24 24-pin; or 12 40-pin DIP packages or combinations thereof

Input Buffering Area (B)

-----

This area is for installation of RFI isolation circuitry.

- Connector Interface Areas:
  - Area C: for up to 67-pin, "D"-type connectors
  - Area D: for up to 50-pin, ribbon-cable connectors
- Additional Board Areas:
  - SPST switch position (E)
  - RF Shield (supplied) connection points (F)
  - 50-pin, gold-plated edge connector

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Tech Info Library Article Number:6964



# Tech Info Library

## Inter•Poll Network Administrator's Utility: Specifications

Revised: 5/17/91  
Security: Everyone

Inter•Poll Network Administrator's Utility: Specifications

=====

Article Created: 15 March 1991  
Article Reviewed Only:  
Article Last Updated:

### AppleTalk Protocols Used

-----

- Name Binding Protocol (NBP) to find named devices
- Link Access Protocol (LAP) to find unnamed devices
- Echo Protocol (EP) to determine link integrity and performance
- Printer Access Protocol (PAP) to get printer status information
- AppleTalk Transaction Protocol (ATP) to get system information

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6965





# Tech Info Library

## LANSTAR AppleTalk Network: Specifications (Discontinued)

Revised: 9/21/93  
Security: Everyone

LANSTAR AppleTalk Network: Specifications (Discontinued)

=====

Article Created: 15 March 1991

### Network

-----

- Topology: Star
- Wiring: Unshielded, twisted-pair (22- to 26-gauge wire)
- Signaling speed: 2.56 Mbps to a 40 Mbps backbone
- Maximum length: 2000 feet to each point of the star (workstations can be up to 4000 feet apart)
- Node identification: Self-configuring (except for the LANSTAR AppleTalk Bridge)
- Applications supported: all Macintosh II, AppleTalk applications
- Polling mechanism: high speed perfect-scheduling
- Backbone: Shared 40Mbps; optional redundant backbone

### LANSTAR Interface Card for the Macintosh II

-----

- LANSTAR protocol support for the full AppleTalk protocol stack, including ATP, NBP, ZIP, EP, PAP, and RTM
- ALAP, modified to support twisted-pair media
- DDP, extended to support the LANSTAR AppleTalk Bridge Memory: 2K of RAM
- Interfaces: 2 RJ11 jacks (one is to pass through the telephone)
- Configuration: NuBus
- Maximum power consumption: 4.8 W
- Size: 4 in. (10.2 cm) high by 11.75 in. (29.9 cm) long
- Operating temperature: 50 to 95 degrees F (10 to 35 C)

### Meridian LANSTAR System (Model PTE-S)

-----

#### Electrical Requirements

-----

- Line voltage: 92 to 130 VAC (184 to 260 VAC optional)
- Frequency: 47 to 440 Hz
- Power consumption: 300 W maximum for each power supply; 410 W maximum on a fully-loaded system

#### Environmental Requirements

-----

- Operating temperature: 50 to 99 degrees F (10 to 37 C)
- Relative humidity: 5% to 95% noncondensing
- Regulatory approvals: UL; FCC Part 15, Class B

#### Size and Weight

-----

- Height: 29.5 in. (74.9 cm)
- Width: 23.3 in. (59.2 cm)
- Depth: 25.5 in. (64.8 cm)
- Weight: 215 lb. (97.5 kg) with one power supply; 242 lb. (109.8 kg) with two

#### LANSTAR AppleTalk Diagnostic Tool

-----

Driver interface: NuBus

Protocol interface: DDP

Stand-alone application; standard Macintosh user-interface Loop back, echo, local-node test, and remote-node test

#### AppleTalk Protocol Support

-----

- Driver interface: AAGA
- Configurations
  - Workstation, running in background
  - Network server, with AppleShare and/or LaserShare

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6966



# Tech Info Library

## LaserWriter IINTX: Specifications (Discontinued 10/91)

Revised: 9/21/93  
Security: Everyone

LaserWriter IINTX: Specifications (Discontinued 10/91)

=====

Article Created: 15 March 1991

### Marking Engine

-----

Canon LBP-SX laser xerographic

### Processor

-----

Motorola 68020 (16.67 MHz clock speed)

### Memory

-----

1MB ROM; 2MB RAM

### Interfaces

-----

SCSI, AppleTalk, Apple Desktop Bus (for future expansion), and RS-232-C ports

### Expansion Capabilities

- 
- ROM expansion via font expansion slot
  - RAM expansion up to 12MB
  - External SCSI port for hard disk font storage
  - Apple Desktop Bus for future expansion

### Print Quality

-----

All text and graphics printed at 300 by 300 dots per inch, full page

### Built-in Font Families

-----

Times, Helvetica, Courier, Symbol, ITC Avant Garde Gothic, ITC Bookman, New Century Schoolbook, Helvetica Narrow, Palatino, ITC Zapf Chancery, and ITC Zapf Dingbats

## Speed

-----  
8 pages per minute maximum throughput (actual speed depends on images printed)

## Printing Protocols

- 
- PostScript
  - a subset of the Diablo 630 command set
  - Hewlett-Packard LaserJet Plus emulation

## Print Materials

-----  
Letter, legal, A4, and B5 sizes, using 16- to 20-lb. single-sheet photocopy bond, 8- to 34-lb. letterhead and colored stock, or transparency overhead film. Envelopes, labels, and paper (up to 36-lb.) supported via manual feed. Envelopes also supported via optional envelope tray.

## Print Capacities

- 
- Paper cassettes hold 200 sheets of 20-lb paper.
  - Envelope cassette holds 15 envelopes.

## Printable Surface

- 
- Letter size: 8.0 by 10.5 in.
  - legal: 8.0 by 13.0 in.
  - A4: 7.41 by 10.86 in.
  - B5: 7.69 by 10.16 in.
- (Actual printable area may vary depending on application.)

## Size and Weight

- 
- Height: 8.6 in. (21.8 cm)
  - Width: 20 in. (50.8 cm)
  - Width: with letter tray attached, 26.4 in. (67.1 cm)
  - Depth: 18.5 in. (47 cm)
  - Weight: 45 lb. (20.25 kg)

## Operating Environment

- 
- Temperature: 50 to 90 degrees F (10 to 32 C)
  - Humidity: 20% to 80%

## Power Requirements

-----  
90 to 126 VAC, 50 to 60 Hz

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number: 6968



# Tech Info Library

## LaserWriter IINT: Specifications (Discontinued 10/91)

Revised: 9/21/93  
Security: Everyone

LaserWriter IINT: Specifications (Discontinued 10/91)

=====

Article Created: 15 March 1991

### Marking Engine

-----

Canon LBP-SX laser xerographic

### Processor

-----

Motorola 68000 (12 MHz clock speed)

### Memory

-----

1MB ROM; 2MB RAM

### Interfaces

-----

AppleTalk, Apple Desktop Bus (for future expansion), and RS-232-C ports

### Print Quality

-----

All text and graphics printed at 300 by 300 dots per inch, full-page

### Built-in Font Families

-----

Times, Helvetica, Courier, Symbol, ITC Avant Garde Gothic, ITC Bookman, New Century Schoolbook, New Helvetica Narrow, Palatino, ITC Zapf Chancery, and ITC Zapf Dingbats

### Speed

-----

8 pages per minute maximum throughput (actual speed depends on images printed)

### Printing Protocols

-----

PostScript and a subset of the Diablo 630 command set

#### Print Materials

-----

Letter, legal, A4, and B5 sizes using 16- to 20-lb. single-sheet photocopy bond, 8- to 34-lb. letterhead and colored stock, or transparency overhead film. Envelopes, labels, and paper (up to 36-lb.) supported via manual feed. Envelopes also supported via optional envelope tray.

#### Print Capacities

-----

- A paper cassette holds 200 sheets of 20-lb. paper.
- Envelope cassette holds 15 envelopes.

#### Printable Surface

-----

- letter size: 8.0 by 10.5 in.
  - legal: 8.0 by 13.0 in.
  - A4: 7.41 by 10.86 in.
  - B5: 7.69 by 10.16 in.
- (Actual printable area may vary depending on application.)

#### Size and Weight

-----

- Height: 8.6 in. (21.8 cm)
- Width: 20 in. (50.8 cm)
- Width: with letter tray attached, 26.4 in. (67.1 cm)
- Depth: 18.5 in. (47 cm)
- Weight: 45 lb. (20.25 kg)

#### Operating Environment

-----

- Temperature: 50 to 90 degrees F (10 to 32 C)
- Humidity: 20% to 80%

#### Power Requirements

-----

90 to 126 VAC, 50 to 60 Hz

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6969



# Tech Info Library

## LaserWriter IISC: Specifications (Discontinued)

Revised: 9/21/93  
Security: Everyone

LaserWriter IISC: Specifications (Discontinued)

=====

Article Created: 15 March 1991

### Marking Engine

-----

Canon LBP-SX laser xerographic

### Processor

-----

Motorola 68000 (7.45 MHz clock speed)

### Memory

-----

16K ROM; 1MB RAM

### Interfaces

-----

SCSI and Apple Desktop Bus (for future expansion) ports

### Macintosh Fonts (on Disk)

-----

Times, Helvetica, Courier, and Symbol typefaces in 9-, 10-, 12-, 14-, 18-, and 24-point sizes. (For best results, these fonts should be installed in the System file of your Macintosh computer from the disks shipped with the LaserWriter IISC)

### Speed

-----

8 pages per minute maximum throughput (actual speed depends on images printed)

### Print Quality

-----

All text and graphics printed at 300 by 300 dots per inch, full page

### Print Materials

-----

# ..TIL06970-LaserWriter\_IISC-Specifications\_Discontinued.pdf

Letter, legal, A4, and B5 sizes using 16- to 20-lb. single-sheet photocopy bond, 8- to 34-lb. letterhead and colored stock, or transparency overhead film. Envelopes, labels, and paper (up to 36-lb.) supported via manual feed. Envelopes also supported via optional envelope tray.

## Print Capacities

-----

- Paper cassettes hold 200 sheets of 20-lb. paper.
- Envelope cassette holds 15 envelopes.

## Printable Surface

-----

- letter size: 8.0 by 10.5 in.
- legal: 8.0 by 13.0 in.
- A4: 7.41 by 10.86 in.
- B5: 7.69 by 10.16 in.

(Actual printable area may vary depending on application.)

## Size and Weight

-----

- Height: 8.6 in. (21.8 cm)
- Width: 20 in. (50.8 cm)
- Width: With letter tray attached, 26.4 in. (67.1 cm)
- Depth: 18.5 in. (47 cm)
- Weight: 45 lb. (20.25 kg)

## Operating Environment

-----

- Temperature: 50 to 90 degrees F (10 to 32 C)
- Humidity: 20% to 80%

## Power Requirements

-----

90 to 126 VAC, 50 to 60 Hz

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6970





# Tech Info Library

## LocalTalk Cable: Specifications

Revised: 8/7/92  
Security: Everyone

LocalTalk Cable: Specifications

=====

Article Created: 15 March 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

Here are some specifications, and some questions and answers about  
LocalTalk networking issues.

DISCUSSION -----

Topology

-----

Serial bus

Wiring

-----

Shielded, twisted-pair

Signaling Standard

-----

EIA standard RS422, balanced voltage

Signing Speed

-----

230.4 Kbits/sec.

Signal Encoding

-----

FMO (biphase space)

Frame Format

-----

SDLC (Synchronous Data Link Control)

# ..TIL06971-LocalTalk\_Cable-Specifications.pdf

Maximum number of Connections per Network Segment

-----

32

Node Identification

-----

Self-configuring; no user action required

Architecture

-----

Open

Connection

-----

Passive drops

Access Method

-----

Carrier-sense, multiple-access with collision avoidance (CSMA/CA)

## • QUESTIONS & ANSWERS

Q) I've been experimenting with LocalTalk networking running inside metal conduit. My tests show that the LocalTalk network would not work at 300 feet within this metal conduit. The wire was Belden shielded twisted-pair apparently meeting Apple specifications.

1) Is Apple LocalTalk affected by running through metal conduit?

2) If diameter is important, how would 2-inch conduit affect it?

3) Does Apple publish a network installation/design guide with this issue in mind?

A) From the sounds of it, the conduit is affecting the impedance/capacitance of the LocalTalk cabling. Also, having the cable lying on the metal conduit could affect the impedance/capacitance. Also, consider these questions: Is the conduit grounded? Is it grounded to the same source as the shield of the LocalTalk cable?

The specification for LocalTalk (included below) only address what you need for the cable. If an external source changes any of those parameters (in this case, the impedance/ capacitance is most likely being affected), then the cable would not meet the required specifications. Apple does not test LocalTalk cabling under multiple conditions (in conduit, by large grounds, by power sources), because it would be difficult--if not impossible--to anticipate all the different possible environmental conditions that could affect a cable.

Other than "Inside AppleTalk," Apple does not publish any information about LocalTalk cables. We did notice that the cabling specification 062-0190-B is not included in the second version of "Inside AppleTalk."

After you verify that you are using the proper cable and connectors, see if the cable will work over the same distance when it is outside the conductor. If there are fire codes that require conduit installation, would Teflon cable satisfy the requirement?

Here are some basic specs:

- Cable Specification (sheet 5 of 10, drawing number 062-0190-B)
- Conductors: 22 AWG stranded 17 ohm per 300 meters
- Shield: 85% coverage braid
- Impedance: 78 ohm
- Capacitance: 68 pF per meter
- Rise time: 175 ns 0 to 50% at 300 meters
- Diameter: 4.7 mm (0.185 inches) maximum

Q) Why does Apple use a shielded pair wire (LocalTalk) when other manufacturers, such as Farallon, can perform the same function without shielding?

A) During the evolution of AppleTalk, a major concern for Engineering was the need to meet FCC Class B specifications for radiated emissions. To meet this specification using RS-422-type signalling, it is necessary to use shielded cable. This shielded cable also reduced EMI with the signal on the cable itself (incoming interference). This was all done in the interest of both the FCC specification and the need for data integrity in a variety of network installation locations. The ground (shield) prevents excessive RFI, while a resistor/capacitor combination reduces ground currents while offering a low-impedance path for high-frequency noise, further reducing EMI/RFI. Telephone wiring is suitable for use in normal environments, but in some cases, network performance suffers because of the lack of shielding. There have been instances where electrical interference has compromised the integrity of data on PhoneNET.

Q) With respect to the first question, why is the LocalTalk network length limited to 1000 feet?

A) The 32-node/1000-foot limit is a recommendation. It is specific to LocalTalk networks using this cabling scheme. The considerations for this limit are the average traffic generated by these nodes and the physical transmission limitations of LocalTalk. With 32 LocalTalk Connection Modules attached to a LocalTalk network, there is a very specific drop in the signal level on the network based on the characteristic impedance of the cable, the impedance of the secondary of the transformer, and the distance over which this signal must travel. The recommended limits are based on this maximum signal level drop over this distance with this number of nodes. More distance and/or more nodes could reduce the network signal below the acceptable data reliability limits, as well as the acceptance range of the receiver chips in the system.

From a traffic standpoint, only active nodes have an effect on the performance. However, both active and nonactive workstations affect the

electrical characteristics of the network because each LocalTalk connector box (transformer-isolated) puts another load on the network, regardless of whether the workstation is on.

- Q) What is the impedance of the LocalTalk cable? (Termination is documented in "Inside AppleTalk" as 100-ohm resistor, yet available AppleLink information seems to indicate 78 ohms is the impedance of the cable. Isn't the terminator supposed to match the cable for minimal signal reflection?)
- A) The impedance of the LocalTalk cable is 78 ohms, and the termination resistor is 100 ohms. To quote "Inside AppleTalk," "A 100-ohm resistor is used, even though the characteristic impedance of the line is 78 ohms, because it gives adequate termination and minimizes resistive losses." Our interpretation of this statement is: If there is a 1:1 impedance match across the transformer, there will be maximum signal transfer through the transformer, which would reduce the signal level on the network side of the transformer. If there is too great a difference in the values of the terminator and the cable, once again there will be signal losses--this time on the node side of the transformer because of the mismatch. By compromising on 100 ohms, losses from perfect impedance matching and losses due to gross mismatch are minimized.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:6971



# Tech Info Library

## Macintosh IIci Cache: Specifications

Revised: 7/10/92  
Security: Everyone

Macintosh IIci Cache: Specifications

=====

Article Created: 15 March 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

These are the specifications for the Apple Macintosh IIci Cache Card.

DISCUSSION -----

INTERFACE

The Macintosh IIci Cache Card Connector (120-pin Euro-DIN style)

POWER DISSIPATION

+5 V, 5 W max

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6972



# Tech Info Library

## Macintosh IIX: Specifications (Discontinued 10/90)

Revised: 9/27/93  
Security: Everyone

Macintosh IIX: Specifications (Discontinued 10/90)

Article Created: 15 March 1991  
Article Reviewed/Updated: 20 July 1992

TOPIC -----

This article provides technical specifications for the Macintosh IIX computer.

DISCUSSION -----

### PROCESSOR

- 68030; 32-bit internal
- Harvard architecture
- 15.667 MHz clock speed
- 256-byte instruction and data caches

### COPROCESSOR

- 68882 floating-point coprocessor (IEEE standard: 80-bit precision)
- 15.667-MHz clock speed

### INTERFACES

- Six NuBus internal slots support full 32-bit address and data buses.
- Two mini-8 serial (RS-232/ RS-422) ports
- Two Apple Desktop Bus ports allow daisy-chaining of multiple peripheral devices with a SCSI interface: uses a 50-pin connector (internal) and a DB-25 connector (external)
- Sound jack for stereo output

### MOUSE

- Mechanical tracking: optical shaft encoding at 3.94+/-0.39 pulses per mm (100 +/-10 pulses/in.) of travel

### SOUND GENERATOR

- Apple's custom digital-sound chip provides 8-bit stereo sampling at 44.1 KHz, and includes four-voice, wave-table synthesis. Capable of driving stereo headphones or other stereo equipment through the sound jack.

ELECTRICAL REQUIREMENTS

- Line voltage: 100 to 240 VAC, automatically configured
- Frequency: 48 to 62 Hz
- Maximum power: 230 W, not including monitor power

SIZE AND WEIGHT

- MAIN UNIT
  - Height: 5.5 in. (14.0 cm)
  - Width: 18.7 in. (47.4 cm)
  - Depth: 14.4 in. (36.5 cm)
  - Weight: 24 lb. (10.9 kg, not including hard disk drive)
- MOUSE
  - Height: 1.1 in. (2.8 cm)
  - Width: 2.1 in. (5.3 cm)
  - Depth: 3.8 in. (9.7 cm)
  - Weight: 6 oz. (17 kg)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6973



# Tech Info Library

## Macintosh Internal 800K Disk Drive: Specs (Discontinued)

Revised: 9/27/93  
Security: Everyone

Macintosh Internal 800K Disk Drive: Specs (Discontinued)

=====

Article Created: 18 March 1991

### Recording Media

-----

- Disk diameter: 3.5 in.
- Recording surfaces: 2
- Tracks per inch: 80

### Capacity

-----

- Formatted data capacity: 800K (use only certified, double-sided media in Apple 3.5 Drive)
- Unformatted data capacity: 1246K

### Drive Characteristics

-----

- Seek time (track to track): 6 ms maximum
- Settle time: 30 ms maximum
- Drive startup time: 600 ms maximum

### Head Position Accuracy

-----

+0.035 mm

### Interface

-----

Direct connection to the Macintosh II via the SCSI 50-pin connector

### Electrical Requirements

-----

+12 volts

-----

- Standby: 10 microamps
- Typical: 120 mA
- Peak: 600 mA (during eject only: 2-sec. maximum duration)

+5 volts



-----

- Standby: 10 mA
- Typical: 360 mA

#### Environmental Requirements

-----

- Operating temperature: 40 to 122 degrees F (5 to 50 C)
- Storage temperature: -40 to 140 degrees F (-40 to 60 C) (no condensation)
- Relative humidity: 5% to 90% with maximum wet bulb temperature of 85 F (29 C) and no condensation

#### Size

----

- Height: 2.01 in. (51 mm)
- Width: 4.72 in. (120 mm)
- Depth: 7.87 in. (200 mm)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6974



# Tech Info Library

## Macintosh Internal Hard Disk 160SC: Specifications

Revised: 5/17/91  
Security: Everyone

Macintosh Internal Hard Disk 160SC: Specifications

Article Created: 18 March 1991  
Article Reviewed Only:  
Article Last Updated:

### Capacity

- Data capacity: 160MB (formatted)
- Data surfaces: 5
- Heads/Surface: 1
- Block size: 512 bytes
- Total disk blocks: 327,780
- Blocks/Track: 32 to 54

### Characteristics

- Average seek time: 18 ms
- Rotational speed: 3,600 rpm
- Startup time: 20 secs
- Spin-down time: 20 secs

### Interface

Direct connection to the Macintosh II or IIfx via the SCSI 50-pin connector.

### Electrical Requirements

- Line voltage: 85 to 270 VAC
- Frequency: 47 to 64 Hz
- Maximum power: 60 W

### Environmental Requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: 32 to 122 F degrees (0 to 50 C)
- Relative humidity: 20% to 80% noncondensing

# ..TIL06975-Macintosh\_Internal\_Hard\_Disk\_160SC-Specifications.pdf

- Operating altitude: 0 to 10,000 ft. (0 to 3,048 m)
- Shipping altitude: -1000 to 40,000 ft. (-305 to 12,195 m)

## Size and Weight

-----

- Height: 1.9 in. (4.8 cm)
- Width: 6.0 in. (15.2 cm)
- Depth: 9.0 in. (22.8 cm)
- Weight: 4.6 lb. (2.09 kg)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6975



# Tech Info Library

## Macintosh Internal Hard Disk 40SC: Specifications

Revised: 5/17/91  
Security: Everyone

Macintosh Internal Hard Disk 40SC: Specifications

Article Created: 18 March 1991  
Article Reviewed Only:  
Article Last Updated:

### Capacity

- Data capacity: 40MB (formatted)
- Data surfaces: 3 and 4
- Heads/Surface: 1
- Block size: 512 bytes
- Total disk blocks: 82,020
- Blocks/Track: 28, 33, and 35

### Characteristics

- Average seek time: 30 ms
- Rotational speed: 3,600 rpm
- Startup time: 20 secs
- Spin-down time: 20 secs

### Interface

Direct connection to the Macintosh SE, SE/30, II, IIcx or IIx via the SCSI 50-pin connector.

### Electrical Requirements

- Line voltage: 85 to 270 VAC
- Frequency: 47 to 64 Hz
- Maximum power: 60 W

### Environmental Requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: 32 to 122 F degrees (0 to 50 C)

# ..TIL06976-Macintosh\_Internal\_Hard\_Disk\_40SC-Specifications.pdf

- Relative humidity: 20% to 80% noncondensing
- Operating altitude: 0 to 10,000 ft. (0 to 3,048 m)
- Shipping altitude: -1000 to 40,000 ft. (-305 to 12,195 m)

## Size and Weight

-----

Height: 2.3 in. (5.8 cm)

Width: 4.3 in. (10.9 cm)

Depth: 7.9 in. (20 cm)

Weight: 2.4 lb. (1.09 kg)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6976



# Tech Info Library

## Macintosh Internal Hard Disk 80SC: Specifications

Revised: 6/24/92  
Security: Everyone

Macintosh Internal Hard Disk 80SC: Specifications

=====  
Article Created: 18 March 1991  
Article Reviewed Only: 23 June 1992  
Article Last Updated:

TOPIC -----

This articles provides specifications for Apple's internal 80MB hard disk.

DISCUSSION -----

### Capacity

-----

- Data capacity: 80MB (formatted)
- Data surfaces: 5
- Heads/Surface: 1
- Block size: 512 bytes
- Total disk blocks: 163,940
- Blocks/Track: 28 and 35

### Characteristics

-----

- Average seek time: 20 ms
- Rotational speed: 3,662 rpm
- Startup time: 20 sec.
- Spin-down time: 20 sec.

### Interface

-----

Direct connection to the Macintosh SE, SE/30, II, IIcx or IIx via the SCSI 50-pin connector.

### Electrical Requirements

-----

- Line voltage: 85 to 270 VAC
- Frequency: 47 to 64 Hz

# ..TIL06977-Macintosh\_Internal\_Hard\_Disk\_80SC-Specifications.pdf

- Maximum power: 60 W

## Environmental Requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 C)
- Storage temperature: 32 to 122 F degrees (0 to 50 C)
- Relative humidity: 20% to 80% noncondensing
- Operating altitude: 0 to 10,000 ft. (0 to 3,048 m)
- Shipping altitude: -1000 to 40,000 ft. (-305 to 12,195 m)

## Size and Weight

- Height: 2.3 in. (5.8 cm)
- Width: 4.3 in. (10.9 cm)
- Depth: 7.9 in. (20 cm)
- Weight: 2.4 lb. (1.09 kg)

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Tech Info Library Article Number:6977



# Tech Info Library

## MacAPPC: Specifications

Revised: 5/17/91  
Security: Everyone

MacAPPC: Specifications

=====

Article Created: 18 March 1991  
Article Reviewed Only:  
Article Last Updated:

MacAPPC is implemented in a client-server configuration. The server code resides on a Macintosh Coprocessor Platform communications card plugged into one of the NuBus expansion slots of any member of the Macintosh II family.

The Toolbox portion (the client) exists as a set of device drivers on the same Macintosh and/or on one or more Macintosh computers connected to the server via AppleTalk. Because the Macintosh Coprocessor Platform is providing the services and using only the resources found on the card, MacAPPC offers LU 6.2 connectivity without requiring a dedicated Macintosh system.pansion slots of any member of the Macintosh II family.

The toolbox portion (the client) exists as a set of device drivers on the same Macintosh and/or on one or more Macintosh computers connected to the server via AppleTalk. Because the Macintosh Coprocessor Platform is providing the services and using only the resources found on the card, MacAPPC offers LU 6.2 connectivity without requiring a dedicated Macintosh system.

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Tech Info Library Article Number:6978





# Tech Info Library

## MacX25: Specifications

Revised: 5/17/91  
Security: Everyone

MacX25: Specifications

=====

Article Created: 18 March 1991  
Article Reviewed Only:  
Article Last Updated:

MacX25 supports the following:

- CCITT 1980 Compatible Mode
- CCITT 1984 Compatible Mode
- Packet Assembler/Disassembler (X.3, X.28, X.29)
- Operation as a DTE
- Operation as a DCE
- Virtual Circuits: 64 maximum
- Single link for each Apple Serial NB Card
- Multiple cards for each Macintosh II
- Operation at up to 19.2Kbps with RS-232C
- Operation at up to 64Kbps with V.35
- Multiple servers for each AppleTalk network system

MacX25 does not support the following:

- Permanent Virtual Circuits
- X.32 switched circuit operation

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6983



# Tech Info Library

## Apple Daisy Wheel Cut-Sheet Feeder: Specs (8/94)

Revised: 8/31/94  
Security: Everyone

Apple Daisy Wheel Cut-Sheet Feeder: Specs (8/94)

Article Created: 18 March 1991  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

This article describes the features and functions of the cut-sheet feeder on the Apple Daisy Wheel Printer. This printer has been discontinued and is no longer available.

DISCUSSION -----

Print Registration

-----  
The Apple Daisy Wheel Printer feeds paper, so that printing starts 0.15 inches from the top edge of the paper. Control of the bottom edge is a function of the printer and is dictated by program commands. Cut-sheet horizontal and vertical registration fall within the following accuracy requirements from page to page:

| Frequency (% of sheets being fed) | Tolerance (maximum deviation allowed within volume of sheets fed) |
|-----------------------------------|-------------------------------------------------------------------|
| 66%                               | +/- .030 inches (+/- .076 cm)                                     |
| 95%                               | +/- .060 inches (+/- .153 cm)                                     |

Skew

-----  
Operating on a properly adjusted Apple Daisy Wheel Printer, the feeder does not skew cut sheets (measured over the width of an 8-inch form) more than the following:

| Frequency (% of sheets being fed) | Tolerance (maximum deviation allowed within volume of sheets fed) |
|-----------------------------------|-------------------------------------------------------------------|
| 66%                               | +/- .030 inches (+/- .076 cm)                                     |
| 95%                               | +/- .060 inches (+/- .153 cm)                                     |

## Paper-Handling Capability

-----

Cut sheets are stacked into an adjustable paper hopper, having the following specifications:

- The paper hopper has a cut-sheet supply capacity equivalent to 200 sheets of 20 lb. paper.
- The paper stacker holds the same supply capacity as the paper hopper (200 sheets).
- You can reverse the paper feed up to one inch for subscript and superscript application.
- The number of operator interventions does not exceed one per 1000 sheets when using typical 20 lb. office paper.
- The sheet cycle time, from the ejection of a printed sheet to the feeding of a new one, is 6 seconds (approximate average time with a maximum of 12 seconds).
- The Form Feed switch on the front panel of the Daisy Wheel Printer initiates the feed cycle.

## Paper Specifications

- 
- Cut-Sheet Dimensions:  
Width: 8 inches (20.32 cm) to 12 inches (30.8 cm)  
Length: 8 inches (20.32 cm) to 14 inches (35.56 cm)
  - Cut-Sheet Weights:  
16 lb. (6.02 g/m<sup>2</sup>) to 24 lb. (9.2 g/m<sup>2</sup>)

Cut sheets include bond or equivalent weights of other types of cut sheets, like xerographic, mimeographic, offset, or text.

## Paper Surface Texture

-----

The recommended uncoated paper finishes are listed below:

|        |         |         |
|--------|---------|---------|
| Laid   | Vellum  | Antique |
| Cockle | English | Woven   |
| Policy | Linen   | Smooth  |

## Indicators

-----

The Feeder has no operator controls or visual indicators. It is platen driven. The only electrical interface to the printer is the paper-out sensor. The only error conditions possible are those initiated by the paper-out sensor, when the feeder is connected to the Apple Daisy Wheel Printer.

## Article Change History:

31 Aug 1994 - Removed "Discontinued" from title. Reviewed and updated.

## Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:6984



# Tech Info Library

## Monitor IIC: Specifications (Discontinued)

Revised: 9/27/93  
Security: Everyone

Monitor IIC: Specifications (Discontinued)

Article Created: 18 March 1991

### Electrical

- CRT type: 10-inch diagonal screen (9-inch-diagonal display)  
90-degree diagonal deflection
- Phosphor: P31, green
- Scanning: EIA standard; 525 lines, 30 frames, 60 fields/sec. with  
overscan
- Data input signal: 0.5 V p-p to 2.0 V p-p composite; negative sync. into  
75 ohms (RS-170 compatible)
- Drive rates: 15,699 KHz horizontal, 60 Hz vertical
- Video bandwidth: 18 MHz
- Horizontal resolution: 800 TV lines center: 700 TV lines corners.
- Horizontal linearity: Less than 10%
- Operating temperature range: 41 to 104 degrees F (5 to 40 C)
- Power requirements: 115 VAC +5%, -12%; 50/60 Hz

### Weight and Dimensions

- Width: 9.5 in. (240 mm)
- Height: 7.3 in. (185 mm)
- Depth: 10.2 in. (260 mm)
- Weight (including packing material): 11 lb. (5.5 kg)

### Mechanical

- Cabinet: UL approved: styling coordinated with the Apple IIC
- Side controls: Power on/off, contrast
- Rear controls: Brightness. vertical hold, vertical amplitude
- Internal controls: Focus, vertical linearity, horizontal hold,  
horizontal size, preset brightness
- Input connector: RCA-type, 75 ohms terminated.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6985



# Tech Info Library

## Macintosh Portable Keypad: Specifications (Discontinued 10/93)

Revised: 10/21/93  
Security: Everyone

Macintosh Portable Keypad: Specifications (Discontinued 10/93)

=====

Article Created: 18 March 1991  
Article Reviewed/Updated: 28 July 1992

TOPIC -----

This article provides technical specifications for the Macintosh Portable Keypad.

DISCUSSION -----

### KEYS

- Number of keys: 18
- Keys included
  - Numbers: 0-9
  - Arithmetic operators: =,/, -, +
  - Decimal point
  - Enter
  - Clear

### SIZE AND WEIGHT

- Height: maximum 1.0 in. (2.5 cm.)
- Width: 3.0 in. (7.6 cm.)
- Depth: 5.0 in. (12.7 cm.)
- Weight: 5.0 oz. (140 g)

### INTERFACE

- Direct internal connection with the Macintosh Portable

### ENVIRONMENTAL REQUIREMENTS

- Operating temperature: 32 to 122 degrees F (0 to 50 C)
- Storage temperature: -40 to 140 degrees F (-40 to 60 C)
- Relative humidity: 95% non-condensing at 32 to 122 degrees F (0 to 50 C)

for 8 hours

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6986



# Tech Info Library

## Apple Universal Monitor Stand: Specifications (Discon 10/21/93)

Revised: 10/21/93  
Security: Everyone

Apple Universal Monitor Stand: Specifications (Discon 10/21/93)

=====

Article Created: 18 March 1991  
Article Reviewed/Updated: 21 October 1993

### Tilt Range

-----

- Backward 12 degrees
- Forward 10 degrees

### Swivel Range

-----

45 degrees each direction

### Size

----

- Height: 3.5 in. (140 mm)
- Width: 11.25 in. (550 mm)
- Depth: 14.5 in. (680 mm)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6989



# Tech Info Library

## X Windows System Version 11r3: Specifications

Revised: 9/18/92  
Security: Everyone

X Windows System Version 11r3: Specifications

Article Created: 18 March 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

X Windows System Version 11r3: Specifications

### DISCUSSION -----

#### Server

- 
- Network transparent
  - Supports multiple monitors connected to a single Workstation running A/UX Version 1.1 or later
  - Color support (with A/UX Version 1.1 or later)

#### Window Manager

- 
- Window decoration similar to the Macintosh environment
  - User control of screen configuration and customization
  - Customized to use Apple Desktop Bus (ADB) mouse and all ADB keyboards
  - Support for "backing store" and "save under," features that improve window system performance
  - Ability to manage multiple screens (using twm) from a single window manager process

#### Applications

- 
- Mouse-based screen editor (xedit)



- Calculator (xcalc)
- CPU Performance meter (xload)
- Clock (xclock)
- Bit-mapped, image-manipulation utilities, including conversion from screen image to PostScript format (bitmap, xdpr, xwd, xwud, xpr)
- Terminal emulator with DEC VTIO2 and Tektronix 4014 compatibility (xterm)
- Font displayer (xfd)

#### Libraries in C

- Complete applications development toolkit (X Toolkit intrinsics and Xaw Athen widget set)
- Graphics library (.Xlib)
- Include files

#### Configuration Required

- X for A/UX requires a Berkeley Networking Services or Sun Microsystems' Network File System. (NFS) environment.
- The simultaneous display of X and Macintosh Toolbox applications is not supported in this release.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6990



# Tech Info Library

## AppleLine 3270 File Transfer: Specifications (Discontinued)

Revised: 9/15/93  
Security: Everyone

AppleLine 3270 File Transfer: Specifications (Discontinued)

=====

Article Created: 14 March 1991

Emulation

-----

IBM 3278 Model 2

Serial Communications to AppleLine

-----

9600 baud with flow control

File Transfer Environments

-----

Works under both the TSO (Time Sharing Option) under MVS and CMS  
(Conversational Monitor System) under VM

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6991



# Tech Info Library

## Macintosh II EtherTalk NB Interface Card: Specs (Discontinued)

Revised: 9/27/93  
Security: Everyone

Macintosh II EtherTalk NB Interface Card: Specs (Discontinued)

=====

Article Created: 15 March 1991  
Article Reviewed Only: 24 June 1992

### Connectors

-----

- 15-pin D-style (standard Ethernet connector)
- BNC (for RG58 thin Ethernet cabling)

### Transmit/Receive Data Rate

-----

- 10 Mbits/sec on-board transceiver
- Can be enabled for use with thin Ethernet cabling

### Packet Buffering

-----

- Multipacket using 16K dual-ported, local-memory ROM space
- 32K

### Power Dissipation

-----

- +5 V, 6.5 W max
- +12 V, 3.6 W min

### Environmental Requirements

-----

- Operating temperature: 32 to 131 degrees F (0 to 55 C)
- Humidity: 10% to 90% noncondensing

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6992



# Tech Info Library

## Apple III Univ Parallel Interface Card: Specs (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple III Univ Parallel Interface Card: Specs (Discontinued)

=====

Article Created: 15 March 1991

### Data Lines

-----

- 16 output (24 mA at 0.5 V)
- 8 input (1 LSTTL load)

### Control Lines

-----

- Data Ready Output
- Acknowledge Input
- Reset Data Ready
- Output Strobe
- Signal Ground
- Chassis Ground

### Control Signal Polarity

-----

Software-settable

### Signal Levels

-----

LSTTL

### Strobe Length

-----

1-15K sec. in 2&5

### Interrupts

-----

Software controlled

### Connector

-----

- 40-Pin Ribbon (parallel), center-keyed
- Accepts 20-Pin Ribbon (Printer), center-keyed

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6993



# Tech Info Library

## Forms Creation Software: High-End Products

Revised: 5/28/91  
Security: Everyone

Forms Creation Software: High-End Products

=====  
Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to create high-end forms. Claris' SmartForm is not powerful enough, nor does it have many of the features that a dedicated, high-end, forms processing and creation system has.

Are you aware of any high-end products for the Macintosh?

DISCUSSION -----

Below are the names of three forms creation and management software publishers. Feature sets vary across the three. Each is strong in some areas and weak in others when compared to SmartForm from Claris. Apple is currently evaluating forms software for its own use. The project leader is very excited about features of packages not yet on the market. Great advances are expected in the next six months.

Here are the three packages and their publishers:

- Informed Designer from Informed Manager
- if/x: series from Softview
- True Forms from Adobe Systems, Inc.

For contact information, search the Technical Info library under the name of the publisher.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6995



# Tech Info Library

## Kinko's Products Now Available from Intellimation

Revised: 5/28/91  
Security: Everyone

Kinko's Products Now Available from Intellimation

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What became of the educational software products that were once distributed through Kinko's?

DISCUSSION -----

The products formerly available through Apple Computer, Inc. and Kinko's are now available through Intellimation. For contact information, search the Technical Info library under "Intellimation."

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6996



# Tech Info Library

## AppleShare PC 2.0: Using Expanded or Extended Memory

Revised: 5/28/91  
Security: Everyone

AppleShare PC 2.0: Using Expanded or Extended Memory

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it possible to load AppleShare PC 2.0 into either extended or expanded memory?

DISCUSSION -----

Yes, it is possible to load parts of AppleShare PC into extended memory (XMS) or expanded memory (EMS, EEMS, etc.) There is no real feature built into AppleShare PC to allow this, but a number of utilities exist that can manage memory and load programs and drivers into this alternate memory.

We have not done a great deal of testing with this, and, of course, third-party utilities that do this can't be treated as Apple-supported solutions. However, we have used one product (QEMM-386) to load a great deal of AppleShare PC 2.0.1 into extended memory on an IBM model 70 and it seems to work fine.

The process of determining what can and cannot be loaded into extended memory takes trial-and-error experimentation and can be rather complex. The variables involved include the processor capabilities of your computer, the capabilities of your memory-manager software, the number and type of programs to be loaded "high", and the type and amount of hardware that also needs use of this high memory range. This process is usually documented with the memory-manager software and differs enough between programs to be beyond the scope of this response. If you provide a very detailed description of specific PC installation, we may be able to provide more assistance.

For information on the QEMM-386 package, please contact the manufacturer, Quarterdeck Office Systems. For contact information, search the Technical



Info library under "Quarterdeck".

Note: At the time we tested it, QEMM-386 v5.1 was the one third-party memory manager available that was a compatible substitute for the Windows 3.0 HIMEM.SYS memory manager. There are now several other utilities, some commercial, some user-supported, advertising this ability. We have not tried any of these and probably won't unless a specific case needs attention.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:6997



# Tech Info Library

## DAL: DB2 Data Updates Concerns (11/94)

Revised: 11/7/94  
Security: Everyone

DAL: DB2 Data Updates Concerns (11/94)

=====

Article Created: 14 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

We have developed the first phase of an enterprise-wide DSS system using DAL up to a DB/2 database. We need to query information and do real-time updates to the database.

From the query standpoint, everything works fine, but I have some concerns regarding updating the host database. Overall, we want to set up standards and procedures for updating DB/2 data from Macintoshes. Dynamic SQL gives us the capability to update the host, but MIS may not allow its use, due to backup, recovery, security, and other control issues. As alternatives to dynamic SQL, we could use batch mode on the host or COBOL to do the updates.

This is more of an organizational issue than a strict technical problem. Has anyone else faced the same issues, developed guidelines, and so on?

DISCUSSION -----

The fact that DAL uses dynamic, not static, SQL is not really the issue. You need to establish security by user or user group regardless of the kind of SQL used to access the tables.

The problems and concerns with backup and recovery are a function of the DB2 design and would exist if you used static SQL and CICS to do transaction updates. If you want neat backup points (for possible recovery later), you will have to do your updates in batch programs with quiesce points before and after. We are not aware of any guidelines established to address this issue.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:6998



# Tech Info Library

## DART (Disk Archive/Retrieval Tool) 1.5: Manual (10/93)

Revised: 10/6/93  
Security: Everyone

DART (Disk Archive/Retrieval Tool) 1.5: Manual (10/93)

=====

Article Created: 14 February 1991  
Article Reviewed/Updated: 6 October 1993

TOPIC -----

Where can I get the manual for Apple's disk-image copy program, DART 1.5?

DISCUSSION -----

The DART 1.5 manual is posted, along with the current version of DART, in a self extracting archive (.sea) file. You can find this file in two locations on AppleLink:

- 1) On the Apple SW Updates icon:
  - Software Sampler
  - Apple SW Updates
  - Macintosh
  - Utilities
- 2) On the AppleLink version of the Tech Info Library, posted as an enclosure to the article: "DART 1.5.3: Version Change History (10/93)"

Article Change History:  
6 October 1993 - Rewrote article, adding new version information and new location information.

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Tech Info Library Article Number:6999



# Tech Info Library

## Macintosh IIsi and Display Card 8•24 GC: Compatibility Update

Revised: 7/16/92  
Security: Everyone

Macintosh IIsi and Display Card 8•24 GC: Compatibility Update

=====

Article Created: 14 February 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated:

TOPIC -----

What recommendations can you make regarding 8•24 GC card and the Macintosh IIsi?

DISCUSSION -----

The Macintosh Display Cards 4•8, 8•24, and 8•24 GC can be used in any NuBus-capable Macintosh. This includes the Macintosh II, Macintosh IICx, Macintosh IIX, Macintosh IIfx, Macintosh IICI, Macintosh IIsi with NuBus adapter card, and the Macintosh Quadra computers.

There have never been any concerns regarding the Display Cards 4•8 and 8•24 and the Macintosh IIsi. These have been and continue to be recommended configurations.

The Display Card 8•24 GC takes slightly more power, due to the processor and on-board memory, than the NuBus power specification of 15 watts. Because Apple had not completed initial testing of the Macintosh IIsi and Display Card 8•24 GC combination in October 1990, we were not able to initially recommend the combination.

We have now completed initial tests and can now recommend the Macintosh IIsi and Macintosh Display Card 8•24 GC combination in normal operating environments, meeting Apple's high reliability requirements.

Apple is continuing testing for elevated temperature environments. We will publish results of these tests as they become available. Until then, we do not recommend the combination of Macintosh IIsi and Macintosh Display Card 8•24 GC in environments where the temperature is expected to regularly exceed 32 C or 90 F. But we can recommend the combination for

normal environments.

With regard to third-party cards, we have found the vast majority to be completely compatible and to work reliably with the Macintosh IIsi. In those few instances where the power specification exceeds the NuBus specification, or if you have any questions or concerns about a specific product, contact the vendor. In Apple's case, we can now recommend all of our displays cards across the line of NuBus-capable Macintoshes.

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Tech Info Library Article Number:7001



# Tech Info Library

## Communications ToolBox: 3270 Tools Information

Revised: 5/28/91  
Security: Everyone

Communications ToolBox: 3270 Tools Information

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there any plans for a 3270 connection tool for the Communications Toolbox?

DISCUSSION -----

Advanced Software Concepts has acs3270, a terminal tool to allow access to IBM computers using TCP/IP. It will also support AS/400 connections. They are planning to support DEC SNA/Gateways within the near future. Educational institutions get a special discount. Site licensing is available upon request. Special feature for those very large accounts: a special installer that lets the system administrator freeze some or all settings.

For contact information, search the Technical Info library under "Advanced Software Concepts."

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Tech Info Library Article Number:7004



# Tech Info Library

## Display PostScript Options

Revised: 6/15/92  
Security: Everyone

Display PostScript Options

=====

Article Created: 14 February 1991  
Article Last Reviewed: 22 May 1992  
Article Last Updated: 22 May 1992

TOPIC -----

Is there any third-party hardware that uses Display PostScript to draw the image on a Macintosh screen?

If there is no hardware, do you know of a software PostScript interpreter to preview PostScript files on a Macintosh screen?

DISCUSSION -----

Display PostScript (licensed by Adobe) lets a PostScript procedure render graphics on a bit-map screen (in the same manner that a LaserWriter with its built-in PostScript lets a PostScript procedure render graphics on a sheet of paper).

Apple displays its graphics via QuickDraw instead of PostScript. Apple has no plans to display graphics based on PostScript language routines for many reasons. Providing this capability would likely require a rewrite of the Macintosh operating system.

If you are running A/UX, a PostScript user interface called NeWS may be used. A NeWS application is a collection of PostScript procedures that are sent to a NeWS server (perhaps remotely via a network connection). The server interprets the PostScript procedures and renders graphics in a window on the display's bit-map screen.

Macintosh print drivers let you view PostScript commands for editing purposes. If running System 6, press and hold the Command and "F" keys after selecting OK from the print dialog box. You'll see the message "Creating PostScript File." The file is named PostScript0, PostScript1, and so on - a standard text file that can be opened by most word processing and text editing programs. System 7



## ..TIL07005-Display\_PostScript\_Options.pdf

print drivers give you the option to change the print-job destination from the printer to disk. Merely check the appropriate destination in the print dialog.

It is possible to display an EPS (Encapsulated PostScript) file with many Macintosh applications, including Adobe Illustrator.

To display full PostScript files under the Macintosh OS, use an application like LaserTalk from Emerald City Software or PostShow from Lincoln & Co.

Search on company names for more information about third party products.

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Tech Info Library Article Number:7005



# Tech Info Library

## A/UX 2.0: giftoptbm and pbmtotbm Utilities

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: "giftoptbm" and "pbmtotbm" Utilities

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Article Created: 14 February 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

There are some new A/UX patches on AppleLink under: Field Engineer/Field Materials/Software. They are: giftoptbm and pbmtotbm. What are they for?

### DISCUSSION -----

The "giftoptbm" (converts a GIF format file into a Portable Bit Map format file) and "pbmtotbm" (converts a Portable Bit Map format into an X11 bitmap format file) are not A/UX specific patches. They were public-domain utilities and used as a temporary solution for people looking for a way of converting Macintosh PICT format into X11 Bitmap format.

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Tech Info Library Article Number:7006



# Tech Info Library

## HyperCard: Dial Sounds Different with System 6.0.5

Revised: 5/28/91  
Security: Everyone

HyperCard: Dial Sounds Different with System 6.0.5

=====

Article Created: 14 February 1991  
Article Last Reviewed: 4 June 1992  
Article Last Updated:

TOPIC -----

I have a new Macintosh LC, and a HyperCard note stack I've used for the past six months, which includes phone dialing routines. The dialer, which I've used by holding my handset to the speaker of a Macintosh IIX, no longer works. Tones are generated, but regardless of the distance between the Macintosh speaker and phone mouthpiece, they don't trigger the phone system. I've done some audio comparison tests, and it sounds as if the LC's tone generator is inaccurate, perhaps as much as a quarter-tone high.

DISCUSSION -----

As a result of changes in the Macintosh OS, support for DTMF tones is no longer available. HyperCard 2.0 uses digitized sounds with the Dial command. HyperCard 1.2.x will have difficulty producing the exact tones required to trigger the telephone system. Upgrading to HyperCard 2.0 should solve the problem.

You may want to consider the following:

- Try dialing with pauses between the tones. Commas in the string cause a one-second delay.
- A direct connection to the Macintosh results in higher fidelity and may trigger the phone system. The Macintosh sound circuitry is capable of producing much higher-quality sound than the speaker can pass. HyperDialer connects directly to the sound port and eliminates both our speaker and the telephone microphone.

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Tech Info Library Article Number:7007



# Tech Info Library

## MacDFT Group 1: Timer and Performance over Token Ring

Revised: 5/28/91  
Security: Everyone

MacDFT Group 1: Timer and Performance over Token Ring

=====

Article Created: 14 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What happens when you change the Group 1 timer values on the Token Ring card? People here are complaining about the speed of MacDFT compared to the PS/2's that they had connected on the network. Would changing the values have any effect on the response time of MacDFT over Token Ring?

DISCUSSION -----

We don't recommend changing the Response and Acknowledge timers, unless you really know what you are doing. You can experiment with the Inactivity Timer, if you often get timeouts from the hosts. While selecting the MacDFT Config CDEV, pressing Command-T brings up the Group 1 Timers window with three timers. Only experiment with the Inactivity Timer, which is the bottom value. We don't expect changing these values would increase the performance of MacDFT.

The performance differences between the machines is not due to the block or even packet size (if both systems are on Token Ring), but is most likely due to MacDFT's intrinsic program speed. However, if the PS/2 is a LU and is "directly" connected to the controller, and, if the Macintosh is a PU having to go through a gateway, there can be substantial performance differences. Or if the PS/2 is on Token Ring, and the Macintosh is on coax, the PS/2 will be faster. But again, if everything else is equal, the Macintosh will still be slower.

In file transfer for example, under TSO when you transfer a file you allocate space in blocks, tracks, or cylinders by specifying BLKS, TRKS, or CYLS. Under CMS this is done automatically, depending on the file type you select, and can't be changed by the client. And even under TSO when you allocate the space, this doesn't influence perceptibly the throughput

performance.

Data is sent one buffer-full at a time, and the buffer size is set to be the screen size. So, if your terminal is configured to have a 80\*24 screen, during file transfer approximately 1920 bytes will be transferred at a time.

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Tech Info Library Article Number:7008



# Tech Info Library

## Internet Router and Novell Token Ring VAP Problem

Revised: 12/10/92  
Security: Everyone

Internet Router and Novell Token Ring VAP Problem

Article Created: 15 February 1991

### Article Change History

12/9/92 - RETITLED

- To more accurately describe the article.

### TOPIC

I have been having problems with what looks like the Novell Token Ring VAP and the Apple Internet Router. The following is a description of the problem, the observations of the packet traffic by an engineer from Novell, and myself, with a shot at a conclusion. I know that the description of the packet traffic is meaningless without the actual trace data in front of you, but sending the trace data was impractical due to size (5MB). If you are interested in looking at the collected data, I can get it for you.

If there are known problems with the Internet Router that manifest themselves by the following description, I need to know as soon as possible.

### Observations: The Router Problem

Our company is seeing a problem where our 286 server drops connections. Our printers fade in and out of the Chooser. Our mail servers appear and disappear. Our network is nearly unusable. In the office we visited, there is a main token ring with four routers. Two of those routers connect the main ring to smaller rings that contain users. One of those routers connects to a LocalTalk segment. The other router routes to an Ethernet that passes back to the company's enterprise-wide net, and contains some large servers.

In general, we are worried about users on the two smaller rings and the LocalTalk segment talking to servers on the main ring. There are no

"users" on the main ring, just routers and servers. The two servers involved are called "who" and "who2". All of the routers involved are Apple Internet Routers, running on some fast II-class Macintoshes.

To look at this problem we attached two LANalyzers to the network, one (LA1) on one of the smaller rings, and one (LA2) on the main ring. On the smaller ring, we caught all traffic in and out of the router. On the main ring we caught all broadcast traffic, all traffic in and out of the "who" server, and all traffic in and out of that router. We told engineers to halt the LANalyzers whenever they had a report of a dropped connection, and we would look at the problem in the morning.

The next morning they had very few reports of the network failing. They had two traces for us. One was a failure on the subring we were watching. Two were failures from the LocalTalk segment, whose router we were not specifically watching. In the case of the failure on the subring, we were watching, the traffic on the main ring was so high that we couldn't get enough information about the history before the crash.

We did see that the server (who2) had sent an ASP close connection request to the workstation, and that the workstation had received it. The server issues a close connection usually only when there aren't enough ASP tickle packets to convince the server that the connection is still up. But we could not look far enough back in time to see the cause of this close.

We looked at one of the LocalTalk failure traces, expecting to find little of interest, because we weren't specifically targeting that router. However, the LANalyzer on the main ring told an interesting story. What follows is my interpretation of the trace, showing the important points. There is probably other information to be gleaned from the trace.

Packet #186 the first traffic between WHO and the LocalTalk connected router about the ASP connection in question (called 17103\_air) was a tickle packet. Instead of sending the tickle directly over the Ethernet, the packet was sent to a different router (let's call it MYSTERY) on the ring, one that we couldn't identify. Time 7:43:31.

Packet #36517103\_air starts sending AARP request broadcasts, looking for the WHO node. It sends one every 200 millisec, and about 3 millisec later the WHO server responds. It seems that the AARP responses are well formed, but 17103\_air continues to rebroadcast. This continues for approximately 15 seconds, and during that time no traffic between 17103\_air and WHO takes place. We see some, but not much, traffic between 17103\_air and the other router we were monitoring. Time 7:43:42.

Packet #64017103\_air stops sending AARP requests to WHO, and starts sending packets. Several retries of an ASP Request are sent, all within a second, and the server responds back to 17103\_air correctly in each case. The connection will continue correctly for a while, with 17103\_air sending directly to WHO and vice versa. Time 7:43:57

Packet #95317103\_air sends an ASP Req packet to WHO, and WHO sends the response to a new and different Token Ring address (MYSTERY2). We don't

see this node forward the packet, but 17103\_air sends the ASP release directly to WHO, so the connection is still up, and the packet did get to the end Macintosh. The connection continues, with WHO sending most of its packets on this connection (destined eventually for 17103\_air) to MYSTERY2.

Packet #1161 WHO sends its tickle packet to MYSTERY2 instead of 17103\_air.

Packet #1387 WHO sends an ASP Response to MYSTERY (remember him?).

Packet #1843 17103\_air starts sending AARP request packets, looking for node WHO. Like in the sequence starting in packet 356, AARP requests are sent every 200 microsec, and WHO responds correctly to each and every request. 17103\_air continues to request. We see no further packets from 17103\_air to WHO. WHO continues to send tickle packets destined for the end workstation, but sends them to all kinds of routers (MYSTERY, MYSTERY2). Time 7:45:20.

Packet #4516 WHO sends a close connection packet to the workstation through 17102\_air (the router we were watching in the first place). 17103\_air is still AARPing. Time 7:47:09.

Packet #5043 17103\_air stops AARPing. It does not send any further packets to WHO. The connection is dead. Time 7:47:26.

#### Questions and Problems

-----  
The first and most interesting question is why does the Apple Internet Router continue to AARP over and over again? Another question is, why did it stop AARPing in the first case, in so little time as to let the connection stay alive? Looking at the trace we see another router, 17102\_air, AARP over and over again for the server WHO2.

This is obviously not an isolated problem, and it is the cause of the destruction of the connections. Possibly, it also backs up the router queues, and thus prevents NBP lookups, accounting for our NBP problems. The router statistics are showing a large number of "overflows" whatever that is.

The second question is why the 286 VAPs start sending to other routers besides the correct router (MYSTERY, MYSTERY2). Secondly, the VAPs do not seem to redirect back to the correct router after getting a packet from it. However, although "Inside AppleTalk" suggests the caching of routers and building up of a RTMP table via the RTMP stub, nothing particularly bad will happen except loss of bandwidth and overburdening of routers.

In conclusion, the company's problem is a sporadic loss of routing through our Apple Internet Routers, caused by an illegal activity of the AIRs (not accepting AARP responses correctly). The cause of this failure remains unknown.

DISCUSSION -----



The central problem is that printers, file servers, and mail servers drop in and out of the Chooser. This brings up a couple of questions. How many of each type of device do you have in each zone? Could you do an Inter•Poll of the affected zones for each type of device in question and send us the information? Here is some information and a possible answer:

This is how the Chooser really works in a nutshell:

The Chooser sends out a Name Binding Protocol (NBP) packet looking for all devices of type XXXXXX (for example, type LaserWriter). It sets up a buffer of 512 bytes for the responses. The responses look like:

|                    |                |                        |
|--------------------|----------------|------------------------|
| device name length | 1 byte         |                        |
| device name        | variable bytes | e.g. MyLaser-Hands off |
| type name length   | 1 byte         |                        |
| type name          | variable bytes | e.g. LaserWriter       |
| zone field length  | 1 byte         |                        |
| zone name field    | variable bytes | probably *             |

The Chooser gets such a packet back for each device, i.e., each LaserWriter. When the 512-byte buffer is full of these packets, it stops looking for device names to display. This means that some LaserWriters might not be displayed immediately. If you leave the Chooser window open, however, the Chooser continues to send out NBP lookups every 1.47 seconds. Different LaserWriters could respond more quickly each time. In this case, you may see the Chooser show and hide various devices.

This means that the number of devices the Chooser can show really depends on how long the type name (like "LaserWriter") is and how long the device names are.

The number 18 is an average number, based on device names being about 13- or 14 characters long and the device name being about 10 or 11 characters long.

In System 7.0, the buffer size for the Chooser is increased to 1024. This means, on an average, about 36 devices will be able to be displayed.

There is a way to affect the manner in which the lookup is done, which could help in some environments, especially in wide-area-network environments where slow data links may be used. If you modify the GNRL resource in the Chooser document (AppleShare, for example), it will affect every NBP lookup that is done from the Chooser for that type of device.

The Chooser uses these values to determine the NBP lookup interval and retry values for the current NBP transaction. The default of 0705 tells the Chooser to send five NBP lookup requests at an interval of 7/8ths of a second. This process is repeated in an infinite loop, until the user closes the Chooser.

Chooser Event Flow Example:

```
User opens Chooser and selects the AppleShare CDEV
GNRL resource -4096 loaded value = (5002)
NBP lookup mechanism started
```

```
NBP Loop:
```

```
    Get NBP ID for this transaction
```

```
        (Note: All NBP request and replies for this loop will use
            this ID)
```

```
    Send first lookup (NBP ID = "New")
```

```
    Collect and display responses from the NBP lookup ID "New"
```

```
    Wait 10.6 seconds
```

```
    Send second lookup (NBP ID still = "New")
```

```
    Collect and display responses from the NBP lookup ID "New"
```

```
    Wait 10.6 seconds
```

```
    Discard all buffers and data associated with NBP ID "New"
```

```
        (Note: If a response is received for NBP lookup ID =
            "New" after this point the reply data would be discarded
            and the device would not be added to the list in the
            Chooser)
```

```
    Do some other misc. cleanup (approx. time 1 sec)
```

```
    goto NBP Loop
```

```
End NBP Loop:
```

With the retry timer set to such a large value the multiple retry count is really not necessary. On the other hand, it doesn't hurt either, and it effectively increases the time we'll wait for NBP replies to over 20 seconds for the current transaction. The idea behind the retry count is to send several lookup requests out in quick succession (default < 1 sec.), in case there are devices which were unable to respond because they were busy or because the previous packet never reached them.

The reason that increasing the interval timer helps in the case of remote servers is directly tied to the way the NBP mechanism works. The Chooser maintains only 1 NBP lookup request at a time, tracking all replies to that request by way of the NBP ID mechanism. Replies that are received that do not match the current request ID are discarded.

The request ID is maintained only for the current NBP request, the interval and retry counters for this request can be tuned via the GNRL resource. In other words, if you set the retry counter to 10 and the interval timer to 50 the NBP ID would be maintained for 10 requests at an interval of 10.6 seconds. The GNRL resource is documented in "Inside Macintosh, Vol. 4", page 216.

AARP Issue

-----

The symptoms you describe with the Apple Internet router AARPing for the same node over and over is probably attributed to the router being

overloaded and not able to accept the response AARPs. You mention that the router is getting a fair amount of overflow errors, this would lead me to believe that the routers are indeed overloaded.

What ports on the routers are getting the overflow errors and how many are reported over the course of a day, a week? Overflow errors are caused by the router being too busy to process all incoming packets on an interface. The network interface chip set can detect that a packet was available but that the processor was too busy to get the packet from the interface before the next packet arrived. There may be some other problems related to your environment, but this is a good starting point.

#### Novell VAPs Sending to Random Routers

-----  
AppleTalk Phase 2 does provide an enhancement that lets your node cache network to router pairs for use when determining where to route a packet destined for a remote network. When the AppleTalk protocol DDP receives a packet from a remote network, it strips off the data-link source address of the packet. This is the address of the last router on the route from the original network. This router should generally be the optimal router in terms of hop count back to the original network. You can then use that router for any future transactions to that network.

Now that I've explained all of that, you're saying, "Okay, that sounds right, but the Novell server is not doing what it's supposed to." The real story is that this enhancement is an optional, implementation-specific addition that is not required by the AppleTalk protocol. In this case, it would be normal for the Novell server to act the way that you described, if they did not implement the "Best Router" enhancement.

#### Conclusions

-----  
We first need to get a handle on the environment that you have, including numbers of devices per network and per zone. We need to take a close look at the statistics from the Apple Internet routers, average load on the various network segments as measured by the Internet Router, as measured by a network monitor/analyzer.

A close look at traffic patterns could also be helpful in determining where to best segment the network if it becomes necessary. It may be that the traffic on the main ring is so heavy that the Macintosh routers can't keep up. We don't really have any statistical, benchmark, or historic information that would tell us when the use of an AIR on a token ring is not going to offer the best performance. At this point, we just need to collect all the information and then take it one step at a time.

The LANalyzer traces wouldn't do us any good, because we have a Network General Sniffer. If we really need to see some trace data, we'll do some tests using a Sniffer on your end, or the LANalyzer data could be saved to an ASCII file and shipped to us on a tape. I don't think we need to worry about the trace data yet.





# Tech Info Library

## IIGS: Visit Monitor 03 Same as Released Version

Revised: 5/29/91  
Security: Everyone

IIGS: "Visit Monitor" 03 Same as Released Version

=====

Article Created: 15 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a difference between the Apple IIGS (ROM 03) I own, and other Apple IIGS systems with ROM version 03? My 03 is one of the first few hundred that were accidentally assembled with "Memory Peeker" and "Visit Monitor" stuck in the Classic Desk Accessories menu.

Anyway, I've documented a list of things that seem to be wrong with my ROM 03 Apple IIGS. Could you try out the things on the list with your ROM 03 (one without "Memory Peeker" and "Visit Monitor" in the CDA menu), and let me know if any of those things happen on your Apple IIGS.

### The System Monitor

-----

After entering Monitor with a "CALL-151" command or accessing it through "Visit Monitor/CDA", the system will freeze after entering the "LIST" command. Pressing any key after this causes a continuous scroll of inverse text, while the Error bell rings non-stop. Strangely enough, pressing certain keys will display different graphic modes while this is happening, replacing the scrolling text, but with the error bell still ringing, and no way to stop it.

### Applesoft BASIC

-----

When trying to run any program written in Applesoft BASIC that launches GS-specific programs (i.e., doing calls to Apple IIGS ROMs or hardware), the program will not run and gives this error message:

```
?SYNTAX ERROR IN 65182
```

All programs give the same error message. After this error message occurs

from trying to load an Applesoft BASIC program, the GS/OS operating system won't run. Trying to load any disk that uses GS/OS to boot up will crash after the "Welcome to the Apple IIGS" message appears and gives the following error message:

Error Loading Apple IIGS.OS File. Error=\$002E

After this you must turn the computer off for 30 seconds or more before you can load GS/OS without getting the same error message.

#### MDIdeas Card

-----

When plugged into my ROM 03 Apple IIGS, the Stereo/Digitizer card from MDIdeas, does not function properly. Any sound that's recorded with the card is played back with an echo, and is noisy and scratchy (incompatible with either card or software). The card and software are not at fault, because they work perfectly on my other Apple IIGS, which is a ROM 01.

#### Software

-----

Many software applications will not run on my Apple IIGS with the 03 ROMs, while they apparently run on other 03 ROM-d systems. (This includes public-domain and commercial software titles.)

#### RAM Disk

-----

With 2.125MB in my Apple IIGS, there's a maximum RAM disk size of 1,920K. The system will not auto-format a RAM disk larger than 1,888K in size. Selecting 1,920K from Control Panel won't auto-format.

- Each time you reset the computer to auto-format a RAM disk, the system freezes for 5 or more seconds.
- When a RAM disk is created, the system will erase the entire RAM disk after using Open-Apple Reset command a couple of times. (It seems to change the setting in the Control Panel to "Resize after reset: YES", thereby changing the setting by itself.)

#### Disk Access Slows Down

-----

When loading up some GS-specific programs that use ProDOS 8 or ProDOS 16 as a launcher, the computer seems to have trouble loading ProDOS, and then trouble loading the main program system file. The program will take two to three times longer to start up than it will on a ROM 01-GS or other ROM 03-GS systems. It slows down so much that it appears the disk is damaged or corrupted. Some examples of programs that have this problem are "Diversi-Tune" and "Tunnel of Armageddon".

#### DISCUSSION -----

Most of these problems can be avoided. The ROMs (early and late) are identical. Some systems went out configured improperly. Anyway, I'll take them one at a time.

## System Monitor

-----

"LIST" is not a Monitor command. To list the contents of memory locations, you only need to type "l" or "L". When the monitor sees "LIST" it scrolls 20 lines of location contents and then sets the display to inverse. The monitor queues commands typed as a string; the second command in the string is "i"; the command for inverse. "S" and "T" are not Monitor commands and seem to confuse the system. Typing "l", a carriage return, "i" and a carriage return works fine. You should read the "Apple IIGS Firmware Reference" for a complete description of the Monitor and its commands.

## Applesoft BASIC

-----

Without an exact description of the steps required to create the problem described, we can only speculate as to the cause of the problem.

It sounds as if you are trying to run a ProDOS-16 application from ProDOS-8. Whatever the case, some memory locations are being stomped on, seriously scrambling memory, because the system thinks a disk has been switched. If this continues to be a problem, let us know exactly what you are doing to cause this crash, and we'll dig into it.

## MDIdeas Card

-----

The MDIdeas card was developed for the original Apple IIGS. The company is now out of business and has therefore not upgraded the product to work with the new ROMs. The card (or perhaps the accompanying software) is not compatible with the new version of the ROMs. Applied Engineering offers a comparable product that is compatible with the new ROMs.

## Software

-----

We will need concrete examples of the differences when software is run on two different systems, because the ROMs are identical. The problems exhibited here may be a result of a drive problem (discussed in the "slows down" section below).

## RAM Disk

-----

It sounds as if you are using the Classic Control Panel to modify the RAM disk. The Classic Control Panel is not aware of the memory requirements of GS/OS and will let the user set unreasonable RAM disk sizes. GS/OS will re-assign the value as it "takes" memory back at boot time. Using the Graphic Control Panel will eliminate this problem. This is not a bug, because the Classic Control Panel is necessary when using the system with ProDOS-8.

As a side note, pressing Open-Apple-Reset is not a very elegant way to re-start the system. We highly recommend the use of menu-bar selections over this method. Use Open-Apple-Reset only as a last-ditch effort.

## Disk Access Slows Down

-----

The slowdown your customer is experiencing could be a result of copy-protected software. If other Apple IIGS systems with the same ROMs (03) load the software more quickly, swap in a disk drive from one of the other systems. It's possible that the drive is in need of cleaning, and has troubles reading copy-protected disks.

Again, the ROMs you received are the same as the ROMs shipped in later systems.

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Tech Info Library Article Number:7011





# Tech Info Library

## Macintosh LC and Macintosh LC II: 16-Bit Color

Revised: 7/23/92  
Security: Everyone

Macintosh LC and Macintosh LC II: 16-Bit Color

=====

Article Created: 15 February 1992  
Article Last Reviewed: 23 July 1992  
Article Last Updated: 24 April 1992

TOPIC -----

John Sculley said something at MacWorld about the support of "thousands" of colors with 16-bit color on the Macintosh LC. Is that true?

DISCUSSION -----

Yes, it is true. This was announced at the introduction of Macintosh LC. The product is called the Macintosh LC 512K VRAM SIMM (M0517LL/A) and was made available in February 1991.

The standard Macintosh LC and the new Macintosh LC II support these video configurations:

- Macintosh 12-Inch Monochrome Display: 2, 4, or 16 shades of gray
- Macintosh 12-Inch RGB Display: 2, 4, 16, or 256 colors
- AppleColor High-Resolution RGB Monitor (13-inch): 2, 4, or 16 colors

With the Macintosh LC 512K VRAM SIMM (M0517LL/A) installed, the Macintosh LC and Macintosh LC II support these video configurations:

- Macintosh 12-Inch Monochrome Display: 2, 4, 16, or 256 shades of gray
- Macintosh 12-Inch RGB Display: 2, 4, 16, 256, or 32,000 colors
- AppleColor High-Resolution RGB Monitor (13-inch): 2, 4, 16, or 256 colors

Note

----

The Macintosh LC and LC II do not support full 16-bit color, which allows over 65,000 colors.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7012



# Tech Info Library

## A/UX newfs and Sony Optical Disk Drive

Revised: 11/9/92  
Security: Everyone

A/UX newfs and Sony Optical Disk Drive

Article Created: 15 February 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I have a private Sony SMO-C501-00 (Magneto-Optical disk). I did a newfs and mounted it under A/UX. I've formatted it under SilverLining 5.25 with a Slice 3 partition (287MB) under Macintosh OS. But when I created the newfs on it under A/UX, the options were quite confusing. After several unsuccessful attempts, I chose to recognize it as a 160SC disk, and then the miracle occurs! The newfs command was working perfectly! So my question is:

Is this normal? Does the newfs command recognize the hardware specification of the disk and bypass the /etc/disktab or newfs options, whatever your choice is?

### DISCUSSION -----

The problem that you were getting with a smaller size of file system or something confusing about the newfs options was possibly due to the wrong type of disk drive you've chosen when creating the file system via "newfs". We don't know what option(s) of "newfs" syntax you specified. We are not sure if you have the right size of file system (with 287MB) after you chose 160SC disk type.

You should choose a drive type which is closer to your drive specification, or you could create a new entry with the drive physical characteristics (number of sectors/track, number of tracks/cylinder, and the number of cylinders/disk) in /etc/disktab for the particular disk drive. "newfs"

## ..TIL07014-A-UX\_newfs\_and\_Sony\_Optical\_Disk\_Drive\_(TA45433).pdf

reads the information from /dev/disktab for a particular drive type and invokes the /etc/fs/ufs/mkfs program to make a file system for a partition.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7014



# Tech Info Library

## Datapoint Terminal Emulator for Macintosh

Revised: 5/29/91  
Security: Everyone

Datapoint Terminal Emulator for Macintosh

=====

Article Created: 15 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My work group uses a number of Datapoint terminals. I am looking for a communications package that can emulate Datapoint terminals.

DISCUSSION -----

The Custom Systems Group at Datapoint sells Mac8220--Macintosh software that emulates Datapoint terminals. We called Datapoint and found that the software was available through their marketing organization. Contact your Datapoint representative for details.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7016



# Tech Info Library

## DAL 1.2: How to Get Listener Module for VMS 5.4

Revised: 9/2/92  
Security: Everyone

DAL 1.2: How to Get Listener Module for VMS 5.4

Article Created: 6 May 1991

### Article Change History

-----  
08/12/92 - REVIEWED  
• For technical accuracy

### TOPIC -----

I am planning to upgrade our VAXcluster to VMS 5.4 and need a copy of the DAL listener module that supports the 5.4 password hashing algorithm. Does the DAL package that ships with PATHWORKS for Macintosh from DEC support 5.4? Or do I need a new listener? How do get a copy of the module?

### DISCUSSION -----

Note: Earlier versions of DAL were referred to as CL/1.

There is a compatibility problem with the new VMS 5.4 release and the CL/1 1.0 and 1.1 VAX/VMS servers. Due to changes in VMS password authentication in VMS 5.4, AppleTalk connections fail when made to the earlier versions of VAX/VMS Server (CL/1 Servers 1.0 and 1.1) running on a VMS 5.4 system. This is a problem with AppleTalk connections only; asynchronous connections do work. There is no workaround for the 1.0 and 1.1 versions.

DAL 1.2 is compatible with VAX/VMS 5.1 through 5.3. Compatibility with VAX/VMS 5.4 is shown below.

| VMS 5.4 Compatibility |           |
|-----------------------|-----------|
| Async                 | AppleTalk |
| -----                 | -----     |

|              |     |      |
|--------------|-----|------|
| CL/1 1.0,1.1 | Yes | No   |
| APDA DAL 1.2 | Yes | No * |

\* If you have recently installed VAX/VMS 5.4 or are planning on upgrading to 5.4, please contact the Technical Answerline, so that we may send you a new DAL Listener module that is compatible with VAX/VMS 5.4. As of release 1.3 of DAL, VMS 5.4 is supported as part of the standard product.

When customers purchase Data Access Language, they have a card that they can send in for support on Technical Answerline for 90 days. After that, they can purchase a one-year Technical Answerline support. They can purchase this Technical Answerline contract from a dealer. Customers on a support contract may call the Technical Answerline to request for the DAL Listener module that works with VAX/VMS 5.4.

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Tech Info Library Article Number:7017



# Tech Info Library

## **PATHWORKS: How to Create a System 6.0.7 Installer Disk**

Revised: 5/31/91  
Security: Everyone

PATHWORKS: How to Create a System 6.0.7 Installer Disk

=====

This article last reviewed: 15 February 1991

TOPIC -----

How can one create a PATHWORKS for Macintosh Installer Disk with System Software 6.0.7?

DISCUSSION -----

The PATHWORKS for Macintosh Installer Disk is just like a normal System Software 6.0.7 startup disk with AppleShare Workstation software, so you can access to a VAXshare file server. All the PATHWORKS for Macintosh software is located on the VAXshare file server. The PATHWORKS Installer Disk works when your Macintosh is connected to the Digital network through LocalTalk and a router, or through an Apple EtherTalk NB card. EtherTalk software must be installed on this Installer Disk for this use.

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Tech Info Library Article Number:7019





# Tech Info Library

## PATHWORKS: Where to Get DEC Support

Revised: 5/31/91  
Security: Everyone

PATHWORKS: Where to Get DEC Support

=====

Article Created: 18 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Should PATHWORKS customers call Digital for support? If so, how?

DISCUSSION -----

PATHWORKS for Macintosh is supported by Digital. All Digital customers should call the Digital local office, or call Digital Atlanta Support Center (CSC). CSC can contact Apple Direct Response Center (DRC) to discuss the problems.

Problems that cannot be solved by Digital CSC will escalate to Digital CSSE, which can contact Apple Technical Communications to work on the problem. Digital CSSE and Apple Technical Communications will escalate problems to appropriate engineering personnel, if necessary.

For contact information, search the Technical Info library under "Digital Equipment Corporation" (DEC).

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Tech Info Library Article Number:7020



# Tech Info Library

## Simware's SIMMac: No Support for Token Ring

Revised: 5/31/91  
Security: Everyone

Simware's SIMMac: No Support for Token Ring

=====

This article last reviewed: 18 February 1991

TOPIC -----

Can you use SIMMac (from Simware) over Token Ring for 3270 host connection (IBM host), as one uses MacDFT over Token Ring?

DISCUSSION -----

SIMMac from Simware only provides synchronous and asynchronous connections via protocol converters, coaxial boards, or its own protocol conversion software. SIMMac does not support token ring or LU 6.2 connections.

For contact information, search the Technical Info library under "Simware, Inc."

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Tech Info Library Article Number:7021



# Tech Info Library

## Heap-Setting Utilities

Revised: 5/31/91  
Security: Everyone

Heap-Setting Utilities

=====

This article last reviewed: 18 February 1991

TOPIC -----

Whatever became of CE Software's HeapFixer program?

DISCUSSION -----

CE Software no longer supports HeapFixer as a free program. However, Bill Steinberg, author of the Switch-A-Roo FKEY, Pyro!, the SystemErrors DA, and so forth, has written a free program called Bootman. With Bootman, you can set the heap, the number of events, and the number of windows, and shows graphically how the heap is being used. It's available via bulletin boards, user groups, CompuServe, and so on.

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Tech Info Library Article Number:7022



# Tech Info Library

## A/UX 2.0: Double-Click Behavior and Locked Files

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: Double-Click Behavior and Locked Files

=====

Article Created: 18 February 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

One annoying aspect of A/UX is that it sometimes fails to respond promptly to mouse clicks (presumably because the preemptive time slicer has preempted the task running my Macintosh window and has given the CPU to someone else).

So, for example, when I'm trying to edit a file name by clicking the name under the icon, I often find myself launching the software instead, because the Macintosh "double-click detector" thinks I double-clicked, when in fact I only clicked twice in the text field of the icon. In other words, the definition of "double-click" seems to be variable under A/UX.

### DISCUSSION -----

Although A/UX handles jobs based on a preemptive, time-slice basis, we can't reproduce the mouse double-clicking behavior that you described. In any case, here is the scenario of the mouse motion:

If the file is UNLOCKED and the mouse is pointed and single-clicked on the name of that file under the icon, the mouse symbol SHOULD change from arrow pointer to I-beam which lets you change the name of the file (the name is then highlighted). Then, when the mouse is double-clicked on the name, the word in the name is selected and allowed to change that word. When the mouse pointer leaves the name area, it becomes an arrow point.

If the file is LOCKED and the mouse is pointed and a single-clicked on the name of that file under the icon, the mouse symbol remains an arrow pointer which means the name of file can't be changed, because it was LOCKED. In this case, if the mouse is double-clicked on the name of the locked file, it will launch the program.

Check if the file to be renamed is LOCKED or UNLOCKED.

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Tech Info Library Article Number:7023



# Tech Info Library

## MacX 1.1: Visual Types Supported

Revised: 4/20/93  
Security: Everyone

MacX 1.1: Visual Types Supported

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Article Created: 18 February 1991

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

Which visual types does MacX support--static gray, pseudo color, direct color? I have observed a response of static gray to a visual type query when using an RGB monitor. Would the individual display (B/W rooted, rootless and Color rooted, rootless) return a different visual type when queried? How does it handle different monitors on the same system and the client application running across those different monitors?

### DISCUSSION -----

MacX, like all X11r4-based servers, supports all visual types on the 8-bit screens that make sense. This means that, given the right colormap, MacX can support or "fake" PseudoColor, DirectColor, Gray scale, StaticGray, StaticColor, and TrueColor. You can use xdpinfo to see all of these visuals.

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Tech Info Library Article Number:7025



# Tech Info Library

## MacX: Arc-Drawing Algorithms

Revised: 4/20/93  
Security: Everyone

MacX: Arc-Drawing Algorithms

=====

Article Created: 18 February 1991

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

In terms of drawing algorithms, MacX has apparently optimized arc-drawing algorithms, but wide-line drawing seems to be extremely slow. I noticed this while working with mwm.

### DISCUSSION -----

You are correct. Much better arc drawing code is present in MacX than is present in many X11 servers. On machines that have a floating point unit (all Mac II-class machines, Macintosh SE, and Macintosh IIsx with FPU installed), MacX uses this hardware to achieve good arc-drawing performance. Without an FPU, MacX uses SANE to do its floating point, but it is still pretty fast. Thick lines are slow. Actually, pretty much the same arc-drawing code appears in MacX 1.0 as in MacX 1.1.

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Tech Info Library Article Number:7026



# Tech Info Library

## NCSA Telnet 2.3: Questions and Diagnosis

Revised: 5/31/91  
Security: Everyone

NCSA Telnet 2.3: Questions and Diagnosis

=====

This article last reviewed: 18 February 1991

TOPIC -----

I have a two problems regarding Telnet. I have been using Telnet rev 2.2 and recently upgraded to Telnet 2.3, which is now using MacTCP 1.01. I am using a LocalTalk connection to a Kinetics FastPath IV rev J. I have not yet upgraded these units for Phase 2 AppleTalk yet. Every time I try to transfer a file using FTP from my Sun system to the Macintosh, it hangs my machine.

The other new error happens when I am doing a Telnet session--I get NCSA Telnet error #1, program unexpectedly quit. It is independent of CPU (I am using system 6.0.5 on all systems). The problem showed up when I upgraded to Telnet 2.3. Have you heard of any problems like this one?

DISCUSSION -----

We haven't heard any problem like this. There are two versions of NCSA Telnet 2.3, one is Telnet without MacTCP, the other is Telnet with MacTCP. Here are some things to check:

- Make sure you're using the right version of NCSA Telnet 2.3.  
In this case, you must use NCSA Telnet 2.3 with MacTCP.
- Was MacTCP driver installed and configured properly?
- Was Kinetics FastPath software installed and configured properly?
- Try running "MacTCP Spy" from the Macintosh OS to see if MacTCP is up and running.
- From the Sun machine, try to use "ping", a generic UNIX network utility, to send an ICMP packet to the Macintosh machine to make sure they are talking to each other.



- Try to increase the NCSA Telnet 2.3 with MacTCP application memory size.  
This is done via Get Info.

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Tech Info Library Article Number:7027



# Tech Info Library

## Software that Compares Files after Copying (2/91)

Revised: 8/4/93  
Security: Everyone

Software that Compares Files after Copying (2/91)

=====

Article Created: 18 February 1991

TOPIC -----

When you do a regular copy on a Macintosh (drag a folder or file to another volume), does the Finder do any compare or verify in that command?

Is there any program that can compare two different files to see if they are totally equal? I need a program that verifies that a copy of a file is an image of the original.

DISCUSSION -----

After a copy, the Finder does minimal checking to see if any errors were logged during the copy or verify. It doesn't do a checksum, or any byte-for-byte comparisons of the file.

As for file comparisons, the Hard Disk Jockey disk utility from FWB lets the user copy and verify (among other things) files on disk.

The Macintosh Programmer's Workshop (MPW), available from APDA, comes with two utilities for comparing files:

- Compare compares the lines of two text files and writes their differences to standard output. Options are provided to compare a specific column range in each file, to ignore blanks, and to ignore case.
- ResEqual compares the resources in two files and writes differences in type, identifier, size, or contents to standard output.

To locate a vendor's address and phone numbers, use vendor name as a search string.

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Tech Info Library Article Number:7028



# Tech Info Library

## LaserWriter IINTX: Hard Disks Can Be Cloned under A/UX (11/94)

Revised: 11/7/94  
Security: Everyone

LaserWriter IINTX: Hard Disks Can Be Cloned under A/UX (11/94)

Article Created: 06 May 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I have attached to a LaserWriter IINTX a hard drive that is apparently bad. Because there is another unit which is still in good condition, is there a way to transfer the contents of the good hard disk to the other?

DISCUSSION -----

We don't have a utility specifically designed to copy or back up font info stored on LaserWriter hard disks, but you can clone the disk under A/UX.

- Connect two drives of the same size to an A/UX system.
- Set the SCSI address of the source drive to 5 and the target drive to 6.
- Boot A/UX and login as root.
- At the command line, type:

```
# dd if=/dev/dsk/c5d0s31 of=/dev/dsk/c6d0s31 (do not type the #)
```

The process will take about 1 minute per megabyte of disk space. When it is complete, type:

```
# sync;sync;sync
```

Log out and shut down the system. Re-connect the disk to the LaserWriter, power-up and print.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7029



# Tech Info Library

## DAL Server for A/UX: Availability (9/94)

Revised: 9/21/94  
Security: Everyone

DAL Server for A/UX: Availability (9/94)

=====

Article Created: 18 February 1991  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

Is there a version of DAL Server available for A/UX?

DISCUSSION -----

NOTE: As of December 1993, Independence Technologies, Inc. (ITI) took ownership of the DAL technology. Contact ITI for current product information.

Data Access Language (DAL) 1.3 will work with A/UX 2.0 or 2.0.1. Connections can be made via asynch or TCP/IP but not AppleTalk because A/UX 2.0 and A/UX 2.0.1 don't support ADSP. DAL 1.3.6 supports A/UX 3.0 and ADSP is supported to A/UX as of that release.

Oracle, The Ask Group, Inc./Ingres Products, and Sybase have announced a server that runs on an A/UX 2.0 platform.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

### Article Change History:

21 Sep 1994 - Added info about ITI.  
23 Jul 1993 - Company title updated from Ingres to The Ask Group,  
Inc./Ingres Products

Support Information Services

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Tech Info Library Article Number:7030



# Tech Info Library

## LaserWriter: Deleting Pages from RAM

Revised: 5/21/91  
Security: Everyone

LaserWriter: Deleting Pages from RAM

=====

Article Created: 18 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

After the LaserWriter prints a document, does an image of the document remain in the LaserWriter's RAM? If so, when does it get removed?

DISCUSSION -----

After the LaserWriter gets the image of the page in memory, the PostScript command "showpage" is called to print the page. The "showpage" command looks up the value in "#copies" to determine how many copies to print and then prints that number of pages. Once the printing is completed, the "showpage" command does the equivalent of the "erasepage" and "initgraphics" PostScript commands.

The "erasepage" command erases the entire image in the LaserWriter memory by painting it with gray level 1, which is normally white. The "initgraphics" command resets many of the graphics states to their default values.

For more information on "showpage", "erasepage", and "initgraphics", see pages 238, 161, and 184, respectively, of the "PostScript Language Reference Manual" (the Red Book).

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Tech Info Library Article Number:7032



# Tech Info Library

## Multiplan: Doesn't Run on the Macintosh Classic

Revised: 5/31/91  
Security: Everyone

Multiplan: Doesn't Run on the Macintosh Classic

=====

This article last reviewed: 22 February 1991

TOPIC -----

I bought a Macintosh Classic to replace a Macintosh Plus. I am using System Software 6.0.7 and Multiplan version 2.4. Multiplan bombs on the Macintosh Classic. You can start the program, but when you try to enter anything in a cell, it gives an error message saying there is an address error, and you have to restart the Macintosh.

Could the problem might be that Multiplan just won't work under System Software 6.0.7?

DISCUSSION -----

The latest version of Multiplan is Multiplan 1.1, and it doesn't work on the Macintosh Classic. Multiplan 1.1 has not been sold in the U.S. since 1986.

Microsoft Technical Support told us that the latest version of System Software that Multiplan 1.1 was tested with is System Software 2.0 which used System 4.1 and Finder 5.5. Microsoft no longer supports Multiplan and suggests upgrading to Excel.

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Tech Info Library Article Number:7033



# Tech Info Library

## ROLMphone 244PC Phone Controller

Revised: 5/29/91  
Security: Everyone

ROLMphone 244PC Phone Controller

=====  
Article Created: 18 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are you folks aware of a Macintosh product that controls a ROLM 244-PC phone? I am looking for something with the same feature set as IBM's "Personal Telephone Manager"

DISCUSSION -----

There is a Macintosh ROLM 244-PC phone "control" application:

The ROLMphone 244PC is a smart, voice and data-communications telephone that links personal computers to the ROLM 9751 CBX and ROLM CBX II family of voice/data controllers. It combines a digital ROLM telephone with data communications features that support the "AT" intelligent modem command set. The ROLMphone 244PC also includes a documented programming interface (API) that lets programmers design specific, telephone-enhanced applications in areas like outbound dialing, inbound answering, telephone management, and integrated voice/data applications. The documented ROLMphone 244PC API lets a user write customized applications.

You may wish to contact ROLM's direct sales and support team for a copy of the API documentation and write your own control program.

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Tech Info Library Article Number:7035





# Tech Info Library

## Document Time-Monitor Software Needed

Revised: 5/29/91  
Security: Everyone

Document Time-Monitor Software Needed

=====

Article Created: 18 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a newspaper running four Macintosh IIcx computers on a AppleShare Macintosh SE/30 server and printing to a Birmy Imagesetter with its own spooler. The production manager needs to track the documents off each workstation, documenting how long was spent on each document and its deadtime (the amount of time the document was open but no keyboard or mouse action took place). We've looked at Macintosh-In-Use, but it only totals up all the deadtime from that workstation, and doesn't seem to be able to apply it to the individual document.

DISCUSSION -----

We don't know of a product that will do the above. One developer we mentioned to you may design and ship a product this year somewhat along these lines, but has not yet started on it or determined its feature set.

If anyone else knows of a document time monitor, please send in whatever details you have to TECH.COMM.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7036



# Tech Info Library

## A/UX 2.0: CmdShell vi Repeat Key Problem on Macintosh IIfx 8/94

Revised: 8/25/94  
Security: Everyone

A/UX 2.0: CmdShell vi Repeat Key Problem on Macintosh IIfx 8/94

Article Created: 18 February 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I've noticed another bug in A/UX 2.0, but only on Macintosh IIfx. To see it, do these steps:

- 1) Open a CommandShell Window, and in this window open a big text file (/FILE for instance) with the vi editor.
- 2) Type some text and all seems to be okay. But sometimes, you will notice that if you use a key with auto-repeat mode, the auto-repeat mode will stop without any reason (for example, while holding down an arrow key).

If you want the auto-repeat function to start again, you must hit the release the key and press it again, or you must move the mouse outside a window (in this last case, you are not obliged to release the key).

DISCUSSION -----

We have verified the symptom of the repeat key performed in vi under CommandShell with a Macintosh IIfx running A/UX 2.0. This strange behavior on the repeating key will be sent to A/UX engineering for further investigation.

For your information, here are two scenarios. In A/UX 2.0, both the mouse pointer and the current keyboard cursor are coexistent. However, in A/UX 2.0.1b2, the mouse disappears from the desktop as soon as the keyboard is activated.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7037



# Tech Info Library

## A/UX and Apple CD-ROM: Commando mount Minor Bug (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX and Apple CD-ROM: Commando "mount" Minor Bug (8/94)

=====

Article Created: 22 February 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I am trying to mount a CD ROM under A/UX, using Commando to build the command.  
When you select "Read Only" mounting options for the "mount" command, it  
returns

```
mount -r -o rw
```

If you click the appropriate option, does the -r override the rw option?

DISCUSSION -----

The Commando returns "mount -o rw" after choosing "Mount specified filesystem"  
because the default option for "mount" is read/write. The Commando produces  
"mount -r -o rw" after choosing "Read Only".

Because "-r" is identical to "-o ro", the "Read Only" operation SHOULD override  
the previous default (rw) option. However, The "-o rw" can be changed to "-o  
ro" by selecting "Read Only" from the "Other options" button.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7038



# Tech Info Library

## A/UX AppleTalk Network Configuration (8/93)

Revised: 8/17/93  
Security: Everyone

A/UX AppleTalk Network Configuration (8/93)

Article Created: 22 February 1991  
Article Reviewed/Updated: 17 August 1993

TOPIC -----

I have a problem with my A/UX 2.0 network configuration. My network is okay when working with MACpartition, but when I start up A/UX, all the zones disappear. My configuration is:

Macintosh IIci with 8MB  
External LA CIE 80MB Hard Disk  
Apples NB Ethernet board

DISCUSSION -----

Based on the fact that the zones disappear, we suggest you consider the following diagnostic questions:

- Is AppleShare server and/or PrintServer and/or Apple Internet Router on the AppleTalk network based on AppleTalk Phase 2? A/UX 2.0 does not support AppleTalk Phase 1.
- Is "appletalk" configured within A/UX 2.0 kernel? Use "module\_dump /unix" to verify it.
- Is "appletalk" currently running? Use "appletalk -s" to see the status. Use "appletalk -d" to bring AppleTalk network DOWN, and use "appletalk -u" to bring the AppleTalk network UP.
- Make sure the interface is properly selected; this is specified in the /etc/appletalkrc file.
- Refer to Chapter 6 of "Administering AppleTalk" in A/UX Network System Administration for more detailed information.

The message "appletalk: No such file or directory" from the "appletalk -u"

command output is a strong indication that the /dev/appletalk directory and/or its sub-directories and files are probably missing or corrupted. Normally, the /dev/appletalk directory should include as follows:

```
total 4
drwxr-xr-x  2 bin      bin          512 Dec  7 10:07 ddp
drwxr-xr-x  4 bin      bin          512 Dec  6 18:01 lap

appletalk/ddp:
total 0
crw-rw-rw-  1 bin      bin          12, 16 Jan 15 16:15 socket

appletalk/lap:
total 4
drwxr-xr-x  2 bin      bin          512 Dec  7 10:07 ethertalk0
drwxr-xr-x  2 bin      bin          512 Dec  7 10:07 localtalk0

appletalk/lap/ethertalk0:
total 0
crw-rw-rw-  1 bin      bin          15,  0 Dec  7 10:07 control

appletalk/lap/localtalk0:
total 0
crw-rw-rw-  1 bin      bin          17,  0 Dec  7 10:07 control
```

If the /dev/appletalk directory is causing the problem, do these steps:

- 1) Run a file system check on the Root file system: `fsck /dev/dsk/c?d0s0`
- 2) De-install the appletalk module from the kernel: `newconfig noappletalk`
- 3) Re-install the appletalk into the kernel: `newconfig appletalk`

After re-installing appletalk, the appletalk modules, the /dev/appletalk directory and its sub-directories and files will be correctly re-created.

Article Change History:

17 Aug 1993 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7039



# Tech Info Library

## Plotter: Sharing on AppleTalk Network

Revised: 5/21/91  
Security: Everyone

Plotter: Sharing on AppleTalk Network

=====

This article last reviewed: 22 February 1991

TOPIC -----

Do you know how to share an HP Plotter between Macintoshes and PCs on an AppleTalk network?

DISCUSSION -----

We found a Macintosh-only solution from Palomar Software. PLOTTERgeist is a Chooser-selected driver for plotters connected to a network via Shiva's NetSerial product. You could work around the no-PC limitation by connecting the plotter to an A/B switchbox connected to the NetSerial on one port and a peripheral-sharing switchbox (Black Box has them) on the other.

For contact information, search the Technical Info library under "Palomar Software" and "Black Box."

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7041



# Tech Info Library

## AppleShare PC: NDIS Compliant? (11/94)

Revised: 11/7/94  
Security: Everyone

AppleShare PC: NDIS Compliant? (11/94)

Article Created: 22 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

Is AppleShare PC NDIS compliant? I would like to run AppleTalk and TCP/IP protocols through the LocalTalk PC Card at the same time.

DISCUSSION -----

The Microsoft/3Com specification known as the Network Driver Interface Standard (NDIS) specifies software requirements and its interface to hardware and protocol stacks for PC network drivers. It is, therefore, very similar in purpose to our Open Data-Link Interface specification (ODI) which we co-developed with Novell.

However, each of these specifications detail similar requirements in very different ways. An application written to one standard cannot work with drivers based on the other. The two specifications are essentially competitors in the PC-network, driver-architecture world.

Because of this, a protocol stack based on one standard cannot coexist on a network card with a protocol stack for the other standard. This is the unfortunate side effect of two competing standards. A user must use one or the other set of software at one time. Switching between them generally requires rebooting the computer.

Because AppleShare PC 2.0.x is based on the ODI specification, software based on NDIS cannot use a network interface card while AppleShare PC is using it. This prevents an NDIS based Telnet application from concurrently using the same network card as AppleShare PC.

We don't know of any ODI compliant TCP/IP software that can coexist with AppleShare PC, but we'll submit this to product management as an enhancement request. We'll also submit it to Farallon product management, because they're now taking over the AppleShare PC product.



Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7042



# Tech Info Library

## HyperCard, FTP, and Telnet

Revised: 5/29/91  
Security: Everyone

HyperCard, FTP, and Telnet

=====

Article Created: 22 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do you know of any XCMDs or XFCNs that use MacTCP or other TCP/IP drivers which let HyperCard do a Telnet or FTP session?

DISCUSSION -----

The HyperCard MacTCP Toolkit version 1.0 is available from APDA and provides the functionality that you want. Here is the description from the APDAlog:

This toolkit contains XCMDs and source code for using HyperCard with MacTCP. Included is a sample stack for reading "netnews" and a documentation stack. MacTCP is software that allows developers to create Macintosh applications for networking environments that use TCP/IP protocols, a widely used standard for networking heterogeneous systems.

We haven't heard of a stack that supports the Telnet protocol.

There is an FTP client stack, called HyperFTP, written by Douglas Hornig of Cornell University. The latest version is available for anonymous FTP download at [elroy.cit.cornell.edu](http://elroy.cit.cornell.edu) (128.253.232.14).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7043



# Tech Info Library

## A/UX: Printing to Serial LaserWriter Plus (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: Printing to Serial LaserWriter Plus (8/94)

=====

Article Created: 22 February 1991  
Article Reviewed/Updated: 25 August 1994

TOPIC -----

I have a Macintosh IIfx with 8MB of RAM and a 160MB hard drive running A/UX. I want to attach the Macintosh IIfx to a LaserWriter Plus and print to it serially using the printer port on the back of the Macintosh.

I've set the speed of the LaserWriter Plus to 9600bps, set up the print queue, enabled all relevant print daemons, and I've used the setport command to establish the speed of the printer port.

I've used a direct RS/232 cable (Hayes Modem Cable), 2 LocalTalk connectors, and 2 PhoneNET connectors, and I get the same results: the printer flashes its Ready lights, but never prints anything.

I made it work using AppleTalk. I've tried using the Enscript utility to establish direct communication with the print and am successful, but when I try to establish communication with the PostScript interpreter, I get garbage. Is this an A/UX issue or is it related to the serial ports of the Macintosh IIfx--or both?

DISCUSSION -----

We have never used a direct RS-232 cable (Hayes Modem Cable), 2 LocalTalk connector, and 2 PhoneNET connectors to connect a LaserWriter Plus to a Macintosh. For a direct connection of a Macintosh to a LaserWriter Plus, We recommend you use a Mini-DIN-8 Male to DB-9 Male cable (cable number 590-0551, Apple finished goods number M0196). Furthermore, to make sure the connection is working, you can use the "cu" command to verify it.

We are not quite sure what you mean by "established communication with the PostScript interpreter". To print a PostScript format file directly, the %! symbols must be the first two characters on the first line of the file so that the rest of the file will be treated as the PostScript format by

the PostScript printer.

Article Change History:

25 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:7044



# Tech Info Library

## DAL: Response Time Via Modem (11/94)

Revised: 11/7/94  
Security: Everyone

DAL: Response Time Via Modem (11/94)

=====

Article Created: 22 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

Do you know what is the response time for a simple DAL query to the host through a 2400-baud modem?

Do you know what is the response time for a simple DAL query to the host through AppleTalk tunneling?

DISCUSSION -----

It is difficult to provide any hard number because the response time varies so much depending on the environment. There are a number factors that can affect response time:

- Network traffic
- Host CPU model and its current user load: lack of system resources like memory, disk space, and CPU power. Too many users trying to update or read the same records at the same time can cause locking problems.
- Condition of communications line
- Macintosh model
- Database brand
- Database design: Bad design can make finding or updating certain records take a long time.
- Operating system set up
- Programs

Additionally, a DAL query, though simple, can result in one or many records to be selected. Depending on the machine's host load, a 2400-baud connection will work. For DECnet tunneling, we recommend a line speed of 56K or faster to achieve reliability and good performance.

Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7045



# Tech Info Library

## MacX: How to Use It in a DECnet Environment (1/95)

Revised: 1/30/95  
Security: Everyone

MacX: How to Use It in a DECnet Environment (1/95)

Article Created: 22 February 1991  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

Regarding the use of MacX in a DECnet environment:

- 1) A DECnet driver is needed for the CommToolBox.
- 2) This driver does a translation from TCP/IP to ADSP.
- 3) The driver is available only from DEC, as part of PATHWORKS.

DISCUSSION -----

- 1) You need a DECnet/Mac driver in the System Folder, and a DECnet Tool in the Communications Folder. There is also a DECnet Control CDEV, that shows DECnet traffic statistics, and allows turning Network State on or off.
- 2) The DECnet driver does not translate TCP/IP to ADSP. It uses DECnet protocol to communicate with the VAX host. Another tool, the AppleTalk-DECnet Connection Tool establishes a connection to a DECwindows application through the AppleTalk/DECnet Transport Gateway. This one uses ADSP connections.
- 3) The DECnet Connection Tool and driver are included with the PATHWORKS for Macintosh package. Alisa also stated that their TSSnet software supports MacX connection over DECnet. For contact information, search the Technical Info library under "Alisa."

Article Change History:  
30 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7046





# Tech Info Library

## Accelerator Boards: Using Virtual Memory

Revised: 5/23/91  
Security: Everyone

Accelerator Boards: Using Virtual Memory

=====

Article Created: 25 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I get virtual memory with 68000 machines and 68020 machines without a PMMU by adding a 68030 accelerator board? If so, are there any repercussions I should know about?

DISCUSSION -----

Yes, one way to get virtual memory with 68000 machines and 68020 machines without a PMMU is to add a 68030 accelerator board. Warning: adding a 68030 accelerator board to your 68000- or 68020-based system does not guarantee that one of the third-party virtual-memory products will support the upgrade you have added.

If virtual memory support is your goal, verify with the board manufacturer that their product works with your virtual-memory products. Likewise, check with the virtual-memory product's manufacturer to verify that their product works with your 68030 accelerator board.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7047



# Tech Info Library

## Access II and Apple IIf Plus: No 40-Column Mode

Revised: 5/23/91  
Security: Everyone

Access II and Apple IIf Plus: No 40-Column Mode

=====

Article Created: 25 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using an Apple IIf Plus and Apple Access II. The Volume Slide Control on the keyboard for the Apple IIf Plus replaces the 40- or 80-column mode switch found on the original Apple IIf.

Typing PR#3 for 80-column mode and PR#0 for 40-column mode works when in ProDOS, but when using Apple Access how can I switch between 40- and 80-column mode?

Aren't both 40- and 80-column modes supported in Apple Access II?

DISCUSSION -----

Apple Access II does not support 40-column mode on the Apple IIf Plus. The software detects that the 80-column mode is available and wants to switch the system into that mode. There is no workaround.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7048



# Tech Info Library

## Apple Scanner: Upgrade for 256 Shades of Gray

Revised: 1/18/93  
Security: Everyone

Apple Scanner: Upgrade for 256 Shades of Gray

=====

Article Created: 25 February 1991

### Article Change History

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1/15/93 - UPDATED

- Abaton now Everex Systems.

### TOPIC -----

Does anyone in France sell a product that upgrades the Apple Scanner to support 256 levels of gray?

### DISCUSSION -----

Everex Systems has a product called the "Apple Scan Upgrade" that upgrades the Apple Scanner to support 256 levels of gray. The Abaton Scan DA also comes with the product. For more information, contact Seeder, Abaton's distributor in France

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7049



# Tech Info Library

## EtherPeek 1.3: Compatible Ethernet Cards

Revised: 7/27/93  
Security: Everyone

EtherPeek 1.3: Compatible Ethernet Cards

=====

Article Created: 25 February 1991  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

What third-party products does Apple recommend for connecting a Macintosh IICx with EtherPeek?

DISCUSSION -----

Apple does not make recommendations regarding third-party products. The AG Group, authors of EtherPeek, say the following Ethernet cards work with EtherPeek 1.3 as of early 1991:

Apple EtherTalk NB

3Com EtherLink NB

Asante MacCon Ethernet (SE/30 and II)

Cabletron E5010/20/40/10-X/20-X/40-X  
E6010/20/30/40/10-X/20-X/30-X/40-X

Cayman GatorCard E/II

Compatible Systems Ether2  
Ether+ (SCSI Ethernet)

Dayna Communication DaynaPort SE/30 and II

Farallon PhoneNET IIN

Focus Enhancement, Inc. EtherLan II  
EtherLan SC

National Semiconductor EtherNODE-16NB

Network Resources Mac 1000-16  
Mac 1000TP/16  
Mac 1000-64  
Mac 1000-TP/64  
Mac 2000E-TP

Novell EtherPort SE/30  
EtherPort IIN  
Kinetics/Excelan EXOS 109 (EtherPort Iii)

Racal Interlan NIA310 Ethernet Card

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:

27 July 1993 - Company title updated from Focus Enhancements to Focus Enhancements, Inc.

19 June 1992 - Company name Nuvotech changed to Focus.

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Tech Info Library Article Number:7050



# Tech Info Library

## Macintosh: Line Dropout Immunity (7/94)

Revised: 7/18/94  
Security: Everyone

Macintosh: Line Dropout Immunity (7/94)

=====  
Article Created: 25 February 1991  
Article Reviewed/Updated: 18 July 1994

TOPIC -----

How long can a Macintosh system be without power? Our Macintosh IIIfx is going to be used on a ship in rough conditions. We plan to use a battery, which sometimes switches power.

DISCUSSION -----

Generally, the line dropout immunity for most Macintosh computers is 20 ms, including the AC adaptor for the Macintosh PowerBooks. The Macintosh Plus has a dropout immunity of 16 ms.

This information is available in the "Guide to Macintosh Family Hardware", ISBN 0-201-52405-8.

Note: We do not have the line dropout immunity for the Macintosh Quadra computers at this time.

Article Change History:  
18 Jul 1994 - Reviewed for technical accuracy.  
31 Mar 1994 - Updated formatting.  
09 Jul 1992 - Reviewed for technical accuracy

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Tech Info Library Article Number:7051



# Tech Info Library

## MacX Manual: Availability of Copies

Revised: 4/20/93  
Security: Everyone

MacX Manual: Availability of Copies

=====

Article Created: 25 February 1991

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

We are considering the purchase of a site license for MacX, and we have a question about getting copies of the manual for our users. Is the manual for MacX available in electronic form? We would prefer to print copies on our LaserWriter instead of trying to duplicate the fuzzy hard copy that we have.

### DISCUSSION -----

As of February 1991, you can buy the MacX manual. This will be the only way to obtain the manual separately from the software. To respond further to your question:

- The manuals are not available in electronic form.
- They may not be legally copied.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7052



# Tech Info Library

## AppleTalk Plotter: How to Make It Chooser-Selectable

Revised: 5/21/91  
Security: Everyone

AppleTalk Plotter: How to Make It Chooser-Selectable

=====

This article last reviewed: 25 February 1991

TOPIC -----

I want to connect an HP Plotter 7550A to an AppleTalk Network and be able to select the plotter from the Chooser.

DISCUSSION -----

There is a plotter driver called "PLOTTERgeist" from Palomar Software that supports many plotters, including the HP 7550A. This Chooser-level driver works in conjunction with the Shiva Net Serial to put the plotter on an AppleTalk network. For contact information, search the Technical Info library under "Palomar Software".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7053





# Tech Info Library

## Apple IIe/IIGS: Connecting to IBM Host via 3708

Revised: 5/21/91  
Security: Everyone

Apple IIe/IIGS: Connecting to IBM Host via 3708

=====

Article Created: 25 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I would like to access an IBM host via an Apple IIe or Apple IIGS for services like PROFS. There is a 3708 in some way attached to the host, and I can log in with an emulator through this device. I'm having a problem with keyboard mapping (particularly the PF keys).

DISCUSSION -----

The 3708 is a protocol converter that converts, among other things, a terminal's ASCII character set to the host's EBCDIC character set. You don't mention what terminal emulator is being used on the Apple IIGS, but we suspect it is a VT52, VT100, or similar type of emulator.

Regardless, you'll need to verify that the terminal emulator type you are using is among those supported by the 3708. Check the "IBM 3708 Planning Manual" for the list of non-IBM ASCII display terminals it supports.

Even though terminal packages may not specifically state that they support IBM host communications and PF keys, many emulators can send the specific escape or command key sequences that are recognized and remapped by the controller into PF keys. For instance, Apple Access II's key sequence Esc-1 is remapped by many protocol converters to a PF1, an Esc-\$ to PF16, and so on.

When using a general-purpose terminal emulator, like a VT100 emulator, you need to identify which ASCII key sequences map to PF keys, after you satisfy the general connection requirements like handshaking issues. Check the 3708 documentation for the ASCII to EBCDIC mapping. To determine if an emulator will send the specific ASCII key sequences, check the emulator's manual or contact the manufacturer. You too could use a datascope analyzer

to determine what the appropriate character combinations are.

In terms of general information, the 3708 Network Conversion Unit is a ten-port, compact, desktop, protocol converter. It enables asynchronous ASCII terminals or personal computers with asynchronous ASCII communications capability to connect to and be compatible with one or multiple SNA host and non-SNA host systems. The user of an asynchronous ASCII terminal can access host applications that support 3270 displays and printers, Network Terminal Option devices, and applications that support the actual terminal type.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7056



# Tech Info Library

## A/UX 2.0: Missing /dev File

Revised: 8/31/93  
Security: Everyone

A/UX 2.0: Missing /dev File

=====

Article Created: 25 February 1991  
Article Reviewed/Updated: August 16 1993

TOPIC -----

After installing a brand new copy of A/UX 2.0, I've discovered that I'm missing a needed device file: /dev/dsk/c0d0s3.

I've used HDSetup to partition my internal HD160 SC drive (SCSI 0), and selected partitioning that would allow a 40MB Macintosh partition, Standard A/UX partitions, and the rest as "Unreserved 1" Slice 3. Without this device, I can't set up that final partition on my disk unless I repartition.

Is it possible to modify an existing device file to create this missing one? How would I do this?

DISCUSSION -----

The missing device file /dev/dsk/c0d0s3, for example, can be created by the "mknod" command:

```
mknod /dev/dsk/c0d0s3 b 24 3
chmod 600 /dev/dsk/c0d0s3
chown bin /dev/dsk/c0d0s3
chgrp bin /dev/dsk/c0d0s3
```

Note that 24 is the major device number, 3 is the minor device number for /dev/dsk/c0d0s3, and b indicates a block device type. Of course, you have to be "root" to do it.

The "pname" command seems to do the same thing. It will automatically create the file in the /dev/dsk directory, if c0d0s3 doesn't exist. In your case, for example, pname -c0 -s3 "Unreserved 1".

Article Change History:

August 16 1993 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7057



# Tech Info Library

## A/UX 2.0: Input during Login Session

Revised: 8/17/93  
Security: Everyone

A/UX 2.0: Input during Login Session

=====

Article Created: 25 February 1991  
Article Reviewed/Updated: 31 June 1992

TOPIC -----

If I have something in my login file, like a question about setting the variable term with the A/UX login, I can answer but I can't see what I am typing. Is there a way to have a window with the question in it?

DISCUSSION -----

Since A/UX Finder 32-bit environment was selected as a default Login Session, and the Login process (not part of CommandShell process) was handled via the /mac/bin/mac32 process, all output messages (from .profile or .login or .cshrc or .kshrc file) are disabled by the mac32 environment. We know of this symptom.

There are, however, two ways that let you view and answer the question asked in the shell script: the "Console Emulator" Session and "Initial command" dialog box.

Console Emulator Session

-----

Use "Console Emulator" session. This lets regular UNIX input or output (usually specified in the .profile or .login or .cshrc or .kshrc file) be viewed on the Console display.

- 1) Select "Console Emulator" as the Session Type.
- 2) Login into Console Emulator mode. All the questions asked in the .profile or .login or .kshrc file will be displayed.
- 3) Issue the "mac32;screenrestore" or "mac24;screenrestore" command to go to Macintosh 32-bit or 24-bit environment.

Or you may insert the "mac32; screenrestore" or "mac24;screenrestore"

command at the end of your .profile or .login or .kshrc file to automatically go to MultiFinder environment.

- 4) Select "Logout" from MultiFinder environment to get back to the "Console Emulator" mode.
- 5) Issue the "exit" command from the "Console Emulator" mode to get back to the Login Dialog session.

#### The Initial Command

-----  
Use the "Initial command" dialog box from the "Active Window Settings" menu:

- 1) Within a CommandShell window, select the "Active Window Settings" item from the "Preferences" menu.
- 2) Put in any command you want to execute at log-in time into this window. For example:

```
sh /.cmdshrc
```

where /.cmdshrc is the shell script file to be executed as soon as you log into this window.

- 3) Click OK.
- 4) Select the "Save Preferences" item from the "File" menu to save the settings. The .cmdshellprefs file will be created in the user's home directory.

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Tech Info Library Article Number:7058



# Tech Info Library

## Aristotle Menu Setup Problem: Check Access Privileges (11/94)

Revised: 11/7/94  
Security: Everyone

Aristotle Menu Setup Problem: Check Access Privileges (11/94)

=====

Article Created: 26 February 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

We are having problems with menu access using Aristotle. The server is a Macintosh SE/30 4/80, running the latest System software (GS/OS 5.0.2) and the proper Apple II Setup.

The menu setup that we are using lets two of the teachers have set their own menus up so that they can go into student menu Administration with a menu choice of their own. One teacher doesn't see that choice; he can only see his two classes. The other can't see one class, but sees administration.

What could be wrong in the setup?

DISCUSSION -----

The typical issue that causes this type of problem relates to folder access privileges.

The first teacher's access privileges are probably not set for access to the Menu Management program's folder, while the set for access to his two classes' folders. The second teacher's privileges seem to be set for access to the Menu Management's folder, while the class folder's access is probably not permitted. This has been the only way we have been able to duplicate the situation you describe.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7063



# Tech Info Library

## Mac 'N Touch Touch-screen Monitor Works with HyperCard

Revised: 7/23/93  
Security: Everyone

Mac 'N Touch Touch-screen Monitor Works with HyperCard

=====

Article Created: 26 February 1991  
Article Reviewed/Updated: 5 June 1992

TOPIC -----

I am looking for a touch screen monitor that can be used with HyperCard.

DISCUSSION -----

MicroTouch, Inc. makes a low-cost touch screen monitor called Mac 'N Touch that works with nearly all Macintosh systems. It is based on the Magnavox 9CM080, which is capable of displaying up to 256 colors from a palette of more than 16 million with a resolution of 640 by 480. The monitor has a 14-inch display with a 0.25mm dot pitch. MicroTouch verified that their product does work with HyperCard.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:  
5 June 1992 - Reviewed for technical accuracy.  
22 July 1993 - Correcting company title.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7064





# Tech Info Library

## HyperCard 2.0: Sound Changes

Revised: 5/6/91  
Security: Everyone

HyperCard 2.0: Sound Changes

=====

Article Created: 26 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have developed a "Vocal Communicator" stack that takes advantage of MacinTalk (Apple, Jan. 1 1983) and several XCMDs and XFCNs from HyperMacinTalk v1.0 (Copyright 1987, by Dennis C. DeMars). This stack worked perfectly on my Macintosh SE/30 under System 6.0.5 and HyperCard 1.2.5. With it, a mute person can answer questions and build sentences to be spoken aloud by the Macintosh. After I upgraded to HyperCard 2.0, all it would do was beep, or remain tied up and silent for the length of time that should have been spent "talking."

Is there something about HyperCard 2.0 that makes it incompatible with existing XCMDs or XFCNs?

DISCUSSION -----

HyperCard 2.0 has changed the way XCMDs and HyperCard interact when using the sound capabilities of the Macintosh. Specific callback procedures have been added that XCMDs (and XFCNs) can use to signal HyperCard when they want control of the Macintosh's sound channels. It is likely that XCMDs using sound will need to be modified to work properly with HyperCard 2.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7065



# Tech Info Library

## Macintosh IIfx: Combining Parity and Non-Parity RAM

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: Combining Parity and Non-Parity RAM

=====

Article Created: 26 January 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

Are there any compatibility issues with combining parity and non-parity RAM in a non-parity Macintosh IIfx?

DISCUSSION -----

Combining parity and non-parity RAM in a non-parity Macintosh IIfx should not be a problem as long as all the SIMMs in each SIMM bank are the same speed. We have seen some problems using SIMMs from different vendors in the same SIMM bank, even though they have the same speed. This is probably due to speed differences between the SIMMs.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7066



# Tech Info Library

## Macintosh Family: MIPS Ratings (10/96)

Revised: 10/23/96  
Security: Everyone

Macintosh Family: MIPS Ratings (10/96)

Article Created: 22 November 1991  
Article Reviewed/Updated: 23 October 1996

TOPIC -----

Are there any MIPS specifications for Apple hardware?

DISCUSSION -----

IMPORTANT: Resellers PLEASE include all disclaimers when passing this information to a customer.

Measuring MIPS is, at best, an inaccurate art. All the reference manuals we consulted stated that a MIPS rating can be misleading. MIPS (Million Instructions Per Second) is a measurement of CPU (Central Processing Unit) speed.

From Motorola's 68020/68030 Performance Report:

"Benchmarking microprocessors is much like water-witching. Everyone wants to use the results but are skeptical of the 900-methods. From the user's point of view, the best benchmark to use in making a decision on a given microprocessor is to run the code which will be run in the final application. This, however, is usually difficult at best, and expensive and time consuming at least. Since running the actual code is usually not feasible, most users and all microprocessor manufacturers turn to either synthetic benchmarks - ones that simulate real-world conditions - or small standard benchmark programs which are designed to indicate real-world performance. Not everyone can agree on what simulates real conditions; thus, there are numerous benchmark programs available, each written to test some aspect of performance that the writer is interested in testing."

Another issue that causes MIPS ratings to be suspect is that not all

instructions take the same amount of time. A single instruction can take from 2 to over 200 machine cycles. The MC68020, for example, runs at a sustained rate of 2 to 3 MIPS, with occasional bursts of 8 MIPS.

Several other factors may enter into the process of obtaining the MIPS rating:

- Instruction in cache and cache enabled
- Instruction data size
- Addressing mode used -- Extensions folder words and indirect
- Memory port size
- Memory speed -- variable wait states
- Operand misalignment
- Prefetch sequence -- even or odd, word alignment of op word
- Instruction overlap

If a program is written to test the MIPS, other issues surface:

- Which instruction is used? The best instruction to make the MIPS rating look good would be the fastest executing instruction in the CPU set.
- What is the best program structure to use? Two choices, a loop or a straight line. A straight line program will take more space but is, by far, the fastest. The straight line program executes only the fast instructions without executing any looping instructions.

For these reasons, Apple hasn't published MIPS ratings. However, the press has designated some ratings for our products. Using their formula

$$\text{MIPS} = \text{MHz} / \text{ICC} / \text{Memd} \\ (\text{clock speed} / \text{instruction cycle count} / \text{memory system delay})$$

provides the following MIPS ratings:

|                         |     |     |     |
|-------------------------|-----|-----|-----|
| Macintosh Classic       | 0.7 |     |     |
| Macintosh Plus          | 0.7 |     |     |
| Macintosh SE            | 0.7 |     |     |
| Macintosh Portable      | 1.3 |     |     |
| Macintosh PowerBook 100 | 1.3 |     |     |
| Macintosh II            | 2.6 | **  |     |
| Macintosh LC            | 2.6 | **  |     |
| Macintosh Color Classic | 3.9 |     |     |
| Performa 405            | 3.9 | *** |     |
| Performa 410            | 3.9 | *** |     |
| Performa 430            | 3.9 | *** |     |
| Macintosh IICx          | 3.9 | **  |     |
| Macintosh IIX           | 3.9 | **  |     |
| Macintosh LC II         | 3.9 | **  |     |
| Macintosh SE/30         | 3.9 | **  |     |
| Performa 400            | 3.9 | **  |     |
| Macintosh Classic II    | 3.9 | **  | *** |
| Macintosh PowerBook 140 | 3.9 | **  | *** |
| Performa 200            | 3.9 | **  | *** |

|                          |      |      |      |
|--------------------------|------|------|------|
| Macintosh IIfx(Int'l)    | 4.3  | **   | ***  |
| Macintosh IIsi           | 5.0  | **   | ***  |
| Macintosh LC 520         | 6.3  | ***  |      |
| Macintosh LC III         | 6.3  | ***  |      |
| Performa 450             | 6.3  | ***  |      |
| PowerBook 145B           | 6.3  |      |      |
| Macintosh IIfx           | 6.3  | **   | ***  |
| Macintosh PowerBook 145  | 6.3  | **   | ***  |
| Macintosh PowerBook 160  | 6.3  | **   | ***  |
| Macintosh PowerBook 170  | 6.3  | **   | ***  |
| PowerBook Duo 210        | 6.3  | **   | ***  |
| Performa 600             | 6.5  | **   | ***  |
| Macintosh IIfx           | 7.0  | **   | ***  |
| Performa 460             | 8.3  | ***  |      |
| Performa 466             | 8.3  | ***  |      |
| Performa 467             | 8.3  | ***  |      |
| Performa 550             | 8.3  |      |      |
| PowerBook 165            | 8.3  |      |      |
| Macintosh PowerBook 165c | 8.3  | **   | ***  |
| Macintosh PowerBook 180  | 8.3  | **   | ***  |
| Macintosh PowerBook 180c | 8.3  | **   | ***  |
| PowerBook Duo 230        | 8.3  | **   | ***  |
| PowerBook Duo 250        | 8.3  | **   | ***  |
| PowerBook Duo 270c       | 8.3  | **   | ***  |
| Macintosh IIfx           | 10.0 | **   | ***  |
| WorkGroup Server 60      | 17.6 | ***  |      |
| Macintosh Centris 610    | 17.6 | **** |      |
| Macintosh Centris 660av  | 22.0 | ***  |      |
| Macintosh LC 475         | 22.0 |      |      |
| Macintosh Quadra 605     | 22.0 | ***  |      |
| Macintosh Quadra 610     | 22.0 | ***  | **** |
| Macintosh Quadra 660av   | 22.0 | ***  |      |
| Performa 475             | 22.0 |      |      |
| Performa 476             | 22.0 |      |      |
| Macintosh Centris 650    | 22.0 | **** |      |
| Macintosh Quadra 610     | 22.0 | **** |      |
| Macintosh Quadra 700     | 22.0 | **** |      |
| Macintosh Quadra 900     | 22.0 | **** |      |
| Macintosh Quadra 650     | 29.0 | ***  |      |
| WorkGroup Server 80      | 29.0 | ***  |      |
| WorkGroup Server 95      | 29.0 | ***  |      |
| Macintosh Quadra 650     | 29.0 | **** |      |
| Macintosh Quadra 800     | 29.0 | **** |      |
| Macintosh Quadra 950     | 29.0 | **** |      |
| Macintosh Quadra 840av   | 35.0 | ***  |      |

Power Macintosh computers: IBM and Motorola do not publish MIPS ratings for the PowerPC line of processors. Instead, they have adopted the SPEC benchmark suites to evaluate their PowerPC processors. This information is available in the Tech Info Library using the search string "SPEC ratings and PowerPC" to locate the following articles:

PowerPC: SPEC ratings for 604 & 620 chips

PowerPC: SPEC ratings for 604 & 620 chips

PowerPC: SPEC ratings for 601, 601+, and 602

For additional information about SPEC ratings, access the SPEC Web site at <http://www.specbench.org/>. For information about PowerPC processors, contact Motorola at <http://www.mot.com/SPS/PowerPC/> or IBM at <http://www.chips.ibm.com/products/ppc/index.html>.

\* NOTE: The majority of our systems operate with a variable number of wait states. See the Tech Info article on Wait States and Macintosh. The article is titled: "RAM Speed and CPU Speed: How They're Related".

\*\* NOTE: This figure has been adjusted to reflect the improved efficiency of the 68020, 68030, and 68040.

\*\*\* NOTE: This figure doesn't reflect performance degradation due to the use of internal video, or increases provided by an optional cache card.

\*\*\*\* NOTE: Rating from Motorola.

Using variable wait states, the rating for the Macintosh IIx could be anywhere from 3.3 to 10 MIPS. The values shown above are based on nominal wait states of 2 for each computer.

Again, we stress that MIPS calculation is very misleading. Any presentation of these numbers should be accompanied by a disclaimer.

#### Article Change History:

22 Oct 1996 - Added SPEC ratings information.

31 May 1994 - Included title of wait state article.

29 Mar 1994 - Updated to include ratings for numerous Macintosh and Performa models.

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Tech Info Library Article Number:7067



# Tech Info Library

## Mitsubishi 37-inch Monitor: How to Use it with Macintosh SE/30

Revised: 2/11/93  
Security: Everyone

Mitsubishi 37-inch Monitor: How to Use it with Macintosh SE/30

=====

Article Created: 22 February 1991

### Article Change History

-----

02/09/93 - UPDATED

- Micron Technology acquired by Xceed Technologies.

### TOPIC -----

I would like to be able to display the image from a Macintosh SE/30 to a "Mitsubishi 37-inch monitor. Can this be done?

### DISCUSSION -----

For a Macintosh SE/30 to connect to this monitor, you need a video card and a video cable.

There are several color video cards that fit the Macintosh SE/30's processor direct slot. One of these cards will need to be installed. Among the cards available are RasterOps' ColorBoard 108+/SE30 & ColorBoard 264, Xceed Technologies' Xceed SE/306-48 & Xceed SE/3010-78 and Spark's Color Video Card.

Mitsubishi markets a cable that will connect between the card output connector and the monitor input connector. The cable is available from Mitsubishi's authorized retail outlets. For the name of an authorized dealer, contact one of Mitsubishi's distributors.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7068



# Tech Info Library

## Inside Basic Magazine

Revised: 5/7/91  
Security: Everyone

"Inside Basic" Magazine

=====

Article Created: 26 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do you know of any magazines that emphasize BASIC?

DISCUSSION -----

Ross Lambert of Ariel has made subscriptions to his new magazine, "Inside Basic," available at a yearly rate of \$36.95.

The journal contains articles about programming in BASIC on the Macintosh, whether in QuickBASIC, Zbasic, HyperBASIC, or TrueBasic.

With a Visa or Mastercard, you may LINK your subscription in (address: ARIEL), or call Ross at (509) 923-2249.

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Tech Info Library Article Number:7070





# Tech Info Library

## A/UX 2.0: No VT100 Graphics Characters Displayed

Revised: 9/14/92  
Security: Everyone

A/UX 2.0: No VT100 Graphics Characters Displayed

=====

Article Created: 6 February 1991

Article Change History

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08/31/92 - REVIEWED  
•For technical accuracy

TOPIC -----

A/UX 2.0 CommandShell won't show graphics characters in VT100 mode.  
Instead, letters are displayed in place of the desired lines The font used  
was Monaco.

Can the graphics characters be displayed on the CommandShell window? Is  
there a font which must be installed to give the VT100 graphics characters?

DISCUSSION -----

The current version of Console Emulator in A/UX 2.0 isn't a full VT100  
emulator and doesn't support the graphics-characters mode.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7071



# Tech Info Library

## Macintosh Portable: Modem Switches Explained

Revised: 5/21/91  
Security: Everyone

Macintosh Portable: Modem Switches Explained

=====

Article Created: 6 February 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can you tell me what the switches on the Portable modem are used for?

DISCUSSION -----

You localize the Macintosh Portable Modem through the use of an external line adapter (DAA) that plugs into the generic modem board (installed through the back panel).

There is a different DAA whose hardware complies with the different country regulations and which identifies itself to the main board, thereby enabling country-compliant pieces of firmware to control the modem ("automatic communication parameters configuration").

So, the purpose of the two switches is to provide four adjustable transmit levels. They are set in the same position at the factory for all countries. Transmitted levels comply with each country's regulation.

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Tech Info Library Article Number:7072



# Tech Info Library

## Macintosh Portable: External Video Adapter Canceled (6/96)

Revised: 6/5/96  
Security: Everyone

Macintosh Portable: External Video Adapter Canceled (6/96)

=====

Article Created: 19 February 1991  
Article Reviewed/Updated: 5 June 1996

TOPIC -----

Whatever happened to the promised Macintosh Portable video adapter?

DISCUSSION -----

In September of 1989, when Apple introduced the Macintosh Portable, Apple announced they intended to ship a video adapter which would let users take advantage of external displays.

Since that time, a variety of developers have introduced products which provide the external video functionality customers require. For that reason, Apple decided not to offer a video adapter.

Customers in need of external video support have a wide range of products to choose from, including:

- Sayett Technology's DataShow, an overhead viewplate that connects directly to the Portable's Video Out port
- Aura System's ScuzzyGraph II, which enables customers to use the Macintosh Portable with a color monitor
- Generation Systems' Portable Publisher, which lets Portable users take advantage of the Apple High Resolution Monochrome Monitor, Portrait Display, and Two-Page Display.

The above is a sample of the products and capabilities currently available to Macintosh Portable customers, and we anticipate other third-party video product announcements.

This article provides information about a non-Apple product. Apple Computer,

Inc. is not responsible for its content. Please contact the vendor for additional information.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

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Tech Info Library Article Number:7073



# Tech Info Library

## A/UX 2.01: Lisp Bug Fixed (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX 2.01: Lisp Bug Fixed (8/94)

=====

Article Created: 11 February 1991  
Article Reviewed/Updated: 23 August 1994

TOPIC -----

Is Macintosh Allegro Common Lisp 32-bit clean? I've had some problems running it under A/UX 2.0

DISCUSSION -----

There is an A/UX kernel problem which MacLisp uncovered, and this has been corrected in 2.0.1 release of A/UX.

Article Change History:

23 Aug 1994 - Reformatted and reviewed.

Support Information Services

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Tech Info Library Article Number:7074



# Tech Info Library

## System 7: Editing a Subscriber

Revised: 9/22/92  
Security: Everyone

System 7: Editing a Subscriber

=====

Article Created: 7 March 1991

### Article Change History

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09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I edit a subscriber?

### DISCUSSION -----

Not generally. A subscriber is a copy of data that was published by another document. The published material stays in the original document.

There are two ways to change the data you see in the subscriber. You can either edit the original data in the publisher, or break the connection between the publisher and the subscriber. Breaking the connection leaves an editable copy of the data in the subscribing document.

To edit the original data, follow these steps:

- 1) Select the subscriber.
- 2) Choose "Subscriber Options..." from the Edit menu.
- 3) Click the "Open Publisher" button

To break the connection, follow these steps:

- 1) Select the subscriber.

2) Choose "Subscriber Options..." from the Edit menu.

3) Click the "Cancel Subscriber" button.

Once you break the connection, the subscriber is no longer automatically updated when the publisher is changed.

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Tech Info Library Article Number:7075



# Tech Info Library

## Macintosh IIfx and IIfx: New 3.5-Inch 160MB SCSI Hard Drive

Revised: 5/20/91  
Security: Everyone

Macintosh IIfx and IIfx: New 3.5-Inch 160MB SCSI Hard Drive

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Apple is now using a new 3.5-inch 160MB SCSI hard disk drive mechanism as an optional component in the Macintosh IIfx and Macintosh IIfx. (It is not a separate product.) Here are the technical specifications for this drive mechanism.

DISCUSSION -----

### Capacity

-----

|                          |           |
|--------------------------|-----------|
| Formatted data capacity: | 160MB     |
| Data surfaces:           | 8         |
| Heads per surface:       | 1         |
| Block size:              | 512 bytes |
| Total disk blocks:       | 327,780   |
| Sectors per track:       | 39        |

### Characteristics

-----

|                      |                                     |
|----------------------|-------------------------------------|
| Average access time: | 16 milliseconds, including settling |
| Transfer rate:       | up to 1.5MB/sec (CPU/bus dependent) |
| Rotation speed:      | 3,600 RPM                           |
| Startup:             | <20 seconds                         |
| Spindown:            | <20 seconds                         |

### Physical

-----

|              |                                     |
|--------------|-------------------------------------|
| Form Factor: | 3.5-inch, half height               |
| Weight:      | 0.85 kg (30 ounces) without carrier |
| Size:        | 150 x 102 x 42 millimeters          |



Miscellaneous

-----

Encoding method: 2,7 RLL (Run-Length Limited)  
Servo mechanism: Embedded sector servo  
Actuator type: Balanced Rotary Voice Coil  
Landing zone: Dedicated (i.e. not on data)  
Head Park and Lock: The actuator automatically parks and locks in the  
landing zone at power down  
Mounting: Any mounting orientation is supported

Environmental

-----

Exceeds all Macintosh CPU environmental  
specifications (operating and non-operating  
temperature, humidity, altitude, vibration and shock).

Safety

-----

UL, CSA and TUV certified

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Tech Info Library Article Number:7079



# Tech Info Library

## Network Troubleshooting: Symptoms & Causes (4/94)

Revised: 4/13/94  
Security: Everyone

Network Troubleshooting: Symptoms & Causes (4/94)

=====

Article Created: May 16, 1991  
Article Reviewed/Updated: 13 April 1994

TOPIC -----

Troubleshooting a network can be much more difficult than troubleshooting a single piece of equipment. This is because many devices might be involved. Because of this, you should use a systematic approach to isolating and resolving the problem.

DISCUSSION -----

Below is a list of possible symptom/cures to be referenced when troubleshooting network problems. The list is based on LocalTalk, Ethernet, Token Ring, and Star networks--but can be adapted to other topologies. If you are a service provider, additional information can be found in Apple Technical Procedures. In addition, there are other articles in the Tech Info Library that may assist you.

### Missing Device Problems

-----

#### Symptoms:

- Can't access file server.
- Can't access printer.
- Can't access another zone on the network.
- Can't access another network.

#### Possible causes:

- Break in connector.
- Broken or damaged pins on connector box.
- Device turned off.
- Cables severed or damaged.
- Disconnected cable extenders.
- Network interface card damaged, missing, or not installed properly.
- System software versions not consistent across the network.
- Incorrect printer or other device drivers.

Appropriate cdev and/or adev missing or not in System folder.

Token Ring:

MAU not connected.

Bad MAU port.

Ring In/Ring Out bad or not connected.

STAR:

Star Controller turned off, not plugged in or is malfunctioning.

Wires not punched down or punched down correctly.

Punchdown block not connected to Star Controller.

#### Ghosting Problems

-----

Symptoms:

Network device appears and disappears in the Chooser.

Possible causes:

Loose connector.

Damaged or obstructed cable.

Improper termination.

Loose cable extenders.

Maximum cable length exceeded (check user manual).

Maximum number of nodes exceeded.

Electro-magnetic interference.

Network not designed properly.

#### Performance Degradation

-----

Symptoms:

Slow printing

Slow file transfer

Network appears to be dead.

Possible causes:

Maximum number of nodes exceeded.

Excessive traffic.

System software versions not consistent across the network.

Virus.

#### File Folder Access

-----

Symptoms:

Can't see files or folders.

Can't open files or folders.

Can't drop files or folders into drop folder.

Can't change file or folder name.

Can't move file or folder.

Possible causes:

Access privileges set incorrectly.  
Files or folders locked.

Article Change History:  
13 Apr 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7084



# Tech Info Library

## HyperCard: Converting Stacks Macintosh <—> Apple IIGS (5/91)

Revised: 12/21/93  
Security: Everyone

HyperCard: Converting Stacks Macintosh <—> Apple IIGS (5/91)

Article Created: 13 May 1991

TOPIC -----

This article describes HyperMover 1.1, a software tool for converting stacks between Macintosh HyperCard and HyperCard IIGS.

DISCUSSION -----

Because of the differences between the Macintosh and the Apple IIGS, stacks created on one computer do not run directly on the other. HyperMover makes it easier and faster to convert stacks between the Macintosh and the Apple IIGS. HyperMover will be available from user groups and on-line services.

HyperMover 1.1 includes two stacks: Macintosh HyperMover and HyperMover IIGS.

### MACINTOSH HYPERMOVER

Macintosh HyperMover analyzes a Macintosh HyperCard stack, then creates a folder containing information that HyperMover IIGS can use to create an equivalent stack for use on the Apple IIGS.

- HyperMover works on all Macintosh models capable of running HyperCard. It requires HyperCard 1.2.5, or HyperCard 2.0v2 or later.
- HyperMover may require up to 2MB RAM to dismantle or rebuild stacks. If you are running HyperCard under MultiFinder, allocate at least 1600K to HyperCard. Large stacks with many objects or sounds may require more memory.
- Disk space: HyperMover needs 1.5 to 5 times the size of the original stack.

## HYPERMOVER IIGS

-----

HyperMover IIGS analyzes a HyperCard IIGS stack, then creates a folder containing information that Macintosh HyperMover can use to create an equivalent stack for use on the Macintosh.

HyperMover IIGS requires:

- HyperCard IIGS 1.0 or later.
- System Software 5.0.4. or later.
- IIGS ROM 01 and ROM 03.
- 1.5MB RAM for small stacks, 2MB for most stacks.
- Disk space: 1.5 to 5 times the size of the original stack. In general, Macintosh stacks rebuilt on the Apple IIGS will be slightly larger than the original stack, because HyperCard IIGS supports color paint, which takes up more disk space.

## TRANSFERRING THE FILES

-----

After dismantling a stack, you must transfer the files HyperMover creates. This can be done either with Apple File Exchange or an AppleTalk network.

If you use a network, both the Macintosh and the Apple IIGS must be physically connected and logged on to a common server. Simply drag the folder that HyperMover created on one computer to a location on the server that you can also access from the other computer.

If you use Apple File Exchange, you must format as many disks as needed to contain the converted files. After formatting the necessary number of disks, use Apple File Exchange to transfer the folder containing the converted files. The files can be transferred in two or more groups if the contents of the folder total more than 800K and are combined into one folder.

When converting from Macintosh to Apple IIGS, the text file with the same name as the dismantled stack may not be a legal ProDOS filename; if this is the case, simply rename the file to a legal filename. Do not rename any of the other files in the folder.

## DIFFERENCES BETWEEN STACKS

-----

Because the Apple IIGS and Macintosh differ significantly in hardware, some aspects of a converted stack will not be identical to the original. HyperMover will pre-scan the original stack and warn the user of features, such as XCMDs and XFCNs, that will not be converted.

## Graphics

-----

The most noticeable difference between the original and the rebuilt stack will be in the graphics. The Apple IIGS and the Macintosh have different screen sizes (320x200, 4-bits per pixel; and 512x342, 1-bit per pixel). Therefore, graphics moved between the two systems need to be modified to fit and display properly.

This is handled by HyperMover in several ways:

- Macintosh graphics to the Apple IIGS. HyperMover contains two algorithms for scaling graphics from Macintosh to Apple IIGS screen resolution. The first routine is best used for line-art. The second is preferable for heavily dithered graphics such as those created with HyperScan.
- Apple IIGS graphics to the Macintosh. Moving graphics this direction involves reducing the number of colors available per pixel from sixteen (Apple IIGS) to black-and-white (Macintosh). At the same time, however, the picture must be scaled up from 320x200 to 512x342. This results in more pixels being available to simulate the colors lost during dithering.

## Screen Coordinates

-----

Just as pictures must be scaled to fit the destination card size, buttons and fields must also be scaled so that they appear in the correct locations on the destination card. However, buttons and fields are objects and can be scaled with no distortion.

## Scripts

-----

Because of the differing screen sizes, scripts converted from one system to the other will require modification to function properly if they rely on specific screen coordinates.

Scripts that rely on features specific to one system, such as the color properties of HyperCard IIGS or specific commands in Macintosh HyperCard 2.0, will also need to be modified to work correctly.

## Animation Sequences

-----

Animation sequences that use system icons and refer to them by ID will need to be modified after the stack is converted.

## Machine-Specific Properties

-----

Properties specific to HyperCard IIGS, such as button families and sharedText on the Apple IIGS will not be preserved in stacks converted to HyperCard 1.2.5. Conversion of HyperCard IIGS to HyperCard 2.0 will retain those properties that are common to HyperCard 2.0 and HyperCard IIGS.

Similarly, varying card sizes in HyperCard 2.0 will not be preserved in

stacks converted to HyperCard IIGS.

#### WHAT HYPERMOVER CAN AND CANNOT DO

-----

HyperMover can:

- Create scaled representations of pictures.
- Convert Macintosh sounds to Apple IIGS sounds, and vice versa.
- Transfer all HyperCard objects--including backgrounds, cards, buttons, and fields, and their attributes.
- Convert and scale Macintosh icons and cursors to Apple IIGS icons and cursors.

HyperMover cannot:

- Convert external commands and functions (XCMDs and XFCNs).
- Fix scripts that depend on specific screen coordinates.
- Alter scripts that rely on features specific to one machine.
- Maintain the ordering of buttons in relation to fields.

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Tech Info Library Article Number:7085





# Tech Info Library

## Disk III: Specifications (Discontinued)

Revised: 9/15/93  
Security: Everyone

Disk III: Specifications (Discontinued)

Article Created: 1 May 1991

TOPIC -----

This article gives specifications for the Disk III product.

DISCUSSION -----

Technical Specifications

Format

-----

- Sectoring: Soft (hard-sectored disks may be used)
- Recording Surfaces: 1
- Tracks per surface: 35
- Sectors per track: 16
- Bytes per sector: 256

Capacity

-----

- Formatted data capacity: 143K
  - 16 sector
  - Under: SOS

Characteristics

-----

- Head movement time:
  - 25 milliseconds track to track
  - 600 milliseconds across all tracks
- Head load time: 50 milliseconds

# ..TIL07086-Disk\_III-Specifications\_Discontinued.pdf

- Average rotational delay: 100 milliseconds
- Drive dimensions:

|         | inches | centimeters |
|---------|--------|-------------|
| Height: | 4.12   | 10.5        |
| Width:  | 6.25   | 15.9        |
| Depth:  | 8.75   | 22.3        |
|         | pounds | kilograms   |
| Weight: | 4.49   | 2.03        |
- Power source for drives: Apple system power supply

## System Configuration

Apple III, Apple III Plus (with adapter)

- 
- Recommended minimum memory: 128K

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Tech Info Library Article Number:7086



# Tech Info Library

## Non-Postscript Printers: Solution to Printing Large Characters

Revised: 5/24/91  
Security: Everyone

Non-Postscript Printers: Solution to Printing Large Characters

=====

Article Created: 1 April 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated: 23 May 1991

TOPIC -----

I'm having a problem writing large characters on a Personal LaserWriter SC. Printed characters larger than 18 point are being cut off near the bottom. For example, if an "f" is printed, most of the part below the crossbar is missing.

DISCUSSION -----

The Personal LaserWriter SC suffers from the same problem as the LaserWriter IISC and the ImageWriter LQ: when printing outline, bold and shadow text in 18 point or larger type sizes, some parts of the characters may be omitted and/or garbled. The problem usually occurs when 4X fonts are used. Installing more system RAM and/or allocating more memory to the application will have no effect on the problem.

In March of 1991, this problem is fixed by using TrueType-compatible printer drivers. Apple introduced the TrueType font scaling software which is bundled with both the StyleWriter and the Personal LaserWriter LS printers. The TrueType compatible drivers are available on a Macintosh Printing Tools disk which contains the drivers for the following printers:

| Printer<br>-----           | Version<br>----- |
|----------------------------|------------------|
| LaserWriter                | 6.1              |
| ImageWriter                | 6.1              |
| AppleTalk ImageWriter      | 6.1              |
| Personal LaserWriter SC    | 6.1              |
| Personal LaserWriter LS    | 1.0              |
| ImageWriter LQ ImageWriter | 6.1              |

|                                      |     |
|--------------------------------------|-----|
| ImageWriter LQ AppleTalk ImageWriter | 6.1 |
| StyleWriter                          | 1.0 |

In May of 1991 another solution was made available with the release of System 7. System 7 includes a new Printing disk and Tidbit disk which contain printer drivers for the following:

| Printer                  | Version |
|--------------------------|---------|
| -----                    | -----   |
| LaserWriter              | 7.0     |
| Personal LaserWriter SC  | 7.0     |
| ImageWriter              | 7.0     |
| AppleTalk ImageWriter    | 7.0     |
| LQ ImageWriter           | 7.0     |
| LQ AppleTalk ImageWriter | 7.0     |

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Tech Info Library Article Number:7087



# Tech Info Library

## Macintosh LC: Connecting to VGA Monitors

Revised: 7/23/92  
Security: Everyone

Macintosh LC: Connecting to VGA Monitors

Article Created: 5 March 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated: 23 July 1992

TOPIC -----

Does the Macintosh LC support VGA monitors? What are the pinouts for connecting a VGA monitor to a Macintosh LC?

DISCUSSION -----

The Macintosh LC supports some VGA monitors. However, there are many different modes/types of VGA timing. The following specifications show the VGA timing characteristics supported by the Macintosh LC.

|            |               |
|------------|---------------|
| Dot clock  | = 25.175 MHz  |
| Dot        | = 39.722 nsec |
| Full line  | = 31.778 usec |
| Line rate  | = 31.469 kHz  |
| Full frame | = 16.68 msec  |
| Frame rate | = 59.94 Hz    |

Here are the pinouts for connecting a VGA monitor to a Macintosh LC:

| Macintosh LC |                    | VGA Connector |
|--------------|--------------------|---------------|
| DB-15        |                    |               |
| -----        |                    | -----         |
| 2            | ----- Red Video    | 1             |
| 1            | ----- Red Ground   | 6             |
| 9            | ----- Blue Video   | 3             |
| 13           | ----- Blue Ground  | 8             |
| 5            | ----- Green Video  | 2             |
| 6            | ----- Green Ground | 7             |
| 15           | ----- Hsync        | 13            |

```
12 ----- Vsync ----- 14
14 ----- Sync Ground ----- 10
10 -----|
7 -----| Connect 7 and 10 so the sense pin ID will equal VGA
```

A few issues to keep in mind:

- VGA monitors may vary depending on the vendor. Check with the vendor about Macintosh LC compatibility before buying.
- Vendors have different image quality specifications. There may significant differences between Apple monitors and VGA monitors. Do a side-by-side comparison of a VGA monitor with an Apple monitor before buying.
- Third party cable vendors should have cables available for purchase soon.
- When a VGA monitor is connected as described in the pinout above, the resolution is 640 x 480. The bit-depth supported depends on the amount of VRAM installed. For example, if the Macintosh LC 256K VRAM SIMM is installed, 4-bit color (16 colors) is supported. If the Macintosh LC 512K VRAM SIMM is installed, 8-bit (256 colors) is supported.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7088



# Tech Info Library

## System 7: Hardware and Memory Requirements

Revised: 9/18/92  
Security: Everyone

System 7: Hardware and Memory Requirements

Article Created: 1 May 1991

### Article Change History

-----  
09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What hardware do I need to run System 7?

### DISCUSSION -----

System 7.0 runs on all Macintosh computers with 2MB of RAM and a hard drive. If you have a Macintosh with a 68030 microprocessor (or a 68020 with a PMMU), you can also take advantage of virtual memory (VM).

On a 2MB Macintosh running System 7.0, you have enough RAM (750K to 1024K) to run one moderate-size application like a word processor or spreadsheet. With a 2MB Macintosh SE running System 7:

- You always have access to the desktop
- You can use most of the features of System 7
- You have about the same amount of memory for applications as you did under System 6 with 1MB of RAM.

Further, a System 7 Macintosh is as fast as a System 6 Macintosh SE, and even faster in many important operations like copying files.

Note: Turning file sharing on reduces memory available for applications by about 200K. Using on-board video on a Macintosh IIx and Macintosh IIfx can consume over 300K of memory when the monitor is set to 8-bit color.

How you use your Macintosh computer affects how much memory you will need. This makes it difficult to make a memory recommendation for a particular user.

Taking advantage of other specific features of System 7 may require other hardware like a network, color monitor, and so on.

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Tech Info Library Article Number:7089





# Tech Info Library

## System 7: Upgrade Kits and Other Sources

Revised: 9/18/92  
Security: Everyone

System 7: Upgrade Kits and Other Sources

=====

Article Created: 1 May 1991

### Article Change History

-----

09/16/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Must I buy a System 7 upgrade kit or can a dealer copy the disks for me?

### DISCUSSION -----

System 7 offers so many new features and capabilities that many users will want to have the System 7 User's Guides and the information offered in the System 7 Upgrade Kits. These kits include Macintosh System Software 7, reference manuals, and many extra features.

However, as in the past, some dealers may make new versions of System Software available to customers by duplicating the software onto the customer's disks.

System Software 7 is also available through users groups, electronic bulletin boards, individuals, and AppleLink.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7090



# Tech Info Library

## System 7: AppleShare 1.1 Workstation Software Is Compatible

Revised: 9/18/92  
Security: Everyone

System 7: AppleShare 1.1 Workstation Software Is Compatible

=====

Article Created: 1 May 1991

### Article Change History

-----

09/15/92 - CORRECTED  
• To make topic more clear.

### TOPIC -----

Can I log on to a System 7 Macintosh with file sharing on from a Macintosh with AppleShare 1.1 Workstation software?

### DISCUSSION -----

Yes. AppleShare 1.1 drivers (still required on the Macintosh 512Ke) can connect to a folder shared by a System 7 user running Macintosh File Sharing.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7092



# Tech Info Library

## System 7: File Sharing on a Large Network

Revised: 9/4/92  
Security: Everyone

System 7: File Sharing on a Large Network

=====

Article Created: 9 May 1991

### Article Change History

-----

09/04/92 - REVIEWED

- For accuracy and edited.

### TOPIC -----

How do I manage file sharing on a large network?

### DISCUSSION -----

File sharing is managed by each Macintosh user who has enabled it. Management involves all users naming their Macintosh computers with the Sharing Setup control panel, creating users and groups with which to share (if desired), and controlling access to the shared folders. The individual file sharing user performs these tasks.

It's a good idea for each network administrator to give each user guidelines regarding naming conventions and setting appropriate access privileges for sharing information.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7094



# Tech Info Library

## System 7 Decides Among Bitmap, TrueType, and ATM Fonts (10/96)

Revised: 10/3/96  
Security: Everyone

System 7 Decides Among Bitmap, TrueType, and ATM Fonts (10/96)

Article Created: 31 May 1991  
Article Reviewed/Updated: 3 October 1996

TOPIC -----

This document provides information about how System 7.x decides which font to use when different types of the same font family are installed.

DISCUSSION -----

For this discussion, assume that you have:

- Bitmap Times 24.
- TrueType Times (in any size).
- An Adobe Type Manager (ATM) Times (in any size).

Screen Fonts

=====

When you choose a font and size, the system uses the following order to decide among the possibilities for displaying type on the screen:

- 1) The bitmap font.
- 2) The TrueType font.
- 3) An Adobe Type Manager (ATM) font if available.
- 4) A bitmap font of a different size, to be scaled to the specified size.

This sequence means that the document you created in bitmap Times 24 will show up in the same bitmap font on the screen to ensure against reformatting. The system looks for the bitmap font first, and if it isn't available, it scales the TrueType font to the proper size.

## PostScript Printer Fonts

=====

When you print your document, the preference order changes. For type on a PostScript printer (such as a LaserWriter Plus, LaserWriter IINT, IINTX, IIf, IIg, LaserWriter Pro, Personal LaserWriter NT, NTR, LaserWriter Select 310, and many third-party PostScript laser printers), the order is:

- 1) The printer's ROM
- 2) The printer's RAM
- 3) The printer's hard disk
- 4) Type 1 or Type 3 PostScript files in the System Folder (stored inside the Extensions folder in System 7.0 and inside the Fonts folder in System 7.1 or later)
- 5) TrueType
- 6) Bitmap

## Detailed Information on How a PostScript Printer Determines Font Type

-----

When a job is being processed and when a font is called for in the job, the font is selected using the arbitration scheme described above, and the bitmap is built and cached in the printer's VM (RAM).

If the same font is called again later in the job, then this font in RAM is used unless it was purged by the interpreter to free up room for some other activity, such as to make room to build another font called for in the job. When the job is completed, the VM is flushed. The next job then goes through the same font arbitration process described above, until the bitmap is built in the printer's VM. As long as the font is resident in VM it is used during the course of that job.

Fonts downloaded by a utility or by some other means having the same name as a font in ROM will not be used. To download a font for print jobs to call and use, it must have a unique name. There are some third-party font applications which allow you to change the name of the font. Simply renaming the font in the Mac OS does NOT change the font name. All Apple PostScript printers and most third-party PostScript laser printers manage font arbitration similarly.

## Non-PostScript Printer and Fax Fonts

=====

For printing to a non-PostScript device (such as an ImageWriter, LaserWriter IISC, Personal LaserWriter SC or LS, LaserWriter Select 300, Personal LaserWriter 300, StyleWriter, StyleWriter II, the DeskWriter by Hewlett-Packard, fax modems, and so on) the order is:

- 1) TrueType

2) ATM (if available)

3) A bitmap font of a different size, scaled to the specified size

Adobe Type Manager (ATM) is a utility that generates bitmap fonts for any size and resolution from Type 1 PostScript fonts. Since TrueType fonts are not PostScript, Adobe Type Manager cannot manipulate them. ATM and TrueType can work side-by-side in your system. If you have some PostScript fonts to display and print using ATM, and you have different fonts in the TrueType format, you should have no problems.

However, keeping the same fonts installed in both ATM and TrueType formats is not recommended. Because of the order of precedence (TrueType over ATM on screen and on non-PostScript printers), if you have the same font installed in both formats, the system uses TrueType -- not ATM.

#### System 7 Installed Fonts

=====

The System 7 Installer automatically installs TrueType versions of Times, Helvetica, Courier, Symbol, Monaco, Geneva, and Chicago. If you need to use an ATM version of these fonts, you must remove the TrueType version from the System file (in System 7.0 or earlier) or from within the Fonts folder in the System Folder (in System 7.1 or later).

This article is one of many available through the apple fax center. for a complete list of available fax documents, search the tech info library for apple fax document index or call the apple fax line at 1-800-505-0171 and select document number 20000 (apple fax - document index - product support literature). the apple fax center is available free of charge 24 hours a day, 7 days a week.

#### Article Change History:

03 Oct 1996 - Added detailed PostScript font information.  
20 Jun 1996 - Corrected order fonts are addressed  
17 Oct 1994 - Reviewed for consistency and updated format.

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Tech Info Library Article Number:7095



# Tech Info Library

## System 7: How to Prepare for It

Revised: 9/14/92  
Security: Everyone

System 7: How to Prepare for It

=====

Article Created: 9 May 1991

### Article Change History

-----

08/24/92 - REVISED

- To provide additional, clearer information.

### TOPIC -----

What should I do to prepare for System 7?

### DISCUSSION -----

Apple recommends that you do the following things to prepare for System 7:

- 1) "Before You Install System 7" is in the Personal Upgrade Kit and the Group Upgrade kit. This stack describes features of System 7 and answers questions about upgrading.

Use the System 7 "Compatibility Checker" (a HyperCard stack), which scans your hard disk, checking the compatibility of your third-party applications, Control Panels (cdevs), and system extensions (INITs) against a database of compatibility information provided by the developers of the software. For the most up-to-date information, call the individual vendors of the software applications you use.

- 2) Upgrade to compatible versions of your application software.
- 3) Make sure you have enough RAM in your Macintosh (2MB is the absolute minimum; 4MB is strongly recommended) and that you have enough free space on your hard drive (at least 5MB).
- 4) If you use EtherTalk, upgrade your routers and EtherTalk drivers to

Phase II.

For more information on the Compatibility Checker, search for "Compatibility Checker".

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Tech Info Library Article Number:7099





# Tech Info Library

## System 7: About the Compatibility Checker

Revised: 9/2/92  
Security: Everyone

System 7: About the Compatibility Checker

=====

Article Created: 9 May 1991

### Article Change History

-----

09/02/92 - REVISED

- With additional information about Compatibility Checker accuracy.

### TOPIC -----

What is the Compatibility Checker?

### DISCUSSION -----

The System 7 Compatibility Checker is a HyperCard stack that scans your hard disk, or any other startup disk, checking the compatibility of third-party:

- Applications
- Startup documents (INITs), known in System 7 as system extensions
- Control Panel documents (cdevs)
- Chooser selectable devices (rdevs)

All compatibility information used by the Compatibility Checker came from the developers of the products. You should use the Compatibility Checker before upgrading to System 7; you can use it afterward as well. Before using it, however, be sure to check the version and date of the Compatibility Checker itself. If it is out of date, the report it gives you will not contain accurate information about the third-party software on your disk. For instance, if you have just purchased a new version of a spreadsheet application, Compatibility Checker will be unaware of this version and will report it as incompatible. For the most recent possible information, it is best to contact the vendors of your software directly.

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Tech Info Library Article Number:7100



# Tech Info Library

## System 7: Upgrade Strategy for Groups

Revised: 5/31/91  
Security: Everyone

System 7: Upgrade Strategy for Groups

=====

Article Created: 10 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the recommended System 7 upgrade strategy for groups of Macintosh computers?

DISCUSSION -----

Apple's recommended upgrade strategy for groups of Macintosh computers is contained in the System 7 Group Upgrade Guide. This guide is an integral part of the System 7 Group Upgrade Kit. The kit contains all the tools and necessary information on how to plan, implement, and manage a group transition to System 7. This kit contains System 7 software and other software on disks and on a CD-ROM.

Network administrators and users who support a group of Macintosh computers should buy the System 7 Group Upgrade Kit (Order #M8221LL/A):

### Manuals

-----

System 7: Group Upgrade Guide  
What's New in System 7  
Macintosh Reference  
Macintosh Networking Reference  
HyperCard Basics 2.1

### Disks

-----

System 7 CD-ROM  
System Software 7, eight 800K disks  
Before You Install, one 800K disk  
HyperCard 2.1, two 800K disks

# ..TIL07103-System\_7-Upgrade\_Strategy\_for\_Groups\_(TA45519).pdf

Macintosh Networking Basics, one 800K disk  
Macintosh CD Setup, one 800K disk

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7103



# Tech Info Library

## System 7: How to Get Manuals

Revised: 5/19/94  
Security: Everyone

System 7: How to Get Manuals

=====

Article Created: 10 May 1991

### Article Change History

-----

09/17/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How can I get extra System 7 manuals?

### DISCUSSION -----

The System 7 manuals are for sale at your dealer in the System 7 User Documentation Pack ("5 pack"), Order #M8223LL/A:

- How to Install System 7
- What's New in System 7
- Macintosh Reference
- Macintosh Networking Reference

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Tech Info Library Article Number:7104



# Tech Info Library

## System 7: Dimmed Label Menu

Revised: 9/14/92  
Security: Everyone

System 7: Dimmed Label Menu

=====

Article Created: 10 May 1991

### Article Change History

-----

09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Why is the Label menu sometimes dimmed?

### DISCUSSION -----

The Label menu is available only when an icon has been selected in the Finder. If there are no windows open or icons selected on which the Label menu can have an effect, it will appear dimmed.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7106



# Tech Info Library

## System 7: Moving Documents from System 6 to System 7

Revised: 8/24/92  
Security: Everyone

System 7: Moving Documents from System 6 to System 7

=====

Article Created: 10 May 1991

### Article Change History

-----

08/24/92 - REVISED

- To give additional information.

### TOPIC -----

Can I move documents from my System 6 Macintosh to a Macintosh running System 7? Will my documents change?

### DISCUSSION -----

You can move documents between a Macintosh running System 6 and a Macintosh running System 7 without any problems. In most cases, your documents will not change their appearance. For example, if your document uses Times font in size 12, your document won't change.

An exception occurs when you have TrueType fonts installed and you have documents using numerous odd type sizes. Line endings for such documents may change slightly when you open the document under System 7. Also, the document's formatting may be slightly different. You may need to readjust your document's formatting to have the format for lines and paragraphs appear exactly as before. This happens because the substituted TrueType fonts are more accurate and true to the printed output you'll get. But if you want the document to look exactly like it did under System 6, just remove the TrueType fonts from your System file. They are the ones with the triple "A" in the icon which display three different sizes when you double-click on them.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7107



# Tech Info Library

## System 7: How to Quit from an Application That Hangs

Revised: 5/31/91  
Security: Everyone

System 7: How to Quit from an Application That Hangs

=====

Article Created: 10 May 1991

### Article Change History

-----

08/19/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Under System 7, how do I force a hung application to quit?

### DISCUSSION -----

Built into System 7 is the ability to force an application to terminate. To do this, simultaneously press the Command, Option, and Escape keys. This feature should be used with extreme caution. You should definitely not rely on this as a usual way to quit an application.

It is particularly useful in the event that you have unsaved work in other applications when your current application hangs. By using this "force quit" feature, you can return to the Finder and save the work in your other applications. But because of possible corrupted memory after force quitting an application, you should restart your computer after using this feature.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7110





# Tech Info Library

## System 7: No Need to Restart after Installing a TrueType Font

Revised: 5/31/91  
Security: Everyone

System 7: No Need to Restart after Installing a TrueType Font

=====

Article Created: 10 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Must I restart my computer after installing a TrueType font?

DISCUSSION -----

No. Any TrueType font is available as soon as you install it in the System file.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7111



# Tech Info Library

## TrueType: How to Use with System 6 (8/94)

Revised: 8/22/94  
Security: Everyone

TrueType: How to Use with System 6 (8/94)

Article Created: 10 May 1991  
Article Reviewed/Updated: 22 August 1994

TOPIC -----

Can I use TrueType with System 6?

DISCUSSION -----

The TrueType Disk Set (INIT plus fonts and drivers) is no longer available. However there are some additional sources for the TrueType Init needed for System 6. The TrueType init comes with the following printer software:

- LaserWriter Select 300 - TrueType Init is on Disk 2 Printer Software.
- Personal LaserWriter 300 - TrueType Init is compressed. Use Installer.
- Personal LaserWriter 320 - TrueType Init is compressed. Use Installer.
- StyleWriter - TrueType Init is on StyleWriter Installation Disk 1.
- StyleWriter II - TrueType Init is on Disk 2 Printer Software.

If you know someone who has the TrueType Disk set disks, you can also install them to get TrueType functionality with a System 6 machine.

Your Macintosh must have at least 1 MB of RAM and system software version 6.0.7 or later. Although the TrueType software works on System 6.0.5, Apple hasn't thoroughly tested it under 6.0.5. Therefore, we recommend you upgrade to System 6.0.7 or later. System 7.0 users don't need to install this software because the TrueType functionality is built into System 7.

The TrueType INIT goes into the root level of the System Folder. The fonts need to be installed using the Font/DA mover found on Disk 1 (version 4.1)

Full installation instructions can be found in the ReadMe file on Disk 1.

The TrueType Disk Set includes:

Disk 1 "TrueType Fonts & Software" (686K)

-----  
TrueType INIT  
TrueType fonts (13 type styles)  
Font/DA Mover v4.1  
ReadMe file (installation instructions, plus printer ReadMe notes)  
TeachText

Disk 2 "TrueType Printing Tools" (753K)  
-----

ImageWriter v6.1  
AppleTalk ImageWriter v6.1  
ImageWriter LQ v6.1  
AppleTalk ImageWriter LQ v6.1  
LaserWriter software (folder)  
    LaserWriter v6.1  
    Backgrounder  
    PrintMonitor  
    Personal LaserWriter SC v6.1  
Utilities (folder)  
    LaserWriter Font Utility  
    Laser Prep  
    About Laser Prep (ReadMe file)

Article Change History:

22 Aug 1994 - Added listing of specific diskettes for TrueType Init.  
27 Jul 1994 - Added additional sources for the TrueType Init.  
20 May 1994 - Detailed where the items go on a System 6 system.  
3 Nov 1993 - Stated that the disk set is no longer available.

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Tech Info Library Article Number:7112



# Tech Info Library

## System 7: How to Use ATM instead of TrueType

Revised: 6/3/91  
Security: Everyone

System 7: How to Use ATM instead of TrueType

=====

Article Created: 10 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I turn off TrueType when using System 7 and ATM (Adobe Type Manager)?

DISCUSSION -----

TrueType is part of the Macintosh System Software. If you prefer to use ATM fonts, remove the TrueType fonts from the System file.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7113



# Tech Info Library

## System 7: Memory Needed for a Macintosh IIsi

Revised: 6/3/91  
Security: Everyone

System 7: Memory Needed for a Macintosh IIsi

=====

Article Created: 10 May 1991  
Article Last Reviewed: 14 August 1992  
Article Last Updated:

TOPIC -----

How much memory do I need with System 7 and a Macintosh IIsi?

DISCUSSION -----

If you want to run System 7 on a Macintosh IIsi and are using its built-in video capabilities, Apple recommends that you have more than 2MB of RAM. System 7 works with 2MB of RAM, but with limited space for running your application software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7115



# Tech Info Library

## System 7: No Need for the 32-Bit QuickDraw INIT (12/95)

Revised: 12/6/95  
Security: Everyone

System 7: No Need for the 32-Bit QuickDraw INIT (12/95)

=====

Article Created: 10 May 1991  
Article Reviewed/Updated: 6 December 1995

TOPIC -----

Do I need the 32-bit QuickDraw INIT with System 7?

DISCUSSION -----

No. 32-Bit QuickDraw has been integrated into System 7, and the INIT is no longer needed to get the benefits of 32-Bit QuickDraw. The System 7 Installer will delete the old 32-Bit QuickDraw INIT from your System Folder during installation.

Article Change History:  
06 Dec 1995 - Updated format.  
21 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7116



# Tech Info Library

## System 7: Preparing an Apple Hard Drive for Virtual Memory 6/95

Revised: 6/1/95  
Security: Everyone

System 7: Preparing an Apple Hard Drive for Virtual Memory 6/95

Article Created: 10 May 1991  
Article Reviewed/Updated: 1 June 1995

TOPIC -----

Why do I get a message that says my hard drive needs to be updated when I try to turn on Virtual Memory (VM)?

DISCUSSION -----

If you have not initialized your hard drive with a System 7 compatible version of the hard drive formatting software, you may need to do so before the system allows you to activate virtual memory.

If you have a third-party (non-Apple) hard drive, you may need to obtain from the manufacturer an updated version of the correct formatting software for that drive. If you have an Apple hard drive, you can update your hard drive software using the instructions below. The process does not affect the data on your hard drive, and it is very simple.

Step 1

-----

Locate the System 7 disk marked "Disk Tools".

Step 2

-----

Restart your computer with the "Disk Tools" floppy.

Step 3

-----

Launch the application HD SC Setup.

Step 4

-----

Click the "Update" button.

Step 5

-----

Click Quit.

If you are moving from System 6.0.x to ANY version of Sytem 7.x, you can follow these steps.

Article Change History:

01 Jun 1995 - Reviewed for technical accuracy.

14 SEP 1992 - provided more accurate information.

Support Information Services

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Tech Info Library Article Number:7119





# Tech Info Library

## System 7: Hypercard 2.1 Recommended

Revised: 9/2/92  
Security: Everyone

System 7: Hypercard 2.1 Recommended

=====

Article Created: 13 May 1991

### Article Change History

-----

09/02/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What version of Hypercard should I use with System 7?

### DISCUSSION -----

Claris recommends at least Hypercard 2.1 for use with System 7.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7123



# Tech Info Library

## System 7: System 6 Fonts Still Used

Revised: 5/31/91  
Security: Everyone

System 7: System 6 Fonts Still Used

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What will happen to fonts in my old System file when I install System 7?

DISCUSSION -----

You keep all of your existing fonts. While TrueType installs a number of TrueType fonts with System 7, TrueType fonts complement any bitmap fonts available on your Macintosh. Remember these points:

- All of the fonts in your System 6 System file are retained in System 7.
- If you request a font size that is available as a bitmap, your Macintosh uses the bitmap.
- If you use a size for which you do not have a bitmap, your Macintosh scales the appropriate TrueType outline.
- If you remove a bitmap from your System file, the Macintosh uses the TrueType font. Depending on the font and size you request, you will end up with either a bitmap font OR a TrueType font. Regardless of whether it's a bitmap or a TrueType font, your text will look great.

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Tech Info Library Article Number:7124



# Tech Info Library

## System 7: Suitcase and Master Juggler

Revised: 5/31/91  
Security: Everyone

System 7: Suitcase and Master Juggler

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Under System 6, I've used Suitcase and Master Juggler, so my fonts don't take up space in my System file. Do I need these products with System 7?

DISCUSSION -----

Before System 7, Macintosh System software limited the number of fonts you could have in the System file. With System 7, that limit is so much greater that you can, for all practical purposes, disregard it. You may still want to use programs like Suitcase and Master Juggler to organize sets of fonts that you don't need access to all the time. Keep in mind also that one TrueType file, which can produce all point sizes in that font, takes up much less space in your system than the files for the equivalent bitmap fonts.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7125



# Tech Info Library

## System 7: Italic, Bold, and Bold Italic in TrueType

Revised: 5/31/91  
Security: Everyone

System 7: Italic, Bold, and Bold Italic in TrueType

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why are Italic, Bold, and Bold Italic listed as separate typefaces for TrueType (and Postscript fonts), but not for bitmap fonts?

DISCUSSION -----

When you're using a bitmap font and you choose Italic or Bold from the Style menu, the italic or bold type you see on the screen is a manipulation of the plain bitmap typeface. The plain font itself is modified--slanted forward for italic or thickened for bold--to create the style you've chosen.

TrueType and PostScript fonts give you separate, specially-designed typefaces, not just manipulations of the plain typeface, for italic, bold, and bold-italic styles. These look even better than the modified bitmaps, and are truer to the original designs.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7126



# Tech Info Library

## System 7: A/UX 2.1 Not Compatible

Revised: 9/3/92  
Security: Everyone

System 7: A/UX 2.1 Not Compatible

=====

Article Created: 28 May 1991

### Article Change History

-----

09/02/92 - UPDATED

- To include information on A/UX 3.0.

### TOPIC -----

Is A/UX software compatible with System 7?

### DISCUSSION -----

A/UX 3.0 is compatible with System 7.

A/UX version 2.1 is not compatible with System 7. The A/UX 2.1 startup application cannot be launched from a System 7 system. System 7 can't run in a Macintosh partition under A/UX 2.1.

Users who require A/UX functionality and who want to run System 7 should upgrade to version 3.0 of A/UX.

A/UX systems are network-compatible with System 7 systems. Users of the Macintosh partition under A/UX and still running System 6 should upgrade their LaserWriter drivers to version 7.0. This will make them printer-compatible with System 7 computers on the network.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7129



# Tech Info Library

## System 7: Upgrade Information for AppleCD SC

Revised: 8/13/91  
Security: Everyone

System 7: Upgrade Information for AppleCD SC

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Article Created: 28 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is the Apple CD-ROM system extension compatible with System 7.0?

DISCUSSION -----

Versions of the Apple CD-ROM system extension prior to 3.0 are incompatible with System 7. Version 3.0 is mostly compatible with System 7, but version 3.1 is recommended. Users should install the Apple CD-ROM software BEFORE installing System 7.

The upgrade to version 3.1 is free, and the files can be found in the Upgrade folder on the System 7 Information bulletin board (use BB Pathfinder to locate this bulletin board), as well as on the System 7 Group Upgrade Kit CD.

The AppleCD SC hardware is compatible with all Macintosh systems that have a SCSI interface.

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Tech Info Library Article Number:7130



# Tech Info Library

## System 7: Upgrade Information for Apple Hard Disks

Revised: 5/31/91  
Security: Everyone

System 7: Upgrade Information for Apple Hard Disks

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Article Created: 28 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is System 7 compatible with all Apple hard disks formatted with HD SC Setup?

DISCUSSION -----

Some hard disks that have been formatted with older versions of HD SC Setup may require an updated driver in order to function with Virtual Memory. IT IS NOT NECESSARY TO REFORMAT THE DRIVE. If the Memory control panel indicates the drive needs updating, follow the instructions in the System 7 Personal Upgrade Kit to use HD SC Setup to update the driver.

All Apple internal and external hard disks are compatible with all Macintosh systems that have a SCSI interface.

The version of Apple HD SC Setup that ships with all hard disks is compatible with System 7, but version 2.0.4 is the recommended version.

The upgrade to version 2.0.4 is free, and the files can be found in the Upgrade folder on the System 7 Information bulletin board, as well as on the System 7 Group Upgrade Kit CD.

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Tech Info Library Article Number:7131



# Tech Info Library

## System 7: Upgrades for Apple Product Compatibility

Revised: 5/31/91  
Security: Everyone

System 7: Upgrades for Apple Product Compatibility

Article Created: 28 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This document lists products on the April 1991 Suggested Retail Price List that require updating and are incompatible with Macintosh System Software version 7.0, or both.

DISCUSSION -----

Apple Products Updated By System 7

-----  
The following Apple products require software updates for use with System 7. System 7 software includes the update software. Users should not use the installer disks that come with the product; use the equivalent System 7 software or Custom Install option instead.

|           |                                                                        |
|-----------|------------------------------------------------------------------------|
| M5540LL/A | Macintosh Portable Backlight Screen Upgrade                            |
| M0268     | Macintosh Portable Internal 40SC Hard Disk                             |
| M2620/A   | Apple Hard Disk 20SC                                                   |
| M2644/A   | Apple Hard Disk 40SC                                                   |
| M2688/A   | Apple Hard Disk 80SC                                                   |
| M2666     | Apple Hard Disk 160SC                                                  |
| M0216/A   | Macintosh Internal 20SC Hard Disk<br>(SE, SE/30, II, IIx or IIfx only) |
| M0283     | Macintosh Internal 40SC Hard Disk (IIcx or IIci only)                  |
| M0269     | Macintosh Internal 40SC Hard Disk<br>(SE, SE/30, II, IIx or IIfx only) |
| M0284     | Macintosh Internal 80SC Hard Disk (IIcx or IIci only)                  |
| M0270     | Macintosh Internal 80SC Hard Disk<br>(SE, SE/30, II, IIx or IIfx only) |
| M0267     | Macintosh Internal 160SC Hard Disk (II, IIx or IIfx only)              |



|           |                                                              |
|-----------|--------------------------------------------------------------|
| M0235     | Macintosh SE-Bus Drive Card                                  |
| M0234     | Macintosh II PC Drive Card                                   |
| M0410LL/A | Macintosh II EtherTalk® NB Card                              |
| M0264     | Apple Serial NB Card                                         |
| M0237     | Apple TokenTalk® NB Card                                     |
| M0261/A   | Apple Coax/Twinax Card (requires MacDFT or 3rd party equiv.) |
| M0443LL/A | Apple Ethernet LC Card                                       |
| B0438LL/A | StyleWriter Printer w/Acc. Kit & Ink Cartridge               |
| C0090LL/A | ImageWriter II Printer                                       |
| A9B0314   | ImageWriter II/LQ LocalTalk Option                           |
| M6009     | LaserWriter IINT Controller Card                             |
| M6210     | LaserWriter IINT w/Toner Cartridge and Letter Cassette       |
| M6004/A   | LaserWriter IINTX Controller Card                            |
| M0445LL/A | LaserWriter IINTX Upgrade Kit                                |
| M6215/A   | LaserWriter IINTX w/Toner Cartridge and Letter Cassette      |
| M0191     | LaserWriter Plus Kit                                         |
| B0454LL/A | Personal LaserWriter LS w/Toner Cartridge & Acc. Kit         |
| M0097LL/A | Personal LaserWriter NT Controller Card                      |
| B0325LL/A | Personal LaserWriter NT w/Toner Cartridge & Letter Cassette  |
| B0326LL/A | Personal LaserWriter SC w/Toner Cartridge & Letter Cassette  |

#### Products Requiring Separate Upgrades

-----  
The following Apple products require software upgrades that are not included with System 7. See the System 7 Information icon on AppleLink for information on how to acquire the upgraded software.

#### Upgrades Available Now

|         |                                            |
|---------|--------------------------------------------|
| M0697   | Inter•Poll Network Administrator's Utility |
| M2700/B | AppleCD SC                                 |
| A9M0337 | Apple Scanner                              |

#### Upgrades Available June/July 1991

|           |                                 |
|-----------|---------------------------------|
| M6045     | MacTCP                          |
| M0108LL/B | MacX 1.1                        |
| M1043LL/A | MacX 1.1 Update                 |
| M0695     | MacDFT®                         |
| B0324LL/B | Apple Coax/Twinax Card w/MacDFT |

#### Upgrades Available Later in 1991

|           |                                 |
|-----------|---------------------------------|
| M0122     | Macintosh Display Card 8•24 GC* |
| M0516LL/A | A/UX Incremental Update Kit     |
| M0598LL/A | A/UX 2.0.1 CD-ROM Product       |
| M0616LL/A | A/UX 2.0.1 Floppy Product       |
| M0559LL/A | A/UX Update Product - CD ROM    |

\* Hardware is functional but software does not work in accelerated mode.

## Incompatible Products

-----

The following product is incompatible with System 7, but can be used with third-party backup software:

M2640/B      Apple Tape Backup 40SC

The following systems should not be upgraded to System 7:

B0452LL/A    Macintosh IIci A/UX Hard Disk 80 CPU (8MB)  
B0452LL/A    Macintosh IIci A/UX Hard Disk 80 CPU (8MB)  
B0453LL/A    Macintosh IIfx A/UX Hard Disk 160 CPU (4MB)  
B0453LL/A    Macintosh IIfx A/UX Hard Disk 160 CPU (4MB)  
B0471LL/A    Macintosh IIfx A/UX Hard Disk 160 CPU (8MB)  
B0451LL/A    Macintosh IIsi A/UX Hard Disk 80 CPU (5MB)

The following products should not be installed on a System 7-based system. Install System Software version 6.0.7 or 6.0.8 before installing these products on a server or router. They are network-compatible with System 7, and both System 6 and System 7 systems can use their services.

M0576          AppleShare Print Server  
M0548/B      AppleShare File Server 2.0

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Tech Info Library Article Number:7132



# Tech Info Library

## System 7: Upgrade Information for Apple Scanner

Revised: 8/13/91  
Security: Everyone

System 7: Upgrade Information for Apple Scanner

=====

Article Created: 29 May 1991  
Article Last Reviewed: 12 August 1991  
Article Last Updated:

TOPIC -----

Is the Apple Scanner software compatible with System 7.0?

DISCUSSION -----

Version 1.0 of the AppleScan application and the Scanner system extension are mostly compatible with System 7. Version 1.0.2 of AppleScan and version 1.0.1 of Scanner are the recommended versions. Users should upgrade to these versions after installing System 7.

Upgrades to these versions are free, and the software is included in the Upgrades folder on the System 7 Information bulletin board. Use BB Pathfinder to locate this bulletin board.

The Apple Scanner is compatible with all Macintosh systems that have a SCSI interface.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7133



# Tech Info Library

## System 7: Upgrade Information for AppleShare File Server

Revised: 10/15/91  
Security: Everyone

System 7: Upgrade Information for AppleShare File Server

=====

Article Created: 29 May 1991  
Article Last Reviewed: 15 October 1991  
Article Last Updated: 15 October 1991

TOPIC -----

Is the AppleShare File Server software compatible with System 7?

DISCUSSION -----

No. The AppleShare File Server software version 2.0 is not compatible with System 7 and should not be installed on a System 7-based Macintosh system.

AppleShare is fully network-compatible with both System 6 and System 7. Both System 6 and System 7-based Macintosh users can access an AppleShare File Server running on a System 6-based machine.

AppleShare Server 3.0, which was announced on October 15, 1991, is fully compatible with System 7. For upgrade information, please locate the article titled "AppleShare Server 3.0: Upgrade Information".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7135



# Tech Info Library

## System 7: Upgrade Information for Inter•Poll

Revised: 5/27/93  
Security: Everyone

System 7: Upgrade Information for Inter•Poll

Article Created: 29 May 1991

Article Change History

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05/27/93 - REVIEWED

TOPIC -----

Is Inter•Poll compatible with System 7?

DISCUSSION -----

Yes. Inter•Poll version 1.0 is mostly compatible with System 7, and version 1.0.1 is fully compatible. The update to Inter•Poll is free and the software is posted on AppleLink. Users should upgrade the Inter•Poll software after installing System 7. Inter•Poll will work with both System 7 and System 6 systems over the network.

Inter•Poll will work with both System 7 and System 6 systems over the network. The Responder functionality is now built into System 7, and installing System 7 removes the Responder extension from a System 6 system. If a System 6.0.x Mac is upgraded with System 7 printers drivers, the network administrator using Inter•poll (Apples network administrator software) will get a blank line for that system's LaserWriter driver version number. There is no problem viewing System 7 drivers on System 7.0 Macs. The Sys 6 responder can't read the System 7 driver resources.

Copyright 1991, 1993, Apple Computer, Inc.

Tech Info Library Article Number:7136



# Tech Info Library

## System 7: Upgrade for MacDFT and the Coax/Twinax Card

Revised: 5/31/91  
Security: Everyone

System 7: Upgrade for MacDFT and the Coax/Twinax Card

=====

Article Created: 29 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are the Coax/Twinax card and MacDFT compatible with System 7?

DISCUSSION -----

The Apple Coax/Twinax card is compatible with System 7, and the installer for System 7 updates the A/ROSE software needed to run that card. The Coax/Twinax card can be used with System 7 and compatible third-party products.

MacDFT is not compatible with System 7. Users who require MacDFT functionality should not upgrade to System 7 until the upgrade to MacDFT is available.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7137



# Tech Info Library

## System 7.x: Upgrade Information for MacTCP (1/95)

Revised: 1/24/95  
Security: Everyone

System 7.x: Upgrade Information for MacTCP (1/95)

Article Created: 29 May 1991  
Article Reviewed/Updated: 24 January 1995

TOPIC -----

Is MacTCP compatible with System 7 and higher?

DISCUSSION -----

MacTCP is compatible with System 7. The specifics follow:

- For System 7.0 and System 7.0.1, use MacTCP version 1.1 or higher.
- For System 7.1 and System 7 Pro (7.1.1), use MacTCP version 1.1.1 or higher.
- For System 7.1.2 and System 7.5, use MacTCP version 2.0.4 or higher.

Note: The current version of MacTCP is version 2.0.6.

The applications: "MacTCP 2.0.4 to 2.0.6 Patch" and "MacTCP Admin 2.0.6 Patch" are ResCompare resource patching applications. Applying the appropriate patch to a COPY OF YOUR ORIGINAL ("clean") MacTCP or MacTCP Admin control panel will upgrade your copy to version 2.0.6.

All licensed copies of MacTCP 2.0.4 can be upgraded. For users of earlier 2.x versions (2.0 and 2.0.2) must first be updated to version 2.0.4 before updating to version 2.0.6.

### Article Change History:

24 Jan 1995 - Added current MacTCP information and System software.  
07 Jan 1994 - Added current MacTCP information.

Support Information Services

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Tech Info Library Article Number:7138





# Tech Info Library

## System 7: Upgrade Information for MacTerminal

Revised: 5/31/91  
Security: Everyone

System 7: Upgrade Information for MacTerminal

=====

Article Created: 29 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is MacTerminal compatible with System 7?

DISCUSSION -----

MacTerminal version 3.0 is compatible with System 7. Earlier versions of the MacTerminal application are not compatible with System 7.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7139



# Tech Info Library

## System 7: Upgrade Information for Apple Tape Backup 40SC

Revised: 5/31/91  
Security: Everyone

System 7: Upgrade Information for Apple Tape Backup 40SC

Article Created: 29 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is the Apple Tape Backup 40SC software compatible with System 7?

DISCUSSION -----

No. The Apple Tape Backup 40SC software and Tape Disk system extension are not compatible with System 7, and no update is planned. Apple recommends the use of third-party backup software for use with the Apple Tape Backup 40SC. (The Apple Tape Backup 40SC hardware is fully compatible with all Macintosh models running System 7.)

Take the following steps to recover system information from tapes generated with the Apple Tape Backup 40SC:

- 1) Use a System 6-based Macintosh to recover the files.
- 2) Use the File Sharing capability of System 7 to transfer the files to the System 7 system.

In the case of a complete hard disk recovery, follow these steps:

- 1) Install System 6 on the hard disk.
- 2) Use Tape Backup 40SC to recover the information.
- 3) Reinstall System 7.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7142



# Tech Info Library

## System 7: Compatibility with Macintosh Software Utilities (8/94)

Revised: 8/23/94  
Security: Everyone

System 7: Compatibility with Macintosh Software Utilities (8/94)

Article Created: 29 May 1991  
Article Reviewed/Updated: 22 August 1994

TOPIC -----

This article describes how System 7 works with some commonly-used Macintosh software.

DISCUSSION -----

The following software is no longer needed because its functionality has been incorporated into System 7:

800K Eject INIT  
Font/DA Mover  
Memory Manager INIT  
TrueType INIT

The following software is incompatible with System 7 and no update is planned. Users of this software should purchase third-party equivalents.

HD Backup  
MacroMaker

The following software is incompatible with System 7, but compatible versions are included with the System 7 Personal Upgrade Kit:

|                          |                                                                         |
|--------------------------|-------------------------------------------------------------------------|
| Apple File Exchange      | (prior to 7.0)                                                          |
| Disk First Aid           | (prior to 1.5)                                                          |
| LaserWriter Font Utility | (prior to 6.0; this program has been supplanted by LaserWriter Utility) |
| TeachText                | (prior to 7.0)                                                          |

The following software is incompatible with System 7. Compatible versions are supplied with the System 7 Group Upgrade Kit, and are also posted in the Upgrade

folder on the System 7 Information bulletin board:

|              |                                                                                                    |
|--------------|----------------------------------------------------------------------------------------------------|
| QuickMount   | (prior to 1.0.7)                                                                                   |
| Apple CD-ROM | (prior to 3.0)                                                                                     |
| The Namer    | (prior to 2.1; the functionality of this<br>program has been supplanted by LaserWriter<br>Utility) |

Article Change History:

22 Aug 1994 - Reviewed/Deleted duplicate TIL article.

02 Sep 1992 - REVISED to provide information more clearly.

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Tech Info Library Article Number:7143



# Tech Info Library

## System 7: Specifications (9/95)

Revised: 9/8/95  
Security: Everyone

System 7: Specifications (9/95)

=====  
Article Created: 13 May 1991  
Article Reviewed/Updated: 8 September 1995

TOPIC -----

This article contains some specifications of Macintosh System 7.

DISCUSSION -----

### Built-in Fonts

-----  
Two types of fonts are supplied with System 7: TrueType and bitmapped.

TrueType fonts include:

- Times (plain, bold, italic, and bold italic)
- Helvetica (plain and bold)
- Symbol
- Courier (plain and bold)
- Chicago
- New York
- Monaco
- Geneva

### Print Drivers

-----  
The following print drivers are included with System 7

- ImageWriter and AppleTalk ImageWriter
- LaserWriter
- Personal LaserWriter LS
- Personal LaserWriter SC
- ImageWriter LQ and AppleTalk ImageWriter LQ
- StyleWriter

### Networking Capabilities

-----  
With System 7, the AppleTalk network system supports LocalTalk, Ethernet (EtherTalk), or Token Ring (TokenTalk). Over 16 million nodes per network

are provided for with AppleTalk Phase II networking. Using Macintosh file sharing, up to 10 folders per machine can be shared, each having an unlimited number of enclosed folders. Up to 10 guest users can be connected to a networked hard disk, with up to 50 guest users identified in the Users and Groups file. User management is built into the software to allow entry of user names, passwords, group memberships, and access privileges for opening and modifying files.

#### Memory and Storage

With 24-bit addressing, up to 8MB of physical memory can be accessed and up to 14MB of memory can be accessed with virtual memory, depending on which model Macintosh is being used. With 32-bit addressing, 1 gigabyte of physical memory is accessible (without taking into account the hardware limitations) and up to 1 gigabyte of virtual memory is accessible.

A minimum of 2MB of RAM is required to run System Software Version 7.0. The amount of memory used by System 7 alone (without any additional third party software) is 1MB to 1.25MB, depending on configuration.

Approximately 2.5MB to 4MB of disk space is consumed by System 7, depending on configuration.

#### Compatibility

System 7 is compatible with most Macintosh System 6 applications. The processor is compatible with 68000, 68020, and 68030 microprocessors, 68851 Paged Memory Management Unit (PMMU), and 68881 and 68882 floating-point units (FPUs).

#### Disk Formats

The following disk formats are supported by System 7: 400K, 800K, 1.4MB Macintosh disks, 720K and 1.44MB read/write MS-DOS or OS/2.

#### Files and Volumes

Up to 31 characters with mixed case, spaces, and symbols are allowed with System 7's file naming conventions.

Maximum file and volume size is 2 gigabytes. The maximum number of files per volume is 65,536.

The maximum number of volumes open at once as well as the maximum number of tasks supported are limited only by the amount of available system memory.

#### Sound

Sound can be played from disk and input to disk. The maximum number of simultaneous sound channels is 4.

Article Change History:

08 Sep 1995 - Reviewed for technical accuracy.

17 Sep 1992 - Reviewed for technical accuracy.

27 Sep 1991 - Updated for accuracy.

Support Information Services

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Tech Info Library Article Number:7145



# Tech Info Library

## HyperCard: How to Control Which Version Gets Launched

Revised: 6/21/91  
Security: Everyone

HyperCard: How to Control Which Version Gets Launched

=====

Article Created: 1 April 1991  
Article Last Reviewed: 5 June 1992  
Article Last Updated:

TOPIC -----

I have HyperCard 2.0 and HyperCard 1.2.5 on the same AppleShare server. When I double-click on a HyperCard stack, sometimes I want HyperCard 2.0 to launch, sometimes I want HyperCard 1.2.5 to launch.

How can I control which version of HyperCard is launched?

DISCUSSION -----

On your personal computer, if two applications differ only in their version numbers, then the last copy installed is the one that gets launched. However, this rule doesn't apply to applications on an AppleShare volume.

A sure way to eliminate the version (or last-installed) confusion is to change the Creator of the applications you don't want to launch.

For example, use ResEdit to change the Creator of HyperCard from "WILD" to "FRED". When you double-click on a stack, the system looks for the application whose creator matches the creator of the document or stack. If you have another copy of HyperCard (say, 2.0v2) on a mounted device, it will be launched. Saving files from the changed application is unaffected (they still have "WILD" for their creator).

Change the creator of all non-current HyperCard applications to something other than "WILD" (try "DLIW"; it's probably not used by other applications). All stacks launched will come up in HyperCard 2.0v2. To open the stacks in other versions, launch the desired application and use "Open..." in the file menu.

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# Tech Info Library

## System 6.0.7: Installing Comm Toolbox

Revised: 6/21/91  
Security: Everyone

System 6.0.7: Installing Comm Toolbox

Article Created: 16 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to install MacTerminal 3.0 on a Macintosh LC. Unfortunately, MacTerminal 3.0 has to have certain Comm Toolbox resources into the System file. This means I have to restart from the original Installer disk, which happens to be System 6.0.5, a System that doesn't work on Macintosh LC.

I've tried to upgrade the installer disk to System 6.0.7. When I start the Macintosh LC and try to execute the installer script, the computer asks for the "Communications 1" disk. All I can find is a disk called "Communications", not "Communications 1".

DISCUSSION -----

The Communications Toolbox installation diskette that ships with MacTerminal is named "Communications". An essentially identical diskette shipped with the Macintosh Communications Toolbox package is named "Communications 1."

The Communications Toolbox 1.0 Installer Script on both diskettes (and the 6.0.7 Network Product Installer) asks you to insert the diskette "Communications 1", but you may use either diskette. Updating the CTB Installation diskette to version 6.0.7 has no effect on the resources and their locations called for by the installation script.

There isn't enough room on the CTB installation disk to conveniently update it to System 6.0.7 using the script "minimal software for any Macintosh". Many people choose to install minimal software for a specific Macintosh. An alternative is to not update the CTB installation diskette to System 6.0.7 but instead start the Macintosh with another diskette containing System Software 6.0.7. Then insert the CTB installation diskette

and run the installer.

Another possibility is to get the 6.0.7 Network Products Installer off AppleLink. Use the BB Pathfinder and search on "Software and 6.0.7".

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Tech Info Library Article Number:7148



# Tech Info Library

## LaserWriter IINTX: Benefits of Attached Hard Drive

Revised: 7/16/91  
Security: Everyone

LaserWriter IINTX: Benefits of Attached Hard Drive

=====

Article Created: 16 April 1991  
Article Last Reviewed: 16 July 1991  
Article Last Updated: 16 July 1991

TOPIC -----

What are the benefits of using an attached hard drive with a LaserWriter IINTX?

- 1) Is the purpose of a hard drive to:
  - A. increase printing speed through RAM caching?
  - B. centrally locate PostScript fonts?
  - C. to free up space on a local hard drive?
  - D. all the above?
- 2) Currently, TrueType fonts cannot be downloaded to a hard drive connected to a LaserWriter IINTX. Will this feature be used in the future and will you gain any benefit by loading TrueType fonts onto a hard drive connected to a LaserWriter IINTX?

DISCUSSION -----

The purpose of a hard drive is primarily to centrally locate PostScript fonts and to free up space on a local hard drive, but can be all of the above.

A hard disk attached to a LaserWriter IINTX speeds printing only if the fonts required for a document are stored on it and thus do not need to be downloaded over a network. Other uses generally slow down printing unless the hard disk speed versus the network speed is appreciably different. For example, if font scan-conversion (idle-time or otherwise) stores its cache to the hard disk, printing is slowed because it takes time to retrieve the cache from disk. An extremely fast disk may overcome this problem, but we haven't performed any tests that clearly prove this.

Choice B, centrally locating PostScript fonts, is a valid use, and can speed up printing if those fonts are used in the document in question.

Choice C, freeing up local hard disk space, is also valid because every PostScript font located on the hard disk need not be located on the user's hard disk. Therefore the fonts can be removed from the user's hard disk, freeing up storage space. Of course, a backup of these fonts should be kept somewhere in case the LaserWriter IINTX's hard disk ever fails.

Another way to improve the printing speed of a LaserWriter IINTX, or any PostScript LaserWriter for that matter, is to download fonts using the LaserWriter Font Utility. If there is adequate RAM (or disk space) available, downloading the fonts can greatly increase print speed. And fonts downloaded to RAM are faster than those downloaded to disk, so optimum performance depends on what fonts are used most often and where they are stored.

The difference between using the Font Utility to download fonts versus allowing them to be automatically downloaded with your document is that those fonts downloaded with the utility will persist until the printer is reset or powered off. Those fonts that are downloaded automatically with a document only persist for that job. The next job requiring the same fonts would download them again. This increases network traffic and job overhead appreciably, and with a busy network, can slow printing significantly.

Similar issues are involved with TrueType fonts. With current LaserWriter models, the TrueType fonts and rasterizer are not available in ROM. Therefore, all TrueType fonts used in a document must be downloaded, along with the rasterizer. These fonts and their scan converted data will only be persistent for each job, so the effect will be nearly identical to that with PostScript fonts downloaded from a user's System Folder. The LaserWriter Font Utility, version 7.0, is able to download TrueType fonts as well as PostScript fonts.

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Tech Info Library Article Number:7149



# Tech Info Library

## LaserWriter and WordPerfect: Correcting Timeout Problem

Revised: 6/21/91  
Security: Everyone

LaserWriter and WordPerfect: Correcting Timeout Problem

=====

Article Created: 16 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm printing a WordPerfect document from a DOS machine using a LaserWriter IINT. After the first 40 pages have printed, the document no longer prints and junk comes out on the paper. No matter where I start, the printing never goes beyond 40 good pages.

DISCUSSION -----

After limited testing, it appears that WordPerfect takes a long time to repaginate lengthy documents during printing. This creates a time lag that can exceed AppleShare PC's timeout for printer connections and causes the job to fail. Symptoms are seen as pauses between pages that wouldn't seem to warrant any additional computation. If one of these pauses is long enough, it causes AppleShare PC to terminate its connection with the LaserWriter.

Try increasing the timeout value used in AppleShare PC's DA program at connection time. If increasing the timeout value helps but does not solve the problem, leave the timeout value blank. This can delay other users from accessing the LaserWriter, but not too badly.

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Tech Info Library Article Number:7150



# Tech Info Library

## Macintosh IIsi: Sound Driver Incompatibilities and CE QuickMail

Revised: 7/28/92  
Security: Everyone

Macintosh IIsi: Sound Driver Incompatibilities and CE QuickMail

=====

Article Created: 16 April 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

I'm having problems using CE QuickMail's voicemail on a Macintosh IIsi. I can send voice messages only to other Macintosh IIsi computers. No other Macintosh computers can play my messages.

DISCUSSION -----

The problem is that QuickMail requires a compatible sound driver on every Macintosh, but the drivers on your network may be different on each Macintosh. On a Macintosh IIsi or Macintosh LC, QuickMail uses the Apple Sound Manager in System 6.0.7. On other Macintosh models using Farallon's MacRecorder, QuickMail uses Farallon's sound driver. And while the Sound Manager understands the new AIFF format sounds, as well as the older 'snd' resource format sounds, older versions of Farallon's driver did not understand the AIFF format.

When a Macintosh IIsi records a sound (using the Sound Manager), the sound is stored internally in AIFF format. Other Macintosh IIsi users can play the sound because they're using the same sound manager. Macintosh computers using the MacRecorder and earlier versions of the Farallon sound driver can't play the message.

You can either install a Farallon sound driver on all your Macintosh IIsi systems or get an upgrade. Farallon has sold the MacRecorder hardware and software to MacroMedia (formerly MacroMind) and they're handling support for the product.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7151





# Tech Info Library

## Macintosh Monitors: Visible Raster Area Specifications

Revised: 6/21/91  
Security: Everyone

Macintosh Monitors: Visible Raster Area Specifications

=====

Article Created: 16 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the visible screen size of Macintosh monitors? How much of the page width can you see? For example, on the 13-inch RGB monitor you can see from 0 to 8.5 inches.

Please tell me the visible width of the:

- Macintosh 12-inch Monochrome
- Macintosh 12-inch RGB
- Apple Two-Page Monochrome

DISCUSSION -----

For the monitors you mention, the visible raster sizes are:

- |                            |               |
|----------------------------|---------------|
| • Apple 12-inch Monochrome | 8 3/16 inches |
| • Apple 12-inch RGB        | 8 3/16 inches |
| • Apple Two-Page Display   | 14 7/8 inches |

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7153



# Tech Info Library

## A/UX: How To Turn On IP Forwarding (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: How To Turn On IP Forwarding (8/94)

Article Created: 17 April 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

I just discovered that A/UX defaults IP forwarding to OFF. This means that an A/UX system with more than one interface no longer "knows" how to route IP traffic regardless of how in.routed is configured.

DISCUSSION -----

To enable forwarding, run adb on the kernel. Log in and type the following command:

```
# adb -w -k /unix /dev/kmem
```

```
a.out file = /unix (COFF format)
core file = /dev/kmem
ready
```

```
ipforwarding?D
```

```
ipforwarding: 0
```

```
ipforwarding?W 1
```

```
ipforwarding: 0x0 = 0x1
```

```
$w
$q
#
```

This changes the "ipforwarding" constant in the kernel. Reboot, and when the system comes back up, IP forwarding will be on.

For more details on IP forwarding refer to the A/UX Network System

# ..TIL07155-A-UX-How\_To\_Turn\_On\_IP\_Forwarding\_8-94\_(TA45572).pdf

Administration manual section on "Configuring and Managing a TCP/IP Network".

Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7155



# Tech Info Library

## Apple CD-ROM Explorer Disk: Using with Macintosh IIsi

Revised: 7/29/92  
Security: Everyone

Apple CD-ROM Explorer Disk: Using with Macintosh IIsi

=====

Article Created: 17 April 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

I have a Macintosh IIsi with the 12-inch RGB display and an AppleCD SC. The problem is my CD-ROM Explorer disk included with my AppleCD SC was designed for a 13-inch RGB monitor. Also, the HyperCard stacks on the CD-ROM Explorer are incompatible with HyperCard 2.0, the version required when using 6.0.7 system software.

My questions are:

- 1) Is Apple going to revise the CD-ROM Explorer disk?
- 2) If yes, what is the upgrade policy and how do I get a copy?

DISCUSSION -----

The CD-ROM Explorer HyperCard stacks are compatible with HyperCard 1.2.5 and HyperCard 2.0 under Macintosh System Software 6.0.7.

As of July 1992, the CD-ROM Explorer disk is no longer included with Apple CD-ROM drives.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7156



# Tech Info Library

## A/UX: Supports File Sharing Services (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Supports File Sharing Services (9/94)

=====

Article Created: 5 March 1991  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

Can A/UX 3.0 do AppleShare file and print services?

DISCUSSION -----

A/UX 3.0 does support the use of System 7 File Sharing services. It's use and limitations are exactly the same as when running under the Macintosh OS.

A/UX 3.0 does not support AppleShare print services by itself. The AWS 95 running AppleShare Pro does support the AppleShare Print server.

Article Change History:  
08 Sep 1994 - Updated for A/UX 3.0.

Support Information Services

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Tech Info Library Article Number:7157



# Tech Info Library

## Apple Sound Chip: Macintosh IIfx Audio Output Level (4/95)

Revised: 4/26/95  
Security: Everyone

Apple Sound Chip: Macintosh IIfx Audio Output Level (4/95)

=====

Article Created: 5 March 1991  
Article Reviewed/Updated: 26 April 1995

TOPIC -----

I am trying to match up line levels for my audio system and I need to know the audio output level of the Macintosh IIfx. This information is not in the Macintosh IIfx manual.

DISCUSSION -----

The following information is from the "Guide to the Macintosh Family Hardware" available through Addison-Wesley dealers. This information applies to all models using the Apple Sound Chip.

"The external sound jack is at standard line level (approximately 1.5 volts peak-to-peak) and its source impedance is approximately 47 ohms. The jack is capable of driving a headphone load of 8 to 600 ohms, or the input to almost any audio amplifier or amplified speakers. It will not adequately drive a directly connected external speaker. The external sound jack is short-circuit protected."

Article Change History:  
26 Apr 1995 - Revised format of article.

Support Information Services

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Tech Info Library Article Number:7159



# Tech Info Library

## Print Shop 1.1: Fixes 1MB Apple IIGS Incompatibility

Revised: 6/21/91  
Security: Everyone

Print Shop 1.1: Fixes 1MB Apple IIGS Incompatibility

=====

Article Created: 5 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using Broderbund's "Print Shop" on an Apple IIGS with 1MB built into the motherboard. When starting the program, I see a line of hex codes on the screen, then loading stops. The same disks work fine with the versions of Apple IIGS with 256K RAM on the motherboard and a 512K memory expansion card in the slot.

DISCUSSION -----

Broderbund has released version 1.1 of their Print Shop software that is compatible with version 3.0 of the Apple IIGS ROMs. Customers should contact Broderbund's customer service group for upgrade information.

For more information, search on "Broderbund"

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7161



# Tech Info Library

## HyperCard 2.0: How To Get Updates

Revised: 6/21/91  
Security: Everyone

HyperCard 2.0: How To Get Updates

=====

Article Created: 5 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

There are several commercial stacks shipping that require HyperCard 2.0 v1, HyperCard 2.0 v2, and so on. I want to use these stacks but don't want to necessarily buy a full HyperCard bundle from Claris. Is there a way for me to get an update from Apple, or must I purchase HyperCard from Claris to get an update?

DISCUSSION -----

HyperCard is a Claris product, and customers should contact them regarding software updates. Claris will send a disk containing HyperCard 2.0v2, HyperCard Fonts, and a small Home stack to any owner who requests it.

Customers who purchased the Software Update package for HyperCard or the Network Admin package will be shipped the same software Apple is including with its computers.

Claris says that the HyperCard 2.0 upgrade is the best way to go. The upgrade includes the new Script Language Guide, a guide to the new features, and the complete set of HyperCard disks.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7162





# Tech Info Library

## HyperCard 2.0: Command-Option-S Key Problem

Revised: 6/21/91  
Security: Everyone

HyperCard 2.0: "Command-Option-S" Key Problem

=====

Article Created: 5 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

In HyperCard 2.0, the Command-Option-S key combination brings up a dialog box requesting the location of the System folder, rather than the stack script as expected.

DISCUSSION -----

Command-Option-S opens the script of the stack in use. This did not change in HyperCard 2.0. You might have a macro set up to do something different. In QuicKeys 2, Command-Option-S is set up as the start/stop sequence for macro recording. Make sure that nothing like this is in use and the problem should be eliminated.

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Tech Info Library Article Number:7163



# Tech Info Library

## HyperCard 2.0: Version Numbers Explained (2/95)

Revised: 2/22/95  
Security: Everyone

HyperCard 2.0: Version Numbers Explained (2/95)

Article Created: 5 March 1991  
Article Reviewed/Updated: 22 February 1995

TOPIC -----

How do I know if I have the latest released version of HyperCard 2.0? Is there a way to get that information other than using the "Get Info" command?

DISCUSSION -----

The latest released version of HyperCard is 2.2. This is the version returned by the Get Info command. The "version" property of HyperCard returns version information on the HyperCard application and stacks. On pages 645 to 647 of, "HyperTalk 2.0: The Book", by Dan Winkler and Scot Kamins, is an excellent description of the property and the information it returns. However, Claris Corporation uses a different numbering scheme for release versions of its software.

Running HyperCard 2.2, type "put the long version". The string "02218000" appears in the message box.

- The first two digits (02) show major revision number.
- The next digit (2) is for minor revisions.
- The fourth digit (1) is for bug fix revisions.
- The next two digits (80) show the development stage. In this case, the 80 means it is released software.
- The final digits (00) are only applicable on unreleased software.

Translating all of this using the Apple scheme results in 2.2.1. Claris uses only the major and minor revision number in its releases. The bug fix revision number translates to a "v" number with 0 being equivalent to "v1", 1 to "v2", and so on.

Article Change History:  
22 Feb 1995 - Added keyword; updated revision numbers.

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7164



# Tech Info Library

## HyperCard 2.0: When Double-Clicking Fails To Select

Revised: 6/21/91  
Security: Everyone

HyperCard 2.0: When Double-Clicking Fails To Select

=====

This article last reviewed: 5 March 1991

TOPIC -----

When editing HyperTalk scripts, I frequently notice the problem that double-clicking on a word fails to select it. The single click (place insert point) and triple click (select entire line) functions continue to work properly.

DISCUSSION -----

This problem can be fixed by upgrading to HyperCard 2.0v2.

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Tech Info Library Article Number:7165



# Tech Info Library

## CD-ROM Drive: Pioneer Changer Holds Six CDs

Revised: 6/21/91  
Security: Everyone

CD-ROM Drive: Pioneer Changer Holds Six CDs

=====  
  
Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Is there a Macintosh CD-ROM drive that can hold several CDs at once?

DISCUSSION -----

Pioneer offers a SCSI drive that holds six CDs at once. The DRM-600 or the DRM-610 (220v) can mount six disks at a time on the Macintosh desktop.

For more information, search on "Pioneer Communications"

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Tech Info Library Article Number:7167



# Tech Info Library

## LocalTalk PC Card: Where To Get Interface Specifications

Revised: 6/21/91  
Security: Everyone

LocalTalk PC Card: Where To Get Interface Specifications

=====

Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I want to develop a server program on a PC. To do this, I suppose I'll need to get the hardware and software interface specifications for the LocalTalk PC card. Where can I get them?

DISCUSSION -----

You may not need to get down to the hardware level. You may be better off basing your software on an existing model, such as the Open Data-Link Interface (ODI) specification. This way, you wouldn't have to adjust for each type of network card, but could work with a single model. Also, you'll save much development time by using ODI-compliant drivers already in use for many network cards. Your software could then coexist with other software that uses ODI protocol stacks--AppleShare PC, for example.

Since an ODI-based driver already exists for the LocalTalk PC Card, you could concentrate on developing your server software and basing it on the available AppleTalk protocol stack. If you want to implement a different protocol stack for the LocalTalk PC card, this also can be done within the framework of ODI, and it would still take advantage of the existing driver.

The best source of information on programming to the ODI specification is the Open Data-Link Interface Developer's Guide, available from APDA. Here is the introduction to Chapter 1:

"The Open Data-Link Interface is a new system jointly developed by Apple Computer, Inc., and Novell, Inc., that provides unmatched flexibility for both network developers and end users. The Open Data-Link Interface (ODI) includes the Multiple Link Interface (MLI) and the Multiple Protocol

Interface (MPI). The MLI and MPI are the interfaces for network card drivers and protocol stacks to the Link Support Layer (LSL). The LSL provides packet transfer between these interfaces in a way that allows different protocol stacks to use link-level drivers interchangeably and simultaneously. The ODI puts an end to the need for one-driver to one-stack communication."

The entire publication includes the Developer's Guide, some sample driver notes, and a disk with code and test programs. It is available from APDA as part number M0355LL/A.

For more information, search on "APDA"

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Tech Info Library Article Number:7168



# Tech Info Library

## DAL 1.2: Bug in MacMainFrame 3.2 in CUT Mode

Revised: 9/2/92  
Security: Everyone

DAL 1.2: Bug in MacMainFrame 3.2 in CUT Mode

=====

Article Created: March 9, 1991

### Article Change History

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07/10/92 - REVIEWED

- For technical accuracy

### TOPIC -----

There is a known bug with MacMainFrame 3.2 (CUT only) and DAL 1.2.

### DISCUSSION -----

If your controller runs in DFT mode, use it. Otherwise, you'll need the latest Avatar release 3.3x. The 3.3x MacMainFrame product works fine under both CUT and DFT with DAL at release 1.2.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7169





# Tech Info Library

## DAL: Rdb Support and CPU Overhead Questions

Revised: 6/21/91  
Security: Everyone

DAL: Rdb Support and CPU Overhead Questions

=====

Article Created: March 9, 1991  
Article Reviewed Only: 9 July 1992  
Article Last Updated: 9 July 1992

### TOPIC -----

- 1) Can I access multiple Rdb/VMS databases (not just tables within a database) simultaneously with DAL?
- 2) Approximately how much CPU power does DAL use?

### DISCUSSION -----

#### 1) Multiple Databases

-----

Let's go over the terminology used by Rdb/VMS as compared to parallel terminology often used in discussions of relational theory:

| Rdb/VMS Term     | Relational Technology Term |
|------------------|----------------------------|
| -----            | -----                      |
| Relation         | Table                      |
| Record           | Row (Tuple)                |
| Field            | Column (Attribute)         |
| System relations | Metadata                   |

In Rdb/VMS, you can choose to store relations (tables) in a single file or in separate files. A database that stores relations in one file with file type RDB is a single-file database. You can also have a database in which all metadata and system information are stored in a root file (file type RDB) and the data are stored in one or more storage area files (default file type RDA). You can place each relation in a separate file, several relations in one file, or several relations in separate files. A database with a root file and one or more storage area is a multifile database.

As you can see, each database can store one or more relations (tables) in

one or more files.

Data Access Language will open more than one database using the OPEN dbbrand DATABASE "databasename"statement or command. For example:

```
open rdb database "daldemo"
```

will open the "daldemo" database that contains one or more tables.

You can use another OPEN rdb DATABASE to open a new database. The newly opened database becomes the default database for the session. This means all subsequent unqualified table references refer to this database. You can, however, use the USE DATABASE dbalias to establish a previously-opened database as the current default database. Each Open Database statement requires a USE LOCATION statement if the Rdb databases are not all in the same location.

## 2) CPU Use

-----  
There are no rough figures on how much CPU power DAL uses because many factors affect the performance of the system. In theory, DAL overhead should be minimum compared to one imposed by the DBMS. If you monitor top CPU usage on the VAX, you will notice that percentage used by DAL server is quite low.

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Tech Info Library Article Number:7170



# Tech Info Library

## HP Terminal Emulators: Printing on Host Printers

Revised: 6/21/91  
Security: Everyone

HP Terminal Emulators: Printing on Host Printers

=====  
  
Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

### TOPIC -----

Is there a Macintosh terminal emulator that allows file transfer and printing from an HP3000? I've found some information about Session and Reflection 3 PLUS, but there's no mention of printing.

I've also read that Tymlabs, publishers of the Sessions series of terminal emulators, now supports Ethernet. Will using Ethernet allow better connectivity?

### DISCUSSION -----

To our knowledge, no terminal emulation package for HP computers has a specific feature to print directly to an HP3000's printers. You'll have to use the file transfer feature to transfer the text file to the HP3000 and print from there. Walker, Richer & Quinn Inc., the maker of Reflection 3 PLUS, says that you can automate this process using their scripting language. Tymlabs Corporation, the maker of Session, said that version 4.0, has scripts for printing on the host printer.

Ethernet's high transmission speed (10 megabits per second) is particularly useful when there is heavy use of a file server. Examples include multi-user database use, primary storage use for all applications, or for applications development with shared libraries on the file server.

For more information, search on "Walker, Richer & Quinn" or "Tymlabs"

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Tech Info Library Article Number:7171



# Tech Info Library

## Macintosh/VAX Integration: Queue & Bridge Questions (11/94)

Revised: 11/7/94  
Security: Everyone

Macintosh/VAX Integration: Queue & Bridge Questions (11/94)

=====

Article Created: March 9, 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

A law firm has VAX computer where 90% of the firm's 350 users have terminals and some Intel-based PCs. The VAX is the hub of the entire operation.

All printing is through the print Queue mechanism on the VAX. The VAX handles forty HP LaserJet clones with PCL as the communication mechanism from the queue to the printer. The printers are serially connected with terminal servers.

- 1) Is there a product that allows the Macintosh to access these print queues using PCL, or does this have to be done through PostScript?
- 2) Remote access to this system is through VitaLink bridges. Has any headway been made to incorporate AppleTalk into these bridges? All VAX resources are on one side of the bridge, so this would eliminate DECnet encapsulation. Any ideas?

DISCUSSION -----

- 1) We are not aware of any product that will do what you are looking for. To do this, the product must supply a receiver process on the VAX, which will act like a LaserJet printer and register its name on the network for users to choose from. Once a PCL print job is sent from the Macintosh, the receiver reads the LaserJet PCL format file and stores it as a standard VAX/VMS text file to be sent to the print queueing system. A print symbiont will take standard VMS text files and convert them to PCL format before they can be forwarded to the LaserJets. The symbiont translator is normally driven by a set of Device Control Library (DEVLIB) modules. Theoretically, one can write a Device Control Library module to translate file to PCLs.

Macintosh to VAX integration product such as PATHWORKS for Macintosh and Alisa use this above approach to get PostScript files to the VAX queue and then print on the Apple LaserWriters on LocalTalk or Digital PostScript printers on the network. Of course, the printers have to support PostScript. One way to allow printing on PCL-based printers is to write a Device Control Library module mentioned above to translate from PostScript to PCL. This is not a trivial task.

In your situation, the easiest way, though not a seamless integration, is to send the text files to the printer device captured by the VMS print queue. These are the terminal server port names in your case. On VAX/VMS, once a terminal port or a terminal server port is captured by a queue, any file sent to the port directly will be queued. The file can be sent by NetCopy application over DECnet, specifying the destination node name followed by the terminal port name, such as YOURNODE::LTA12:, where LTA12 is the terminal server port connected to the LaserJet. You might want to check if the port protection is world write-able. Doing this way, there is no change required in their current PCL-based printer queues.

2. In theory, bridges will pass all protocols on the network unless you program them to filter a particular protocol. To our knowledge, the VitaLink bridge should pass AppleTalk protocol. You should check with Network Systems (formerly VitaLink) for the correct hardware and software version, and correct configuration to pass AppleTalk protocol.

#### Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

22 Jul 1993 - Updated company names.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7172



# Tech Info Library

## MacTerminal 3.0: Block Cursor Disappears on Macintosh LC

Revised: 6/21/91  
Security: Everyone

MacTerminal 3.0: Block Cursor Disappears on Macintosh LC

=====

Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I'm using MacTerminal 3.0 on a Macintosh LC with System 6.0.7. My block cursor disappears off the screen when logged onto the VAX using VT320 emulation. I have to go into the terminal settings dialog to get the cursor to show up again.

Are there any compatibility problems with MacTerminal and the Macintosh LC?

DISCUSSION -----

We tried both the LAT Tool over Ethernet and the Serial Tool to the VAX, but were unable to duplicate the problem. We don't know which Connection Tool you're using, but here are a few suggestions:

- 1) Throw away the old system file and reinstall it.
- 2) Throw away the Communications folder, reinstall the CommToolBox and its Tools from a known good copy of the diskette.
- 3) Make sure that you don't have any other INITs/CDEVs in the system that may conflict.
- 4) We have heard that some network devices that provide serial look-alike drives are having problems with the CommToolBox. If you're using one of these drivers, remove it and try MacTerminal again.

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Tech Info Library Article Number:7173



# Tech Info Library

## AppleTalk Phase II: Issues with FDDI Are Resolved (7/96)

Revised: 7/5/96  
Security: Everyone

AppleTalk Phase II: Issues with FDDI Are Resolved (7/96)

=====

Article Created: 17 March 1991  
Article Reviewed/Updated: 5 July 1996

TOPIC -----

Is there an issue with AppleTalk Phase 2 and FDDI?

DISCUSSION -----

The IEEE 802.1h is the formal standard for AppleTalk and FDDI. Below are four third-party vendors which support this standard:

- UB Networks' current products supports the 802.1h standard. Users should contact them regarding their bridges and for upgraded information.
- 3Com Corporation's LANplex bridge supports the 802.1h standard and AppleTalk. For more information see the following web page:

<http://www.3com.com/cgi-bin/mfs/01/0files/products/dsheets/lpfamspc.html>

- Kalpana's EtherSwitch supports 802.1h.
- Grand Junction's FastSwitch supports 802.1h.

We believe there are other bridges that support 802.h as well.

Below Is Information Outlining Issue Before The IEEE 802.1h Was Set

-----

First, some background:

AppleTalk Phase 2 packets crossing a transparent FDDI bridge are translated into Ethernet-style packets. If these packets translate incorrectly, the bridged Ethernet segments can't communicate with each other over EtherTalk Phase 2. This problem relates to the way vendors implement the OUI 0000 (organizational unique identifier) in the 802 SNAP header.

Some bridge vendors base their products on the IEEE 802.1 standard. However, there are questions about how the standard handles translating "all zeros" in the OUI field of an 802.2 SNAP header.

The problem has to do with the way Apple implements AARP in SNAP in AppleTalk Phase 2. The 802.1 specification says that all SNAP PDUs need a 40-bit protocol identifier. The first 24 bits are unique organizational identifiers assigned by the IEEE; the remaining 16 bits are administered by the assignee:

Begin\_Graphic

| UI   |      |      |      | Assignee Administered |  |      |      |      |      |      |
|------|------|------|------|-----------------------|--|------|------|------|------|------|
| 0011 | 0101 | 0111 | 1011 | 0001 | \| | 0010 | 0000 | 0000 | 0000 | 0001 |
|      |      |      |      |                       |  |      |      |      |      |      |
| lsb  | msb  |      |      |                       |  |      |      |      |      |      |

Apple's assigned identifier is      08    00    07  
                                         1000 0000 0111  
         network bit order 0001 0000 1110

IEEE 802.1 states that:            ||  
                                         ||  
                                         MX

M = 0: (M=1 is reserved)  
X = 0: Globally Administered Protocol Identifier  
X = 1: Locally Administered Protocol Identifier

End\_Graphic

For all AppleTalk protocols, Apple uses the identifier 08007809B. But for AARP, Apple uses 00000080F3. This is really where the problem begins--in the use of OUI 00000.

Because Apple uses 0000 as a UI, there are conflicts with FDDI-Ethernet bridges that also use the same UI to recognize and translate Ethernet-style packets. The question is: who's right--Apple, the vendor, or both?

The all-zero OUI was not intended to be used for translating Ethernet frames to 802.2/SNAP. Its original intention was (and is) not completely clear; all that was agreed upon was:

- 1) The low-order 16 bits of the SNAP protocol discriminator indicated an Ethernet protocol type; and
- 2) The format of the data part of the SNAP packet was the same as the format of the data part of the Ethernet packet of this protocol type.

This "general agreement," was never written down--AppleTalk Phase 2 and TCP/IP just adopted it. Unfortunately, on an Ethernet/802.3 data link, AppleTalk Phase 2 runs on top of 802.3 (and 802.2) and TCP/IP runs on top of Ethernet. Thus, when TCP/IP Ethernet nodes communicate with TCP/IP 802.2 nodes (on token ring or FDDI, say) some type of packet translation must occur. But AppleTalk Phase 2



Ethernet nodes communicating with AppleTalk Phase 2 802.2 nodes (on Ethernet, token ring or FDDI) MUST NOT have any translation done.

This is why it's not so simple to build a bridge that "transparently" allows both forms of communication. What's needed is a bridge with a small Ethernet protocol translation table. The smaller the table, the less translation that happens, and the better the bridge's performance. Any bridge between Ethernet and 802 media that does not translate OUI zero packets prevents TCP/IP nodes (and any others using the same OUI convention) from communicating between the two media. Any bridge between Ethernet and an 802 media that translates all OUI zero packets prevents AppleTalk nodes (and any others with an OUI of zero who don't expect translation) from communicating between the two media. In both cases, routers can, of course, be set up to communicate.

A similar problem happens if two bridges connect two Ethernet/802.3 data links across an 802 backbone (say FDDI). In this case, some type of translation/encapsulation of Ethernet (non-802.3) packets must happen so they can pass across the 802 backbone. There are many ways to do this, one of which is to translate all Ethernet packets to OUI zero packets, shipping them across the backbone, and then converting them back. This, however, does not work for any OUI zero packets that start out on the Ethernet/802.3 data link. Such packets will not be translated on the way into the backbone but will be incorrectly translated before being delivered on the destination Ethernet. Such packets should be forwarded entirely without translation.

In terms of actual product implementations, unfortunately DEC is already shipping an Ethernet-to-FDDI bridge (LanBridge 500) that translates all OUI zero packets, and thus does not work with AppleTalk Phase 2. DEC is aware of this issue. At the recent 802 meetings in Denver, it was clear that this type of translation is not part of the 802.1d (Mac Bridging) standard, but is something that many bridge manufacturers wish to include as a non-802-standard option with their products. Most have said they will have some type of translation (or non-translation) table to insure it is possible to work with all known protocols.

#### Current Status:

At a recent IEEE 802.1 meeting, there was agreement about the translation of Ethernet-like packets from an FDDI backbone to an Ethernet segment. The creation of a new OUI for Ethernet (non 802.3) packets will be required. The Bridge translation decision from an FDDI backbone to Ethernet segment will be as follows:

If OUI = NEW, then translate back to Ethernet (e.g., Phase 1 EtherTalk) Otherwise if (OUI=0 and TYPE=80F3 or other defined types do NOT translate), Do not translate (e.g., Phase 2 EtherTalk AARP)

Apple and DEC were major sponsors of this proposal, and DEC has agreed to make changes to their bridges. This means is that EtherTalk Phase 2 AppleTalk end nodes will work correctly (without modification to the end nodes), when transversing an Ethernet/FDDI bridge. Furthermore, EtherTalk phase 1 end nodes will also work using the new OUI translation scheme.

The IEEE 802.1 committee is currently formalizing the use of OUI in Ethernet to FDDI bridges that will define what to do if a bridge encounters SNAP headers with OUI=0.

Article Change History:

05 Jul 1996 - Updated with IEEE 802.1h standard information.

09 Dec 1994 - Reviewed for technical accuracy.

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Tech Info Library Article Number:7175



# Tech Info Library

## Minitel Services Company

Revised: 7/14/93  
Security: Everyone

Minitel Services Company

=====

Article Created: 4 June 1991  
Article Reviewed/Updated: 14 July 1993

Minitel Services Company

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28th Floor  
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### Company Profile:

Joint venture between France Telecom and Infonet, is an international distribution channel for over 14,000 information providers and videotex services. The service has over five million users and offers real-time automatic translation into French, Spanish, German, and Portuguese.

Software is available for Macintosh and IBM PC.

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Tech Info Library Article Number: 7176



# Tech Info Library

## Macintosh to NetFrame Server Connectivity (11/94)

Revised: 11/7/94  
Security: Everyone

Macintosh to NetFrame Server Connectivity (11/94)

Article Created: March 11, 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

What are NetFrame servers and how do I connect to them?

DISCUSSION -----

NetFrame Servers are Intel 386- or 486-based and run either Novell Netware version 2.15 or the OS/2 LAN Manager.

If you're trying to connect a Macintosh to a server running Novell, use Novell's MacVAP and Netware. If the server is running OS/2 LAN Manager, you can only transfer files using SMB File Transfer. Another option is to use Miramar MacLAN Connect and access it as an AFP Server.

There might be a problem trying to connect to the server using MacTCP. The system allows up to eight LAN adapters (Ethernet or Token Ring) for network throughput. The problem is network addresses use a single host name and MacTCP cannot handle multiple addresses returned from a single host.

For more information, search on "NetFrame"

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7179



# Tech Info Library

## TokenTalk: How To Find Burned-In Address

Revised: 6/21/91  
Security: Everyone

TokenTalk: How To Find "Burned-In" Address

=====

Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

How can I find out what the "burned-in" address is for my TokenTalk Card?

DISCUSSION -----

Although you can find out what the "burned-in" address is using the MacDFT Config CDEV, there are times when you don't have this handy.

When holding the card, port to the right and the chip set facing you, look for the ROM card (the card on the card). Now look for the serial number of the card. It is printed on a label two chips to the left of the ROM card on the second row from the top. It is proceeded with S/N.

Once you have found this decimal number, convert it to hex. Now add the result (in hex) to 5000E0000000. This will be your address.

For example:

If your card's serial number is: 1969 (with a bunch of leading zeros)

1969 base 10 = 7B1 hex

5000E0000000 + 7B1 = 5000E00007B1 <= your address.

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Tech Info Library Article Number:7180



# Tech Info Library

## Apple Coax/Twinax Card: Rev B Fixes MacDFT & Video Problems

Revised: 6/21/91  
Security: Everyone

Apple Coax/Twinax Card: Rev B Fixes MacDFT & Video Problems

=====

Article Created: March 9, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

What does the "new" Apple Coax/Twinax card revision do? Who needs it?

DISCUSSION -----

The new Apple Coax/Twinax card offers no new functionality, but it does resolve a somewhat rare incompatibility problem with the Macintosh Display Card 8•24 and Macintosh Display Card 8•24 GC. The only difference between this "new" card and the "old" one is that the inductor/ferrite bead replaces a jumper wire, and the masking on the board says that the board is revision "B."

You should consider upgrading to the new cards if you have the following problem:

MacDFT hangs on boot when the initial "splash screen" appears. MacDFT hangs before the Window Manager completes drawing the window frame, or shortly after the frame draw and the content region goes black. This problem happens often on systems with 8•24 style video and Coax/Twinax cards. It is also more likely to happen on a Macintosh IIci, Macintosh IICx, or Macintosh IIfx than on a Macintosh II or Macintosh IIX.

But a similar problem has a different solution: Some NuBus conflicts happen with the Portrait or Workstation display cards and the Apple Coax/Twinax card. The error shows up when launching MacDFT. At launch, the Macintosh bombs and gives a bus error (if the system has MacsBug installed) or displays a system error of ID=28. Use A/ROSE v1.1.2 to fix this problem.

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Tech Info Library Article Number:7181



# Tech Info Library

## A/UX 2.0.1: Fixes ls -F Bug

Revised: 11/9/92  
Security: Everyone

A/UX 2.0.1: Fixes "ls -F" Bug

=====

Article Created: March 9, 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

In A/UX 2.0, ls -F should display the current directory's content appending \*, /, @, to denote executable, directory, and symbolic link.

I linked a directory to another symbolic link, but when I typed in ls -F, I see xxx/ rather than xxx@. Although when I typed in ls -l, I can see the symbolic linked directory is linked -> to another directory.

### DISCUSSION -----

This is a bug in A/UX 2.0 that has been fixed in A/UX 2.0.1.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7182



# Tech Info Library

## A/UX: AppleTalk Printing Problem (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: AppleTalk Printing Problem (8/94)

=====

Article Created: 9 March 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

When I try printing from A/UX to a LaserWriter IINTX connected to an AppleShare Print Server, I get a message that says that the Laser Prep version is not correct.

DISCUSSION -----

The message you are getting is because the LaserWriter driver and its Laser Prep in the A/UX /mac/sys/System Folder are different from the one in the AppleShare Printer Server in the AppleTalk network. Use the same version of LaserWriter driver and Laser Prep files and/or PrintMonitor as the ones in the Printer Server.

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7183





# Tech Info Library

## NFS Client for Macintosh

Revised: 6/21/91  
Security: Everyone

NFS Client for Macintosh

=====

Article Created: March 9, 1991  
Article Reviewed Only: 11 August 1992  
Article Last Updated: 11 August 1992

TOPIC -----

Where can I get an NFS client package for the Macintosh?

DISCUSSION -----

Both Wollongong and InterCon make such a product.

InterCon's NFS/Share supports mounting of multiple volumes from different servers, host-based user authentication, yellow pages, SNMP, Chooser access, and more.

Wollongong Group, Inc., publishers of MacPathWay software, have an NFS client package for Macintosh called PathWay Client NFS for Macintosh. The product allows a Macintosh to share files with any NFS server.

For more information, search on "InterCon" or "Wollongong".

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Tech Info Library Article Number:7184



# Tech Info Library

## Disinfectant 2.4: Compatible with A/UX 2.0

Revised: 11/10/92  
Security: Everyone

Disinfectant 2.4: Compatible with A/UX 2.0

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Article Created: March 11, 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is Disinfectant compatible with A/UX?

### DISCUSSION -----

Disinfectant 2.4 works with A/UX 2.0. Disinfectant is widely available (including here on AppleLink). The program has a protection INIT and a scanning utility.

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Tech Info Library Article Number:7186



# Tech Info Library

## System 6.0.5 & 6.0.7: Helvetica Narrow Fonts (11/94)

Revised: 11/14/94  
Security: Everyone

System 6.0.5 & 6.0.7: Helvetica Narrow Fonts (11/94)

=====

Article Created: March 11, 1991  
Article Reviewed/Updated: 14 November 1994

TOPIC -----

System 6.0.7 Installer has a FONT problem if I:

- 1) Install the FONTS from the LaserWriter IINT into the System.
- 2) Create a MacWrite document using Helvetica and N Helvetica Narrow.
- 3) Update the System software with Easy INSTALL. It doesn't matter if I'm updating from 6.0.5 to 6.0.5, 6.0.5 to 6.0.7 or 6.0.7 to 6.0.7.
- 4) Look at the FONTS in the MacWrite menu. I still have N Helvetica Narrow, but the text that should be N Helvetica Narrow is Geneva.
- 5) Look in the System file FONT list with ResEdit. The N Helvetica Narrow family still exists, but the individual FONTS normally listed under the family heading have disappeared.

This problem appears on a Macintosh IIsi, Macintosh SE or Macintosh Classic running System Software 6.0.5 or 6.0.7 (Swedish or U.S. versions).

DISCUSSION -----

Reinstalling the Narrow FONTS fixes this problem. After reinstalling, all the other FONTS should be all right, too.

Article Change History:  
14 Nov 1994 - Reviewed for technical accuracy, made information public.

Support Information Services

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# Tech Info Library

## HP 2P LaserPrinter: Connecting to a Macintosh

Revised: 6/21/91  
Security: Everyone

HP 2P LaserPrinter: Connecting to a Macintosh

=====

Article Created: March 11, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Is there any way to connect a Macintosh to an HP 2P LaserPrinter? I have unsuccessfully tried using the Orange Micro Grappler LX. The Grappler LX does work, however, with the HP LaserJet Plus.

DISCUSSION -----

We contacted Orange Micro and found that the HP 2P and Macintosh computers using a 68020, 68030, or 68040 can connect with a Grappler LX. Macintoshes using a 68000 must use the Orange Micro Grappler LS.

Orange Micro also states that the HP printer must have a minimum of 1MB of RAM to function properly with their equipment.

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Tech Info Library Article Number:7188



# Tech Info Library

## MacX: How To Specify Available Window Fonts

Revised: 4/20/93  
Security: Everyone

MacX: How To Specify Available Window Fonts

=====

Article Created: March 11, 1991

### Article Change History

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04/20/93 - REVIEWED

- For technical accuracy.

### TOPIC -----

I want to use the Fonts selection feature in MacX to customize the font selection in DECterm windows.

How do I use this menu item?

### DISCUSSION -----

The "F" item in the MacX "Edit" menu, or Command-F, brings up the Font Director dialog box. Font Director lets you see a sample of the typeface without having to run font clients or type commands with long and cryptic font names. Font Director also lets you sort fonts in various ways, assign aliases to font names, and compile fonts from Bitmap Distribution Format (BDF) files.

To use this command, tell the DECterm client which font to use in the window. Specify a font in the remote command to invoke the X client (DECterm in your case). This is similar to the "-fn" option when you invoke "xterm" in UNIX.

The command to invoke DECterm is CREATE/TERMINAL. To specify which font to be used in the window, use the /WINDOW\_ATTRIBUTES=(keyword [,...]) qualifier. The keyword is FONT for this case. Example:

```
create/terminal/window=(rows=24,columns=75,font=timR24)/  
application_keypad/insert/line_editing/detached
```

The above command creates a DECterm window using X font alias timR24. Note that you can abbreviate the VMS qualifier so the command string doesn't exceed the 255 character limit.

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Tech Info Library Article Number:7189



# Tech Info Library

## IBM Token Ring Bridge: Filter Programs

Revised: 6/24/91  
Security: Everyone

IBM Token Ring Bridge: Filter Programs

=====  
Article Created: March 11, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I have a customer who needs to set up an IBM Source Routing Bridge to filter AppleTalk in order to allow us to run an Internet Router in parallel with it. IBM supplied them with some sample programs, but these sample programs only show how to filter ranges of Token Ring addresses. This would be fine if the only Token Ring cards running AppleTalk were Apple's cards, but this is not the case. Do you know of anyone that has written an AppleTalk protocol filter for this bridge that might share this code with my account? What types of filters are supported by the Token Ring Bridge program?

DISCUSSION -----

We are not aware of anyone having an IBM Token Ring Bridge filter program for AppleTalk. The Token Ring Bridge program supports three types of filters:

1. Link Limiting Filter: to be used for remote bridge, such as two half bridges connected by a T1 line.
2. NetBIOS Filter: to accept or discard only NetBIOS protocol.
3. Address Filter: to accept or discard a range of Token Ring address.

According to the IBM Token Bridge Program 2.1 User's Guide, you can have up to 10 filters in the FILTER.BAT file. Thus, you can add one or more address filters in this file to filter out the token ring addresses of the other non-Apple token ring cards. Otherwise, you have the option to write your own AppleTalk filter using DOS Macro Assembler language.

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Tech Info Library Article Number:7192





# Tech Info Library

## Macintosh: Structured Analysis & Design Programs (SSADM)

Revised: 6/21/91  
Security: Everyone

Macintosh: Structured Analysis & Design Programs (SSADM)

=====

Article Created: March 11, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

There is a VAX program called Structured System Analysis Design Methodology (SSADM), a generic term as well as the product name for the VAX program. It designs systems to run warehouses, handle orders and delivery notes, and so on. The program checks that the designer doesn't use variables with the same name in different areas and automates many other parts of the design process.

Is there a similar program available for the Macintosh?

DISCUSSION -----

There are several programs for the Macintosh designed to help in Structured Analysis and Design. For more information, search in the Redgate Buyer's Guide Library using the search term "Case and Tools" or "Design and Tools".

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Tech Info Library Article Number:7193



# Tech Info Library

## A/UX: Missing /dev/cXd0s3 File (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: Missing /dev/cXd0s3 File (9/94)

Article Created: 11 March 1991  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

After loading A/UX, I needed to mount the slice 3 partition onto "/users." For some reason, when A/UX loaded, the /dev/dsk/cXd0s3 and /dev/rdisk/cXd0s3 drivers did not load (where "X" is the SCSI ID of the disk being loaded). I had to shutdown and change the SCSI ID before creating and mounting a file system on slice 3 for "/users." Why is this?

This leads to another problem: when installing, the Installer automatically modifies "/etc/fstab" to include an entry for "/usr" on slice 2 of the drive. Since I had to change the SCSI ID of the drive, the fstab entry was now incorrect. When I started up the system after changing the SCSI address, I got the message, "The file system on /dev/dsk/cXd0s2 is damaged. Do I want to repair?" When you say yes, it says it can't make the repairs, since of course it can't find the SCSI ID in "/etc/fstab". I went into "/etc/fstab" and changed the entry to match the new drive ID, which of course solved the problem.

Why doesn't the installer automatically create a "fs" on slice 3 and permanently mount it? Why weren't the "/dev/dsk/cXd0s3" and "/dev/rdisk/cXd0s3" files loaded?

DISCUSSION -----

Did you follow a nonstandard or standard procedure when installing A/UX? For instance, if you follow a nonstandard procedure and create a separate "Usr" partition, the slice 2 is automatically assigned to that partition. From the error message above, it seems that the "Usr" on slice 2 was created by the installation process, but we're not positive what originally partitioned.

An output of "dp /dev/rdisk/cXd0s3l" would help identify what partitions have been partitioned and what associated slices have been assigned.

In general, if a particular device driver entry was missing from the /dev/[r]dsk

directory, you don't have to shutdown the system and change the SCSI ID. The entry is easily re-created by either entering the "mknod" or "pname" command. For example,

```
mknod /dev/dsk/c6d0s3 b 24 3
chmod 600 /dev/dsk/c6d0s3
chown bin /dev/dsk/c6d0s3
chgrp bin /dev/dsk/c6d0s3
```

Note that 24 is the major device number and 3 is the minor device number for /dev/dsk/c6d0s3. b is indicated as a block device type.

```
pname -c6 -s3 "/users"
```

The /dev/[r]dsk/c6d0s3 files will be automatically created in the /dev/[r]dsk directory. Note that "/users" is the partition name in dpme (disk partition map entries). Use "dp /dev/rds/c6d0s31" to see its exact spelling.

When using HD Setup for A/UX, the predefined A/UX partitioning schemes include three partition assignments. The partition named "A/UX Root" is assigned with slice 0, partition named "Swap" is assigned with slice 1 and a 4 MB Macintosh partition is defined. Remaining space is used for free UNIX slice 3. If the "custom" button is selected, other partitions and associated slice numbers can also be selected. For example, A/UX Usrc partition will have slice 2, Free UNIX partition will have slice 3 through 6, and so on.

The reason that the installation process doesn't make a file system and permanently mount on these partitions is because the pre-assigned partition/slice may not be big enough to make a real file system (either SVFS or UFS).

#### Article Change History:

23 Sep 1994 - Reviewed.

03 Jul 1992 - Reviewed.

#### Support Information Services

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Tech Info Library Article Number:7196



# Tech Info Library

## A/UX: How To Figure Swap Partition Sizes

Revised: 9/29/92  
Security: Everyone

A/UX: How To Figure Swap Partition Sizes

Article Created: March 11, 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can you recommend a good size swap partition for best performance under A/UX? I'm using a 200MB drive and have a Macintosh IIx with 20MB, though I'm also interested in recommendations for a 32MB Macintosh IIx system.

Also, is there any formula (physical RAM +10MB, for instance) for determining a good swap size? I assume the swap size should be larger than the physical RAM in the system.

### DISCUSSION -----

The size of swap space should be larger than the physical memory size. Actually, there is no magic "formula".

A standard version of A/UX 2.0, based on an A/UX with 8MB of physical memory, has about 18MB of disk space allocated for swap purposes. 18MB is twice as much as the physical memory. Therefore, if disk space is not a restraint, we recommend two to two and a half times the physical memory size be assigned for swap space. If disk space is a concern, less than twice of physical memory size may be allocated for swap space.

Note that the swapping in and out activity occurs only when the available physical memory is used up. If your applications require large amounts of memory allocation, you should increase the swap size. Use the "swap -l" to view the current free swap size. If you have a reserved A/UX partition, you may use the "swap -a ..." to add additional swap area.

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Tech Info Library Article Number:7198



# Tech Info Library

## LaserWriter IINTX: System Printer with VAX Host

Revised: 6/19/91  
Security: Everyone

LaserWriter IINTX: System Printer with VAX Host

=====

Article Created: March 11, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

How do I use a LaserWriter IINTX printer as system printer for a VAX host?

I'm looking for general pointers, including PATHWORKS, and some comparison shopping tips, such as equipment, labor and training requirements to install and support this kind of printer.

DISCUSSION -----

PATHWORKS for Macintosh has a VAXshare Print service that does what you want.

VAXshare print servers work very much like AppleShare print servers. When you send a document to a VAXshare print server, VAXshare receives the file's contents. The server then prints instructions from your Macintosh application and saves a print file on the disk. VAXshare returns the printer codes to your application to signal that printing is done.

VAXshare print servers access both Apple and Digital PostScript network printers. Since the LaserWriter IINTX has to be on a LocalTalk network, you'll need a router between EtherTalk and LocalTalk. Examples of routers include the Apple Internet Router, Shiva FastPath, Farallon Liaison, Cayman GatorBox, or devices that connect the LaserWriter II printer to Ethernet, such as EtherPrint.

After installing PATHWORKS on a VAX, the system manager goes into the MSA\$MANAGER program, adds a printer queue, and starts it. These printer queues are standard VMS queues, so they work the same way as other existing VMS queues (using SET QUEUES, START, and STOP QUEUES commands). VMS users also can print to these queues with the PRINT/QUEUE= command.

On the Macintosh side, selecting a VAXshare print spooler is similar to selecting an AppleShare Print Spooler. From the Chooser, select the zone (if necessary) then select the LaserWriter icon from the group of icons on the left side of the Chooser window.

There shouldn't be much training needed for doing this. On the VAX side, VMS System Managers are familiar with VMS queues, and installation on the VAX is done with standard VMSINSTAL. Macintosh users need only choose the standard printer/spooler name.

The only issue is the amount of printing you'll be doing. If there will be much printing that doesn't require laser quality, then a standard line printer might be all you need.

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Tech Info Library Article Number:7199



# Tech Info Library

## A/UX: How To Get Classic Terminal Logon Screen at Launch (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: How To Get Classic Terminal Logon Screen at Launch (8/94)

=====

Article Created: 12 March 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

Is it possible to launch A/UX so that a classic terminal logon screen comes up without having to use the Macintosh logon screen?

DISCUSSION -----

Yes, and here's how:

- Modify the /etc/inittab file to have the "co" entry execute a different shell script (for instance /etc/unixlogin below) instead of /etc/loginrc (executes the Macintosh Login)

or

- Make the /mac/bin/Login program nonexecutable or nonexistent by renaming it. The /etc/loginrc shell script checks to see if /mac/bin/Login is executable. If not, it will execute "/etc/getty" instead of /mac/bin/Login.

```
#!/bin/sh
# /etc/unixlogin
/bin/screenrestore
exec /etc/getty console co_9600
```

Article Change History:  
24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7200





# Tech Info Library

## Airport Security Scanners (X-Rays) Don't Damage Disks

Revised: 3/22/96  
Security: Everyone

Airport Security Scanners (X-Rays) Don't Damage Disks

=====

Article Created: 13 March 1991  
Article Reviewed/Updated: 21 March 1996

TOPIC -----

I'm concerned about my Macintosh Portable (or PowerBook) going through security scanners (x-ray machines) at airports. Is there a potential for short-term or long-term damage?

DISCUSSION -----

The American Society for Testing and Materials (ASTM) conducted a study on X-ray induced damage to memory devices, including audio and video tapes and floppy disks, and found that the devices have enough shielding to protect the media.

The study found that the magnetic field was actually strongest around the monitor. They taped a disk to the monitor for several hours without damage. A committee member suggested that it would take at least 1000 million passes through the machine before any damage would be evident.

Article Change History:  
21 Mar 1996 - Reviewed for technical accuracy.

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Tech Info Library Article Number:7201



# Tech Info Library

## Norton Utilities: Can't Override Empower Encryption

Revised: 6/19/91  
Security: Everyone

Norton Utilities: Can't Override Empower Encryption

=====

Article Created: March 13, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Can Norton Utilities bypass Empower and Fileguard security? Can Norton read folders and files protected by security software packages?

DISCUSSION -----

Using the Norton Emergency disk, we could recover deleted files protected by Empower. All of these files were still encrypted, unreadable, and useless. Sometimes the file types no longer matched the original.

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Tech Info Library Article Number:7202



# Tech Info Library

## AppleShare: Modification Date Depends On Client's Clock (4/94)

Revised: 4/11/94  
Security: Everyone

AppleShare: Modification Date Depends On Client's Clock (4/94)

=====

Article Created: 13 March 1991  
Article Reviewed/Updated: 7 April 1994

TOPIC -----

We have an AppleShare File Server. One morning, a user put a file at the root level. On his machine, the file correctly showed a modification date of 21 February.

When the server volume was mounted on another Macintosh, the modification date showed up as 18 February. We noticed that this Macintosh's clock was set to 18 February. When we reset the clock to the correct date, the modification date changed back to 21 February.

What's going on here? The date on any single machine should not affect the date that shows up for the file. Shouldn't the server be giving the creation date? Why would the Finder show the wrong date?

DISCUSSION -----

This is not a bug and is intentional. Here is some text from "Inside AppleTalk, Second Edition," pages 13-21 and 13-22, that discusses this subject:

Date-time Values

-----

"All date-time quantities used by AFP specify values of the server's clock. These values correspond to the number of seconds measured from 12:00 AM on January 1, 2000. In other words, the start of the next century corresponds to the date-time of 0. AFP represents date-time values with 4-byte signed integers."

"One of the AFP calls, allows the workstation to obtain the current value of the server's clock. At log on time, the workstation should read this value (s) and the value of the workstation's clock (w) and compute the offset between these values: s-w. All subsequent date-time values read from the server should be adjusted by subtracting this offset from the date-time. All subsequent date-

time values sent to the server should be adjusted by adding this offset to the date-time. This adjustment will correct for differences between the two clocks and will ensure that all workstations see a consistent time base."

One thing to note here is with Apple's AFP servers, the time base is not adjusted if the workstation's clock and server's clock are within 15 minutes or so of each other. This is done so slight differences between the workstation's clock and the server's clock settings do not affect the file date-time values. If the time difference is more than 15 minutes, the time is adjusted to the nearest half hour. For example, if the server clock is 20 minutes ahead of the workstation clock, the date-time value for a file would be 30 minutes less on the workstation. Non-Apple AFP servers may do this differently.

#### Some Examples

-----

Note: These examples assume the time zone values are set correctly on the server and the client unless otherwise specified.

- Example 1:

There is an AppleShare File Server in New York and its clock says it is 4:01 PM. There is an AppleShare client in Los Angeles that is logged into the server in New York and its clock says it is 1:00 PM. A "Get Info" is done on file "X" by someone in New York on the New York server and the created and modified date-time says:

"Wed, Mar 4,1992, 7:07 PM"

At the workstation in Los Angeles, a "Get Info" is done on file "X" on the New York server, and the created and modified date-time says:

"Wed, Mar 4,1992, 4:07 PM".

As you can see, the client in Los Angeles shows the file created and modified date-time stamp as being 3 hours earlier.

- Example 2:

There is a AppleShare File Server in San Jose and its clock says it is 8:21 PM. There is a AppleShare client, also in San Jose, that is logged into this server and its clock says it is 8:00 PM. A "Get Info" is done on file "X" at the server and the created and modified date-time says:

"Wed, Mar 4,1992, 7:07 PM".

The client does a "Get Info" on file "X" and the created and modified date-time says:

"Wed, Mar 4,1992, 6:37 PM".

If the client's clock had been within 15 minutes of the server's clock, the file would have had the same date-time stamp.

All of our testing regarding this date-time stamping issue shows that the actual time shown in the "General Controls" or "Date & Time" Control Panel is what is

used to compute the date-time offset between the client and the server.

Article Change History:

07 Apr 1994 - Added additional information and examples.

15 Apr 1993 - Retitled to better reflect the article.

Support Information Services

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Tech Info Library Article Number:7203



# Tech Info Library

## LaserWriter Performance: Color/Gray Scale vs Black & White

Revised: 6/19/91  
Security: Everyone

LaserWriter Performance: Color/Gray Scale vs Black & White

=====

Article Created: March 13, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Does changing a LaserWriter's default dialogue box from color/gray scale to black and white improve printing performance? Can I use ResEdit to do this, or is there another way to change the default?

DISCUSSION -----

On AppleLink, in the Tech Info Library, you will find a patched version of the LaserWriter 6.0.1 driver that defaults to black and white. Use the search criterion of "LaserWriter 6.z.1".

The LaserWriter 6.0.x drivers, when in "Black & White" mode, print black and white documents as fast or slightly faster than the LaserWriter 5.2 drivers. This is true for both text or graphic documents.

The LaserWriter 6.0.x drivers, when in "Color/Grayscale" mode, are as much as 8 times slower than the LaserWriter 5.2 drivers. Black and white text-only documents will print as if the "Black & White" mode was selected. The "Color/Grayscale" mode should be used only in situations where you are printing documents that are multicolor or gray scale images.

The LaserWriter 6.0.x drivers default to "Color/Grayscale" mode, so you'll have to change the setting every time you print if they want to use "Black & White" mode.

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Tech Info Library Article Number:7204



# Tech Info Library

## A/UX 2.0.1: Upgrade Kit Availability

Revised: 11/9/92  
Security: Everyone

A/UX 2.0.1: Upgrade Kit Availability

=====

Article Created: March 13, 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is there a kit available to upgrade A/UX 2.0 to 2.0.1?

### DISCUSSION -----

Yes, it is part number: M0516LL/A (Incremental Update Kit) For international use, the part number is: M0516Z/A. Check with your support provider for cost information.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7205



# Tech Info Library

## Macintosh: When Application Colors Change Unexpectedly

Revised: 6/19/91  
Security: Everyone

Macintosh: When Application Colors Change Unexpectedly

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Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I have a Macintosh IIsi with 5MB of memory, a 13-inch High Resolution color monitor with built-in video, 40MB hard disk, and NuBus adapter.

My problem appears randomly, always when running these applications: Telnet 2.3, Microsoft Word 4.0b, and Microsoft Excel 2.2a.

In Excel, when I call up a dialog box (to set borders, for example) the colors of the box will be messed up. If I keep reopening the dialog box the colors will eventually change. For example, the box may initially come up with a black background and black letters, then a blue background with black letters, then a red background, with black letters, and so on.

DISCUSSION -----

It sounds like something is changing the System color table. We have experienced this when using the Kolor CDEV (the CDEV that allows you to change the color of the windows, buttons, scroll bars, and so on). If you're running MultiFinder, one of your applications may be setting the System color table to its own custom palette. 4th Dimension, for example, can change the System's color table.

Your workaround depends on whether it's an application or a CDEV that's changing the color. If it's something like Kolor, turning it off may be the only solution. Or perhaps there's been an update to the CDEV--check with the publisher for the latest version. With 4th Dimension, some people have used ResEdit to eliminate the offending resource. But this causes some applications to crash, so we don't recommend this solution.

Also, reinstalling the System may be a solution. It could be that your



System color table has simply been corrupted.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7206



# Tech Info Library

## Novell: How It Handles Desktop Information (11/94)

Revised: 11/9/94  
Security: Everyone

Novell: How It Handles Desktop Information (11/94)

Article Created: 16 March 1991  
Article Reviewed/Updated: 09 November 1994

### TOPIC -----

Does Novell duplicate the function of the Apple Desktop file or the Desktop Manager implementation on AppleShare?

What does the Resource Manager do when the desktop size exceeds the Resource Manager addressability limit?

### DISCUSSION -----

The AppleTalk Filing Protocol requires that each server maintain a desktop database containing information associating documents with applications and files with icons. This information helps the Finder know which icons to display for files, and which applications to launch when documents are opened. The Finder uses this database to build the familiar Macintosh graphical user interface.

In addition to a name, every Macintosh file has a four-character type code that identifies the nature of the file, and a four-character Creator code that identifies the application that created the file. For example, a document created by MacWrite has a Type value of WORD and a Creator value of MACA. The desktop database uses these values to find the appropriate icon for files of type WORD. Likewise, the desktop finds the appropriate application used for opening or printing files of this type using the value MACA.

When the Finder on a Macintosh workstation displays the contents of a server folder in a window, it attempts to find the appropriate icon for each file. First, the Finder looks in memory to see if it found the correct icon in a recent search. Then, it looks on the local Macintosh hard disk. If the icon is not found, the Finder requests the icon from the server. If the server volume's desktop database contains the appropriate icon, the server sends the icon to the Macintosh. If the icon is not found locally or in the server volume's desktop database, the Finder displays a generic icon for the file.

Once the Finder has determined that an icon cannot be found for a particular file type, it will not ask the server again until the Finder is restarted. This optimization prevents the Finder from repeatedly making the same request, which would slow the server.

In NetWare for Macintosh 4.0, the desktop database is stored in two files in the DESKTOP.AFP folder at the root of each volume. AFP.NLM creates the folder and database files on each volume that supports the Macintosh name space. These files, ICON.BTV and APPL.BTV, are in a proprietary, highly-optimized format, and are not meant to be used by programs other than AFP.NLM.

#### Maintaining and Rebuilding the Desktop Database

-----

The Macintosh Finder and AFP.NLM share the responsibility of maintaining the desktop database. The Macintosh Finder incrementally updates the desktop database when it copies new files to the server volume. In version 7 and later, the Finder always ensures that when a document is copied to the server volume, the appropriate icons are also copied, if necessary. The Finder also updates the desktop database whenever it copies an application to the server volume, so that the application can be launched when documents are opened or printed.

NetWare for Macintosh is ultimately responsible for the contents and integrity of the desktop database for each of the volumes it supports. While it is possible to rebuild a server's desktop database using the System 6 Finder (but not MultiFinder), doing so will not enable you to locate the new color icons used in System 7. NetWare for Macintosh can examine all the files on each volume, and can rebuild the desktop database on each of its supported volumes. Because this process is carried out on the server, it is much faster and more efficient than rebuilding the desktop from a Macintosh workstation.

#### Article Change History:

09 Nov 1994 - Additional information on Novell Desktop file included.

#### Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7208



# Tech Info Library

## DAL 1.2: Problem Accessing VM Host (11/94)

Revised: 11/7/94  
Security: Everyone

DAL 1.2: Problem Accessing VM Host (11/94)

Article Created: March 16, 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

- 1) I'm trying to get DAL 1.2 for VM to work with an IBM 3090. I'm using a Macintosh II connected by a coax, a DCA MacIrma card, and am running "DAL debugger for MacIrma".

After trying several times, I keep getting the error #10646 (-43). What does this error mean?

- 2) What state should the server be in when attempting access?
- 3) What programming languages support DAL development?

DISCUSSION -----

- 1) Error -10646 means the DAL client cannot load the Network Adapter. You probably have the wrong driver installed. MacIrma is shipping with the HLLAPI drivers, which DAL doesn't support. You need to call DCA and get the Apple API drivers. Apple does not have the rights to distribute them, so you have to get them from DCA.

To verify this, the following files should be in the system folder:

DFT: "MacIrma SNA 2.1.0" (or .1) and "MacIrma DAL Driver" 1.2.0  
CUT: "MacIrma DAL Driver" 1.2.0

In addition, be sure that your coax line is correctly identified as CUT or DFT in your DAL connection script.

- 2) Once a session is established between the DAL client and the DAL server, the server will be ready to accept any request from the client. Perhaps an explanation of DAL Request/Reply relationship would help:

DAL uses a request/reply relationship between the desktop and the server(s). The user connects to the host machine using the query tool (HyperCard, 4th Dimension, or a custom C or Pascal program). The query tool application passes the request to the DAL API, which in turn establishes a connection to the host server. The DAL server on the host receives the request and translates it to the SQL dialect of the opened database. The server then checks the syntax and passes the translated request to the proper database. The database complies and passes the data back to the DAL Host Server. The Host Server checks for errors, mapping them to the standard error set that DAL supports. The server then assembles the results returned from the database sends them to the Macintosh. The query application sees the results are available and begins to put them, item by item into its own window (such as a spreadsheet window).

- 3) DAL provides Application Programming Interfaces for C, Pascal, and HyperCard.

#### Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7209



# Tech Info Library

## DAL: Username and Password not Encrypted During Access (2/95)

Revised: 2/3/95  
Security: Everyone

DAL: Username and Password not Encrypted During Access (2/95)

=====

Article Created: 16 March 1991  
Article Reviewed/Updated: 3 February 1995

TOPIC -----

When establishing a DAL session with a VAX over AppleTalk, is username and password information encrypted?

DISCUSSION -----

The username and password information is not encrypted when sending to the host because AppleTalk does not encrypt. DAL does not furnish encryption, but uses whatever the network supplies.

Article Change History:  
03 Feb 1995 - Corrected reference to AppleTalk.  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7210



# Tech Info Library

## **PATHWORKS: Third-Party Printers Not Available**

Revised: 6/19/91  
Security: Everyone

PATHWORKS: Third-Party Printers Not Available

=====

Article Created: March 16, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Are there any third-party printers that work with PATHWORKS?

DISCUSSION -----

We are not aware of any third-party printers that support PATHWORKS.

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Tech Info Library Article Number:7212



# Tech Info Library

## PATHWORKS: Printing on AppleTalk Phase 1 Networks

Revised: 6/19/91  
Security: Everyone

PATHWORKS: Printing on AppleTalk Phase 1 Networks

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

We are implementing the Tolas accounting system using PATHWORKS for Macintosh. We will be linking a MicroVAX to Macintosh systems on Ethernet and using LocalTalk to connect to our LaserWriters. Since we are using AppleTalk Phase 1, we can't send files to the LaserWriters.

Can we do what we want without using PATHWORKS for Macintosh? Can we just run AppleTalk for VMS 3.0 and still support AppleTalk Phase 1?

DISCUSSION -----

PATHWORKS for Macintosh is the name for an integrated set of components in one client/server product. The package includes file sharing, data access, electronic mail, and resource services for Macintosh clients. AppleTalk for VMS 3.0 is included in the product but it supports only AppleTalk Phase 2.

If you are using the Apple Internet Router, install the Upgrade Utility. If you are using non-Apple routers, use an equivalent Phase 1/Phase 2 transition utility. Because this is only a temporary solution, eventually you will want to upgrade all your routers to AppleTalk Phase 2.

Consult the AppleTalk Phase 2 Introduction and Upgrade Guide for upgrade procedures.

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Tech Info Library Article Number:7213





# Tech Info Library

## VAX RDBMS: Access from Macintosh and MS-DOS

Revised: 7/23/93  
Security: Everyone

VAX RDBMS: Access from Macintosh and MS-DOS

=====

Article Created: March 17, 1991

TOPIC -----

Is there an RDBMS for VAX/VMS that fully uses the Macintosh as a VAX server client? Most RDBMS packages only use the Macintosh in VT100 emulation mode. I want a package that gives the Macintosh and PC the same screen look.

DISCUSSION -----

Check the following Client/Server VAX database access products:

- Apple's Data Access Language (DAL):

An Apple DAL Server can run on VAX/VMS providing Data Access Language access to databases. The server works cooperatively with Macintosh applications that support Data Access Language.

The server receives a request from a Macintosh application, carries it out on the VAX, and sends the desired data back to the Macintosh application. The Macintosh application can be HyperCard, 4th Dimension, popular spreadsheet products such as Excel and WingZ, or C programs. DAL operates under existing host and database-management security and integrity schemes, assuring complete data security with no additional maintenance requirements.

The server supports serial lines (directly or via modem) or AppleTalk Data Stream Protocol (requires Apple's AppleTalk for VMS running on VAX system). Databases supported by DAL Server for VAX/VMS include: Informix, Ingres, Oracle, VAX Rdb/VMS, and Sybase.

Apple DAL Server is available from APDA.

- SequeLink, Version 2.1:

This program allows cooperative processing between Macintosh and VAX computers. With it, you can write a Macintosh front-end to a relational database residing on a VAX, using environments such as HyperCard, Microsoft Excel or 4th Dimension, and compiled languages such as C, Pascal, or MacApp. Your Macintosh application can then access transparently the relational database on the VAX, off-loading the VAX.

SequeLink can write on-line transaction processing application and decision support applications. SequeLink supports Oracle, Ingres, VAX Rdb/VMS, and Sybase. It runs over AppleTalk and DECnet. The SequeLink product family includes other client and server platforms, such as MS-DOS, OS/2, UNIX, AS/400, and MVS.

SequeLink, Version 2.1 is available from TechGnosis, Inc.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7214



# Tech Info Library

## PATHWORKS: VAXshare Support for LaserWriter 6.0.X

Revised: 6/19/91  
Security: Everyone

PATHWORKS: VAXshare Support for LaserWriter 6.0.X

=====

Article Created: March 17, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

How do I get VAXshare Print Service in PATHWORKS for Macintosh to work with LaserWriter 6.0.X? The help facility in PATHWORKS doesn't help.

DISCUSSION -----

There are two modules in the device control library that are not only unnecessary, their presence prevents the ADD PRINTER command from working correctly. Delete them with this command:

```
$ library/delete=(msap$permdict1,msap$permdictquery1) -  
_ $ sys$library:msap$devctl.tlb
```

Then, add the printer, using the /SETUP qualifier to specify the appropriate level of Laser Prep (msap\$appledict70 = Laser Prep 6.0):

```
MSA$MANAGER> add printer "Spooler Name" -  
_MSA$MANAGER> /queue=sys$print -  
_MSA$MANAGER> /destination="Printer Name@Zone Name" -  
_MSA$MANAGER> /setup=msap$appledict70  
MSA$MANAGER> start printer "Spooler Name"
```

Other modules available in the device control library are:

|                   |                  |
|-------------------|------------------|
| MSAP\$APPLEDICT66 | (Laser Prep 5.0) |
| MSAP\$APPLEDICT67 | (Laser Prep 5.1) |
| MSAP\$APPLEDICT68 | (Laser Prep 5.2) |

If /SETUP is not used, the default is 5.2.

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Tech Info Library Article Number:7215



# Tech Info Library

## Macintosh IIsi, LC Series: Not Designed for Vertical Operation

Revised: 7/12/93  
Security: Everyone

Macintosh IIsi, LC Series: Not Designed for Vertical Operation

Article Created: 19 March 1991

### Article Change History

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07/12/93 - REVISED  
          \* To include Performa 400 series.  
02/01/93 - REVISED  
          \* To include the LC III.

### TOPIC -----

I want to use my Macintosh IIsi and Macintosh LC in a vertical position.  
If I leave enough room for ventilation, will this cause any problems?

### DISCUSSION -----

The Macintosh IIsi, the Macintosh LC Family (LC, LC II, LC III), and Performa 400 series (Performa 400, 405, 430, 450) weren't designed to operate on their sides. Because Apple hasn't tested these computers in a vertical position, Apple can't recommend that customers use them this way.

We do know that the floppy-disk drives and hard drives will work properly either horizontally or vertically. Ventilation shouldn't be a problem as long as there's 4 to 6 inches of clearance around all the computer's vents.

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Tech Info Library Article Number:7216



# Tech Info Library

## AppleShare PC: Using with Extended Memory (11/94)

Revised: 11/7/94  
Security: Everyone

AppleShare PC: Using with Extended Memory (11/94)

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I want to load parts of PhoneNet Talk software into extended memory. I also want to load AppleShare Print Server and File Server into the top 3MB of expanded memory on a 4MB 386 machine. I'll be running PFS FirstChoice and the QEMM-386 utility.

Can I do this? How?

DISCUSSION -----

Yes, most of AppleShare PC can be loaded into a PC's "high memory" (conventional memory is the range from 0 to 640K, high memory is the range between 640K and 1024K). High memory is generally used by the PC BIOS, expansion cards, video memory, and other system resources. Very few PCs use their entire address range for such purposes. Most machines have space available that can be mapped to extended memory and used to load user software, such as drivers and TSR (Terminate and Stay Resident) utilities.

Unfortunately, DOS doesn't have a standard way to manage high memory ranges for user programs. It also can't find available ranges within high memory. Using this space means that programs sharing the same memory space may begin to write over each other resulting in unpredictable crashes, freezes, and generally weird behavior.

The QEMM-386 utility addresses this problem by providing extended, expanded, and high memory management functions. Extended and expanded memory is beyond the scope of this discussion and is somewhat irrelevant to your problem. What you should be concerned about is high memory.

QEMM-386 maps out available high memory ranges. Once this is done, QEMM-386 can then begin to "LOADHI" specific software, usually drivers and TSR utilities.

This whole process is a bit involved but is documented well in the QEMM-386 manuals. We strongly recommend that you read it. Below is a rough outline of the procedure. This general procedure must adapt to fit the needs of the specific hardware and software you're using.

- 1) Install AppleShare PC, and confirm it functions satisfactorily, allowing it to load from the AUTOEXEC.BAT file.
- 2) Perform a basic install of QEMM-386. Modify its line in the CONFIG.SYS file, enabling its "ON" option. Reboot. QEMM-386 and AppleShare PC should both load.
- 3) Exercise the installed hardware, meaning format floppy disks, print something, send something through each COM port, and so forth. The idea is to access memory ranges that may be associated with the PC hardware.
- 4) Without rebooting, use the QEMM analysis feature to determine which high memory ranges are available and which are already in use by the PC.
- 5) Modify the CONFIG.SYS line for QEMM-386 to INCLUDE and EXCLUDE the appropriate memory ranges discovered in the previous step. Also, remove the ON option you added in step 2. Reboot.
- 6) Use the QEMM-386 Optimize program to find which parts of the system and AppleShare PC it can load into the new high memory. This is a fairly automated process, but it requires three reboots. When complete, the Optimize program should indicate how much conventional memory was saved by loading software into high memory instead of conventional memory.
- 7) Confirm that the MINSES.EXE program is not one of those that is loaded into high memory. If it is, change it by removing the reference to LOADHI that loaded it. MINSES is a required part of the AppleShare PC software, but will cause problems if loaded into high memory. (MINSES and REDIR were both written by Microsoft, and assist in directing standard DOS commands to network devices.)

This is a very short description of the process, but it should give you a general idea of what to do. Again, we recommend reading the QEMM-386 manual for exact details. In addition to installation, the manual covers the different capabilities and uses for each PC memory type.

Additional information can be obtained from Farallon Computing, Inc.

#### Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7217



# Tech Info Library

## PATHWORKS VAXshare: Multilaunching Applications (11/94)

Revised: 11/7/94  
Security: Everyone

PATHWORKS VAXshare: Multilaunching Applications (11/94)

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I'm testing PATHWORKS for Macintosh and have a problem multilaunching Claris applications, such as MacDraw, on the VAX. I'm able to multilaunch Microsoft applications on the VAX.

Is this only a problem with Claris? Is there a way to fix this?

Ideally, I'd like to be able to share all the applications on the VAX between the Macintosh users.

DISCUSSION -----

This situation isn't just limited to a PATHWORKS VAXshare server. We tried the same thing on an AppleShare File Server and got the same result.

Microsoft Technical Support says that Microsoft Word, Microsoft Excel, Microsoft File, and PowerPoint are all multilaunch applications. Each has some limited multi-user capabilities as well.

This is not a limitation of Claris' software: these applications are not supported as multilaunch applications. The effects of multilaunching are unknown. Also, keep in mind possible licensing problems, because these applications are sold as single-user applications.

Check with the vendor of the application to determine if it provides multi-launch capability.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services



Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7218



# Tech Info Library

## Lapis Technologies, Inc

Revised: 9/5/95  
Security: Everyone

Lapis Technologies, Inc

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Article Created: 4 June 1991  
Article Reviewed/Updated: 5 September 1995

Lapis Technologies, Inc.

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(merged with Focus Enhancements, Inc.)

1100 Marina Village Parkway  
Suite 100  
Alameda, CA 94501

510-748-1600 (Main Number)

800-435-2747 (Sales)

### Company Profile:

Hardware, specializing in video interfaces for all kinds of Macintosh (even older models) titled the "DisplayServer" (monochrome) and "ProColorServer" (color, 8/16/24 bit) series, Monitors, Powerbase (Powerbook SCSI), and an Macintosh LC to NTSC adapter.

Support Information Services

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Tech Info Library Article Number:7220



# Tech Info Library

## Blueridge Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

Blueridge Technologies, Inc.

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Article Created: 03/25/91  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Blueridge Technologies, Inc.

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P.O. Box 430  
Flint Hill Sq.  
Flint Hill, VA 22627

703-675-3015

703-675-3130 Fax

### Company Profile:

Hardware and software, specializing in the Optix document imaging system, a document storage and retrieval package, OCR, Techsearch, and Workflow for Macintosh, OS/2, and A/UX systems.

Copyright 1991-937, Apple Computer, Inc.

Tech Info Library Article Number:7221



# Tech Info Library

## Responder: When It Renames System at Startup

Revised: 8/14/92  
Security: Everyone

Responder: When It Renames System at Startup

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Article Created: 19 March 1991  
Article Last Reviewed: 14 August 1992  
Article Last Updated: 14 August 1992

TOPIC -----

The Responder on my Macintosh LC makes me rename my computer every time I start it. I am running system software 6.0.7. Why does this happen?

DISCUSSION -----

The first thing is to make sure you're using at least version 1.1.1 of Responder (actually, 2.0.x is the most recent version).

The next thing to check is the Get Info menu item in the Finder to see if the System file is locked. Responder writes the name of the client Macintosh to a resource in the System file. If the System file is locked, Responder is unable to make a permanent change to the System file.

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Tech Info Library Article Number:7222



# Tech Info Library

## MacTerminal: Receive Characters

Revised: 6/19/91  
Security: Everyone

MacTerminal: Receive Characters

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

MacTerminal 3.0 is having trouble doing an XModem receive from a VAX without PATHWORKS.

What XModem receive character does MacTerminal look for?

DISCUSSION -----

XModem uses ESC-A as the Auto Receive Character, and ESC-B as the MacBinary Auto Receive character.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7223



# Tech Info Library

## A/UX: Wangbat Device Driver Now Available

Revised: 8/4/93  
Security: Everyone

A/UX: Wangbat Device Driver Now Available

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

Do you know of an A/UX device driver for a Wangbat 4mm helical scan tape backup unit?

DISCUSSION -----

FWB Software, Inc. has a device driver for Wangbat 4mm tape drive backup units under A/UX 2.0.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:  
27 July 1993 - Company title updated from FWB, Inc. to FWB Software, Inc.  
31 August 1992 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7225



# Tech Info Library

## Personal LaserWriter NT: Cause of Partial Two-Sided Pages

Revised: 6/19/91  
Security: Everyone

Personal LaserWriter NT: Cause of Partial Two-Sided Pages

=====

Article Created: 25 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I try to print double-sided pages on a Personal LaserWriter NT using manual feed, very often the back side of the page doesn't print. Any ideas?

DISCUSSION -----

This printing problem occurs if there is a delay feeding paper to the multi-purpose tray. The lower portion of the image will begin to disappear about 10 seconds after the Paper Out indicator lights, or about 4 seconds after the preceding page ejects. The amount of the image affected depends on the length of the delay. If too much time passes and the image disappears, the Personal LaserWriter NT will ignore that page entirely and continue with the rest of the print job.

Because double-sided printing requires feeding paper one sheet at a time, and because you must wait for the first sheet to complete before feeding the next, you have little time before the image begins to disappear.

The only workaround is to insert your pages more quickly. Before we figured out what was really happening, we noticed that the problem diminished the more we tried to reproduce it. We were getting better at feeding the paper, and so didn't cause a sufficient delay to see the problem.

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Tech Info Library Article Number:7226



# Tech Info Library

## SMB File Transfer: Access over Ethernet (11/94)

Revised: 11/7/94  
Security: Everyone

SMB File Transfer: Access over Ethernet (11/94)

Article Created: 20 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

We can access SMB over Token Ring, but not over Ethernet. Will it ever be possible to access SMB servers over Ethernet?

DISCUSSION -----

While the SMB protocols are not limited to Token Ring, they are usually used only with Token Ring. Since Apple's SMB File Transfer utility works so closely with the Texas Instruments Token Ring interface controller chip set on the TokenTalk NB card, it's difficult to port to an Ethernet environment without a major rewrite of the software.

A workaround is to use MacLAN Connect, a product that allows any PC or compatible to act as an AppleShare compatible server. All hard disks, LAN volumes or other storage devices are available to AppleShare-connected Macintosh workstations. MacLAN Connect supports LocalTalk, EtherTalk and TokenTalk.

For more information, search on "Miramar Systems"

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94 Apple Computer, Inc.

Tech Info Library Article Number:7228





# Tech Info Library

## Ungermann-Bass: Description of AppleTalk & Macintosh Products

Revised: 6/19/91  
Security: Everyone

Ungermann-Bass: Description of AppleTalk & Macintosh Products

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Article Created: 20 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need some information on Ungermann-Bass. I think they have a Macintosh product, but I am unable to find it listed on AppleLink.

Do you have any information on this company and their Macintosh products?

DISCUSSION -----

The following are from the Apple Multivendor Network Solutions Guide, August 1990:

### Access/One MaxTalk Interface Module

The Access/One MaxTalk Interface Module delivers high-performance networking among Apple Macintosh personal computers and other LocalTalk devices such as printers, and integrates those devices into an Ethernet, FDDI, token ring, or broadband network. The MaxTalk Module supports 16 individual LocalTalk devices or 16 daisy-chained LocalTalk networks using unshielded twisted-pair wiring. LocalTalk connectors may be connected directly into twisted-pair cabling star-wired from Access/One Enclosures. Up to four MaxTalk Interf modules may be installed in a single ASE-3000 System Enclosure, and up to ten MaxTalk Interface Modules may be installed in a single ASE-7000 System Enclosure. The MaxTalk Modules may be installed in a single ASE-7000 System Enclosure. The MaxTalk Module filters traffic on each of its 16 ports, forwarding data packets only to their addressed destinations. Each device has its own dedicated 230.4 Kbps transmission line. All 16 devices attached to the MaxTalk module can simultaneously use the network.

Net/One MacUWS

MacUWS provides a Macintosh front-end to host applications, turning routine activities into an interactive process with pull-down menus, scroll bars, and selection buttons for point-and-click mouse support. End users can share resources and information throughout the network with MacUWS. Included is a VT100 terminal emulator that supports up to five Telnet sessions. Each session runs in a user-configurable window. Using a standard File Transfer Protocol (FTP) facility, network users can download data from host computers for local use. MacUWS includes a standards-based TCP/IP driver, FTP/Telnet capabilities, and the Advanced Scripting and Application Platform (ASAP) language. MacUWS provides support for Apple's EtherTalk (IEEE 802.3) and LocalTalk, and users can run MacUWS under Finder and MultiFinder.

For more information, search on "Ungermann-Bass"

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7229



# Tech Info Library

## AppleShare File Server: Multilaunch Management Utilities

Revised: 6/19/91  
Security: Everyone

AppleShare File Server: Multilaunch Management Utilities

=====

Article Created: 21 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there any AppleShare utilities that limit the number of copies made of applications on the server?

DISCUSSION -----

Here are two programs that restrict launch restrictions on AppleShare:

KeyServer

Developed and used at Dartmouth and available from Sassafras Software, is a launch control package which also provides rwall and motd capability.

LaunchBreak

Developed by the University of Michigan's Computer Aided Engineering Network, LaunchBreak 1.0.3 is available to not-for-profit educational institutions.

LaunchBreak's features:

- Monitors the usage and enforces an upper limit for copying applications on an AppleTalk network.
- Applications running under LaunchBreak can be rendered useless outside of a site's network, hindering software piracy.
- Applications can be located anywhere on the network.
- Doesn't interfere with legitimate copying of programs for backup.

Applications can be freely copied, although the copied programs are still subject to control of LaunchBreak.

- The license server can run as a foreground application on an AppleShare server, or on another machine on the network.
- Remote administration of the license server
- Statistical record keeping on all server transactions.

System Requirements:

- System 6.0 or later
- AppleTalk Data Stream Protocol (ADSP).

For more information, search on "Sassafras" or "LaunchBreak"

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7230



# Tech Info Library

## Computer Aided Engineering Network (formerly LaunchBreak)

Revised: 4/4/97  
Security: Everyone

Computer Aided Engineering Network (formerly LaunchBreak)

=====

Article Created: 4 June 1991  
Article Reviewed/Updated: 4 April 1997

Computer Aided Engineering Network

-----

University of Michigan  
229 Chrysler Center / 2121 Bonisteel Dr.  
Ann Arbor, MI 48109

313-763-3266

Company Profile:  
Networking software developed by the University of Michigan's Computer Aided Engineering Network. As of March 1991, the program is available to non-profit educational institutions.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7231



# Tech Info Library

## MacX: Window Position Problem (4/93)

Revised: 4/22/93  
Security: Everyone

MacX: Window Position Problem (4/93)

=====

Article Created: 23 March 1991

### Article Change History

-----

04/20/93 - UPDATED

- To include MacX 1.2 information.

### TOPIC -----

I'm using FrameMaker on a Sun, displaying in MacX 1.0. Some rootless windows are displaying their title bars underneath the MacX menu bar. MacX sets the top left corner of the X display server to be at (0,0), rather than compensating for the fact that the Macintosh menu bar is 20 pixels or so tall. I can't move these windows because I can't access their title bars.

I can adjust the window prefs file on the host, but the problem happens because of MacX's rootless operation, regardless of the host process.

### DISCUSSION -----

If your title bars are hidden under the Macintosh menu bar, drag the window out of the Macintosh menu bar while holding down the OPTION key.

Yes, it is true that the MacX 1.0 to 1.1.7 Window Manager sets the upper-left corner of the screen at origin (0,0). The Macintosh menu bar (MacX application in this case) is accounted in the entire screen coordinates. Therefore, when specifying the y coordinate for a rootless window, the height of the title bar must be taken into consideration. Otherwise, the application's title bar will be hidden under the Macintosh menu bar.

The MacX Window Manager automatically positions a window:

- if its display coordinates are off screen
  - or • if the command to create it doesn't have a geometry option
  - or • if the geometry option's x,y coordinates are 0,0
- MacX 1.2 will position the window just below the menu bar.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7232



# Tech Info Library

## A/UX: How to Collect System Crash Information (8/94)

Revised: 8/25/94  
Security: Everyone

A/UX: How to Collect System Crash Information (8/94)

=====

Article Created: 23 March 1991  
Article Reviewed/Updated: 24 August 1994

TOPIC -----

How can I get an operating system dump when A/UX either hangs or crashes?  
Is there any documentation on interpreting such output?

DISCUSSION -----

Currently A/UX provides no BSD UNIX styled "crash" system dump. However, A/UX does provide a basic kernel debugger (a module linked into the kernel).

To make a kernel that contains the "debugger" module, invoke the "newconfig debugger" command to build a new kernel. To boot a kernel that contains the "debugger" module, make sure that the "launch" from the A/UX Startup contains the -s option. The -s option causes "launch" to load the kernel symbol table into memory and allows the debugger to display addresses as symbolic names.

To use the debugger, connect an ASCII asynchronous terminal to the modem port (tty0). The debugger reads from and writes to the modem port at 9600 speed with 8-bit characters.

Two ways you can activate the debugger:

- by pressing the programmer's interrupt switch to produce a non-maskable level 7 interrupt.
- by calling the debugger's "sysdebug()" routine.

The above information was documented in greater detail in the Release notes for "A/UX Device Drivers Kit Version 2.0". This kit is no longer available.



Article Change History:

24 Aug 1994 - Reviewed and updated.

Support Information Services

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Tech Info Library Article Number:7233



# Tech Info Library

## PATHWORKS for Macintosh: System Software Requirements

Revised: 6/18/91  
Security: Everyone

PATHWORKS for Macintosh: System Software Requirements

=====  
  
Article Created: 23 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

With PATHWORKS for Macintosh, what system software is required?

DISCUSSION -----

The Macintosh workstation must have the following software installed before you can install and use PATHWORKS for Macintosh:

- System Software version 6.0.4 or later
- AppleShare workstation software
- AppleTalk Phase 2 software (for use with EtherTalk card)

The AppleShare workstation software is required because you install the Macintosh software for PATHWORKS for Macintosh from a VAXshare file server.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7235



# Tech Info Library

## A/UX 2.0.1: Function Keys and CommandShell

Revised: 11/9/92  
Security: Everyone

A/UX 2.0.1: Function Keys and CommandShell

Article Created: 23 March 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Does A/UX 2.0.1 support the function keys in the CommandShell?

### DISCUSSION -----

Yes, A/UX 2.0.1 supports the Apple Extended Keyboard function keys in both the CommandShell environment and console emulator mode. In addition, A/UX 2.0.1 supports VT100 application keypad mode in the CommandShell environment, but not, however, in console emulator mode.

The console(7) manual pages provide more information on this subject.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7236



# Tech Info Library

## PATHWORKS-DECnet: Wide-Area Network Issues (11/94)

Revised: 11/7/94  
Security: Everyone

PATHWORKS-DECnet: Wide-Area Network Issues (11/94)

=====

Article Created: 24 March 1991  
Article Reviewed/Updated: 07 November 1994

TOPIC -----

I have a VAX in two countries: Hong Kong and Korea. Both sites have AppleTalk networks connected using PATHWORKS. I would like to connect these networks using X.25 (using VAX PSI software).

According to Digital and PATHWORKS documentation, I can run full DECnet over VAX PSI and have completely integrated operation. If I run PATHWORKS (AppleTalk-to-DECnet gateway), will I still have this level of transparency?

The literature I have read states that I can do this. But will I have to keep the X.25 link on all the time? How expensive is this? Or is the PSI software intelligent enough to connect to the X.25 network only when actually needed?

DISCUSSION -----

In theory, your setup should work. As long as you have a line and a circuit between the two DECnet nodes, creating the DECnet tunnel is just a matter of defining the "tunnel" port, giving it a name, taking care of routing costs, turning on the system, and (most important) specifying a partner (the DECnet node name of the other VAX).

In practice, you may encounter these problems:

- With AppleTalk 3.0 for VMS, we don't recommend any tunneling below 56KB. In many X.25 networks, the connection between the computer and X.25 pad may be slower than the connection between the pads.
- The X.25 link should be up all the time. There is no way for DECnet PSI software to be dynamically connected and "know" when AppleTalk packets should go through. Even if the software could do this, the tunnel port definitions on both ends can't be dynamic.

- If your X.25 network has any two-minute delays, AppleShare will have problems. The ASP session timer expires at two minutes, terminating the session and losing the server connection.
- Another problem has to do with NBP lookup. You might not see the file server when opening the Chooser and selecting the AppleShare icon. Some sites have to change a resource called GNRL to increase the Chooser interval timer and retry timer values.

You can find a complete discussion of this subject in the Tech Info library in AppleLink. For more information, search on "AppleTalk and Wide and Area".

Article Change History:

07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7238



# Tech Info Library

## MacX25: Problems Using with Macintosh IIsi

Revised: 4/20/93  
Security: Everyone

MacX25: Problems Using with Macintosh IIsi

=====

Article Created: 23 March 1991

### Article Change History

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04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I installed MacX25 on a Macintosh IIsi and then tried to start the MacX25 Admin program. The MacX25 Admin program doesn't recognize my AppleSerial NB Card: I keep getting a "Status" "Out of service" message.

Is this a known problem?

### DISCUSSION -----

You are mostly likely using the first version of MacX25; the MacX25 server and MacX25 Admin software version 1.0 doesn't work on any computer that requires System Software 6.0.7 (such as the Macintosh IIsi). The problem involves the "Gestalt" function and is fixed in version 1.0.1 of MacX25.

Version 1.0.1 of MacX25 is compatible with both System 6.0.7 and System 7. To use the MacX25 server software under System 6.0.7, you'll need at least 2MB of RAM. Under System 7, you'll need at least 4MB of RAM.

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Tech Info Library Article Number:7239



# Tech Info Library

## TrueType: Use LaserWriter 6.1 Driver or Later

Revised: 6/18/91  
Security: Everyone

TrueType: Use LaserWriter 6.1 Driver or Later

=====  
Article Created: 24 March 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

### TOPIC -----

After installing TrueType software that ships with the StyleWriter (for use under System Software 6.0.7) I can't print to the LaserWriter using the LaserWriter 5.2 drivers. I keep getting a dialog box telling me to update my printer drivers.

Do I have to use the LaserWriter 6.0.1 driver if TrueType is installed?

### DISCUSSION -----

The TrueType software that comes with the StyleWriter or Personal LaserWriter LS printer requires the LaserWriter 6.1 driver or later. The driver is on the Macintosh Printing Tools disk that comes with the StyleWriter printer. Everyone on the network should upgrade together to the newest driver.

The LaserWriter 6.1 driver doesn't use the separate Laser Prep file required by previous versions of the LaserWriter driver. Instead the Laser Prep code is downloaded with every print job. Because of this, users of this driver will not have Laser Prep "wars" when new versions of LaserWriter drivers are installed.

There is a Laser Prep file on the above printing disk, but only for upgrading AppleShare Print Servers that makes them compatible with the new LaserWriter driver. Here is the path:

Macintosh Printing Tools  
    LaserWriter Utilities  
        For AppleShare Print Server  
            Laser Prep

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Tech Info Library Article Number:7240





# Tech Info Library

## Macintosh: Multi-line Dial-in Access Software

Revised: 5/11/94  
Security: Everyone

Macintosh: Multi-line Dial-in Access Software

=====

Article Created: 26 March 1991  
Article Reviewed/Updated: 11 May 1994

TOPIC -----

I'm looking for a multi-line remote-access AppleTalk server or bulletin board system for the Macintosh.

Also, how do I go about setting up such a system?

DISCUSSION -----

Multiple calls on a single phone number ("one-number access") are available from your local telephone company. This is the same service many businesses use for voice services.

Apple Remote Access MultiPort Server is a product from Apple that provides a flexible, scalable, and secure way to offer network access to large numbers of remote or mobile users. Used in conjunction with one or more Apple Remote Access Serial Cards, it allows a Macintosh computer or a Workgroup Server to support from 4 to 16 simultaneous dial-up connections.

On the client side users would have the Apple Remote Access Client for Macintosh software on their system to connect to a Apple Remote Access MultiPort server.

Another solution for allowing multiple dial up lines into an AppleShare network would be the use of network modems such as Shiva's NetModem. These modems are stand-alone AppleTalk devices that connect as a node. One NetModem would be required for each incoming line. Once connected, the computer dialing in would become a node on the network via the NetModem.

TeleFinder, by Spider Island Software, is a bulletin board program for the Macintosh that handles multiple callers. The program provides electronic mail (its own, not a gateway to other systems) and file transfers. It also sports a Macintosh interface: files and folders appear and behave much as they do in the Finder. And while Macintosh users have the benefit of a graphical interface,

other computer users can have access using text commands.

TeleFinder handles as many phone lines as host Macintosh memory and processing power allow: a standard Macintosh II with 8 MB of RAM could handle six lines at 9600 baud or twenty or more phone lines at 2400 baud. Be aware that the Macintosh cannot efficiently manage multiple serial port activity. Ten or more callers on one Macintosh will definitely result in significant performance degradation.

Multiport serial cards are available from Creative Solutions and Applied Engineering.

For more information, search on "MultiPort", "Shiva", "TeleFinder", "Creative Solutions", or "Applied Engineering"

Article Change History:

11 May 1994 - Updated with MultiPort Server info and Shiva Netmodem.

Support Information Services

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Tech Info Library Article Number:7244



# Tech Info Library

## LaserWriter 6.0: How To Get Black & White Update Patch

Revised: 6/18/91  
Security: Everyone

LaserWriter 6.0: How To Get Black & White Update Patch

=====

Article Created: 27 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I obtain the LaserWriter 6.0 driver with the patch that has black and white selected as the default?

DISCUSSION -----

The LaserWriter 6.z.1 driver is on AppleLink in the Tech Info Library. Use the search criterion of "LaserWriter 6.z.1".

Also, the LaserWriter 6.1 driver defaults to black and white or Color/Gray scale, depending on what was used last. The LaserWriter 6.1 driver is on the Macintosh Printing Tools disk that comes with the Personal LaserWriter LS and the StyleWriter.

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Tech Info Library Article Number:7245



# Tech Info Library

## Macintosh: Where To Find DRAM for Old-Style Video Boards

Revised: 6/18/92  
Security: Everyone

Macintosh: Where To Find DRAM for Old-Style Video Boards

=====

Article Created: 27 March 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated:

TOPIC -----

I want to upgrade my old 4-bit video card to 8-bit. Apple's memory upgrade kit for the old video card is now off the price list. I assume that these are just standard 64K DRAMs. Can you recommend a third-party source?

DISCUSSION -----

The memory chips used to expand the old Macintosh II Video Card from 4-bit to 8-bit are not standard 64K DRAMs. VRAMs made by NEC were used on the board (part numbers: D41264C-12). The "-12" in the part number indicates that the chips have a 120ns rating.

Companies that sell these chips include:

- The Chip Merchant
- SHECOM COMPUTERS
- Peripheral Outlet

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7246



# Tech Info Library

## DriveSavers

Revised: 4/4/97  
Security: Everyone

DriveSavers

=====

Article Created: 28 March 1991  
Article Reviewed/Updated: 4 April 1997

DriveSavers

-----  
400 Bell Marin Keys Blvd.  
Novato, CA 94949

800-440-1904

415-883-4232

415-883-0780 Fax

Company Profile:  
Services, Macintosh hard drive repairs, hard drive,  
SyQuest, optical removable, and floptical data recovery services. Fast,  
nationwide, the real hard drive savers.

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Tech Info Library Article Number:7247



# Tech Info Library

## Macintosh: Voicemail & Audiotex System Now Available

Revised: 6/14/91  
Security: Everyone

Macintosh: Voicemail & Audiotex System Now Available

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do you know of any Macintosh product that handles DTMF (Dual Tone Multi Frequency) decoding, voice mail, and audiotex?

DISCUSSION -----

TFLX, from Magnum Software, is a complete audiotex system for any 1MB Macintosh with a 20ns or faster hard disk.

TFLX is a combination hardware and software product. It connects to a serial port, has a sound digitizer, 1200 baud Hayes-compatible modem, serial port pass-through, and DTMF decoding. It can detect busy, ring, modem and fast busy recognition. The package is MultiFinder and AppleShare compatible and has a graphical user interface.

It also has database telemarketing capabilities, with keypad input for menu-driven operations.

The entire operation of the unit is programmable using Magnum's custom icon-oriented language.

For more information, search on "Magnum Software"

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Tech Info Library Article Number:7249



# Tech Info Library

## A/UX: Recover a Missing or Corrupted System Folder (5/95)

Revised: 5/3/95  
Security: Everyone

A/UX: Recover a Missing or Corrupted System Folder (5/95)

=====

Article Created: 29 March 1991  
Article Reviewed/Updated: 3 May 1995

TOPIC -----

If the System Folder, `"/mac/sys/System Folder"`, of an A/UX user gets accidentally thrown away in the trash, what System Folder can be used to replace the original contents? Are there any special files?

DISCUSSION -----

The A/UX command `"systemfolder"` can generate a clean personal Folder in the `$HOME` directory. The contents of the newly created personal System Folder will include generic files from the `"/mac/lib/SystemFiles/private"` and `"/mac/lib/SystemFiles/shared"` directories. Follow these steps:

- 1) Log on as `"root"`
- 2) Type the command `"systemfolder"`
- 3) If you receive the message, `"System Folder '/System Folder' already exists - updating"`, type the command: `mv "System Folder" "old system"`. Then type the command `"systemfolder"`
- 4) Logout as root and login as the user.
- 5) You have created a clean System Folder, and you can then copy the Extensions and Control Panels you want into the `"/mac/sys/System Folder"`.

Article Change History:  
03 May 1995 - Updated article for clarity.  
22 Aug 1994 - Reviewed for accuracy.

Support Information Services

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Tech Info Library Article Number:7250





# Tech Info Library

## Macintosh 8•24 GC Card: QuickDraw Printer Problem (11/94)

Revised: 11/7/94  
Security: Everyone

Macintosh 8•24 GC Card: QuickDraw Printer Problem (11/94)

Article Created: 30 March 1991  
Article Reviewed/Updated: 07 November 1994

### TOPIC -----

I'm having problems printing from a Macintosh II with a Macintosh Display Card 8•24 GC connected to a LaserWriter SC. When acceleration on the Macintosh Display Card 8•24 GC is on, QuickDraw fill patterns aren't printing properly. I am running System 6.0.5 with LaserWriter SC driver 1.1.

If I turn off acceleration on the Macintosh Display Card 8•24 GC and restart, everything works fine. But restarting each time I want to print is not a satisfactory solution.

### DISCUSSION -----

After doing some testing, we discovered that this problem happens with any of Apple's QuickDraw printers. We have told Engineering about the problem and will announce a solution when we have it.

In the mean time, we suggest that you switch off the Macintosh Display Card 8•24 GC's acceleration before printing. You can do this using the card's Control Panel without rebooting or even quitting from an open application. We realize that this isn't a solution, but it is an adequate temporary workaround.

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7252



# Tech Info Library

## Personal LaserWriter LS: About the Paper Feeder Accessory

Revised: 6/6/91  
Security: Everyone

Personal LaserWriter LS: About the Paper Feeder Accessory

=====

Article Created: 30 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm confused about the optional paper and envelope feeder for the Apple Personal LaserWriter LS.

Apple's price list states that the Personal LaserWriter LS requires a Personal LaserWriter LS Paper Feeder to accept the optional Letter, Legal, and Envelope cassettes.

I've read all the available Personal LaserWriter LS literature and can find no other mention of the Paper Feeder. Do I really need to get the Paper Feeder, and where do I get more information about it?

DISCUSSION -----

The Personal LaserWriter LS has two standard ways to feed-in paper:

- Manual feeding using the multi-purpose tray, or
- stacking 50 pieces of paper or less in the multi-purpose tray.

There is an optional, dealer-installable, Personal LaserWriter LS Paper Feeder that works with the Personal LaserWriter Letter Cassette, Personal LaserWriter Legal Cassette, or Personal LaserWriter Envelope Cassette.

You don't need the Personal LaserWriter LS Paper Feeder to use the printer. It is only necessary if you want to have a 250-sheet capacity Personal LaserWriter Letter Cassette or Personal LaserWriter Legal Cassette, or the handy Personal LaserWriter Envelope Cassette.

The Personal LaserWriter LS Paper Feeder documentation is in the Personal LaserWriter LS Owner's Guide on pages 79-86.

The Apple part number for the Personal LaserWriter LS Paper Feeder is M8028G/A.

The Apple Personal LaserWriter LS product sheet (M1076LL/A) mentions the Personal LaserWriter LS Paper Feeder under the "Related Products" section.

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Tech Info Library Article Number:7255



# Tech Info Library

## A/UX: How To Create Additional Swap on a Separate Drive

Revised: 7/13/92  
Security: Everyone

A/UX: How To Create Additional Swap on a Separate Drive

=====

Article Created: 30 March 1991  
Article Last Reviewed: 3 July 1992  
Article Last Updated:

TOPIC -----

I'm trying to tune an A/UX system for maximum performance. How do I set up swap space exclusively on a second drive? The way I'm doing it doesn't seem to "take hold".

System Setup: Macintosh IIIfx with 20MB RAM, A/UX 2.0.1, X Window System 2.1.

A/UX is on an external 1GB drive from MacinStor (set to SCSI 1) partitioned with SilverLining. The drive's default size swap partition (18MB) is at slice 1. To increase performance, I want to dedicate the Apple internal 80MB drive to swap.

Here's how I'm trying to do this:

- 1) I use Apple HD SC Setup to create custom partitions on the internal drive (SCSI 0, slice 1).
- 2) I boot A/UX off the external drive.
- 3) I log in as root and associate the new partition with a slice using the command: " pname -a -c 0 -s 1 Swap"
- 4) I added the new swap area with the command:  
"swap -a /dev/dsk/c0d0s1"
- 5) I reboot the system.
- 6) I run "swap -l" to list swap area status and only see  
/dev/dsk/c1d0s1 showing (the default swap area on the

external drive).

What else do I need to do? Do I have to manually add an entry to /etc/fstab for /dev/dsk/c0d0s1? If so, what parameters need to be set?

#### DISCUSSION -----

If you use Apple HD SC Setup to create a custom Swap partition on slice 1 (the default slice number in A/UX) you don't have to do "pname -a -c 0 -s 1 Swap" to associate that partition. The swap device /dev/[r]dks/cXdYs1 is the default recognition of A/UX.

To automatically add additional swap areas when booting A/UX, insert the following lines in /etc/rc:

```
# add additional swap area here
/etc/swap -a
```

Now insert the additional swap block device entry in the /etc/fstab. In your situation this is:

```
/dev/dsk/c0d0s1  ignore  swap  rw  ignore ignore
```

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Tech Info Library Article Number:7257



# Tech Info Library

## Macintosh: Remote Access to UNIX Servers

Revised: 9/25/92  
Security: Everyone

Macintosh: Remote Access to UNIX Servers

=====

Article Created: 1 April 1991

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I want to access a UNIX server with my Macintosh using dial-up phone lines and modems.

What software do I need to do terminal emulation and file transfer?

### DISCUSSION -----

Many Macintosh communication programs, such as MacTerminal, MicroPhone, Smartcom II, Kermit, MacBLAST, VersaTerm, and so on, have VT100, VT52, VT102 terminal emulation. These programs also have file transfer protocols, such as X/Y/Zmodem, Kermit, MacBinary, and so on.

Most UNIX machines support these types of terminal emulation. As long as your UNIX machine has the same file transfer protocol (such as Kermit, or X/Y/Z Modem) as your Macintosh software, there should be no problem doing file transfers.

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Tech Info Library Article Number:7258



# Tech Info Library

## Macintosh: Compressed Digital Audio Access from LaserDiscs

Revised: 6/6/91  
Security: Everyone

Macintosh: Compressed Digital Audio Access from LaserDiscs

=====

Article Created: 1 April 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I'm interested in decoding "Time Compressed Audio" stored on a LaserDisc. This compression allows up to 300 hours of audio-only to be stored on a video LaserDisc.

Is there a Macintosh product for this purpose?

DISCUSSION -----

Fast Trax Digital Technologies, Inc. of Irvine, California sells encoder/decoder devices for the Macintosh and MS-DOS PC. The Macintosh needs only a software driver to use the equipment.

For more information, search on "Fast Trax".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7259



# Tech Info Library

## Apple IIGS: Error 0C Indicates Sound Chip Problem

Revised: 6/6/91  
Security: Everyone

Apple IIGS: Error 0C Indicates Sound Chip Problem

=====

Article Created: 14 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Apple IIGS (rev. 03 ROM) gives a self test error code of 0C000004, though everything seems to be working fine. What does this code mean?

DISCUSSION -----

Apple IIGS Tech Note #95 explains the diagnostics test:

AA = 0C  
DD = 01: RAM data error  
      02: RAM address error  
      03: Data register failed  
      04: Control register failed  
      05: Oscillator interrupt timeout

In your case, the problem is a control register failure, specifically a bad sound chip. Since the sound chip is not socketed, you will have to replace the logic board of the Apple IIGS.

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Tech Info Library Article Number:7260





# Tech Info Library

## ImageWriter I: Compatible with Newer Macintosh Models (2/96)

Revised: 2/5/96  
Security: Everyone

ImageWriter I: Compatible with Newer Macintosh Models (2/96)

=====

Article Created: 15 April 1991  
Article Reviewed/Updated: 5 February 1996

TOPIC -----

I am having difficulty using a Macintosh Classic with a wide carriage ImageWriter I. Are there any known incompatibilities with old ImageWriter printers and the new computers or system software?

DISCUSSION -----

There are no known compatibility problems with the ImageWriter I and Macintosh computer with DIN 8 serial ports, if the current ImageWriter driver and the proper cables are used.

The current ImageWriter driver is version 2.7 for System 6 users and version 7.0.1 for System 7.x users. The correct cable configuration is to use the original Macintosh to ImageWriter DB-9 to DB-25 cable, part number 590-0169, with the DB-9 to Mini DIN 8 Macintosh Peripheral Adapter cable, part number 590-0553.

When using these cables and the current ImageWriter driver, the printer should work just fine.

Article Change History:  
05 Feb 1996 - Made minor change.  
06 Jul 1995 - Updated part numbers to reflect current models

Support Information Services

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Tech Info Library Article Number:7261



# Tech Info Library

## A/UX: Directories; 32-bit Clean Warning; Number of Procs (9/94)

Revised: 9/7/94  
Security: Everyone

A/UX: Directories; 32-bit Clean Warning; Number of Procs (9/94)

=====

Article Created: 16 April 1991  
Article Reviewed/Updated: 6 September 1994

TOPIC -----

Here are a few A/UX questions:

1. I've got an NFS server online. How do I export specific directories (/usr/catman, for example) without exporting root or /usr?
2. How do I prevent the "32-bit clean" warning (for Macintosh applications stored and launched under A/UX file system) without resorting to a ResEdit fix?
3. I know how to increase the maximum number of processes using kconfig. Is it possible to increase my maximum number of PTYs to 64?

DISCUSSION -----

1. All the NFS exported entries specified in the /etc/exports file are file system mount points. Currently, there is no way you can only "export" specific directories under a mounted file system.

We suggest you make and export a new file system for these specific directories.

2. SIZE resource is the only place to make this change. Here are two ways you can make a Macintosh application "recognizable" as a 32-bit clean so as not to get a "32-bit clean..." warning message everytime it is launched:

- use ResEdit
- or
- use "changesize +32BitCompatible file" command under CommandShell.

Changesize command sounds easier than ResEdit.

3. Yes, it is possible to change the maximum # of PTYs via kconfig.  
Just specify the NPTY=64 within kconfig.

Article Change History:

06 Sep 1994 - Reviewed. Changed parent folder.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7263



# Tech Info Library

## A/UX 2.0.1: Internet Forwarder Bug (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX 2.0.1: Internet Forwarder Bug (8/94)

Article Created: 16 April 1991  
Article Reviewed/Updated: 23 August 1994

TOPIC -----

I'm trying to get an Internet forwarder running under A/UX 2.0.1. I have configured several systems the same way, with no luck. I've tried using a Macintosh IIx, a Macintosh IIci and a Macintosh IIfx, each with 2 rev K EtherTalk cards. The other systems on the networks include a Macintosh IIfx on each network and a Decstation 2100 and a MacBlitz card on the 192.33.20 network.

Here are the procedures I've been using in my attempts to bring up the forwarder:

- 1) Install the cards into the system.
- 2) Do a newconfig nfs and answer "n" to the YP client prompt.
- 3) Configure IP & broadcast addresses & netmasks for each card so /etc/NETADDRES file look like:

```
0 192.33.20.1 192.33.20.255 255.255.255.0
1 134.69.50.1 134.69.50.255 255.255.255.0
```

- 4) Set up my /etc/hosts file to include hosts on both sides of the router as follows:

```
0x7F.0x00.0x00.0x01 loop lo loo localhost
192.33.20.1 jabberwock #ae0 host reference
134.69.50.1 jabberwock1 #ae1 host reference
192.33.20.2 manticore
134.69.50.4 fredsys
192.33.20.200 dextra # decstation 2100
192.33.20.201 blitzoid # macblitz 50/8
```

5) Restart the system and verify that the following daemons are running:

```
/etc/portmap
/etc/inted
/etc/in.routed
/etc/nfsd 4 (4 of these)
/etc/biod 4 (4 of these)
/etc/rpc.lockd
/etc/rpc.statd
```

6) From system "manticore", which has an Internet address of 192.33.20.2, a broadcast address of 192.33.20.255 and a netmask of 255.255.255.0, I can ping jabberwock successfully on both sides (192.33.20.1 and 134.69.50.1). Additionally, I can rlogin to both sides of jabberwock (the /etc/hosts file contains EXACTLY the same info as jabberwock's) using "rlogin jabberwock" and "rlogin jabberwock1".

7) From system "fredsys", that has an Internet address of 134.69.50.4, a broadcast address of 134.69.50.255, and a netmask of 255.255.255.0, I can access both sides of jabberwock the same as I could from manticore. Again, the /etc/hosts file is identical to jabberwock's.

8) Neither ping nor Telnet nor rlogin is successful from manticore to fredsys or vice versa. The /etc/hosts files are the same on all three of these machines. All of the addresses match up as they should.

9) Verify the cables and terminations; check the interfaces with an ifconfig ae0 on all three machines and an ifconfig ae1 on jabberwock. All addresses and interfaces show up as they should, but to no avail.

10) At this point, I can't Telnet, ftp, ping or rlogin to fredsys from any system on the 192.33.20 network except jabberwock.

11) From jabberwock, I can ping all of the other systems on both nets. I can rlogin, etc. all of the other systems. I just can't cross the barrier from one net to the other.

Any suggestions?

#### DISCUSSION -----

With the above configuration, we have been able to reproduce your problem. On an A/UX 2.0.1 Internet forwarder/router, the host "manticore" on network 192.33.20 CAN'T talk to the host "fredsys" on network 134.69 via A/UX 2.0.1 Internet forwarder host "jabberwock".

With the same configuration, but with the Internet forwarder/router (jabberwock) running A/UX 2.0, the problem goes away. Hosts ("manticore" and "fredsys" in this case for example) on different networks via A/UX 2.0 router CAN talk to each other.

Article Change History:

23 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1991-94 Apple Computer, Inc.

Tech Info Library Article Number:7264



# Tech Info Library

## ComTalk and NFS: Compatibility Update

Revised: 6/6/91  
Security: Everyone

ComTalk and NFS: Compatibility Update

=====

Article Created: 16 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I get an update on APT's ComTalk AppleTalk & TCP/IP Routing products and the new NFS software compatibility?

DISCUSSION -----

NFS/Share from Intercon and Wollongong's NFS Client do not work across ComTalk gateways because of lack of support for splitting up and encapsulating larger UDP-type packets over AppleTalk/LocalTalk. These vendors are aware of this problem and are working on a fix. There are no problems supporting TCP-based services, such as Telnet, SMTP, FTP.

Other than this compatibility issue, these products are very fast, and have a comprehensive set of security options.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7265



# Tech Info Library

## MacRecorder Driver 1.0: Incompatible with Macintosh Portable

Revised: 7/28/92  
Security: Everyone

MacRecorder Driver 1.0: Incompatible with Macintosh Portable

=====

Article Created: 17 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

I'm trying to use Farallon's MacRecorder with my Macintosh Portable running System Software 6.0.7. The files SoundEdit and HyperSound are working fine.

When I place the MacRecorder Driver in the System Folder and restart, the driver doesn't load (the icon appears with an 'X' through it).

DISCUSSION -----

The MacRecorder Driver 1.0 is not compatible with the Macintosh Portable. Version 1.0.2 is the latest version as of July 1992 and it is compatible with the Macintosh Portable and System 6.0.7.

Farallon has sold the MacRecorder software and hardware to MacroMedia (formerly MacroMind) and they're responsible for supporting the product now.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7268





# Tech Info Library

## Macintosh SE/30: Problems with Ethernet Caused by ADEV

Revised: 6/10/91  
Security: Everyone

Macintosh SE/30: Problems with Ethernet Caused by ADEV

=====

Article Created: March 17, 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

My Macintosh SE/30 is freezing up when I use it as a server and router (using an AppleTalk Internet Router and a Kinetics Ethernet card). Could it be that the 68030 Direct Slot card is interfering with the processor in some way?

DISCUSSION -----

We are not aware of any problems using the Macintosh SE/30 in the configuration you describe. The Macintosh SE/30-AppleShare-Router combination is freezing probably because of a problem with the Ethernet card's ADEV. We suggest you try reinstalling the ADEV and see if that solves the problem.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7269



# Tech Info Library

## Macintosh: Where Changes Are Stored When a File Is Edited

Revised: 10/10/91  
Security: Everyone

Macintosh: Where Changes Are Stored When a File Is Edited

=====

Article Created: 17 March 1991  
Article Last Reviewed: 8 October 1991  
Article Last Updated: 8 October 1991

TOPIC -----

For security reasons, I need to know where changes stored during editing of a document. Is there a temporary document created, or are the changes stored in RAM until I save or exit the document?

DISCUSSION -----

How a document stores changes varies depending on the manufacturer. For instance, MacPaint is a "RAM based" program and keeps its "changes" in the application heap space. MacPaint saves changes to disk only when you choose Save, whereas Microsoft Word buffers data to the disk.

Generally, if your program is creating "temp" files, it is writing changes to disk. For instance, with MultiFinder running, launch Microsoft Word and note how it creates a Word Temp file in the System folder. Quit Microsoft Word (saving your document using Save or Save As) and the "Word Temp" file disappears. Not all temp files are visible, and some applications may buffer data to disk without being so obvious.

If you must know if an application buffers user data to disk, ask the manufacturer of your software.

A related issue is the Virtual INIT and Virtual in System 7. By design, both programs buffer data to disk (but you have the option to turn them off).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7270



# Tech Info Library

## Solana H Server: Problems with Large Phase 2 Networks

Revised: 4/10/92  
Security: Everyone

Solana H Server: Problems with Large Phase 2 Networks

=====

Article Created: 17 March 1991  
Article Last Reviewed: 10 April 1992  
Article Last Updated: 10 April 1992

TOPIC -----

Is there a problem using Solana H-Servers on large multiple-zone AppleTalk Phase 2 networks?

DISCUSSION -----

There is a problem maintaining router tables on very large networks.

Occasionally, several routers can get their battery-backed RAM blown, though they still stay running from 30 minutes to several hours, depending on network traffic. When the routers finally start to go down, you'll begin to see erroneous, duplicated, and scrambled zone names and device names. Then all the routers will stop completely and begin flashing their error indicators.

You can restart the routers, but their routing tables will be scrambled. Each time you try restarting the problem only gets worse. Completely resetting PRAM only temporarily fixes the problem.

Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7271



# Tech Info Library

## **Bull HN Information Systems (formerly Honeywell)**

Revised: 7/6/93  
Security: Everyone

Bull HN Information Systems (formerly Honeywell)

=====

Article Created: 06/07/91  
Article Reviewed: 07/06/93  
Article Updated: 11/06/92

Bull HN Information Systems  
-----

300 Concord Rd.  
M/S 843  
Billerica, MA 01821

800-343-6665

508-294-7411 Fax

Company Profile:  
Specializing in VIP 4 that allows the IBM PC to emulate the Bull VIP computer systems, computer integration

Article Change History: 07/06/93 Name information added, New Product Information Added

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7272



# Tech Info Library

## System 7: Workaround for 32-bit Incompatible Boards

Revised: 6/10/91  
Security: Everyone

System 7: Workaround for 32-bit Incompatible Boards

=====

Article Created: 5 June 1991

### Article Change History

-----

08/21/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

If a computer is set to 32-bit mode under System 7 and has a 32-bit incompatible board installed, you get an error chime at startup and a sad Macintosh on the screen, or both. How do you fix the problem?

### DISCUSSION -----

To fix this, do the following:

- Remove the incompatible board or boards.
  - If you still have your video card installed (assuming it's not the incompatible card), start up from a 6.0.x floppy and you will get a dialog prompting you to change to 24-bit addressing.
- OR -
- If you don't have your video card, start up from your System 7 and reset the Parameter RAM by holding down Command-Option-p-r at start up.

These procedures will reset the addressing to 24-bit mode.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7275



# Tech Info Library

## System 7.x: How to Prepare a Network Install Folder (2/95)

Revised: 2/15/95  
Security: Everyone

System 7.x: How to Prepare a Network Install Folder (2/95)

=====

Article Created: 5 June 1991  
Article Reviewed/Updated: 15 February 1995

TOPIC -----

Can the System 7.x Installer that is shipped on a floppy disk or CD ROM do a network install?

DISCUSSION -----

Yes. There is only one version of the Installer and it can be setup to perform a network installation. This same process works for all versions of System 7.

This is how you do it:

- 1) Create a folder called Net Install on a shared volume.
- 2) Drag all disk images needed for the installation (all disks except the Disk Tools disk) to the Net Install folder. A folder will be created inside the Net Install folder that corresponds to each diskette.
- 3) Drag the Installer and the Install script from the Install Me First or Install 1 diskette to the top level of the Net Install folder.
- 4) The Net Install folder is now prepared for remote users to use for performing system software installations. Once they log into the remote volume, they double click the Installer icon and the installation process will run.

Article Change History:

15 Feb 1995 - Reviewed for technical accuracy, revised keyword.  
05 Dec 1994 - Clarified the Net Install creation process.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7276



# Tech Info Library

## System 7: Unmounting a Disk

Revised: 8/24/92  
Security: Everyone

System 7: Unmounting a Disk

=====

Article Created: 5 June 1991

### Article Change History

-----

07/08/91 - UPDATED

- To correct terminology.

08/24/92 - UPDATED

- With additional details from another article.

### TOPIC -----

How can I unmount a disk (floppy, server, or hard disk) and remove the disk image from the desktop, besides dragging it to the Trash? System 6.0.5 and System 6.0.7 eject a disk and remove its icon from the desktop when I press Option-Command-E.

This does not appear to work with System 7.0. All System 7.0 seems to support is Command-E, so you still have to drag an icon into the trash.

### DISCUSSION -----

Command-Option-E does not work in System 7.0. Command-Y has taken over that function.

Select the disk icon and either choose Put Away from the File menu, or use the keyboard equivalent, Command-Y.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7278





# Tech Info Library

## System 7: Hiding Previous Application when Switching to Another

Revised: 6/10/91  
Security: Everyone

System 7: Hiding Previous Application when Switching to Another

=====

Article Created: 5 June 1991

### Article Change History

-----

08/24/92 - REVISED

- For clarity and accuracy.

### TOPIC -----

Under System 7.0, can I switch to another running application and hide the current application in one step?

### DISCUSSION -----

Yes. Hold down the Option key and select the application to which you want to switch by clicking in a window or selecting the application from the Application menu. This hides the current application--even any windows open in the Finder (though items on the desktop remain visible).

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7279



# Tech Info Library

## System 7: How to See About the Finder Window

Revised: 6/10/91  
Security: Everyone

System 7: How to See "About the Finder" Window

=====

Article Created: 5 June 1991

### Article Change History

-----

08/19/92 - RETITLED

- To be more specific.

### TOPIC -----

Where can I find the black-and-white picture with mountains and a moon in the Finder?

### DISCUSSION -----

In the Finder, hold down the Option key and choose "About the Finder..." from the Apple menu for the "About the Finder" window from early versions of Macintosh system software.

Hold down both the Option and Command keys while selecting this option, and the cursor displays an amusing shape.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7280



# Tech Info Library

## Third-Party Video Cards for the Macintosh Family

Revised: 6/18/92  
Security: Everyone

Third-Party Video Cards for the Macintosh Family

=====

Article Created: 5 March 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

Do you know of any third-party video cards that work with the Macintosh Classic, Macintosh LC, and Macintosh IIsi?

DISCUSSION -----

Lapis Technology manufactures a line of video interface cards, called the DisplayServer series, for the Macintosh family, including the Macintosh Classic, Macintosh LC, and Macintosh IIsi.

RasterOps Corporation also makes a line of video cards for the Macintosh family, including the Macintosh Classic, Macintosh LC, and Macintosh IIsi.

These cards support both Apple and third-party monitors.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7282



# Tech Info Library

## System 7: Correction to Installer Message on Macintosh Plus

Revised: 8/22/91  
Security: Everyone

System 7: Correction to Installer Message on Macintosh Plus

=====

Article Created: 11 June 1991  
Article Last Reviewed: 14 August 1992  
Article Last Updated: 22 August 1991

TOPIC -----

This is a notice about an incorrect message given by the System 7 Installer on a Macintosh Plus.

DISCUSSION -----

If customers attempt to install System 7 to floppy disks and choose "Minimal Installation for Macintosh Plus," the Installer screen INCORRECTLY reads as follows:

"This package contains the minimal set of system software for use on the Macintosh Plus. It is intended to create a high-density (FDHD) startup disk that will only be used with the Macintosh Plus."

This statement is incorrect. Aside from the hard drive requirement, users cannot install System 7 to high density floppy disks on a Macintosh Plus because there are no SuperDrives (FDHD 1.44MB) for the Macintosh Plus. The 1.44MB floppy drives are not supported by the Macintosh Plus ROMs.

Refer to the System 7 Installation manual, which states the hardware requirements--including a hard drive--to install System 7.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7288



# Tech Info Library

## System 7: Inter•Poll Report of LaserWriter Driver Versions

Revised: 9/3/92  
Security: Everyone

System 7: Inter•Poll Report of LaserWriter Driver Versions

=====

Article Created: 11 June 1991

### Article Change History

-----

09/02/92 - REVIEWED  
• For technical accuracy; edited.

### TOPIC -----

When I run Inter•Poll, I get blank lines where I should see LaserWriter driver version numbers. What causes this?

### DISCUSSION -----

Inter•Poll 1.0.1 (Apple's network administration software) will get a blank line for the LaserWriter driver version number from a Macintosh running System 6.0.x with the System 7 printer driver.

There is no problem viewing System 7 drivers on System 7. The System 6 Responder can't read the System 7 driver resources.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7290



# Tech Info Library

## System 7: Installing EtherTalk Phase 1 under System 7

Revised: 6/24/91  
Security: Everyone

System 7: Installing EtherTalk Phase 1 under System 7

=====

Article Created: 11 April 1991

### Article Change History

-----

08/24/92 - REVISED

- To include information from two other articles.

### TOPIC -----

Are networks running AppleTalk Phase 1 still supported under System 7?

If so, how do I install AppleTalk Phase 1 for Ethernet under System 7?

Where is the Phase 1 resource we are to use?

### DISCUSSION -----

System 7 automatically installs and supports AppleTalk Phase 2 networking software. If your network consists entirely of LocalTalk, PhoneNet, or TokenTalk (or some combination thereof), this has absolutely no impact on you and you don't need to read any further. Phase 2 software only affects networks that have EtherTalk.

But a Phase 1 EtherTalk driver that works with System 7 is available on the CD that comes as part of the System 7 Group Upgrade Kit. The procedure and software for installing Phase 1 under System 7 are contained on the CD, or on AppleLink.

The reason for this approach is that Apple is migrating the installed base to AppleTalk Phase 2. We want all new System 7 users to automatically have Phase 2 software on their Macintosh computers. However, some people will be installing System 7 on their existing Phase 1 networks, and they will need the Phase 1 EtherTalk driver until they have completed their migration to Phase 2.

The datalink software (EtherTalk and TokenTalk) included and installed with System 7 is Phase 2. However, a network of mixed Phase 1 and Phase 2 drivers can be implemented, provided the network administrator has set up the internet routers with the appropriate migration utility. Migration issues will affect only those networks using EtherTalk datalink software, because no version of TokenTalk predates version 2.0.

Network applications (like AppleShare File Server and Print Server software), system software, and its associated services are Phase independent. They can connect to and use services on any AppleTalk network.

The following is the Read Me file that is found on the Group Upgrade Kit CD:

#### EtherTalk Phase 1

-----

EtherTalk® software allows communication with AppleTalk® network services over Ethernet networking interface cards and media. EtherTalk Phase 2 software is part of Macintosh® system software version 7.0. This folder contains an earlier version of EtherTalk software, EtherTalk Phase 1.

You only need to install EtherTalk Phase 1 software for users who have Ethernet networking interface hardware and who are connected to a network that has not been upgraded to support AppleTalk Phase 2. AppleTalk Phase 2 transition and upgrade are discussed in the "System 7 Group Upgrade Guide."

To install the EtherTalk Phase 1 software, begin by installing the EtherTalk software as part of the System 7 installation procedure. Next, drag the EtherTalk icon to the icon of your System Folder (not the open System Folder window). It is automatically placed in the Extensions folder inside the System Folder.

To select the EtherTalk Phase 1 software, open the Control Panels folder, located in the System Folder. Double-click the Network control panel. Finally, select the EtherTalk icon.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7292



# Tech Info Library

## A/UX: Sendmail and Domain Name Server (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX: Sendmail and Domain Name Server (8/94)

=====

Article Created: 30 March 1991  
Article Reviewed/Updated: 23 August 1994

TOPIC -----

How do I get "sendmail" to work under A/UX?

DISCUSSION -----

The version of "sendmail" in A/UX requires your local network to be running with Domain Name Server (DNS), which is /etc/named. The README file in /usr/lib/sendmail.conf directory describes in more detail the type of mailers currently supported.

Choose one of the machines on your network as a primary Domain Name Server to prevent any host name conflicts. (See the "Setting Up Network Mail" section in the "A/UX Network System Administration" manual on how to do this.)

The distributed sendmail.cf file included with A/UX doesn't work on every network.

After you have a Domain Name Server configured and running properly on the network, execute these commands to get sendmail working:

```
# CD /usr/lib
# kill -9 the-running-sendmail-process-id
# mv sendmail.cf sendmail.cf.orig
# mv sendmail.cf.NEW sendmail.cf
# rm -f sendmail.fc           # remove the old sendmail frozen file
# sendmail -bz               # create a new sendmail frozen file
# /usr/lib/sendmail -bd -q30m # restart the sendmail
```

To get all the domain names resolved with the domain name server machine, create a file called /etc/resolv.conf on the machines not running /etc/named.



Here is an example of the content of /etc/resolv.conf:

```
domain support.apple.com
nameserver 130.43.4.9
```

Article Change History:

23 Aug 1994 - Reviewed and updated.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7293



# Tech Info Library

## Macintosh: How To Get Simultaneous RGB and NTSC Output

Revised: 6/18/92  
Security: Everyone

Macintosh: How To Get Simultaneous RGB and NTSC Output

Article Created: 14 April 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

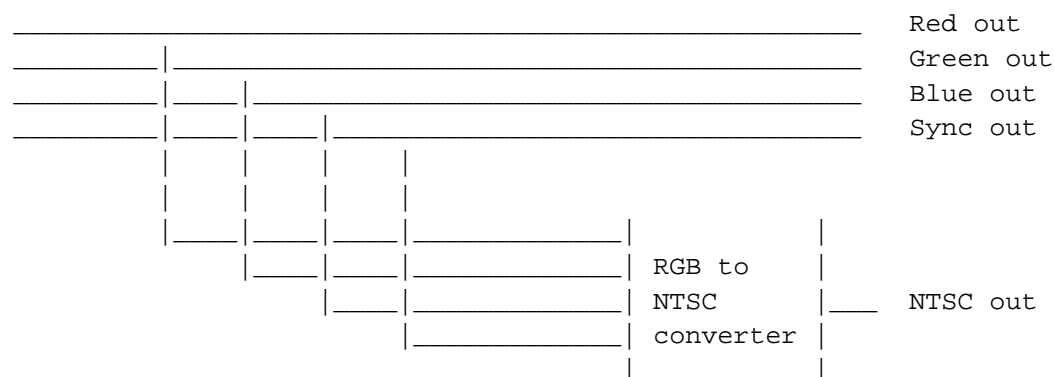
TOPIC -----

I'm trying to setup my Macintosh so it can simultaneously output an NTSC video signal for cable TV and an RGB signal for an Electrohome projector.

I've been able to do this by tapping the RGB signal from the Macintosh and feeding into a scan converter, but this creates a lot of interrupts on the projector.

I've been looking at NTSC boards, like the one from TrueVision, but these boards don't support simultaneous RGB output. What I need is a single board that outputs both signals.

Here's what I've been doing:



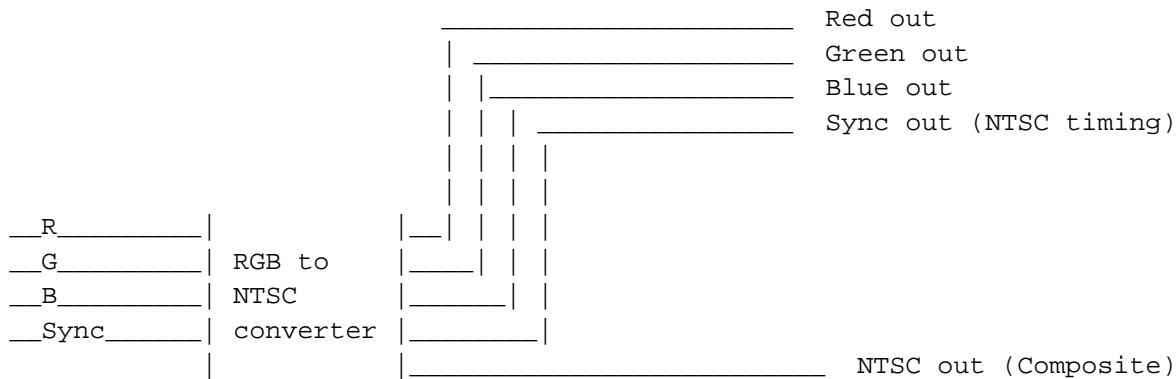
DISCUSSION -----

We doubt there is one video card available that provides simultaneous

Macintosh-style RGB (synchronization rate of around 31K) and NTSC signals (synchronization rate of around 15K).

However, if your Electrohome projector is a multi-sync RGB monitor that has NTSC sync timing, there are several options available. You can use a TrueVision NuVista card and have its RGB signal timed to the NTSC sync signal. Both the RGB signal and the composite signal are timed to the 15K sync of the NTSC specification. If your Electrohome projector has the ability to sync to NTSC timing, the Macintosh video output can go to the Electrohome as RGB and as composite NTSC for TV devices.

Here's the schematic:



The converters discussed below use this approach to drive both a RGB device and a NTSC device with the same video image simultaneously.

There are several cards that will work. The key is that the video card must be able to produce the NTSC sync timing to drive the converter.

- The NuVista+ (newer) or NuVista (older) with VIDI/O Box
- Several RasterOps video cards with their Video Expander Box
- The Macintosh Display Card 4•8, Macintosh Display Card 8•24, and Macintosh Display Card 8•24 GC with either the VIDI/O or Video Expander
- Any cards listed as compatible with VIDI/O or Video Expander

RGB devices used in this situation must be able to sync to the 15K NTSC timing produced by the video cards.

The TrueVision card has a variety of NuVista+ cables for connecting different products, including BNC, S-Video, composite (RCA style), and so on. The NuVista+ video card is like the VIDI/O Box on the Macintosh NuBus card: the card doesn't need a separate converter box.

Cables for the VIDI/O Box and the Video Expander Box use standard RCA style connectors for composite NTSC, standard S-Video connectors for the S-Video NTSC, and individual BNC connectors for the NTSC RGB. Depending on what you need, standard off-the-shelf cables may work, or you may need to create

custom cables.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7294



# Tech Info Library

## TechWorks (Technology Works)

Revised: 4/4/97  
Security: Everyone

TechWorks (Technology Works)

=====

Article Created: 4 November 1991  
Article Reviewed/Updated: 4 April 1997

TechWorks

-----

4030 Braker Lane West  
Suite 350  
Austin, TX 78759-5319

Telephone: 800-879-9739  
800-688-7466

Telephone: 512-794-8533

Fax: 512-794-8520

Company Profile:

-----

Hardware and Software. TechWorks develops and markets memory modules (SIMMs) and Ethernet cards for the Macintosh as well as the GraceLAN family of network administration and troubleshooting products.

Article Change History:  
15 Aug 1995 - Updated 800 number.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7295



# Tech Info Library

## LocalTalk PC Card: LAP Driver (11/94)

Revised: 11/7/94  
Security: Everyone

LocalTalk PC Card: LAP Driver (11/94)

=====  
Article Created: 23 April 1991  
Article Reviewed/Updated: 22 July 1993

### TOPIC -----

Is there a driver for the old LocalTalk PC Card now called the PhoneNetTalk PC Card from Farallon that will give my software raw LAP packets? I don't want a DDP interface like ATALK.SYS. The Clarkson packet driver, "localtlk", doesn't do what I want because it has a packet interface that uses ATALK.SYS and gives IP packets. What I need are raw LAP packets.

### DISCUSSION -----

We haven't seen a driver that has LAP level packets, but there is a source of information available that may help. The APDA document, "LocalTalk PC Card and Driver Preliminary Notes" (APDA part number M7055), describes how to write low-level software to control and communicate with the card. The note contains sample code in C and detailed information about programming.

For specifics on other cards, you'll need to contact the manufacturer. We suggest you contact DayStar Digital, Inc. on the LT200, and Sun Select (formerly Sitka Corp.) about the FlashCard. Also contact Farallon for information on the PhoneNetTalk PC Card.

To locate a vendor's address and phone numbers, use vendor name as a search string

Article Change History:  
07 Nov 1994 - Reviewed for technical accuracy.  
22 Jul 1993 - Updating company names.

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Tech Info Library Article Number:7296



# Tech Info Library

## Honeywell: Available Terminal Emulation Software

Revised: 2/6/92  
Security: Everyone

Honeywell: Available Terminal Emulation Software

=====

Article Created: 23 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the status of Honeywell's PC7800?

DISCUSSION -----

PC7800 is an old product that Honeywell is no longer developing. A much more up-to-date and powerful package is Mac73/78 3.0 from Cambridge Systems. Besides emulating a wide variety of Honeywell terminals, it also can emulate ADDS, DEC, Tektronics, and other terminals.

For more information, search on Cambridge Computer

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7297



# Tech Info Library

## **DAL: Problem with Table Locking and Rdb/VMS**

Revised: 2/6/92  
Security: Everyone

DAL: Problem with Table Locking and Rdb/VMS

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Tech Info Library Article Number:7298





# Tech Info Library

## KnowledgeSet Corporation

Revised: 4/4/97  
Security: Everyone

KnowledgeSet Corporation

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Article Created: 04/23/91  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

KnowledgeSet Corporation

-----

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Company Profile:  
Software, specializing in knowledge, text, and graphic retrieval systems.

Article Change History: 07/12/93 Address changed, phone number changed

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Tech Info Library Article Number:7299



# Tech Info Library

## Macintosh Portable: RAM Upgrade Card Issues

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: RAM Upgrade Card Issues

=====  
Article Created: 20 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

- 1) Can I use a PDS Memory Card with a third-party RAM Slot memory card?  
The information available in the TIL suggests that the Apple Memory Card should be removed if a PDS Memory Card is in use. If third-party cards will work, which ones do you recommend? Can you be more specific regarding the problem with the memory decode chip?
- 2) The Pseudo Static RAM cards are not compatible with older versions of the Macintosh Portable. Is this because of different pinouts on the new logic board or because of Pseudo Static RAM?
- 3) With an upgraded Macintosh Portable, will both the RAM slot and PDS memory cards work? Will Pseudo Static memory work in the upgraded system?
- 4) What is the maximum amount of RAM that is supported in the Macintosh Portable's RAM slot?

DISCUSSION -----

- 1) PDS memory cards are compatible with third-party RAM Slot memory cards. PDS cards do not use the Apple Memory Decode Chip, so there are no compatibility problems. Any third-party card designed for the new Macintosh Portable should work. Contact the card's manufacturer for compatibility information before buying.

The only memory card affected by the memory decode chip problem is Apple's. When an Apple 1MB or 3MB PSRAM Memory Board is installed, you cannot use the PDS for RAM expansion. The Apple card will try to decode memory accesses above the 4MB boundary.

- 2) The pseudo static RAM of the upgraded Macintosh Portable requires a refresh line. SRAM cards designed for the original Macintosh Portable will not work with the new Macintosh Portable.
- 3) The Backlit Upgrade consists of a new bezel (including display) and a card that goes into the ROM slot that powers the backlit display. PDS cards and RAM from the original system will work in the upgraded system.
- 4) For the new Macintosh Portable, the RAM slot can support up to 3MB of PSRAM, with 1MB soldered on to the main logic board. The PDS card can support up to 7MB of RAM (provided the Apple Memory Card is not used) making for a grand total of 8MB for the system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7300



# Tech Info Library

## MacX: Default Color Map Is Macintosh System Palette

Revised: 4/22/93  
Security: Everyone

MacX: Default Color Map Is Macintosh System Palette

=====

Article Created: 20 April 1991

### Article Change History

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04/21/93 - UPDATED

- To include MacX 1.2 information.

### TOPIC -----

When trying to plot a color bar of 256 colors, MacX shows me a full range of colors on the left side of my screen (colors 0 through 128, or so), but shows only a solid color on the right (colors 128 to 256). When printing to a Tektronix color printer, the screen dump routine returns a mirror message "130 colors found". This occurs in both rooted and rootless windows.

The color bar is complete (256 colors) on both the screen and printer when running White Pine's Exodus II and matches the color table of the host.

Why isn't MacX displaying all the colors?

### DISCUSSION -----

There are many X client applications that use the standard or default X color map. MacX uses the standard Macintosh System palette as the default color map (which it should), though this can lead to the situation you describe. The System palette has 128 colors locked in and no additional colors specified.

If you, using the X client application, request a new color map from MacX, you should get all 256 colors.

In MacX 1.2 loading the standard color map is an option in the display

preferences dialog.

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Tech Info Library Article Number:7302



# Tech Info Library

## Microsoft Works: 32-bit clean version for A/UX, System 7 (12/93)

Revised: 12/10/93  
Security: Everyone

Microsoft Works: 32-bit clean version for A/UX, System 7 (12/93)

=====

Article Created: 20 April 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

There is an incompatibility with Microsoft Works 2.0 running under A/UX 2.0.1. Double-clicking on Microsoft Works causes the menu bar to appear momentarily, then closes and returns to MultiFinder. I have tried double-clicking on spreadsheet, database, and word processing files with the same result. I have also tried adjusting the RAM allocation with no change.

DISCUSSION -----

Microsoft Works 3.0 is a 32-bit clean version. Please use version 3.0 or later.

Article Change History:  
10 December 1993 - Edited Discussion.  
17 Jun 1993 - Revised include reference to MS Works 3.0.  
08 Oct 1993 - Reviewed for technical accuracy.  
08 Oct 1993 - Updated to include A/UX 2.0 Information.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7303



# Tech Info Library

## AppleShare: A/UX Users Take About Two Minutes to Disconnect

Revised: 11/9/92  
Security: Everyone

AppleShare: A/UX Users Take About Two Minutes to Disconnect

=====

Article Created: 20 April 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

On a network with many workstations running A/UX, I log in to our AppleShare server, do some work, and log off. The window on the server indicates that I'm still logged in. This problem doesn't happen with identical workstation running under Macintosh System 6.0.7.

### DISCUSSION -----

This problem happens under both A/UX 2.0 and 2.0.1. User's names are not IMMEDIATELY disconnected from the Connection User List in AppleShare, but they will disappear after about two minutes from log off of an A/UX workstation.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7304



# Tech Info Library

## A/UX: AppleTalk Phase 2 Node Identifier (6/93)

Revised: 8/13/93  
Security: Everyone

A/UX: AppleTalk Phase 2 Node Identifier (6/93)

=====

Article Created: 20 April 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

What is required for the Phase 2 Node Identifier program to report an A/UX machine as Phase 2?

DISCUSSION -----

The AppleTalk Phase 2 Node Identifier uses the version of the AppleTalk drivers to determine AppleTalk Phase 2 compatibility. A/UX 3.x requires AppleTalk version 57 or later to show up as AppleTalk Phase 2.

Article Change History:  
17 Jun 1993 - Updated and Revised to bring article up-to-date with  
A/UX 3.x.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7305





# Tech Info Library

## MacX: Using with Motorola X Clients

Revised: 4/20/93  
Security: Everyone

MacX: Using with Motorola X Clients

Article Created: 26 April 1991

### Article Change History

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04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm trying to have session using MacX 1.1 and MacTCP Tool 1.1 with a:

- Motorola 8640
- UNIX SVR3.2
- X11R3

My MacX application opens fine, but when I try to execute any X sessions, I get the error message:

The remote command "xclock" could not be executed using the tool "MacTCP Tool". Creation of the remote stream failed. The connection came up halfway then failed."

Users can create a X session on the Motorola box and send it to the MacX screen via the 'setenv' command. However, the session executed and sent to the Macintosh doesn't fit on a less than 19-inch Macintosh monitor.

What configurations does the Motorola box need:

- via /usr/etc/n.rexecd?
- via /etc/hosts.equiv?

Are there compatibility issues running a MacX X11R4 server against an X11R3 client?

### DISCUSSION -----

This scenario sounds familiar. Your problem is most likely with the remote host, the "rexecd" service not functioning properly, or some restriction while executing the "rexecd" command.

We knew this was happening on some of Sun's systems. Sun implemented a "feature" in their "rexecd" code that doesn't allow a host (that isn't listed in the /etc/hosts file) to execute the "rexecd" command. The solution is to add the Macintosh IP address and host name to the Sun's /etc/hosts file.

If /etc/hosts file is not the issue, check to see if the "rexecd" service is available. Usually, the Internet Server database is kept in the /etc/servers file, in A/UX for example, an entry would look something like this:

```
exec    TCP    /usr/etc/in.rexecd
```

and the official Internet Service name database is kept in the /etc/services file, an entry in A/UX for example looks something like:

```
exec    512/TCP
```

The "rexecd" daemon uses a TCP protocol and listens on port number 512.

Regarding the Macintosh monitor problem, what was the X client's "geometry" specification on the command line? This display problem can happen if the "geometry" is specified to be larger than the display size of the MacX. If no "geometry" is specified, the default geometry is taken from the application. Try to specify the "geometry" within the size of the MacX display.

We don't think there is a compatibility issue for a MacX 11R4 server running against an X11R3 client.

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Tech Info Library Article Number:7306



# Tech Info Library

## AppleShare PC: 7.0 LaserWriter Driver Not Required

Revised: 6/24/91  
Security: Everyone

AppleShare PC: 7.0 LaserWriter Driver Not Required

=====

Article Created: 26 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do AppleShare PC users need to use the 7.0 LaserWriter driver? Is this a question that should be addressed to Farallon?

DISCUSSION -----

AppleShare PC has no need for the 7.0 LaserWriter driver or its prep information (also called Laser Prep, md, or Macintosh Dictionary).

When AppleShare PC prints to a LaserWriter, it uses one of two methods, depending on how it's connected. If it's set up for Epson LQ-2500 emulation, an emulation dictionary downloads with each job. This doesn't interfere with md (if it is present) and is purged at the end of the job.

If AppleShare PC is set up for PostScript printing, no dictionaries download at all. Only data made by the MS-DOS application are used. These data pass directly to the LaserWriter without changes. These data can cause problems depending on the application's print driver requirements. We haven't yet done any testing yet but don't expect any compatibility problems.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7307



# Tech Info Library

## Personal LaserWriter NT: setprintername Character Restrictions

Revised: 6/24/91  
Security: Everyone

Personal LaserWriter NT: "setprintername" Character Restrictions

=====

Article Created: 26 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using a Personal LaserWriter NT, I am trying to change the network name and type of the printer. To do this, I'm using the PostScript code:

```
-----
%!
serverdict begin 0 exitserver
statusdict begin
(Print Station:CuccaPS) setprintername
end
-----
```

This code works fine for the LaserWriter Plus and LaserWriter IINT, but not the Personal LaserWriter NT. Can the Personal LaserWriter NT change its network type?

DISCUSSION -----

The PostScript setprintername operator was not designed for changing the LaserWriter's type. The operator should not allow any of these characters as valid string components:

: @ \* =

While these characters may not always cause errors on older LaserWriters, they do cause unusual behavior with the Personal LaserWriter NT. They are invalid characters because they are field separators and wildcards, as defined by the AppleTalk Name Binding Protocol (NBP).

The format of an NBP entity name (such as a LaserWriter's Printer Access

Protocol server) is:

object:type@zone or Etch A Sketch:LaserWriter@Bandley3

If the ":" character were part of a LaserWriter's name, software attempting to address the LaserWriter would become confused and not know where the object's name leaves off or the type begins.

With the Personal LaserWriter NT, the setprintername operator is only able to change the object name. This forces the entire string into the object entry. Because the ":" character is invalid, the product operator must be used to obtain a valid AppleTalk name.

The LaserWriter Namer utility (shipped with each LaserWriter) prevents users from defining names with invalid characters. But not all PostScript interpreters enforce this restriction properly.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7308



# Tech Info Library

## Hayes InterBridge: Limits

Revised: 6/24/91  
Security: Everyone

Hayes InterBridge: Limits

=====

Article Created: 26 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

It appears that my Hayes InterBridges can't handle lots of zones with long zone names. The InterBridges only process one packet per reply for zone information. People on the other side of the Hayes InterBridges can see only 150 zones out of 183.

DISCUSSION -----

The 150 zone limit you've discovered is a characteristic of Hayes Phase 1 InterBridges.

|                                    | Phase 1 | Phase 2 |
|------------------------------------|---------|---------|
|                                    | -----   | -----   |
| Maximum number of zones            | 150     | 250     |
| Maximum number of networks         | 300     | 500     |
| Current ROM version of InterBridge | 1.12    | 2.10    |

Long zone names are not a problem with Hayes InterBridges as they will support zone names of any length.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7309



# Tech Info Library

## A/UX 2.0: Toolbox Shutdown Manager Routines Correction (4/95)

Revised: 4/26/95  
Security: Everyone

A/UX 2.0: Toolbox Shutdown Manager Routines Correction (4/95)

Article Created: 26 April 1991  
Article Reviewed/Updated: 26 April 1995

TOPIC -----

Using A/UX 2.0, I want to run a self-written program as a stand-alone application without the Finder. When I change the "mac32" startup script to "/mac/bin/startup -f ApplicationName &" things work fine except for the logout. Because the 'ExitToShell' procedure doesn't do a logout, I tried using the Shutdown Manager routines.

The "A/UX Toolbox: Macintosh ROM Interface" documentation mentions that the A/UX Toolbox routines 'ShutDwnPower' and 'ShutDwnStart' do an exit to the user's login shell. I've tried using both routines, but they work just like normal Macintosh Toolbox routines (in other word, they shutdown and restart the machine).

DISCUSSION -----

First of all, one minor correction: /mac/bin/startup SHOULD BE either /mac/bin/startmac or /mac/bin/startmac24

The "ShutDwnPower" and "ShutDwnStart" routines documented in the "A/UX Toolbox: Macintosh ROM Interface" are WRONG! The routines behave the same as Mac OS Shutdown Manager routines (shutdown and restart).

To Logout from user's login shell, use the AUXDispatch() trap with the A/UX\_LOGOUT selector. All definitions for the AUXDispatch trap are specified in the header file /usr/include/mac/aux.h.

For more detailed information about AUXDispatch trap, please refer to page 3-15 on "A/UX Toolbox: Macintosh ROM Interface" documentation.

Article Change History:  
26 Apr 1995 - Made correction of typographical errors.

31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7310





# Tech Info Library

## SuperPaint: How To Use with 32-Bit QuickDraw

Revised: 6/25/91  
Security: Everyone

SuperPaint: How To Use with 32-Bit QuickDraw

=====

Article Created: 27 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can SuperPaint 2.0 work with 32-Bit QuickDraw?

DISCUSSION -----

Follow these steps when using SuperPaint 2.0 with 32-bit QuickDraw:

- 1) Before launching SuperPaint, Go to the Monitors CDEV.
- 2) Set to four colors or grays.
- 3) Close the CDEV.
- 4) Launch SuperPaint.
- 5) Select the Preferences menu.
- 6) Turn on the preference "Use QuickDraw only for screen rendering".
- 7) Quit SuperPaint.
- 8) Go to the Monitors CDEV.
- 9) Set to the preferred color/gray level.

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Tech Info Library Article Number:7311



# Tech Info Library

## DECnet: Tunneling and Network Traffic

Revised: 6/25/91  
Security: Everyone

DECnet: Tunneling and Network Traffic

=====  
Article Created: 27 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using PATHWORKS and DECnet tunnels, I am trying to set up a 23-location WAN. I have a star and a central VAX at the home office. I'm going to use existing 9.6Kb DECnet links because I expect to do night time downloads only.

- 1) What would the RTMP traffic look like over the DECnet links assuming I have around five routers in the home office? Do the half routers on each VAX exchange routing table information?
- 2) Is there internal tunnel maintenance traffic outside of the standard AppleTalk traffic?
- 3) Anything else to look at?

DISCUSSION -----

- 1) With DECnet Tunneling, each VAX on each side of the tunnel is an AppleTalk half-router for routing AppleTalk traffic over DECnet. Since AppleTalk for VMS version 3.0 is a full implementation of AppleTalk Phase 2 protocol stack on VAX/VMS, the RTMP traffic will be similar to any other AppleTalk network. And because half-routers are logically a full router, they periodically broadcast and receive RTMP Data packets to and from all other routers on its directly connected networks, backbones, or the DECnet links.
- 2) Within the Tunnel traffic, there should not be any other traffic besides the standard AppleTalk traffic. The Tunnel is made up of DECnet logical links, so it needs all the DECnet maintenance traffic (such as circuit hello and listen traffic) to be maintained.

3) With AppleTalk for VMS 3.0, we strongly recommend that your wide-area link is at least 56KB or higher. Though you don't expect a high traffic load, we are not clear on how you will do the night time download. If your network has any delay longer than two minutes, you might have problems with AppleShare. If the ASP session timer of two minutes expires, the session terminates and you lose the server connection.

Another problem may be with NBP lookup. Users might not see the file server when opening the Chooser and selecting the AppleShare icon. Some sites have to change a resource, called GNRL, to increase the Chooser interval timer and retry timer values. You can find a complete description of these two problems in the Tech Info Library on AppleLink. Search using keywords "AppleTalk and Wide and Area".

The other thing to look into is the capability of the central VAX since it serves as a single-point hub to the other 23 nodes. Does it have enough power to provide satisfactory performance?

Since you already have DECnet links, we suggest bringing up one tunnel at a time and stress test it with typical file download. Keep adding tunnels to see if performance remains acceptable. You might find that, at some point, you will want to add resources to the central VAX and/or increase the speed of the communications link.

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Tech Info Library Article Number:7312



# Tech Info Library

## Macintosh System 6.0.x: Don't Begin File Name with Period

Revised: 6/25/91  
Security: Everyone

Macintosh System 6.0.x: Don't Begin File Name with Period

=====

Article Created: 27 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using System Software 6.0.7, I create a file and name it ".temp". If I select the file and try to duplicate it with the Finder "Duplicate File" command, it won't. The screen blinks then comes back. If I keep trying to duplicate the file, the Finder bombs.

DISCUSSION -----

Apple is aware of this problem, which has to do with a patch to the "Open" trap for the Slot Manager. The Slot Manager assumes that all attempts to open a file that has a period ('.') as the first character in its name is a driver for a NuBus card.

This will always be a problem with System Software 6.0.x-based Macintosh systems. There are no workarounds that we are aware of except not using a period as the first character in a file name.

System Software 7.0 has a call that prevents this problem from happening. The call that causes the problem is "FSOpen". The new call is "OpenDF" and will be documented in Inside Macintosh Volume VI. The difference between the two calls is that FSOpen can open both files and devices; OpenDF can only open files.

This problem will still happen in System 7.0 if the old call is used. This will be the case with all existing applications and possibly new applications for System 7.0 specifically. Both calls will work under System 7.0. We recommend that developers use the new calls for their System 7.0 applications.

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Tech Info Library Article Number:7313



# Tech Info Library

## A/UX: How to Assign Function Keys in X11

Revised: 9/18/92  
Security: Everyone

A/UX: How to Assign Function Keys in X11

Article Created: 27 April 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I change the mapping of the keyboard in X11 under A/UX? I want to assign "esc-a" and "esc-d" to the function keys of the extended keyboard, because these keystrokes are cursor movements in the X client application instead of arrow keys.

### DISCUSSION -----

The command "xmodmap" let's you see the current mapping of your keys. You can also use this command to modify the mapping of various keys on the keyboard.

To obtain a display of your current settings, enter the command:

```
xmodmap -pk
```

There is a man page for xmodmap that gives you the information necessary for mapping the keys.

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Tech Info Library Article Number:7315



# Tech Info Library

## DAL: MVS Server Questions

Revised: 7/9/92  
Security: Everyone

DAL: MVS Server Questions

=====  
Article Created: 27 April 1991  
Article Last Reviewed: 7 July 1992  
Article Last Updated: 7 July 1992

TOPIC -----

I have a few questions about DAL for MVS specifically relating  
to the MVS/TSO DAL Server:

- 1) What is the overhead of DAL on the Host, both disk blocks (space)  
and memory while running?
- 2) In what form or where does the Server run on the IBM Host?
- 3) How does DAL deal with security packages such as ACF2?
- 4) I'm using EDS Net to navigate through the network to the host. How  
do I configure a DAL application, such as one of the Query packages, to  
navigate through the EDS network parameters?

DISCUSSION -----

- 1) To install and use DAL, you need:
  - Any release of MVS that supports DB2 Version Release 3 or higher
  - 52 tracks of available space on a 3380
  - TSO logins with at least 2048K of memory
  - Either the DB2 DSNLOAD library allocated to native TSO or these  
modules copied to the load library containing the DAL load modules:
    - DSNACAB
    - DSNACAF

- DSNALI
- DSNHLI2
- DSN3ID00.

- Appropriate hardware and software for the supported network connection.

Keep in mind that large database queries can create temporary datasets on disk, but they are erased after the query is complete.

2) DAL will run in the users TSO address space. Each user needs a TSO id.

3) We have a number of customers using DAL that have ACF2 on their systems and they coexist without any problems. ACF2 has to be set up to support the RACROUTE call. This call is standard so it is likely that the customer's ACF2 is already set up to support it.

4) We don't know how to configure DAL to work within these parameters. If EDS Net doesn't support Macintosh-to-host using one of the connections listed below, DAL probably won't work in that environment:

- Apple Coax/Twinax Card connection using Apple MacDFT.
- Apple TokenTalk Card NB connection using Apple MacDFT
- Apple Serial NB Card connection using Apple MacDFT.
- Netway 1000/2000 connection.
- Avatar MacMainFrame connection.
- DCA MacIrma connection.
- SNA•ps 3270 Gateway connection.
- Asynchronous dial-in to a protocol converter (as long as the protocol converter accepts VT100 terminal type input).

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Tech Info Library Article Number:7316





# Tech Info Library

## DAL: How It Checks Communication Lines for Errors

Revised: 7/9/92  
Security: Everyone

DAL: How It Checks Communication Lines for Errors

=====

Article Created: 27 April 1991  
Article Last Reviewed: 9 July 1992  
Article Last Updated: 9 July 1992

TOPIC -----

I'm using a Macintosh DAL client to have sessions with a DAL server running on a VAX (asynchronous) and an IBM 3090 with a 3270 card. Does DAL implement an error free data link on top of the communications channel so that glitches in the data flow do not effect the results of a query?

DISCUSSION -----

Data Access Language does not add error checking on top of the transport data link. That would produce unnecessary overhead. Instead, DAL uses the error checking provided by the transport methods. On asynchronous lines, it can specify parity, databits, stop bits, flow control, packet length, modem timeout, and dial attempts. For AppleTalk connections, DAL relies on ADSP to handle errors, and for 3270 connections, DAL uses the 3270 display station protocol (LU2) or the APPC (LU6.2) protocol.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7317



# Tech Info Library

## MacX: Bad STARTFONT Statement Error Caused by Lower Case Type

Revised: 4/20/93  
Security: Everyone

MacX: "Bad STARTFONT" Statement Error Caused by Lower Case Type

=====

Article Created: 27 April 1991

### Article Change History

-----

04/20/93 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I cannot seem to get MacX 1.0.1 to compile BDF fonts properly. MacX keeps converting the fonts into 0 byte files and complains about a "Bad STARTFONT statement".

### DISCUSSION -----

We tried compiling one of the sample BDF files under MacX 1.0.1 without any problems. The first line in the BDF file must be ALL UPPER CASE, such as "STARTFONT 2.1". Otherwise, you will get the "Bad STARTFONT statement" message.

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Tech Info Library Article Number:7318



# Tech Info Library

## A/UX: Correction to A/UX Programming Language and Tools Manual

Revised: 9/21/92  
Security: Everyone

A/UX: Correction to "A/UX Programming Language and Tools" Manual

=====

Article Created: 27 April 1991  
Article Last Reviewed: 31 August 1992  
Article Last Updated: 31 August 1992

TOPIC -----

I've noticed an error in the A/UX Programming Language and Tools, Vol. 2, chapter 25, page 5, section 13. The sample doesn't work at all, and there is a bug in the first and third line.

For example, try this source code (test.c):

```
char *_Version_ =  
    "(c) Copyright 1986\  
    Standard Software Version V.2.1";  
main  
{  
    printf ("hello world\n");  
}
```

compile it with: cc test.c  
then get the version number with : version a.out  
but no version number is available

Who can explain to me how to correctly use the 'version' utility, that is, how to create a string variable to be used by version utility?

DISCUSSION -----

First of all, the example in the "A/UX Programming Language and Tools. Vol. 2, Chapter 25, Section 13, page 5" is INCORRECT. The same is also true for volume one of the manual.

The version program attempted to look for a string of the following form:

```
{Apple version RELEASE.LEVEL YY/MM/DD HH:MM:SS}
```

where the capitalized words(RELEASE, LEVEL, YY, MM, DD, HH, MM, SS) are matched by numbers. Both RELEASE and LEVEL numbers can be up to 8 digits in length, the rest (YY, MM, DD, HH, MM, and SS) must be EXACTLY 2 digits. Both "{" and "}" symbols, and "Apple version" words are also required to match. Only one SPACE is allowed before words RELEASE, YY, and HH.

If the defined character string for version does not meet any of the above matching criteria, the 'version' program will display "no version number found".

The above character string, for example, should be changed to:

```
char *_Version_=
    "(c) Copyright 1986\
    {Apple version 2.1 86/09/12 18:05:24}";
```

This has been fixed in the A/UX 3.0 documentation.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7319



# Tech Info Library

## A/UX: Using A/UX as a Print Spooler (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX: Using A/UX as a Print Spooler (8/94)

Article Created: 27 April 1991  
Article Reviewed/Updated: 23 August 1994

TOPIC -----

I'm running A/UX on an Macintosh IIfx. I'm using "lpr" to print to a LocalTalk LaserWriter. I also have HP/Apollo workstations on the same Ethernet. I want to print to the LaserWriter from the HP. My file goes to the A/UX spool folder, but needs to be printed by A/UX. How do I print directly to the LaserWriter from another IP node?

DISCUSSION -----

For the HP (or any other IP node) to print to a LaserWriter connected to the A/UX box, you have to edit the /etc/printcap file of the remote system to reflect the A/UX system. It should have an entry like this:

```
remote:\
    :lp=:\
    :rm=a/ux.hostname:\
    :rp=lp:\
    :sd=/usr/spool/remote:
```

The above entry brakes down as:

Line 1: Name by which the HP calls the A/UX system's printer

Line 2: Local printer designation

Line 3: Remote host name. This must also be in the host config file (/etc/hosts or equiv)

Line 4: Name of printer on the A/UX system. By default, this will be lp for a Chooser selected printer.

Line 5: Spool directory. This is a directory where remote print jobs will be

spooled. Instructions on how to set this up follow.

To create the spool directory, do this:

```
(1)  mkdir /usr/spool/remote
      chmod 755 /usr/spool/remote
      chgrp daemon /usr/spool/remote
      chown daemon /usr/spool/remote
      CD /usr/spool/remote
      mknod pipe p
      chmod 660 pipe
```

(2) Next, verify the /etc/hosts file on the HP that contains an entry which allows access to the A/UX system. It should look like:

```
134.66.20.45    aux_hostname  aux_hostname.domain.com
```

The first entry is the IP address of the A/UX system. The second entry is the hostname of the A/UX system, and the final entry is the hostname and domainname of the A/UX system (optional if domain name servers are not being used).

(3) Finally, you must tell the A/UX system that it can accept print requests from the HP system. To do so, edit the /etc/hosts file on the A/UX system so that there is an entry for the HP. The format will be as shown above.

Next, add the HP's hostname to the /etc/hosts.lpd file on the A/UX system. If the A/UX box has not yet been set up for remote printing access, the /etc/hosts.lpd file will not yet exist. Create it and enter the HP hostname.

Now to invoke remote printing on the LaserWriter from the HP, use the lpr command as follows:

```
lpr -Premote filename_to_be_printed
```

Also, the newly created pipe in /usr/spool/remote MUST be owned and grouped by "daemon", otherwise, it won't be opened by the spooler.

```
chown daemon pipe; chgrp daemon pipe
```

#### Article Change History:

23 Aug 1994 - Reviewed and updated.  
30 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7320



# Tech Info Library

## 32-Bit QuickDraw: Located on Printing Tools Disk

Revised: 6/25/91  
Security: Everyone

32-Bit QuickDraw: Located on Printing Tools Disk

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I start up my Macintosh, I get a message that System 6.0.5 needs version 1.2 of 32-bit QuickDraw.

Where do I get this software?

DISCUSSION -----

Version 1.2 of 32-bit QuickDraw is on the 6.0.5 Printing Tools disk inside the Apple Color folder. You can use the installer script for 32-bit QuickDraw or simply drag the icon into your System Folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7321



# Tech Info Library

## Apple II Family: Driver Not Yet Available for LaserWriter SC

Revised: 6/25/91  
Security: Everyone

Apple II Family: Driver Not Yet Available for LaserWriter SC

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to connect my Apple IIe to the Personal LaserWriter SC. Are there printer drivers to do this?

DISCUSSION -----

There is no Apple support for connecting either the older LaserWriter IISC nor the new Personal LaserWriter SC to any Apple II computer. Apple has made low-level driver information available to developers to create such a driver, but we don't know of any available drivers as of April 1991.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7322





# Tech Info Library

## Apple PC 5.25 Drive: Compatibility with Macintosh Computers

Revised: 7/8/92  
Security: Everyone

Apple PC 5.25 Drive: Compatibility with Macintosh Computers

=====

Article Created: 15 April 1991  
Article Last Reviewed: 19 June 1992  
Article Last Updated: 22 August 1991

TOPIC -----

Which Macintosh computers support the Apple PC 5.25 Drive?

DISCUSSION -----

The Apple PC 5.25 drive is supported only by the Macintosh SE and the Macintosh II, systems that were introduced without the Apple SuperDrive (formerly Apple FDHD).

Later versions of Macintosh computers have the Apple SuperDrive, which supports 3.5-inch MS-DOS diskettes--eliminating the need for the Apple PC 5.25 drive.

For customers who need to use 5.25-inch MS-DOS diskettes, we suggest looking at third-party products, such as those made by Dayna Communications.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7323



# Tech Info Library

## AppleTalk: 32 Device Limit Refers to Physical Connections

Revised: 6/25/91  
Security: Everyone

AppleTalk: 32 Device Limit Refers to Physical Connections

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is the AppleTalk 32 device limit referring only to physical connections (such as printers, computers, and so on) or is it the total number of logical and physical devices (such as TOPS, FileMaker, etc)?

DISCUSSION -----

The limit of 32 devices is for physical hardware devices such as printers, computers, and so on.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7324



# Tech Info Library

## ImageWriter LQ: When Top Margin Increases with Each Page

Revised: 6/24/91  
Security: Everyone

ImageWriter LQ: When Top Margin Increases with Each Page

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm manually feeding a multi-page document through my ImageWriter LQ. The margins in Page Setup are set correctly at 1 inch, top and bottom. The paper size is correctly set to Letter, 8 1/2 x 11 inches.

The first page comes out fine, but all the other sheets' top margin increases by 1/2 inch.

DISCUSSION -----

This problem is usually caused by the Manual Feed option not being selected in the Print dialog box. The printer assumes that it should not do a backfeed, and increases the top margin on each page. (Also be sure that the DIP switch 2-8 is set to Open.)

There is something else you might try: Select the Macintosh Print dialog box by holding down the Shift key while selecting Print from the File Menu. This allows you to use the Macintosh print drivers. When you select print without holding down the Shift key, you are accessing the application's print driver.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7325



# Tech Info Library

## Synchronous and Asynchronous Communication Defined

Revised: 6/24/91  
Security: Everyone

Synchronous and Asynchronous Communication Defined

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is asynchronous communication and how is it different from synchronous communication?

DISCUSSION -----

Synchronous transmission means both the sending and receiving devices are on the same frequency. This method uses precise timing for error checking.

Asynchronous transmission sends each byte of data with a start bit at the front and a stop bit at the end. Timing is variable and is not used for error checking. Asynchronous transmission is a less sophisticated way to send data, but less complex and less expensive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7326



# Tech Info Library

## XMODEM vs. 1K Block XMODEM

Revised: 6/25/91  
Security: Everyone

XMODEM vs. 1K Block XMODEM

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What's the difference between regular XMODEM and 1K Block XMODEM?

DISCUSSION -----

Regular XMODEM sends data in 128-byte blocks. 1K Block XMODEM, as its name implies, transfers data in 1024-byte blocks.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7327



# Tech Info Library

## MacBinary: File Format Description (11/95)

Revised: 11/22/95  
Security: Everyone

MacBinary: File Format Description (11/95)

Article Created: 29 April 1991  
Article Reviewed/Updated: 22 November 1995

TOPIC -----

This article contains a brief description of the MacBinary file format. A detailed description and technical information is available from APDA.

DISCUSSION -----

Overview  
=====

Because of the way the Macintosh file system keeps track of files, there was a need to provide this tracking information when transmitting files through a modem. A committee was established, which developed the original MacBinary and later the MacBinary II format. These two formats remain functionally identical, however the MacBinary II format added additional information to maintain the integrity of the file system information.

Macintosh Files  
=====

Every Macintosh file contains two parts; a resource fork, which contains data used by an application, such as menus, fonts, and icons, and a data fork, which contains data specific to an application.

Originally, telecommunication programs only sent one part of a Macintosh file (the data fork). This meant that when a binary file was transferred from a Macintosh it lost its icon, and Type & Creator information. Since this information is important to the Macintosh file system, MacBinary was developed.

MacBinary  
=====

MacBinary is not a transfer protocol like Xmodem, Kermit, or Zmodem. Instead, it is used in conjunction with a transfer protocol, however it is independent of that protocol. MacBinary is very important when binary files are placed on a BBS (Bulletin Board Service), since a BBS can be run from any type of computer and Operating System, not just a Macintosh computer.

MacBinary consists of 128 bytes, which are added to beginning of any file sent through a modem. Most Macintosh telecommunication programs (terminal applications) automatically use MacBinary when a binary file is sent. Most applications also allow you to turn off MacBinary. If you are sending a binary file such as a TIFF or JPEG file to someone who uses a Windows computer, you must turn off MacBinary. If you do not turn off MacBinary, the additional 128 bytes at the beginning of the file will corrupt the file. There are ways of removing the MacBinary information, but most of these are designed for Macintosh. At one time there were a couple of MS-DOS terminal programs that automatically detected MacBinary files and stripped off the first 128 bytes of the file.

#### MacBinary vs. BinHex and UUencode

=====

MacBinary, unlike BinHex or UUencode, does not convert the data into a text representation of the binary data. This is important when you want to send a binary file to someone through a an e-mail system. Most e-mail systems do not support MacBinary, so you should use BinHex or UUencode instead. The Tech Info Library articles "What is Binhex & Where To Obtain It", and "UUencode & UUdecode: Explained" provide additional information on UUencode and BinHex. These articles can help you decide the best way to send your files through e-mail systems. If you are placing binary files such as applications, compressed binary files (StuffIt, Compactor), or other Macintosh specific binary files on a remote file server or FTP site here is a chart that can help you determine if you need to use MacBinary or not.

#### Begin\_Table

| Primary users  | MacBinary | Examples                         |
|----------------|-----------|----------------------------------|
| =====          | =====     | =====                            |
| Macintosh      | Yes       | Applications, Control Panels     |
| MS-DOS/Windows | No        | GIF, TIFF, QuickTime, MIDI files |
| Mixture        | No        | GIF, TIFF, QuickTime, MIDI files |

#### End\_Table

#### Article Change History:

22 Nov 1995 - Replaced entire discussion area.

#### Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7328



# Tech Info Library

## Macintosh System Software: Use Installer, Don't Drag-Copy

Revised: 6/24/91  
Security: Everyone

Macintosh System Software: Use Installer, Don't Drag-Copy

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it really necessary to use the Installer application to put a new System on a Macintosh? What's wrong with just dragging over a good System Folder from another computer?

DISCUSSION -----

Drag copying System Folders is not an acceptable method of replacing System files. You must use the Installer to get a complete and successful installation of all necessary visible and invisible System files. There are hooks and patches to the ROM that can be part of the System only if the Installer is used.

If you have a System that was installed by drag-copying, we suggest that you trash it and install a fresh System Folder using the Installer program.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7330





# Tech Info Library

## Macintosh Plus: Allow 30 Seconds for SCSI Devices to Start Up

Revised: 7/27/92  
Security: Everyone

Macintosh Plus: Allow 30 Seconds for SCSI Devices to Start Up

=====

Article Created: 29 April 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

I have four SCSI hard disks daisy chained to a Macintosh Plus. On startup, only some of the hard disks mount, though they all mount when hooked up individually.

I've removed all internal terminators and replaced them with external ones, disabled all INITs, and checked the SCSI device numbers, all to no avail.

DISCUSSION -----

This is a problem cause by the relatively slow speed of Macintosh Plus computers with old-style ROMs. All SCSI devices must be in the ready state before the computer or they won't be recognized. Be sure to wait around 30 seconds after turning on your hard drives before turning on the Macintosh Plus. You also might consider upgrading your Macintosh Plus' ROM.

Also, just for the sake of consistency, standardize on one brand/type of SCSI terminator.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7333



# Tech Info Library

## Apple II Family: No Support for Macintosh Hard Disk 20

Revised: 6/25/91  
Security: Everyone

Apple II Family: No Support for Macintosh Hard Disk 20

=====

Article Created: 30 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it possible to use a Macintosh Hard Disk 20 with any Apple II computer?

DISCUSSION -----

No, there is no support for the serial Macintosh Hard Disk 20 on any of the Apple II computers. A controller card was never produced to provide this compatibility.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7334



# Tech Info Library

## Apple IIGS: Compatibility with Macintosh Hard Drives

Revised: 6/24/91  
Security: Everyone

Apple IIGS: Compatibility with Macintosh Hard Drives

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can any Macintosh SCSI external hard drive work with the Apple IIGS?

DISCUSSION -----

If the hard drive is advertised for compatibility with the Apple IIGS (which almost all currently available hard drives are) you should have no problem using it with an Apple IIGS.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7335



# Tech Info Library

## LaserWriter: Page Count Cannot be Reset (12/94)

Revised: 12/6/94  
Security: Everyone

LaserWriter: Page Count Cannot be Reset (12/94)

=====

Article Created: 30 April 1991  
Article Reviewed/Updated: 06 December 1994

TOPIC -----

Is there any way to reset the page counter on a LaserWriter I/O board? I received one that did not show zero pages and it is going into a new engine.

DISCUSSION -----

The page count number is intended to be a permanent record showing the number of pages processed by a particular print engine. The page count is comparable to the odometer in a car showing the number of miles travelled.

In an effort to prevent misuse, Adobe Systems withheld the publishing of any methods for resetting the page count on PostScript printers using their code. Although there are legitimate reasons for resetting the page count, Adobe and Apple will not publish this information.

In order to properly track the page count for maintenance purposes, it is recommended that you place a sticker inside the printer which notes the date and the page count when the printer was serviced. This will help ensure that the ozone filter and other consumable items are replaced at the recommended intervals.

Article Change History:  
06 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7336



# Tech Info Library

## Personal LaserWriter NT: Can't Support 5MB of RAM

Revised: 6/25/91  
Security: Everyone

Personal LaserWriter NT: Can't Support 5MB of RAM

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can the Personal LaserWriter NT support 5MB RAM or must it jump from 2MB to 8MB?

DISCUSSION -----

The Personal LaserWriter NT only supports 2MB or 8MB because its two SIMM slots are treated as one contiguous, single slot.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7337



# Tech Info Library

## LaserWriter II: Minimum Paper Length is 6 Inches

Revised: 6/24/91  
Security: Everyone

LaserWriter II: Minimum Paper Length is 6 Inches

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm trying to manually feed 8.5 x 5.5-inch paper into a LaserWriter IINTX. I keep getting the jam alarm as the paper reaches the fuser. (The paper is not actually jammed but the electronic sensor thinks it is.) Is my paper too short?

DISCUSSION -----

The minimum paper length for the LaserWriter II engine is very close to 5.5 inches. At 5.5 inches, the paper has already left the feed rollers in the transfer guide assembly and may not be suitably fed into the fuser assembly. As the fuser cannot pick up the paper, a jam alarm goes off. Our measurements suggest that six inches is the minimum length for printer paper.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7338



# Tech Info Library

## A/UX 2.0: What To Do If You Accidentally Erase It

Revised: 10/1/92  
Security: Everyone

A/UX 2.0: What To Do If You Accidentally Erase It

=====

Article Created: 30 April 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I accidentally deleted my copy of A/UX 2.0 while initializing my hard drive. Is there any way for me to get a replacement?

### DISCUSSION -----

If you can show proof-of-purchase to a dealer who has the SAME VERSION of A/UX, they can clone you a copy. If your dealer has a different version, you'll need to get a replacement drive with A/UX on it.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7339



# Tech Info Library

## Macintosh Plus: Why There's No External Monitor Option

Revised: 7/27/92  
Security: Everyone

Macintosh Plus: Why There's No External Monitor Option

=====

Article Created: 30 April 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

Why didn't Apple offer an external full-screen monitor option for the Macintosh Plus?

DISCUSSION -----

The main reason is that the Macintosh Plus was not designed to support any expansion cards. Short of modifying the case, there was no supportable way to connect a driver board and cabling to the logic board of the Mac Plus. Additional load on the power supply would also be a concern.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7340





# Tech Info Library

## Macintosh Portable: Internal Hard Drive Can't Be Transferred

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: Internal Hard Drive Can't Be Transferred

=====

Article Created: 15 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

Is it possible to use the Macintosh Portable's internal hard drive in another Macintosh?

DISCUSSION -----

No, it's not possible to mount the Macintosh Portable's hard drive in another member of the Macintosh family because it has a unique mounting bracket.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7341



# Tech Info Library

## LaserWriter: Turning It Off versus Leaving It On

Revised: 6/25/91  
Security: Everyone

LaserWriter: Turning It Off versus Leaving It On

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it better to leave my LaserWriter on all the time or to turn it off?

DISCUSSION -----

Generally speaking, any circuit will last longer if it is not turned on and off a lot. Switching the power decreases the life of electrical components due to the stresses of heating and cooling.

In our offices we have LaserWriters powered on for months at time. Some have been on for over a year with no need for increased maintenance.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7343



# Tech Info Library

## SCSI: Maximum Cable Length Between Devices is Six Feet

Revised: 6/27/91  
Security: Everyone

SCSI: Maximum Cable Length Between Devices is Six Feet

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the maximum cable length allowable between SCSI devices?

DISCUSSION -----

The maximum distance between SCSI devices is two meters or approximately six feet. This can be increased to 18 feet if there is only one SCSI device on the bus.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7344



# Tech Info Library

## Macintosh: OK to Use SIMMs that Are Faster than Required

Revised: 5/27/92  
Security: Everyone

Macintosh: OK to Use SIMMs that Are Faster than Required

=====

Article Created: 15 April 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated:

TOPIC -----

Can using SIMMs faster than what a Macintosh is officially rated for cause any problems?

DISCUSSION -----

Using SIMMs that are faster than a computer's rating should not cause any problems. It's like arriving at the bus stop 10 minutes early--you'll just be there with time to spare but it won't make the bus arrive any earlier. In the same way, your data will be ready for the CPU faster, but the CPU won't read it until it's ready.

As long as your SIMMs are good quality and the proper resistors have been clipped, there should be no problem using faster speeds.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7345



# Tech Info Library

## LaserWriter II: Shortest Possible Envelope Size is 6.5 Inches

Revised: 6/27/91  
Security: Everyone

LaserWriter II: Shortest Possible Envelope Size is 6.5 Inches

=====

Article Created: 30 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the shortest size envelope that I can feed into a LaserWriter II?

DISCUSSION -----

The absolute shortest envelope size would have to be slightly longer than the distance between the transfer Corona's last feed roller and the Fuser Assembly. For the LaserWriter II engine, this distance is 6.5 inches.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7346



# Tech Info Library

## Personal LaserWriter: European-Size Paper Tray Availability

Revised: 6/24/91  
Security: Everyone

Personal LaserWriter: European-Size Paper Tray Availability

=====

Article Created: 30 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to use European-size paper (8 7/8 x 12 5/8 inches) in my Personal LaserWriter NT's cassette tray. Is this possible? I couldn't find anything in the spec sheets.

DISCUSSION -----

Apple Service has a European paper tray in the A4 and B5 sizes. The part numbers can be found in the Service Programs binder under the Personal LaserWriter section. Determine which size you need, then contact Customer Service Administration to place an order.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7347



# Tech Info Library

## Apple Hard Disk: Changing Its Desktop Icon (5/94)

Revised: 5/19/94  
Security: Everyone

Apple Hard Disk: Changing Its Desktop Icon (5/94)

Article Created: 29 April 1991  
Article Reviewed/Updated: 18 May 1994

TOPIC -----

Where is the hard disk icon resource located? I want to go in and change it with ResEdit, but I can't seem to find it.

DISCUSSION -----

Under System 6, changing the icon on any icon required a utility like ResEdit to modify. The location of the hard drive icon depended on where the manufacturer decided to put it. For example, with La Cie drives, the icon is made available to users for changing.

For Apple drives there was a custom resource in the SCSI Setup that puts the icon in the boot blocks of the drive. Changing the hard drive icon using a resource editing utility is not recommended by Apple.

With System 7 systems, changing the drive icon is as easy as copying an icon or picture into the Clipboard, opening Get Info on the drive, clicking on the icon, and pasting the icon you have in your Clipboard. You will not be able to change the icon if the drive is shared, or locked.

Article Change History:  
18 May 1994 - Added information about System 7 and icon modifying.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7348



# Tech Info Library

## Apple II: 80 Column Card Cannot Handle Some Color Programs

Revised: 6/27/91  
Security: Everyone

Apple II: 80 Column Card Cannot Handle Some "Color" Programs

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIe, an Enhanced 80 Column card, and an Apple Color Monitor 100. I have two games, Batman and Hunt for Red October, that do not display in color even though they are both advertised as able to run on the Apple II with double high-resolution color graphics.

DISCUSSION -----

The problem is that your software is trying to write directly to the video circuitry instead of using calls to the software. The 80 column card cannot handle these kinds of requests.

There are only two possible fixes:

- Get a different type of monitor and video card
- Call the software companies and ask if they have a software patch.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7350





# Tech Info Library

## Appleworks GS: Is Compatible with Older Appleworks Files

Revised: 6/27/91  
Security: Everyone

Appleworks GS: Is Compatible with Older Appleworks Files

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does Appleworks GS open older Appleworks files?

DISCUSSION -----

Yes, AppleWorks GS opens older Appleworks files. You'll need to use the Import function of Appleworks GS to do this.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7351



# Tech Info Library

## LaserWriter IISC: Use QuickDraw GX to Network (10/96)

Revised: 10/15/96  
Security: Everyone

LaserWriter IISC: Use QuickDraw GX to Network (10/96)

=====

Article Created: 19 April 1991  
Article Reviewed/Updated: 15 October 1996

TOPIC -----

I want to connect my LaserWriter IIsC to an AppleTalk network. Can I do this using the AppleShare Print Server?

DISCUSSION -----

No. The LaserWriter IISC and Personal LaserWriter SC printers were designed as stand-alone SCSI printers. With the standard LaserWriter drivers installed, you cannot use either printer on an AppleTalk network. However, if you install QuickDraw GX, you can use both printers over an AppleTalk network.

Article Change History:  
15 Oct 1996 - Added QuickDraw GX solution.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:7353



# Tech Info Library

## LaserWriter: stackunderflow;OffendingCommand:exch Error

Revised: 7/20/95  
Security: Everyone

LaserWriter: "stackunderflow;OffendingCommand:exch" Error

=====

Article Created: 28 April 1991

TOPIC -----

Every time I try to print an Excel document on a LaserWriter over AppleShare I get the message:

Error: stackunderflow;OffendingCommand:exch

I can print large documents with no problems, but not these small Excel documents. My document is clear of printer codes, and the page setup is correct.

DISCUSSION -----

That error message indicates that there is a problem with the document, either just a section of the document or the whole thing. Remove different parts of the document and copy them to a new document. Then print the new document and see if it works. If it does, add another piece from the bad document and print again. Do this until printing fails.

It may also be that your application is creating defective document. Try replacing Excel.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7354



# Tech Info Library

## AppleShare Server: Which Server Files Ought Be Backed Up (6/94)

Revised: 6/13/94  
Security: Everyone

AppleShare Server: Which Server Files Ought Be Backed Up (6/94)

=====

Article Created: 15 April 1991  
Article Reviewed/Updated: 13 June 1994

TOPIC -----

I want to do a full, unattended backup of my AppleShare server, but my backup software only lets me backup my Server Folder separately.

What files in the Server Folder, if any, need to be backed up on a continuous basis?

DISCUSSION -----

AppleShare has two important sets of configuration information. The first is the Users and Groups data file, which is stored in the Preferences Folder of the system folder.

The second is folder permission information. On read and write volumes, this information is in an invisible file at the top level of the volume called "AppleShare PDS." On read only volumes, the information is stored inside "System Folder:Preferences:File Server." There is a PDF file for every volume that has been mounted while AppleShare was on.

You should back up both the Users and Groups data file, and the File Sharing folder as well.

Article Change History:  
13 Jun 1994 - Updated article with File Sharing folder information.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7355



# Tech Info Library

## Macintosh: The Dangers of Drag-Copying System Folders

Revised: 6/24/91  
Security: Everyone

Macintosh: The Dangers of Drag-Copying System Folders

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

By not using the Installer program to install a Macintosh System on a hard disk, what potential problems might I run into?

Also, is there any way to tell if a Macintosh System was installed correctly or drag-copied?

DISCUSSION -----

When a System is drag-copied onto a disk rather than installed using the Installer, the System becomes unstable. There are several symptoms:

- The System bombs often.
- The System hangs without error messages.
- Applications unexpectedly quit.

There is no way to tell which Systems have been installed using the Installer and which have not. The best thing to do is to remove a suspect System Folder and reinstall using the Installer application.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7356



# Tech Info Library

## Macintosh Plus: SCSI Hard Drive Recognition Problem

Revised: 6/27/91  
Security: Everyone

Macintosh Plus: SCSI Hard Drive Recognition Problem

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh Plus, with an external SCSI hard drive that has worked reliably for over a year. Suddenly the Macintosh won't recognize the drive, though both the Macintosh Plus and hard drive work fine separately (for example, using the hard drive with a Macintosh SE).

DISCUSSION -----

Most probably something has blown the IC on the hard drive's analog board that controls the SCSI reset line. Since the Macintosh Plus (and the Macintosh Portable) doesn't have SCSI termination power, this problem can only be fixed by replacing the hard drive assembly.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7357



# Tech Info Library

## **Tatum Labs, Inc.**

Revised: 7/20/93  
Security: Everyone

Tatum Labs, Inc.

=====

Article Created: 23 April 1991  
Article Reviewed/Updated: 20 July 1993

Tatum Labs, Inc.

-----

1287 N. Silo Ridge Dr.  
Ann Arbor, MI 48108

313-663-8810

Fax: 313-663-3640

### Company Profile:

Software, specializing in CAD/CAM software packages, electronic circuit design, analog circuit and thermal design simulation programs.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7358



# Tech Info Library

## Macintosh IICI: Speeding Up 24-Bit Graphics

Revised: 7/10/92  
Security: Everyone

Macintosh IICI: Speeding Up 24-Bit Graphics

=====

Article Created: 18 April 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Which speeds up a Macintosh IICI's 24-bit graphics more: a cache card or a Macintosh Display Card 8•24 GC?

DISCUSSION -----

By far the best choice for speeding up 24-bit images is the Macintosh Display Card 8•24 GC. Off-loading the graphics processing from the central processor speeds up screen imaging and "number crunching" (as neither is interrupting the other).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7359





# Tech Info Library

## Ethernet Card: Determining a Card's Address (5/96)

Revised: 5/6/96  
Security: Everyone

Ethernet Card: Determining a Card's Address (5/96)

=====

Article Created: 15 April 1991  
Article Reviewed/Updated: 6 May 1996

TOPIC -----

How can I determine the address of an Ethernet card? Is there a software utility that does this?

DISCUSSION -----

Printed on Board

-----

The network address of some Ethernet card is on a printed label on the back of the Ethernet circuit board.

EtherPeek

-----

You can obtain the AG Group EtherPeek network monitoring application, which includes a utility called it GetMyAddress. This will also return the address of the Ethernet card.

MacTCP

-----

Users who use MacTCP may be able to identify the Ethernet address by opening the MacTCP control panel and pressing the Option key when selecting the Ethernet Icon. For this to work you must be sure the caps lock key is NOT depressed.

Open Transport 1.1 or Later

-----

If you are using Open Transport (version 1.1 or later), you can obtain the Ethernet address by opening the AppleTalk control panel and selecting Get Info from the File menu.

Apple LAN Utility

-----

You can use the Apple LAN Utility to report the burned in address without being

connected to a network.

These articles can help you locate the software mentioned here:

- "Where To Find Apple Software Updates"  
Lists online services for "free" Apple software updates.
- "Obtaining Apple Product Support in the USA"  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library.

Article Change History:

06 May 1996 - Added Open Transport information.

31 Jan 1995 - Added the Apple LAN Utility information.

09 Sep 1994 - Added EtherPeek and MacTCP solutions.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:7360



# Tech Info Library

## Disk First Aid: Disk with Bad Name Error Message

Revised: 6/28/91  
Security: Everyone

Disk First Aid: "Disk with Bad Name" Error Message

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm running Disk First Aid on a hard drive and am getting a "Disk with Bad Name" error. What does it mean? I'm sure the hard drive is okay.

DISCUSSION -----

More than likely Disk First Aid has found a bad bit of data in the boot blocks of the hard drive--possibly a bad pointer. Disk First Aid's error messages are sometimes a little unclear because it defaults to the "closest" error message.

One thing to do is bring up Disk First Aid's status screen before you run the test. After opening the drive, type Command-S, then check the drive. You'll see a much more comprehensive list of actions than "Checking the drive...".

Also, be sure you're running Disk First Aid under Finder (not MultiFinder), and that the drive you're checking is not the startup volume.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7361



# Tech Info Library

## Thirdware Computer Products

Revised: 4/13/92  
Security: Everyone

Thirdware Computer Products

=====

Article Created: 23 April 1991  
Article Last Reviewed: 13 April 1992  
Article Last Updated:

Thirdware Computer Products, hardware/software, specializing in Apple II  
graphics utility and printer interface products.

Thirdware Computer Products  
3300 Corporate Ave., Building 116  
Ft. Lauderdale, FL 33331  
305-389-9009  
800-446-5987  
Fax: 305-389-9066

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7362



# Tech Info Library

## LaserWriter: Font Substitution Printing Problem

Revised: 6/28/91  
Security: Everyone

LaserWriter: Font Substitution Printing Problem

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have suddenly begun experiencing printing problems on my LaserWriter. When I try to print with Adobe fonts, the system responds that it is "substituting a bit mapped version, as the printer font can't be found". The LaserWriter then prints using the Courier font.

This problem happened after I did some work on my System file. I was having a font ID conflict, so I removed all but the required fonts then reinstalled the fonts one-at-a-time.

Of course, all my printer fonts are in a Printer Folder.

DISCUSSION -----

This sounds like your PostScript fonts are not downloading. Are your fonts in the System Folder or in a folder in the System Folder? Put them at the first level of your System Folder; don't embed them in another sub-folder.

Also, be sure font substitution is off in your Page Setup dialog box.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7363



# Tech Info Library

## LaserWriter IINTX: Font Utility Shows When You're Out of Storage

Revised: 6/24/91  
Security: Everyone

LaserWriter IINTX: Font Utility Shows When You're Out of Storage

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a hard disk attached to my LaserWriter IINTX. I know that I'm using 80% of my disk space for caching and only 20% for font storage. Does this mean I only have room for 8MB of fonts on a 40MB hard disk?

DISCUSSION -----

Your hard disk has room for only 8MB of fonts. The Font Utility application gives you a warning when the disk is getting too full. If you have several large fonts, you might not be able to get 8MB of fonts on the drive before the utility tells you you're running out of room.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7364



# Tech Info Library

## LaserWriter IINTX: How It Allocates Disk Space

Revised: 6/24/91  
Security: Everyone

LaserWriter IINTX: How It Allocates Disk Space

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a 40MB hard drive attached to a LaserWriter IINTX. Is it true that only 20% of the storage space is used for fonts while the other 80% is used for caching?

DISCUSSION -----

A hard disk attached to a LaserWriter IINTX gets initialized with 20% of the disk space dedicated to font storage and 80% to font caching. The LaserWriter Font Utility tells you how much space is available for additional font storage.

The "diskstatus" operator gives the number of pages currently available and the maximum number of pages available (a page being 1024 characters). The operator "userdiskpercent" returns the percentage of disk space allocated for user files.

The operator "setuserdiskpercent" allows you to set the percentage of user file space on the drive. It also removes the least-recently used cached bitmaps from the hard disk until there is enough free space available.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7365



# Tech Info Library

## Apple IIGS: High Speed SCSI Card Not Recognizing Hard Drive

Revised: 6/24/91  
Security: Everyone

Apple IIGS: High Speed SCSI Card Not Recognizing Hard Drive

=====

Article Created: 28 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using a High Speed SCSI card on my Apple IIGS. The problem is my CMS 60MB hard drive isn't being recognized by the SCSI card.

DISCUSSION -----

Check how much RAM the Apple IIGS has: to support the High Speed SCSI card, an Apple IIGS must have a minimum of 768K.

Also, check DIP switch 8 on the CMS drive. It controls the reset line, which is pin 40. All Apple SCSI cards use the reset line for handshaking. If this pin is disconnected or turned off, the Apple IIGS won't recognize the hard drive. Be sure that switch 8 on the CMS hard drive is in the closed position.

If switch 8 is in the closed position and you still do not get recognition of the hard drive, check the SCSI switch to make sure it is not set to 7.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7366





# Tech Info Library

## HyperCard: RAM Cache Launching Problems

Revised: 7/23/92  
Security: Everyone

HyperCard: RAM Cache Launching Problems

=====

Article Created: 29 April 1991  
Article Last Reviewed: 5 June 1992  
Article Last Updated: 5 June 1992

### TOPIC -----

While trying to launch HyperCard 1.2.5 under System 6 with the RAM Cache ON, I only get a menu bar that says "HyperCard". The menu doesn't really work and my computer locks up. If I turn RAM Cache OFF, HyperCard launches just fine.

Removing all the INITs from the System Folder doesn't help.

### DISCUSSION -----

There is no known problem using the RAM Cache with HyperCard, so your problem is probably a corrupted HyperCard file. Try these steps:

- 1) Rebuild the desktop.
- 2) Use a new Home card.
- 3) If you're still having problems, replace your HyperCard application.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7367



# Tech Info Library

## HyperCard: Dial Command Problems with Macintosh Portable Modem

Revised: 7/28/92  
Security: Everyone

HyperCard: Dial Command Problems with Macintosh Portable Modem

=====

Article Created: 15 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

I'm having problems using the Apple Internal 2400 baud modem with the Macintosh portable. The HyperCard Phone stack's dial command just doesn't seem to work with this modem.

DISCUSSION -----

Make sure that the 10-second pause is in the "doDial" handler. Before "put empty", the last line of code in the handler, insert these lines:

```
wait 10 sec  
send return to HyperCard
```

This way the change takes place only once, and it's easier to follow the code at that point. The "return" causes the modem to drop the line, leaving you in voice mode.

The problem with the modem and the Phone stack is that HyperCard opens the serial port for three seconds. It takes the modem around two seconds to go off hook. The dial string contains a comma creating a one-second pause. This leaves hardly any time to send the phone number. The phone number is incompletely transmitted and you get disconnected.

We suggest you use the Serial XCMDs available from APDA for sending data to modems. This command set gives you complete control over the serial port, eliminating the need for the 10-second pause to get the modem to release. (You'll need to recreate the doDial handler to use the serial XCMDs.)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7368



# Tech Info Library

## Macintosh: Proper SCSI Termination for Powered-Off Devices

Revised: 6/24/91  
Security: Everyone

Macintosh: Proper SCSI Termination for Powered-Off Devices

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using a Montage FR1 slide maker connected via the Macintosh SCSI port. My Macintosh won't boot if the FR1 is off. I don't want to leave the slide maker on all the time. What can I do?

DISCUSSION -----

The SCSI bus requires termination power to provide clean, quality SCSI signals. When a SCSI device has its own termination power, the SCSI bus signals are corrupted when the device is off because this leaves the SCSI bus unterminated. An non-terminated SCSI bus can cause startup problems because of noise on the bus.

Sometimes, a SCSI device supplying its own termination power can remain off at startup because it has a relatively clean SCSI bus signal. But there is no guarantee that the bus signals will stay clean and uncorrupted, as it is improperly terminated in this situation.

SCSI devices that use Macintosh termination power can be off and still be properly terminated.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7369



# Tech Info Library

## Macintosh: Parity Checking Not Needed By Average Users

Revised: 6/17/92  
Security: Everyone

Macintosh: Parity Checking Not Needed By Average Users

=====

Article Created: 28 April 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated: 17 June 1992

TOPIC -----

What is the difference between a plain Macintosh IIci and a Macintosh IIci with parity?

DISCUSSION -----

The only difference is that one machine has parity checking and the other does not. RAM parity detects single-bit errors in RAM and prevents operation with damaged data or instructions. This type of error checking detects "soft errors" and intermittent "hard errors". Most soft errors are caused by atmospheric conditions, but the reliability of current DRAM is high enough that these conditions are VERY rare. Bad RAM chips are almost always found during Macintosh startup without using parity checking.

Apple has never used ECC (Error Correction Code) schemes to detect errors in System RAM. The Macintosh IIci and Macintosh IIfx (parity models) are the first Macintosh computers to use any kind of memory error checking during normal operation.

Apple implemented parity checking as an option for the Macintosh IIci and Macintosh IIfx as a result of government requirements. Average users won't need parity checking.

For more information, search under "Parity Checking".

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7370



# Tech Info Library

## System 6.x: Ways to Change System Memory Configuration (1/95)

Revised: 1/12/95  
Security: Everyone

System 6.x: Ways to Change System Memory Configuration (1/95)

Article Created: 29 April 1991  
Article Reviewed/Updated: 12 January 1995

TOPIC -----

I have a Macintosh IIci with 4 MB of RAM that is crashing frequently when using Microsoft Excel 2.2. I called Microsoft and they told me I needed to increase the size of my System file's memory partition under MultiFinder. How do I do this??

DISCUSSION -----

There's only one of two memory allocation changes that Microsoft could be referring to:

- 1) The memory allocation for Excel
- 2) The memory allocation for Finder

We suggest that you try these options by using the Get Info dialog in the Finder. If neither of the above options work, you should perform a clean system install.

Article Change History:  
12 Jan 1995 - Revised article, removed discontinued third-party option.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7371



# Tech Info Library

## Apple II: LocalTalk ImageWriter Delay from BASIC (2/97)

Revised: 2/18/97  
Security: Everyone

Apple II: LocalTalk ImageWriter Delay from BASIC (2/97)

=====

Article Created: 24 June 1991  
Article Reviewed/Updated: 17 February 1997

TOPIC -----

I'm running an Apple IIGS lab (28 systems) with seven LocalTalk ImageWriters.

When using Applesoft BASIC, my computers print properly with a "PR#1" command. However, there is a 30-second delay from the time one computer finishes printing until the next system is allowed to print.

Here is a test program that I'm using:

```
10 PRINT CHR$(4);"PR#1"  
20 FOR I=32 TO 126  
30 PRINT CHR$(I);  
40 NEXT:PRINT  
50 PRINT CHR$(4);"PR#0"
```

If I run the above test program simultaneously on two Apple IIGS computers trying to print to one LocalTalk ImageWriter, the first computer to type "run" prints fine. The other computer has to wait for the LocalTalk option board to release the printer.

I have gone through the ImageWriter technical book and can't find anything that allows the LocalTalk card to release the printer immediately after the "PR#0" command.

Is there a reset or release command that I can add to the program to eliminate this wait?

DISCUSSION -----

You are experiencing the time it takes the ImageWriter to release after the connection to the computer is lost. Your problem is that the "PR#0" command just

changes the mode of the computer; the printer still thinks the first computer should be there.

The printer has a built-in timeout that can't be changed. Something you might try is to insert an "ESC c" as line 45. This command resets the printer and might cause the printer to drop its connection before the computer does.

Article Change History:

17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7373





# Tech Info Library

## ImageWriter: Can't Use Null (00) Code

Revised: 6/28/91  
Security: Everyone

ImageWriter: Can't Use Null (00) Code

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can the ImageWriter II do anything with a null (00) code?

Is there anything I can send to the ImageWriter II to simulate the old  
"bell" ACSII function?

DISCUSSION -----

The ImageWriter can't do anything with a null (00) code. There is nothing  
you can send to the printer to simulate the "bell" ASCII function because  
the printer has no speaker.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7374



# Tech Info Library

## LaserWriter IINTX: ROM Upgrade Supports Dynamic Soft-Switching

Revised: 6/24/91  
Security: Everyone

LaserWriter IINTX: ROM Upgrade Supports Dynamic Soft-Switching

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I understand that the new LaserWriter IINTX ROM upgrade supports software switching between emulation modes and ports. Does this mean that a LaserWriter IINTX can connect simultaneously to a LocalTalk and PS/2 serial port? While the product update sheet makes this sound possible, the LaserWriter manual (Appendix F, page 133) seems to say that you must disconnect the LocalTalk connector when using the serial port.

DISCUSSION -----

Yes, this will work. The LaserWriter should ignore the "other" port, and only listen to the active port. The soft-switching capability enable/disable the ports correctly, as will the DIP switches.

To our knowledge, there isn't any software on the market that automatically takes advantage of this feature. If you want to take advantage of this feature, you'll have to write the PostScript code (there are examples of such code in the LaserWriter Owner's Guide).

There is a consideration: The LaserWriter needs to receive the code to change modes from the system connected to the active port. This means that both an MS-DOS machine and a Macintosh need to have the code, and each will tell the LaserWriter to listen to the other computer.

All in all, a much better solution is to use a single interface for all machines. LocalTalk is your best solution, with a LocalTalk interface card installed in the MS-DOS system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7375



# Tech Info Library

## **LaserWriter: Maximum Printable Area is 6.75 x 13.0 Inches**

Revised: 6/28/91  
Security: Everyone

LaserWriter: Maximum Printable Area is 6.75 x 13.0 Inches

=====

Article Created: 28 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why can't I print anything larger than 8.5 x 14 inches on my LaserWriter?

DISCUSSION -----

The maximum printable area of a LaserWriter is 6.75 x 13.0 inches when centered on an 8.5 x 14 inch page.

The LaserWriter II engine has a minimum left, right, top, and bottom margin of 0.197 inches. This gives the LaserWriter II a printable area of 8.106 x 13.606 inches. So, the only way to get a larger print area is to use a LaserWriter II series printer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7376



# Tech Info Library

## GateKeeper: Using with AppleShare

Revised: 6/28/91  
Security: Everyone

GateKeeper: Using with AppleShare

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using GateKeeper Aid with AppleShare. When I start the server, I get the message, "GateKeeper Aid encountered FCB expansion".

Is this serious? What is FCB expansion?

DISCUSSION -----

You have nothing to worry about. When you boot AppleShare, it makes major changes in the way the system is configured and GateKeeper notices the changes.

The FCB expansion is the File Control Block. This tells the system how many files can be open at one time.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7377



# Tech Info Library

## Macintosh: Application Troubleshooting

Revised: 6/28/91  
Security: Everyone

Macintosh: Application Troubleshooting

=====

Article Created: 28 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I using Microsoft Works on a Macintosh with an Apple external hard drive. Whenever I try to save or quit, the hard drive runs a little with the watch on the screen, then the screen goes blank and the computer hangs. The only way to quit is to turn the Macintosh off and then on again.

DISCUSSION -----

This sounds like a software problem. Here are some basic steps you should take:

- 1) Check to be sure your System software version is compatible with the version of the application that you are running. If not, replace your application with a more current version.
- 2) Verify that there is only one System on your hard drive.
- 3) Reinstall your System using the Installer on the System Tools disk.
- 4) Remove all INITs and CDEVs from the System Folder before rebooting.
- 5) If all this fails, replace your application.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7379



# Tech Info Library

## Macintosh Portable: External Hard Drives and Sad Mac Errors

Revised: 7/28/92  
Security: Everyone

Macintosh Portable: External Hard Drives and "Sad Mac" Errors

=====

Article Created: 18 April 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated:

TOPIC -----

Are there problems with connecting an external SCSI hard drive to the Macintosh Portable? I have a Macintosh Portable with an internal 40MB drive. When I tried to connect a 45MB external drive, the Macintosh Portable refused to boot. The "Sad Mac" icon came up with the error code: 0000000F 00000002.

The hard drive is a Jasmine Direct Drive 45 that has been with a Macintosh Plus. I checked the usual things: The external hard drive was powered up and running before I powered on the Portable. There was no System Folder on the external hard drive. The drive was terminated and had a unique SCSI ID.

Am I overlooking something? Can the Portable support an external hard drive?

DISCUSSION -----

The Macintosh Portable can access and use any external SCSI device that a Macintosh Plus can access. There may be an issue with the SCSI driver on the hard drive and compatibility with the Portable boot ROMs, but we do not have any information on this problem.

The error message you gave above is roughly equivalent to an "ID=02" -- meaning that you can't really use it seriously to diagnose the problem. It does tell you that some piece of recently-loaded software got clobbered, but it's a guess to say whether it was due to software corruption, SCSI signal problems, incompatible drivers, or all of the above.

The best thing to do when getting this kind of error message is contact

the third-party's service organization for any possible information on driver compatibility.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7381



# Tech Info Library

## Responder: Changing a Macintosh Network Name

Revised: 5/15/92  
Security: Everyone

Responder: Changing a Macintosh Network Name

=====

Article Created: 24 June 1991

### Article Change History

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- 05/14/92 - RETITLED
- For clarity.
- 08/25/92 - REVIEWED
- For technical accuracy.

### TOPIC -----

A customer has a Macintosh set up as a workstation on an AppleShare network. When the Responder asked them to name the computer, they did that. Now they need to change the name on that computer that the Responder recognizes. We can't get Responder to allow them to rename the drive. None of the following worked:

- deleting the Responder file and copying a new one to the system.
- deleting the Responder file and then reinstalling from the system installation disks.
- starting up from a system floppy, deleting the System, Finder, and Responder files, then reinstalling the system.

### DISCUSSION -----

There is no need to throw away any files to change the network name of a Macintosh. The procedure differs, depending on the version of System software:

- With System 6, the easiest way to rename the Macintosh is to open the Chooser and type a new name in the "User Name:" field. The new name is



not used until the Macintosh is restarted.

- With System 7, open the Sharing Setup control panel and change the "Macintosh Name:" field. The new name is used immediately.

With both System 6 and System 7, the name is stored in the System file in an STR resource with an ID of -16096. When starting up under System 6, if the Macintosh has no name, the Responder will ask the user to type in a name. If a name is typed in, the Responder will write the name to the resource STR ID = -16096. System 7 does not do this. The only way to name the Macintosh is via the Sharing Setup Control Panel.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7386



# Tech Info Library

## ImageWriter LQ: Needs Super Serial Card for Apple IIf

Revised: 6/28/91  
Security: Everyone

ImageWriter LQ: Needs Super Serial Card for Apple IIf

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can an Apple IIf with an old High Speed Serial Interface card run an  
ImageWriter LQ or do I need a Super Serial Card?

DISCUSSION -----

You need the Super Serial Card to drive the ImageWriter LQ from an Apple  
IIf. The older High Speed Serial Interface cannot be configured properly  
to work with the ImageWriter LQ.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7387



# Tech Info Library

## ImageWriter: Cable for Apple IIe

Revised: 6/28/94  
Security: Everyone

ImageWriter: Cable for Apple IIe

=====

Article Created: 15 April 1991

TOPIC -----

I have an ImageWriter, part number A9M0303. Is there a way to connect it to an Apple IIe?

DISCUSSION -----

Yes, you can connect an original ImageWriter to an Apple IIe. The cable that you do this with is A2C0352. In case you cannot get that cable through Finished Goods, the service part number is 590-0037. You will also need a Super Serial Card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7388



# Tech Info Library

## Personal LaserWriter NT: Envelope Centering Problem

Revised: 6/28/91  
Security: Everyone

Personal LaserWriter NT: Envelope Centering Problem

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using a software utility to print envelopes on my Personal LaserWriter NT. I can't seem to get the address centered on the envelope.

DISCUSSION -----

There is nothing that can be done to center the print on the Personal LaserWriter NT. The printer positions the paper differently than Apple's LaserWriter II series of printers. To correct the problem, contact the manufacturers of the software you are using to see if they have a upgrade for the Personal LaserWriter NT.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7389



# Tech Info Library

## All LaserWriters: Connecting to IBM or IBM-Compatible Computers

Revised: 11/18/93  
Security: Everyone

All LaserWriters: Connecting to IBM or IBM-Compatible Computers

=====

Article Created: 28 April 1991  
Article Reviewed/Updated: 17 November 1993

TOPIC -----

How do I connect an Apple Personal LaserWriter NT to an IBM compatible computer?

DISCUSSION -----

The following cable configurations will support serial connections to the Personal LaserWriters, the original LaserWriters and the LaserWriter II family.

Use a RS-232 Null Modem cable. The DB-25 end goes into the printer, and depending on what kind of port it has, either a DB-9 or DB-25 goes into the computer.

Cable configuration for DB-9 to DB-25:

| PC<br>DB9 | Printer<br>DB25 |
|-----------|-----------------|
|-----------|-----------------|

|     |     |
|-----|-----|
| 1   | 4   |
| 2   | 2   |
| 3   | 3   |
| 4   | 5&6 |
| 5   | 7   |
| 6&8 | 20  |
| 7   | 8   |
| 9   | NC  |

| PC<br>DB25 | Printer<br>DB25 |
|------------|-----------------|
|------------|-----------------|

|   |   |
|---|---|
| 1 | 1 |
| 2 | 3 |
| 3 | 2 |

|      |      |
|------|------|
| 4    | 5    |
| 5    | 4    |
| 6    | 8&20 |
| 7    | 7    |
| 8&20 | 6    |

| PC    | Printer      |
|-------|--------------|
| DB 25 | DB9 (LW Pro) |
| 1     | 5            |
| 2     | 2            |
| 3     | 3            |
| 4     | 8            |
| 5     | 7            |
| 6     | 1&4          |
| 7     | 5            |
| 8&20  | 6            |

| PC  | Printer |
|-----|---------|
| DB9 | DB9     |
| 1&4 | 6       |
| 2   | 3       |
| 3   | 2       |
| 5   | 5       |
| 6   | 1&4     |
| 7   | 8       |
| 8   | 7       |

Article Change History:

11/18/93- Added corrected cable pinouts

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Tech Info Library Article Number:7390



# Tech Info Library

## ImageWriter II: Troubleshooting Printer is not responding

Revised: 7/29/92  
Security: Everyone

ImageWriter II: Troubleshooting "Printer is not responding"

=====

Article Created: 18 April 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

I'm using an ImageWriter II with a Macintosh Portable. I keep getting the message. "Printer is not responding. Check the select switch", but my select switch is on.

DISCUSSION -----

If there is nothing wrong with your ImageWriter II, there are three possible causes for this problem:

- A defective printer cable.
- A defective printer port on the Macintosh Portable.
- Incorrectly set software.

The most common of the three causes is incorrectly set software. Be sure you have selected the proper ImageWriter driver--not the AppleTalk ImageWriter--in the Chooser, and confirm that it is in the selected port, either printer or modem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7391



# Tech Info Library

## PostScript: Where To Find ROM Upgrade Ordering Information

Revised: 6/28/91  
Security: Everyone

PostScript: Where To Find ROM Upgrade Ordering Information

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I get the latest PostScript upgrade for the latest LaserWriter II?

DISCUSSION -----

The upgrade for the LaserWriter IINXT ROMs is on the finished goods price list in the LaserWriter Printers section. The part number is M0445LL/A LaserWriter IINTX Upgrade Kit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7392





# Tech Info Library

## PrintMonitor: Why=6 and Why=-120 Error Messages

Revised: 6/28/91  
Security: Everyone

PrintMonitor: Why=6 and Why=-120 Error Messages

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My PrintMonitor is giving me the error codes of Why=6 and Why=-120. What do these mean?

DISCUSSION -----

PrintMonitor error messages can actually be decoded if you have a list of Macintosh system errors. The "why" (or y=) portion is the system error number.

Why=-120 means "Directory Not Found". Why=-120 may be the result of a corrupt directory structure on your local hard drive. Rebuilding the Desktop may solve the problem, or you may have to backup, reformat, or restore the drive.

Why=6 means "overflow trap error" and is pretty general and not much to go on. With Why=6 it's more important to know what else was going on that may have caused a conflict (such as what applications are running and what INITs and cDEVs are on the system). You may be seeing an incompatibility, memory conflict, or just general system corruption. Trashing and reinstalling the System with the Installer usually takes care of this.

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Tech Info Library Article Number:7393



# Tech Info Library

## PostScript: How To Print a File on a LaserWriter (5/93)

Revised: 6/3/93  
Security: Everyone

PostScript: How To Print a File on a LaserWriter (5/93)

=====

Article Created: 29 April 1991

### Article Change History

-----

05/28/93 - REVISED

- To include information on Apple's LaserWriter Utility.

### TOPIC -----

I have a raw PostScript file that I want to print out on a LaserWriter II, but none of my applications will open this file.

### DISCUSSION -----

Apple's LaserWriter Utility (version 7.4.1 at this writing) can print PostScript files directly by choosing "Download PostScript File..." from the Utilities menu. LaserWriter Utility should be included with all LaserWriters from Apple; if you do not have it, you can download it from AppleLink.

You can also try using PS Dump from CE Software. This utility prints PostScript files to the LaserWriter. For more information, search on "CE Software".

Copyright 1991, 1993, Apple Computer, Inc.

Tech Info Library Article Number:7394



# Tech Info Library

## AppleShare Server: Drawbacks to Backing Up via Drag-Copy

Revised: 6/28/91  
Security: Everyone

AppleShare Server: Drawbacks to Backing Up via Drag-Copy

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Instead of using a backup utility, why not just drag-copy my AppleShare file server files onto another hard disk?

DISCUSSION -----

If you drag-copy AppleShare files from one hard drive to another, you'll lose all your access privileges. Use the AppleShare Administration disk and do a Copy Volume from the menu. Other ways are to use DiskFit from SuperMac, HFS Backup 3.0 from PCPC, or Retrospect 1.1 from Dantz Development Corp. All four of these products retain the AppleShare access privileges.

For more information, search on the above company names.

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Tech Info Library Article Number:7395



# Tech Info Library

## MouseText: Display for Characters F and G

Revised: 6/28/91  
Security: Everyone

MouseText: Display for Characters "F" and "G"

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What should the MouseText ROM display for characters "F" and "G"?

DISCUSSION -----

The "F" in MouseText is the character used to represent a carriage return, sort of like this:

```
  |  
  |  
<----|
```

The "G" displays four horizontal bars, an Apple II representation of an active (or foremost) window. It looks like this:

```
_____  
_____  
_____  
_____
```

(this space is intentional)

You'll find a list of MouseText characters in the Apple IIe Owner's Manual (platinum), page 133.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7396



# Tech Info Library

## Macintosh SE: Third-Party 80ns SIMMs Can Cause Problems

Revised: 6/28/91  
Security: Everyone

Macintosh SE: Third-Party 80ns SIMMs Can Cause Problems

=====  
Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm putting a 2MB RAM upgrade into my Macintosh SE. I started out with four 120ns 256K SIMMs. I'm putting two 80ns 1MB SIMMs into slots one and two and am putting the other two 120ns 256K SIMMs into slots three and four.

At power-on, my screen shows vertical lines spaced evenly across, about 1/4 inch apart. These lines appear right away, even while showing the "happy Mac" icon. With the lines visible, I can choose "About the Finder" and it indicates that the Macintosh SE is recognizing all 2.5MB of RAM.

Should I not be mixing 80ns and 120ns SIMMs with a standard Macintosh SE?

DISCUSSION -----

We have had reports of third-party 80ns memory having strange effects on Macintosh SE computers. In all of the cases, the problem was defective memory modules. The first thing to do is replace the 80ns SIMMs with new ones. If the problem still continues, try using slower 1MB SIMMs.

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Tech Info Library Article Number:7397



# Tech Info Library

## Macintosh: Why It Doesn't Use Entire Screen

Revised: 6/28/91  
Security: Everyone

Macintosh: Why It Doesn't Use Entire Screen

=====

Article Created: 30 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why is there a 1/2 inch unused border around the edge of Macintosh monitors? Why doesn't the Macintosh use its entire available screen space?

DISCUSSION -----

This is because of image resolution quality and aspect ratio concerns. The Macintosh screen has to have certain dimensions. If the projected image were to completely fill the screen, it would be slightly distorted, especially at the edge of the screen. Most computer CRTs have a mask around the border area to provide the largest and clearest usable area.

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Tech Info Library Article Number:7398



# Tech Info Library

## SCSI Devices Cannot be Shared Between Computers

Revised: 6/28/91  
Security: Everyone

SCSI Devices Cannot be Shared Between Computers

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way a single SCSI device can be connected to two Macintosh computers, with a switch box for example?

DISCUSSION -----

The SCSI protocol doesn't allow dynamic switching or interruption of the power and signal lines in the cable. For this reason alone, a switch box would create havoc in a SCSI chain--at the minimum causing all types of data transfer errors and possibly even blowing a device. We know of no way to connect one SCSI peripheral to two computers.

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Tech Info Library Article Number:7399



# Tech Info Library

## Macintosh: How To Get Two Screen Dumps on a Single Page

Revised: 6/28/91  
Security: Everyone

Macintosh: How To Get Two Screen Dumps on a Single Page

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to get a Macintosh to do two screen prints on a single page?

DISCUSSION -----

There is no way to automatically get two screen prints on the same page. Because the screen dump is a MacPaint file, you can cut and paste the two documents into one and print the resulting document.

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Tech Info Library Article Number:7400





# Tech Info Library

## Macintosh SE/30: Screen Bowing Problems

Revised: 6/28/91  
Security: Everyone

Macintosh SE/30: Screen Bowing Problems

=====

Article Created: 29 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh SE/30's screen bows on the sides when there is a black rectangle displaying. This happens, for example, in Excel when I select three or more cells and highlight a whole row across the entire screen. When I deselect, the bowing stops.

I've replaced the analog board, the power supply, the video board, the CRT, and disconnected the hard drive--all to no avail. Is it possible that the system board is receiving interference from something else in the system?

DISCUSSION -----

The problem you're describing is usually caused by one of three things:

- defective analog board,
- defective video board, or
- internal contrast setting set too high.

Even though you've already replaced these components, we suggest you recheck them (particularly the video board) for possible defects.

Though the logic board is a possible cause for this type of problem (since it maintains the video image in VRAM) it is unlikely to be causing the problem. If the first set doesn't solve the problem, however, then go ahead and replace the logic board.

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Tech Info Library Article Number:7401



# Tech Info Library

## EMI: What You Can Do To Prevent Screen Interference

Revised: 6/28/91  
Security: Everyone

EMI: What You Can Do To Prevent Screen Interference

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm getting screen interference on my computer from a transformer outside my home. I've tried all sorts of surge suppressors, all to no avail. Any other suggestions?

DISCUSSION -----

Is your interference coming directly from power lines or from electromagnetic interference (EMI) in the air? If it's from power lines, you'll need a "high-end power filter" costing around \$200 and up.

Your problem sounds like general electromagnetic interference. The only thing you can do is move your monitor as far away as possible from the source of interference. You can also try putting some shielding around the monitor to protect it from EMI.

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Tech Info Library Article Number:7402



# Tech Info Library

## System 7 Chooser: Device, Name, Zone, Memory Limits

Revised: 6/25/91  
Security: Everyone

System 7 Chooser: Device, Name, Zone, Memory Limits

=====

Article Created: 24 June 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

This article discusses device, name, and zone limits as displayed and controlled through the System 7 Chooser, with some additional notes on the limits of previous versions of the Chooser.

DISCUSSION -----

The following information pertains mostly to the System 7 Chooser (use at least version 7.0 of the Chooser, preferably 7.1 or greater), with some comparative information on the System 6 Chooser:

The Chooser DA window consists of four separate sections:

- 1) The device type list.
  - 2) The AppleTalk zone list (visible only if there are multiple zones).
  - 3) The AppleTalk active/inactive controls.
  - 4) The available devices name list.
- 
- 1) The Chooser is able to display a maximum of 32 items in the Chooser device type list (Note: The System 6 limit was 16). This is the limit that is imposed by the Chooser itself, not by something interfering with the operation of the Chooser. If, for instance, you have more than 16 Chooser items in your System Folder under System 6 and only 16 show up, there is no conflict. Sixteen is simply the limit under System 6.
  - 2) The Chooser allocates memory for the zone list dynamically, up to 32K (Note: this is the same as the System 6 Chooser). Each entry in the zone list uses 1 byte of memory for each character in the zone name, plus 1 byte. The Chooser uses this extra byte as a length byte. For example,

the 7-character zone name "My Zone" uses 8 bytes of memory: 7 bytes for the characters and 1 byte for the length byte. The maximum length of a zone name is 32 characters. A 32-character zone name uses 33 bytes of memory.

Based on this information, if every zone had a 32-character name, it would be possible to have a maximum of 992 zones listed in the Chooser ( $32,768 / 33 = 992.97$ , remove the remainder). The maximum number of zones that can be displayed in the Chooser is wholly dependent on the length of the zone names being used.

3) This one is self-explanatory; it controls whether or not AppleTalk is active (Note: this is the same as the System 6 Chooser).

4) Determining the maximum number of visible Chooser device names:

The System 7 Chooser allocate a 32,768-byte buffer for the Chooser's list of available AppleTalk network device names (Note: the System 6 Chooser allocated a 512-byte buffer). Each name in the buffer is embedded in an AppleTalk Name Binding Protocol (NBP) packet received by the Chooser from the selected device type. The NBP packet is called a "lookup reply", and is sent in answer to the Chooser's lookup broadcast for the selected device. An example is the selection of the device type LaserWriter driver, and the displayed LaserWriter object names.

The buffer space used by each returned AppleTalk device is the length of the NBP reply packet returned by the device to the Chooser's lookup.

#### NBP LaserWriter Lookup Reply Packet Definition

```
-----
Function and Tuple Count:    1 byte
NBP ID:                     1 byte
Network Number:             2 bytes
Node ID:                    1 byte
Socket Number:              1 byte
Enumerator:                 1 byte
Object Field Length:        1 byte
Object:                     length of name
Type Field Length:          1 byte
Type:                       11 bytes for type "LaserWriter"
Zone Field Length:          1 byte
Zone:                       1 byte for zone "*" the NBP reply default
-----
TOTAL                        22 bytes + length of the LaserWriter name
```

A calculation for determining the maximum number of visible LaserWriters in a zone:

Number of visible LaserWriters =  $\text{trunc}(32,768 / (22 + (\text{sum of name lengths} / \text{Number of LaserWriters})))$

If the LaserWriter names are all the same length, the calculation is simplified to  $\text{trunc}(32,768 / (22 + \text{length}))$ . The mean calculation (sum of

name lengths / Number of LaserWriters) is not necessary in this case.

(NOTE: Trunc indicates that decimal values should be ignored. That is, a result of 780.19 indicates 780 LaserWriters.)

The calculation can be used for any other type of AppleTalk device, if the type length and the mean of the device names are known.

System 7 Chooser selecting the Apple LaserWriter driver displays:

| Mean Name Length | Max Number of Visible LaserWriters |
|------------------|------------------------------------|
| -----            | -----                              |
| 32               | 606                                |
| 30               | 630                                |
| 25               | 697                                |
| 20               | 780                                |
| 15               | 885                                |
| 10               | 1024                               |
| 5                | 1213                               |

For information on the System 6 Chooser limits, search on System 6 Chooser.

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Tech Info Library Article Number:7403



# Tech Info Library

## System 7: System 7.0-7.1.2 Preferences Defaults & Location 8/95

Revised: 8/28/95  
Security: Everyone

System 7: System 7.0-7.1.2 Preferences Defaults & Location 8/95

Article Created: 24 June 1991  
Article Reviewed/Updated: 28 August 1995

TOPIC -----

This article describes the default preference settings of System 7.0 through System 7.1.2.

You can customize your Macintosh in a variety of ways to suit your own personal style. For example, you can change ways in which information is displayed, the sounds your system makes, and how it handles file management. Your Macintosh uses a variety of Preferences files to maintain your custom settings.

There are several preference settings under System 7. System-wide preferences, such as mouse-tracking speed, are set via Control Panels, but are stored in Parameter RAM (PRAM). Preferences specific to the Finder are also set via Control Panels, but are stored in a file called Finder Preferences located in the Preferences folder, in the System Folder.

Here is some information on where each preference is stored, along with instructions for resetting both system-wide and Finder preferences.

DISCUSSION -----

System Preferences  
=====

This table lists system-wide preferences that may affect all applications:

NOTE: Items marked with an asterisk (\*) (the last items in the table) apply to the PowerBook.

Begin\_Table

| PREFERENCE | LOCATION | DEFAULT |
|------------|----------|---------|
|------------|----------|---------|

|                                                 |                                    |                                                                                                                       |
|-------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 32-bit addressing                               | Memory Control Panel               | 24-bit addressing                                                                                                     |
| Disk cache size                                 | Memory Control Panel               | 6K                                                                                                                    |
| Brightness settings                             | Brightness Control Panel           | Mid-range on the slider                                                                                               |
| Highlight color                                 | Color Control Panel                | Black                                                                                                                 |
| Cursor blink rate                               | General Control Panel              | Middle setting                                                                                                        |
| Menu blink count                                | General Control Panel              | 3 times                                                                                                               |
| Date, time, and displayed format                | General Control Panel and Alarm DA | None                                                                                                                  |
| Keyboard repeat rate and repeat delay           | Keyboard Control Panel             | For repeat: One away from Fast<br>For delay: One away from Long                                                       |
| Monitor settings and location of extra monitors | Monitors Control Panel             | Primary monitor only; set to Black & White                                                                            |
| Mouse tracking and double-click speeds          | Mouse Control Panel                | For tracking: Very Slow<br>For double-click: Middle setting                                                           |
| Beep sound                                      | Sound Control Panel                | Simple beep, though it is not highlighted                                                                             |
| Startup disk choice                             | Startup Disk Control Panel         | None set, uses standard volume search method                                                                          |
| Cache settings (68040 Macintosh)                | Cache Switch Control Panel         | Faster (Caches Enabled)                                                                                               |
| Minutes before system sleep*                    | PowerBook Control Panel            | 8 Minutes                                                                                                             |
| Minutes before hard disk sleep*                 | PowerBook Control Panel            | 4 Minutes                                                                                                             |
| Macintosh PowerBook rest*                       | PowerBook Control Panel            | Rest (While in the PowerBook Portable Control Panel, hold down the Option key and click Minutes Before System Sleep.) |
| Stay awake when plugged in*                     | PowerBook Control Panel            | Unselected                                                                                                            |

|                 |                               |                                                             |
|-----------------|-------------------------------|-------------------------------------------------------------|
| Modem selection | PowerBook Setup Control Panel | Internal modem                                              |
| Wake on ring    | PowerBook Setup Control Panel | Unselected (See Portable Control Panel for internal modem.) |

Except for Date and Time and the default application font all system-wide preferences may be reset by zapping PRAM.

- To zap PRAM under System 7, hold down the Command-Option-p-r keys during start up (Make sure the Caps Lock key is up!). The Macintosh restarts shortly after displaying the "Welcome to Macintosh" screen, which indicates that PRAM has been reset.

#### Finder Preferences =====

| PREFERENCE                            | LOCATION                                 | DEFAULT                                                                                                                                 |
|---------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Font used for<br>Finder view          | Views Control Panel                      | Geneva 9                                                                                                                                |
| Icon alignment<br>settings for Finder | Views Control Panel                      | Straight grid - "Always<br>snap to grid" deselected                                                                                     |
| Icon list view<br>settings for Finder | Views Control Panel                      | Smallest icon; display<br>sizes, kinds, labels,<br>and dates; deselect<br>"Calculate Folder Sizes"<br>and "Show Disk Info in<br>Header" |
| Trash Can warning<br>dialog           | Setting in Get Info<br>for the Trash Can | Warn before emptying                                                                                                                    |

End\_Table

With the exception of virtual memory, these parameters may be reset by deleting the Finder Preferences file, which is located in the Preferences folder inside the System Folder. System 7 does not allow this file to be modified so if it is on the start-up disk, you need to disable it instead. To do this, drag the Finder Preferences file out of the Preferences folder and restart the Macintosh. System 7 creates a new Finder Preferences with default values automatically. You may then delete the old Finder Preferences file.

NOTE: The Virtual Memory, File Sharing, and Window Color settings are stored with their respective Control Panel files and cannot be reset using these methods. Virtual Memory and File Sharing can be temporarily disabled, however, by pressing the Shift Key while starting the Macintosh. Hold the key down until "Extensions Of" appears in the "Welcome to Macintosh" screen.



This article was published in the "Information Alley":  
Volume 1, Issue 3, Page

Article Change History:

28 Aug 1995 - Changed title to better reflect content.  
27 Jun 1995 - Added Info Alley information.  
19 Jun 1995 - Broke out system 6 information.

Support Information Services

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Tech Info Library Article Number:7404



# Tech Info Library

## AppleCD SC Plus: Product Description (Discontinued)

Revised: 6/1/94  
Security: Everyone

AppleCD SC Plus: Product Description (Discontinued)

=====

Article Created: 21 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the AppleCD SC® Plus disc drive.

DISCUSSION -----

The AppleCD SC Plus is a CD-ROM (compact disc, read-only memory) drive that can be used with either a Macintosh or Apple II computer. It provides access to text, graphics, and sound that has been digitally recorded on CD-ROM discs. A single CD-ROM can hold approximately 650MB of information.

Speed has been improved by approximately 20% over previous models. Data from these compact discs can be copied and pasted for use in other applications. This drive supports the Apple II, Macintosh, and industry standard High Sierra and ISO 9660 file systems.

This unit has a 64K RAM buffer and a front-loading CD-ROM slot. Its CD caddy provides dust protection, guarding the integrity of the recorded information and provides a convenient way to store discs.

A CD audio chip set and the drive's CD Remote desk accessory provide for listening to audio information stored on disc. The unit includes two RCA jacks for connection to external amplified speakers as well as a headphone jack for listening to stereophonic audio information. Discs can be played using either the Apple II or Macintosh, providing the information has been pressed in an industry standard file format.

### System Requirements

-----

This drive has a universal power supply to ensure compatibility with worldwide electrical standards. Only SCSI cabling is required to use the

unit. An Apple II SCSI interface card is needed to connect the Apple CD SC Plus to an Apple IIe or Apple IIGS computer.

Ordering Information

-----

| Product Name                          | Order Number |
|---------------------------------------|--------------|
| AppleCD SC Plus                       | M2700LL/C    |
| Apple CD Caddy (box of 5)             | M2705        |
| Apple SCSI System Cable               | M0206        |
| Apple SCSI Cable Terminator           | M0332LL/A    |
| Apple SCSI Peripheral Interface Cable | M0207        |
| Apple SCSI Cable Extender             | M0208        |
| Apple II High Speed SCSI Card         | A0220LL/A    |

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Tech Info Library Article Number:7405



# Tech Info Library

## AppleCD SC Plus: Specifications (Discontinued)

Revised: 10/7/93  
Security: Everyone

AppleCD SC Plus: Specifications (Discontinued)

Article Created: 21 June 1991

TOPIC -----

This article gives the technical specifications for the AppleCD SC® Plus CD-ROM drive.

DISCUSSION -----

The playback medium for the AppleCD SC Plus is a 12-centimeter optical disc installed in a CD caddy. Any CD-ROM or audio compact disc is compatible.

The data capacity in mode #1 is 656MB, 748MB in mode #2. The unit access is from 1 recording surface. The unit has a capacity of more than 270,000 blocks per disc. Data per block is 2,048 bytes in mode #1, 2,336 bytes in mode #2.

Audio playback time is more than 1 hour with a frequency response of 20 to 20,000 hertz.

Characteristics include

- Typical access time is 380ms (including latency).  
The maximum first to last block access time is typically 650ms.
- The data streaming rate is 150K/second in mode #1, 171K/second in mode #2.
- The block rate is 75 blocks/second.
- SCSI bus transfer burst rate is 1.5MB/second.
- Rotational speed is approximately 230 to 530 rpm (variable).
- Startup time is typically 5 seconds, but media-dependent.
- Spin-down time is typically 2 seconds.

Electrical requirements

- 100 to 240 volts AC for line voltage
- Frequency is 50 to 60 hertz with maximum power of 40 watts.

#### Environmental requirements

---

- Operating temperature: 50 to 104 degrees Fahrenheit (10 to 40 degrees Centigrade)
- Storage temperature: -22 to 122 degrees Fahrenheit (-30 to 50 degrees Centigrade)

#### Size and Weight

---

Height: 3.31 in. (8.4 cm)  
Width: 9.69 in. (24.6 cm)  
Depth: 10.47 in. (26.6 cm)  
Weight: 8.8 lb (8 kg)

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Tech Info Library Article Number:7406



# Tech Info Library

## SNA•ps Gateway: Description (Discontinued)

Revised: 6/1/94  
Security: Everyone

SNA•ps Gateway: Description (Discontinued)

=====

Article Created: 21 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the SNA•ps™ Gateway.

DISCUSSION -----

Overview

-----

The SNA•ps Gateway is Apple's implementation of Systems Network Architecture protocols and services. It is an integrated 3270 Advanced Program-to-Program Communications (APPC), and Advanced Peer-to-Peer Networking (APPN) gateway. You can configure it as a personal gateway for direct SNA connectivity or as an AppleTalk network gateway to enable any Macintosh to communicate with IBM systems running the VM, MVS, OS/400, and OS/2 operating systems.

The SNA•ps Gateway supports multiple expandable interface cards, tunable performance parameters, and combined 3270 and APPC configurations. It provides access to existing 3270 terminal-based applications and a Macintosh interface to host applications, databases, and OfficeVision services.

It is implemented on an intelligent NuBus card, and offers parallel sessions and independent LU support. The design frees the main Macintosh processor to run other LAN applications that provide file, mail, and database services. It is easily upgraded to support new features without hardware changes.

System Requirements

-----

To use the SNA•ps Gateway, you need:

- A Macintosh II system with a minimum of 1MB of RAM (Additional RAM on the Macintosh II logic board will not affect gateway performance.)
- System software version 6.0.5 or later
- An Apple Coax/Twinax Card, Apple TokenTalk NB Card, or Apple Serial NB Card

#### Product Details

-----  
SNA Protocols. The SNA•ps Gateway protocols are a complete implementation of IBM LU 2, LU 6.2, and NT 2.1.

AppleTalk Gateway. In AppleTalk network environments, the SNA•ps Gateway serves as a network resource for Macintosh applications such as SNA•ps 3270 or third-party SNA•ps-compatible applications.

Server Administration. These Macintosh applications, which can be run on the Macintosh containing the SNA•ps Gateway or on a Macintosh connected to the Gateway via AppleTalk, are used to initialize and manage local and remote SNA•ps Gateways:

- SNA•ps 3270 Manager allows SNA•ps Gateway configuration where only 3270 terminal emulation is needed for a single connection to a single host.
- SNA•ps Config allows SNA•ps Gateway configuration for more complex environments that may involve multiple lines, multiple hosts, and APPC connections.
- SNA•ps Admin provides a complete set of management features for SNA•ps Gateways running any configuration created by SNA•ps 3270 Manager or SNA•ps Config.

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Tech Info Library Article Number:7408



# Tech Info Library

## System 7: Short File and Folder Names for MS-DOS Access

Revised: 6/28/91  
Security: Everyone

System 7: Short File and Folder Names for MS-DOS Access

Article Created: 24 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The file and folder names in the Get Info dialog box are not the same as the name shown under the directories on the Finder desktop. When I click on the name in the Get Info dialog box, the name changes. Why?

DISCUSSION -----

The file or folder you're viewing is located on a file server or is being shared under System 7. To allow both MS-DOS computers and Macintosh computers to access file servers, all files and folders are named twice.

Since MS-DOS limits both the length and the kinds of characters in file and folder names, we have to change the standard Macintosh names to shorter versions that work under MS-DOS. Clicking on the file or folder name in the Get Info dialog box toggles between the Macintosh and MS-DOS versions of the name.

Examples:

|                                |                        |
|--------------------------------|------------------------|
| Macintosh name = System Folder | Short name=!System.Fol |
| Macintosh name = Cafe 7.0F     | Short name=!Cafe_7.0F  |

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Tech Info Library Article Number:7411





# Tech Info Library

## System 7: Microsoft File Version 2.0, 2.0a Not 32-Bit Compatible

Revised: 9/3/92  
Security: Everyone

System 7: Microsoft File Version 2.0, 2.0a Not 32-Bit Compatible

=====

Article Created: 24 June 1991

### Article Change History

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09/02/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Is Microsoft File (versions 2.0 and 2.0a) 32-bit compatible?

### DISCUSSION -----

No. It has problems running with 32-bit addressing turned on. The difficulty is in creating a new database structure from a copy of another database structure. When this occurs, the application unexpectedly quits, listing a type 1, bus error.

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Tech Info Library Article Number:7412



# Tech Info Library

## Macintosh 21 Color Display (International): Specs (Disc.)

Revised: 6/20/94  
Security: Everyone

Macintosh 21" Color Display (International): Specs (Disc.)

=====

Article Created: 21 June 1991

TOPIC -----

This article gives the technical specifications for the Macintosh 21" Color Display.

DISCUSSION -----

Product Overview

-----

This document describes the special features of Apple's Macintosh 21" Color Display. (As of June 1991, this display is not available for sale in the United States.)

Feature Set

-----

- Two full pages of color display
- Asymmetric .26 mm horizontal by .29 mm vertical dot pitch
- 1152 horizontal pixels by 870 vertical lines
- 79 dots per inch
- Horizontal scan rate 68.7 kHz
- Vertical refresh rate 75 Hz
- Automatic degaussing
- Excellent ergonomic design
- Two ADB ports for keyboard and mouse
- Anti-glare screen
- Vertically and horizontally pivoting base
- Meets Swedish recommendation for low frequency magnetic and electric field emissions.

Video Card Support

-----

The 21" Color Display is supported by the same video cards as Apple's Two-Page Monochrome Monitor. Cards supporting the 21" Color Display include:

- Macintosh Display Card 4•8 at 4 bits per pixel
- Macintosh Display Card 8•24 at 8 bits per pixel
- Macintosh Display Card 8•24 GC at 8 bits per pixel
- SuperMac Spectrum 24/PDQ Card at 24 bits per pixel

RasterOps has also indicated that their 24-bit card will support the 21" Color Display. The 21" Color Display is not supported by on-board video on the Macintosh IIci, Macintosh IICx, or Macintosh LC.

#### Shadow Mask

-----

A metal shield or mask acts as a filter to separate the red, green, and blue electron beams that create the images you see. The Macintosh 21" Color Display uses a perforated shield called a shadow mask. This differs from some other monitors which use a vertically-oriented aperture grill design. After the electron beams pass through a mask or grill, they strike the designated red, green, or blue dots of phosphor on the back of the screen. When the beams strike the colored phosphor dots, they glow. The combination of the glowing dots produces the color images you see.

Traditional mask and grill designs use perforations arranged in a pattern that interacts with the changing pattern of the electron beams as they scan across the shield. The interaction of these patterns frequently causes a subtle screen interference, called a moire pattern. Certain Macintosh desktop patterns cause the interference to be quite obvious.

The Macintosh 21" Color Display has a unique design for the pattern of tiny holes in its shadow mask. The 21" Color Display uses an asymmetric dot pitch of .029 mm horizontally and .026 mm vertically. This pattern does not conflict with the one created by electron beams and thus avoids the distracting effects of the most common moire patterns.

#### Uniform Brightness

-----

Traditional CRT technology has limitations that cause many large-screen color monitors to show uneven brightness across the screen. Variable screen brightness degrades the image quality and increases eye fatigue.

The Macintosh 21" Color Display uses a CRT design that provides uniform brightness across the entire screen. All parts of the screen show the same vivid colors. There is no degradation between the center of the screen and the edges.

#### Adjustable White Point Color Temperature

-----

The white point color temperature is a measure, in degrees Kelvin, of how white a display's white is. Traditional displays use a 9300 degree Kelvin white which has a bluish tint to it and a high contrast. A 6500 degree Kelvin white is similar to page white and is more useful for color matching.

The Macintosh 21" Color Display features an adjustable white point color

temperature. The white point color temperature can be adjusted by selecting the monitors CDEV in the control panel and clicking on the option button. The options dialog offers a choice of gamma tables and among them are the "Mac Std Gamma" and "Page-White Gamma". The "Mac Std Gamma" is the 9300 degree Kelvin option that is the traditional bluish display white. The "Page-White Gamma" is the 6500 degree Kelvin white that closely resembles the white of a printed page.

#### Automatic Degaussing

-----

The Macintosh 21" Color Display has innovative circuitry that provides automatic degaussing, ensuring that you always have the best image possible on your screen. Color display technology uses magnetic fields to guide electron beams inside the CRT to the screen. If a foreign magnetic field comes close to the CRT, it may disturb the internal magnetic field and cause the beams to be slightly misdirected, distorting the screen image.

Most monitors have circuitry that compensates for the distortions by adjusting the internal magnetic field to counteract the external magnetic field. However, most monitors degauss only when they first start up. If the external magnetic field changes enough during operation to distort the screen image, the image remains distorted until the power is turned off and on again.

The AppleColor™ High-Resolution RGB Monitor has a manual degauss control that allows you to press a button to degauss the monitor without turning it off.

The Macintosh 21" Color Display has startup, manual, and automatic degaussing features. If the small magnetometer (a device that measures magnetic fields) inside the case senses a major change in the ambient magnetic field, it sends a signal that initiates a degauss.

Tilting or swiveling the monitor may change the magnetic field enough to cause distortion, and to trigger automatic degaussing. Automatic degaussing guarantees that the image on your screen is the best it can be. Occasional automatic degaussing is normal. The magnetometer is operational whenever the power is on so it can occur even when there is no image on the screen. If degaussing occurs when you haven't moved the monitor, there may be a source of interference in the room. It may be necessary to move the source of interference to another location to reduce the frequency of automatic degaussing.

#### Ergonomics

-----

The Macintosh 21" Color Display has several ergonomic features that provide optimum flexibility for viewing comfort and ease of use.

- An antiglare, antistatic panel greatly reduces glare and dust buildup.
- The built-in tilt and swivel base makes it easy to change your viewing angle.
- A 75 hertz screen refresh rate eliminates any flickering on your screen.

- The easily accessible ADB ports on the front of the base offer flexibility for arranging your system's components.
- Brightness and contrast controls on the front of the monitor make it easy to make adjustments.
- The curved and recessed base, the recessed video cable connector, and the right-angled power cord all help to reduce the total desk space needed for the monitor.
- The hard plastic spheres on the bottom of the base make it easier to lift and slide the monitor to a new location nearby.

#### Specifications

-----

##### Picture Tube:

- 21-inch diagonal, 20-inch viewable, with in-line gun
- 90 degree deflection angle
- Black matrix-type dot screen
- Phosphor type (aluminized), P22
- Flat square faceplate with gray filter glass, 50% nominal light transmission
- Shadow mask
- Dot pitch 0.26 x 0.29 millimeters
- Phosphor CIE coordinates: red, green, blue
- Color Temperature 6500 degrees K

##### Input Signals:

- Red, green, and blue video signals; TTL separate sync

##### User Controls:

- On/off switch (back, above power cord)
- Brightness, with detent reference (front, right)
- Contrast (front, left of brightness control)
- Manual degauss switch (back, above security lock)

##### Scanning and Refresh Rates:

- Horizontal scan rate 68.7 kHz
- Vertical refresh rate 75 Hz

##### Video Rise and Fall Time:

- 5 nanoseconds maximum

##### Active Video Image Area:

- Adjusted at the factory to produce an active video area described by an ideal rectangle of 371 mm by 280 mm. The remainder of the screen is used for the dark border around the screen.

##### Resolution:

- 1152 horizontal pixels by 870 vertical lines; 79 dots per inch

##### Dimensions:

- Weight 79.6 lb. (36.2 kg)
- Height 46.1 cm

##### Electrical Input Requirements:

- Voltage 85-135 volts (AC) or 170-270 volts (AC)
- Frequency 47-63 Hz
- Power 165 watts maximum, all line conditions

Operating Ambient Temperature:

- 50-95 degrees F (10-35 degrees C)

Environmental Requirements:

- Operating Humidity 95% maximum, noncondensing
- Operating Altitude 10,000 feet maximum

Fuse Protection:

- The monitor contains internal power line fuse protection. Its fuse should be replaced with a fuse of the same type by a qualified service technician.

Warm-up Time:

- 30 minutes to meet all specifications (however, the monitor can be used immediately after it's turned on)

Video Input signal jack pin assignments:

| Pin   | Function     |
|-------|--------------|
| ---   | -----        |
| A1    | Blue video   |
| A2    | Green video  |
| A3    | Red video    |
| 1     | Hsync return |
| 2     | Vsync        |
| 3     | Sense #3     |
| 4     | Sense ground |
| 5     | Csync        |
| 6     | Hsync        |
| 7     | Vsync return |
| 8     | Sense #2     |
| 9     | Sense #1     |
| 10    | Csync return |
| Shell | Shell ground |

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Tech Info Library Article Number:7413



# Tech Info Library

## System 7: Contiguous Memory with Virtual Memory in 24-bit Mode

Revised: 6/28/91  
Security: Everyone

System 7: Contiguous Memory with Virtual Memory in 24-bit Mode

Article Created: 25 June 1991

### Article Change History

-----  
08/19/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the largest contiguous memory block available with virtual memory in 24-bit mode?

### DISCUSSION -----

In 24-bit mode using virtual memory, total RAM can be set up to 13MB, depending on the CPU and the number and placement of NuBus cards. This memory is not a contiguous block, however. The largest contiguous block will be roughly 7.5MB.

Viewing the About this Macintosh window can appear confusing because the totals for RAM used by programs may seem to add up incorrectly. A total of 16MB of RAM is addressable under System 7. Some of this is memory reserved for ROM (1MB), IO (1MB), video for the Macintosh IIci or Macintosh IIsi (1MB), and NuBus cards (1MB each). This memory is mapped starting above the 8MB mark. Any free memory in the upper 8MB of RAM (up to the 5MB possible) forms an "upper memory block."

Under System 7, system heap first loads into the bottom 8MB of memory then programs, starting with Finder, load into the upper memory block, provided there is a large enough contiguous block there to hold the program. If there is not a large enough contiguous block in the upper memory, the program will load in the lower memory block. Thus it is possible to have a lower unused block of about 7.5MB (the lower 8MB minus

system heap) and an upper unused block of about 4MB (or less). Viewing About this Macintosh lists only the largest unused block of memory, not the total unused memory.

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Tech Info Library Article Number:7414





# Tech Info Library

## System 7: Window Border Colors in 16-Color Mode

Revised: 6/28/91  
Security: Everyone

System 7: Window Border Colors in 16-Color Mode

=====

Article Created: 25 June 1991

### Article Change History

-----

08/17/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I change the color of window borders through the Color control panel when my monitor is set to 16 colors?

### DISCUSSION -----

Although the Window color option appears in the Color control panel when the Monitors control panel has been set to 16 colors, the window borders will remain black and white. To display colored window borders, set the Monitor control panel to 256 colors.

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Tech Info Library Article Number:7415



# Tech Info Library

## System 7: Ready,Set,Go! Compatibility

Revised: 9/3/92  
Security: Everyone

System 7: Ready,Set,Go! Compatibility

=====

Article Created: 25 June 1991

### Article Change History

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09/02/92 - CORRECTED

- Spelling of product name.

### TOPIC -----

Is Ready,Set,Go! 4.5 fully compatible with System 7?

### DISCUSSION -----

Ready,Set,Go! 4.5a, which is listed as fully compatible in the "System 7.0: Compatibility With Selected Hardware and Software" booklet has some compatibility problems with printer drivers later than 5.2 (System 7 drivers are 7.0).

Non-PostScript pen lines and fills will not print and may result in the error message "Undefined error, Command-S 8. A PostScript error has been generated by the LaserWriter extension file. The document is OK but cannot be printed." PostScript pen lines and fills which are located to the far left of the Ready,Set,Go! menu work fine.

LetraSet will not be updating Ready,Set,Go! 4.5a, but will continue to support the product. They recommend Design Studio 2.0 as an upgrade.

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Tech Info Library Article Number:7416



# Tech Info Library

## On Three

Revised: 6/16/94  
Security: Everyone

On Three

=====

Article Created: 1 July 1991  
Article Reviewed/Updated: 16 June 1994

On Three  
-----

1174 Hickory Ave.  
Tehachapi, CA 93561

805-822-8580

Tech Support: 617-731-0662

Company Profile:  
Software and hardware, specializing in Apple III and IIGS products sales and technical support.

Article Change History:  
16 June 1994 - Updated tech support phone number

Support Information Services

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Tech Info Library Article Number:7420



# Tech Info Library

## TDD Modems

Revised: 7/9/91  
Security: Everyone

TDD Modems

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What companies manufacture modems that can communicate with deaf or hearing-impaired TDD (Telecommunication Device for the Deaf) users?

DISCUSSION -----

Krown Research and UltraTec make 300-baud/TDD modems. You can find their addresses and phone numbers in separate articles in the Tech Info library by searching on their company names.

These modems require a special cable to connect to the computer. They can be used with a Macintosh or Apple II system equipped with an RS-232 serial port. Use the 300-baud modem setting.

You can use MacTerminal 2.3.1 with these modems. MacTerminal 3.0 will not work with the TDD modems.

For a normal modem to communicate with a TDD Modem, change the TDD settings to ASCII and 300 baud, and set the normal modem to 300 baud and TTY.

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Tech Info Library Article Number:7424



# Tech Info Library

## Macintosh IIsi: Third-Party Monitors

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Third-Party Monitors

=====

Article Created: 1 May 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

What third-party monitors are compatible with the Macintosh IIsi?

DISCUSSION -----

Most multisync monitors that are about 14" should work. There currently is no third-party two-page or portrait option available for the Macintosh IIsi's built-in video.

Here is a list of companies whose monitors work with the Macintosh IIsi's built-in video:

- Mitsubishi
- Relisys
- Seiko
- Sony
- NEC MacSync
- NEC Multisync
- Princeton

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7425



# Tech Info Library

## Macintosh Classic: Third-Party 1/3 Height Drives

Revised: 6/18/92  
Security: Everyone

Macintosh Classic: Third-Party 1/3 Height Drives

Article Created: 1 May 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

What third-party companies sell 1/3-height drives for the Macintosh Classic?

DISCUSSION -----

Here are companies offering 1/3 height drives for the Macintosh Classic:

|                         | Mechanism<br>----- | Capacity<br>----- |
|-------------------------|--------------------|-------------------|
| CMS Enhancements        |                    |                   |
| MC-20                   | Seagate            | 20MB              |
| MC-100                  | NEC                | 100MB             |
| Microtech International |                    |                   |
| Europa 20-ic            | Seagate            | 20MB              |
| Europa 50-ic            | Quantum            | 50MB              |
| Europa 100-ic           | Quantum            | 100MB             |
| MicroNet Technology     |                    |                   |
| MCi-40p                 | Conner             | 40MB              |
| MCi-80p                 | Maxtor             | 80MB              |
| Optima Technology       |                    |                   |
| MiniPak 401/Classic     | -----              | 40MB              |
| MiniPak 1301/Classic    | -----              | 130MB             |
| MiniPak 2001/Classic    | -----              | 200MB             |
| Procom Technology       |                    |                   |
| Classic 20              | Seagate            | 20MB              |

|             |         |       |
|-------------|---------|-------|
| Classic 30  | Seagate | 30MB  |
| Classic 45  | Seagate | 45MB  |
| Classic 50  | Quantum | 50MB  |
| Classic 100 | Quantum | 100MB |

Storage Dimensions

|              |        |      |
|--------------|--------|------|
| MacinStor 40 | Maxtor | 40MB |
| MacinStor 80 | Maxtor | 80MB |

Apple does not approve, test, or support these configurations.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7427



# Tech Info Library

## Apple II SCSI Card: Large File Transfer (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II SCSI Card: Large File Transfer (11/96)

=====

Article Created: 15 May 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

I am using an Apple II SCSI card to transfer files and sometimes large files become corrupted. Is there a fix for this problem?

DISCUSSION -----

Files larger than 64K become corrupted during the transfer process when using the Apple II SCSI Card. Use the newer High Speed SCSI card drivers with the older SCSI cards.

Article Change History:  
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:7428





# Tech Info Library

## Backup Power Supplies

Revised: 6/22/92  
Security: Everyone

Backup Power Supplies

Article Created: 31 May 1991  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

This article presents some information about backup power supplies.

DISCUSSION -----

Here are a few evaluations done on standby power supplies, which will allow users, should a brownout or power failure occur, to shut down their systems without losing data.

An evaluation in the April 30, 1990, PC Week cited two products:

- SPS300, a 300 volt-ampere device from ITT Powersystems Corp.
- MM300SS, a 312 volt-ampere device from Sutton Designs

Both of these units kept the PC Week system operating for 12 minutes after a power outage.

An evaluation in the February 12, 1990 Infoworld mentioned the following products:

- 600-LS, a 600 volt-ampere device from American Power Conversion Corp.
- Linebacker 300, a 300 volt-ampere device from SL Waber, Inc.
- 650FR, a 650 volt-ampere device from Alpha Technologies, Inc.

This is a heavy-duty supply (128-pound unit needing floor space) that will keep a system working for an hour and a half after a failure.

An evaluation in the April 1989 Byte magazine discussed the following:

- VIP 800, an 800 volt-ampere device from ITT Powersystems Corp. that gave a

## ..TIL07430-Backup\_Power\_Supplies\_(TA46073).pdf

10-minute reprieve after a power failure.

- PC/ET, a 360 volt-ampere device from Emerson Electric

This is a small size power supply with 7-minute backup time.

For more information, search under the company names.

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Tech Info Library Article Number:7430



# Tech Info Library

## Macintosh IIci, IIfx, IIsi, LC: Memory Manager Performance

Revised: 7/14/92  
Security: Everyone

Macintosh IIci, IIfx, IIsi, LC: Memory Manager Performance

=====

Article Created: 15 May 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated: 10 July 1992

TOPIC -----

A customer reported that a Macintosh IIfx took 12-13 minutes to load and display an Adobe PhotoShop file. A Macintosh IIfx took 1-2 minutes to load and display the same file. The customer was not using the black terminator, or the internal SCSI filter on the Macintosh IIfx. After the customer installed these, the Macintosh IIfx performed as expected.

DISCUSSION-----

There is a minor problem in the Memory Manager in the ROMs of the Macintosh IIci, IIfx, IIsi, and LC. This results in performance degradation in an extremely small number of applications, and doesn't cause system crashes. This affects few applications and very few customers. It is not a new problem and it only applies if you're using System 6, System 7.0 corrects this bug.

During extensive testing and research, Apple investigated a variety of solutions to enhance the memory manager performance. One solution was software called the Memory Manager INIT ( a software "patch"). Testing revealed that this patch did not enhance Memory Manager performance, and introduced risks, such as decreased performance, in some mainstream applications. We are aware of the distribution of an unofficial version of the Memory Manager INIT. This INIT was modified from Apple's experimental version, and should NOT be used. This INIT can cause data corruption, data loss and system crashes. Apple strongly urges that you throw away this INIT.

Because of the minimal impact, the Apple task force decided that it was not necessary to develop, test, and release a patch to the Memory Manager for System 6. It is important to realize the implications of patching the

Memory Manager. Since it is at the heart of everything the Macintosh does, any patch would require major testing resources to cover the entire product line, large numbers of applications, and Network and Communications products.

Based on developer feedback, customer feedback, and extensive in-house testing, Apple identified very few affected applications.

If you have a customer reporting slow downs on the Macintosh IIci, IIfx, IIsi, or LC, check the following items:

- 1) They aren't using built-in video. The Macintosh IIci and IIsi cycle-steal. The LC does not.
- 2) They have a clean System folder. Large numbers of INITs cause many problems.
- 3) They don't have network-based problems that also cause slow downs.
- 4) They have a properly configured SCSI bus.
- 5) They generally have a configuration that works.

If the slow performance persists after checking these items, it may be due to a Memory Manager software problem. The best solution would be to upgrade to System 7.

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Tech Info Library Article Number:7432



# Tech Info Library

## Macintosh: Plotter Driver Software

Revised: 5/27/92  
Security: Everyone

Macintosh: Plotter Driver Software

=====

Article Created: 30 May 1991  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

Plottergeist is a Macintosh Chooser-level plotter driver that supports Hewlett-Packard and Houston Instrument plotters.

DISCUSSION -----

Plottergeist allows the connection of a Macintosh to plotters to produce plotted output from CAD software, presentation packages, drawing and graphics programs. Compatible with all Macintosh applications, the plotter can be chosen from within a software application.

Background printing allows users to work on the Macintosh while their document is being plotted. A preview mode allows users to see their entire document before sending it to be plotted.

Arbitrary reduction and enlargement allows scaling output to fit from a standard letter-size page to a 36 by 48-inch E-size drawing. You can print smooth text in large sizes, or use the plotter's built-in fonts for fast draft work.

The package includes disk, manual and an RS-232 interface cable.

Plottergeist requires a Macintosh Plus or later. Background printing requires 2MB of RAM and MultiFinder.

Plottergeist is available from Palomar Software, Inc. For more information, search on the keyword, "Palomar".

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Tech Info Library Article Number:7434



# Tech Info Library

## Macintosh: Connections Software from Concentrix

Revised: 7/24/91  
Security: Everyone

Macintosh: Connections Software from Concentrix

=====  
Article Created: 30 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes Connections™ software for the Macintosh.

DISCUSSION -----

Connections software, from Concentrix Technology, Inc. consists of applications such as personal calendaring, to-do lists, a telephone directory, call tracker, daily accomplishments journal, and text information organizer. It provides an interface to IBM PROFS electronic mail and group calendaring.

Many of the functions of PROFS calendaring and electronic mail can be done off line, including archiving, organizing, and searching e-mail messages. If the mainframe or network goes down, the user still has access to the calendar and previously read e-mail messages. Mail messages can also be created off line and sent from Connections' out basket.

Connections offers slots for additional modules that can be created with other third-party connectivity tools, such as MitemView or SQL/DAL add-ons.

Connections can be modified in HyperCard.

The address and phone number of Concentrix Technology, Inc. are in a separate article in the Tech Info Library.

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Tech Info Library Article Number:7435



# Tech Info Library

## Macintosh LC: Screen Print to an ImageWriter

Revised: 7/23/92  
Security: Everyone

Macintosh LC: Screen Print to an ImageWriter

=====

Article Created: 15 May 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

When using the Command-Shift-4 key sequence to print the screen, the ImageWriter defaults to the modem port. If you open the Chooser, reselect the printer port, and then close the Chooser, the ImageWriter still defaults to the modem port. Can you get a screen print on a Macintosh LC connected to an ImageWriter?

DISCUSSION -----

You can get a screen print with a Macintosh LC when you leave the Chooser window open as the top window, and print to the ImageWriter using Command-Shift-4.

A better solution is to use the Command-Shift-3 key sequence to print the screen to a disk file. Then open the disk file in MacPaint, and print from there.

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Tech Info Library Article Number:7436



# Tech Info Library

## Apple File Exchange: AppleWorks 3.0 to MS Works Translator

Revised: 7/24/91  
Security: Everyone

Apple File Exchange: AppleWorks 3.0 to MS Works Translator

=====

Article Created: 30 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is the Apple File Exchange Translator compatible with AppleWorks?

DISCUSSION -----

The AppleWorks to Microsoft Works Translator for Apple File Exchange will operate properly with AppleWorks 2.x and earlier. It does NOT operate with AppleWorks 3.0 files.

There is a third-party solution called Cross-Works by SoftSpoken. You can find the address and phone number for SoftSpoken in a separate article in the Tech Info Library.

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Tech Info Library Article Number:7437





# Tech Info Library

## Apple IIe and IIGS: Optical Character Recognition Software

Revised: 7/24/91  
Security: Everyone

Apple IIe and IIGS: Optical Character Recognition Software

=====

Article Created: 30 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is Optical Character Recognition software available for Apple II computers?

DISCUSSION -----

WestCode Software developed INWORDS, Optical Character Recognition (OCR) software for the Apple IIe and Apple IIGS. You use the software with hand-held scanners. It scans text at up to 3000 characters per minute.

You can find the address and phone number for this company in a separate article in the Tech Info Library.

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Tech Info Library Article Number:7438



# Tech Info Library

## Personal LaserWriter NT: Switch Settings (11/96)

Revised: 11/8/96  
Security: Everyone

Personal LaserWriter NT: Switch Settings (11/96)

Article Created: 15 May 1991  
Article Reviewed/Updated: 8 November 1996

TOPIC -----

Users sometimes confuse the Personal LaserWriter NT switch assembly with the SCSI ID selector found on SCSI hard drives. These users change the printer mode number from zero (the default LocalTalk/PostScript setting) to another number. If the printer is set to anything other than zero or seven, the printer will disappear from the Chooser and the green ready light may begin blinking. How can users resolve this problem?

DISCUSSION -----

To resolve this problem, reset the mode selector switch to zero, then restart the printer. When the test page prints, verify that it contains the desired printer configuration information.

The Personal LaserWriter NT has two connectors (DIN-8, DB-25) and a switch assembly that looks almost identical to the SCSI ID selector switch on external SCSI drives. The switch assembly sets the printer mode (LocalTalk/PostScript, Diablo 630 Emulation, and so on) for the printer, and has nothing to do with a SCSI ID setting.

Here is the switch setting information:

| Switch | Port  | Mode Setting                                         |
|--------|-------|------------------------------------------------------|
| -----  | ----  | -----                                                |
| 0      | Din-8 | AppleTalk, PostScript (normal mode)                  |
|        | DB-25 | Serial, no input                                     |
| 1      | Din-8 | Serial (9600), (No parity), 7 data bits, 1 stop bit, |
|        |       | XON/XOFF, PostScript Batch Mode                      |
|        | DB-25 | Serial 9600, No parity, 7 data bits, 1 stop bit,     |
|        |       | XON/XOFF, PostScript Batch Mode                      |

|   |       |                                                                                            |
|---|-------|--------------------------------------------------------------------------------------------|
| 2 | Din-8 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, HP Emulation                 |
|   | DB-25 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, HP Emulation                 |
| 3 | Din-8 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, Diablo 630 Emulation         |
|   | DB-25 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, Diablo 630 Emulation         |
| 4 | Din-8 | Serial 1200, No parity, 7 data bits, 1 stop bit,<br>XON/XOFF, PostScript Batch Mode        |
|   | DB-25 | Serial 1200, No parity, 7 data bits, 1 stop bit,<br>XON/XOFF, PostScript Batch Mode        |
| 5 | Din-8 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>no handshake(?), PostScript Batch Mode |
|   | DB-25 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>DTR, PostScript Batch Mode             |
| 6 | Din-8 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, PostScript Binary Mode       |
|   | DB-25 | Serial 9600, No parity, 8 data bits, 1 stop bit,<br>XON/XOFF, PostScript Binary Mode       |
| 7 | Din-8 | AppleTalk, PostScript (normal mode)                                                        |
|   | DB-25 | no input                                                                                   |

Notes:

- For switch positions 1 through 6, the parameters are listed in the following order: data transfer rate, parity check, number of data bits, stop bits, handshake and mode.

- PostScript Binary Mode allows the user to change in and out of the various emulation modes (like Diablo 630 and HP Emulation) while still in PostScript by using control codes. This was a limiting factor on the LaserWriter IINTX, but is available on the Personal LaserWriter.

- When the switch is set to 4 and you turn on the printer, you will get a diagnostic page instead of the normal startup page. This page shows the current parameters of each switch setting and other useful information.

- To Connect the Personal LaserWriter to an MS-DOS computer with a LocalTalk PC Card installed, use setting 0 or 7 [0 is the default setting from the factory].

Article Change History:

08 Nov 1996 - Combined with similar article.

03 Sep 1992 - corrected to call the product "Personal LaserWriter NT"

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:7439



# Tech Info Library

## Apple II High Speed SCSI Card: CMS Hard Drive (11/96)

Revised: 11/20/96  
Security: Everyone

Apple II High Speed SCSI Card: CMS Hard Drive (11/96)

=====

Article Created: 15 May 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

My computer does not recognize a CMS hard drive when using the Apple II High Speed SCSI card. How can I correct this problem?

DISCUSSION-----

Ensure DIP switch 8 on the CMS hard drive is in the closed position. DIP switch 8 controls the reset line at pin 40. All Apple SCSI cards use the reset line for handshaking. If this pin is disconnected or turned off, the computer will not recognize the hard drive.

If your computer still doesn't recognize the CMS hard drive, check the SCSI switch to make sure it is not set to 7.

Article Change History:  
14 November 1996 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:7440



# Tech Info Library

## Apple IIGS: Remove AppleTalk Before Internal Test

Revised: 7/25/91  
Security: Everyone

Apple IIGS: Remove AppleTalk Before Internal Test

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I performed an internal test on my Apple IIGS using the Command-Control-Option-Reset key sequence. Soon after I did this, other computers were disconnected from the network. Did my Apple IIGS internal test cause the problem?

DISCUSSION -----

Yes. When performing an internal test on an Apple IIGS that is on an AppleShare network, be sure to disconnect the network connector. Failure to do so will cause severe communication problems with other nodes, and will usually result in other computers becoming electronically disconnected from the network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7444



# Tech Info Library

## Macintosh IIfx: StarController Incompatibility, Workaround

Revised: 7/25/91  
Security: Everyone

Macintosh IIfx: StarController Incompatibility, Workaround

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes workarounds for the StarController compatibility problem with the Macintosh IIfx.

DISCUSSION -----

The Macintosh IIfx, with it's new high speed serial ports, has some problems with the "Black Beauty" StarController™ hub (PN207). If you set the serial ports on the Macintosh IIfx to "Compatible Mode" everything works fine. But in "High Speed Mode," network performance actually drops if you are going through a StarController.

The problem involves the StarController timing PAL (a socketed programmable analog logic chip) and the way AppleTalk is implemented on the Macintosh IIfx. By replacing the PAL with a GAL (gate array logic chip), you can restore StarController and Macintosh IIfx communication.

The StarController Series 300 hub, which replaces Black Beauty, works fine with the Macintosh IIfx in "High Speed Mode." If you have a Black Beauty StarController and want the PALs replaced by GALs, you can get an upgrade kit, available to the general public (U.S. ONLY).

The address and phone number for Farallon is in a separate article in the Tech Info Library.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7445



# Tech Info Library

## Macintosh IIfx: Logic Board Jumper Settings

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: Logic Board Jumper Settings

Article Created: 1 May 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

A customer's Macintosh IIfx is not functioning, and I suspect that the jumper settings on the logic board have been altered. What should I check for?

DISCUSSION -----

Jumper J103 on the Macintosh IIfx logic board disables the external 68030 RAM cache when it is disconnected. In the event that the jumper is removed, the system may not reset properly when turned on, essentially disabling the system.

As a side note, the jumper next to J103, J106, is used for debugging. This jumper is not documented because it can severely affect system performance.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7446



# Tech Info Library

## Data Modem 2400: Reset Parameters Before Testing

Revised: 7/25/91  
Security: Everyone

Data Modem 2400: Reset Parameters Before Testing

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My customer is unable to establish communications with a dial-up service or another modem. The modem dials out, but as soon as the connection with the other modem is made, it hangs up. The Apple ModemTest diagnostic confirms a failure in the modem board. Since replacing the main board doesn't solve the problem, what should I do next?

DISCUSSION -----

The Data Modem 2400 has many parameters that are configured through software. Some of the finished goods units, and some of the service stock boards, may not be configured for normal use. The current ModemTest diagnostic test will fail any modem that has parameters other than the default settings.

Reset the modem parameters to the default settings. Do this by pressing the switch on the front of the modem while turning it on, or by issuing the 'AT&F' command using a terminal emulation package. The reset procedures are documented in the owner's guide.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7447





# Tech Info Library

## Logo Disk Replacement

Revised: 7/25/91  
Security: Everyone

Logo Disk Replacement

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it still possible to get a replacement for bad Logo disks?

DISCUSSION -----

Yes. Logo Computer Systems, Inc. still supports Logo purchasers with replacement disks as needed. There is a charge for replacement, and you must send them the damaged disk.

If you call the Montreal number, and don't understand French, the electronic message will switch over to English if you wait a while.

Search the Tech Info Library for a separate article that gives the phone number and address for Logo Computer Systems, Inc.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7448



# Tech Info Library

## LaserWriter: Sharing via Intelligent Switchbox

Revised: 7/25/91  
Security: Everyone

LaserWriter: Sharing via Intelligent Switchbox

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

### TOPIC -----

This article describes an intelligent electronic switching device, called BridgePort. Extended Systems manufactures this product.

### DISCUSSION -----

BridgePort extends the use of a PostScript printer to both PCs and Macintosh systems. It automatically directs print jobs from connected PCs and Macintosh systems to a single PostScript printer. BridgePort allows two PCs and up to 31 Macintosh systems to print.

Macintoshes connect to BridgePort with standard LocalTalk or PhoneNet cabling. PCs connect to BridgePort with a serial or parallel (Centronics) cable.

Here are the steps required to set up BridgePort:

- 1) Connect the required cabling.
- 2) Initialize the printer.
- 3) Select the appropriate PostScript printer driver.

BridgePort requires no special printer drivers. For Macintosh, select LaserWriter in the Chooser. For PCs, configure the application software to use a PostScript printer.

BridgePort supports the HP LaserJet series II, IID, IIP, and III printers with an Adobe or HP PostScript cartridge or Pacific Data Products PostScript emulation cartridge. It also supports the Apple LaserWriter IINT and IINTX, the IBM LaserPrinter with PostScript option, and the QMS-PS 810 turbo.

The phone number and address for Extended Systems is in a separate article in the Tech Info Library.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7449



# Tech Info Library

## Macintosh Portable: Battery Recharger

Revised: 6/20/94  
Security: Everyone

Macintosh Portable: Battery Recharger

Article Created: 31 May 1991  
Article Reviewed/Updated: 30 July 1992

TOPIC -----

This article describes battery rechargers for the Macintosh Portable.

DISCUSSION -----

Apple Computer sells the Macintosh Portable Battery Recharger (p/n M0275). It comes with a power adapter and a cradle that holds the battery while it is recharging.

Lind Electronic Design, Inc. (LED) markets a specially designed External Battery Charger for the Macintosh Portable Rechargeable Battery. It comes in a molded plastic box with carrying handle. It measures 3.3 x 6 x 7 inches, weighs 1.6 lbs. without the spare battery, and obtains power through Apple's Power Adapter from a 115V AC wall outlet. It can also charge the battery from a 12V DC power source such as a vehicle cigarette lighter.

LED also sells a 12V DC Automobile Power Adapter that plugs into the Macintosh Portable through the Power Adapter port. The Automobile Power Adapter can operate the computer and charge its internal battery from a 12V DC power source. A regulator prevents the Power Adapter from overcharging the Macintosh Portable's internal battery. It weighs only 0.75 lbs, measures 1.9 x 2.4 x 3.3 inches, and comes equipped with a Velcro fastener strip to attach it to the side of the Macintosh Portable's case. When the Adapter is not in use, all power cords and plugs fit into the Portable case.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7450



# Tech Info Library

## Inter•Poll: The Role of Responder

Revised: 8/5/91  
Security: Everyone

Inter•Poll: The Role of Responder

=====

Article Created: 1 May 1991

### Article Change History

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08/21/92 - EDITED  
• For clarity and technical accuracy.

### TOPIC -----

What is Responder?

### DISCUSSION -----

Responder is a resource placed in individual Macintoshes that identifies that computer - and any others in the network that have Responder installed - when the Inter•Poll program runs. At startup time, Responder reads the name of the user and the Macintosh name where it resides, then the versions of the system software, LaserWriter driver, and AppleTalk. Inter•Poll requests this information later to tell the system administrator the characteristics of the user's system. Inter•Poll interrogates each system, and Responder answers Inter•Poll.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7451



# Tech Info Library

## Macintosh: KeyLayout

Revised: 8/5/91  
Security: Everyone

Macintosh: KeyLayout

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is KeyLayout?

DISCUSSION -----

KeyLayout is a resource that tells the system software where keys are located on the keyboard. This is important for international systems. International systems have different keyboard layouts, but use the same physical keyboard.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7452



# Tech Info Library

## LocalTalk Interface Board from DayStar Digital

Revised: 8/5/91  
Security: Everyone

LocalTalk Interface Board from DayStar Digital

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the LocalTalk Interface Board manufactured by DayStar Digital, Inc.

DISCUSSION -----

The LT200 LocalTalk Interface Board allows IBM PC, PS/2, and Macintosh computers to coexist on a LocalTalk network. The LT200 is a card that fits into the expansion slot of a PC or PS/2. Users can plug directly into the LocalTalk network and have access to LaserWriters, Macintoshes and other devices on the network.

The LT200 includes printer utilities that allow PCs to print to PostScript printers.

Search the Tech Info Library for a separate document that gives the address and phone number for DayStar Digital, Inc.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7453





# Tech Info Library

## Macintosh LC and IIsi: No Top Lid Screw in US Models

Revised: 7/17/92  
Security: Everyone

Macintosh LC and IIsi: No Top Lid Screw in US Models

=====

Article Created: 1 May 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Why does Apple ship the Macintosh IIsi and LC without the screw for the top lid?

DISCUSSION -----

The screw is not included on the US version of the Macintosh IIsi and LC because it is not required in the United States.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7460



# Tech Info Library

## Macintosh SE: Power Supply Connector Pin Assignments

Revised: 6/22/92  
Security: Everyone

Macintosh SE: Power Supply Connector Pin Assignments

=====

Article Created: 1 May 1991  
Article Last Reviewed: 16 June 1992  
Article Last Updated:

TOPIC -----

This article is a chart of the pin assignments for the Macintosh SE power supply connector.

DISCUSSION -----

| Pin number | Signal | Color of Wire |
|------------|--------|---------------|
|------------|--------|---------------|

|    |             |        |
|----|-------------|--------|
| 1  | Ground      | Black  |
| 2  | Ground      | Black  |
| 3  | Ground      | Black  |
| 4  | +5 V        | Orange |
| 5  | +12 V disk  | Yellow |
| 6  | -12 V       | Green  |
| 7  | Ground      | Black  |
| 8  | Ground      | Black  |
| 9  | +5 V        | Orange |
| 10 | +12 V sweep | Red    |

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7461



# Tech Info Library

## Macintosh II Family: NuBus Video Port Expanders

Revised: 6/22/92  
Security: Everyone

Macintosh II Family: NuBus Video Port Expanders

=====

Article Created: 31 May 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

This article describes NuBus video port expanders for the Macintosh II family, manufactured by Network Technologies, Inc.

DISCUSSION -----

Vopex-2M

-----

The Vopex-2M video port expander allows two Macintosh II monitors to be driven from the same video port. In addition, the operating distance between the Macintosh and its monitors can be extended to 50 feet. This permits the relocation of monitors into classrooms, control rooms, factory floors and applications using video projectors. Vopex-2M has 50 MHz bandwidth and no resolution loss. The Macintosh II interface cable is included.

Vopex-8M

-----

The Vopex-8M is a video port expander for the Macintosh II video standard and is functional with both the monochrome and color monitor. The Vopex-8M allows eight monitors to be driven by a single Macintosh II at distances up to 50 feet from the computer. It is a device for applications such as training rooms, presentations, video printers and video projectors.

The Vopex-8M connects directly to a Macintosh II video port via a 4-foot interface cable supplied by NTI. All eight output ports are individually buffered. The Vopex-8M operates with monochrome or color monitors because it precisely tracks the input signal.

It is easy to install and operates by plugging any compatible Macintosh II

monitor directly into the 15-pin D output connectors. Extension cables fitted with the same 15-pin D connectors are available in lengths of 25, 35 and 50 feet.

The Vopex-8M is housed in an 8 by 2.5 by 6.2-inch package and powered by 110 VAC.

For more information, search under "Network Technologies".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7462



# Tech Info Library

## HyperCard 1.2.x: System Software Incompatibility

Revised: 9/3/92  
Security: Everyone

HyperCard 1.2.x: System Software Incompatibility

=====

Article Created: 1 May 1991

### Article Change History

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09/02/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

If you are using system software version 6.0.6, 6.0.7, or 7.0 you may have heard that you can't use HyperCard 1.2.2 or 1.2.5. The following discussion tells you how to recover when one of these HyperCard versions causes your computer to lock up.

### DISCUSSION -----

HyperCard generates sound when a stack uses play or beep, or makes a sound because you typed a wrong key. With system software version 6.0.6, 6.0.7, or 7.0, HyperCard 1.2.x will lock up when sound is produced for any reason. When this happens, type the Command-Period (Command-.) key sequence. If you were editing a script when the program locked up, the script window closes; if a script was executing, it is canceled.

To prevent HyperCard from causing a lock-up condition, avoid making a sound. Set your Speaker Volume to 0 from the control panel. You won't hear any sounds, but your stack will avoid this sound problem.

If you must play a sound, you can use Farallon's fplay external command (and associated resources) from Farallon's HyperSound™ Toolkit. If you use HyperSound, substitute fplay for every occurrence of the play command or beep command.

If you don't have to use HyperCard 1.2.x with System 6.0.7 or 7.0, don't

use it. If possible use HyperCard 2.0. HyperCard 1.2.x is officially not compatible with System 6.0.7 or 7.0. So you may find problems other than those described above.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7463



# Tech Info Library

## AppleTalk: System Errors and Third-Party Software

Revised: 8/7/91  
Security: Everyone

AppleTalk: System Errors and Third-Party Software

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Some third-party software products cause system crashes when AppleTalk is turned off.

DISCUSSION -----

If AppleTalk is turned off, you may get error codes 3, 10, 12, or 85 while using system software 6.0.5 or higher with network-aware software. Some third-party software products go out and check the network, and if AppleTalk is turned off, the system crashes.

To fix this problem, use the Chooser to make sure AppleTalk is turned on.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7466



# Tech Info Library

## Microtech International

Revised: 7/13/93  
Security: Everyone

Microtech International

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Article Created: 07/01/91  
Article Reviewed: 07/13/93  
Article Updated: 07/30/92

Microtech International

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158 Commerce Street  
East Haven, CT 06512

800-626-4276

203-468-6223

203-468-6466 Fax

### Company Profile:

Specializing in hard drives and memory for the Macintosh, as well as SolarPOWER, a photovoltaic (solar power) panel for the PowerBook family.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7470





# Tech Info Library

## Mitsubishi Information Systems

Revised: 7/13/93  
Security: Everyone

Mitsubishi Information Systems

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Article Created: 05/24/91  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

Mitsubishi Information Systems

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5665 Plaza Dr.  
Cypress, CA 90630

800-344-6352 (Computer Resources)

714-220-2500  
714-220-1464 (Cust. Service)

714-220-6810 Fax

Company Profile:  
Hardware, specializing in monitors for the Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7471



# Tech Info Library

## Seiko Instruments, Inc.

Revised: 7/19/93  
Security: Everyone

Seiko Instruments, Inc.

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Article Created: 1 July 1991  
Article Reviewed/Updated: 19 July 1993

Seiko Instruments, Inc.

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1130 Ringwood Court  
San Jose, CA 95131

408-922-5900  
408-922-5800

Fax: 408-922-5840

Company Profile:  
Hardware, specializing in color monitors and color printers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7473



# Tech Info Library

## Personal LaserWriter LS: Upgrading to 1MB RAM

Revised: 7/1/91  
Security: Everyone

Personal LaserWriter LS: Upgrading to 1MB RAM

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article tells you what you need to upgrade a Personal LaserWriter LS to 1MB of RAM.

DISCUSSION -----

The standard amount of RAM in a Personal LaserWriter LS is 512K. The speed of this RAM is 100ns.

To upgrade to 1MB, you need four 256K x 4-bit 100ns RAM chips. Third-party companies supply this memory. Note that this is NOT 256K x 1-bit memory, which the Apple IIGS uses.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7474



# Tech Info Library

## Macintosh IIsi and LC: Third-Party SIMM Incompatibility

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi and LC: Third-Party SIMM Incompatibility

=====

Article Created: 1 May 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Some Macintosh IIsi and Macintosh LC customers have difficulties with third-party 2MB SIMMs installed in their systems. Reported problems include system hanging and/or system crashes sometime after a third-party 2MB SIMMs upgrade. Read the following discussion for more details.

DISCUSSION -----

Apple investigated the problem and discovered that this occurs because some third-party 2MB SIMMs are not compatible with the Macintosh IIsi and the Macintosh LC.

You can determine whether your third-party 2MB SIMMs are compatible with a Macintosh IIsi or Macintosh LC by removing them from the system and installing known good Apple 1MB SIMMs. If the symptoms disappear, the problem was in the third-party SIMMs, and you should discontinue using them in your system.

Contact the manufacturer of the third-party SIMMs if this troubleshooting procedure determines they are incompatible.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7475



# Tech Info Library

## Laser Printers: Ozone Emissions (2/95)

Revised: 2/22/95  
Security: Everyone

Laser Printers: Ozone Emissions (2/95)

Article Created: 1 May 1991  
Article Reviewed/Updated: 22 February 1995

TOPIC -----

This article provides guidelines for reducing ozone emissions from laser printers, as well as suggestions for minimizing the effects of ozone in the workplace.

DISCUSSION -----

### Background

Ozone gas is emitted in detectable levels by almost all laser printers and photocopiers as a by-product of the electrophotographic process. In laser printers the primary source of ozone is the transfer corona wire, which produces an electrical charge to draw the toner powder from the print drum to the paper. Ozone is produced only when the printer is printing.

Manufacturers install special filters to ensure a safe level of ozone emissions. These filters are impregnated with activated carbon. Laser printers that operate without a transfer corona wire emit a negligible amount of ozone gas and do not require these filters. Underwriter Laboratories (UL) provides an ozone emission standard based on OSHA exposure limits.

In general, filter effectiveness can diminish in direct proportion to the number of pages printed. Therefore, filters should be replaced periodically. The ozone filter depends on a steady air flow over the filter to remove ozone. If the printer's fan starts to slow down due to age or mechanical problems, the reduced air flow could cause more ozone to escape. Dust accumulating on the filter's surface can also affect its performance. A properly maintained laser printer that is installed in a well-ventilated area should not expose users to an unsafe ozone level.

Ozone can be an irritant that can cause a range of symptoms including dry throat and nose, headache, and sore eyes. At very high concentrations ozone can have

serious health effects such as nausea, vomiting, pulmonary congestion, and possible premature aging. Ozone is a highly unstable molecule that reverts quickly to oxygen. Ozone concentrations may rise to noticeable levels depending on the rate generated (amount and time) as well as the physical environment (room ventilation and location of workers).

Typically, ozone can be identified by its characteristic odor before it reaches the permissible exposure limit. However, as the concentration of ozone or the duration of exposure increases, a person's ability to smell it may decrease. The current OSHA permissible exposure limit for ozone is 0.1 parts of ozone per million parts of air averaged over an 8-hour work shift.

#### Apple Printers

-----  
Apple is committed to making products that meet or exceed the industry and government health and safety guidelines of every country where we do business. All Apple laser printers are within the limits of the UL guidelines when shipped from the factory to the customer.

The Personal LaserWriter, LaserWriter Pro, and LaserWriter Select series of printers have no transfer corona wire and therefore do not require ozone filters to meet the UL safety requirements. StyleWriter and ImageWriter printers are not laser printers and do not emit ozone.

The LaserWriter, LaserWriter Plus, and LaserWriter II printers have ozone filters designed to operate effectively up to 100,000 printed pages.

However, to ensure maximum effectiveness, Apple recommends service (checking the entire ozone emission control system) and an ozone filter replacement after 50,000 pages or at least once a year. You can print a startup page to determine your laser printer's page count. Dusty conditions or damage to the filter may necessitate more frequent filter replacement. This maintenance check and filter replacement can be done by any Authorized Apple Service Provider.

Proper installation of your laser printer helps to keep the ozone concentrations at a safe level. Choose a well ventilated area. In general, a correctly-designed air conditioning system provides adequate ventilation for printer use. Air circulation is especially important if there are multiple laser printers and/or photocopy machines in an area. A small, enclosed space such as a closet should not be used for printing. Placement in a common area is preferable to placement in an individual's work space. In addition, the fan exhaust should not blow directly in anyone's face.

The laser printer works best in relative humidity between 30 and 70 percent. Lower humidity can slow the natural breakdown of ozone in the air and can reduce the filter's effectiveness.

#### Article Change History:

- 22 Feb 1995 - Added keyword; made minor technical updates.
- 03 Feb 1995 - Corrected transfer process explanation.
- 08 Nov 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:7476



# Tech Info Library

## StyleWriter: Clear the Ink Cartridge When Installing a New One

Revised: 8/8/91  
Security: Everyone

StyleWriter: Clear the Ink Cartridge When Installing a New One

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When installing a new ink cartridge in the StyleWriter printer, you must clear the cartridge. This process, which takes several seconds, is detailed in the StyleWriter User's Manual:

DISCUSSION -----

Here's how to do it:

- 1) Turn the StyleWriter's Power Switch off.
- 2) Press the Ready switch (located on the left) and hold.
- 3) Press the Power switch (located on the right) and release both switches simultaneously.

Do all this twice. You may hear some whirring and clicking sounds as the cartridge is cleaned, but consider it a normal part of the process.

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Tech Info Library Article Number:7477





# Tech Info Library

## StyleWriter: Protect Ink Cartridge during Air Transport

Revised: 8/8/91  
Security: Everyone

StyleWriter: Protect Ink Cartridge during Air Transport

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Low air pressure during air transport can cause ink to pump from the  
StyleWriter cartridge.

DISCUSSION -----

When transporting a StyleWriter printer by air, always remove the cartridge  
from the printer and then protect it.

The best solution is to carry a new cartridge still in its plastic carton.

To provide minimum protection, place the opened cartridge in a sealed  
plastic bag.

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Tech Info Library Article Number:7478



# Tech Info Library

## Macintosh LC Apple IIe Card version 1.0: Software Compatibility

Revised: 7/27/93  
Security: Everyone

Macintosh LC Apple IIe Card version 1.0: Software Compatibility

Article Created: 13 May 1991  
Article Reviewed/Updated: 26 July 1993

TOPIC -----

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Mention in this list does not constitute an endorsement by Apple Computer, Inc. Third-party product information is provided for compatibility reasons only.

Please contact your dealer or the software developer if you have any questions. They can help you identify the newest version of a particular program or tell you how to upgrade your current version if necessary. For best results, we recommend you use the latest versions of software and hardware products with your Apple IIe Card for the Macintosh LC.

DISCUSSION-----

| Title<br>-----                          | Author<br>-----             |
|-----------------------------------------|-----------------------------|
| 1-2-3 Digit Multiplication, 1.0         | Microcomputer Workshops     |
| 816/Paint, 3.1                          | Baudville                   |
| Ace Reporter, 1984                      | Mindplay                    |
| Activity Files-Bank Street Writer, 1984 | Scholastic                  |
| Addition Logician, 1984                 | MECC                        |
| Agents of Infection, 1986               | Prentice-Hall               |
| An Experience w/ AI, 4/27/87            | Scholastic                  |
| Alge-Blaster, 1985                      | Davidson & Associates       |
| Algebra Curr Pk Vols 1 - 6, 1985        | Britannica Software-EduWare |
| Alice in Wonderland, 1986               | HRM Software                |
| All about Circulation, 1980             | Micro Power and Light       |

|                                       |                              |
|---------------------------------------|------------------------------|
| Alligator Alley,1984                  | DLM                          |
| Alphabet Recognition,1986             | Micro Power and Light        |
| Amer. Hist, Ach. I:PreColumb-1860,1.3 | Microcomputer Workshops      |
| American Indians,1984                 | Right On Programs            |
| Animal Kingdom,1986                   | Unicorn Software             |
| Animal Photo Fun,1985                 | SRA                          |
| Animate,1986                          | Broderbund                   |
| Apple Access II,1.1                   | Apple Computer, Inc.         |
| Apple at Work 40-col,1984             | Apple Computer, Inc.         |
| Apple at Work 80-col,1984             | Apple Computer, Inc.         |
| Apple Co-Pilot,1982                   | Apple Computer, Inc.         |
| ED Classics w/ Shell Games,1984       | Apple Computer, Inc.         |
| Apple II Business Graphics,1981       | Apple Computer, Inc.         |
| Apple II Instant Pascal,1.5           | Apple Computer, Inc.         |
| Set to monochrome monitor.            |                              |
| Apple II Pascal,1.3                   | Apple Computer, Inc.         |
| Apple II System Utilities,3.2         | Apple Computer, Inc.         |
| Apple IIe: An Introduction,1984       | Apple Computer, Inc.         |
| Apple IIe: Inside Story,1984          | Apple Computer, Inc.         |
| Apple Logo,1982                       | Apple Computer, Inc.         |
| Apple Pres Getting Down to BASIC,1986 | Apple Computer, Inc.         |
| Apple SuperPILOT,1982                 | Apple Computer, Inc.         |
| Apple SuperPilot Log,1982             | Apple Computer, Inc.         |
| Apple Term //,1.5                     | Apple Computer, Inc.         |
| Apple Writer II,2.1                   | Apple Computer, Inc.         |
| AppleWorks,3.0                        | Claris                       |
| AppleWorks,2.1                        | Apple Computer, Inc.         |
| AppleWorks Mailing Program,1.3        | International Apple Core     |
| ASCII Express,4.30P                   | United Software Industries   |
| ASCII Express MouseTalk,v 1.5         | United Software Industries   |
| Audubon Wildlife Adventures,1988      | Advanced Ideas               |
| Award Maker Plus,23621/236            | Baudville                    |
| Bake & Taste,1986                     | MindPlay                     |
| Cannot run at Fast speed.             |                              |
| Bank Street School Filer,1986/87      | Sunburst                     |
| Bank Street Writer III,1986,1.3       | Scholastic                   |
| 3.5" on external UniDisk Drive        |                              |
| (due to copy protection).             |                              |
| Bank Street Writer Plus2.6            | Broderbund                   |
| 3.5" on external UniDisk Drive        |                              |
| (due to copy protection).             |                              |
| Bard's Tale,v1985                     | Electronic Arts              |
| Basic Programming with ProDOS,1983    | Apple Computer, Inc.         |
| Biomes,1986                           | D.C.Heath/William K.Bradford |
| Blazing Paddles,04441A                | Baudville                    |
| Blockers & Finders:Conjecture & Proof | Sunburst                     |
| BluePrint for Decision making,1985    | MCE, Inc.                    |
| Body Awareness,1983                   | Mindscape                    |
| Body Awareness Res. Nwk. (BARN),1985  | Learning Multi-Systems       |
| Brainz-Gamz,1985                      | Bainum Dunbar                |
| Brick by Brick: Level 1 & 4,1985      | Hartley Courseware           |
| Building Memory skills,1987           | MCE, Inc.                    |
| Bumble Games,1.5                      | Learning Company (The)       |

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|------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Business Education Package I,1980                                                                                | Micro Learningware               |
| California Games,1987                                                                                            | EPYX                             |
| Calliope 128,1986                                                                                                | Innovision                       |
| Capitalization,06.03.86                                                                                          | Hartley Courseware               |
| Car Builder,1985                                                                                                 | Weekly Reader / Optimum Resource |
| Card & Party Shop,1986                                                                                           | Walt Disney Computer Software    |
| Certificate Library - VOL.1,1986                                                                                 | Springboard                      |
| Certificate Maker,1986                                                                                           | Springboard                      |
| Joystick is sensitive,<br>works faster than on IIe.                                                              |                                  |
| Better to use Keyboard.                                                                                          |                                  |
| Certificates and More,1988                                                                                       | Mindscape                        |
| Charlie Brown's ABC'S,1984                                                                                       | Random House                     |
| Charlotte's Web,1987                                                                                             | Sunburst                         |
| Children's Writing & Pub. Center,1.1                                                                             | Learning Company (The)           |
| Choplifter/David's Midnight Magic,1981                                                                           | Broderbund                       |
| Choplifter will not boot<br>(due to hardware specific copy<br>protection). David's Midnight<br>Magic works fine. |                                  |
| Chuck Yeager's Adv. Flt Trainer,1987                                                                             | Electronic Arts                  |
| Circus Math,1984                                                                                                 | MECC                             |
| Class Spreadsheet,1987                                                                                           | J. Weston Walch                  |
| Classmaster Grade Assistant,1988                                                                                 | A.U. Software                    |
| Clock Works,1.0                                                                                                  | MECC                             |
| Clue In,1984                                                                                                     | American Language Academy        |
| Color Me: Computer Color Kit,1985                                                                                | Mindscape                        |
| Will not boot if the Option panel<br>is set for Fast Mode.                                                       |                                  |
| Comic Strip Maker,1986                                                                                           | Walt Disney Computer Software    |
| Computer Math Games: Vol 1,1982                                                                                  | Addison Wesley                   |
| Conquering Decimals (+,-),1.0                                                                                    | MECC                             |
| Conquering Decimals (x,/),1.0                                                                                    | MECC                             |
| Copy II Plus 8.2, 9.0                                                                                            | Central Point Software           |
| Cotton Tales Intro to Word Proc.,1987                                                                            | MindPlay                         |
| Cotton's First Files,1989                                                                                        | MindPlay                         |
| Counting Critters,1985                                                                                           | MECC                             |
| Course Master: Anatomy,1986                                                                                      | Compu-Tations Quality Software   |
| Create a Calenda,1987                                                                                            | EPYX                             |
| Create with Garfield,1987                                                                                        | SRA                              |
| Creative Contraptions,1985                                                                                       | Bantam                           |
| Creature Creator,1983                                                                                            | Britannica Software - DesignWare |
| Crosscountry Calf.: School Edition,1987                                                                          | Didatech Software                |
| CrossWord Magic,4.0                                                                                              | Mindscape                        |
| CrossWord Magic Puzzle Disks,1987                                                                                | Mindscape                        |
| CryptoCube,1983                                                                                                  | Britannica Software - DesignWare |
| CSL Marks,1.8                                                                                                    | Chancery Software, Ltd.          |
| Curious George Goes Shopping,1989                                                                                | SRA                              |
| Curious George in Outer Space,1989                                                                               | SRA                              |
| Curious George visits Library                                                                                    | SRA                              |
| Customized Number Basics,1983                                                                                    | Merit Audio Visual               |
| Dazzle Draw,1.2                                                                                                  | Broderbund                       |
| Decisions,Decisions,Colonization,1986                                                                            | Tom Snyder Productions           |

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|---------------------------------------------------------------------------------------------|----------------------------------|
| Designasaurus,1987                                                                          | Britannica Software - DesignWare |
| Diascriptive Language Arts Dev.,1988                                                        | Educational Activities           |
| Dinosaur Days,1984                                                                          | Teach Yourself by Computer       |
| Dinosaur Division,1986                                                                      | Continental Press / Puzzle Works |
| Dinosaurs,1984                                                                              | Advanced Ideas                   |
| Dinosaurs Are Forever1.0,1988                                                               | Polarware                        |
| Discovery Lab,1.0                                                                           | MECC                             |
| DOS 3.3 System Master,1980                                                                  | Apple Computer, Inc.             |
| DOS Programmer's Toolkit ,7/12/83                                                           | Apple Computer, Inc.             |
| Dr. Seuss Mix-up Puzzler,1985                                                               | Mindscape                        |
| Drug Alert!,1987                                                                            | Learning Well                    |
| Early Games for Young Children,1985                                                         | Springboard                      |
| Easy as ABC,1985                                                                            | Springboard                      |
| Easy Graph,1984                                                                             | Grolier Electronic Publishing    |
| Easy Street,1988                                                                            | Mindplay                         |
| Run at Normal speed only.                                                                   |                                  |
| Elect. Crayon-This Land is Your Land                                                        | Polarware                        |
| ESL Picture Grammar,1984                                                                    | Gessler Educational Software     |
| European Nations & Locations,1985                                                           | Britannica Software - DesignWare |
| Explore-A-Science - Tyrannosaurus Rex                                                       | D.C. Heath / William K. Bradford |
| Exploring Apple Logo,1984                                                                   | Apple Computer, Inc.             |
| Exploring Heat Through Less.&Labs,1985                                                      | D.C. Heath / William K. Bradford |
| F-15 Strike Eagle 1.0                                                                       | MicroProse                       |
| Run in fast mode to get<br>best performance.                                                |                                  |
| Facemaker - Golden Edition 1.0,1986                                                         | Spinnaker                        |
| Factory, The,1985                                                                           | Sunburst                         |
| Family Life Series 1.2,1988                                                                 | Little Shaver Software           |
| Fantavision,1987                                                                            | Broderbund                       |
| Fay: That Math Woman,1983                                                                   | Didatech Software                |
| Fay: The Word Hunter,1983                                                                   | Didatech Software                |
| First Letter Fun,1.1                                                                        | MECC                             |
| Fish Scales 1.0,1985                                                                        | SRA                              |
| Fitness - A State of Body & Mind,1985                                                       | Marshmedia                       |
| FlashCalc,1.0                                                                               | VisiCorp                         |
| Flights into Fiction:Fairy Tales,1986                                                       | Focus Media                      |
| Fraction Concepts Inc,1.1                                                                   | MECC                             |
| Fraction Munchers,1.0                                                                       | MECC                             |
| FrEdWriter,4.4                                                                              | CUE Software                     |
| Friendly Filer,1984                                                                         | Grolier Electronic Publishing    |
| Prints fine to direct connect<br>printer but not with Appletalk<br>connected (same on IIe). |                                  |
| Game Show, The,1986                                                                         | Advanced Ideas                   |
| Works if the clock card is<br>removed. Same on IIe.                                         |                                  |
| Garfield Trivia Game,1989                                                                   | SRA                              |
| Geography: Our Country<br>& Our World,1988                                                  |                                  |
| Geo. Search - The Search Series,1981                                                        | Scott Foresman and Co            |
| Geo. Search - The Search Series,1982                                                        | McGraw-Hill                      |
| Geometric preSupposer,1986                                                                  | McGraw-Hill                      |
| GEOS,1988                                                                                   | Sunburst                         |
|                                                                                             | Berkeley Softworks               |

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|-----------------------------------------|----------------------------------|
| GeoWhiz,1988                            | Silver Burdett and Ginn          |
| GeoWorld,1986                           | Tom Snyder Productions           |
| German Grammar Computerized I 1.1,1984  | Lingo Fun                        |
| Gertrude's Puzzles,1984                 | Learning Company (The)           |
| Gertrude's Secrets 1.3                  | Learning Company (The)           |
| Better at Fast Speed.                   |                                  |
| Giant First-Start:The Goofy Ghost,1985  | Troll Associates                 |
| Gnee or Not Gnee,1985                   | Sunburst                         |
| Go Fish!,1987                           | HRM Software                     |
| Golden Spike, The,1987                  | National Geographic Society      |
| Grab-a-Cab,1988                         | Silver Burdett and Ginn          |
| Gradebook Plus,1990                     | E.M.A. Software                  |
| Grammar Examiner,1984                   | Britannica Software - DesignWare |
| Grammar Gremlins,1986                   | Davidson & Associates            |
| Grammaze,1984                           | Scott Foresman and Co            |
| Green Globbs & Graphing Equations,1986  | Sunburst                         |
| Heredity Dog,1983                       | HRM Software                     |
| Hinky Pinky,1985                        | Mindscape                        |
| Home Video Producer,1988                | EPYX                             |
| Homework Helper Math,1985               | Spinnaker                        |
| Homework Helper Writing,1985            | Spinnaker                        |
| Homeworker,v1986                        | Davidson & Associates            |
| Iggy's Gnees,1986                       | Sunburst                         |
| II Write Random House,v2.01             | Random House                     |
| Immigrant:Irish Experience in Boston    | Educational Technology           |
| Incredible Laboratory, The,1986         | #1136 Sunburst                   |
| Information Focus,1987                  | Random House                     |
| Introductory Mechanics,1981             | Conduit                          |
| Island of the Blue Dolphins,1986        | Sunburst                         |
| Jenny's Journeys,1.0                    | MECC                             |
| John Madden Football,1988               | Electronic Arts                  |
| Karateka,1984                           | Broderbund                       |
| Better set to Fast speed.               |                                  |
| Kermit's Electronic Story Maker,1985    | Simon and Schuster               |
| Kids on Keys,2.0                        | Spinnaker                        |
| Kidwriter,1984                          | Spinnaker                        |
| Knowledge Master: Am. Hist. Series,1987 | Academic Hallmarks               |
| Knowledge Master Eng.Series:Eng.I,1982  | Academic Hallmarks               |
| Lang. Arts Seq: Alphabetization,1980    | Milliken Publishing              |
| Language Carnival 1,1988                | DLM                              |
| Better set to Fast speed.               |                                  |
| Learn About Animals,1989                | Sunburst                         |
| Learn About Plants,1990                 | Sunburst                         |
| Learning Library - Vol 1,1988           | Hi-Tech Expressions              |
| Better set to Fast speed.               |                                  |
| Letter-Go-Round,1988                    | Hi-Tech Expressions              |
| Lode Runner1983                         | Broderbund                       |
| Logo Works: Lessons in Logo,1985        | Terrapin                         |
| LogoWriter,2.03                         | Logo Computer Systems            |
| Money & Time Adventures,1984            | Society for Visual Education     |
| School Library Adventures,1987          | Society for Visual Education     |
| Lunar Greenhouse,1.0                    | MECC                             |
| M-SS-NG L-NKS: Classics                 | Sunburst                         |

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|------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| Magic Slate 1.4,1984                                                                                                   | Sunburst                           |
| Magic Slate Typestyles 40/80,1987                                                                                      | Sunburst                           |
| Magic Spellsv2.1                                                                                                       | Learning Company (The)             |
| Marine Life Series: Anatomy-Shark,1986                                                                                 | Ventura Educational Systems        |
| Better set to Fast speed.                                                                                              |                                    |
| Market Place,v1.0                                                                                                      | MECC                               |
| Mastering Math Diagnostic System,1985                                                                                  | MECC                               |
| Mastering Math Worksheet Generator,1985                                                                                | MECC                               |
| Mastering the Parts of Speech,1982                                                                                     | Society for Visual Education (SVE) |
| MasterType,2.1                                                                                                         | Mindscape                          |
| Math Blaster!1983,1989                                                                                                 | Davidson & Associates              |
| Math Blaster Mystery!,1.0                                                                                              | Davidson & Associates              |
| Better set to Fast speed.                                                                                              |                                    |
| Math Blaster Plus,3.7                                                                                                  | Davidson & Associates              |
| Math Football,1985                                                                                                     | Gamco                              |
| Math Man,1984                                                                                                          | Scholastic                         |
| Better set to Fast speed.                                                                                              |                                    |
| Math Masters Add/Sub,1988                                                                                              | SRA                                |
| Can't have memory card installed<br>(same on IIe).                                                                     |                                    |
| Math Masters Mult/Div,1988                                                                                             | SRA                                |
| Can't have memory card installed<br>(same on IIe).                                                                     |                                    |
| Math Rabbit,1.2                                                                                                        | Learning Company (The)             |
| Math Shop,1986                                                                                                         | Scholastic                         |
| Mathematics Prob Solv. CW Level 8,1.0                                                                                  | McGraw-Hill                        |
| Mathematics Prob Solv. Level 3&7, 1.0                                                                                  | Addison Wesley                     |
| Mathematics Skills Levels 1 - 8 1.0                                                                                    | Addison Wesley                     |
| It only prints to Parallel port,<br>and the LC only has a serial port.                                                 |                                    |
| MECC Dataquest Composer,1986                                                                                           | MECC                               |
| MECC Dataquest:The Fifty States,1986                                                                                   | MECC                               |
| MECC Grade Manager,1983                                                                                                | MECC                               |
| Grade Manager uses some type of<br>copy protection that doesn't<br>work with the IIe card and IIe<br>startup software. |                                    |
| MECC Graph 1.1,1985                                                                                                    | MECC                               |
| Mickey's Space Adventure,1984                                                                                          | Walt Disney Computer Software      |
| Micro Gardener, The,1983                                                                                               | Educational Activities             |
| Microorganism Simulator,1986                                                                                           | Focus Media                        |
| MicroType - The world of PAWS,1.0                                                                                      | SouthWestern Publishing            |
| Microzine #10,1985                                                                                                     | Scholastic                         |
| Microzine #16:,1986                                                                                                    | Scholastic                         |
| Microzine JR. #2,1988                                                                                                  | Scholastic                         |
| Microzine JR. #3,1983                                                                                                  | Scholastic                         |
| Milliken Word Processor,1984                                                                                           | Milliken Publishing                |
| Run at Normal speed. Will not<br>boot if set to Fast speed.                                                            |                                    |
| Miner's Cave,1.0                                                                                                       | MECC                               |
| Will not work with clock card<br>installed.                                                                            |                                    |
| Money! Money !,1984-1986                                                                                               | Hartley Courseware                 |

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|-------------------------------------------------------------------------------------------------|--------------------------------------------|
| Money Squares3.1.5,1985                                                                         | Gamco Industries                           |
| Money Works,1.1                                                                                 | MECC                                       |
| MonkeyNews,1984                                                                                 | Artworx Software                           |
| Monsters and Make-Believe1.1,1987                                                               | Pelican Software                           |
| Moptown Hotel,1985                                                                              | Learning Company (The)                     |
| Mouse Desk,1.5                                                                                  | Apple Computer, Inc.                       |
| MousePaint 1.2,1986                                                                             | Apple Computer, Inc                        |
| MouseWrite,1986                                                                                 | Roger Wagner Publishing                    |
| Multiple Choices,1989                                                                           | Mindscape                                  |
| MultiScribe, 3.0                                                                                | StyleWare                                  |
| Muppet Word Book,1986                                                                           | Sunburst                                   |
| Music Construction Set,1983                                                                     | Electronic Arts                            |
| Mystery Matter,1.0                                                                              | MECC                                       |
| Mystery Objects,1.0                                                                             | MECC                                       |
| Newsroom,1984                                                                                   | Springboard                                |
| NewsWorks IV,1989                                                                               | Newsweek Data for AppleWorks.              |
| NoteCard Maker,1985                                                                             | Grolier Electronic Publishing Direct       |
| Number Munchers,v1.0                                                                            | MECC                                       |
| Nutrition - A Balanced Diet,1982                                                                | EME                                        |
| Odell Lake:,1980                                                                                | MECC                                       |
| Oh, Deer!,1983                                                                                  | MECC                                       |
| Once Upon a Time I,1987                                                                         | Compu-Teach                                |
| Operation: Frog,1984                                                                            | Scholastic                                 |
| The mouse has problems moving<br>sometimes. The pointer often<br>moves in the left hand corner. |                                            |
| Orbit II,1983                                                                                   | Vernier Software                           |
| Oregon Trail,1986                                                                               | MECC                                       |
| Other Side, The,1986                                                                            | Tom Snyder Productions                     |
| Paint With Words,1.3                                                                            | MECC                                       |
| Patterns,1.0                                                                                    | MECC                                       |
| Periodic Law,1987                                                                               | EME                                        |
| PFS: Write,1985                                                                                 | Scholastic                                 |
| Picture It With Words,1986                                                                      | Micro Learningware                         |
| Pinball Construction Set,v1984                                                                  | Electronic Arts                            |
| Pinball Math,1984                                                                               | Electronic Courseware Systems              |
| PinPoint,v2.0.2                                                                                 | PinPoint Publishing                        |
| Planetary Guide, The,1981                                                                       | Educational Images, Ltd.                   |
| Playroom, The,1.0                                                                               | Broderbund                                 |
| Point-To-Point,3.0                                                                              | WordPerfect Corporation                    |
| Pollute - A simu. of Water Poll.,1983                                                           | DEE-Diversified Educational<br>Enterprises |
| Pond - Strategies in Prob. Solv.,1984                                                           | Sunburst                                   |
| Better set to Fast speed.                                                                       |                                            |
| Potato Factory,1983                                                                             | Microcomputer Workshops / Queue            |
| Print Magic,1987                                                                                | EPYX                                       |
| Print Shop Companion,?                                                                          | Broderbund Data for Print Shop             |
| Print Shop, The,1986                                                                            | Broderbund                                 |
| Problem Solving Solutions,1.3                                                                   | MECC                                       |
| ProTERM,2.01                                                                                    | Checkmate Technology                       |
| Publish It!,1987                                                                                | Timeworks                                  |
| Use monochrome monitor or switch<br>to monochrome mode on a color                               |                                            |



display. Also, when you create a picture frame and IMPORT PICTURE, as the screen loads it may appear messed up. But if you move the picture frame around or exit to the Option Panel and return, the screen will clear.

#### Puzzle Tanks:

A Game of Numbers & Logic, 1984  
Quest for Files: Social Studies, 1987  
Quicken, 1987  
Quotient Quest, 1.0  
Read 'n Roll, 1.0  
Rd., Wr., & Pub. - Grades 5 & 8  
Reader Rabbit 1.4  
Reading & Writing Connections, 12.12.86  
Report Card II, 2.0e  
Return of the Dinosaurs, 1988  
Rocky's Boots, 4.1

Mouse and Joystick conflict.  
Same on IIe. Remove joystick to use mouse. Otherwise, mouse will appear erratic.

Sargon III, 1983  
The Human Body-An Overview, 1984  
Science Software, 1985  
Science Square-Off, 1986  
Science Square-Off:Earth Science, 1989  
Science Square-Off:Life Science, 1989  
Science Sqr.-Off:Physical Science, 1989  
Science Toolkit Master Module, 1.0 & 2.0  
Science Tk Mod 1: Speed and Motion, 1.0  
Science Tk Mod 2: Earthquake Lab, 1.0  
Science Tk Mod 3: Body Lab, 1.0  
Scoop Mahoney, 1988  
Sensible Speller, 1Y  
Seven Cities of Gold, 1984

Many Video and speed problems.  
Often accessing disk at the same time as drawing the screen slows down the program considerably.

Shakespeare, 06.04.86  
Sherlock Holmes in "Another Bow", 1985  
Runs slightly slower than IIe even at Fast speed.

Signs & Symbols, 1988  
Slide Shop 1.1, 1988  
Sound is distorted on the LC when playing back a sound file.

Smart Eyes 1.0, 1985  
Snoopy Writer, 1985  
Sound Ideas: Consonants, 1986  
Sound Ideas: Vowels, 1986

Sunburst  
Mindscape  
Intuit  
MECC  
Davidson & Associates  
D.C. Heath / William K. Bradford  
Learning Company (The)  
Hartley Courseware  
Sensible Software  
American Educational Computer  
Learning Company (The)

Spinnaker  
BrainBank  
Harcourt, Brace, Jovanovich  
Scott Foresman and Co  
Scott Foresman and Co  
Scott Foresman and Co  
Scott Foresman and Co  
Broderbund  
Broderbund  
Broderbund  
SRA  
Sensible Software  
Electronic Arts

Hartley Courseware  
Bantam

MCE, Inc.  
Scholastic

Addison Wesley  
Random House  
Houghton Mifflin  
Houghton Mifflin

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| Sound Ideas: Word Attack,1987                                                                          | Houghton Mifflin                 |
| Space Commander: States and Capitals                                                                   | Gamco                            |
| SpaceLace,1987                                                                                         | Great Wave Software              |
| Speed Reader II,1983                                                                                   | Davidson & Associates            |
| Spell It,1984                                                                                          | Davidson & Associates            |
| Spellevator, 1.2                                                                                       | MECC                             |
| Spellicopter,1983                                                                                      | Britannica Software - DesignWare |
| Spelling Press,1.1                                                                                     | MECC                             |
| Spelling Series Toolkit,1.0                                                                            | MECC                             |
| Spelling Workout,1.1                                                                                   | MECC                             |
| States & Traits,1984                                                                                   | Britannica Software - DesignWare |
| Stepping Stones Level I,1987                                                                           | Compu-Teach                      |
| Stickybear ABC,1986                                                                                    | Weekly Reader / Optimum Resource |
| Stickybear Drawing,1986                                                                                | Weekly Reader / Optimum Resource |
| Stickybear Math,1984                                                                                   | Weekly Reader / Optimum Resource |
| Stickybear Numbers,1987                                                                                | Weekly Reader / Optimum Resource |
| Stickybear Reading Comprehension,1985                                                                  | Weekly Reader / Optimum Resource |
| Stickybear Shapes,1989                                                                                 | Weekly Reader / Optimum Resource |
| Stickybear Spellgrabber,1984                                                                           | Weekly Reader / Optimum Resource |
| Stickybear Town Builder,1984                                                                           | Weekly Reader / Optimum Resource |
| Stickybear Typing,1986                                                                                 | Weekly Reader / Optimum Resource |
| Hangs on the Title Screen when booting.                                                                |                                  |
| Story Tree,1984                                                                                        | Scholastic                       |
| Subtraction Puzzles,1.0                                                                                | MECC                             |
| Summer Games,1984                                                                                      | EPYX                             |
| Better set to Fast speed.                                                                              |                                  |
| Summer Games II,1985                                                                                   | EPYX                             |
| Better set to Fast speed.                                                                              |                                  |
| Super Factory,1986                                                                                     | Sunburst                         |
| Supercat,1984                                                                                          | Zephyr Services                  |
| SuperPrint!,1.2                                                                                        | Scholastic                       |
| Better to use Keyboard or Joystick control as Mouse is very sensitive (same on IIe but less apparent). |                                  |
| SuperPrint Graphics Pack I,1.2                                                                         | Scholastic                       |
| SuperPrint II,1.0                                                                                      | Scholastic                       |
| Symbol-Picture Logic VOL.1 & 2,1986                                                                    | CAE Software                     |
| Teacher's ToolKit, The,1987                                                                            | HI TECH of Santa Cruz            |
| Teachers' Management Program,3.2                                                                       | American Language Academy        |
| Teasers by Tobbs:Puzz.&Prob.Solv.,1982                                                                 | Sunburst                         |
| Terrapin Logo Language,1985                                                                            | Terrapin                         |
| The Apple at Play,1984                                                                                 | Apple Computer, Inc.             |
| The Apple at Work,1986                                                                                 | Apple Computer, Inc.             |
| Think Tank,1.10                                                                                        | Living Videotext                 |
| Those Amazing Reading Machines                                                                         | MECC                             |
| Three Little Pigs,1989                                                                                 | D.C. Heath / William K. Bradford |
| Must use external 3.5 UniDisk drive (copy protected)                                                   |                                  |
| Ticket to Paris,1986                                                                                   | Blue Lion Software               |
| Time Tunl.: Am. Hist. Series 1,1983                                                                    | Focus Media                      |
| Time Tunl.: Euro. Hist. Series,1985                                                                    | Focus Media                      |
| Time Tunl: The America Series,1985                                                                     | Focus Media                      |
| TimeLiner,1986                                                                                         | Tom Snyder Productions           |

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|----------------------------------------------------------------------|------------------------------------|
| TimeLiner Data Disk: The Arts 1.0,1986                               | Tom Snyder Productions             |
| TimeOut DeskTools II,2.1                                             | WordPerfect Corporation            |
| TimeOut FileMaster,2.1                                               | WordPerfect Corporation            |
| TimeOut Graph,2.1                                                    | WordPerfect Corporation            |
| TimeOut QuickSpell,2.1                                               | WordPerfect Corporation            |
| TimeOut SideSpread,2.1                                               | WordPerfect Corporation            |
| TimeOut Superfonts,1987                                              | WordPerfect Corporation            |
| TimeOut Thesaurus,2.1                                                | WordPerfect Corporation            |
| TimeOut UltraMacros,2.0                                              | WordPerfect Corporation            |
| Tonk in the Land of Buddy-Bots,1986                                  | Mindscape                          |
| Top Reader's Club,1989                                               | Micrograms                         |
| Touch 'n Write,1986                                                  | Sunburst                           |
| Touch Window,?                                                       | Edmark                             |
| Hardware - attaches to the joystick port.                            |                                    |
| Type!,1986                                                           | Broderbund                         |
| Typing Tutor III w/ Letter Invaders,1984                             | Simon and Schuster                 |
| Typing Tutor IV,1987                                                 | Simon and Schuster                 |
| Use a B&W monitor or set to B&W mode.                                |                                    |
| U.S. Constitution Then & Now,1987                                    | Scholastic                         |
| Ultima V-Warriors of Destiny,1988                                    | Origin Systems                     |
| VisiCalc,1981                                                        | Personal Software, Inc.            |
| Vocabulary Adv. II: The Labryrinth,1985                              | Intellectual Software              |
| Vocabulary Word Builder,1983                                         | American Educational Computer      |
| Voyage of the Mimi,1985                                              | Holt Rinehart and Winston          |
| Use later version, copy protection problem in this version.          |                                    |
| Wall Street On-Line: An Investment Simulation for the Classroom,1986 | J. Weston Walch                    |
| Weather Analyst, The,1980                                            | Climate Assessment Technology      |
| Westward Ho!,1988                                                    | McGraw-Hill                        |
| Where in Europe Is Carmen Sandiego,1.3                               | Broderbund                         |
| Where in the USA Is Carmen Sandiego,1986                             | Broderbund                         |
| Where in the World Is Carmen Sandiego,1990                           | Broderbund                         |
| Where in Time is Carmen Sandiego,1989                                | Broderbund                         |
| Who Am I?,v1986                                                      | Focus Media                        |
| Do not set Type Ahead "On".                                          |                                    |
| Will lock up program. Same as IIGS.                                  |                                    |
| Who Framed Roger Rabbit,1.0                                          | Buena Vista Software               |
| Better set to Fast speed.                                            |                                    |
| Wild West Math,1990                                                  | Micrograms                         |
| Word Attack!,1983                                                    | Davidson & Associates              |
| Word Attack Plus-Spanish,1984                                        | Davidson & Associates              |
| Word Blaster,1982                                                    | Random House                       |
| Do not turn Type Ahead "On".                                         |                                    |
| Will lock up game. Same as IIGS.                                     |                                    |
| Word Munchers,1985                                                   | MECC                               |
| Wordbench,1988                                                       | Addison Wesley                     |
| WordPerfect,2.1e                                                     | WordPerfect Corporation            |
| Wordwise - Analogies/Astroquotes,1983                                | Program Design International/Queue |
| World Geography,1990                                                 | BOBCO                              |
| Writer Rabbit,1986                                                   | Learning Company (The)             |

Writer's Helper,1985  
Zoyon Patrol,1.0

Conduit  
MECC

Article Change History:

26 July 1993 - Company title changed from DLM to SRA (Science Research Associates).

19 January 1993 - Updated, Beagle Brothers now WordPerfect Corporation.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7479



# Tech Info Library

## Personal LaserWriter LS, StyleWriter: Software Compatibility

Revised: 8/8/91  
Security: Everyone

Personal LaserWriter LS, StyleWriter: Software Compatibility

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The following list is a compatibility report on the Personal LaserWriter LS, StyleWriter, and TrueType INIT. These are the findings as of February 26, 1991.

Even though Apple has reviewed this list, Apple makes no warranty or representation, either expressed or implied, with respect to this list, its quality, accuracy, or fitness for a particular purpose. In no event will Apple be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect or inaccuracy in this list. Please contact the developer for current compatibility information.

Mention in this list does not constitute an endorsement by Apple Computer, Inc. Third-party product information is provided for compatibility reasons only.

DISCUSSION-----

4th Dimension 2.11 - No problem.  
Acta 3.01 DA - No problem.  
Adobe Illustrator 88 1.9.3 - TrueType problems with text in large point sizes. TrueType quality will not be very high in any point size. Adobe Illustrator 3.0 - Requires Adobe Type Manager 2.0, does not take advantage of TrueType. Prints to Personal LaserWriter LS at 72 DPI.  
Adobe Photoshop 1.0 - No problem.  
Adobe Type Manager 1.2 - No problem.  
Adobe Type Manager 2.0 - No problem.  
Aldus Freehand 2.02 - On Personal LaserWriter LS, may experience crashes when printing graphics which were created as bitmaps in another application and then pasted into Freehand through the clipboard.

The StyleWriter has the following problems: Some features do not work correctly. Lines assigned a width of 0 should print as hairlines, but are printed as 1 point lines. Some rounded rectangles do not print as smoothly as other printers.

AppleScan 1.02 - No problem.

atOnce! 1.01 - No problem.

Canvas 2.1 - No problem.

Claris CAD 1.0v5 - No problem.

Color Studio 1.0 - No problem.

Cricket Draw 1.1.1 - No problem.

Cricket Graph 1.3 - Does not display third-party TrueType fonts.

Cricket Paint 1.0 - No problem.

Cricket Presents 2.0.1 - Times Bold/Italic lines of text sometimes get cut off when printing Personal LaserWriter LS.

Delta Graph 1.5 - No problem.

Design Studio 1.01 - No problem.

Digital Darkroom 1.1a - When printing a select portion of a document to a StyleWriter from a Macintosh SE, the system will crash. Printing a Digital Darkroom document to the StyleWriter, the image is recreated eight times in miniature at the top of the page. A black line appears across the print options box of the StyleWriter driver.

Dreams 1.1 - TrueType text occasionally causes a Personal LaserWriter NT to crash. Printing rotated text to the Personal LaserWriter LS, both the rotated object and the original non-rotated object are printed.

FoxBASE+/Mac 2.01 - TrueType fonts with bitmaps installed have spacing problems when printed, and bottoms of characters are sometimes clipped.

FileMaker II 1.1v2 - No problem.

FileMaker Pro 1.0v1 - No problem.

Full Impact 2.0 - Text is dropped when printing to Personal LaserWriter LS under MultiFinder.

FullWrite Professional 1.1 - No problem.

HyperCard 2.0v2 - No problem.

Image Studio 1.7 - In landscape mode, prints strips of garbage across the page. Happens to a number of printers, including Personal LaserWriter LS and StyleWriter.

LetraStudio 1.5 - Designed only for Letraset's proprietary or Postscript fonts, will not benefit TrueType users.

MacDraft 2.0 - No problem.

MacDraw 1.9.8 - No problem.

MacDraw II 1.1v2 - No problem.

MacWrite II 1.1v1 - Type sizes greater than 127 will not display or print correctly. TrueType fonts will not display correctly in reduced view.

MacFlow 3.0.3 - No problem.

MacInTax 89 2.0 - No problem.

MacMoney 3.5 - No problem.

MacPaint 2.0 - No problem.

MacProject II 2.0v3 - No problem.

MacroMind Director 2.0 - No problem.

MacWrite 5.0.1 - No problem.

Microsoft Excel 2.2a - No problem.

Microsoft PowerPoint 2.01D - TrueType text spacing is bad enough to cause the text to be illegible on the Macintosh II family of CPUs. This problem does not occur with PowerPoint 2.01.

Microsoft Word 4.0b - When printing to the Personal LaserWriter SC or LS, TrueType output sometimes has line breaks in the wrong places, and incorrectly spaced characters.

Microsoft Works 2.0b - No problem.

MiniCad+ 2.0v6 - Double underlines print as single underline on the Personal LaserWriter LS and StyleWriter. StyleWriter drops all underlines at 40% reduction.

More 3.0 - No problem.

Nisus 2.11 - No problem.

Nisus 3.01 - No problem.

PageMaker 3.02 - No problem.

PageMaker 4.0 - No problem.

Persuasion 2.0 - No problem.

PixelPaint Professional 1.0.1 - Printing to Personal LaserWriter LS and StyleWriter often causes a crash.

Quark XPress 2.12 and 3.0 - Problems with large point sizes and reduced and enlarged view.

Quickmail 2.2.3 - Will not print in text mode to the StyleWriter.

Quicken 1.5 - No problem.

ReadySetGo 4.5 - No problem.

ReadySetShow 1.0 - No problem.

SmartForm Assistant/Designer 1.1v1 - Place rotated text on mailing labels template does not print onto every label when printing to Personal LaserWriter LS and StyleWriter.

Statview SE+ Graphics 1.03 - No problem.

Studio 1 1.0 - No problem.

Studio 8 1.1 - No problem.

SuperCard 1.5 - No problem.

SuperPaint 2.0a - When printing complicated text and graphics to the Personal LaserWriter LS, some objects do not print.

UltraPaint 1.02 - No problem.

Vellum 1.0 - No problem.

WingZ 1.1 - When "center" page setup option is selected, extra blank pages are printed out to the Personal LaserWriter SC and LS.

WordPerfect 1.0.5 - No problem.

WriteNow 2.2 - When printing to the StyleWriter, occasionally characters overlap.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7480



# Tech Info Library

## System 7: Memory Requirements

Revised: 9/18/92  
Security: Everyone

System 7: Memory Requirements

Article Created: 15 May 1991

### Article Change History

09/17/92 - REVISED

- To set 2MB capabilities more realistically.

### TOPIC -----

The following information provides guidelines for memory (RAM) usage with System 7.

### DISCUSSION -----

The minimum requirement to run System 7 is a 2MB system with a hard disk. User testing shows that this configuration is functionally equivalent to a 1MB configuration running system 6.0.7. But to take full advantage of System 7 and multiple and/or larger applications you will need at least 4MB of RAM.

Here is a rough guide to memory usage:

- 1MB - Use system 6 with one application.
- 2MB - Use System 7, the Finder, and one application.
- 2.5MB - Use System 7, the Finder, and one or two applications.
- 3MB to 5MB - Use System 7, the Finder, and multiple applications or one large application.
- 5MB to 8MB - Use System 7, the Finder, and multiple large applications and/or documents.



Because of System 7's built-in multitasking, users may launch a second application without quitting from the first. In a 2MB system, this will frequently produce an "Out of Memory" error message. To avoid these messages, users with 2MB Macintosh computers should quit each application before using another. This will not affect their ability to use the multitasking features of System 7, such as background printing and file copying.

System 7 consumes 500K to 1MB more memory than system software 6.0.x. Consider adding one to two megabytes of memory to a Macintosh with limited memory. Or use System 7's virtual memory feature, which is available on the Macintosh SE/30, IIX, IICX, IICI, IIFX, and Macintosh II with optional PMMU.

Because of differences in system ROMs and video architecture, each Macintosh configuration has slightly different system memory usage under System 7. Here are the basic memory profiles of System 7 on various Macintosh computers, using basic install with file sharing and program linking turned off:

| System             | Memory Consumed | Memory Free* |
|--------------------|-----------------|--------------|
| -----              | -----           | -----        |
| Macintosh Plus     | 1056K           | 992K         |
| Macintosh SE       | 1125K           | 923K         |
| Macintosh SE/30    | 1271K           | 777K         |
| Macintosh Portable | 1085K           | 963K         |
| Macintosh Classic  | 1123K           | 925K         |
| Macintosh LC       | 1298K           | 750K         |
| Macintosh IIsi     | 1216K**         | 1085K***     |
| Macintosh II       | 1275K           | 773K         |
| Macintosh IIX      | 1268K           | 780K         |
| Macintosh IICX     | 1298K**         | 750K         |
| Macintosh IICI     | 1202K           | 796K         |
| Macintosh IIFX     | 1185K           | 2911K****    |

\* Available application memory in a 2MB configuration. Any memory above 2MB is available for application use as well.

\*\* 8-bit color video consumes an additional 280K.

\*\*\* 3MB configuration

\*\*\*\* 4MB configuration

Note: Macintosh file sharing consumes an additional 260K.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7481



# Tech Info Library

## Alpha Technologies, Inc.

Revised: 4/4/97  
Security: Everyone

Alpha Technologies, Inc.

=====

Article Created: 05/31/91  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

Alpha Technologies, Inc.

-----

3765 Alpha Way  
Bellingham, WA 98226

206-671-7703  
206-647-2360

206-671-4936 Fax

Company Profile:  
Hardware, specializing in backup power supplies.

Copyright 1991-97 Apple Computer, Inc.

Tech Info Library Article Number:7482



# Tech Info Library

## The Chip Merchant

Revised: 7/8/93  
Security: Everyone

The Chip Merchant

=====

Article Created: 07/01/91  
Article Reviewed: 07/07/93  
Article Updated: 07/07/93

The Chip Merchant

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9541 Ridgehaven Court  
Suite A  
San Diego, CA 92123

619-268-4774

619-268-0874 Fax

Company Profile:  
Specializing in memory upgrades for LaserWriters and Macintosh systems, and  
memory upgrades for PC's

Article Change History: 07/07/93 New Product Information Added

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7483



# Tech Info Library

## Concentrix Technology, Inc.

Revised: 4/4/97  
Security: Everyone

Concentrix Technology, Inc.

=====

Article Created: 30 May 1991  
Article Reviewed/Updated: 4 April 1997

Concentrix Technology, Inc.

-----

7 Ashdown Pl.  
Half Moon Bay, 94019

415-358-8600

Fax: 415-726-5938

Company Profile:  
Software, specializing in software for the Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7484



# Tech Info Library

## **KRI Communications, Inc. (dba Krown Research)**

Revised: 3/9/94  
Security: Everyone

KRI Communications, Inc. (dba Krown Research)

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Article Created: 1 July 1991  
Article Reviewed/Updated: 8 March 1994

KRI Communications, Inc.

-----

129 Sheldon Street  
El Segundo, CA 90245

800-833-4968 (outside California)

310-322-3202 (in California)

310-322-4985 Fax

Company Profile:  
Specializing in 300 baud TDD terminals for the hearing-impaired. They  
no longer produce Macintosh TDD modems.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7485



# Tech Info Library

## MacCenter

Revised: 7/13/93  
Security: Everyone

MacCenter

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Article Created: 07/01/91  
Article Reviewed: 07/13/93  
Article Updated: 12/01/92

MacCenter

-----

4930 South Congress Ave.  
Suite 303  
Austin, TX 78745

800-950-3726

512-445-6262

512-444-3726 Fax

### Company Profile:

Hardware, specializing in Macintosh accelerator cards, monitors and video cards, fax and normal modems, network cards, harddrives (int./ext./removable), scanners, and printer products for the Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7486



# Tech Info Library

## MacSystems/Lifetime Memory Products

Revised: 7/14/93  
Security: Everyone

MacSystems/Lifetime Memory Products

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Article Created: 05/28/91  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

MacSystems/Lifetime Memory Products

-----

305 17th St.  
Huntington Beach, CA 92648

800-942-6227

714-969-5532 Fax

### Company Profile:

Software, specializing in memory upgrades for LaserWriters and Macintosh systems, memory, Apple developer and manufacturer.

Article Change History: 07/13/93 New product information added, address changed, name changed, phone number changed.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7487



# Tech Info Library

## Memory Plus

Revised: 7/13/93  
Security: Everyone

Memory Plus

=====

Article Created: 07/01/91  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

Memory Plus

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22 Water St.  
P.O. Box 664  
Westboro, MA 01581

800-388-7587

508-366-2240

508-366-7344 Fax

Company Profile:  
Hardware, specializing in memory upgrades for LaserWriters, Macintosh, and IBM  
PC systems.

Article Change History: 07/13/93 Address changed

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7488





# Tech Info Library

## Data Recovery/Disk Repair (acquired Mipro III)

Revised: 7/19/93  
Security: Everyone

Data Recovery/Disk Repair (acquired Mipro III)

=====

Article Created: 1 July 1991  
Article Reviewed/Updated: 16 July 1993

Data Recovery/Disk Repair, Inc.  
-----

915 Terminal Way  
Suite C  
San Carlos, CA 94070

415-802-6980

415-595-4042 Fax

Company Profile:  
Acquired Mipro III, specializing in data recovery and hard disk repair.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7489



# Tech Info Library

## On-Time Mac Service

Revised: 7/16/93  
Security: Everyone

On-Time Mac Service

=====

Article Created: 30 May 1991  
Article Reviewed/Updated: 16 July 1993

On-Time Mac Service

-----

2682 Middlefield Rd.  
Suite C  
Redwood City, CA 94063

415-367-6263

Fax: 415-367-6793

Company Profile:  
Specializing in hard disk repair and data recovery.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7490



# Tech Info Library

## OnTrack Data Recovery

Revised: 7/15/93  
Security: Everyone

OnTrack Data Recovery

=====

Article Created: 30 May 1991  
Article Reviewed/Updated: 15 July 1993

OnTrack Data Recovery

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6321 Bury Drive  
Suite 15-19  
Eden Prairie, MN 55346

612-937-1107 (OnTrack Computer Systems; also sells software)  
612-937-5161 (OnTrack Data Recovery)

612-937-5815 Fax

Company Profile:  
Specializing in and data recovery.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7491



# Tech Info Library

## Computer Peripheral Repair & Recovery Services

Revised: 7/19/93  
Security: Everyone

Computer Peripheral Repair & Recovery Services

=====  
Article Created: 30 Mat 1991  
Article Reviewed/Updated: 19 July 1993

Computer Peripheral Repair and Recovery Services, Inc.  
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7570 South U.S. Highway 1  
Suite 8-11  
Hypoluxo, FL 33462

407-586-0011

407-582-7921 Fax

Company Profile:  
Formerly SeaGator Marine, Inc., specializing in data recovery and hard disk repair.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7493



# Tech Info Library

## SL Waber, Inc.

Revised: 7/19/93  
Security: Everyone

SL Waber, Inc.

=====

Article Created: 31 May 1991  
Article Reviewed/Updated: 19 July 1993

SL Waber, Inc.

-----

520 Fellowship Road  
Suite 306  
Mount Laurel, NJ 08054

609-866-8888

800-634-1485

Fax: 609-866-1945

Company Profile:  
Specializing in backup power supplies, multiple outlet strips, and surge suppressors.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7494



# Tech Info Library

## SoftSpoken, Inc.

Revised: 7/19/93  
Security: Everyone

SoftSpoken, Inc.

=====

Article Created: 30 May 1991  
Article Reviewed/Updated: 19 July 1993

SoftSpoken, Inc.

-----

P.O. Box 18343  
Raleigh, NC 27619

919-870-5694

Fax: 919-870-5696

Company Profile:  
Specializing in Crossworks, and an Apple II to IBM PC data exchange utility.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7495



# Tech Info Library

## Stratum Technologies, Inc.

Revised: 7/19/93  
Security: Everyone

Stratum Technologies, Inc.

=====

Article Created: 28 May 1991  
Article Reviewed/Updated: 19 July 1993

Stratum Technologies, Inc.

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12201 Technology Blvd.  
Suite 130  
Austin, TX 78727

512-258-3570

800-533-1744

Fax: 512-258-3689

### Company Profile:

Parent company is 1st Tech. Corp., Hardware, specializing in memory upgrades for LaserWriters and Macintosh systems.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7497



# Tech Info Library

## Sutton Designs

Revised: 7/19/93  
Security: Everyone

Sutton Designs

=====

Article Created: 31 May 1991  
Article Reviewed/Updated: 19 July 1993

Sutton Designs

-----

215 North Cayuga Street  
Ithaca, NY 14850

607-277-4301

800-326-8119

Fax: 607-277-6983

Company Profile:  
Specializing in backup power supplies and surge suppressors.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7498





# Tech Info Library

## UltraTec

Revised: 7/20/93  
Security: Everyone

UltraTec

=====

Article Created: 24 May 1991  
Article Reviewed/Updated: 20 July 1993

UltraTec  
-----

450 Science Drive  
Madison, WI 53711

608-238-5400

Fax: 608-238-3008

Company Profile:  
Specializing in Macintosh TDD Modems for the hearing-impaired.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7499



# Tech Info Library

## WestCode Software

Revised: 4/4/97  
Security: Everyone

WestCode Software

=====

Article Created: 1 July 1991  
Article Reviewed/Updated: 4 April 1997

WestCode Software

-----

15050 Avenue of Science  
Suite 112  
San Diego, CA 92128

800-448-4250

619-487-9200

Fax: 619-487-9255

### Company Profile:

Specializing in Optical Character Recognition (OCR) software for the Apple IIe and IIGS, Pointless adds truetype capability to the IIGS, Hardpressed on the fly harddrive compression, Typewest truetype 40 professionally designed fonts, Typeset font management tools for the GS.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7500



# Tech Info Library

## System 7: Virex Compatibility

Revised: 7/27/93  
Security: Everyone

System 7: Virex Compatibility

=====

Article Created: 15 May 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

Is the Virex INIT compatible with System 7? Some customers experience printer errors when printing from a system with the Virex INIT v.3.1 loaded. The compatibility reports say it's compatible, but disabling the INIT corrects the problem.

DISCUSSION -----

The Virex program is compatible with System 7, but the Virex INIT is not fully compatible. Note that at least version 3.5 is available, with improved compatibility. Check with Relay Technology (formerly Microcom) for the latest information. Here is Relay Technology's (formerly Microcom) recommended workaround:

- 1) Disable checking on file opening. Checking at disk insertion should work fine.
- 2) Put the Virex INIT in the root level of the System Folder. Create an alias for the INIT, and place it in the Control Panels folder.

### Article Change History

23 July 1993 - Company title changed from Microcom to Relay Technology.  
2 September 1992 - Updated, to note that at least version 3.5 of Virex is available.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7502



# Tech Info Library

## AppleShare PC 2.0.X Requires AppleTalk Phase 2

Revised: 8/8/91  
Security: Everyone

AppleShare PC 2.0.X Requires AppleTalk Phase 2

=====

Article Created: 11 April 1991

### Article Change History

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08/21/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I am running AppleShare PC 2.0.1 and a 3Com Etherlink II Board (ThinWire) on an AST 486. When I load ABOTH, I can only see Phase 2 Zones, because our K-Boxes are filtering out Phase 2 traffic. Is there any way I can see our Phase 1 zones the same way I can on my Macintosh using the old EtherTalk Phase 1 drivers? I don't know when we plan to migrate to Phase 2.

### DISCUSSION -----

You need AppleTalk Phase 2 for AppleShare PC 2.0 environments using Ethernet or Token Ring networks. If you could attach to a LocalTalk network, then you could use Phase 1. Otherwise, upgrade your present network to Phase 2 as soon as possible.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7503



# Tech Info Library

## Macintosh IIsi: Ethernet Card Using Thin-wire Ethernet

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Ethernet Card Using Thin-wire Ethernet

=====

Article Created: 11 April 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Has the Macintosh IIsi been tested with any Ethernet cards that handle thin-wire Ethernet?

DISCUSSION -----

Apple's EtherTalk NB card works with the Macintosh IIsi in a NuBus adapter. This card has gone through considerable testing and has a huge installed base.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7504



# Tech Info Library

## CD Remote DA: When It's Needed

Revised: 7/1/91  
Security: Everyone

CD Remote DA: When It's Needed

=====

Article Created: 28 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do I really need CD Remote DA in my System Folder?

DISCUSSION -----

You need the CD Remote DA only if you are playing audio CDs. It is not needed for using CD-ROMs.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7505



# Tech Info Library

## ImageWriter II: Color Printing Applications

Revised: 1/18/93  
Security: Everyone

ImageWriter II: Color Printing Applications

=====

Article Created: 11 April 1991

### Article Change History

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1/15/93 - UPDATED  
• Vendor name.

### TOPIC -----

Are there any drivers or programs that print color documents to a ImageWriter II with a color ribbon?

### DISCUSSION -----

Most color applications can print in color on an ImageWriter II with the standard driver. These include SuperPaint 2.0 and Cricket Draw.

Silicon Beach Software's (now Aldus Consumer Division) SuperPaint is a graphics editor for bit-mapped (paint) and object-oriented (draw) art. You can toggle between the paint and draw layers by clicking an icon.

Computer Associates International's Cricket Draw is an object-oriented drawing program that can take advantage of the graphics capabilities of PostScript printers (from the LaserWriter to the Linotronic 300). The package consists of two integrated programs: a drawing window and a PostScript language editor. The programs can be used independently or in conjunction.

To locate a vendor's address and phone numbers, use the vendor's name in a search string.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7506



# Tech Info Library

## Macintosh Plus: How to Get the Propeller Symbol

Revised: 8/8/91  
Security: Everyone

Macintosh Plus: How to Get the "Propeller" Symbol

=====

Article Created: 11 April 1991  
Article Last Reviewed: 13 July 1992  
Article Last Updated:

TOPIC -----

I want to generate the "propeller" character on my keyboard, but it's produced with the Control-Q key combination, and my Macintosh Plus has no Control key. Is there another way to generate that character directly on the Macintosh Plus?

DISCUSSION -----

We checked through the character sets of all of our fonts and found that symbol only in Chicago under Control-Q. Short of re-defining a font in ResEdit or buying a font-creation product, you can type the character on another Macintosh and save the character in a document that you can transfer (by disk or modem) to your computer. Then, copy the character and paste it into your document.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7507





# Tech Info Library

## Commodore 64: How to Migrate Text Files to a Macintosh

Revised: 7/1/91  
Security: Everyone

Commodore 64: How to Migrate Text Files to a Macintosh

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to migrate all my Commodore 64 text files to a Macintosh. How would I do this?

DISCUSSION -----

We have not seen any software package that does this conversion. The only way is to print the files out through a serial port on the Commodore with a cable going to the Macintosh with a communications package, like MacTerminal running on the Macintosh side.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7508



# Tech Info Library

## Apple II: How to Copy Software from 5.25 to 3.5-inch Disks

Revised: 8/8/91  
Security: Everyone

Apple II: How to Copy Software from 5.25 to 3.5-inch Disks

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to copy Apple IIe software from 5.25-inch to 3.5-inch disks, using an Apple IIGS--and then run the programs. I get a message that the Apple IIe disk was not formatted in ProDOS. What should I do?

DISCUSSION -----

If the program was written to run under DOS 3.3, it probably won't work under ProDOS. You can use the System Utilities Disk 3.1 to copy the information over to a 3.5-inch disk (the DOS to ProDOS conversion is handled automatically during the copy). However, if the application interacts with the operating system giving DOS 3.3 commands, it won't run. We recommend that you ask the software developer if they have a ProDOS version.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7509



# Tech Info Library

## Macintosh SE: Requirements for SoftPC

Revised: 8/8/91  
Security: Everyone

Macintosh SE: Requirements for SoftPC

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I run Soft PC and DOS applications on my Macintosh SE?

DISCUSSION -----

To run SoftPC on a Macintosh SE, Insignia Solutions recommends:

- 2MB RAM
- a hard disk drive with at least 3MB of free space
- a 68020 or 68030 accelerator card

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7510



# Tech Info Library

## Apple IIGS: RAM Upgrade, CAS and RAS

Revised: 8/8/91  
Security: Everyone

Apple IIGS: RAM Upgrade, CAS and RAS

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to upgrade an early version of the Apple IIGS and having problems with the 256K chips. Please advise me on the need for CAS and RAS and when and where they are necessary. The solder-in chips on the expansion card don't fall into the category listed in the service manual for replacement. They are NEC/Japan D41256C-15.

DISCUSSION -----

The computer requires CAS before RAS refresh. At one time, we were describing the problem chips, but there are too many different RAM manufacturers. Run the Apple IIGS diagnostic 4.0. You must specifically choose the RAM card test to test the card. If the test comes back with "RAM out of spec," you have the wrong refresh. If the test fails, it is a straight failure. If the test passes, the RAM is the correct refresh and in working order.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7511



# Tech Info Library

## LaserWriter Plus: Can't Use LaserWriter II's Envelope Tray

Revised: 8/8/91  
Security: Everyone

LaserWriter Plus: Can't Use LaserWriter II's Envelope Tray

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Will the LaserWriter II envelope cassette (P/N M0141) work on the LaserWriter Plus?

DISCUSSION -----

No, the LaserWriter II envelope cassette tray does not work in a LaserWriter Plus.

The LaserWriter and LaserWriter Plus only supported printing envelopes one at a time through manual feed. (Check with companies like BDT who make sheet and envelope feeders for the LaserWriter. For contact information, search the Tech Info Library under "BDT".)

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7512



# Tech Info Library

## MacTCP CDEV and EtherTalk

Revised: 8/8/91  
Security: Everyone

MacTCP CDEV and EtherTalk

=====  
Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an EtherTalk board in my Macintosh II and am using MacTCP and NCSA Telnet to talk to campus mainframes through an Ethernet backbone.

When I select Ethernet in the MacTCP CDEV, I can connect to a host through Ethernet. However, when I have EtherTalk selected, I cannot make a TCP connection to any host. Shouldn't I be able to make a connection with EtherTalk selected?

DISCUSSION -----

EtherTalk in MacTCP is for sending AppleTalk packets with encapsulated TCP. Use this choice for networks that must go through a DDP/IP router. The Ethertalk setting creates the Datagram Delivery Packets that the router expects.

Your network apparently has direct access to the TCP host, which lets you use the straight packets (Ethernet choice). The way to look at this setting is that it's one or the other, not both.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7513



# Tech Info Library

## AppleCD SC: Audio Driver Needed to Play Sounds from Hard Disk

Revised: 8/8/91  
Security: Everyone

AppleCD SC: Audio Driver Needed to Play Sounds from Hard Disk

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I copied the contents of the Explorer CD-ROM to a hard disk, but when I start Explorer from the hard disk, there is no sound. When I put the Explorer CD back in the CD player, and then start Explorer from the hard disk, the sound works. It appears to be accessing files on the CD, rather than on the hard disk. Shouldn't Explorer work just from the hard disk without the CD version present?

DISCUSSION -----

Look at the Macintosh data files and the sound files as being two separate types of CD information. In fact, that is why you have a separate audio CD driver. When you copied the CD over to the hard disk, it couldn't copy the CD audio information. If a sound is something that is generated in a program by the computer (something that would play out of the computer's speaker), that would copy. But, if the sound is a CD audio recording (only heard from the sound outputs of the CD player), then the sound won't copy.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7514



# Tech Info Library

## Macintosh IIx: How to Troubleshoot a Monitor/4•8 Card Problem

Revised: 7/2/92  
Security: Everyone

Macintosh IIx: How to Troubleshoot a Monitor/4•8 Card Problem

=====

Article Created: 28 March 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

We have four Macintosh IIx systems with the same problem. Each computer is running System 6.0.5 with an Apple 4-bit video card and the Macintosh Display Card 4•8. The cards drive a Macintosh High-Res RGB monitor and a Macintosh Two-Page Display. The color monitors come up, but the Two-Page Displays don't. The same configuration using the old Two-Page Display card and the 4-bit card works fine. What's the problem?

DISCUSSION -----

Here is a troubleshooting sequence that may help you locate the culprit:

- 1) Start up with a known-good System disk with no INITs installed. Some INITs cause problems with video.
- 2) Try swapping out the 4•8 card if you haven't already done so.
- 3) Using the original configuration, insert the 4•8 (the card driving the Two-Page) into a different slot. There might be a problem with the bus lines or the slot itself.
- 4) Swap the logic board, if the slot or bus is the problem.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7515





# Tech Info Library

## Spooler Problem with PostScript Interpreter

Revised: 7/16/92  
Security: Everyone

Spooler Problem with PostScript Interpreter

Article Created: 19 March 1991  
Article Reviewed Only: 9 June 1992  
Article Last Updated: 9 June 1992

TOPIC -----

When I print a multi-page document - say, 3 pages - all pages spool to the spooler as shown in the print spooler window of AppleShare 2.x. The printer initializes and prints page 1 without problem. Either of two things can happen with page 2:

- It never prints or even gets started by the spooler. Thus, the pages to print are 3 and printed pages are 1.
- The job is flushed with an error sheet stating any of the following:

```
undefined;OffendingCommand: ^^^^^^^^ (these are upside down on sheet),
undefined;OffendingCommand:CE6F43C216B8D
,dictfull;OffendingCommand:def,limitcheck;offending command:^^^^^^^A3
(strange foreign characters), canceled by user.
```

If I send only one page at a time to the spooler, everything works well, but it's not very efficient.

DISCUSSION -----

The error messages you received are not related to memory, but to the PostScript Interpreter which resides in the printer.

In general, there appears to be an issue with how the AppleShare print server (version 2.01) is handling PostScript files. The amount of required memory on the print server when capturing one printer is 2MB. The additional memory is not used. The problem would more likely center on how the files are being handled on by the Print Server/LaserWriter. The problem is being reported from the printer.

The "OffendingCommand" is telling us that the interpreter does not understand what has been requested--that is, a Syntax Error is being reported. The "dictFull" error is a report from the PostScript dictionary resident in the printer.

The probability is that packets are getting damaged somewhere in the spooling process on the print server. When the PostScript interpreter receives these damaged packets, it returns the error message or flushes the print job. This could point to a variety of problems with the installation of the server's software.

One thing that may cause this problem involves whether your system has ever run an earlier version of the operating system (and Print Server) before System 6.0.5. If so, you may want to try trashing the ServerFolder and reinstalling the system software and print server. Important: If you do this, make sure you use the Network Products Installer disk to install the print server. The Installer that ships with print server may not work correctly with either 6.0.4 or 6.0.5, but the Network Products Installer will. You may find that you need to reformat and reload the entire hard drive to resolve this problem. Also consider moving up to System 7 and installing AppleShare 3.0.

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Tech Info Library Article Number:7516



# Tech Info Library

## Kensington Turbo Mouse: Using with System 6.0.5 Requires Patch

Revised: 8/8/91  
Security: Everyone

Kensington Turbo Mouse: Using with System 6.0.5 Requires Patch

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh IIfx (running System 6.0.5.) freezes when the system is starting up. The problem is intermittent and happens only when the mouse--a Turbo Mouse from Kensington--is plugged in. (We have swapped out the mouse and the keyboard.)

DISCUSSION -----

The Turbo mouse has a problem with System 6.0.5. Kensington has a patch for this. For contact information, search the Tech Info Library under "Kensington".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7517



# Tech Info Library

## Macintosh Compact Models: Hourglass Effect on Screen

Revised: 7/1/91  
Security: Everyone

Macintosh Compact Models: "Hourglass" Effect on Screen

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh SE/30 screen displays severe "hourglassing" when there is a large, black area on the screen. I drew a black rectangle (wider than it is high) in MacDraw and then moved it around the screen. The left and right sides of the screen closest to the rectangle squeeze in towards the rectangle (hourglassing). I have replaced everything in the unit at least once. I also removed the hard disk, but that had no effect.

DISCUSSION -----

The hourglass effect is common to all of the compact Macintosh computers. It's more pronounced on some systems than on others. To reduce (but not eliminate) the effect, turn down the internal brightness level. Try this and experiment with other compact Macintosh computers.

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Tech Info Library Article Number:7520



# Tech Info Library

## HyperCard 1.2.5: Multi-launching from a Server

Revised: 8/8/91  
Security: Everyone

HyperCard 1.2.5: Multi-launching from a Server

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Our school's Macintosh lab has an AppleShare server. I want to set up a single copy of HyperCard (1.2.5) with several stacks on the server, so that it can be multi-launched. The HyperCard stacks and applications on the server are locked (Finder), and they do not have any problems. Is there a way to do it?

DISCUSSION -----

HyperCard can multi-launch on the server. It works if HyperCard is either locked or in a locked folder. We experimented and got an error message by unlocking HyperCard or by putting it in a write-enabled folder. Stacks work the same way.

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Tech Info Library Article Number:7521



# Tech Info Library

## Apple IIfc: Use Mouse Designed for IIfc (11/94)

Revised: 11/8/94  
Security: Everyone

Apple IIfc: Use Mouse Designed for IIfc (11/94)

=====

Article Created: 12 April 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

I have a question concerning the "platinum" Apple IIfc and a mouse. When I'm using the mouse, the cursor starts at the top-left corner and moves straight down to the bottom-left corner of the screen. Why?

DISCUSSION -----

You have come across an incompatibility in mouse timing. The mouse sold for the Apple IIfc works properly, and mice received from service work properly. However, mice that came from Macintosh Plus systems sometimes work and sometimes not, depending on the manufacturer.

To assure proper operation, make sure you use a mouse that was designed for use with the IIfc.

Article Change History:  
08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7522



# Tech Info Library

## Apple IIe: Difficulty Starting Up when Connected to a TV Monitor

Revised: 8/8/91  
Security: Everyone

Apple IIe: Difficulty Starting Up when Connected to a TV Monitor

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Apple IIe won't power up its disk drive when connected to a TV monitor.

DISCUSSION -----

If your RF modulator is the type that gets its power from the Apple IIe, the power supply could be the problem. Try unplugging one or more interface cards and see if the computer can power up with the RF modulator. If this works, try a new power supply. If it still refuses to power up, suspect a bad RF modulator.

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Tech Info Library Article Number:7524



# Tech Info Library

## Apple IIGS: How to Mix a 3.5-inch Drive with Other Drives

Revised: 8/9/91  
Security: Everyone

Apple IIGS: How to Mix a 3.5-inch Drive with Other Drives

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using an Apple IIGS with a DuoDisk drive and a single 5.25-inch drive. The controller cards are in slots 5 and 6. I want to use a 3.5-inch drive along with the other drives. I installed an Apple UniDisk 3.5-inch drive with its controller in slot 4 and tried slot 7 with no success. I changed the slot settings under the Control Panel each time. How can a 3.5-inch drive be used with the described 5.25-inch drives?

DISCUSSION -----

Try this configuration:

- 1) Plug the UniDisk 3.5-inch directly into the back of the computer (no controller).
- 2) Plug the DuoDisk into the port on the UniDisk 3.5 disk (no controller).
- 3) Plug the single 5.25-inch UniDisk into a controller card in slot 7.

Set the Control Panel as follows:

|         |            |
|---------|------------|
| slot 5  | smart port |
| slot 6  | disk port  |
| slot 7  | your card  |
| startup | scan       |

This configuration tries first to start up from the UniDisk 5.25. If no disk is found, then it looks to drive 1 of the DuoDisk. If no disk is found, then it goes to the UniDisk 3.5.



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Tech Info Library Article Number:7525



# Tech Info Library

## Apple IIGS: When One Hard Drive Shows Two Icons

Revised: 8/8/91  
Security: Everyone

Apple IIGS: When One Hard Drive Shows Two Icons

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIGS with 1.25MB RAM, a 3.5-inch floppy drive, 5.25-inch floppy drive, and an HD 20SC hard disk.

I removed all data from the HD 20SC to install System 5.0. Now, I see multiple hard-drive icons. What happened? Should I re-format the disk?

DISCUSSION -----

Most likely, you accidentally created more than one partition. (This may also have happened if the drive was previously used on another operating system, such as the Macintosh OS.)

You need to go back to Advance Disk Utilities and select Partition. Remove all partitions, then create a new one.

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Tech Info Library Article Number:7526



# Tech Info Library

## Macintosh Extended Keyboard: How to Program Function Keys (1/95)

Revised: 1/19/95  
Security: Everyone

Macintosh Extended Keyboard: How to Program Function Keys (1/95)

Article Created: 12 April 1991  
Article Reviewed/Updated: 09 January 1995

TOPIC -----

What are some applications that can program the function keys on the Macintosh extended keyboard?

DISCUSSION -----

CE Software's QuicKeys is probably the most popular, but MacroMaker, included with system software prior to System 7, also programs the function keys. For contact information, search the Tech Info Library under "CE Software".

Article Change History:  
09 Jan 1995 - Noted that MacroMaker is no longer in the system software.

Support Information Services

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Tech Info Library Article Number:7527



# Tech Info Library

## LaserWriter: Blank Test Page May Be From Downloaded PostScript

Revised: 8/8/91  
Security: Everyone

LaserWriter: Blank Test Page May Be From Downloaded PostScript

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My LaserWriter IINTX works normally, except that the test print page is blank. The unit prints all other pages with no problem. What does this mean?

DISCUSSION -----

If you have downloaded any PostScript programs to the printer, the test page may have been blanked out unintentionally. If this is the case, the fact that the sheet is blank does not point to any hardware failure.

If you have not downloaded any PostScript programs the blank test page could be a sign of future I/O problems.

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Tech Info Library Article Number:7528



# Tech Info Library

## Apple IIe and IIc: How to Convert DOS 3.3 Files to ProDOS

Revised: 8/9/91  
Security: Everyone

Apple IIe and IIc: How to Convert DOS 3.3 Files to ProDOS

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to convert DOS ASCII and other formats into ProDOS format. Is there a disk that will convert DOS 3.3 to ProDOS?

DISCUSSION -----

The current version of System Utilities 3.1 handles the conversion from DOS 3.3 to ProDOS automatically during a copy. This disk was included with the Apple IIe and IIc Plus.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7529



# Tech Info Library

## Macintosh: When DAs Can't Be Accessed

Revised: 8/9/91  
Security: Everyone

Macintosh: When DAs Can't Be Accessed

=====

Article Created: 12 April 1991  
Article Last Reviewed: 1 June 1992  
Article Last Updated: 1 June 1992

TOPIC -----

I have a Macintosh II using System 6 that cannot run desk accessories or even access the control panels with MultiFinder running. The machine beeps once if you try to select General or other items.

DISCUSSION -----

Under System 6, this condition is usually caused by the omission of the DA Handler file from the System Folder. Sometimes the file is there, but it is corrupted. Try replacing it by reinstalling System software.

If this situation happens while under System 7, try restarting the Mac and hold down the Shift key as it starts back up. This will keep any extensions from loading that may be conflicting with the actions you are taking. If this doesn't work, consider reinstalling the system software.

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Tech Info Library Article Number:7531



# Tech Info Library

## Macintosh System Errors: Possible Sources

Revised: 7/2/92  
Security: Everyone

Macintosh System Errors: Possible Sources

=====

Article Created: 15 April 1991  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

I just installed a new hard disk in my Macintosh II and am getting all sorts of system errors. The dealer who installed the hard drive insists that the problems are not hardware-based. The only software that I have been able to install is System 6.0.5.

Trying to install anything else generates system errors. (Sometimes just starting the computer and opening the System Folder generates errors.) I get errors ID =10, ID =28, ID =03, and ID =01, not to mention a "line 1111 trap error."

DISCUSSION -----

Most system errors sound like gibberish to most of us, but if you were writing a new program for the Macintosh, the error number would tell you that you have a problem with your code. But, when you are running a compiled program and get this error, all it tells you is that the software crashed. Some errors, like 25, are "out of memory." This one does make sense. In your case, check through these possible problems:

- 1) This is a third-party drive that was formatted with HD Setup. You have to use a utility from the third-party manufacturer to format a third-party drive. Apple's utility is only for Apple's hard drives.
- 2) The hard drive is defective.
- 3) Some other file within the System Folder is causing the crashes: a screen dimmer, startup sound, electronic mail, or something similar.
- 4) The computer could have a memory problem in RAM or the logic board.

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Tech Info Library Article Number:7532





# Tech Info Library

## MacDFT, PF10 Function, and 32798 Error

Revised: 4/2/92  
Security: Everyone

MacDFT, PF10 Function, and 32798 Error

=====  
Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am running MacDFT on my Macintosh IICx, with System 6.0.5. I am accessing PROFS from our mainframe. When I ran version 1.0 of MacDFT I was okay, but as soon as I upgraded to version 1.1, I began experiencing problems when I used the PF10 function. The system hangs and reports a 32798 error and that communication with the host has been lost. I did try switching settings within the program, but to no avail. We are using a coax connection.

DISCUSSION -----

A 32798 error is a TIMEOUT\_ERR, or "request timed out" and suggests a problem between the terminal and controller. We have seen similar problems when a non-IBM controller is used (Apple only supports IBM 3x74 controllers). And this type of error is much more prevalent when one is using DFT mode as compared to CUT.

MacDFT 1.0 only supported CUT mode, and MacDFT 1.1 supports either. You may be able to use MacDFT 1.1 in CUT mode to work around this problem. However, you may encounter other incompatibilities if you are not using IBM controllers.

A PF10 from the PROFS main menu is an add-on automatic reminder. This worked flawlessly for us during our testing with MacDFT 1.1.

Another possible problem area is the type of cable used. When coaxial devices are designed, we usually assume RG62/AU, but often unshielded and less-expensive cable is substituted, like RG59 or RG58. Either of these latter two cable types could cause problems.

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# Tech Info Library

## AppleTalk: Modem Sharing over Network (8/93)

Revised: 8/26/93  
Security: Everyone

AppleTalk: Modem Sharing over Network (8/93)

=====  
Article Created: 15 April 1991  
Article Reviewed/Updated: 25 August 1993

TOPIC -----

I am looking for software that allows modem sharing over an AppleTalk network.

DISCUSSION -----

Here are two possibilities:

The three-port C-Server from Solana Electronics lets multiple users on an AppleTalk network share up to three serial peripherals. These devices may be modems, OCR readers, plotters, mainframes, printers, typesetters, protocol converters, or any combination of RS-232 connections.

SilverServer Software from La Cie, Ltd. allows the sharing of Hayes-compatible modems and hard disks over a LocalTalk network or telephone line. The maximums are 32 users and 224 drives per network. You also get DiskDup+ and SilverLining utility software.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Editor's Note 22 June 1992: Solana has discontinued business to our knowledge, so we are unable to refer you to them directly for further information.

Article Change History:  
25 August 1993 - Removed reference to InfoSphere product called Comserve.

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Tech Info Library Article Number:7534



# Tech Info Library

## Apple II AppleShare Network: Troubleshooting Freeze-Ups

Revised: 8/9/91  
Security: Everyone

Apple II AppleShare Network: Troubleshooting Freeze-Ups

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have three AppleShare networks. One has all new Apple IIGS computers, and the other two are mixed with Apple IIe systems, plus both old and new Apple IIGS computers. They all come up fine but, two or three hours later they freeze. When we restart the computers most (not always the same ones) freeze at the IIGS loading gauge. This happens only on the new IIGS models.

I have about thirty Apple networks installed. On some of them, new Apple IIGS computers froze from the beginning. Replacing their logic boards seems to fix the problem. However, on the last one, the problem just moved to another, previously "clean" computer.

DISCUSSION-----

First, check for bad RAM, the most common cause of a system locking up during startup. This would explain why swapping logic boards cured the one case.

Second, check for bad software on server. In this case, this diagnosis is more likely, because the condition is appearing on more and more systems. Try re-installing the server, making sure you use the Network Products Installer disk. Re-install the following:

- 1) System 6.0.5
- 2) AppleShare 2.0.1
- 3) AppleShare Apple II Setup 2.1.1
- 4) GS/OS 5.02

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7535



# Tech Info Library

## Telnet Access: Using the Apple Communications Toolbox (9/95)

Revised: 9/18/95  
Security: Everyone

Telnet Access: Using the Apple Communications Toolbox (9/95)

=====

Article Created: 21 April 1991  
Article Reviewed/Updated: 18 September 1995

TOPIC -----

The MacTerminal manual hints that you can use MacTerminal in a TCP/IP environment. How? Can I use MacTCP with MacTerminal, or do I need something else to work with the Apple Communications Toolbox?

DISCUSSION -----

There are several products that provide telnet access for programs that access the Communication ToolBox. Some are Sysnet Corporation's TCPack, InterCon's Telnet Driver/Tool, and Synergy Software's VersaTerm Pro.

To locate a vendor's address and phone number, use the vendor name as a search string.

Article Change History:  
18 Sep 1995 - Corrected vendor information.  
21 Nov 1994 - Added VersaTerm Pro to the list of software available.

Support Information Services

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Tech Info Library Article Number:7538



# Tech Info Library

## LaserWriter IINT/IINTX: Symptoms of Badly Mounted Power Supply

Revised: 8/8/91  
Security: Everyone

LaserWriter IINT/IINTX: Symptoms of Badly Mounted Power Supply

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

On power up, the LaserWriter IINT/NTX Ready light blinks, then the Toner light comes on solid. Shortly after this, both the Ready and Toner lights go solid, and the printer fails to generate a user self-test page. Subsequent service self-tests generate only blank pages.

DISCUSSION -----

These symptoms appear when the high-voltage power supply is incorrectly mounted with connector pins (to the DC Controller) completely missing their places. This only happens during a repair, when the high-voltage power supply is replaced.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7539



# Tech Info Library

## Macintosh 400K Drive: Won't Work on a Apple IIGS

Revised: 8/9/91  
Security: Everyone

Macintosh 400K Drive: Won't Work on a Apple IIGS

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Can we use a Macintosh 400K drive on an Apple IIGS?

DISCUSSION -----

No. The Macintosh 400K drive is designed to be used only on the Macintosh 128K, 512K, 512Ke, and Plus.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7540





# Tech Info Library

## Macintosh Nubus Cards: Effect on Power Supply

Revised: 7/2/92  
Security: Everyone

Macintosh Nubus Cards: Effect on Power Supply

=====

Article Created: 15 April 1991  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

Is there a problem with putting three or more NuBus cards in a Macintosh II family system?

DISCUSSION -----

Not inherently, but the more cards you install, the greater the drain on the power supply. If the power supply was bad, it might not show up until it was under this increased load. Some card makers don't follow Apple specifications about power draw per card. Out-of-spec cards can strain the power supply.

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Tech Info Library Article Number:7541



# Tech Info Library

## 32-Bit QuickDraw and Print Monitor Problem

Revised: 8/9/91  
Security: Everyone

32-Bit QuickDraw and Print Monitor Problem

=====

Article Created: 28 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IIfx with 8MB of RAM, an 80MB hard disk, and a 24-bit video board. I am running System 6.0.4 with MultiFinder and 32-bit QuickDraw active. I am trying to print using the background printing option. When I try to print a 24-bit image, the program quits with a MultiFinder 01 error (a bus error, I believe), but not until it has already fed the print job to the print monitor. I have noticed this from Pixel Paint Professional, Microsoft Word 4.0, and other programs.

I have completely trashed my System Folder twice to no avail. However, if I disable background printing, it works fine (no MultiFinder 01 bombs). The only thing that does not seem to work properly is the memory allocation to the print monitor. No matter what I set it to, it seems to take the "recommended" amount of memory, rather than the allocated amount.

Do I have a bad copy of the System disks? Would you update to System 6.0.5 solve the problem? Do I need LaserWriter 6.0.1 to print 24-bit images to the NTX (or should 6.0 work?)

DISCUSSION -----

We recommend upgrading to 6.0.1 LaserWriter and Laser Prep, so that you are using the most current drivers. You should also have Color/Greyscale selected in the Print dialog box.

There is a possibility that you are running the Installer (we hope you are using the Installer) from damaged diskettes. If you have a known-good locked set, throw away your System Folder and use these good disks to reinstall by running the Installer.

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Tech Info Library Article Number:7542



# Tech Info Library

## AppleShare Server: Performance and RAM

Revised: 8/9/91  
Security: Everyone

AppleShare Server: Performance and RAM

=====

Article Created: 28 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Would the performance of a Macintosh SE/30 server improve with more RAM installed?

DISCUSSION -----

Additional memory in the server would provide only a small increase in performance, probably less than the relative cost of the memory. In the server. Memory only allows more simultaneous users with little effect on performance.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7543



# Tech Info Library

## AppleShare: Compatibility with DOS 5.0

Revised: 8/9/91  
Security: Everyone

AppleShare: Compatibility with DOS 5.0

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Which version of AppleShare software works with DOS 5.0?

DISCUSSION -----

The current version of AppleShare file server software is 2.01, which is compatible with DOS 5.0.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7546



# Tech Info Library

## Macintosh to VAX Connectivity and Fatal Error 1020

Revised: 2/8/93  
Security: Everyone

Macintosh to VAX Connectivity and Fatal Error 1020

=====

Article Created: 29 March 1991

### Article Change History

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02/08/93 - RETITLED

- To accurately describe the article.

### TOPIC -----

I am having problems with my Macintosh Plus (System version 6.0.4) communicating with our VAX system. We are using PacerLink 5.3 for VAX access via AppleTalk (Fastpath access onto fiber-optic Ethernet backbone). My Macintosh occasionally freezes, forcing me to turn it off to reboot. Today, I got a dialog box that told me I had a Fatal Error #1020. According to the (somewhat sketchy) information I have, that should indicate an AppleTalk problem.

What specifically does that error indicate, and where should we concentrate our search for the source of the problem?

### DISCUSSION -----

If there are other users in your general area, follow these diagnostic steps:

- 1) Start by taking the Macintosh over to one of those network connections and see if the same problem occurs. If it does not occur there, verify the connection at the original location. If so then continue with the next suggestions.
- 2) Check out the software at the Macintosh end. If possible, try another user's software (or hard disk with the software on it), so you can identify whether or not you have a software problem.

If other users are not experiencing the same problem, the network is not at fault. Our guess is that it's a software problem at your machine either in Pacer (likely) or in the System software (doubtful).

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Tech Info Library Article Number:7547



# Tech Info Library

## AppleTalk: How to Upgrade to Phase 2 to Use PATHWORKS

Revised: 8/9/91  
Security: Everyone

AppleTalk: How to Upgrade to Phase 2 to Use PATHWORKS

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We need to upgrade our AppleTalk network to Phase 2 to use PATHWORKS. Our network consists of six zones, five are separated by Shiva NetBridges, while the other is separated by Cayman GatorBoxes. From what I've read, it looks like all I need to do is set the GatorBoxes to AppleTalk rout using Phase 2 instead of Phase 1 for us to be "upgraded." This sounds a bit too easy.

What else do I need to do? Currently, the only other devices we have are Macintosh computers, LaserWriter printers, some NetSerials and NetModems, and a Netway.

DISCUSSION -----

Easy is what Macintosh is all about! Phase 2 has to be implemented on routing devices, so the GatorBox and the Shiva NetBridges also need upgrading. Check with Shiva on their plans or procedure for upgrading the NetBridge to Phase 2. That is basically all there is to it; the computers on the network have no requirement for an upgrade to Phase 2.

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Tech Info Library Article Number:7548





# Tech Info Library

## LaserWriter: How to Upgrade Drivers on an AppleTalk Network

Revised: 8/9/91  
Security: Everyone

LaserWriter: How to Upgrade Drivers on an AppleTalk Network

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

All LaserWriter drivers must be exactly the same on an AppleTalk network in order to prevent printer reinitialization every time someone prints. On the other hand, you can use any version printer driver with any version of System 6.x.x software. So if five people were running SEs with System 6.0.4 and LaserWriter driver 6.0, and a sixth machine running under System 6.0.5 (a IIfx, for example), the sixth machine could still run LaserWriter driver 6.0. (It's less hassle to make one adjustment than five.) Right?

Is there an enhanced functionality to LaserWriter driver 6.0.1, so that to get the absolutely best results, it would be best to upgrade the 6.0.4 SEs over to LaserWriter driver 6.0.1?

DISCUSSION -----

Yes. You are correct in your first paragraph above, and if there is a new LaserWriter/Laser Prep file introduced you should be able to upgrade to that driver with no other system upgrade, unless it was so specified.

There was an upgraded Print Monitor with the 6.x drivers. Version 1.3 was distributed with the System 6.0.5 suite of diskettes while version 1.2 was distributed with the System 6.0.4 suite of diskettes. The 1.3 version would probably contain the enhancements necessary for use with any of the current printer drivers.

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Tech Info Library Article Number:7549



# Tech Info Library

## Data General: Terminal Line Dropped for Macintosh

Revised: 8/9/91  
Security: Everyone

Data General: Terminal Line Dropped for Macintosh

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IIci with a 40MB internal CMS drive with 4MB RAM. It replaces a Data General terminal. It's connected to our terminal line (DB-25 male) using a female-to-female gender changer and an Apple IIe/ImageWriter II cable (third-party) connected through the modem port.

Thus, I use my Macintosh part-time to communicate with a Data General (Versaterm does the DG emulation). Communication works flawlessly, and everything else is fine until I shut down the Macintosh at the end of the day. When I turn on the Macintosh in the morning, the DG has disconnected the line. I have to contact our systems people and have the line reconnected. Apparently the DG is polling the lines at night and something is timing out and disconnecting them.

I disconnected the cable from the back of the Macintosh at night, and everything works fine when I reconnect it in the morning. Note: People can shut off their terminals at night without the line being disconnected. However, I don't want to unplug the cable from the Macintosh every night.

Is the Macintosh doing something out of the ordinary with the serial ports when the machine is off?

DISCUSSION -----

We suspect the cable may have a pin jumpered in it that may be causing this problem when the mainframe polls the Macintosh in the evening. The possibility is that pins 6 and 8 (jumpered), which should go to 20 on the DG, may be pulled down signal-wise and responding as if the connection is gone. This closes the line for security at the mainframe.

When the cable is disconnected from the Macintosh, those signals are cancelled, because there is not a continuous loop inside the serial port and the mainframe can tell that. When the cable is connected, it goes through the serial port and incorrect cabling may respond as if the connection has dropped.

We suggest you verify that the cable you are using is the correct configuration and not having any extra pins jumpered inside. When the Macintosh is off, nothing happens with the serial port (no power, no activity).

We cannot tell you if there is a way to have the mainframe discontinue the polling overnight. That may be one workaround besides verification of the cable.

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Tech Info Library Article Number:7550



# Tech Info Library

## Responder, Background, & AppleTalk: Purpose in System Folder

Revised: 8/9/91  
Security: Everyone

Responder, Background, & AppleTalk: Purpose in System Folder

=====

Article Created: 22 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am having problems with System 6.0.5 bombing. What are the functions of Responder, Background, and AppleTalk in the System folder? Are they needed? Could they be the cause of my problems?

DISCUSSION -----

- You can remove Responder if you are not using Inter•Poll for network troubleshooting.
- Backgrounder writes temporary files for background printing under MultiFinder. Do not delete this file.
- AppleTalk is a patch to the AppleTalk that is in ROM. It is needed for the efficient use of any network device. Do not remove it.

If you are having bomb problems, we suggest you start up from the System Tools diskette, trash your current System folder, and use the Installer to re-install the System folder.

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Tech Info Library Article Number:7551



# Tech Info Library

## Macintosh IICx: Troubleshooting Startup Freezes (4/94)

Revised: 4/6/94  
Security: Everyone

Macintosh IICx: Troubleshooting Startup Freezes (4/94)

=====

Article Created: 29 March 1991  
Article Reviewed/Updated: 5 April 1994

TOPIC -----

I have an intermittent problem with my Macintosh IICx. It freezes when I start it up.

The system does not have any INITs in the System Folder. I re-installed System software 6.0.5 using the Installer. The system has a Mac286 card and an Irma Link card in it with 5MB of memory. The system board, memory, and power supply have been replaced.

DISCUSSION -----

To troubleshoot this problem follow these steps:

- 1) Remove the Mac286 and the Irma Link cards to isolate the problem to either the cards or the CPU.
- 2) Completely throw away the System Folder.
- 3) Re-install the System Folder from known-good, locked System diskettes.
- 4) If the problem persists, try swapping the keyboard, cable, and mouse.
- 5) Have a service provider run diagnostics to determine if there is a hardware problem.

Article Change History:  
5 April 1994 - Added additional troubleshooting step, Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7552



# Tech Info Library

## Macintosh IIfx: Proper Placement of SCSI Terminators (11/94)

Revised: 11/8/94  
Security: Everyone

Macintosh IIfx: Proper Placement of SCSI Terminators (11/94)

=====

Article Created: 22 March 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

When my Data Frame drive is the only device in the SCSI chain, my Macintosh IIfx starts up, but whenever I have another SCSI device attached, the system won't start. It doesn't matter whether the external SCSI is the drive or the scanner. The SCSI devices are all at different addresses and the external device on the end of the line has termination.

The Data Frame was checked out here on a Macintosh IIci with an external Rodime 140MB SCSI drive. I had no problems with this configuration.

DISCUSSION -----

The only thing we are concerned with is the termination of both the internal drive and the external devices. The IIfx requires the use of the black terminator rather than the standard platinum-colored terminators of other Macintosh computers. This terminator is included with the IIfx in the finished goods box.

We would also verify that the SCSI filter is installed on the internal SCSI bus at the drive. This filter connects between the SCSI ribbon cable and the drive itself and provides some additional termination internal to the IIfx.

Article Change History:  
08 Nov 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:7553



# Tech Info Library

## Aristotle: error occurred in your user folder Message

Revised: 7/1/91  
Security: Everyone

Aristotle: "error occurred in your user folder" Message

=====

Article Created: 4 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an AppleShare network with 20 Apple IIGS workstations. The network has experienced numerous problems this year. Today, while exiting AppleWorks, nine systems locked up and displayed this message:

An error occurred in your user folder: see the administrator

At the same time, five networked ImageWriter II printers locked up. One system in the middle of this line had no problems. When we tried to restart the workstations, some went into BASIC, and some displayed garbage. Now, all systems are totally down.

DISCUSSION -----

Based on the error message, the problem seems to be on the server itself. Go into the users' listing and re-establish the preferences for the users. That may help, and avoid a time-consuming backup and reinstall.

If that does not cure the problem, go back to the most recent backup and restore that data. There may be a corruption within Aristotle itself. If a backup is not available, then recreate the Users and Groups files, and stop short of re-installing Aristotle.

Finally, if the problem still persists, re-install Aristotle and re-create the users and groups.

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Tech Info Library Article Number:7554





# Tech Info Library

## ImageWriter LQ: Printing on Entire Ribbon

Revised: 8/9/91  
Security: Everyone

ImageWriter LQ: Printing on Entire Ribbon

=====

Article Created: 4 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple ImageWriter LQ printer that prints only on the top portion of the black ribbon. According to the manual, the ribbon assembly should shift up and down for an even use of the black ribbon. When the printer is first turned on, the ribbon mechanism shifts down and stays there.

I discovered that when the ribbon is not in the printer, the assembly does shift. When should the shift occur with a black ribbon? What triggers the shift?

DISCUSSION -----

The ImageWriter LQ with the 2.0 driver prints on all four bands of the ribbon on multi-page documents; it should use all bands equally. It moves up through the different bands on each page, so if you print multiple one-page documents, it may stay on the top band. Make sure that you do not turn off the printer between print jobs. This resets the ribbon to the top band.

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Tech Info Library Article Number:7556



# Tech Info Library

## LaserWriter Plus: Double-Blinking Status Light

Revised: 8/9/91  
Security: Everyone

LaserWriter Plus: Double-Blinking Status Light

=====

Article Created: 4 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm having a problem with a LaserWriter Plus (recently upgraded) connected to an IBM. The "Busy" status light sometimes has an uncharacteristic "double blink," as opposed to the normal "single blink" when processing jobs. Also, when PostScript jobs from some applications are completed, the status light does not turn off, but instead starts to "double blink." What does a "double blinking" status light mean?

DISCUSSION -----

The double-blinking light is normal. In certain instances, the yellow light continues to flash, indicating it is processing a job. This is most evident when you do a manual feed and insert the paper before the red jam-light comes on. Also, if an end-of-page command is not sent when printing from an MS-DOS machine, the lights continue to flash.

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Tech Info Library Article Number:7557



# Tech Info Library

## LaserWriter: Shared by Macintosh, Apple IIe, and IBM PC

Revised: 7/1/91  
Security: Everyone

LaserWriter: Shared by Macintosh, Apple IIe, and IBM PC

=====

Article Created: 4 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to connect Macintosh, Apple IIe, and IBM PC, so they can share a LaserWriter IINT. Can this be done? (No file sharing is required.)

DISCUSSION -----

The AppleTalk LaserWriters were designed to be shared.

- Any Macintosh has AppleTalk built in.
- An Apple II needs the Apple II Workstation card and software to enable access to a networked printer.
- An IBM PC needs a LocalTalk PC Card and AppleShare PC to get onto the LocalTalk network to communicate with the LaserWriter.

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Tech Info Library Article Number:7559



# Tech Info Library

## LaserWriter IINT: Problems Printing from WordPerfect

Revised: 8/9/91  
Security: Everyone

LaserWriter IINT: Problems Printing from WordPerfect

Article Created: 4 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an IBM Model 60 server and two Model 70/386 workstations tied together with IBM Token-Ring hardware and cables. Server and workstations run IBM LAN Program 1.03 and LAN support program. WordPerfect 5.1 LAN version runs on the server. The workstations have devices attached to the serial ports. The server is connected to the LaserWriter IINT through a serial cable. The spooler runs on an IBM-LAN program. Our LaserWriter IINT is in standard LaserWriter mode, not Diablo mode.

Printing from WordPerfect (through the parallel port) works unevenly. After printing a while, it quits. I noticed that when I send a simple one-page document to the LaserWriter IINT, the green "working" light blinks for a couple of minutes and then goes out.

WordPerfect support told me to print a file called "ehandler.ps" (provided by WordPerfect) to the printer (from DOS). He said this would print error messages when a PostScript job did not work satisfactorily.

I sent the ehandler.ps file to the printer, and the job printed fine. Afterwards, a sheet printed that said "Error: timeout" and indicated that the command that had failed was "timeout." Although I can print one-page jobs okay, longer jobs don't print properly; they only generate an error sheet.

What do I need to set or change?

DISCUSSION -----

We have three things for you to try:

- 1) Temporarily disable the spooler to see if there is a problem with the communication between it and the printer.
- 2) Verify the correctness of the cable. Here are the correct pinouts for both a DB-9 and DB-25 cable to the LaserWriter II.

| IBM PC/AT |   | LaserWriter |       |
|-----------|---|-------------|-------|
| DB-9      |   | DB-25       |       |
| -----     |   | -----       |       |
| (RXD)     | 2 | 2           | (TXD) |
| (TXD)     | 3 | 3           | (RXD) |
| (DTR)     | 4 | 6           | (DSR) |
| (SG)      | 5 | 7           | (SG)  |
| (DSR)     | 6 | 20          | (DTR) |

|                          |                                      |
|--------------------------|--------------------------------------|
| IBM RS-232 Serial (DTE)  | LaserWriter / LaserWriter Plus (DTE) |
| (DB-25 Female Connector) | (DB-25 Male Connector)               |

|   |       |    |
|---|-------|----|
| 2 | ----- | 3  |
| 3 | ----- | 2  |
| 5 | ----- | 4  |
| 6 | ----- | 20 |
| 7 | ----- | 7  |

- 3) Verify that the LaserWriter's DIP switches are correctly set. They should be: 1 up and 2 down (9600 bps and PostScript).

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Tech Info Library Article Number:7560



# Tech Info Library

## Macintosh II: Upgrade for Apple SuperDrive

Revised: 7/2/92  
Security: Everyone

Macintosh II: Upgrade for Apple SuperDrive

=====

Article Created: 22 March 1991  
Article Last Reviewed: 19 June 1992  
Article Last Updated: 23 August 1991

TOPIC -----

Can a Macintosh II be upgraded to support an Apple SuperDrive (formerly Apple FDHD)?

DISCUSSION -----

As noted in both "Technical Procedures for the Macintosh II" and in the Finished Goods price list, there is an upgrade for the Macintosh II to utilize the SuperDrive.

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Tech Info Library Article Number:7561



# Tech Info Library

## Macintosh: When It Won't Let You Throw Files Away

Revised: 8/9/91  
Security: Everyone

Macintosh: When It Won't Let You Throw Files Away

=====

Article Created: 5 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh Plus running System 6.0.3 and an Apple 20MB hard drive. I want to eliminate old data and old programs, but the system won't let me throw away any programs, data, or folders. The files are not locked, and the hard drive is very slow.

DISCUSSION -----

There are a couple of things we would try.

First, rebuild the hard disk's desktop file by holding down the Command and Option keys while you start up the system. Hold both keys down until the dialog box appears asking you to confirm the desktop rebuild.

If that does not help, boot from a locked System Tools diskette and try to throw away the files, folders, and the System folder. Then, reinstall the System using the Installer. Another solution might be holding the option key down while throwing something into the trash

Once you have a re-installed the System file, do a file-by-file backup of the drive, re-initializing the drive, and then restoring the data and applications.

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Tech Info Library Article Number:7562



# Tech Info Library

## Macintosh Plus ROMs and SIMM Compatibility

Revised: 7/27/92  
Security: Everyone

Macintosh Plus ROMs and SIMM Compatibility

=====

Article Created: 22 March 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

Is it true that Macintosh Plus ROMs won't work with some third-party SIMMs? I bought some 1MB NEC SIMMs and get consistent "sad Macs" when I try to start the Macintosh Plus with them installed.

DISCUSSION -----

We don't know of any reason to upgrade ROMs for SIMM compatibility, nor of any incompatibility with the mentioned SIMMs and the Macintosh Plus. If the Macintosh bombs only with those SIMMs installed, try them in another Macintosh model to see if it is related to the Plus or if one of the SIMMs is bad.

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Tech Info Library Article Number:7563





# Tech Info Library

## Disk First Aid 7.2: Purpose (8/93)

Revised: 8/31/93  
Security: Everyone

Disk First Aid 7.2: Purpose (8/93)

Article Created: 8 April 1991  
Article Reviewed/Updated: 23 August 1993

TOPIC -----

What is Disk First Aid and what does it do?

DISCUSSION -----

Disk First Aid is a utility which verifies the directory structure of any hierarchical file system (HFS) based storage volume. Many hard disk drives, floppy disk and compact disk (CD) drives are examples of HFS-based storage volumes.

If imperfections are found within a volume, Disk First Aid can be used as a "first step" to repair the defects/ if a volume has suffered several corruption other utility programs or repair methods may need to be used.

Disk First Aid 7.2 (released August 1993) checks for and repairs following volume attributes:

- Disk volume
- Extent B-tree
- Extent File
- Catalog B-tree
- Catalog File
- Catalog Hierarchy
- Volume Info
- Search for locked volume name

You can save the results of a verification or repair scan as a TeachText (text) document.

Disk First Aid cannot scan for deleted or trashed files or folders on a volume. There are several third party products which perform these tasks, however.

For further information on terms used in this article, please search the Tech Info Library for the article: "Macintosh: File System Specifications & Terms (7/93)"

Article Change History:

23 August 1993 - Revised article with Disk First Aid 7.2 information.

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Tech Info Library Article Number:7565



# Tech Info Library

## QuickDraw: Using It with an 8-bit Video Card

Revised: 8/10/91  
Security: Everyone

QuickDraw: Using It with an 8-bit Video Card

Article Created: 8 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When and why should one use 32-bit QuickDraw? I assumed it was only for 24-bit color cards, but the Read Me in the Color folder in the 6.0.5 suite says it can also enhance 8-bit (256-color) situations.

I am using a Macintosh II with the original Macintosh Display Card 4•8, running 4 bits (16 colors), System 6.0.5, 5MB RAM, and Laser Driver/Prep 6.0.1. Would 32-bit QuickDraw help? (I presume if you use 32-bit QuickDraw, you should also use a 6.0.x-series Laser Driver/Prep.)

Do applications have to be specially written to take advantage of 32-bit QuickDraw?

Finally, with regard to the 6.0.x series Laser drivers, is there any safe, easy way to make black and white the default choice?

DISCUSSION -----

In a Macintosh with an 8-bit video card, the only benefit is some dithering changes on 8-bit images. The use of 32-bit QuickDraw doesn't demand 6.0.x Laser drivers. The installation of 32-bit would probably not greatly improve your configuration.

Applications must be "32-bit clean" to take advantage of the capabilities of the newest 24- and 32-bit color boards. You will see applications begin to advertise that they are clean as more boards become available.

There is a modified version of the 6.0.x drivers called 6.0.1z that defaults to black and white. You might try it. For more information on 32-bit QuickDraw, see the article in the Tech Info library, titled "32-Bit

QuickDraw Information".

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Tech Info Library Article Number:7566



# Tech Info Library

## FileMaker II: Network Problems

Revised: 7/24/92  
Security: Everyone

FileMaker II: Network Problems

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Article Created: 22 March 1991  
Article Last Reviewed: 24 July 1992  
Article Last Updated:

TOPIC -----

I am supporting an 11-node AppleShare network (2 Macintosh SEs and 9 Macintosh Plus computers). The software versions are:

- AppleShare II 2.0.1
- Finder 6.1
- System 6.0.3
- FileMaker II 1.1v2

Cabling for this network is PhoneNet wired in a passive star. Total cabling distance is less than 400 feet. All 11 workstations can log in to the file server, print, and use the InBox E-mail system. All workstations have 2.5MB of RAM.

My problem is that although nine workstations can share the same file from FileMaker II concurrently, the other two workstations are denied access to the shared FileMaker II database.

The two "denied" computers share a common cable with one other Macintosh. However, they are at the end of the leg. These are Macintosh Plus computers. I cannot get these machines to share the same database, even if they are the only machines trying to log in. What's the problem?

DISCUSSION -----

You mention they are at the end of the leg of the star: have you tried moving one or both Plus systems to a different connector to see if that's the problem? If the problem continues at another physical location and you can log on to the server, we suggest that the problem lies with FileMaker rather than the Macintosh or the network.

Because you can access the server; and print, copy files, and so on; we assume that basic network integrity is good; and the problem lies with FileMaker itself. It appears that you are exceeding the maximum number of simultaneous users. We would suggest that you contact Claris for a solution, if our suggestions don't alter the performance of these two systems.

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Tech Info Library Article Number:7568



# Tech Info Library

## Apple IIGS Network: Looking for AFP filesystems Message

Revised: 8/12/91  
Security: Everyone

Apple IIGS Network: "Looking for AFP filesystems" Message

=====

Article Created: 8 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a problem concerning a Macintosh file server and Apple IIGS lab. I installed the AppleShare File Server software and Aristotle on a Macintosh SE. Ideal Learning installed their Podium software. The installation was successful and the lab operated for two months without a problem.

During the summer, the lab was moved to another room and reconnected. After a few days, problems developed. When the Apple IIGS computers were turned on, we got the normal routine (the dots going across the top of the screen), and then, when the message "Looking for AFP filesystems" came on, the IIGS screen showed what appeared to be hex characters, and it locked up. The IIGS had to be restarted.

The file server appeared to be working without problems. I then re-installed the AppleShare File server software, and the same thing happened. Next, I re-installed the Macintosh OS, updating to System 6.0.5. The same thing happened again. I reformatted the hard disk and restored from a backup. The system worked for about a week, when the same problems developed.

There are five other labs in the school system with the identical set-up, and they are all operating without any problems.

DISCUSSION -----

We would check the server and make sure that GS/OS has been properly installed--with the Installer--and that all the necessary files are there. After you verify that, take a look at each Apple IIGS computer.

If the problems show up on all systems in this network, take one of them to

another network and see if it starts properly there. Also, check to see what is happening before the network fails. Maybe a student is trashing some crucial files within the server folder or within the GS/OS system folder on the server.

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Tech Info Library Article Number:7569





# Tech Info Library

## Macintosh: Correcting Garbled System Numerals

Revised: 5/15/92  
Security: Everyone

Macintosh: Correcting Garbled System Numerals

=====

Article Created: 8 April 1991  
Article Last Reviewed: 15 May 1992  
Article Last Updated: 15 May 1992

TOPIC -----

All the numbers in my Control Panel, on SuperClock, in the Get Info box, in About the Finder, or any other system-related window are messed up. For example, in About the Finder (About This Macintosh in System 7), you might see "Largest unused Block: 1,?22K" instead of "Largest unused Block: 1,722K", or "Total Memory: 3,89>K" instead of "Total Memory: 3,898K" My SuperClock says "6:2 PM" instead of "6:20PM."

Occasionally, a number is represented by a character. However, when I type numbers into applications like Word or Excel, the numbers are always represented correctly.

DISCUSSION -----

There are two possible solutions worth trying. First, try resetting the parameter RAM (PRAM). PRAM could be causing some of the numbers to be misrepresented. (Search for "PRAM" in this database for how to reset PRAM. The procedure is different for System 7.x than for System 6.x.)

If the problem persists, throw away the System Folder in use and reinstall from known-good, locked, original System diskettes.

Finally, if none of these works, have the logic board checked. It may need to be replaced.

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Tech Info Library Article Number:7572



# Tech Info Library

## Apple II: Function of Start 13

Revised: 8/12/91  
Security: Everyone

Apple II: Function of Start 13

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Article Created: 8 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIc Plus with a 5.25-inch drive. Do I need a file called Start 13 on my system for the drive to work properly?

DISCUSSION -----

The file Start 13 was used early on when the Apple II went to a 16-sector disk format. Start 13 made it possible for older, 13-sector diskettes to be read. You don't need it for the Apple IIc to work with current diskettes.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7573



# Tech Info Library

## Macintosh SE: System Software 6.0.5 vs 6.0.2

Revised: 8/7/92  
Security: Everyone

Macintosh SE: System Software 6.0.5 vs 6.0.2

=====

Article Created: 8 April 1991  
Article Last Reviewed: 6 August 1992  
Article Last Updated:

TOPIC -----

I have 50 Macintosh SEs on an AppleShare network. The SEs shipped with System 6.0.5 software. As far as I can tell, this version of the system software does nothing for the SEs and only consumes more memory than System 6.0.2. Could I install 6.0.2 on them instead?

DISCUSSION -----

You are basically correct; there is little advantage for those machines to run System 6.0.5. If you wish to use 6.0.2, go ahead.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7575



# Tech Info Library

## Macintosh: SLIP, TCP, and PPP

Revised: 8/12/91  
Security: Everyone

Macintosh: SLIP, TCP, and PPP

=====  
Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I use DAL and want to connect remotely from a Macintosh IIfx to a Sun workstation. I also want to have terminal emulation and file transfer. Do you know of a TCP/SLIP product that does this?

DISCUSSION -----

SLIP is an asynchronous serial line protocol developed for running TCP/IP over serial communications lines in a point-to-point configuration. SLIP was developed to transmit IP packets over low-speed, sometimes noisy, asynchronous communications lines where error recovery and an efficient line protocol is needed. A new, serial, line protocol named "PPP" is replacing SLIP. PPP uses an even more efficient means of establishing a point-to-point IP connection.

MacTCP 1.0.2 has hooks for different third-party link-layer modules. This helps the development of interfaces to SLIP, PPP, and any other link layer, like broadband, X.25, FDDI, and so on. Apple does not provide support in MacTCP for SLIP or any other serial line protocol. These have to come from third-party developers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7577



# Tech Info Library

## LaserWriter IINTX: ROM Upgrade and Font Rendering

Revised: 7/1/91  
Security: Everyone

LaserWriter IINTX: ROM Upgrade and Font Rendering

=====

Article Created: 25 March 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated: 8 June 1992

TOPIC -----

Does the new version of PostScript on version 3.0 of the ROMs on the LaserWriter IINTX speed up Font rendering as does the new PostScript in the Personal LaserWriter IINT?

DISCUSSION -----

The new version of PostScript for the LaserWriter IINTX does not improve font rendering in most operational modes. The major differences between the 3.0 and older ROMs are:

- Software switching from LaserJet emulation to PostScript
- Font cleanup in LaserJet emulation
- Better disk management routines
- PostScript 51.8.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7578



# Tech Info Library

## LaserWriter IINT: No Plans for a ROM Upgrade

Revised: 8/12/91  
Security: Everyone

LaserWriter IINT: No Plans for a ROM Upgrade

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Is Apple going to give the LaserWriter IINT new ROMs, so that users can have PostScript 51.8 like in the LaserWriter IINTX? Also, does the new LaserWriter IINTX ROM upgrade work in a LaserWriter IINT?

DISCUSSION -----

No, there is no upgrade planned for the LaserWriter IINT ROMs, nor will the LaserWriter IINTX ROMs work in the LaserWriter IINT.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7579



# Tech Info Library

## Hard Disk 20SC: Can't Be Startup Device for Unenhanced Apple IIe

Revised: 8/12/91  
Security: Everyone

Hard Disk 20SC: Can't Be Startup Device for Unenhanced Apple IIe

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The Hard Disk 20SC connected to my Apple IIe is not booting. However, when I boot ProDOS 1.1.1 from the floppy drive, the system recognizes the data on the Hard Disk 20SC. The ProDOS disk shows the "slot configuration" as slot 7 being used. The drive shows that the BASIC.SYSTEM and PRODOS files are there. Is there supposed to be another file?

DISCUSSION -----

In general, a bootable ProDOS volume needs only the PRODOS and BASIC.SYSTEM files. You can substitute a different file for BASIC.SYSTEM as long as the substitute's name ends with .SYSTEM and has a filetype of SYS. If you have only these two files, you boot to BASIC.

The most likely cause is that your Apple IIe is unenhanced. Only the enhanced Apple IIe recognizes the SCSI interface card during startup. An unenhanced Apple IIe can't start up from the device, but you can use it after starting up from some other device.

If this is the problem, get an Apple IIe Enhancement Kit (Finished Goods part number A2M2052, SRP).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7582



# Tech Info Library

## Macintosh System 7.01: Compatible with Plus and Later

Revised: 7/27/92  
Security: Everyone

Macintosh System 7.01: Compatible with Plus and Later

=====

Article Created: 18 April 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated: 27 July 1992

TOPIC -----

We want to standardize systems from the Macintosh Plus computers on up.  
Does version 7.0.1 work okay on all models?

DISCUSSION -----

Yes. System 7.0.1 is good for any Macintosh from the Macintosh Plus on up. You should have no problems upgrading existing installations to this version. Apple also recommends that you install the System 7 TuneUp 1.1.1.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7584





# Tech Info Library

## Macintosh Display Card 8•24 GC: HyperCard 1.2.5 Compatibility

Revised: 7/2/92  
Security: Everyone

Macintosh Display Card 8•24 GC: HyperCard 1.2.5 Compatibility

=====

Article Created: 21 April 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

I just got a new Macintosh Display Card 8•24 GC for my Macintosh IIfx (running System 6.0.5). I am running into a problem when trying to run HyperCard 1.2.5. If the accelerator is disabled, everything is fine. However, with the accelerator on, the outlined hand in HyperCard turns black and the system does not react when I press buttons. Only browsing is affected. When a button tool (or other tool) is selected, it seems to work okay.

I need to use a custom HyperCard 1.2.5 stack off and on during the day. Right now, I must restart the computer to disable the card to use HyperCard.

DISCUSSION -----

An unadorned HyperCard 1.2.5 stack should work fine. Your stack may have an XCMD or XFCN that is interfering with the altered QuickDraw command set that the Macintosh Display Card 8•24 GC uses. As externals are processed by HyperCard when a stack opens, any incompatibility (not bugs, though) shows up.

We recommend that users of the Macintosh Display Card 8•24 GC upgrade to HyperCard 2.0, mainly for the sake of performance. HyperCard 2.0 uses true QuickDraw commands, which the Display Card 8•24 GC accelerates. (Earlier versions of HyperCard bypassed QuickDraw entirely.) Older stacks should work, but performance will not improve.

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Tech Info Library Article Number:7585



# Tech Info Library

## A/UX: Macintosh IIfx Requires A/UX 2.0 or Later

Revised: 9/24/92  
Security: Everyone

A/UX: Macintosh IIfx Requires A/UX 2.0 or Later

Article Created: 19 April 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I bought an Apple HD 80SC drive with A/UX 1.1 installed. When I connected the drive to a Macintosh IIfx (with the special IIfx terminator), I couldn't launch A/UX. However, other folders on the drive open fine. With A/UX, I get error messages:

```
SCSI RESET
DISC C1D0S0:SCSI TIMEOUT
GENERIC DISC C1D0S0 FATAL ERROR:LOGICAL BLOCK 0,
    PHYSICAL BLOCK 1869875042
CHROOT FAILED
SASH#
```

### DISCUSSION -----

To run A/UX on the Macintosh IIfx, you must have A/UX 2.0 or any later version. Version 1.1 gave you this particular error message, because it doesn't know how to use the IIfx DMA SCSI scheme. If you want to use A/UX on a IIfx, you must upgrade.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7586



# Tech Info Library

## Apple II High-Speed SCSI Card: SCSI Reset Line (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II High-Speed SCSI Card: SCSI Reset Line (11/96)

=====

Article Created: 19 March 1991  
Article Reviewed/Updated: 15 November 1996

TOPIC -----

Does the new Apple II High-Speed SCSI Card use the SCSI Reset line as the older Rev C card? I have a series of hard drives that have the reset line is cut in the cable and need to know if they will function with the high-speed card, or will the cable have to be replaced.

DISCUSSION -----

The Apple II High-Speed SCSI Card pin assignments are identical to the older Apple II SCSI Interface card.

The newer card still uses the SCSI Reset Line. You may need to use a special cable or, in the case of some third-party hard drives, make the appropriate DIP switch selections.

Article Change History:  
15 November 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7588



# Tech Info Library

## PrintServer: Length Limit on Device/Zone Names

Revised: 7/1/91  
Security: Everyone

PrintServer: Length Limit on Device/Zone Names

=====

Article Created: 22 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh II is in a zone (Advertising/Professional Computers Zone) that is separated from the rest of our network by a bridge. The PrintServer captures the printer with no problems. I can see the PrintServer listed in the Chooser, and I can select the PrintServer, but when I try to print, it says "LaserWriter «PrintServer» could not be found..."

DISCUSSION -----

Your zone name may be your problem.

The Chooser supports a maximum of 31 characters for a device or zone name, and your name is 34 characters. When the additional device names are appended to the data packet to make a complete address string, the string gets truncated by a lower-level AppleTalk routine. At that point, the name string doesn't match the actual address, and a search for that device fails.

Shorten the zone name to something under 30 characters. Also check device names to verify that they, too, are under 30 characters.

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Tech Info Library Article Number:7589



# Tech Info Library

## Personal LaserWriter NT: Using with Amiga 2500

Revised: 8/13/91  
Security: Everyone

Personal LaserWriter NT: Using with Amiga 2500

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there drivers for the Amiga 2500 that let it communicate with the  
Personal LaserWriter NT via the computer's RS-232 port?

DISCUSSION -----

As of October 1990, our databases show nothing about printing PostScript  
from an Amiga. Depending on your application software (or interfacing  
drivers), you have two choices:

- Connect serially to the LaserWriter and use its built-in PostScript.
- Set the LaserWriter to Diablo 630 emulation and print to it as if the  
LaserWriter were a "dumb" printer.

The Diablo 630 mode is a no-frills, daisy-wheel emulation, so if you have  
an application that doesn't mind if you strip out control codes, you'll  
be in business. The LaserWriter Owner's Guide has much more on this  
type of connection and interface capabilities.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7590



# Tech Info Library

## AppleCD SC: Fan Deleted in 1990

Revised: 8/13/91  
Security: Everyone

AppleCD SC: Fan Deleted in 1990

=====

Article Created: 26 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The outside of the box of my new AppleCD SC says: APPLE CD ROM/NO FAN. When did Apple stop including the fan? Why?

DISCUSSION -----

Apple stopped including the fan in the AppleCD SC in early 1990. We had found that the fan was drawing an excess amount of dust and other airborne particles into the CD mechanism and depositing them on the optical read head. The fan turned out to be unnecessary, so it was removed completely.

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Tech Info Library Article Number:7591



# Tech Info Library

## AppleShare 2.0: Partitioning, Zones, and Restricted Log-In

Revised: 8/13/91  
Security: Everyone

AppleShare 2.0: Partitioning, Zones, and Restricted Log-In

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I would like to restrict the total available space of a zone to that preset by a partition. Does AppleShare 2.0 let the hardware partitioning of the server hard drive correspond to the zones of the network?

Also, could I have multiple hard drives and assign each to a particular zone? Can LaserWriters be assigned and restricted to a zone?

DISCUSSION -----

AppleShare File Server recognizes hard-drive partitions, depending on how well-written the partitioning software is. There are probably some partitioning utilities that are not compatible with AppleShare. Contact the utility's vendor to make sure it works.

In the larger picture, you can't specify login privileges based on zone, but you can do the same thing by setting the privileges based on user ID. The login list is specified by volume, so you can give each volume a list of "good" users and by telling it to disallow "guest" log-ins. This will, in effect, do what you need.

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Tech Info Library Article Number:7592



# Tech Info Library

## AppleShare Print Spooler: No Demand-Based Routing

Revised: 7/1/91  
Security: Everyone

AppleShare Print Spooler: No Demand-Based Routing

=====

Article Created: 21 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIGS lab that is configured with several teacher accounts, but without individual student accounts. During a particular session all the students log on with the same username, and are therefore attached to the same printer. Can the AppleShare print spooler be configured to capture input from all the GS computers and spool it to two or more ImageWriters?

DISCUSSION -----

As of October, 1990, there was no spooler that could intelligently divert output to different printers, based on the number of jobs in each queue for each printer (nor even simply divide all output in half and send each half to a different printer). Our databases don't show a product that can do this, nor can the AppleShare Print Server do it. All of the products listed have a one-to-one spooling capability, and the user has to change the spooled device manually.

Depending on your software and user configuration, you may want to try splitting the users into two groups. Instead of having everyone log on with the same username, make two usernames and have each print to a different printer. You can put each username into a single group and set the access privileges at the group level to keep everything the same.

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Tech Info Library Article Number:7593





# Tech Info Library

## AppleShare: Troubleshooting PrintShare Problems

Revised: 8/13/91  
Security: Everyone

AppleShare: Troubleshooting PrintShare Problems

=====

Article Created: 22 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We have set up an AppleShare network with PrintShare running. We have had frequent system bombs on the server. Although we made some changes, and things seem to go well for a while, system bombs recur.

In addition, we get lots of error sheets from PrintShare. Many of them have to do with "stack underflow". This situation occurs frequently on another AppleShare network, but without the crashes.

Our server is a Macintosh SE/30 with 4MB of RAM and an external 80MB hard disk running System 6.0.5, AppleShare 2.0.1, and PrintShare 2.0. We partitioned the disks with SilverLining Software (for a password-protected partition).

Our network includes three volumes on the server. The network contains about 15 workstations, three older LaserWriters (captured by the PrintServer), and three ImageWriters.

All workstations are Macintosh Plus computers. They run System 6.0.5, Laser drivers v. 5.0, the Virex INIT for virus checks, and no unusual INITs, DAs, or cDEVs.

DISCUSSION -----

Three things come to mind. First, make sure that the LaserWriter driver used by everyone (including the server itself) is at least version 5.2. Versions 5.0 and 5.1 have some known bugs which could contribute to the problems.

Second, make sure that NO extra INITs or cDEVs are running on the server.

Given the way AppleShare works, these extra INITs can cause a performance decrease and occasional system bombs. AppleShare is too time-sensitive to tolerate much interruption.

Third, everything could come down to a defective SCSI driver written to the hard drive. Make sure that you use the very latest version of SilverLining and reformat the drive. Make sure that backups are file-by-file rather than partition-by-partition, as any slight mistake in partition size may cause lots of problems during the restore operation. After formatting, re-install the File and Print Servers from diskette, rather than from the backup.

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Tech Info Library Article Number:7594



# Tech Info Library

## Apple Modem 1200: Adaptor Cable for Macintosh Classic

Revised: 7/2/92  
Security: Everyone

Apple Modem 1200: Adaptor Cable for Macintosh Classic

=====

Article Created: 22 April 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

The Apple Modem 1200 cable has DB-9 connectors on both ends. How can I connect the Apple Modem 1200 to the Macintosh Classic?

DISCUSSION -----

There is a male Mini-DIN-8 to female DB-9 cable adapter cable. Attach the adaptor to the Classic and the original cable to the adaptor. The cable's service part number is 699-0430.

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Tech Info Library Article Number:7596



# Tech Info Library

## Macintosh Portable: Fax Modems

Revised: 7/2/92  
Security: Everyone

Macintosh Portable: Fax Modems

=====

Article Created: 21 April 1991  
Article Last Reviewed: 19 June 1992  
Article Last Updated:

TOPIC -----

Can the Macintosh Portable handle a fax device? If so, what equipment is required?

DISCUSSION -----

The Macintosh Portable supports any external fax modem that works with the Macintosh family. You might check the Tech Info Library or the Redgate Buyer's Guide Library on AppleLink for a list of vendors. Search under key words such as "fax" and "modem".

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Tech Info Library Article Number:7597



# Tech Info Library

## Chooser: How Device Lists Are Sorted

Revised: 8/13/91  
Security: Everyone

Chooser: How Device Lists Are Sorted

=====

Article Created: 26 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What determines the order that items appear in the Chooser's scrolling fields?

DISCUSSION -----

The Chooser broadcasts a signal to the entire network (or zone, if applicable) requesting that all devices of DEVICETYPE respond with their network information. The order in which those devices respond determines their order in the selection list. (A lightly-loaded network almost always returns the devices in the same order, because the devices aren't too busy to respond to the Chooser immediately.)

The order in which zone names are listed depends on the router you're using. Because this information is usual not dynamically compiled, most routers sort the list alphabetically for readability.

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Tech Info Library Article Number:7598



# Tech Info Library

## A/UX and Macintosh Display Card 8•24 GC (4/94)

Revised: 4/1/94  
Security: Everyone

A/UX and Macintosh Display Card 8•24 GC (4/94)

Article Created: 26 March 1991  
Article Reviewed/Updated: 1 April 1994

TOPIC -----

What versions of A/UX support the Macintosh Display Card 8•24 GC?

DISCUSSION -----

The Macintosh Display Card 8•24 GC works with A/UX 2.0 through the current release as of this writing. However, acceleration cannot be enabled on the card, it will behave as an 8•24 card.

The QuickDraw acceleration features of the Macintosh Display Card 8•24 GC may or may not be supported in future releases of A/UX. Therefore, customers should not be expecting A/UX to support the card fully in the future.

### Article Change History

-----  
1 April 1994 - Reviewed for technical accuracy, updated formatting.  
27 January 1993 - Reviewed for technical accuracy.

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Tech Info Library Article Number:7599



# Tech Info Library

## Mouse Paint for the Apple IIf Plus

Revised: 8/14/91  
Security: Everyone

Mouse Paint for the Apple IIf Plus

=====

Article Created: 19 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

Is it possible to copy the Mouse Paint drawing program from a 5.25-inch disk (p/n 680-3005-B) onto a 3.5-inch disk for the Apple IIf Plus. If so, what is the procedure?

DISCUSSION -----

It is possible. First, copy file-by-file everything from the 5.25-inch disk to the 3.5-inch disk. Then, make sure that the name of 3.5-inch disk matches the original 5.25-inch disk.

The program expects to find itself only on disks with that particular name, and it assumes that its files are in exact places. If you don't change the name or move the files, you'll be fine.

You can use the Apple System Utilities diskette, which should come with every Apple 3.5 and 5.25 Drive accessory kit to copy the files. There are a variety of third-party disk utilities available that can also do this. Check the Redgate Buyer's Guide library on AppleLink for possible solutions.

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Tech Info Library Article Number:7600



# Tech Info Library

## Apple Daisy Wheel Printer: Printwheels Still Available

Revised: 8/13/91  
Security: Everyone

Apple Daisy Wheel Printer: Printwheels Still Available

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple Daisy Wheel Printer, and I need a new printwheel--  
preferably Prestige Elite.

DISCUSSION -----

Apple still sells printwheels:

### Apple Finished Goods

| Part Number | Description                         |
|-------------|-------------------------------------|
| A2M0081     | Printwheel, Boldface (6/pack)       |
| A2M0079     | Printwheel, Courier 10 (pack/6)     |
| A2M0080     | Printwheel, Gothic (pack/6)         |
| A2M0078     | Printwheel, Prestige Elite (pack/6) |

To help you help identify compatible printwheels, keep in mind that the  
Apple Daisy Wheel Printer is identical to a Qume Sprint-5.

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Tech Info Library Article Number:7601





# Tech Info Library

## DuoDisk Drive: How to Use It with Apple IIGS

Revised: 8/13/91  
Security: Everyone

DuoDisk Drive: How to Use It with Apple IIGS

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to connect a DuoDisk Drive to an Apple IIGS. How is this done, and how will it affect my 3.5-inch drive and 5.25-inch drives?

DISCUSSION -----

The DuoDisk usually acts like two Apple 5.25-inch drives. There are a couple of compatibility issues, however:

- If you plan to attach the DuoDisk to the SmartPort on the back of the Apple IIGS, and it is going to be the last device in the chain, then you need to make sure the DuoDisk's analog board has a particular modification. If it lacks this modification, you can do it yourself. Details can be found in both "Tech Procedures for the DuoDisk" and the Product Notices section of the "Apple Service Programs" binder.
- If you have a newer IIGS, with rev 03 ROMs and 1MB of RAM installed on the logic board, you CANNOT attach the DuoDisk to the SmartPort at all: you must use a DuoDisk interface card, just as if the IIGS were an Apple IIe instead. You can buy this through Service (part number 661-92131).

If you meet these two considerations, the DuoDisk will not affect your other attached disk drives.

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Tech Info Library Article Number:7602



# Tech Info Library

## Finder: file could not be written and was skipped Message

Revised: 8/13/91  
Security: Everyone

Finder: "file could not be written and was skipped" Message

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When copying a file from one disk to another, I got the message:

    This file could not be written and was skipped

The original file seems to open and work fine.

DISCUSSION -----

Here are two possible reasons for this:

This error indicates that your destination volume has a problem with it. If it is a floppy, reformat it. If it is a hard disk, run a good disk utility against it to discover the problem. Then take appropriate action.

The problem could also lie within the file or application. Examples such as a damaged or copy-protected file or application may also cause this message to occur. Make sure you are using a clean copy. You may want recopy from the original source to make the file is undamaged.

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Tech Info Library Article Number:7603



# Tech Info Library

## Personal LaserWriter NT: 4MB SIMMs

Revised: 8/13/91  
Security: Everyone

Personal LaserWriter NT: 4MB SIMMs

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are the 4MB SIMMs for the Personal LaserWriter NT the same as those in the general market?

DISCUSSION -----

The requirements for the 4MB SIMMs are the same as for standard Macintosh II SIMMs, but they must be rated at 100ns or faster. They must also fit in a significantly smaller space than is allowed by the Macintosh II family. This eliminates 4MB SIMMs made from lots of 1MB DRAM chips.

A number of vendors advertise compatible 4MB SIMMs. Just check the ads in your favorite Macintosh-oriented magazine, or check with an Authorized Apple Dealer.

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Tech Info Library Article Number:7604



# Tech Info Library

## HyperCard: Script for Printing Individual Cards

Revised: 7/1/91  
Security: Everyone

HyperCard: Script for Printing Individual Cards

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have created a stack of 200 cards with HyperCard version 1.2.5. I want to print out cards 1, 5, 10, 15, and 20 without printing the whole stack. What script would do this?

DISCUSSION -----

In a button, put the following script:

```
on mouseUp
  set lockscreen to TRUE
  put the short name of this card into ThisCard
  go to card 1
  doMenu "Print Card"
  go to card 5
  doMenu "Print Card"
  go to card 10
  doMenu "Print Card"
  go to card 15
  doMenu "Print Card"
  go to card 20
  doMenu "Print Card"
  go to card ThisCard
end mouseUp
```

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Tech Info Library Article Number:7608



# Tech Info Library

## Macintosh IICx: Mouse Failure and Memory

Revised: 7/14/92  
Security: Everyone

Macintosh IICx: Mouse Failure and Memory

=====  
Article Created: 19 March 1991  
Article Reviewed Only: 10 July 1992  
Article Last Updated:

TOPIC -----

I have a Macintosh IICx with memory expanded to 8MB (four 80ns and four 120ns chips). When I put the 120ns in bank A and the 80ns in bank B, I got an error chime on startup. I swapped the two banks and was able to use the system. Now, I am finding that when I do memory-intensive operations, my mouse freezes. My debugger points to the memory as the problem.

Is my configuration correct--four 80ns 1MB SIMMs in bank A and four 120ns 1MB SIMMs in bank B? Does the speed of the SIMMs determine which bank they go into? Might I have a flawed SIMM? Is the mouse freezing a symptom of reaching the memory limit (that 8MB may still not be enough for my purposes)?

DISCUSSION -----

You wouldn't normally experience a problem using these SIMMs in the IICx. All of them are at least as fast as the specifications require, and you're not mixing them within a bank (which, technically, is supposed to work, but often does not).

It sounds more like you have a defective SIMM, probably one of the 120ns. The self-test does not check the RAM as extensively as our diagnostics check it. It will try to make sure the lower addresses are good, which are the SIMMs in bank A, so the operating system will work correctly. Because it erred with the 120ns SIMMs in bank A, I would suspect those SIMMs first.

Mouse-freezing can be caused by a variety of things. Basically, mouse movement is controlled by the operating system, completely aside from all other system events. All mouse movements are posted to an event queue, as

are almost all other events, and then the events are processed in order of their occurrence. If a mouse freezes, then the event queue is not being processed. This means the operating system is hung within an event, because the operating system is either within an event or getting the next event.

One such event that causes the system to hang is faulty RAM refreshing or memory I/O, but the most common is disk I/O. In this case, however, we think you're dealing with a RAM problem.

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Tech Info Library Article Number:7609



# Tech Info Library

## 80-Column Text Cards: Apple II & II Plus Compatibility (11/96)

Revised: 11/18/96  
Security: Everyone

80-Column Text Cards: Apple II & II Plus Compatibility (11/96)

=====

Article Created: 19 April 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Does the Extended 80-column card work in the Apple II or Apple II Plus? If not, is there any way to upgrade an Apple II or Apple II Plus to 80-Column?

DISCUSSION -----

The 80-Column Card and Extended 80-Column Card work only in the Apple IIe; they cannot be used in any other computer.

Our databases do not show an 80-column interface for the Apple II or Apple II Plus. There were once several on the market, but the demand for this type of card has almost disappeared. You might still be able to find these 80-column cards through some of the computer remarketing companies, or where use computer equipment is sold.

An alternative is to purchase an Apple IIe or Apple IIGS computer. You need to to contact computer remarketing companies, or look where use computer equipment is sold.

Article Change History:  
14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7610



# Tech Info Library

## Macintosh: Internal Hard Drives Not Always Interchangeable

Revised: 8/13/91  
Security: Everyone

Macintosh: Internal Hard Drives Not Always Interchangeable

=====

Article Created: 21 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IIfx with an 80MB drive. I also have a Macintosh IIsi with a 40MB drive. I want the 80MB in the IIsi and the 40MB in the IIfx. Can I swap these drives? How about swapping drives between a Macintosh SE and a Macintosh IIsi?

DISCUSSION -----

No. In one direction (IIfx to IIsi), the hard drive is too large. In the other direction (IIsi to IIfx), there's no way to mount the hard drive in the box. Your best bet is to get an external drive for the Macintosh IIsi.

There are also physical size and mounting bracket problems with swapping drives between a Macintosh SE and a Macintosh IIsi.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7611





# Tech Info Library

## Apple IIe: Memory and the Power Supply

Revised: 8/13/91  
Security: Everyone

Apple IIe: Memory and the Power Supply

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I was about to install additional memory in my Apple IIe when a friend told me that any memory over 128K would cause my transformer to burn out prematurely. He advised me replace it with a more durable model. Is there any truth to this?

DISCUSSION -----

Memory, by itself, is not going to cause the Apple IIe power supply a problem. You should be able to install as many memory boards as the computer supports.

Some third-party power-supply manufacturers say that a fully-loaded Apple IIe (one with every interface slot filled) draws too much power and that you should install a higher-capacity power supply. However, we have not found that to be the case. Instances of supposed excessive power drain can usually be attributed to a damaged logic board, power supply, or interface card. A fully functional unit should not need a power supply upgrade.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7612



# Tech Info Library

## Apple IIGS and Integer BASIC

Revised: 7/1/91  
Security: Everyone

Apple IIGS and Integer BASIC

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to run old Apple II programs written in Integer BASIC on an Apple IIGS (original Woz version with 256K of RAM). I can list the programs with the CAT command, but can't run them.

DISCUSSION -----

The Apple IIGS can run Integer BASIC programs, but only under DOS 3.3, not under ProDOS. ProDOS is not compatible with Integer BASIC (though it is compatible with Applesoft BASIC).

To run your programs, first start up from a known-good DOS 3.3 System Master (or other DOS 3.3 startup disk that loads Integer BASIC in RAM).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7614



# Tech Info Library

## ImageWriter II: How to Set Line Length from an Apple IIGS

Revised: 7/1/91  
Security: Everyone

ImageWriter II: How to Set Line Length from an Apple IIGS

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a way, when writing a BASIC program on the Apple IIGS, to send a command string to an ImageWriter II printer (like Control-i 40N) to limit the number of characters that the ImageWriter prints on a line?

DISCUSSION -----

You cannot set that limit within the ImageWriter, but you can set it within the IIGS's serial port firmware. In fact, it's the command you cited above. The ImageWriter prints until it physically reaches the end of the platen. So, if you need a guaranteed way to force a premature carriage return, set the serial port's firmware.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7615



# Tech Info Library

## ImageWriter II: Worn Spring Affects Print Quality

Revised: 8/13/91  
Security: Everyone

ImageWriter II: Worn Spring Affects Print Quality

=====

Article Created: 20 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I have seen numerous ImageWriter II printers with this problem: once or twice in a page (during test print) the printing gets very light for a word or two, and then goes back to normal. Sometimes ribbon quality is blamed, but other times a new ribbon changes nothing.

I had one on which I changed the wire and gears that drive the ribbon, and it still did it. Moving the carriage back and forth by hand and holding the ribbon-advance knob with light pressure shows that sometimes the knob stops spinning briefly, as if the wire were sliding on the pulley. However, everything looks physically okay.

DISCUSSION -----

The most common cause for the ribbon to stop spinning intermittently is a worn spring: the spring that maintains constant tension on the nylon wire that drives the ribbon-drive gear assembly. If the spring is worn, the constantly-varying tension within the ribbon cartridge (transmitted to the gear assembly), causes the nylon wire to slip.

Try replacing either the Ribbon Wire/Spring assembly (service part number 935-0001) or the spring only (available as a part of the Miscellaneous Hardware Kit, part number 076-0317).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7616



# Tech Info Library

## LaserWriter: Connecting to a Macintosh via Serial Cable (2/97)

Revised: 2/27/97  
Security: Everyone

LaserWriter: Connecting to a Macintosh via Serial Cable (2/97)

=====

Article Created: 20 March 1991  
Article Reviewed/Updated: 27 February 1997

TOPIC -----

If a user has a single Macintosh and a LaserWriter, is it necessary to connect the two using LocalTalk connectors, or would a serial connection like the Peripheral 8 cable work? Would there be any drawbacks to this?

DISCUSSION -----

It is possible to connect a Macintosh to a LaserWriter and print using a serial cable, though there are drawbacks and only a few LaserWriters are officially supported serially. The serial port on LaserWriters manufactured after the original LaserWriter is normally used for LocalTalk and can be identified by its mini-circular 8 port.

Here is a partial list of LaserWriter printers Apple fully supports using a Peripheral 8 serial cable.

LaserWriter Pro 600  
LaserWriter Pro 630  
LaserWriter Pro 810  
LaserWriter Select 300  
LaserWriter Select 310 (This print only supports a Macintosh serial cable)  
LaserWriter Select 360  
Personal LaserWriter LS  
Personal LaserWriter 300  
LaserWriter 4/600 PS  
LaserWriter 16/600 PS  
LaserWriter 12/640 PS\*  
Color LaserWriter 12/600 PS  
Color LaserWriter 12/660 PS

\* - To change the printer name or toggle the startup page, you cannot use a serial cable. Instead a Ethernet or LocalTalk connection is needed.

Almost every Apple PostScript LaserWriter printer manufactured after 1995 can use a serial cable. Consult your LaserWriter User's Guide, it contains connection instructions. If your LaserWriter printer supports serial printing, instructions are provided.

The one drawback to a serial connection on LaserWriter printers designed for LocalTalk is that you lose access to other network services since the LocalTalk port is being used by the serial cable.

NOTE:

Reference the User's Guide for correct printer port settings. You may have to change the pushwheel number or the dip switches.

The finished goods part number for the Peripheral 8 serial cable is M0197, the service part number is 590-0522.

Article Change History:

27 Feb 1997 - Added note about 12/640.

02 Dec 1996 - Updated to include additional printers.

25 Jul 1994 - Clarified what printers are supported.

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Tech Info Library Article Number:7617



# Tech Info Library

## LaserWriter and IBM PS/2: False out of paper Message

Revised: 8/13/91  
Security: Everyone

LaserWriter and IBM PS/2: False "out of paper" Message

=====

Article Created: 20 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have tried connecting an IBM PS/2 to a LaserWriter IINT. After following the directions in the manual (with the corrected "8" instead of "7") I got an error message on the PS/2--"printer out of paper"--although there was some in the paper tray. Where is the problem?

DISCUSSION -----

The MS-DOS COM drivers scan for a particular signal on the RS-232 port for the paper-out condition. Given that, you're probably experiencing some type of cable problem. Most likely, you're missing a jumper on the PS/2 side. Check the DSR or CTS pins.

Also, the LaserWriter IINTX revised manual has about 25 pages of comprehensive details on connecting LaserWriters to IBM-compatibles. Check that for further troubleshooting.

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Tech Info Library Article Number:7618



# Tech Info Library

## Macintosh IIci: Configuring for Speed with Display Card 8•24 GC

Revised: 7/2/92  
Security: Everyone

Macintosh IIci: Configuring for Speed with Display Card 8•24 GC

=====

Article Created: 19 April 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

What is the fastest configuration for a Macintosh IIci using the Macintosh Display Card 8•24 GC and a RasterOps ColorBoard 264 with an Apple Portrait Display Monitor in 2-bit black and white and the Apple 13-inch RGB monitor in 24-bit color? I have the Portrait Display Monitor on the 8•24 GC and the RGB monitor on the RasterOps card. Should I be using the IIci's internal video circuitry?

DISCUSSION -----

There are three considerations here:

- You always have better performance using a NuBus video card than using the IIci's built-in video.
- The Macintosh Display Card 8•24 GC speeds up all QuickDraw processing, as long as it's active and as long as the "other" video board lets it. Check with RasterOps to see what their card does.
- You get more for your money when you put the greater pixel-depth monitor on the faster card, probably the Macintosh Display Card 8•24 GC.

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Tech Info Library Article Number:7620





# Tech Info Library

## LocalTalk PC Card: How to Free Memory to Print

Revised: 8/20/91  
Security: Everyone

LocalTalk PC Card: How to Free Memory to Print

Article Created: 21 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We installed a LocalTalk PC card on a 386 AT clone with 1MB RAM. We use this PC to download stock quotations. The company uses Macintosh SE/30 and IIci systems for everything else. We want the 386 AT to print its stock data to the LaserWriter IINT.

When we try this, we get a message saying we don't have enough memory. We are running MS-DOS, LocalTalk PC software, and the program for the financial service. How can we print reports to the LaserWriter?

DISCUSSION -----

There are several ways to minimize the RAM allocations in an MS-DOS machine, which may free up enough space to run all of the applications at once. You may try reducing the number of buffers allocated to DOS, for instance.

If you configure AppleShare PC for print services only, you can expect it to take up 62K to 90K of base RAM. Because AppleShare PC must reside in the 0K to 640K range, you may free enough RAM for everything, if you can configure other portions of the operating system to run in the 640K to 1MB range.

We advise you to minimize existing RAM allocations first and re-install AppleShare PC with the minimum services. Then, if that doesn't work, start moving applications into higher memory.

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Tech Info Library Article Number:7623



# Tech Info Library

## Macintosh IIfx and 800K Drives

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx and 800K Drives

=====

Article Created: 26 March 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

Is it true that the Macintosh IIfx logic board does not recognize the 800K floppy drive?

DISCUSSION -----

The Macintosh IIfx recognizes both the 800K floppy drive and the SuperDrive. The logic board contains a SWIM chip, as opposed to an IWM, which recognizes and uses both drives. Our lab has a IIfx with both an 800K drive and a SuperDrive installed, and we have no problems using both drives.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7624



# Tech Info Library

## Macintosh Portable: High-Pitched Sound at Startup

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: High-Pitched Sound at Startup

=====

Article Created: 22 April 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

When I try to start up my Macintosh Portable, I get a high-pitched sound through the speaker. The first time, I replaced the logic board. After a while, the sound came back.

DISCUSSION -----

If the Portable has any peripherals (excluding anything plugged into the serial ports), check them. A failing device may be causing portions of the logic board to fail.

If the Portable has no extra peripherals, check the keyboard for either cracks or flexing. These may put it in contact with the case.

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Tech Info Library Article Number:7626



# Tech Info Library

## Macintosh 128K: No ROM Exchange

Revised: 8/20/91  
Security: Everyone

Macintosh 128K: No ROM Exchange

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an old Macintosh 128K. I bought an 800K drive and a RAM upgrade.  
Can I exchange my old 64K ROMs for the new 128K ROMs?

DISCUSSION -----

The change in policy regarding our ROMs was made to prevent the sale of individual ROMs for any purpose. The biggest reason was to protect Apple's intellectual property rights. The new policy cannot be worked around, regardless of the reason for the purchase.

With a 128k Macintosh, you can upgrade to a 512, 512 Enhanced, or a Macintosh Plus logic board.

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Tech Info Library Article Number:7627



# Tech Info Library

## Macintosh IIsi: Upgrading Memory to 5MB

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Upgrading Memory to 5MB

=====

Article Created: 19 April 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated: 17 July 1992

TOPIC -----

What Apple part number is needed to upgrade the Macintosh IIsi memory to 5MB or 10MB?

DISCUSSION -----

The Macintosh IIsi can be upgraded to 5MB of RAM by using the same memory upgrade kit as used for the Macintosh IIci. Ask for Finished Goods part number M5952LL/A.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7628



# Tech Info Library

## AppleShare Network: Auto-Logon Problem

Revised: 8/21/91  
Security: Everyone

AppleShare Network: Auto-Logon Problem

=====  
Article Created: 21 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have one and sometimes two Macintosh computers on my AppleShare network that have been giving me some problems. When these systems are turned on in the morning, they automatically ask for a password, so they can log on to the net. Some mornings, however, they come up and bypass the logon screen and start up without even going to the server.

To remedy this, I go to the Chooser, select AppleShare, and redefine what it is that I want saved for the next time the machine starts. Then, it works fine for quite a while. The network is okay, because there are machines before and after these machines on the net. I have rebuilt the system (6.0.3), re-installed AppleShare numerous times, and so on.

DISCUSSION -----

Automatic logon to an AppleShare server is done through two pieces of software: The AppleShare file itself (the RDEV that appears in the Chooser and is also an INIT) and the AppleShare Prep file, which stores the auto-logon information (volume name, password, and so on).

If the machines fail to log on (but AppleShare is active) you can manually mount the volumes without rebooting--then the most likely problem is that the RDEV can't find the AppleShare Prep file during startup. This could be due to either corrupt System software or a corrupt directory structure. Because you've already rebuilt the System, it's probably the latter.

Run Disk First Aid against the hard drive. This does minor repairs on the directory. You may also want to rebuild the Desktop. A definite cure would be to back up and reformat the hard drives, but you will probably be able to solve your problem without resorting to this.

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Tech Info Library Article Number:7629



# Tech Info Library

## Macintosh: Setting the Serial Port Baud Rate

Revised: 5/27/92  
Security: Everyone

Macintosh: Setting the Serial Port Baud Rate

=====

Article Created: 26 March 1991  
Article Last Reviewed: 21 May 1992  
Article Last Updated:

TOPIC -----

How do I set a device to a different baud rate on a Macintosh serial port?

DISCUSSION -----

The ability to set the baud rate for the Macintosh serial port lies with the application and/or serial port driver you're using. In most instances, the baud rate is predetermined and cannot be changed. The most notable exception is modem communication, where you can set baud from within the application. There is no default (or built-in) method for setting baud.

We would suggest contacting the driver's publisher for this type of information, because it varies from driver to driver.

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Tech Info Library Article Number:7630





# Tech Info Library

## Apple MIDI Manager: Compatibility & Availability (10/95)

Revised: 10/25/95  
Security: Everyone

Apple MIDI Manager: Compatibility & Availability (10/95)

=====

Article Created: 21 April 1991  
Article Reviewed/Updated: 25 October 1995

TOPIC -----

Does Apple sell a software program called MIDI Manager?

DISCUSSION -----

The Apple MIDI Manager is a developer's tool, not a stand-alone application or utility. It is available as part of the downloadable file MIDI Management 2.0.2 available from online services.

The following files are included in MIDI Management Tools 2.0.2:

- Apple MIDI Driver 2.0.2
- MIDI Manager 2.0.2
- PatchBay Help
- PatchBay 2.0.1
- PatchBay DA 2.0.1
- Serial Switch 1.1

The Apple MIDI Manager version 2.0.2 is compatible with System 7.5 but is not supported by Apple because it is considered a development tool.

Neither QuickTime 2.0 or 2.1 have MIDI Manager built-in, but they do have MIDI capability.

The QuickTime 2.0 Software Developers Kit which is available from APDA has information on how to take advantage of the Apple MIDI Manager.

These articles can help you locate the MIDI Management 2.0.2 software mentioned here:

- "Where To Find Apple Software Updates" -- Lists online services for free Apple

software updates.

- "Obtaining Apple Product Support in the USA" -- Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech Info Library.

Article Change History:

25 Oct 1995 - Added information about online availablility.

Support Information Services

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Tech Info Library Article Number:7631



# Tech Info Library

## LaserWriter II: How to Convert for Non-US Voltages

Revised: 8/21/91  
Security: Everyone

LaserWriter II: How to Convert for Non-US Voltages

=====

Article Created: 22 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to ship a LaserWriter IINTX (purchased in the USA) to Israel. Are there any kits that convert the LaserWriter to 220VAC?

DISCUSSION -----

There isn't a kit for the LaserWriter II to convert it to accept 220VAC. Further, the individual parts that need to be replaced (DC Power Supply, AC Power Supply, and Fuser Assembly) are not available for purchase in the United States.

You have two options available: Either buy and use a stepdown transformer (rated at 1300 Watts) or buy the parts overseas. The transformer is better, because then you can use the printer anywhere you take the transformer.

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Tech Info Library Article Number:7633



# Tech Info Library

## System 6.0.x: Disk Distribution

Revised: 5/15/92  
Security: Everyone

System 6.0.x: Disk Distribution

=====

Article Created: 21 April 1991  
Article Last Reviewed: 14 May 1992  
Article Last Updated: 14 May 1992

TOPIC -----

Are there sets of four 800K disks of System Software 6.0.7 for people without 1.4 MB SuperDrives?

DISCUSSION -----

Yes. You can still obtain System 6.0.x on 800K disks through any authorized dealer. Macintosh System Software 6.0.8 is the latest version of System 6.0.x, and it is available on either 800K or 1.4 MB (high-density) floppy disks. Remember that the files on these disks are organized in a special manner. You cannot simply take the two high-density disks containing 6.0.8 and spread the files randomly to four 800K disks. This will not work. You must have the System Software version 6.0.8 disks that are intended for the 800K format. These are labeled "System Tools," "Printing Tools," "Utilities 1" and "Utilities 2."

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Tech Info Library Article Number:7635



# Tech Info Library

## Macintosh: Network Fax Modems (9/93)

Revised: 9/2/93  
Security: Everyone

Macintosh: Network Fax Modems (9/93)

=====

Article Created: 18 April 1991  
Article Reviewed/Updated: 2 September 1993

TOPIC -----

Is there a network fax modem for the Macintosh?

DISCUSSION -----

There are three products that may serve your needs.  
These include:

- Xecom's QuadPort Network Modem family
- Ricoh's DX-1
- Microsoft's FaxGate

QuadPort Network Modem Family from Xecom

-----

These are four channel NuBus data and fax/data modem server products for the Macintosh II family.

The QuadPort Network server product line provides centralized, high-density, telecommunications resources inside a Macintosh II computer. Users can share as many as 24 modems or fax/data modems in AppleTalk, EtherTalk, or TokenTalk network environments.

DX-1 from Ricoh

-----

Ricoh's DX-1 lets Macintosh and many laptop computers communicate with local and remote Group 3 fax machines. Under it, a local fax machine can serve as a computer printer and scanner.

When DX-1 software runs from a computer on a network, users can transmit faxes from computer to computer on the network, without the use of fax boards or fax modems. It can serve as a fax traffic director at a hub unit, automatically saving received documents to

disk or switching them to a local fax for printing or storage in fax memory.

#### FaxGate from Microsoft

-----  
With FaxGate and BackFax, a single fax modem and phone line can serve the fax needs of all users on a Microsoft Mail or QuickMail network. Memos prepared with either LAN-based mail system can be routed to recipients at fax machines around the world in addition to, or instead of, recipients on the local network.

Note: BackFax software is no longer available. Fax Pro for Macintosh from Delrina Technologies replaces BackFax.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

#### Article Change History:

19 June 1992 - Reviewed for technical accuracy.

21 October 1992 Revised to say that FaxGate software is supported by Microsoft, not Solutions, Inc.

2 September 1993 - Added note that BackFax isn't available.

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Tech Info Library Article Number:7637



# Tech Info Library

## Macintosh: How to Access Novell Servers

Revised: 8/21/91  
Security: Everyone

Macintosh: How to Access Novell Servers

=====  
Article Created: 20 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I use a Macintosh as a server within our Novell system? Would it permit mail both within the Novell and external to other AppleTalk nodes? Would MS-DOS machines encounter problems sending or receiving this type of mail? Would I need any special changes or hardware, other than a Macintosh as a server?

DISCUSSION -----

You can do this type of configuration, but with a different server: you need a Novell server with the Macintosh computers getting access from it (as opposed to a Macintosh server).

Novell sells a connectivity solution called "NetWare for the Mac" that lets a Macintosh access a Novell server in much the same way as Macintoshes access an AppleShare server. There are some limitations, like requiring Ethernet cabling at the server end, but it is a good solution.

For further information, search the Tech Info Library under "NetWare" and "Macintosh" to get the relevant articles. There is a three-part article that fully explains the configurations, along with related material.

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Tech Info Library Article Number:7638



# Tech Info Library

## Macintosh Portable and LCD Overhead Projection

Revised: 7/29/92  
Security: Everyone

Macintosh Portable and LCD Overhead Projection

=====

Article Created: 18 April 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

What LCD overhead projectors are available for the Macintosh Portable?

DISCUSSION -----

You may want to consider Sayett Technology's Datashow HR/MP high-resolution LCD system. You can project graphic screen images from a Macintosh Portable, Plus, or SE. The display contrast of 20:1 puts out bright, clear, projected images with a display resolution of 512x342 pixels for the Macintosh Plus, SE, and SE/30; and 640x400 for the Macintosh Portable.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:7641





# Tech Info Library

## Laser Printers: Non-Apple Models and Driver Problems

Revised: 8/21/91  
Security: Everyone

Laser Printers: Non-Apple Models and Driver Problems

=====  
Article Created: 26 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a question about PostScript LaserWriter clones, in particular the ones by GCC, QMS, and Hewlett-Packard. All of these promise AppleTalk ports and true PostScript. The QMS printer even comes with Apple's LaserWriter drivers. What are the possible disadvantages to these non-Apple printers?

DISCUSSION -----

Most of the problems originate with the software drivers, because the hardware is sitting off by itself with only the LocalTalk connection as a compatibility factor. Because LocalTalk is well documented, you won't find too many problems there.

The drivers are the biggest concern, because developers write their applications assuming that a printer driver will adhere to a certain set of protocols. In addition, the driver needs to interact with the system software. That implies yet another set of standard protocols.

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Tech Info Library Article Number:7643



# Tech Info Library

## ImageWriter II: Bent Carrier Shaft Problem

Revised: 8/21/91  
Security: Everyone

ImageWriter II: Bent Carrier Shaft Problem

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The carrier-shaft bushing on the left and right of the printhead assembly were broken on our ImageWriter II; we replaced both items. Now, the left side is too snug when the right side is adjusted properly, and the right side has too much of a gap when the left side is adjusted properly.

DISCUSSION -----

Other than playing around with more shim kits, you probably are looking at a bent carrier shaft. If the shaft is straight, then you should be able to adjust the printer with the shim kits; all but the very worst gap problems can be solved this way.

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Tech Info Library Article Number:7644



# Tech Info Library

## AppleShare PC: Incompatible with Windows 3.0

Revised: 8/21/91  
Security: Everyone

AppleShare PC: Incompatible with Windows 3.0

=====  
  
Article Created: 22 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using Microsoft Word under Windows 3.0. When I try to print to the AppleShare Print Server, I get the error:

Undefined; Offending Command:PS-Adobe\_2.0

and the print job cancels.

DISCUSSION -----

AppleShare PC and Windows 3.0 are incompatible and, unfortunately, there is no known workaround. You may be able to intermittently gain access to either print or file services with this configuration, but it is not stable.

On a side note, Farallon has since taken over the LocalTalk PC Card from Apple and has introduced new software for the card that is compatible with more PC programs than ever before. This may be a solution. Search under "Farallon" for the phone number and address of this third party company.

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Tech Info Library Article Number:7645



# Tech Info Library

## AppleShare Print Server: Storing Outline Fonts

Revised: 7/23/93  
Security: Everyone

AppleShare Print Server: Storing Outline Fonts

=====

Article Created: 26 March 1991  
Article Reviewed/Updated: 22 July 1993

TOPIC -----

I have a Macintosh II and a Macintosh IIfx. From them, I print to a Linotype RIP30 and a LaserWriter IINTX. I put numerous outline fonts in the System folder of each Macintosh to give each full-font capability.

Is there a way to store all of the outline fonts at the server, instead of on each Macintosh? If there isn't, could I attach a hard drive to the LaserWriter II? Could I also attach a hard drive to the RIP30?

DISCUSSION -----

Although it seems reasonable at first glance, you cannot install fonts on the Print Server for everyone to use.

The Print Server acts more like a "dumb" printer than anything else. That is, it looks like an Apple printer with LocalTalk functions only. It knows nothing of any special capabilities the printer may have, beyond what the LaserWriter or ImageWriter drivers tell it. Because of this, the Print Server doesn't have the ability to store any PostScript fonts.

You can install a hard drive on the LaserWriter IINTX to get the same effect. As for the Linotype printer, see your Linotype-Hell representative.

Article Change History:  
23 July 1993 - Company title updated from Linotype to Linotype-Hell.

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Tech Info Library Article Number:7646



# Tech Info Library

## PrintMonitor: found an internal problem Error

Revised: 8/21/91  
Security: Everyone

PrintMonitor: "found an internal problem" Error

=====

Article Created: 21 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I try to print from any of several applications the PrintMonitor becomes active and returns the following error message

PrintMonitor found an internal problem Where=-6; Why=-37

Without the PrintMonitor running, the system prints fine. LaserWriter and Laser Prep are installed from 6.0.5 with AppleShare V2.01.

DISCUSSION -----

That type of error suggests that PrintMonitor has found an incorrect filename (or variable name) during execution. There are several things that could cause it. Here are some things to try:

- Start the system. Throw away the Spool Folder that's in the System Folder. Restart the system, and rebuild the Desktop (hold down the Option and Command keys all the way through the startup process, and OK the dialog box that appears).
- Recopy ONLY the PrintMonitor application from the Printing Tools diskette.
- After backing up your installed fonts and desk accessories, trash the System file from the hard drive, and run the Installer to put a new operating system on the machine. It's important that the System be trashed. The Installer will not necessarily remove a corrupted resource, so you may have the same problems after installing.

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Tech Info Library Article Number:7647



# Tech Info Library

## System 6.0.5: Can't print in MultiFinder

Revised: 8/21/91  
Security: Everyone

System 6.0.5: Can't print in MultiFinder

=====

Article Created: 22 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh IICx prints in Finder to a LaserWriter IINTX, but doesn't print in MultiFinder. Instead, I get the dialog message

a printmonitor error has occurred

I have checked cabling, reformatted the hard drive, and reinstalled System 6.0.5 (thinking I might have a virus problem). Nothing worked.

DISCUSSION -----

Because everything seems to work fine in the Finder, the hardware and most of the software is probably good. There are two more System resources that are pulled in when printing in the background under MultiFinder: Backgrounder and PrintMonitor. You may be experiencing a version incompatibility between these files. This is likely if you've recently upgraded your operating system.

We suggest replacing both of these files from a known-good 6.0.5 Printing Tools diskette. You can drag-copy them, but make sure you've booted your hard drive in Finder-only first. If you have a Spool folder in your System folder, throw that away too.

If that fails, try trashing and reinstalling the complete operating system using the Installer.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7648



# Tech Info Library

## PrintMonitor: Manual Feed and Flashing

Revised: 8/21/91  
Security: Everyone

PrintMonitor: Manual Feed and Flashing

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I recently installed System 6.0.5 and Finder 6.1.5. Now, when I print on my LaserWriter IINTX, the PrintMonitor flashes. I have to select it and then click OK to proceed. With System 6.0.3, selecting Print did the whole thing without my having to select PrintMonitor.

DISCUSSION -----

It sounds as if you have Manual Feed selected. Try again with Automatic Feed selected instead. If you have any doubts about the system upgrade, rerun the Installer to re-create the system files.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7649





# Tech Info Library

## Personal LaserWriter NT: Spurious Paper-Out Light

Revised: 8/21/91  
Security: Everyone

Personal LaserWriter NT: Spurious Paper-Out Light

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm having a problem with a Personal LaserWriter NT. At power-up, with nothing connected to the printer, all three LEDs come on briefly, then they go out, and the paper-out LED starts flashing.

The manual indicates this means the printer is waiting for manual-feed paper, but obviously it shouldn't be. The engine test prints a normal test sheet.

DISCUSSION -----

It sounds like the I/O board needs replacing, especially if you can get a good engine self-test out of the printer. We recommend replacing the board for test purposes.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7650



# Tech Info Library

## LaserWriter IINTX: 3.0 ROM Upgrade

Revised: 8/22/91  
Security: Everyone

LaserWriter IINTX: 3.0 ROM Upgrade

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the availability of the 3.0 ROM Upgrade for the LaserWriter IINTX?  
If so, when will it be available, and what does it do for you when  
installed?

DISCUSSION -----

Here's a rundown of the LaserWriter IINTX ROM 3.0 capabilities:

There is a new version of LaserWriter IINTX ROMs being rolled into production  
in late May 1991. These ROMs contain an updated version of PostScript.  
PostScript version 51.8 has the following enhancements:

- Full support of software switching between emulations and ports. You can switch into and out of an emulation mode via software.
- Improved support of multiple SCSI disks. You can connect as many as eight SCSI hard disks to the LaserWriter IINTX SCSI port. Up to 80 percent of the hard disk with the lowest SCSI ID is used for font caching, with the remainder of that disk and all of any other connected hard disks used for downloaded fonts. Each hard disk is now formatted as a separate volume. Thus, you can move a disk (other than the startup disk) between systems without having to reformat.
- Improved HP LaserJet+ emulation. Four characters have been added that were left out of the original implementation of HP LaserJet+ emulation.
- Improved default settings for HP LaserJet+ bit map printing. Previously, bitmaps in HP LaserJet+ mode were interpreted at 7-bit, thereby ignoring a significant bit. The new ROMs default to 8-bit serial

communications.

These new ROMs are found in any LaserWriter IINTX with a part number ending in 6004/A. Apple's Finished Goods part number for the LaserWriter IINTX Upgrade Kit is M0445LL/A.

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Tech Info Library Article Number:7651



# Tech Info Library

## Apple IIGS: Compatible LaserWriter Printers

Revised: 9/15/92  
Security: Everyone

Apple IIGS: Compatible LaserWriter Printers

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated: 17 December 1991

TOPIC -----

Which LaserWriters work with the Apple IIGS?

DISCUSSION -----

As of GS/OS 5.0.4, the Apple IIGS supports LaserWriters that are available via the network and based on PostScript.

The Apple IIGS doesn't support LaserWriters that use SCSI or serial connections and are based on QuickDraw.

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Tech Info Library Article Number:7652



# Tech Info Library

## LaserWriter: How Pages-per-Minute Is Calculated

Revised: 8/22/91  
Security: Everyone

LaserWriter: How Pages-per-Minute Is Calculated

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The LaserWriter IISC specs indicate a speed of eight pages per minute. I am getting only five pages in about 4.5 minutes. The text is all one font and one size. Font sizes in multiples of four are installed in the system as suggested in the manual.

DISCUSSION -----

The specifications for all printers on the market are based on ideal conditions. In the case of Apple's laser printers, the assumption is that a page has already been downloaded and imaged by the I/O board. In other words, eight copies of a one-page document print in one minute, if you start the clock when the first page is picked out of the paper tray. An eight-page document prints slower, as each page must be downloaded and imaged before being put on paper.

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Tech Info Library Article Number:7653



# Tech Info Library

## Macintosh Display Card 8•24 GC: Acceleration Questions

Revised: 11/29/95  
Security: Everyone

Macintosh Display Card 8•24 GC: Acceleration Questions

Article Created: 19 April 1991  
Article Reviewed/Updated: 29 November 1995

TOPIC -----

- 1) Will the Macintosh Display Card 8•24 GC accelerate the internal video circuitry on the Macintosh IIci?
- 2) Will the Macintosh Display Card 8•24 GC accelerate the Macintosh II Portrait Display Video Card?

DISCUSSION -----

1) Question: Will the Macintosh Display Card 8•24 GC accelerate the internal video circuitry on the Macintosh IIci?

Answer: No. The Macintosh Display Card 8•24 GC accelerates only NuBus video cards that use frame buffering for video images. This works even better if the other video card supports NuBus slave mode. The Macintosh IIci's video circuitry does not use NuBus, nor does it support frame buffering. It will not be accelerated, except possibly in some very complex, pixel-deep images. This would be due to the Display Card 8•24 GC's processor and modified 32-bit QuickDraw. It probably would go unnoticed.

2) Question: Will the Macintosh Display Card 8•24 GC accelerate the Macintosh II Portrait Display Video Card?

Answers: The Display Card 8•24 GC accelerates the Portrait Display Card, but the increased performance would be at the low end of the spectrum (5 versus 30 times increase). This is because the Portrait Display does not support the NuBus slave mode.

Article Change History:  
29 Nov 1995 - Updated format. Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7655



# Tech Info Library

## Surge Protectors: Purpose and Selection

Revised: 6/24/92  
Security: Everyone

Surge Protectors: Purpose and Selection

=====

Article Created: 22 March 1991  
Article Last Reviewed: 23 June 1992  
Article Last Updated:

TOPIC -----

Do you have any tips on protecting Macintosh analog boards against electrical surges?

DISCUSSION -----

The usual techniques for protecting any computer product apply. Surges are the biggest cause of product failure.

Background

-----

Electrical power surges can and do occur in all environments. In some areas, they occur regularly. In some cities, the power is very stable, while in others, the power can cut off two or three times a day, if only for a second. Even within cities or neighborhoods, there are variations.

Other factors that contribute to power fluctuations and surges include:

- Quality of the building's wiring
- Number of electrical devices
- Overloaded circuits
- Circuitry and wiring design

All of the above have a bearing on how often a particular system is prone to sustaining damage from electrical surges or spikes, brownouts, or blackouts.

At times, you may encounter situations where power surges produced damage to a system connected to a surge protector. Unfortunately, not all surge protectors give the same amount of protection.



Systems protected with surge protection devices still may sustain varying degrees of damage (from a slow leak on a chip that caused intermittent failures for months, to an outright failure, to melted chips). For example, a lightning strike 2,000 miles away from your system may be able to electronically zap a system through the phone lines. In one known case, the surge carried through the modem, into the computer, damaging the logic board, disk-drive controller board, modem, and two peripheral cards.

Which surge protection device should you buy? How much protection does a device really provide? Can it protect your system in view of your particular environmental condition?

#### Surge Protector Selection Tips

-----

A single-line surge protector usually protects between hot and neutral wires. This provides minimal protection, which may be adequate for areas and environments that are very stable.

A three-line surge protector usually protects between:

- Hot and neutral wires
- Hot and ground wires
- Neutral and ground wires

This offers more comprehensive protection.

A three-line surge protector protects between:

- Hot and neutral wires
- Hot and ground wires
- Neutral and ground wires

and has a separate fuse for each line. This offers better protection than the previously mentioned devices.

Don't forget about surge protection to your phone line, if you have a modem connected!

Surges attack over four electrical pathways: hot, neutral, ground, and via phone lines. Protecting only one can leave you vulnerable to damage. On a single-fuse system, if a surge takes out the fuse, all three sources of protection are nullified. In a three-line surge protector with three fuses, if a spike or surge takes out the first fuse, or catches only the "leading edge" of a surge, the second circuit takes over to block or reroute the surge with the third circuit absorbing the remainder.

The effectiveness of three-line protectors also depends on the construction of the device. This includes the speed with which it works and the voltages it can handle, block, or absorb. Price alone is not a reliable indicator, and not everyone needs the same type of device.

There are far more sophisticated systems for surge protection than those mentioned here. These include systems providing emergency power backup, which can cost many hundreds and thousands of dollars. The type of protection your equipment requires must be examined on a case-by-case basis.

Getting Selection Help

-----

To determine your needs, see a qualified expert. Your electric company can conduct measurements to determine electrical activity. Have a consulting electrical engineer or electrician check your electrical environment to determine power loads and the necessary level of protection. Then, the consultant can advise you of appropriate surge-protection requirements.

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Tech Info Library Article Number:7658



# Tech Info Library

## Macintosh: Resource Map is Bad Message

Revised: 8/22/91  
Security: Everyone

Macintosh: "Resource Map is Bad" Message

=====

Article Created: 26 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

While starting up my Macintosh SE, I saw the message "Resource Map is Bad."  
What does this mean? (Startup continued without further problems.)

DISCUSSION -----

The resource map is a template that interprets the resource forks in any  
file into something intelligent. The Macintosh OS generates ID bombs  
(between -192 and -199) if it finds a serious problem in the resource fork.

We suspect that the message was generated by another application or  
utility. If it happened only once, don't be alarmed. However, we suggest  
running a file verification utility against the hard drive and possibly  
backing it up (just in case).

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Tech Info Library Article Number:7659



# Tech Info Library

## PostScript: Common Causes of Errors

Revised: 8/22/91  
Security: Everyone

PostScript: Common Causes of Errors

=====

Article Created: 26 March 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated:

TOPIC -----

I tried to send an ASCII PostScript file (originally created under an IBM-PC application) to the LaserWriter. I get a PostScript error when I try to print documents with tables and formulas. The error that appeared on the screen is:

```
%%[Error:undefined;Offending Command:F0]%%
```

I can print text-only files okay. What's the problem? What do you recommend for troubleshooting PostScript errors?

DISCUSSION -----

PostScript errors are usually generated by one of three things: a corrupt document, a bad printer driver, or a slight incompatibility between the version of PostScript in the printer and what the application thinks is there. Because you can print text without a problem, we suspect the latter of the three, particularly if you're printing to the original LaserWriter. To verify this, you may want to try to print to a newer printer, like a LaserWriter IINT.

If you're interested in getting deeper into Postscript troubleshooting, get some of the reference manuals on the subject. Adobe has books on the subject, as do other publishers. For more information, search on "Adobe" AND "3rd".

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Tech Info Library Article Number:7660



# Tech Info Library

## Macintosh: Products for Making Slides

Revised: 8/23/91  
Security: Everyone

Macintosh: Products for Making Slides

=====

Article Created: 22 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there products that produce a slide directly (internally) from a computer's screen image?

DISCUSSION -----

There are several products available for the Macintosh that generate slides from screen images. Look into any of these:

- Still Light from American Liquid Light
- PhotoMetric SlideMaker from General Parametrics Corp.
- Bravo Computer Slide Maker (BCSM) from Polaroid Corp.
- SlideWriter from Agfa Compugraphic Division

For vendor contact information, search the Technical Info library under the company name.

Still Light from American Liquid Light

-----

Still Light is a digital film recorder that captures images and generates boardroom-quality 35mm slides, negatives, transparencies, or instant prints.

Drawing on up to 16.5 million colors, Still Light accepts PICT or PICT II files from popular Macintosh applications. Because of its batch processing capability, it can produce up to 36 images, unattended, without having to load the software where the files were created.

Still Light's standard features include the Still Light video graphics card, software, adapter cables, film recorder, 35mm camera back with

autowinder, instant film back for 3.25x4.25-inch print film, Polaroid Instant Film Processor and slide-mounting accessories. Optional features include a 4x5-inch film back, 8x10-inch film back, and 35mm motion picture back.

PhotoMetric SlideMaker from General Parametrics Corp.

-----

The PhotoMetric SlideMaker is a desktop film recorder for the production of boardroom-quality 35mm slides. Features include: 4K addressability; full-color online preview; automatic text kerning for typeset quality; shaded (gradated) backgrounds; and automatic film loading, advancing, and exposure calibration.

Users can automatically shoot a single image, a series of images, or multiple copies of one or more images with no adjustments or exposure settings. A wide variety of popular film types are supported.

Bravo Computer Slide Maker (BCSM) from Polaroid Corp.

-----

The Polaroid Bravo Computer Slide Maker (BCSM) is a digital film recorder capable of creating images with addressable resolutions of up to 8,000 lines. It has a palette of up to 16.7 million colors and produces both instant and conventionally processed boardroom-quality 35mm slides. Image resolution is software selectable.

The BCSM accepts Polaroid High Contrast PolaChrome instant color, Polaroid Presentation Chrome conventional, and other ISO 100 35mm slide films.

SlideWriter from Agfa Compugraphic Division

-----

SlideWriter is a high-quality 35mm slide maker for business presentations, graphic design, image recording, and so on. Features include very high-resolution 35mm slides (2,048 or 4,096 pixels per scan line), virtually unlimited colors selectable from a palette of 16 million colors, and fast recording.

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Tech Info Library Article Number:7664



# Tech Info Library

## AppleShare Network: WDEF Infection and Remedy

Revised: 8/23/91  
Security: Everyone

AppleShare Network: WDEF Infection and Remedy

=====

Article Created: 26 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Our office has an AppleShare network with about 12 Macintosh nodes of varying configuration. The workstations are constantly going catatonic for about a minute at a time. They seem to be looking out onto the network for something (there's a network activity indicator under the Apple when this occurs), but all work is being done locally.

Almost any action can bring on the behavior. We're using a combination of LocalTalk and PhoneNet. Does this possibly sound like a problem with termination in the network cabling? I've used Inter•Poll to test performance, but can't locate any particular black hole on the net.

DISCUSSION -----

It sounds more like you're dealing with the WDEF virus. The virus tries to infect a mounted AppleShare volume but, because AppleShare doesn't use the Desktop file, everything comes to a halt while WDEF figures out what to do.

We suggest running a good anti-virus utility on all your Macintosh systems except the file server. Symantec's SAM version 1.5 or higher will catch WDEF. You will want to eradicate the virus from your server (you'll have to start up with a floppy), but you don't want to install an anti-virus INIT on it, so that it runs all the time. You really wouldn't be keeping the server clean, just slowing it down.

You can remove WDEF without an anti-virus utility by simply rebuilding the Desktops on every Macintosh on the network. But be aware that you probably have several infected floppy disks around, just waiting to reinfect your hard drives. Also, if you work at home, you should check those computers for infection.

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Tech Info Library Article Number:7665





# Tech Info Library

## System 6.0.7: When It's Needed on Pre-LC Macintosh Models

Revised: 8/23/91  
Security: Everyone

System 6.0.7: When It's Needed on Pre-LC Macintosh Models

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I just got a copy of System 6.0.7. I know it is for the Macintosh Classic, LC, and IIsi, but does Apple recommend it for the Macintosh IIfx and the other Macintosh computers?

DISCUSSION -----

System 6.0.7 is compatible with all Macintosh computers from the Macintosh Plus on up. The only time it is required on the older computers is if you're using an Extended Keyboard II (the one that comes with the Macintosh LC).

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Tech Info Library Article Number:7666



# Tech Info Library

## MultiFinder: Why System Memory Fluctuates

Revised: 9/13/95  
Security: Everyone

MultiFinder: Why System Memory Fluctuates

=====

Article Created: 19 April 1991  
Article Reviewed/Updated: 13 September 1995

TOPIC -----

Why does the amount of memory used by the System constantly change under MultiFinder or System 7? In the "About This Macintosh..." window, the System size and Largest Unused Block size fluctuate.

DISCUSSION -----

This happens because of the event-driven operating system. As various events occur, the System may need to load or unload resources through RAM to take care of them. Because events happen all the time--even when the Macintosh seems to be idle--RAM allocation varies all the time.

You see this fluctuation under System 7 or MultiFinder and not under just the Finder (pre-System 7) because of the dynamic RAM allocation. Under Finder, all RAM allocation is fixed, whereas in MultiFinder and System 7 a given application or resource can request or free up RAM.

Article Change History:  
13 Sep 1995 - Reviewed for technical accuracy.  
09 Sep 1992 - Revised with additional information.

Support Information Services

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Tech Info Library Article Number:7667



# Tech Info Library

## Macintosh: WDEF Symptoms

Revised: 8/23/91  
Security: Everyone

Macintosh: WDEF Symptoms

=====

Article Created: 22 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm having the following problems under System Software 6.0.7:

- Repeated restarts when doing things (moving folders, files, and so on) on the desktop
- Flashing warning box with no text in the box
- System bomb with the error message "Address Error"

DISCUSSION -----

There aren't any known problems with System 6.0.7, and especially none like that. We suspect that you're dealing with either a defective logic board or possibly a virus. I would suggest checking for the virus first, as the symptoms are similar to WDEF's infection of a Macintosh IIfx.

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Tech Info Library Article Number:7668



# Tech Info Library

## LaserWriter IINT: Serial Connection to Xenix

Revised: 7/1/91  
Security: Everyone

LaserWriter IINT: Serial Connection to Xenix

Article Created: 22 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IICx and a LaserWriter IINT. I also have a Xenix network of four Sperry workstations. I am using a program called SCO Lyrinx. This program has drivers that enable it to print to a PostScript printer. I want to print from one of these workstations to the LaserWriter IINT occasionally. Can I do this with the LaserWriter set for serial communication? What cable would I need to do this (or what are the pin-outs for such a cable)?

DISCUSSION -----

This can be done serially; for a broad overview of the process, refer to Appendix of the LaserWriter Owner's Guide. Also check the Tech Info Library; search under "ibm" and "laserwriter".

There are two things to be aware after you get the other information. The first is that the manual is incorrect in stating that the LaserWriter requires 7 data bits; it should be 8.

Second, the easiest cable to make for this connection is as follows:

| DB-25 |   | LaserWriter |
|-------|---|-------------|
| 1     | - | 1           |
| 2     | - | 3           |
| 3     | - | 2           |
| 7     | - | 7           |

If you need hardware handshaking, add:

|   |   |    |
|---|---|----|
| 6 | - | 20 |
|---|---|----|

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Tech Info Library Article Number:7669



# Tech Info Library

## Macintosh IIfx: Screen Blank during Memory Test

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: Screen Blank during Memory Test

=====

Article Created: 15 April 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

When I run tests on the Macintosh IIfx, the screen goes blank when it reaches the memory test. The unit then remains blank for ten minutes.

DISCUSSION -----

The screen goes black during the test. The amount of time the unit remains dark depends on the amount of RAM. This doesn't sound like a problem. You might try another, similarly-configured Macintosh IIfx to see the differences.

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Tech Info Library Article Number:7670



# Tech Info Library

## MacDraw II: Correcting Sluggish Object Moves

Revised: 7/1/91  
Security: Everyone

MacDraw II: Correcting Sluggish Object Moves

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Periodically, when I select the object and move the mouse to the desired location, MacDraw II takes several seconds to snap the object to the new location.

The problem exists even when the computer is not connected to a network. I have re-installed MacDraw II version 2.0 and also re-installed the System.

DISCUSSION -----

We haven't heard of this problem, but here are some diagnostic steps that may help:

- 1) Make sure no background processes are the cause. Remove INITs (screen dimmers, clocks, Sound Master, and the like).
- 2) Re-install the System software.
- 3) Try the same procedure on another system.
- 4) Check with Claris to see if they know of this situation.

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Tech Info Library Article Number:7671



# Tech Info Library

## Macintosh: Troubleshooting ID=15 Segment Loader Error

Revised: 8/23/91  
Security: Everyone

Macintosh: Troubleshooting ID=15 Segment Loader Error

=====

Article Created: 15 April 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated:

TOPIC -----

I have frequent system errors on a Macintosh II with internal CMS hard disk running Quark Xpress 3.0, Illustrator 1.9.x, and Aldus Freehand. The most frequent and consistent error is a System Error ID=15 (Segment Loader Error). It most frequently occurs when launching Quark Xpress by double-clicking a Quark document, although it has happened while opening documents from Illustrator and Freehand. Most of the time, launching the application using the "Open" command seems to work okay.

DISCUSSION -----

It sounds like a software problem. What other files are in the System Folder? Try removing any added INITs (screen dimmers, sounds, mail, menu clocks, and the like). It may be that their software is fine, but when you combine this particular version of the system software with this particular version of Xpress you get a bomb. Make sure you are using a simple System Folder and the current versions of all the software.

Whenever you are troubleshooting a problem, always try to eliminate as many variables as possible. This would include eliminating third party hardware as well as any INITs or third party software that could affect the system folder.

Also, check with the software manufacturers for information on latest revisions, what version of the system should be used with what version of the application, and incompatibilities.

If problems continue after all software situations have been explored, look at hardware, particularly memory or memory management. The problem could be with RAM or the logic board.



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Tech Info Library Article Number:7672



# Tech Info Library

## LaserWriter IINTX: offending command:font downloader Message

Revised: 8/23/91  
Security: Everyone

LaserWriter IINTX: "offending command:font downloader" Message

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IICx with System 6.0.2 on a network with a LaserWriter IINTX. The NTX has an Apple SCSI hard disk. This configuration worked fine with 5.2 LaserWriter drivers and the 4.0 font downloader. However, when I load the 6.0 drivers, it downloads only the Times font and displays the PostScript error:

Invalid printer, offending command:font downloader

Now, with 5.2 drivers re-installed, it continues to mess up.

DISCUSSION -----

This may or may not be the cause of your particular problem, but System 6.0.2 is not compatible with the Macintosh IICx. The minimum software version is System 6.0.3, and we recommend running the System 6.0.5.

This problem sounds most like system software and/or driver corruption. We suggest you do the following things:

- 1) Run the Find File desk accessory ensure you don't have multiple System Folders on your hard drive
- 2) Regardless of how many System Folders you have, throw them all away after saving copies of any third-party INITs or CDEVs that you haven't backed up.
- 3) Use the Installer to install new System software and LaserWriter drivers onto the hard drive. Make sure the operating system version is at least 6.0.3.

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Tech Info Library Article Number:7674



# Tech Info Library

## Apple Licenses MS-DOS Connectivity Products To Farallon

Revised: 8/26/91  
Security: Everyone

Apple Licenses MS-DOS Connectivity Products To Farallon

=====

Article Created: 27 April 1991  
Article Last Reviewed:  
Article Last Updated:

Apple has entered into an agreement with Farallon Computing, Inc., granting them a non-exclusive, worldwide license to use, modify, create, develop, and market products from the AppleShare PC software and the LocalTalk PC Card.

As a result of this agreement with Farallon, Apple has:

- Removed the AppleShare PC and LocalTalk PC products from its Finished Goods price lists in mid-March
- Transitioned to Farallon on April 1 the sales, service, and support for these products SOLD BY Farallon.

You should not have any difficulty distinguishing Apple's software and card from Farallon's, since products sold by Apple are stamped with an Apple logo, and products sold by Farallon have Farallon's trademark.

Farallon has renamed these products this way:

| Apple Product          | Farallon Product                  |
|------------------------|-----------------------------------|
| -----                  | -----                             |
| AppleShare PC software | PhoneNET Talk software            |
| LocalTalk PC Card      | PhoneNET Card PC • LocalTalk Card |

APPLE WILL CONTINUE TO PROVIDE SERVICE AND SUPPORT (INCLUDING MEDIA EXCHANGE) FOR APPLESHARE PC AND LOCALTALK PC PRODUCTS SOLD BY APPLE PRIOR TO APRIL 1, 1991. Service Providers should continue to service and support these products through Apple.

For more information, search on "Farallon".

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Tech Info Library Article Number:7675



# Tech Info Library

## Cambridge Computer Corporation

Revised: 4/4/97  
Security: Everyone

Cambridge Computer Corporation

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Article Created: 04/23/91  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Cambridge Computer Corporation

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### Company Profile:

Software/datacomm, specializing in micro-mainframe links to Honeywell, DEC, Wyse, and Data General systems.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7677



# Tech Info Library

## Capilano Computing Systems, Ltd.

Revised: 4/4/97  
Security: Everyone

Capilano Computing Systems, Ltd.

=====  
Article Created: 04/23/91  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

Capilano Computing Systems, Ltd.  
-----

960 Quayside Dr., Suite 406  
New Westminster, B.C. V3M 6G2  
Canada

604-522-6200

604-522-3972 Fax

Company Profile:  
Software, specializing in electrical engineering schematic capture, digital  
circuit design tools, printed circuit board design, and ABEL programs.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7678



# Tech Info Library

## Apple Scanner: Clarification to Page 121 of the Owner's Guide

Revised: 8/26/91  
Security: Everyone

Apple Scanner: Clarification to Page 121 of the Owner's Guide

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm having trouble scanning according to the directions on page 120 and 121 in the Apple Scanner Owner's Guide. While the directions are clear on how to define two separate areas, it seems I can only select one composition for the whole page.

For example, following the instructions, I select the first area and choose the halftone composition. Then, using the Scan Area tool, I choose the second area and select the line art composition. If I click back on the first area, the composition is at line art, not halftone. If I click it back to halftone and go to the second area, the second area switches to halftone.

Does this feature really work using the AppleScan software? What am I doing wrong?

DISCUSSION -----

We set up the Apple Scanner and followed the directions on page 121. We got two images--one half-tone and one line art--on the screen at the same time. Be sure to select the arrow tool so that things get reset before selecting the scan area tool the second time. Then select the scan area tool and line art before scanning the document.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7680





# Tech Info Library

## HyperCard: How To Do ASCII Character Sorting

Revised: 8/26/91  
Security: Everyone

HyperCard: How To Do ASCII Character Sorting

=====

Article Created: 29 April 1991  
Article Last Reviewed: 5 June 1992  
Article Last Updated: 5 June 1992

TOPIC -----

I want to create a list in HyperCard that contains foreign characters (meaning characters with accent marks, and so on). I can't seem to get HyperCard to sort the characters correctly. Doesn't HyperCard use a standard ASCII table to sort characters?

DISCUSSION -----

HyperCard sorts text using the assigned ASCII values for each character. This means that ascending sorts put text symbols first, followed by numerals, then alphabetic characters last. A sort command that will work for you is:

"sort ascending text by expression"

where "expression" is any expression.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7682



# Tech Info Library

## Oce Graphics U.S.A., Inc.

Revised: 4/4/97  
Security: Everyone

Oce Graphics U.S.A., Inc.

=====

Article Created: 23 April 1991  
Article Reviewed/Updated: 4 April 1997

Oce Graphics U.S.A, Inc.

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1221 Innsbruck Dr.  
Sunnyvale, CA 94089

800-545-5445

415-966-9400

415-961-6152 Fax (Engineering)

### Company Profile:

Hardware, specializing in computer peripherals, including pen plotters, color printers, raster plotters, and cutting plotters.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7683



# Tech Info Library

## Macintosh: Problems with Large Startup Screens

Revised: 2/4/92  
Security: Everyone

Macintosh: Problems with Large Startup Screens

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a startup screen size limit? I've created a 1MB startup screen for my Macintosh, but my system keeps hanging at startup.

DISCUSSION -----

There is no set startup screen limit, but you may be running out of RAM. Your limiting factors are available RAM and heap size. You need to have enough RAM to load your System file, Finder, any INITs or CDEVs, and any RAM cache that might be set in your control panel.

Another possibility could be your system heap needing resizing to accommodate such a large startup screen. Apple does not support changing the heap size, but there are several third-party utilities that do this.

For more information, search on "CE Software".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7685



# Tech Info Library

## Macintosh: Startup Screen Color Shifts Caused by CLUT Matching

Revised: 7/2/91  
Security: Everyone

Macintosh: Startup Screen Color Shifts Caused by CLUT Matching

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When the startup screen on my Macintosh appears, it is first dark and then seems to lighten in tone. Why is this happening?

DISCUSSION -----

The changes to the display of your startup screen are caused by the color look-up table (CLUT). The Macintosh has many color combinations available. For example, on an 8-bit system, there is a choice of 256 colors out of 16 million possibilities. The computer stores a color look-up table for a startup screen graphic, and what you're noticing is the time it takes the Macintosh to match the graphic to the CLUT. During this matching, there is also a shift in the intensity of colors displayed in the graphic.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7686



# Tech Info Library

## Apple Tape Backup: Workaround to Exact Size Volume Limitation

Revised: 7/2/91  
Security: Everyone

Apple Tape Backup: Workaround to Exact Size Volume Limitation

=====

Article Created: 15 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm unable to do a volume restore to a different size drive using the Apple Tape Backup 2.0.1. Is there any workaround to the exact size requirement of Apple's backup software?

DISCUSSION -----

The Apple Tape Backup does insist on restoring to a volume that's the exact size of the original.

There is a way around this (it works only if your backup is a volume backup). An INIT called Tape Disk comes with Tape Backup 2.0.1. Install this INIT into your System Folder and restart. Your tape will show up on the Desktop--just like a drive icon. You then simply drag over any files you want to the hard disk.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7689



# Tech Info Library

## HyperCard IIGS: Release Information

Revised: 7/2/91  
Security: Everyone

HyperCard IIGS: Release Information

=====

This article last reviewed: 22 February 1991

TOPIC -----

When is Apple going to release HyperCard for the Apple IIGS?

DISCUSSION -----

Apple announced HyperCard® IIGS® for the Apple IIGS® personal computer in December 1990. The program was made available in February 1991 through authorized Apple dealers in mid-February 1991. The program comes with nine ready-to-use stacks.

HyperCard IIGS has the full functionality of Macintosh HyperCard version 1.2.5--plus enhancements to improve performance and take advantage of the color capabilities built into the Apple IIGS. Users can also access the many stacks that already exist for the Macintosh, once developers convert them for the Apple IIGS.

To use HyperCard IIGS, you need an Apple IIGS with at least 1.5MB of RAM (2MB is recommended), system software 5.0.4 or later, one 800K disk drive, and a hard-disk drive (or connection to a network). HyperCard IIGS is sold only as a stand-alone kit with six program disks and three manuals.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7690



# Tech Info Library

## Advanced Software Concepts, Inc.

Revised: 4/4/97  
Security: Everyone

Advanced Software Concepts, Inc.

=====

Article Created: 26 February 1991  
Article Reviewed/Updated: 4 April 1997

Advanced Software Concepts (ASC)

-----

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### Company Profile:

pecializing in terminal emulation (3270, 5250, vt420, over Communications Toolbox), Front-Ending and Client Server Architectures.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7691



# Tech Info Library

## Circuit Research Corp.

Revised: 7/6/93  
Security: Everyone

Circuit Research Corp.

=====

Article Created: 02/13/91  
Article Reviewed: 07/06/93  
Article Updated:

Circuit Research Corp.

-----

2 Townsend West  
Suite. 6  
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603-880-4000

603-880-8297 Fax

Company Profile:  
Hardware, specializing in the FlexFax fax modem.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7692





# Tech Info Library

## WingZ and System 6.0.5: Fix for Compatibility Problem

Revised: 7/2/91  
Security: Everyone

WingZ and System 6.0.5: Fix for Compatibility Problem

=====

Article Created: 11 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

My Macintosh IIfx hangs when I run Wingz. Are you aware of any compatibility issues with System 6.0.5?

DISCUSSION -----

Informix has an upgrade to Wingz version 1.1 that cures the problem with System 6.0.5. Contact them regarding this upgrade.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7696



# Tech Info Library

## AppleShare PC: No Support for DEC Ethernet Card

Revised: 8/26/91  
Security: Everyone

AppleShare PC: No Support for DEC Ethernet Card

=====

Article Created: 11 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I have a DOS clone with a DEC DEPCA-AA Ethernet card. Does AppleShare PC support this card, or will I have to get a different card.

DISCUSSION -----

The DEC DEPCA-AA Ethernet card is not inherently supported by AppleShare PC. The list of supported Ethernet cards in the Technical Info library states that the 3Com EtherLink II and its MicroChannel-equivalent card are the only supported Ethernet cards.

However, since "Farallon" took over both AppleShare PC as well as the LocalTalk PC Card from Apple in April 1991, you should contact them for the most current information since they have updated the software to support more DOS programs as well as other hardware.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7697



# Tech Info Library

## Disk First Aid and MFS Volumes

Revised: 10/8/91  
Security: Everyone

Disk First Aid and MFS Volumes

=====

Article Created: 11 March 1991  
Article Last Reviewed: 8 October 1991  
Article Last Updated: 8 October 1991

### TOPIC -----

I'm trying to run Disk First Aid version 1.4.2 from a bootable floppy. When I run the program to analyze my hard disk it says "This is not an HFS disk" (and I think it is).

I'm doing this because Symantec said to run Disk First Aid before trying to defragment and optimize my hard disk before running "Disk TuneUp" on SUM II.

### DISCUSSION -----

We have seen this error only when trying to run Disk First Aid on an MFS-formatted volume. You can verify that the volume is HFS by looking at the left side of the two lines below the volume information when your disk window is open. There will be a pixel on the left side indicating that the volume is an HFS volume. The absence of a pixel means you have an MFS volume or you are running System 7.

If the volume is HFS, use a more current version of Disk First Aid--version 1.4.3 or above.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7698



# Tech Info Library

## System 6.0.5: Troubleshooting Mouse Problem

Revised: 7/14/92  
Security: Everyone

System 6.0.5: Troubleshooting Mouse Problem

Article Created: 11 March 1991  
Article Reviewed Only: 10 July 1992  
Article Last Updated:

### TOPIC -----

The pointer freezes in the left corner of the screen when I start my Macintosh IICx under System 6.0.5. If I start with System 6.0.3, the problem goes away.

### DISCUSSION -----

One problem with System 6.0.5 is that, if the connection is somewhat shaky, the system does not recognize the mouse after startup. If you run pre-6.0.5 System software, you can start the machine without the mouse, wait for it to complete the boot process, and then plug the mouse in. The system will recognize the mouse immediately.

We suggest that you try these diagnostic steps:

- 1) Verify the mouse connection to the keyboard or back of the machine.
- 2) Start the machine with the mouse plugged into the connector not currently in use.
- 3) If there is no difference, try throwing away the currently-installed System folder and reinstall a new copy, using the Installer.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7700



# Tech Info Library

## PrintServer and AppleShare 2.01

Revised: 8/27/91  
Security: Everyone

PrintServer and AppleShare 2.01

=====  
Article Created: 11 March 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I am rebuilding an AppleShare network from scratch. I am upgrading many of the files that we had previously used. The file server seems to be working okay but there are a few problems. I have rebuilt with System 6.0.5 (we had previously used 6.0.3), AppleShare 2.01, and Printserver 2.0. The network is running on a Macintosh SE with 2.5MB RAM.

The network starts okay, but has crashed several times. I think most of these crashes are due to system incompatibilities or memory problems in the workstations. The workstations are mostly Macintosh SEs with 1MB. I expected some of the applications (like PixelPaint and Studio/8) to bomb, because of memory, but these have also caused the file server to crash. One user caused a crash by typing a new password. I thought this was due to system incompatibility (he's running 6.0.3 at present), but the documentation for 6.0.5 says it works fine in a network with other systems (specifically 6.0.2, 6.0.3, and 6.0.4).

The biggest problem I am having is with the PrintServer. I installed it, but when I load it and try to connect to a network printer, it times out. (I have tried both printers on the network with the same results. I have also re-installed PrintServer from another set of diskettes.) Then, when you choose to quit the application it bombs the system.

Do you know of any incompatibilities among System 6.0.5, AppleShare 2.01, and PrintServer 2.0? Are there any upgrades I might need? How about the RAM cache, now set for 1MB? Also, does AppleShare get upset with the file server running 6.0.5 and workstations running an earlier version?

DISCUSSION -----

We don't know of any incompatibilities with the system software and application versions you have listed. In fact, we run similar configurations with no difficulty.

The RAM cache is not changeable by the administrator on an AppleShare server. Rather, AppleShare dynamically allocates RAM to meet its needs. Don't change anything in the RAM cache.

We have two concerns with your configuration:

- Are all your users running the same version of the LaserWriter drivers?
- Was the System software installed using the Installer -- not drag copied?

It is very important that you run the Installer, because this is the only way to get the proper ROM patches loaded into the individual computer's System file.

With your Print Server, you mention that when you load it and try to "connect to a network printer", I have to assume that you are capturing a printer for print spooling services. If that is correct, and it times out, you may want to look at using the 6.0.1 LaserWriter and Laser Prep files as this timeout problem was addressed in those drivers. If you do use these drivers, make sure that all users upgrade and that there are no older drivers present in the network.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7702



# Tech Info Library

## 3270 Dial-In for the Macintosh: Use MacTerminal

Revised: 7/2/91  
Security: Everyone

3270 Dial-In for the Macintosh: Use MacTerminal

=====

This article last reviewed: 25 February 1991

TOPIC -----

Can my Macintosh dial in remotely to an IBM 3708 and get 3270 terminal emulation? Is there a Macintosh equivalent to FTTerm, a DOS product that does this on the IBM?

DISCUSSION -----

3270 emulation is available from the Macintosh side with MacTerminal. This is Apple's data communications product and should work just fine in this environment. You will need to verify with the network administrator that there is the capability in the host for remote dial-in support. If so, have it set up on the host and you should be in business.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7704



# Tech Info Library

## AppleShare File Server: When You Can't Throw Away Files

Revised: 8/26/91  
Security: Everyone

AppleShare File Server: When You Can't Throw Away Files

=====

This article last reviewed: 19 February 1991

TOPIC -----

When I'm logged on as the Administrator of my AppleShare server, the system locks up and bombs whenever I try to throw away folders with duplicate data in them. If I go to the file server and start up with an AppleShare Admin Disk, I can throw these folders away.

DISCUSSION -----

The locking up and bombing problem while throwing away folders could be caused by a couple of things. Try these steps:

1. Rebuild the desktop by holding down the Command and Option keys while the system is starting up from a floppy disk.
2. If the problem persists, reinstall the System and AppleShare software, as there may be some pointers to the Desktop and Finder that could be corrupted. This would explain why files can be thrown away when booted from a floppy.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7706





# Tech Info Library

## 3Com INIT and AppleTalk System File

Revised: 7/2/91  
Security: Everyone

3Com INIT and AppleTalk System File

=====

This article last reviewed: 15 July 1990

TOPIC -----

I have encountered a problem involving 3Com's 3+Mail, the 3+File, and the AppleTalk system file. It seems that 3Com or something is modifying the AppleTalk file so that the Macintosh bombs (usually ID 3). Throwing out the AppleTalk system file prevents the system crash, and my Macintosh seems to run just fine without the file.

What creates this file? What does it do? Why do I need it?

DISCUSSION -----

The file contains AppleTalk protocol updates. AppleTalk is found in ROM, but when an update is made to AppleTalk, these changes get put in a system file. This could happen if you're doing a number of system-related installations: 3Com, EtherTalk, System, etc.

The 3Com INIT is, unfortunately, not "smart" enough to say "I'm not on, EtherNet, so don't load yet." If you forget to disable the 3Com INIT and you boot with LocalTalk selected, you will get a bomb and have to boot from another disk to start up.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7707



# Tech Info Library

## AppleTalk: Where To Find Protocol Information

Revised: 8/27/91  
Security: Everyone

AppleTalk: Where To Find Protocol Information

=====

This article last reviewed: 19 February 1991

TOPIC -----

Is there a technical reference that outlines or specifies the series of AppleTalk-related calls to logon to an AppleShare server? I would like to query the server for some user and password information.

DISCUSSION -----

"Inside AppleTalk", published by Addison-Wesley, has all of the AppleTalk protocols and the other information you need.

For more information, search on "Addison-Wesley".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7708



# Tech Info Library

## AppleWriter II: Transferring Files to a PC

Revised: 8/26/91  
Security: Everyone

AppleWriter II: Transferring Files to a PC

=====

This article last reviewed: 19 February 1991

TOPIC -----

I want to transfer my ProDOS-based AppleWriter II files to WordStar 5.1 on my PC. Can AppleWriter II save files in an ASCII text format? If it does, can I use a standard communications package on my Apple IIe and PC and just run a cable between the two serial ports to transfer the data?

DISCUSSION -----

AppleWriter II saves files in ASCII format automatically. You can simply transfer your data to the PC using a serial cable and communications program.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7710



# Tech Info Library

## AppleShare Print Server: Using with Linotronic Printers

Revised: 7/2/91  
Security: Everyone

AppleShare Print Server: Using with Linotronic Printers

=====

This article last reviewed: 25 February 1991

TOPIC -----

Is it possible to use the AppleShare Print Server on a mixed network of printers, including Linotronic 1300s, Linotronic 100s, and LaserWriters?

DISCUSSION -----

There should be no problem with the LaserWriters, but the AppleShare Print Server doesn't support any of the Linotronic imagesetters, including spooling.

Check with Linotronic to see if they can recommend a spooler for you.

For more information, search on "Linotronic".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7711



# Tech Info Library

## AppleShare: Using with CD-ROM Drive (8/95)

Revised: 8/22/95  
Security: Everyone

AppleShare: Using with CD-ROM Drive (8/95)

Article Created: 15 July 1991  
Article Reviewed/Updated: 22 August 1995

TOPIC -----

We have a CD-ROM drive that is connected to our file server as a server volume. There are times when we would like to use other CDs while the server is still running. Is there any way we can do this without having to shut down the server?

DISCUSSION -----

Apple recommends you upgrade to AppleShare 3.0.x, AppleShare 4.0.x, AppleShare 4.1, or AppleShare Pro (AWS 95). These versions of AppleShare have the feature of Continuous Parallel Data Structure (PDS) maintenance. This allows mounting and unmounting removable media (like CD-ROMs) while the server is running.

### Article Change History:

22 Aug 1995 - Added information on AppleShare 4.1.  
13 Sep 1994 - Added information on AppleShare 4.0 & Pro.  
05 Oct 1993 - Updated information to AppleShare 3.0.x

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7713



# Tech Info Library

## AppleCD SC: Operating Temperature Without a Fan

Revised: 8/26/91  
Security: Everyone

AppleCD SC: Operating Temperature Without a Fan

=====

This article last reviewed: 15 July 1990

TOPIC -----

Concerning the AppleCD SC repair extension program:

A customer is concerned about the compact disks getting a bit warm to the touch now that the fan is disconnected. Is this normal? And if so, how warm can the player get?

DISCUSSION -----

It is true that the temperature of the unit rises without the cooling fan. We did a considerable amount of testing and found that the temperature remained lower than the 120°F needed to warp a CD. With the fan removed pay close attention to the unit's ventilation. DO NOT stack anything on top of the unit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7714



# Tech Info Library

## Cypress Research Corp.

Revised: 4/4/97  
Security: Everyone

Cypress Research Corp.

=====  
Article Created: 2 April 1994  
Article Reviewed/Updated: 4 April 1997

Cypress Research Corp.  
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<http://www.cypressr.com>

Company Profile:  
Hardware, software (Megaphone), and datacomm, specializing Macintosh-based telephone systems for voice mail, audiotex, telemarketing database capabilities, Dual Tone Multi Frequency (DTMF)

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7718



# Tech Info Library

## Davidson & Associates, Inc.

Revised: 4/4/97  
Security: Everyone

Davidson & Associates, Inc.

=====

Article Created: 22 March 1991  
Article Reviewed/Updated: 4 April 1997

Davidson & Associates, Inc.

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Torrance, CA 90503

1-800-545-7677 (Sales)

1-800-556-6141 (Technical Support)

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Company Profile:  
Software, specializing in K-12 education programs, such as Math Blaster and KidPix.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7720





# Tech Info Library

## DEC LQPO2 Daisy Wheel Printer: Pinouts for Macintosh

Revised: 7/2/91  
Security: Everyone

DEC LQPO2 Daisy Wheel Printer: Pinouts for Macintosh

=====

This article last reviewed: 19 February 1991

TOPIC -----

I'm trying to hook up a Digital LQP02 serial daisywheel printer to a Macintosh SE.

The pin-outs are:

| LQP02 Digital |                | Macintosh SE |      |
|---------------|----------------|--------------|------|
| Pin #         |                | Pin #        |      |
| 1             | shield         | 1            | HSKO |
| 2             | Tx data        | 2            | HSKi |
| 3             | Rx data        | 3            | TxD- |
| 6             | Data Set Ready | 4            | GND  |
| 7             | Signal ground  | 5            | RxD- |
| 20            | DTR            | 6            | TxD+ |
|               |                | 7            | GPi  |
|               |                | 8            | RxD+ |

Which pins goes to which connection?

I understand that the grounds go together. What about the shield? Do I really need it? The Tx goes to Rx, but the + and - TxD, RxD on the Macintosh side was a little confusing.

DISCUSSION -----

Use the negative TxD and RxD on the Macintosh side. Also, use the shield.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7721



# Tech Info Library

## Macintosh: Large Amounts of Clip Art

Revised: 8/27/91  
Security: Everyone

Macintosh: Large Amounts of Clip Art

=====

This article last reviewed: 15 July 1990

TOPIC -----

I'd like to have a single file with all my clip art in it so that I can quickly find and copy pictures to the Scrapbook. What program would be best at doing this?

DISCUSSION -----

There is no single right answer to your question. What application you should use depends on the file format of your graphics.

If you are using PostScript clip art, you'll need an application that works in PostScript, such as Adobe Illustrator or Aldus Freehand. If you are going to work with PICT documents, you'll need an application such as MacDraw II. If you are going to work with bit-mapped graphics, a program such as SuperPaint or MacPaint will suffice.

You may want to look for a program that is an art cataloger. These are generally used by people in the Graphics and Design section of desktop publishing who have large amounts of clip art that is commonly used.

Probably the best suggestion is to contact the company whose program you are using, and ask them what cataloger works best with their software or the respective type of clip art or graphic. An example would be to contact Adobe if you are using Illustrator, or Aldus if you are using Freehand.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7722



# Tech Info Library

## Apple III: Switch Settings for Apple DMP

Revised: 8/27/91  
Security: Everyone

Apple III: Switch Settings for Apple DMP

=====

This article last reviewed: 15 July 1990

TOPIC -----

What are the switch settings for connecting an Apple III with a UPIC to an Apple DMP?

DISCUSSION -----

Here is the recommended configuration:

DMP

|     |   |     |
|-----|---|-----|
| SW1 | 1 | off |
|     | 2 | off |
|     | 3 | off |
|     | 4 | off |
|     | 5 | off |
|     | 6 | off |
|     | 7 | off |
|     | 8 | off |

|     |   |               |
|-----|---|---------------|
| SW2 | 1 | off           |
|     | 2 | off           |
|     | 3 | XX (not used) |
|     | 4 | XX            |
|     | 5 | off           |
|     | 6 | on            |
|     | 7 | on            |
|     | 8 | off           |

UPIC with cable 590-0036.

Driver configuration block - Printer Driver

|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|

0E 00 00 00 00

Set the auto linefeed switch on the UPIC to AUTO.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7723



# Tech Info Library

## Hard Drives: Sticking at Startup (9/95)

Revised: 9/21/95  
Security: Everyone

Hard Drives: Sticking at Startup (9/95)

Article Created: 02 July 1990  
Article Review/Updated: 20 September 1995

TOPIC -----

I have an older Macintosh LC with an external 40 megabyte (MB) hard drive. Sometimes when I switch the external drive on, it won't start spinning. Tapping the side of the hard drive seems to break something loose inside, and the drive then starts spinning. The drive may work fine for a while, but the problem generally occurs again. Is there something wrong with my hard drive?

DISCUSSION -----

This is one of the most common hard drive failures. When a hard drive spins down, the read/write heads land on the platters. Hard drive manufacturers place some lubricant on the platters so that the heads don't scratch the platter surfaces when the drive is switched on again. Sometimes the lubricant actually functions as an adhesive and sticks the read/write heads to the platter. If the spindle motor can't overcome this adhesion, the hard drive will not spin up. The hard drive industry refers to this condition "stiction." A twist or a bump may free the heads temporarily, but the condition usually recurs. If you have a hard drive exhibiting these symptoms, back up any data that may not have been backed up, because the hard drive is not reliable. The repair is usually a drive replacement.

This is an industry-wide problem. Hard drive manufacturers are exploring alternate forms of lubrication and read/write head placement methods.

Article Change History:  
20 Sep 1995 - Revised for clarity.  
08 Aug 1991 - Reviewed for accuracy.

Support Information Services

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# Tech Info Library

## Fast Trax Digital Technologies, Inc.

Revised: 7/8/93  
Security: Everyone

Fast Trax Digital Technologies, Inc.

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Article Created: 04/01/91  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Fast Trax Digital Technologies, Inc.

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Company Profile:  
Software/hardware, specializing in interactive multimedia systems and audio  
digital compression for the Macintosh.

Article Change History: 07/08/93 Address Information Changed, Phone Number  
Changed

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Tech Info Library Article Number:7725



# Tech Info Library

## AppleFax Modem: When Wrong Size Letter Is Sent

Revised: 7/2/91  
Security: Everyone

AppleFax Modem: When Wrong Size Letter Is Sent

=====

This article last reviewed: 19 February 1991

TOPIC -----

I have an AppleFax modem that always sends European letter-size faxes instead of regular letter-size.

I have re-done the setup three times, step-by-step, with no luck. Could this be a ROM problem?

DISCUSSION -----

It is possible that there is a ROM problem with your AppleFax Modem. There was a ROM upgrade for the AppleFax and you should order it.

If that still does not cure the problem and all your settings have been checked and verified, the logic board probably is the cause of the problem.

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Tech Info Library Article Number:7726





# Tech Info Library

## Apple SuperDrive: Requires System 6.0.3 or Later (10/94)

Revised: 10/27/94  
Security: Everyone

Apple SuperDrive: Requires System 6.0.3 or Later (10/94)

=====  
Article Created: 17 February 1991  
Article Reviewed/Updated: 27 October 1994

TOPIC -----

I am using DOS mounter and an Apple SuperDrive (formerly Apple FDHD) attached to a Macintosh SE. When I insert a 720K or 1.44MB DOS disk, the disk doesn't mount. Using Apple File Exchange doesn't help.

Is there a specific Apple System version necessary to operate the SuperDrive?

DISCUSSION -----

For the best use of the SuperDrive, we recommend System software 6.0.3 or later.

Article Change History:  
27 Oct 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

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Tech Info Library Article Number:7727



# Tech Info Library

## Apple IIGS: 03 ROM Upgrade Not Needed by Older Machines

Revised: 7/2/91  
Security: Everyone

Apple IIGS: 03 ROM Upgrade Not Needed by Older Machines

=====

This article last reviewed: 15 July 1990

TOPIC -----

Is there a new revision or ROM upgrade available for the Apple IIGS?

DISCUSSION -----

The current version of the Apple IIGS ROM is 03. We have not offered an upgrade for ROM 01 owners. Most of the changes that came out in version 03 are for the 1MB logic board, hence the new ROM would be of little help to older Apple IIGS owners.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7728



# Tech Info Library

## AppleShare File Server: Making Files Undeletable

Revised: 7/2/91  
Security: Everyone

AppleShare File Server: Making Files Undeletable

=====

This article last reviewed: 19 February 1991

TOPIC -----

Is there any way to make a file undeletable on an AppleShare file server?  
I'm aware of the lock attribute, but I need something that a workstation  
user could not change easily.

DISCUSSION -----

There are a couple of commercial file protection programs that would allow  
you to lock files and make them undeletable.

For more information, check the Redgate Buyers Guide library on AppleLink.

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Tech Info Library Article Number:7730



# Tech Info Library

## Apple HD SC Setup: Checks for Bad Blocks & More (5/96)

Revised: 5/27/96  
Security: Everyone

Apple HD SC Setup: Checks for Bad Blocks & More (5/96)

Article Created: 15 July 1990  
Article Reviewed/Updated: 27 May 1996

TOPIC -----

Does the Apple HD SC Setup program re-map the hard disk to set aside bad or unusable sectors like a low-level format, or does it simply set up blocks and mark them all as available?

What other hard drive issues can it address?

DISCUSSION -----

Yes, Apple HD SC Setup does spare bad blocks. If too many bad blocks are found, a message that the hard drive needs to be serviced is displayed. Since you were apparently able to format the drive successfully, we can assume that the problems are not due to bad blocks.

The drive could be have other errors though. For instance, it could be having trouble positioning its head on the platters.

In very rare cases a third party formatter used on a Apple drive can damage it so that Apple HD SC Setup will no longer recognize it. The hardware is usually OK but the driver is severely corrupted. This was an issue with older version of Apple HD SC Setup and should not occur with the version shipping with System 7.5.

If you can prevent the driver from loading at start up. You can usually get Apple HD SC Setup to recognize and reformat the drive. To prevent the driver from loading, wait till the Mac has booted before turning on the drive. For internal drives, try holding down CMD-OPT-SHT-DELETE until the Mac has booted. (Note: This does not work on most Quadra, PowerBook, or LC series computers.

A good rule to follow is to format all SCSI devices with the same formatting software. This avoids possible SCSI driver conflicts.

With System 7.5, all 68040 based and higher Macintosh computers need to have SCSI Manager 4.3 compatible drivers.

You can also do a "Get Info" on problematic drive. In the Get Info window, next to where it says 'Where:' you will see "Hard Disk Name, SCSI 0" or "HardDiskName, SCSI 0 (a)" if it is an Apple HD SC Setup formatted drive. If any other information/characters are there, then it has a third party driver.

Article Change History:

27 May 1996 - Corrected minor typographical error.

09 Nov 1994 - Added more troubleshooting information to article.

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Tech Info Library Article Number:7732



# Tech Info Library

## Macintosh IIfx: Built-In Video Slows Performance Slightly

Revised: 7/10/92  
Security: Everyone

Macintosh IIfx: Built-In Video Slows Performance Slightly

=====

Article Created: 15 July 1990  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Does the Macintosh IIfx's built-in video port support all Apple monitors?

Does using built-in video, instead of a separate video card, slow the performance of the Macintosh IIfx?

DISCUSSION -----

The Macintosh IIfx's built-in video port supports the Apple High Resolution Monochrome, the Apple High Resolution RGB, and the Apple Portrait monitor. It does not support Apple's 2-page monitor.

Using the built-in video port instead of a card requires the computer to use its system memory for screen drawing, resulting in a loss of some performance. This can be minimized by using at least 5MB of RAM with the 1MB bank being located in bank A for video use.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7734



# Tech Info Library

## Apple IIGS: Using on AppleTalk Phase II Network

Revised: 7/2/91  
Security: Everyone

Apple IIGS: Using on AppleTalk Phase II Network

=====

This article last reviewed: 15 July 1990

TOPIC -----

I'm running an Apple IIGS, with GS/OS 5.02, on an AppleTalk LAN with a "II bootblocked" AppleShare server.

Can I upgrade this network to AppleTalk Phase II? I assume that if I do, my Apple IIGS computers will boot from a server in their own zone. What if I want to have two servers in one physical zone? Where will the Apple IIGS computers boot from?

DISCUSSION -----

AppleTalk Phase II has no effect on LocalTalk. The enhancements that Phase II provides are only for EtherNet and Token Ring

There was an upgrade to the boot blocks for loading GS/OS on the server. This is included with GS/OS 5.02 on a new Apple II setup disk.

The Apple IIGS will boot from the first server it finds.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7735



# Tech Info Library

## AppleShare & Apple IIGS: Cannot Load Descriptor File Error

Revised: 7/2/91  
Security: Everyone

AppleShare & Apple IIGS: "Cannot Load Descriptor File" Error

=====

This article last reviewed: 25 February 1991

TOPIC -----

I have a problem trying to install an Apple IIGS workstation on an AppleShare network.

On my Macintosh SE/30 file server, I've installed System 6.0.5, AppleShare, and Apple II network software. On my Apple IIGS, I made an "AppleShare on 3.5" startup disk, started it up, logged on, and installed Network Server Startup on the file server. After starting the Apple IIGS up from the network and setting the startup application to the Finder, I got the error message, "CANNOT LOAD DESCRIPTOR FILE \$0001." I've re-installed everything and the problem persists.

DISCUSSION -----

This sounds like an AppleShare server access privileges problem. Set the System Icons privileges to see files and folders for everyone and make sure that this change is made for all enclosed folders.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7736





# Tech Info Library

## ImageWriter II: Switch Settings for Use with a Apple IIe

Revised: 7/2/91  
Security: Everyone

ImageWriter II: Switch Settings for Use with a Apple IIe

=====

This article last reviewed: 15 July 1990

TOPIC -----

What are the proper settings for using an Apple IIe with a Super  
Serial Card to an ImageWriter II?

DISCUSSION -----

The settings should be:

Super Serial Card

|     |   |     |
|-----|---|-----|
| SW1 | 1 | off |
|     | 2 | off |
|     | 3 | off |
|     | 4 | on  |
|     | 5 | off |
|     | 6 | on  |
|     | 7 | on  |

|     |   |     |
|-----|---|-----|
| SW2 | 1 | on  |
|     | 2 | off |
|     | 3 | off |
|     | 4 | off |
|     | 5 | on  |
|     | 6 | off |
|     | 7 | off |

Jumper block pointed toward terminal.

ImageWriter II

|     |   |     |
|-----|---|-----|
| SW1 | 1 | off |
|     | 2 | off |
|     | 3 | off |
|     | 4 | off |

5 off  
6 on  
7 off  
8 off

SW2 1 on  
2 on  
3 off  
4 off

Cable: 590-0335 or 590-0556

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Tech Info Library Article Number:7737



# Tech Info Library

## AppleShare: Installing on Systems that Require System 6.0.4

Revised: 7/2/91  
Security: Everyone

AppleShare: Installing on Systems that Require System 6.0.4

=====

This article last reviewed: 19 February 1991

TOPIC -----

I recently purchased a Macintosh IIci as an AppleShare file server. My version of AppleShare File Server (2.0.1) is on an 800K diskette and cannot be used because it does not have System Software 6.0.4 on it. Is my only alternative copying the applications to a 1.4MB diskette that has System 6.0.4 on it?

DISCUSSION -----

In order for you to install AppleShare or some of our other networking and communications software on our newer computers, use the Network Products Installer diskette. This disk contains the latest System software and installer scripts as a pre-boot for the actual installer diskette. Just boot from the NPI disk, launch the particular Installer script, and the Installer will prompt you for the appropriate diskette.

The NPI diskette is currently shipping with all new systems that require System 6.0.4 or higher.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7739



# Tech Info Library

## Isolation Transformer: How It Protects You from Shock

Revised: 7/2/91  
Security: Everyone

Isolation Transformer: How It Protects You from Shock

=====

This article last reviewed: 25 February 1991

TOPIC -----

How does the isolation transformer protect a service technician from getting shocked?

DISCUSSION -----

The isolation transformer protects against a ground that's been reversed with a hot lead: for example, a normally grounded monitor frame that's been switched to hot. If you were to touch the frame and a true ground, you would be severely electrocuted.

The isolation transformer creates a floating source for the voltage that ties the voltage coming from the transformer to earth ground. This prevents you from getting between the power source and ground to complete a circuit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7740



# Tech Info Library

## ADB Devices: Don't Connect/Disconnect while Computer Is On

Revised: 8/27/91  
Security: Everyone

ADB Devices: Don't Connect/Disconnect while Computer Is On

=====

This article last reviewed: 15 July 1990

TOPIC -----

I usually run my AppleShare servers without attached keyboards. When a keyboard is needed, I simply connect it. Recently, I've noticed that if the keyboard is plugged in after the machine is booted, the keyboard doesn't work. This problem seems to happen with newer machines and/or the newer versions of the system software.

DISCUSSION -----

The Apple Desktop Bus (ADB) was never intended to allow power-on configuration changes. This is a dangerous practice, as the ADB fuse is a soldered component on the logic board: if the fuse blows from connecting or disconnecting keyboards (or mice, trackballs, etc.) -- the logic board will need to be replaced. The owner's manuals have always made this clear.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7741



# Tech Info Library

## LaserWriter IINTX: Trouble Initializing Attached Hard Drive

Revised: 6/2/92  
Security: Everyone

LaserWriter IINTX: Trouble Initializing Attached Hard Drive

=====

Article Created: 15 July 1990  
Article Last Reviewed: 2 June 1992  
Article Last Updated: 2 June 1992

TOPIC -----

My LaserWriter IINTX is connected to an Apple 40SC Hard drive. My hard drive's SCSI ID is set to 5 and is properly terminated. When I attempt to initialize the hard disk using the LaserWriter Font Utility, the initialize button is always greyed out.

DISCUSSION -----

Be sure that you have:

- Connected the drive to the 50-pin SCSI connector instead of the DB-25 port serial connector on the I/O board.
- Not connected your computer to the same SCSI bus as the printer and the hard drive.
- Let the drive become ready before turning on the LaserWriter IINTX.

If all the above are correct, you may have a bad LaserWriter IINTX controller or hard drive mechanism.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7742



# Tech Info Library

## LaserWriter: Timeout Error Messages Printing Long Documents

Revised: 7/2/91  
Security: Everyone

LaserWriter: Timeout Error Messages Printing Long Documents

=====

This article last reviewed: 19 February 1991

TOPIC -----

When I try to print out long documents on my LaserWriter, I get a timeout error message. Someone suggested that I change the default values of my timeouts with a PostScript program. Where can I get such a program? What else can I do with it? Is one program better than another?

DISCUSSION -----

The new LaserWriter drivers (6.0.1 and later) are better at handling longer print jobs. If you are using older drivers, upgrade to the 6.0.1 versions as a first step.

The PostScript "program" you refer to is not an off-the-shelf commercial product. It's a PostScript code sequence that changes the default value of the timeout clock. We recommend looking at the PostScript Language Reference manual, published by Addison-Wesley. This book explains using PostScript commands to alter the timeout.

We recommend against sending PostScript commands to the LaserWriter, as it is quite possible to change the LaserWriter's parameters in such a way as to make the LaserWriter permanently inaccessible.

For more information, search on "Addison-Wesley".

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Tech Info Library Article Number:7746



# Tech Info Library

## AppleShare File Server: Cannot Be Bypassed at Startup

Revised: 7/2/91  
Security: Everyone

AppleShare File Server: Cannot Be Bypassed at Startup

=====

This article last reviewed: 18 February 1991

TOPIC -----

Is there any way to prevent an AppleShare file server from starting up AppleShare that doesn't require using a separate system disk? Is there an option key sequence, for instance?

DISCUSSION -----

There is no hot key you can use to bypass AppleShare at startup. Using a separate system disk is the only way to prevent AppleShare from loading.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7747





# Tech Info Library

## Macintosh: Sad Mac Error Code Meaning (11/95)

Revised: 9/26/96  
Security: Everyone

Macintosh: "Sad Mac" Error Code Meaning (11/95)

Article Created: 2 July 1991  
Article Reviewed/Updated: 20 November 1995

TOPIC -----

When I turn on my Macintosh, I get a black screen with a "sad Macintosh" face and the numbers 020016. There is no listing for this error code in any of my manuals. What does it mean?

DISCUSSION -----

The particular error code that appears with the "sad Macintosh" is not as important as WHEN it occurs. If the Macintosh can start up from a different system diskette, then the problem is probably with the system software on the other disk. System problems are usually identified when you get a "happy Macintosh" face and the "Welcome to Macintosh" screen before the "sad Macintosh."

If the "sad Macintosh" face appears immediately at power up, that usually suggests an issue with the logic board or memory. Try starting up from a floppy disk before assuming it's a hardware problem.

Sad Mac Error Codes Description  
=====

On the Original ROMs (Macintosh 128k, 512k, 512ke, Plus):  
-----

When you press the interrupt button on the side of your Macintosh when starting up, you should get a sad Mac icon with '0F000D' and some bits cycling under the icon indicating it is performing a memory test.

This numeric code is in two parts:

- The first two characters are the class code. The class code tells what part of the diagnostic program found the error.
- The second four are the sub code. The sub class code tells what the error

was. In the case of a bad RAM chip, the sub class identifies the bad chip (this was very helpful to homegrown upgraders).

#### Begin\_Table

| Class Code                           | Sub Code             |
|--------------------------------------|----------------------|
| -----                                | -----                |
| 1 = ROM test failed                  | Meaningless          |
| 2 = Memory test - bus subtest        | identifies bad chips |
| 3 = Memory test - byte write         | identifies bad chips |
| 4 = Memory test - Mod3 test          | identifies bad chips |
| 5 = Memory test - address uniqueness | identifies bad chips |

#### Single Chip Identification

| Data Bit | Location | Sub Code Bits |
|----------|----------|---------------|
| -----    | -----    | -----         |
| 0        | F5       | 0001          |
| 1        | F6       | 0002          |
| 2        | F7       | 0004          |
| 3        | F8       | 0008          |
| 4        | F9       | 0010          |
| 5        | F10      | 0020          |
| 6        | F11      | 0040          |
| 7        | F12      | 0080          |
| 8        | G5       | 0100          |
| 9        | G6       | 0200          |
| 10       | G7       | 0400          |
| 11       | G8       | 0800          |
| 12       | G9       | 1000          |
| 13       | G10      | 2000          |
| 14       | G11      | 4000          |
| 15       | G12      | 8000          |

| Class Code    | Sub Code                                   |
|---------------|--------------------------------------------|
| -----         | -----                                      |
| F = Exception | 0001 Bus error                             |
|               | 0002 Address error                         |
|               | 0003 Illegal instruction                   |
|               | 0004 Zero divide                           |
|               | 0005 Check instruction                     |
|               | 0006 Traps instruction                     |
|               | 0007 Privilege violation                   |
|               | 0008 Trace                                 |
|               | 0009 Line 1010                             |
|               | 000A Line 1111                             |
|               | 000B Other exception                       |
|               | 000C Nothing                               |
|               | 000D NMI (normal indication)               |
|               | 0064 Couldn't Read System File into Memory |

Macintosh SE & Macintosh II ROMs:

-----  
The Sad Mac error codes have been changed to incorporate additional power for testing and to support the 32-bit world. Generally, the same codes are used for 68000 exceptions as the Macintosh, however they are displayed differently.

The traditional Macintosh error codes are displayed like this:

0F0003

Where "F" indicates an exception occurred, and "3" indicates an illegal instruction occurred. On the Macintosh SE and II, the display would appear:

0000000F  
00000003

\*Please note that 00000003 is a hex number.\*

The new power-on error codes have the following format:

XXXXYYYY  
ZZZZZZZZ

Where XXXX is internal test manager state information (ignore this), YYYY contains codes that indicate either an exception code, or the test number for a power on test failure. The ZZZZZZZZ code contains additional failure information to help track down the problem.

YYYY Error Codes:

-----  
\$0001 The ROM checksum test failed. Ignore the Z field.

\$0002 The first small chunk of RAM to be tested failed. The Z field indicates which RAM Bit(s) failed. This small chunk of RAM is always in Bank B.

Example: \$AABBCCDD  
AA=8 bit mask for bits 31-24  
BB=8 bit mask for bits 23-16  
CC=8 bit mask for bits 15-8  
DD=8 bit mask for bits 7-0

\$0003 The RAM test failed while testing bank B, after passing the chunk tested for code \$0002. The Z field indicates which bits failed as in code \$0002.

\$0004 The RAM test failed while testing bank A. The Z field indicates which bits failed as in code \$0002.

\$0005 The RAM External addressing test failed. The Z field indicates a failed address line.

\$0006 Unable to properly address the VIA1 chip. The Z field is not applicable.

## ..TIL07748-Macintosh-Sad\_Mac\_Error\_Code\_Meaning\_11-95.pdf

\$0007 Unable to properly address the VIA2 chip (Macintosh II only). The Z field is not applicable.

\$0008 Unable to properly access the Front Desk Bus. The Z field is not applicable.

\$0009 Unable to properly access the MMU. The Z field is not applicable.

\$000A Unable to properly access NuBus. The Z field is not applicable.

\$000B Unable to properly access the SCSI Chip. The Z field is not applicable.

\$000C Unable to properly access the IWM chip. The Z field is not applicable.

\$000D Unable to properly access the SCC Chip. The Z field is not applicable.

\$000E Failed Data Bus test. The Z field indicated the bad bit(s) as a 32-bit mask for bits 0-31. This may indicate either a bad SIMM or data bus failure.

\$000F Reserved for Macintosh compatibility.

\$FFxx A 680xx exception occurred during power on testing.  
The xx indicates the exception:

\$01 - Bus Error

\$02 - Address Error

\$03 - Illegal Instruction Error

\$04 - Zero Divide

\$05 - Check Instruction

\$06 - cpTrapCC, Trap CC, Trap V

\$07 - Privilege violation

\$08 - Trace

\$09 - Line A

\$0A - Line F

\$0B - unassigned

\$0C - CP protocol violation

\$0D - Format exception

\$0E - Spurious interrupt

\$0F - Trap 0-15 exception

\$10 - Interrupt Level 1

\$11 - Interrupt Level 2

\$12 - Interrupt Level 3

\$13 - Interrupt Level 4

\$14 - Interrupt Level 5

\$15 - Interrupt Level 6

\$16 - Interrupt Level 7

\$17 - FPCP bra or set on unordered condition

\$18 - FPCP inexact result

\$19 - FPCP divide by zero

\$1A - FPCP underflow

\$1B - FPCP operand error

\$1C - FPCP overflow

\$1D - FPCP signalling NAN

\$1E - PMMU configuration

\$1F - PMMU illegal operation

\$20 - PMMU access level violation

Macintosh Portable ROMs:

-----  
The bootup code in the Macintosh Portable contains a series of startup tests that are run to ensure that the fundamental operations of the machine are working properly. If any of those tests fail, a Sad Mac icon appears on the screen with a code below that describes what failure occurred. Here is a typical example of a Sad Mac display with an error code below it:

SAD MAC CODE

05460203     =     (D7.L)  
0000B6DB     =     (D6.L)

The two codes are actually the contents of the two CPU data registers D6 and D7. The upper word (upper 4 hex digits, in this case 0546) of D7 contains miscellaneous flags that are used by the start-up test routines and are unimportant to just about everybody except a few test engineers within Apple. The lower word of D7 is the major error code. The major error code identifies the general area the test routines were in when a failure occurred. D6 is the minor error and usually contains additional information about the failure, something like a failed bit mask.

SAD MAC CODE BROKEN DOWN

| Test Flags  | Major Error |
|-------------|-------------|
| -----       | -----       |
| 0546        | 0203        |
| Minor Error | Minor Error |
| -----       | -----       |
| 0000        | B6DB        |

The major error is further broken into the upper byte that contains the number of any 68000 exception that occurred (\$00 meaning that no exception occurred), and the lower byte that usually contains the test that was being run at the time of failure. If an unexpected exception occurred during a particular test, then the exception number is logically ORed into the major error code. This way both the exception that occurred as well as the test that was running can be decoded from the major error code:

SAD MAC CODE FURTHER BROKEN DOWN

| 68000 Exception | Test Code |
|-----------------|-----------|
| -----           | -----     |
| 02              | 03        |

In this example, the code says that an address error exception (\$0200) occurred during the RAM test for Bank A (\$03); \$0200 ORed with \$03 = \$0203.

Major Error Codes

-----  
Below is a brief description of the various test codes that might appear in the

major error code:

**\*\*Warning\*\*:** Some of these codes may mean slightly different things in Macintosh models other than the Macintosh Portable. These descriptions describe specifically how they are used in the Macintosh Portable.

- \$01 - ROM test failed. Minor error code is \$FFFF, means nothing.
- \$02 - RAM test failed. Minor error code indicates which RAM bits failed.
- \$05 - RAM external addressing test failed. Minor error code indicates a failed address line.
- \$06 - Unable to properly access the VIA 1 chip during VIA initialization. Minor error code not applicable.
- \$08 - Data bus test at location eight bytes off of top of memory failed. Minor error code indicates the bad bits as a 16-bit mask for bits 15-00.  
This may indicate either a bad RAM chip or data bus failure.
- \$0B - Unable to properly access the SCSI chip. Minor error code not applicable.
- \$0C - Unable to properly access the IWM (or SWIM) chip. Minor error code not applicable.
- \$0D - Not applicable to Macintosh Portable. Unable to properly access the SCC chip.  
Minor error code not applicable.
- \$0E - Data bus test at location \$0 failed. Minor error code indicates the bad bits as a 16-bit mask for bits 15-00. This may indicate either a bad RAM chip or data bus failure.
- \$10 - Video RAM test failed. Minor error code indicates which RAM bits failed.
- \$11 - Video RAM addressing test failed. Minor error code contains the following:

|                   |   |                         |
|-------------------|---|-------------------------|
| upper word        | = | failed address (16-bit) |
| msb of lower word | = | data written            |
| lsb of lower word | = | data read               |

Data value written also indicates which address line is being actively tested.
- \$12 - Deleted
- \$13 - Deleted
- \$14 - Power Manager processor was unable to turn on all the power to the board. This may have been due to a communication problem with the Power Manager. If so, the minor error code contains a Power Manager error code, explained in the next section.
- \$15 - Power Manager failed its self-test. Minor error code contains the following:

|     |   |                                                                               |
|-----|---|-------------------------------------------------------------------------------|
| msw | = | error status of transmission to power manager.                                |
| lsw | = | Power Manager self-test results (0 means it passed, non-zero means it failed) |
- \$16 - A failure occurred while trying to size and configure the RAM.  
Minor error code not applicable.

#### Minor error codes—Power Manager Processor Failures

-----

If a communication problem occurs during communication with the Power Manager, the following error codes will appear somewhere in the minor error code (usually in the lower half of the code, but not always):

|        |                                                             |
|--------|-------------------------------------------------------------|
| \$CD38 | Power Manager was never ready to start handshake.           |
| \$CD37 | Timed out waiting for reply to initial handshake.           |
| \$CD36 | During a send, Power Manager did not start a handshake.     |
| \$CD35 | During a send, Power Manager did not finish a handshake.    |
| \$CD34 | During a receive, Power Manager did not start a handshake.  |
| \$CD33 | During a receive, Power Manager did not finish a handshake. |

#### Diagnostic Code Summary

-----

Below is a summarized version of the Sad Mac error codes:

#### Test Codes

|      |                                                        |
|------|--------------------------------------------------------|
| \$01 | ROM checksum test.                                     |
| \$02 | RAM test.                                              |
| \$05 | RAM addressing test.                                   |
| \$06 | VIA 1 chip access.                                     |
| \$08 | Data bus test at top of memory.                        |
| \$0B | SCSI chip access.                                      |
| \$0C | IWM (or SWIM) chip access.                             |
| \$0D | Not applicable to Macintosh Portable. SCC chip access. |
| \$0E | Data bus test at location \$0.                         |
| \$10 | Video RAM test.                                        |
| \$11 | Video RAM addressing test.                             |
| \$14 | Power Manager board power on.                          |
| \$15 | Power Manager self-test.                               |
| \$16 | RAM sizing.                                            |

#### Power Manager Communication Error Codes

-----

|        |                                             |
|--------|---------------------------------------------|
| \$CD38 | Initial handshake.                          |
| \$CD37 | No reply to initial handshake.              |
| \$CD36 | During send, no start of a handshake.       |
| \$CD35 | During a send, no finish of a handshake.    |
| \$CD34 | During a receive, no start of a handshake.  |
| \$CD33 | During a receive, no finish of a handshake. |

#### CPU Exception Codes (as used by the startup tests)

-----

|        |                                      |
|--------|--------------------------------------|
| \$0100 | Bus error exception code             |
| \$0200 | Address error exception code         |
| \$0300 | Illegal error exception code         |
| \$0400 | Zero divide error exception code     |
| \$0500 | Check inst error exception code      |
| \$0600 | cpTrapcc,Trapcc,TrapV exception code |
| \$0700 | Privilege violation exception code   |
| \$0800 | Trace exception code                 |
| \$0900 | Line A exception code                |
| \$0A00 | Line F exception code                |
| \$0B00 | Unassigned exception code            |
| \$0C00 | CP protocol violation                |
| \$0D00 | Format exception                     |

|        |                                   |
|--------|-----------------------------------|
| \$0E00 | Spurious interrupt exception code |
| \$0F00 | Trap inst exception code          |
| \$1000 | Interrupt level 1                 |
| \$1100 | Interrupt level 2                 |
| \$1200 | Interrupt level 3                 |
| \$1300 | Interrupt level 4                 |
| \$1400 | Interrupt level 5                 |
| \$1500 | Interrupt level 6                 |
| \$1600 | Interrupt level 7                 |

End\_Table

#### Article Change History

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20 Nov 1995 - Added new keyword and reviewed article for technical accuracy.  
14 Aug 1995 - Added Internet table formatting convention.  
01 Aug 1994 - Converted enclosed binary file to text and added to article.  
20 May 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7748





# Tech Info Library

## Magnum Software Corporation

Revised: 4/4/97  
Security: Everyone

Magnum Software Corporation

=====

Article Created: 03/29/91  
Article Reviewed: 07/13/93  
Article Updated: 04/04/97

Magnum Software Corporation

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21115 Devonshire St.  
Suite 337  
Chatsworth, CA 91311

818-700-0510

818-701-5459 Fax

### Company Profile:

Hardware and software, specializing in TFLX, a modular Macintosh-based telephone toolkit, including telemarketing database capability, voice mail, Dual Tone Multi Frequency (DTMF) decoding, and word-to- speech output, fax on demand

For a live demo of the TFLX system: 818-701-5051

Article Change History: 07/13/93 New product information added.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7750



# Tech Info Library

## Apple High-Resolution Monitors: Using with Overhead Projectors

Revised: 8/28/91  
Security: Everyone

Apple High-Resolution Monitors: Using with Overhead Projectors

=====

Article Created:  
Article Last Reviewed: 15 July 1990  
Article Last Updated:

TOPIC -----

The barely visible, thin horizontal lines present on most Apple High-Resolution Monitor screens are causing problems for my LCD overhead projector. Are there any ways to reduce these practically invisible lines?

DISCUSSION -----

The horizontal line you're talking about is the Color Grid Stabilizing Wire; removing or altering it in any way would make your monitor much more fuzzy. Most overhead projectors don't go through the monitor, so the stabilizing wire shouldn't be a factor. If your projector does go through the monitor, you may want to replace it with one that connects directly to a video interface card instead.

Check the Redgate Buyer's Guide library here on AppleLink for possible sources.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7753



# Tech Info Library

## NetFRAME Systems, Inc.

Revised: 7/14/93  
Security: Everyone

NetFRAME Systems, Inc.

=====

Article Created: 2 July 1991  
Article Reviewed/Updated: 14 July 1993

NetFRAME Systems, Inc.

-----

1545 Barber Lane  
Milpitas, CA 95035

800-852-3726

408-944-0600

408-434-4190 (Marketing and Sales) Fax  
408-434-4100 (General) Fax

### Company Profile:

Datacomm, specializing in Intel 386 or 486-based servers running either Novell Netware or the OS/2 LAN Manager.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7755



# Tech Info Library

## Macintosh: Generic Pinouts for 9600 Baud V.32/V.42 Modems

Revised: 7/2/92  
Security: Everyone

Macintosh: Generic Pinouts for 9600 Baud V.32/V.42 Modems

=====  
  
Article Created: 18 February 1991  
Article Last Reviewed: 19 June 1992  
Article Last Updated:

TOPIC -----

What are the generic pinouts for connecting a Macintosh to a high-speed 9600 baud V.32/V.42 modem?

DISCUSSION -----

Here are the generic pinouts:

| Modem | Macintosh |
|-------|-----------|
| 1-7   | 4-8       |
| 2     | 3         |
| 3     | 5         |
| 5     | 2         |
| 4     | 1         |

These pinouts apply to all "V" series modems and all Macintosh computers. Older Macintosh computers have slightly different serial ports than the later machines and may not support the fastest possible Macintosh-to-modem speeds.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7757



# Tech Info Library

## Macintosh: Third-Party Hard Disk Partitioning

Revised: 7/2/91  
Security: Everyone

Macintosh: Third-Party Hard Disk Partitioning

=====

This article last reviewed: 15 July 1990

TOPIC -----

Can I create 10 or more partitions on a third-party 600MB hard drive and have them all available on the Macintosh desktop at the same time?

DISCUSSION -----

Since you have a third-party drive, you'll need to use a third-party hard disk utility. This utility should be provided by the manufacturer of the drive. If not, a program called SilverLining from La Cie works well.

For more information, search on "La Cie".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7759



# Tech Info Library

## Peripheral Outlet, Inc.

Revised: 7/15/93  
Security: Everyone

Peripheral Outlet, Inc.

=====

Article Created: 29 March 1991  
Article Reviewed/Updated: 15 July 1993

Peripheral Outlet, Inc.

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327 E. 14th  
Ada, OK 74820

800-332-6581

405-332-6581

405-436-2245 Fax

Company Profile:  
Hardware reseller, specializing in RAM and memory upgrades.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7761



# Tech Info Library

## **Pioneer New Media Technologies(formerly Pioneer Comm. of Amer.)**

Revised: 7/16/93  
Security: Everyone

Pioneer New Media Technologies(formerly Pioneer Comm. of Amer.)

=====

Article Created: 11 March 1991  
Article Reviewed/Updated: 15 July 1993

Pioneer New Media Technologies

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600 E Crescent Ave.  
Upper Saddle River, NJ 07458

800-527-3766

201-327-6400

201-327-9379 Fax

Company Profile:  
Hardware, specializing in CD-ROM drives, optical memory disk drives, laser  
disc players, video walls and video cubes.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7762



# Tech Info Library

## Macintosh Portable: Battery Charger Is Universal

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Battery Charger Is Universal

=====

Article Created:  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

Will an American-bought Macintosh Portable battery charger work in Japan?

DISCUSSION -----

The charger is universal. No transformer or new charger is needed.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7763





# Tech Info Library

## Macintosh Portable: Modifying for Use by the Handicapped

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Modifying for Use by the Handicapped

=====

Article Created: 2 July 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

Can the Macintosh Portable's display screen be detached? A customer wants to detach the display and mount it on a swing arm of a wheelchair, with the rest of the Portable under the wheelchair.

Is this possible?

DISCUSSION -----

It is possible to remove the screen from the Macintosh Portable, but you'll need a special monitor extension cable that Apple does not manufacture.

Also, Aura Systems makes a product called ScuzzyGraph that allows connection of monochrome and color monitors to the Macintosh Portable and other members of the Macintosh family.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7764



# Tech Info Library

## Macintosh: Screen Dumps for ImageWriter and LaserWriter

Revised: 5/15/92  
Security: Everyone

Macintosh: Screen Dumps for ImageWriter and LaserWriter

=====

Article Created: 15 July 1990  
Article Last Reviewed: 15 May 1992  
Article Last Updated: 15 May 1992

TOPIC -----

How do you do a print screen from a Macintosh?

DISCUSSION -----

From System 7, first take a screen snapshot (Command-Shift-3), which creates a TeachText document of the current screen. Open the document (called "Picture 1" at the root level of the directory) by double-clicking on it and print from there.

From System 6 or earlier, press Command-Shift-4 while in 2-bit mode (black & white) and you will print directly to an ImageWriter. If the Caps Lock key is down, you will print the entire screen. If the Caps Lock key is up, you will print the active window. Direct LaserWriter screen dumps are not supported by the System software, but Command-Shift-3 (also while in 2-bit, black & white mode) will create a printable 72 dpi MacPaint document.

Copyright 1990, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7765



# Tech Info Library

## Laser Printers: Third-Party 600 DPI AppleTalk-compatible

Revised: 7/23/93  
Security: Everyone

Laser Printers: Third-Party 600 DPI AppleTalk-compatible

=====

Article Created: 2 July 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

Do you know of any 600 dpi (or better), AppleTalk-compatible, multi-user laser printers that can handle 35-45 lb. paper stock?

DISCUSSION -----

Both QMS, Inc. and Linotype-Hell make these printers.

To locate a vendor's address and phone numbers, use vendor name as a search string.

Article Change History:  
23 July 1993 - Company title changed from Linotype to Linotype-Hell.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7768



# Tech Info Library

## Macintosh: Mysterious Bombs May Be SCSI or RAM

Revised: 8/28/91  
Security: Everyone

Macintosh: Mysterious Bombs May Be SCSI or RAM

=====

Article Created:  
Article Last Reviewed: 25 February 1991  
Article Last Updated:

TOPIC -----

I have a problem with my Macintosh bombing frequently at startup. My system also bombs at other times, such as when booting or quitting a program, but generally, most bombs occur at startup.

When opening DBase Mac, I get a message that the program has been corrupted. Open the program again and it runs fine. I get a variety of system errors such as ID-04, ID-01 and ID-25.

QuarkXPress 2.12 freezes on the screen while opening, yet an exact copy of QuarkXPress will install and run just fine on another Macintosh. Also, PageMaker 4.0 bombs when trying to "Place" a document or a graphic, as does Excel 2.2 when opening or closing.

I am using all standard Apple equipment, including an 80MB Quantum hard drive with a corrected EPROM and 5MB of RAM.

I have installed System 6.0.5 from the original Installer disks and have removed all INITs.

I have run Macintosh SE/30 diagnostics on the computer and Apple HD diagnostics on the hard drive--and all tests pass.

DISCUSSION -----

Even though your system has passed its diagnostics, you could still be experiencing a RAM or SCSI problem.

RAM problems can show up after warm-up. For example, a marginal SIMM's speed may be fine when cool but slow down after warming up. All SIMMs do

this to a certain extent, but you may have a SIMM that crosses the Macintosh SE/30's tolerance threshold when warm. The only fix for this is to replace the offending SIMM or SIMMs. A similar problem could be happening within the memory manager's circuitry on the logic board, the only possible fix being a complete logic board replacement.

More likely, this is a SCSI problem, particularly if you have external SCSI devices attached. We have seen this problem most often when there are external SCSI devices attached but not turned on. All SCSI devices must be powered on before starting the Macintosh and they must be left on until the Macintosh is turned off. Doing otherwise can introduce garbage onto the SCSI data line. Improper termination of the SCSI chain will also cause this problem.

If your SCSI chain is found to be the source of your problem, be aware that your hard drive's format may be corrupted (the garbage on the SCSI chain having corrupted the format). You'll need to reformat your hard drive with either all the external SCSI devices removed or powered on.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7769



# Tech Info Library

## Apple III: Connecting to an ImageWriter I

Revised: 8/28/91  
Security: Everyone

Apple III: Connecting to an ImageWriter I

Article Created:  
Article Last Reviewed: 18 February 1991  
Article Last Updated:

TOPIC -----

How do I connect an Apple III to an ImageWriter I?

DISCUSSION -----

Connect cables 590-0037 and 590-0166 to the RS-232 serial port. Either the printer driver or the RS-232 driver may be used.

Driver Configuration Block - Printer Driver

|    |    |    |    |    |
|----|----|----|----|----|
| 0  | 1  | 2  | 3  | 4  |
| 0E | 00 | 00 | 00 | 00 |

Driver Configuration Block - RS-232 Driver

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 0  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | A  | B  |
| 0E | 00 | 00 | 00 | 00 | 00 | 13 | 11 | DF | 84 | 50 | 80 |

For ImageWriter I:

590-0037 Pinouts

590-0166 Pinouts

DB-25 Male

DB-25 Male

DB-25 Male

DB-25 Female

1  
2  
3  
4  
5

1  
2  
3  
4  
5

1  
2  
3  
4 and 5  
6

1  
3  
2  
8  
20

|    |    |    |         |
|----|----|----|---------|
| 6  | 6  | 7  | 7       |
| 7  | 7  | 8  | 4 and 5 |
| 8  | 8  | 20 | 6       |
| 20 | 20 |    |         |

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7770



# Tech Info Library

## Apple Scanner: Using with a Macintosh IIfx

Revised: 12/22/92  
Security: Everyone

Apple Scanner: Using with a Macintosh IIfx

Article Created: 2 July 1991

### Article Change History

-----  
12/22/92 - UPDATED

- To include Scanner driver 2.0 information.

### TOPIC -----

Is there any trick for getting an Apple Scanner to work with a Macintosh IIfx? I keep getting a "scanner not found" message. The Macintosh IIfx terminator is installed in the scanner's second SCSI port.

Do I need a second terminator when using with a Macintosh IIfx? Does it need to be an fx-type?

### DISCUSSION -----

The Macintosh IIfx is very picky about its termination. At no time should there be more than two terminators in the entire SCSI chain -- one on each end, or in the case of only one internal SCSI hard drive, a single terminator installed internally. All terminators used with the Macintosh IIfx must either be true IIfx-compatible or "augmented" by the IIfx SCSI Filter (used only with internal hard drives).

In addition, older Apple Scanners had some additional capacitors installed on the logic board, which may garble the SCSI signals when connected to faster Macintosh computers. Install the Scanner driver version 2.0 to correct this problem.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7771





# Tech Info Library

## AppleShare: Requires Dedicated Server

Revised: 8/28/91  
Security: Everyone

AppleShare: Requires Dedicated Server

=====

Article Created:  
Article Last Reviewed: 15 July 1990  
Article Last Updated:

TOPIC -----

If I had enough RAM, would it be possible to run AppleShare file and print servers on my Macintosh in the background under MultiFinder? I know that the instructions state that I need a dedicated machine, but I only need to use a few other programs.

DISCUSSION -----

Unfortunately, there is no way to make either the AppleShare File Server or Print Server run in the background under MultiFinder. The "administrative" portions of these systems can run concurrently under the server software, but that is not the same as running in the background. The actual code that drives the server software actually modifies the operation of the System to such an extent that most applications would be incompatible with it.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7772



# Tech Info Library

## Apple IIGS: How To Make a GS/OS 5.0.2 Diskette

Revised: 8/28/91  
Security: Everyone

Apple IIGS: How To Make a GS/OS 5.0.2 Diskette

=====

Article Created:  
Article Last Reviewed: 15 July 1990  
Article Last Updated:

TOPIC -----

I am trying to get my Apple IIGS to print AppleWorks 3.0 files on a LaserWriter over LocalTalk or local ImageWriter.

I started out with an AppleWorks 2.0 disk that worked just fine on my Apple IIGS (ROM v1.0). I copied the disk, then replaced my AppleWorks 2.0 files with AppleWorks 3.0 files. When I chose Chooser, the Apple IIGS went into what looked like machine language or Pascal code. I then tried using the old AppleWorks 2.0 disk and it did the same thing. I tried to configure a AppleWorks 3.0 disk with GS/OS 5.02 but I can't figure out what files are necessary to do this.

DISCUSSION -----

Your problems are caused by the setup differences between GS/OS 4.0 and 5.0.2. Here are the steps to make a bootable GS/OS 5.0.2 diskette that can print to a LaserWriter and/or ImageWriter:

- 1) Boot GS/OS 5.0.2; format a blank 800K diskette and called it "Startup".
- 2) Run the Installer program from the SYSTEM.TOOLS diskette, and install the option "AppleShare on 3.5" onto the Startup diskette.
- 3) Still within Installer, "Remove" the option called "AppleShare" from the Startup diskette.
- 4) Using Installer, install the LaserWriter and LocalTalk ImageWriter options onto the Startup diskette.

Hint: try to have two 3.5" drives--if you don't it may take you up to one

hour to do the above with only one floppy drive.

This will get you a bootable diskette that contains the absolute minimum operating system and the necessary printer drivers. From a hardware standpoint, make sure that slot 1 in the Apple IIGS control panel is set to "AppleTalk" and that you set AppleWorks to print to slot 1 -- the older Apple IIGS had a different control panel setting.

Note: you may not be able to fit both the operating system and AppleWorks onto a single diskette.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7773



# Tech Info Library

## Asynchronous LaserWriter Driver: Available from APDA

Revised: 12/23/91  
Security: Everyone

Asynchronous LaserWriter Driver: Available from APDA

=====

Article Created: 2 July, 1991  
Article Last Reviewed: 16 Decemeber 1991  
Article Last Updated:

TOPIC -----

I want to print using the serial port of my Macintosh to the serial port of a LaserWriter IINTX.

Where can I get the Asynchronous LaserWriter Driver that allows me to do this?

DISCUSSION -----

The Asynchronous LaserWriter Driver can be purchased through the Apple Programmers and Developers Association (APDA).

For more information, search on "APDA"

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7774



# Tech Info Library

## AppleShare Print Server: Printing Too Many Copies Problem

Revised: 8/28/91  
Security: Everyone

AppleShare Print Server: Printing Too Many Copies Problem

=====

Article Created:  
Article Last Reviewed: 25 February 1991  
Article Last Updated:

TOPIC -----

Every time we send 15 or more pages to the AppleShare Print Spooler, the server automatically doubles or triples the total number of pages printed.

This problem happens no matter what kind of Macintosh we're using or what kind of document we are printing.

DISCUSSION -----

This problem is most likely occurring because the AppleShare Print Server is losing AppleTalk signal packets. In the middle of a print job, the server can sometimes "lose" its connection with the LaserWriter. When this happens, the server automatically resends the entire print job.

There are a couple of things you can do to alleviate this problem. First, be sure you're using at least LaserWriter driver 6.0.1. This version has optimized "answer-back" code for the LaserWriter that continually says "I'm here" to the print server during printing (which is what tells the server to maintain its connection). If your LaserWriter isn't doing that often enough you'll lose the connection.

Next, check for any devices that may be causing an excessive amount of network noise. The most time-consuming (but most reliable) way to do this is to make your network as small as possible (two or three devices). Then test for noise, adding devices until the problem is found. Using a network utility like Inter•Poll can help locate noisy devices. If you're using any routers in your network, try disconnecting them--the extra time required to route data packets may be contributing to the problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7775



# Tech Info Library

## AppleCD SC: Driver Files Do Not Require Installer

Revised: 7/2/91  
Security: Everyone

AppleCD SC: Driver Files Do Not Require Installer

=====

This article last reviewed: 19 February 1991

TOPIC -----

Can I just copy AppleCD SC startup files into my System folder, or do I have to run the Installer?

DISCUSSION -----

You can just drop the CD-ROM files into the System folder. You do not need to use the Installer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7776



# Tech Info Library

## Apple II Family: Cycle Speeds

Revised: 7/2/91  
Security: Everyone

Apple II Family: Cycle Speeds

=====

This article last reviewed: 18 February 1991

TOPIC -----

What are the cycle speeds for the Apple II family?

DISCUSSION -----

Apple IIGS: 2.6 MHz  
Apple IIc Plus: 4 MHz  
all other Apple II models: 1 MHz.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7777





# Tech Info Library

## Daisy Chain Interface Board: Misprint

Revised: 8/28/91  
Security: Everyone

Daisy Chain Interface Board: Misprint

=====

This article last reviewed: 15 July 1990

TOPIC -----

The Apple Service Programs manual, on page 8.5.19, discusses the Daisy Chain Interface Board and how to identify the revised A and B Boards. The second paragraph mentions "The Revision B board can be identified by the P/N CDX 1085B". Should it be "CXD" instead of "CDX", or is "CXD" another series number?

DISCUSSION -----

This is a misprint. The code should read "CXD" -- not "CDX".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7778



# Tech Info Library

## Ethernet: Mixing Cards from Several Manufacturers

Revised: 7/2/91  
Security: Everyone

Ethernet: Mixing Cards from Several Manufacturers

=====

This article last reviewed: 18 February 1991

TOPIC -----

I'm planning to network several dozen Macintosh IIcx computers for use in a color pre-press operation. Can I mix and match third-party Ethernet cards within the internet without compatibility problems?

DISCUSSION -----

We are not aware of any problems mixing Ethernet cards in an internet. There should be no problems unless one of the cards is unstable.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7781



# Tech Info Library

## Japan's Electrical Supply Specifications

Revised: 8/28/91  
Security: Everyone

Japan's Electrical Supply Specifications

=====

Article Created:  
Article Last Reviewed: 15 July 1990  
Article Last Updated:

TOPIC -----

What are the specifications of Japan's electrical power supply?

DISCUSSION -----

Japan's power output is 100 volts across the country.

The hertz rating depends on where you are: East Japan is 50Hz; West Japan is 60Hz.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7783



# Tech Info Library

## HyperCard: Delete Card Command

Revised: 8/28/91  
Security: Everyone

HyperCard: Delete Card Command

=====

Article Created: 15 July 1990  
Article Last Reviewed: 5 June 1992  
Article Last Updated:

TOPIC -----

How do I delete a card from a HyperCard stack without being in that card?

DISCUSSION -----

To delete a card, even from a script, that card must be the active card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7785



# Tech Info Library

## Macintosh: Troubleshooting a System Error ID=01 Message

Revised: 7/2/91  
Security: Everyone

Macintosh: Troubleshooting a "System Error ID=01" Message

=====

This article last reviewed: 18 February 1991

TOPIC -----

My setup is a:

- Macintosh IIci; 80MB hard disk; 8MB RAM
- Radius TP color display
- Scanner
- External HD
- Tape Backup
- System Software 6.0.4

When I attempt to start up from the internal hard disk, a "System Error ID=01" message appears and the system will not start up. The system will start up from a disk copy of the System. Reinstalling the System to the internal HD has not worked.

DISCUSSION -----

ID=01 is a bus error.

First, use Find File or a similar tool to verify that there is only one System file on the hard drive. Next, remove all non-Apple files from the System folder and restart. If this does not fix the problem, you may have a hardware problem. Try a different hard drive first, and then try a different logic board.

The other thing that could be causing the problem is the video card for your Radius display. Try replacing the Radius with an Apple video card and monitor.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7786



# Tech Info Library

## Macintosh IIfx Terminators: Compatible with Macintosh Family

Revised: 7/2/91  
Security: Everyone

Macintosh IIfx Terminators: Compatible with Macintosh Family

=====

This article last reviewed: 18 February 1991

TOPIC -----

Can the special external terminator supplied with the Macintosh IIfx be used on other Macintosh computer SCSI chains?

DISCUSSION -----

Yes, you can use the new black terminators on other Macintosh SCSI devices.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7787



# Tech Info Library

## Apple IIGS: Troubleshooting SCSI Problems

Revised: 7/2/91  
Security: Everyone

Apple IIGS: Troubleshooting SCSI Problems

=====

This article last reviewed: 15 July 1990

TOPIC -----

My Apple IIGS, with a High Speed SCSI Card installed, gets an error code #8002 when copying between SCSI hard drives. What does this error code mean?

DISCUSSION -----

Error code #8002 isn't part of the generic GS/OS 5.0.2 operating system. This suggests the error code is coming from the SCSI driver.

Most problems with the High Speed SCSI card come from improper installation of the SCSI drivers. Specifically, people often don't install the new drivers that come with the card using the original GS/OS SCSI drivers instead.

Here are some troubleshooting steps to try:

- 1) Create a new boot diskette that contains GS/OS 5.0.2 and the new SCSI drivers (the drivers are installed via the Installer program located on the High Speed SCSI Card Utility diskette).
- 2) Try to copy between SCSI devices after booting with this diskette.
- 3) If you can copy successfully, then reinstall the GS/OS onto your hard drive. Remember to reinstall the new SCSI drivers before rebooting from the hard drive.

Depending on the current state of the operating system already on the hard drive, you may have to trash the existing System and Icons folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7789



# Tech Info Library

## ImageWriter LQ: Accessories Needed for Handling Envelopes

Revised: 7/2/91  
Security: Everyone

ImageWriter LQ: Accessories Needed for Handling Envelopes

=====

This article last reviewed: 18 February 1991

TOPIC -----

I need help in handling the sheet feeder--expansion bin--envelope attachment setup for an ImageWriter LQ.

- 1) If I want to have the envelope attachment in place at all times and also want to use the cut sheet feeder, must I also have an expansion bin?
- 2) For the above setup (envelope attachment plus one expansion bin), is the correct DIP switch configuration the one described as "Two Bins Plus Envelope"?

DISCUSSION -----

- 1) In order for you to have the envelope attachment in place on the ImageWriter LQ, you'll need to have an expansion bin to hold the paper.
- 2) Yes, you are correct. The DIP switch setting for "Two Bins Plus Envelope" is the setting you should use.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7790





# Tech Info Library

## LaserWriter: Sharing Access Over Ethernet

Revised: 7/2/91  
Security: Everyone

LaserWriter: Sharing Access Over Ethernet

=====

This article last reviewed: 15 July 1990

TOPIC -----

I have an AppleShare network running over Ethernet. Can I share my LaserWriter IINT with everyone else on the network if it's connected to one of the workstations rather than the server?

DISCUSSION -----

Since the LaserWriter is a LocalTalk device, you can put it anywhere in the loop. But you will need to have some kind of router installed on the network to change the LocalTalk protocols to Ethernet protocols.

There are a couple of ways to do this:

- With a hardware router, such as the Kinetics Fastpath. This device would actually be a separate node on the network.
- With the Apple Internet Router. This is software that is installed on a single Macintosh that can connect to both types of networks. In your case, the most logical place to put it would be on the server, but that is not a strict requirement. The router runs in the background, but if you install it on a workstation, and that machine somehow is turned off (in a system crash, for example) then everyone will lose access to the LaserWriter.

For more information, search on "ROUTER AND ETHERNET"

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7792



# Tech Info Library

## LaserWriter Plus: Running Out of Memory Problem

Revised: 3/18/92  
Security: Everyone

LaserWriter Plus: Running Out of Memory Problem

=====

Article Created: 15 July 1990  
Article Last Reviewed: 18 March 1992  
Article Last Updated: 18 March 1992

TOPIC -----

On my LaserWriter Plus, I'm printing a lot of non-LaserWriter fonts and graphics. I often get the error message that printing exceeds printer memory. How can I fix this?

DISCUSSION -----

The LaserWriter Plus comes with 1.5MB of RAM. Since the LaserWriter Plus cannot be expanded with more on-board RAM, your only recourse is to purchase (or upgrade) to a higher-end LaserWriter. The LaserWriter IINT has 2MB of RAM, and the LaserWriter IINTX has up to 12MB of RAM.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:7793



# Tech Info Library

## Personal LaserWriter: Using Overseas

Revised: 8/29/91  
Security: Everyone

Personal LaserWriter: Using Overseas

=====

This article last reviewed: 15 July 1990

TOPIC -----

Is a step-down transformer required for using a Personal LaserWriter overseas? It appears that it does because on the back of the printer it states 100-115v at 50-60 Hertz. Also, why does the printer specification sheet give both US/Japan and European/Australian power requirements?

DISCUSSION -----

As with our other LaserWriter printers, there are voltage-specific versions available. There are actually two different Personal LaserWriters versions: one for the US/Japan market and the other for the European/Australian market.

You do need a step-down transformer if you take a Personal LaserWriter overseas, just as you would for any LaserWriter or LaserWriter II.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7796



# Tech Info Library

## PrintMonitor: Troubleshooting Quit Unexpectedly (3)

Revised: 7/2/91  
Security: Everyone

PrintMonitor: Troubleshooting "Quit Unexpectedly (3)"

=====

This article last reviewed: 15 July 1990

TOPIC -----

When printing to a LaserWriter in MultiFinder with Background Printing on, the PrintMonitor will either "Quit Unexpectedly(3)" or just not print.

The files I'm trying to print remain in the Spool Folder with the PrintMonitor appearing every 10 seconds to announce that it has "Quit Unexpectedly(3)". This keeps happening until PrintMonitor is removed from the System folder or the spool files are removed from the Spool folder.

Also, the PrintMonitor "Quits Unexpectedly(3)" when I double click on it.

DISCUSSION -----

Most often, applications unexpectedly quit because they ask for more memory than has been allocated to them, the Memory Manager says "no", and the application has no idea what to do next.

PrintMonitor, even though it looks like a standalone application, does not use the RAM allocated to it during the background printing process. Instead, PrintMonitor uses some of the RAM allocated to the Finder. If the Finder (in the background) is maintaining a lot of items, such as open windows, mounted file server volumes, and so on, there may not be enough RAM left over for PrintMonitor to work. Try allocating more memory to Finder, such as 320K (the default is 160K).

Another possible problem is a corrupted Backgrounder file, the INIT that handles the background task management. Since PrintMonitor is appearing periodically to check the Spool Folder, it's probable that Backgrounder is fine and you're seeing only a memory limitation.

And finally, there may be an INIT that is conflicting with PrintMonitor's operation. Removing all non-essential INITs and testing will tell you if

that's the problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7798



# Tech Info Library

## AppleShare Print Server: Capture and Release Questions

Revised: 8/29/91  
Security: Everyone

AppleShare Print Server: Capture and Release Questions

=====

Article Created:  
Article Last Reviewed: 19 February 1991  
Article Last Updated:

TOPIC -----

I have some questions on AppleShare Print Server:

- A) If a printer is "captured" for print service, can another user, who is not set up with the "captured" LaserWriter spooler in the Chooser, print to that printer directly or is that printer unavailable?
- B) It is not clear to me from reading the manual if the captured printer is always releaseable. What are the parameters for releasing a printer?
- C) We currently have five LaserWriters that we plan to capture for print service. In the next two months we plan to add two more printers. How will we be able to capture those printers for service on the network? Will we have to buy another AppleShare Print Server? If so, can we run two print servers on the same file server? How is this best accomplished?

DISCUSSION -----

Here are the answers to your questions:

- A) If you select Printing, Spooling, and Bypass in the Options dialog box, the captured printer can be printed or spooled to directly. Both options will be available to all users in their Choosers.
- B) A captured printer can always be released. To release a printer from the spooler:
  - 1. choose Setup from the File menu  
Printer Types box

3. select the particular printer you want to release
4. click the Release button.

C) The AppleShare print server can capture from one to five printers, depending on the amount of RAM available to the print server application. To capture more than 5 printers you will need a second print server system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7799



# Tech Info Library

## AppleCD SC: Plays Music But Won't Read Data Problem

Revised: 8/29/91  
Security: Everyone

AppleCD SC: Plays Music But Won't Read Data Problem

=====

This article last reviewed: 15 July 1990

TOPIC -----

The CD Remote desk accesory on my Macintosh suddenly doesn't work anymore. I can play audio CDs just fine, but that's all.

The CD-ROM platter loads, the access light comes on, and the access light blinks once. Then the system freezes up. The AppleCD SC's eject button ejects the platter, and finally an alert box appears suggesting that the disk is not Macintosh formatted.

DISCUSSION -----

This is probably caused by an incompatible third-party INIT corrupting the System file. The CD-ROM driver v3.0.1 loads incorrectly and can't read data discs, though it still can play audio CDs.

Follow these repair steps:

- 1) Trash your old System, then reinstall a new System. Be sure there are no duplicate System folders on the hard drive before reinstalling.
- 2) Put only Apple INITs into the System folder; see if the AppleCD SC works.
- 3) One at a time, add your third-party INITs and CDEVs back into the System folder, testing after each addition. It's entirely possible that you'll get everything put back the way it was and the system will work--this would show that you had a corrupted System resoure file.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7800





# Tech Info Library

## Macintosh IIci: Audio Port Electrical Specifications

Revised: 7/10/92  
Security: Everyone

Macintosh IIci: Audio Port Electrical Specifications

=====

Article Created: 2 July 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

What is the impedance for the audio port of a Macintosh IIci?

DISCUSSION -----

According to the Apple Macintosh Family Hardware Reference manual:

"The external sound jack is at standard line level (approximately 1.5 volts peak-to-peak) and its source impedance is approximately 47 ohms. The jack is capable of driving a headphone load of 8 to 600 ohms, or the input to almost any audio amplifier or amplified speakers. It will not adequately drive a directly connected external speaker. The sound jack is short-circuit protected."

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7801



# Tech Info Library

## Macintosh Scrapbook: Copying Between Different Computers

Revised: 7/2/91  
Security: Everyone

Macintosh Scrapbook: Copying Between Different Computers

=====

This article last reviewed: 19 February 1991

TOPIC -----

I want to put the Scrapbook file from one Macintosh in the System folder of another Macintosh. Will this cause any problems?

DISCUSSION -----

We don't see any problems copying the Scrapbook between Macintoshes. The only time when there may be a problem is when the one computer is using a much older version of the System software. Then you will need to copy the contents of the clipboard out or update the older version of the System software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7802



# Tech Info Library

## Apple II Plus: Relocation/Configuration Error (2/97)

Revised: 2/18/97  
Security: Everyone

Apple II Plus: Relocation/Configuration Error (2/97)

Article Created: 02 July 1991  
Article Reviewed/Updated: 17 February 1997

TOPIC -----

What is the meaning of a relocation/configuration error on the Apple II Plus when running ProDOS?

DISCUSSION -----

ProDOS requires 64K of RAM to run. The error you are getting means that you have only 48K of RAM.

Article Change History:  
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7803



# Tech Info Library

## SCSI: Using the SCSI ID Address #0

Revised: 7/2/91  
Security: Everyone

SCSI: Using the SCSI ID Address #0

=====

This article last reviewed: 25 February 1991

TOPIC -----

Can you clarify an issue concerning SCSI addresses? The Macintosh is always address #7. Internal hard drives are always address #0. For a Macintosh that doesn't have an internal hard drive, can its external drive use address #0? Is #0 reserved by the system? Is there some special significance associated with the #0 address?

DISCUSSION -----

The SCSI address #0 is a special address, but it is not absolutely reserved for system use. Not taking the Startup Device cDEV into account, if the Macintosh sees a storage device attached to it that has a SCSI ID of 0, then it will wait for that device to come up to speed to see if it is bootable. If it is bootable, the system will start up from that device. There is no other special significance attached to the #0 ID, so you can set an external device to it if you like.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7806



# Tech Info Library

## Apple Tape Backup: Recovering Lost Data

Revised: 7/2/91  
Security: Everyone

Apple Tape Backup: Recovering Lost Data

=====

This article last reviewed: 19 February 1991

TOPIC -----

I backed up my system using Apple Tape Backup then accidentally backed up another smaller system on the same tape. Is there any way to recover the remaining data from the first backup?

DISCUSSION -----

Since the volume information of the tape is stored at the beginning of the tape, the original contents of the tape would have been lost when a new directory was written on the tape. Something you might try is to use the INIT Tape Disk that comes with the Tape Backup 40SC software. Mount the cartridge as a streaming device on the desktop, then attempt to use a recovery utility, such as SUM, to recover the lost files.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7807



# Tech Info Library

## Apple Internet Router: One Zone Per LocalTalk Port

Revised: 7/2/91  
Security: Everyone

Apple Internet Router: One Zone Per LocalTalk Port

=====

This article last reviewed: 15 July 1990

TOPIC -----

The beta version of the Internet Router supported four zones on two physical LocalTalk ports. According the documentation for the Internet Router version 2.0, and from several articles in the AppleLink Technical Info Library, it appears that one zone per physical LocalTalk Port is the new limit. Is this correct? If so, are there any solutions or workarounds?

DISCUSSION -----

Yes, that function was not implemented in the released version of the Apple Internet Router. To our knowledge the only way you can have more zones than physical ports is to add another interface card with a port on it.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7809



# Tech Info Library

## Sassafras Software, Inc.

Revised: 4/4/97  
Security: Everyone

Sassafras Software, Inc.

=====  
Article Created: 9 March 1991  
Article Reviewed/Updated: 4 April 1997

Sassafras Software, Inc.  
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P.O. Box 150  
Hanover, NH 03755

603-643-3351

Fax: 603-643-3351

Internet: denisd@dartmouth.edu

Bitnet: DDEVLIN@DARTCMS1.BITNET

### Company Profile:

Networking software, specializing in KeyServer, a program lets administrators modify applications, based on the provisions of their site license, so they will run only after receiving a "launch enable" message over the network. KeyServer also allows network administrators to monitor current software access and generate a usage log.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number: 7810



# Tech Info Library

## Shecom Computers

Revised: 7/19/93  
Security: Everyone

Shecom Computers

=====

Article Created: 2 July 1991  
Article Reviewed/Updated: 19 July 1993

Shecom Computers

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22755 Savi Ranch Pkry.  
Unit G  
Yorba Linda, CA 92687

714-637-4800

800-366-4433

Fax: 714-637-0996

Company Profile:  
Hardware reseller, specializing in memory, peripherals, and systems.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:7811





# Tech Info Library

## LaserWriter: Shrinking Image Problem

Revised: 7/2/91  
Security: Everyone

LaserWriter: Shrinking Image Problem

=====

This article last reviewed: 19 February 1991

TOPIC -----

I have a LaserWriter Plus that shrinks any image that I print. After I replaced the scanner, the problem went away for a while. Now the shrinking problem is back again. I'm curious as to whether the problem was caused by just the scanner or something else.

DISCUSSION -----

It may be that either the motor, the DC Power Supply/motor driver PCB, or the DC Controller is causing this problem. On more than one occasion the power supply has been the culprit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7812



# Tech Info Library

## Macintosh: SIMM Thickness Tolerances

Revised: 8/29/91  
Security: Everyone

Macintosh: SIMM Thickness Tolerances

=====

This article last reviewed: 15 July 1990

TOPIC -----

What are the upper and lower limits for Macintosh SIMMs? I know the official size is 1.27mm, but how much tolerance is there?

DISCUSSION -----

The 1.27mm thickness is Apple's specification. Thicker SIMM PCBs can bend the retaining springs out. This isn't a problem as long as thinner SIMMs are never inserted into the same sockets.

If thinner than 1.27mm SIMMs are used, the chance increases of having weak or impaired connections.

The main point to remember is that Apple's sockets are for 1.27mm SIMMs. If you buy SIMMs from Apple, you can be sure they're OK. If you buy from a third party, be sure to ask for SIMMs with the right thickness.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7813



# Tech Info Library

## SoundEdit 1.0: Incompatible with System 6.0.5

Revised: 8/30/91  
Security: Everyone

SoundEdit 1.0: Incompatible with System 6.0.5

=====

Article Created: 18 February 1991  
Article Last Reviewed: 30 August 1991  
Article Last Updated: 30 August 1991

TOPIC -----

Are there any incompatibilities with Farallon's SoundEdit 1.0?

DISCUSSION -----

SoundEdit 1.0 is not compatible with System version 6.0.5.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7814



# Tech Info Library

## Spider Island Software

Revised: 4/4/97  
Security: Everyone

Spider Island Software

=====

Article Created: 22 March 1991  
Article Reviewed/Updated: 4 April 1997

Spider Island Software

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4790 Irvine Blvd.  
Suite 105-347  
Irvine, CA 92720

714-669-9260

Fax: 714-669-1383

Company Profile:  
Datacomm software, specializing in TeleFinder, a bulletin board system (BBS)  
for the Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7815



# Tech Info Library

## TechGnosis, Inc.

Revised: 4/4/97  
Security: Everyone

TechGnosis, Inc.

=====

Article Created: 2 July 1991  
Article Reviewed/Updated: 4 April 1997

TechGnosis, Inc., software, specializing in client/server enabling software for Macintosh to VAX, UNIX, AS400, Sun, HP, A/UX, RS6000, AIX, and mainframe connectivity.

Tech Gnosis, Inc.  
301 Yamato Rd.  
Suite 2200  
Boca Raton, FL 33431  
407-997-6687  
800-321-0543  
Fax: 407-241-6143

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7816



# Tech Info Library

## ImageWriter II: Troubleshooting Garbled Printing

Revised: 9/3/91  
Security: Everyone

ImageWriter II: Troubleshooting Garbled Printing

=====

Article Created: 15 July 1990  
Article Last Reviewed: 30 August 1991  
Article Last Updated: 30 August 1991

TOPIC -----

The printing on my ImageWriter II has become garbled garbage. It's missing the page breaks and prints onto other pages. This happens after about 6 or 7 pages have printed. I've tried cleaning the platen and replacing main circuit board.

DISCUSSION -----

This sounds like a handshake problem in communication between the computer and the printer. It could be caused by a number of glitches, among them a bad driver, bad cable, or printing software.

Try to recreate the problem using:

- a different computer with the same application and file
- a different printer
- a different printer cable

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7817



# Tech Info Library

## Macintosh Memory Allocation: Application Has Unexpectedly Quit

Revised: 2/2/93  
Security: Everyone

Macintosh Memory Allocation: "Application Has Unexpectedly Quit"

=====

Article Created: 15 July 1990

### Article Change History

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12/10/92 - REVISED

- To make the article more general rather than specific to PageMaker.

02/02/93 - REVISED

- To add more possible fixes to the list.

### TOPIC -----

I keep getting out of memory error messages when performing tasks in an application. I also get "Application has unexpectedly quit" error messages.

### DISCUSSION -----

This kind of error is usually caused by an application, INIT (Extension), or CDEV trying to grab more memory than it has been allocated.

Here are some fixes, depending on what's causing the problem:

- Allocate more memory to the application. Under System 6 Finder, applications could grab a lot more memory. Some manufacturers don't set the partition high enough to do certain operations in their programs. To increase the RAM allocation, change the "Application Memory Size" box in the Get Info dialog box for the application.
- Replace the application with a new copy. It may be that the application is corrupted.
- Allocate more memory to PrintMonitor. If you're seeing the error most often when printing, and you have background printing turned, try

allocating more RAM to PrintMonitor first. Then increase RAM for the application.

- Reduce the number of INITs (Extensions) and CDEVs running on the system. Remove all INITs (Extensions) that aren't a fundamental part of the system software or application. Some INITs use a large amount of memory.
- Try reinstalling the system software. Damaged or corrupted system files can cause this error as well.
- If running System 6, an alternate (unsupported) solution is to increase the amount of RAM allocated to the system heap using CE Software's HeapFixer.

Note: Altering the system heap can cause other, more unpredictable errors. Also note that if running System 7, the system heap is adjusted dynamically, and HeapFixer isn't necessary.

For more information, contact CE Software. (To locate a vendor's address and phone numbers, use the vendor name as a search string.)

- This would also be a good time to check for viruses. They can contribute to unusual system behavior.

Copyright 1991, 1992, 1993, Apple Computer, Inc.

Tech Info Library Article Number:7818





# Tech Info Library

## Macintosh LC: VRAM Memory Map Correction

Revised: 7/24/92  
Security: Everyone

Macintosh LC: VRAM Memory Map Correction

Article Created: 25 March 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

### TOPIC -----

The memory map in the "Macintosh LC Computer Developer Note" shows the VRAM space as \$FC 0000-\$FF FFFF. This gives 256K of memory. How does the 512K VRAM SIMM map into this smaller area?

### DISCUSSION -----

The "Macintosh LC Computer Developer Note" is wrong.

The memory spaced used by VRAM is in the following ranges:

| 24-bit mode            | 32-bit mode                |
|------------------------|----------------------------|
| -----                  | -----                      |
| \$F4 0000 to \$FB FFFF | \$50F4 0000 to \$50FB FFFF |

With the 512K VRAM SIMM installed, the entire range from \$F4 0000 to \$FB FFFF (24-bit mode) or \$50F4 0000 to \$50FB FFFF (32-bit mode) is used. (\$FB FFFF minus \$F4 0000 is \$07 FFFF, which equals 512K.)

With the 256K VRAM SIMM installed, the range from \$F4 0000 to \$F7 FFFF (24-bit mode) or \$50F4 0000 to \$50F7 FFFF (32-bit mode) is used; \$FB FFFF minus \$F7 0000 is \$03 FFFF, which equals 128K.

Note: The range from \$F8 0000 to \$FB FFFF (24-bit mode) or \$50F8 0000 to \$50FB FFFF (32-bit mode) maps to the range from \$F4 0000 to \$F7 FFFF (24-bit mode) or \$50F4 0000 to \$50F7 FFFF (32-bit mode). In other words, if a change is made to \$F8 0000, the same change will be made to \$F4 0000. The reverse holds true as well: a change to \$F4 0000 will reflect in \$F8 0000.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7819



# Tech Info Library

## ANDROS Software

Revised: 4/4/97  
Security: Everyone

ANDROS Software

=====  
Article Created: 04/04/91  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

ANDROS Software  
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3419 E. 21st St.  
Suite 5  
Vancouver, WA 98661

206-750-1021

Company Profile:  
Hardware and software, specializing in Macintosh-based clothing pattern design and embroidery sewing machinery, skirts, shirts, pants for men. Windows version also available.

Article Change History: 07/01/93 Name change, Address changed, Phone number changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7821



# Tech Info Library

## **Innovative Design Systems Corp.**

Revised: 4/4/97  
Security: Everyone

Innovative Design Systems Corp.

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Article Created: 2 April 1991  
Article Reviewed/Updated: 4 April 1997

Innovative Design Systems Corp.

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P.O. Box 5174  
Akron, OH 44334

216-836-0006

Fax: 216-836-2399

Company Profile:  
Hardware/software developers, specializing in CAD/CAM programs and cutting  
plotters.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7822



# Tech Info Library

## Kohtec, Inc.

Revised: 4/4/97  
Security: Everyone

Kohtec, Inc.

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Article Created: 04/02/91  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Kohtec, Inc.

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770 Menlo Ave.  
Suite 200A  
Menlo Park, CA, 94025

415-325-8691

415-325-8693 Fax

### Company Profile:

Hardware and software, specializing in Macintosh developer training, object database for Macintosh, and Multimedia.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:7823



# Tech Info Library

## LaserWriter IINT: Possible Reasons for Slow Printing

Revised: 8/12/91  
Security: Everyone

LaserWriter IINT: Possible Reasons for Slow Printing

=====

Article Created: 4 April 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I'm trying to print a MORE document with a SuperPaint picture. The last page of the document prints fine on a LaserWriter, but takes a long time on a LaserWriter IINT.

Is there a problem with the LaserWriter IINT?

DISCUSSION -----

There are several possible causes for slow printing on a LaserWriter IINT:

- There are too many fonts downloaded to the LaserWriter IINT's memory.
- There is an Apple II printing to the LaserWriter IINT. An Apple II slows down the LaserWriter IINT by downloading an ImageWriter emulator.
- There is a network problem causing the LaserWriter IINT to retry. Use Inter•Poll and send several thousand packets to the printer to see how many packets come back with errors. Too many errors suggests a bad cable or printer I/O board.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7824



# Tech Info Library

## Apple IIe: Getting Screen Output to Printer

Revised: 8/12/91  
Security: Everyone

Apple IIe: Getting Screen Output to Printer

=====

Article Created: 2 April 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

I'm using an Apple IIe with a Super Serial Card with an ImageWriter II. I want everything that appears on my computer screen (input and output) to go to my printer. Is this possible?

DISCUSSION -----

You cannot get both the input and output redirected to your printer unless you're using an application that specifically allows this. Another option is to write a BASIC program that echoes the screen input the printer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7825



# Tech Info Library

## Apple Scanner: Purpose of ADB Port

Revised: 7/2/91  
Security: Everyone

Apple Scanner: Purpose of ADB Port

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why does the Apple Scanner have an ADB port? Is the scanner networkable?

DISCUSSION -----

As of April 1991, the ADB port on the Apple Scanner has no function. The port is there for possible future expansion which we are unable to discuss at this time.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7826





# Tech Info Library

## Macintosh: Meaning of the Desktop DB & Desktop DF Files (7/95)

Revised: 7/6/95  
Security: Everyone

Macintosh: Meaning of the Desktop DB & Desktop DF Files (7/95)

Article Created: 4 April 1991  
Article Reviewed/Updated: 06 Jul 1995

TOPIC -----

Why do I have these files on my Macintosh?:

- Desktop DB
- Desktop DF

DISCUSSION -----

The Desktop DB/Desktop DF files are invisible files that are not normally seen by users. The files were original created by the Desktop Manager of AppleShare 2.0 running under System 6.0.x to maintain information in addition to the Finder's Desktop file at that time. There were designed to be more high performance databases to support faster access to information for AppleShare servers.

Under System 7, functions of the Desktop Manager were incorporated into the Finder along with File Sharing support. The limits of the resource manager were being overextended by the old style resource-based Desktop file. The Finder database file was redesigned as a file storing information in the data fork in a faster and more efficient form.

The primary information stored in the Finder's Desktop DB/Desktop DF files is the mapping of icon display information for application and their associated files. This includes application signatures (creators) and associated file types. This information is used by the Finder to determine what application to launch when a file is double-clicked and to ascertain whether a file can be opened by a drag'n'drop action onto an application.

Other files with their own icon information also have their icon mappings stored in this database. Several flags associated with every file, such as whether the file is an alias or stationery file, whether the file name is locked from change, and whether the file is visible or not are maintained in

the database. Other information stored in these files includes Comments from Finder Get Info windows, position information of icons within Finder container windows, and the positioning of the Finder windows.

These are the files that are rebuilt by holding down the Command and Option keys during Finder startup.

More details about the Finder database can be found in Inside Macintosh:Macintosh Toolbox Essentials, chapter 7, Using the Finder Interface.

Article Change History:

06 Jul 1995 - Updated to include differences between System 6 and System 7.

12 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7828



# Tech Info Library

## Apple IIGS: Control Panel Appearing at Startup

Revised: 7/2/91  
Security: Everyone

Apple IIGS: Control Panel Appearing at Startup

=====

Article Created: 4 April 1991  
Article Reviewed Only:  
Article Last Updated:

TOPIC -----

When I start up my Apple IIGS, the Control Panel appears. Why is this happening?

DISCUSSION -----

The problem of the super Control Panel coming up at startup is usually caused by one of four things:

- a bad joystick
- the option key being held down during startup
- a bad keyboard
- a bad logic board

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7829



# Tech Info Library

## Macintosh: Internal vs External SCSI Hard Drive Speeds

Revised: 7/2/91  
Security: Everyone

Macintosh: Internal vs External SCSI Hard Drive Speeds

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any overall speed difference between internal and external SCSI drives?

DISCUSSION -----

Assuming the comparison is between two identical drives, there is no speed difference between internal or external connections. The SCSI signals are handled the same either way.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7830



# Tech Info Library

## LaserWriter: Amperage Fluctuations Caused by Fuser

Revised: 8/12/91  
Security: Everyone

LaserWriter: Amperage Fluctuations Caused by Fuser

=====

Article Created: 11 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My understanding is that an idle LaserWriter uses around 1.5 amps. I've measured my LaserWriter and it sometimes draws as much as six amps. Is this normal?

DISCUSSION -----

What you're probably picking up is the fuser turning on and off. The fuser comes on about every 20 seconds and causes a jump in the amount of amps used by the LaserWriter. This is not unusual and is nothing to worry about.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7832



# Tech Info Library

## Macintosh SE: SuperDrive Upgrade Availability (Discontinued)

Revised: 9/15/95  
Security: Everyone

Macintosh SE: SuperDrive Upgrade Availability (Discontinued)

=====

Article Created: 4 April 1991  
Article Reviewed/Updated: 15 September 1995

TOPIC -----

I have an old Macintosh SE and want to upgrade its drive to an Apple SuperDrive (formerly Apple FDHD). Can I do this?

DISCUSSION -----

The part you are looking for is M6052, Macintosh SE Apple SuperDrive Upgrade Kit. The kit includes the SuperDrive ROM kit, SuperDrive, and system software.

This upgrade has been discontinued.

Article Change History:  
15 Sep 1995 - Revised to show discontinued upgrade.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7833



# Tech Info Library

## Macintosh SE: Difference Between Logic Boards

Revised: 8/7/92  
Security: Everyone

Macintosh SE: Difference Between Logic Boards

=====

Article Created: 4 April 1991  
Article Last Reviewed: 6 August 1992  
Article Last Updated: 23 August 1991

TOPIC -----

There are different versions of the Macintosh SE's logic board. What are the differences between them?

DISCUSSION -----

The boards have different ROMs and IWM chips. One logic board supports the Apple SuperDrive (formerly Apple FDHD) and the other doesn't.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7834



# Tech Info Library

## Macintosh SE/30: Video Flashes are Normal

Revised: 7/2/91  
Security: Everyone

Macintosh SE/30: Video Flashes are Normal

=====

Article Created: 5 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The video display of my Macintosh SE/30 has horizontal lines flashing from left to right. Is this normal?

DISCUSSION -----

Up to a point, this is a normal part of the Macintosh SE/30's video display. If the flashing is very noticeable you might want to have the analog board or the video board checked out. Also, you might try turning the brightness down a bit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7835





# Tech Info Library

## Macintosh Portable: Replacement Part for Weak Plastic Handle

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Replacement Part for Weak Plastic Handle

=====

Article Created: 5 April 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

The plastic handle (630-5071) and the display housing assembly (652-0605) on my Macintosh Portable are very weak and keep breaking. Are there any solutions to this problem?

DISCUSSION -----

Some Macintosh Portable computers manufactured before July 1990 have weak plastic handles. A replacement handle is available. Contact your authorized Apple dealer for more information.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7836



# Tech Info Library

## ELF, VDTs, Health and Safety: Apple's Official Policy

Revised: 7/30/91  
Security: Everyone

ELF, VDTs, Health and Safety: Apple's Official Policy

=====

Article Created: 5 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is Apple's policy regarding VDTs, electromagnetic emissions, and health?

DISCUSSION -----

Apple Computer, Inc.  
Corporate Statement on Video Display Health Issues  
May 29, 1990

### Apple's Corporate Position

Apple Computer is committed to making products safe. That's why we meet or exceed every safety standard, not because we have to, but because we want to. Based on the prevailing opinion of the scientific community, Apple believes that computer monitors are safe. However, with any scientific issue there is a diversity of opinion. We are open-minded to new scientific evidence and in fact encourage research in this area.

### Apple's Monitoring Activity

Apple's products are constantly tested and compared against existing and proposed international standards. We continuously follow scientific developments in the field of computer health and safety. Members of Apple's Environmental Health and Safety group as well as representatives within Product Development, Product Marketing and Engineering Services keep track of new findings.

Apple is also a board member of the Center for Office Technology (contact is O. Bruce Dickerson 212-560-1298), a clearing house for more information

related to health issues and office automation equipment. In addition, Apple is currently setting up a program to sponsor dedicated academic research in the low-frequency radiation field.

#### Scientific Opinion

The low level of intensity of the fields emitted from VDTs is not considered harmful by the American Medical Association, the American College of Obstetricians and Gynecologists, the National Institute for Occupational Safety and Health and the World Health Organization, among others.

Recently, the issue of the possible effects of prolonged exposure to extremely low frequency electromagnetic emissions has been raised. The U.S. Environmental Protection Agency has said (see New York Times 5/23/90) that the evidence on the issue is so far inconclusive. The EPA's office of health and environmental assessment has suggested further study on the ELF issue. Apple also supports additional research so that we can continue to act responsibly, ensuring the health and safety of our customers and employees.

#### Question and Answers

- What is Apple's position on the VDT-emission health issue?

Apple is committed to making products as safe as can be. Based on the prevailing opinion of the scientific community Apple believes that televisions and computers are safe. However with any scientific issue there is a diversity of opinion. We are open-minded to new scientific evidence and in fact encourage it.

- What are the health concerns regarding VDTs?

A number of studies link intensive computer use to health problems such as musculoskeletal disorders, eyestrain, fatigue, and headaches. These problems are well understood and medical experts have suggested effective methods for preventing them.

There is also a growing public concern throughout the world about potential health risks related to the low-frequency electromagnetic fields emitted by VDTs and other electric products, which all operate at the AC line frequency of 50 and 60 Hz such as electric blankets, televisions, and power lines.

Although most scientists and computer experts maintain that low-frequency electromagnetic emissions are harmless, others assert that not enough is known to say with certainty that they are safe. Most everyone agrees that more research is necessary before any conclusions can be made.

- What are the government regulations for VDT emissions?

X-ray emissions are strictly regulated by international law. In the US,

this law is administered by the FDA's Dept. of Health and Human Services. All Apple displays are designed and tested to emit well below the level permitted.

Radio frequency emissions can interfere with radio and TV transmissions and are also regulated internationally. In the US, limits are mandated by the Federal Communications Commission.

In Sweden government-industry cooperatives have set limits for VLF radiation from VDTs. These limits do not appear to be based on data from health studies, but rather are based on general, achievable guidelines for reducing emissions.

No government regulations exist in any country limiting ELF emissions.

- What is Apple doing to follow and participate in research in the VDT health field?

Apple's products are constantly tested and compared against existing and proposed international standards.

We continuously follow scientific developments in the field of VDT health and safety. Members of Apple's Environmental Health and Safety group as well as representatives within Product Development, Product Marketing and Engineering Services keep track of new findings.

Apple is a board member of the Center for Office Technology, a clearinghouse for information related to health issues and office automation equipment.

In addition, Apple is currently setting up a program to sponsor dedicated academic research in the low-frequency emissions field.

- How does Apple respond to increasing government legislative activity concerning VDT's?

We welcome government's inquiry into the safety of VDT's, and support the adoption of standards once generally agreed upon limits and a testing methodology emerge from research.

#### Product Issues

- Will Apple take steps to lower VLF and ELF emissions in its products?

Based on the prevailing opinion of the scientific community, we do not believe it is necessary to lower the ELF emissions of our computer monitors. In fact, scientific research so far has not been able to establish guidelines for emission levels. However Apple is closely following the issue so that we may continue to ensure the health and safety of our customers and employees.

- How might this radiation be reduced?

Currently emissions can be reduced through a combination of circuit board design, component selection, field cancellation coils, metallic shielding and surface coatings.

- Will you comment on IBM's announcement to lower emissions in its monitors?

IBM announced it will offer monitors which feature reduced VLF emissions. (See Wall Street Journal 11/22/89) They have clearly positioned these products as a response to market demand, rather than to health and safety concern. IBM's products are not currently shielded for ELF radiation.

- What are the levels of ELF and VLF emissions by Apple's VDTs?

Apple feels that it would be inappropriate to make these figures public because there is currently no standardized testing methodology or established guidelines by which to make comparisons.

- What is Apple's comment on the MacWorld article?

Regarding the Article: The MacWorld article calls for industry to address the VDT emission issue. Apple encourages further research on low-frequency emissions.

- Regarding the Measurements:

We do not believe it is appropriate to comment on the measurements of the Macintosh monitors that were published in the July 1990 issue because there is currently no standardized testing methodology or established guidelines by which to make comparisons.

- Regarding the Health Conclusions:

With any scientific issue there is a diversity of opinion. The MacWorld article excluded a large body of studies that discount a link between VDT use and a biological effect--for example: The University of Calgary, Alberta, Canada, 1989 Epidemiological Study on VDT Use and Spontaneous Abortion Risk; The University of Toronto, 1989 Rodent Reproductive Study; the Institute of Research for the Health and Safety of Workers, Montreal, Quebec 1984 Survey on VDTs and Pregnancy; and the 1985 Finnish Case Reference Study - Birth Defects and Exposure to VDTs During Pregnancy. The specific studies referenced by MacWorld raise valid questions but do not conclude a health risk for the computer user. We encourage further scientific research.

#### Background on VDT Radiation

- What is radiation?

Are there different kinds? Radiation involves a transfer of energy by waves or particles. There are two types of radiation. Ionizing radiation, such as X-rays, has proven to be damaging to living cells. Non-ionizing radiation is far less potent, and includes visible light, radio waves, and

low frequency electromagnetic emissions.

- What kind of radiation do VDTs emit?

Like television sets, VDTs may emit X-rays (ionizing radiation) at or near naturally occurring background levels. VDTs also give off non-ionizing radiation in the form of infrared light (heat), visible light, radio waves, and low frequency electromagnetic emissions. Apple's displays do not give off ultraviolet or microwave radiation in appreciable levels.

- What is ELF and VLF radiation?

Low-frequency radiation, a form of non-ionizing radiation, is generally divided into two groups: very low frequency (VLF) and extremely low frequency (ELF). VLF radiation falls into the frequency bandwidth between 30 and 150kHz, while ELF radiation refers to frequencies below 30 kHz. The intensity level of this radiation emitted by VDTs is comparable to that emitted by household electrical appliances.

- Is VLF or ELF radiation dangerous?

The prevailing opinion of the scientific community is that exposure to low frequency emissions does not pose a significant health risk. Available data indicate the human body absorbs only a minimal amount of radiation below 200 kHz. The low level of intensity of the fields emitted from VDTs is not considered harmful by the American Medical Association, the American College of Obstetricians and Gynecologists, the National Institute for Occupational Safety and Health (NIOSH) and the World Health Organization, among others.

However, with any scientific issue there is a diversity of opinion. There are several studies which suggest that long-term exposure to pulsed ELF fields (such as those emitted by VDTs) can result in biological changes to cells.

Because valid questions have been raised, Apple encourages further research on low frequency radiation. In fact, we are currently setting up a program to sponsor dedicated academic research in the low-frequency radiation field. We intend to continue monitoring the results of this research so that we can act responsibly to ensure the health and safety of our customers and employees.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7837



# Tech Info Library

## AppleShare: Server Startup with External Drives Attached

Revised: 8/12/91  
Security: Everyone

AppleShare: Server Startup with External Drives Attached

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Article Created: 5 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The Macintosh that I'm using as an AppleShare server has an internal hard disk and two external volumes. In case of a power failure, I have the server set restart automatically. The problem is that the Macintosh checks for the external SCSI drives before the drives are ready.

Is there a way to make the server wait 30-60 seconds before checking for SCSI devices?

DISCUSSION -----

There is no way to have the server wait before it looks for available drives. The server waits for Drive 0 to be ready, though. By the time Drive 0 is ready and loaded, the other drives should be ready to mount.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7838



# Tech Info Library

## Macintosh: Definition of System Heap

Revised: 7/24/91  
Security: Everyone

Macintosh: Definition of System Heap

=====

Article Created: 14 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is a "system heap"?

DISCUSSION -----

The system heap is a special area of RAM set aside for things like fonts and DAs. The heap zone is used mostly by operating system data structures. The heap zone is an area in memory that may be allocated in relocatable and non-relocatable pieces, called heap blocks or heap pieces. The heap zone usually begins at \$B00 and extends to \$CAFF, but you should not count on those addresses being correct.

If you ever see an error message with the number -108, it probably means you need more space in your system heap. Increasing its size will help you if you have many fonts and DAs.

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Tech Info Library Article Number:7839





# Tech Info Library

## System 7: Improving Performance on the Macintosh IIsi and IICI

Revised: 7/10/92  
Security: Everyone

System 7: Improving Performance on the Macintosh IIsi and IICI

Article Created: 5 July 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Why do the Macintosh IIsi and IICI seem so slow with 256 colors or shades of gray? I am running System 7.

DISCUSSION -----

This is due to the video RAM in the 1MB RAM bank A (soldered on the logic board on the Macintosh IIsi). Using 256 colors makes this bank of RAM very busy (the more colors the busier). Consequently, access to anything else in this part of memory is slow.

Macintosh IIsi  
-----

On the Macintosh IIsi, adjust the RAM cache to at least 384K. As a result, bank A is all video RAM, RAM cache, and RAM used by the System. This makes the performance with 256 colors almost as good as with black and white. Setting the RAM cache higher than 384K does not help much. This will also work with the Macintosh IICI if you have four 256K SIMMs in RAM bank A.

Macintosh IICI  
-----

On a Macintosh IICI, if Bank A is not filled with 256K SIMMs (instead, it is filled with 512K, 1MB, 2MB, 4MB or 16MB SIMMs) it is harder to keep applications from sharing that RAM bank which is busy. You can try to boost the RAM cache to approximately the size of the memory in RAM bank A minus 600K and get similar results, but this takes memory away from your applications.

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Tech Info Library Article Number:7840



# Tech Info Library

## System 7: Desktop Manager and Switching Between System 6 & 7

Revised: 9/24/93  
Security: Everyone

System 7: Desktop Manager and Switching Between System 6 & 7

Article Created: 5 July 1991  
Article Reviewed/Updated: 24 September 1993

TOPIC -----

I need to switch between System 6.0.x and System 7.x because I use some applications that are incompatible with System 7.x. Is there a way to avoid rebuilding the Desktop file every time I switch System files?

DISCUSSION -----

Yes, you can use the Desktop Manager INIT (v2.0.1) to switch between System 6 and System 7 without rebuilding the Desktop file. You can find the Desktop Manager INIT on the AppleShare Administration disk in the System Folder. The Desktop Manager Engineer confirmed that it is safe to use. Just put the INIT in your System 6 System Folder. DO NOT put the INIT in your System 7.x System Folder.

NOTE: The Desktop Manager INIT is not available to everyone. It is licensed only to users who have AppleShare 2.0.1. You can find the Desktop Manager 2.0.1 INIT on the AppleShare Server disk inside the System Folder.

Article Change History:  
24 September 1993 - Revised article, clarifying where to obtain the Desktop Manager 2.0.1 INIT.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7841



# Tech Info Library

## System 7: Disk Format Can't Be Done in Background (11/94)

Revised: 11/8/94  
Security: Everyone

System 7: Disk Format Can't Be Done in Background (11/94)

=====

Article Created: 5 July 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

Within System 7, can I start formatting a disk and then switch to a program that is already running?

DISCUSSION -----

No. Although some Finder operations, such as copy, work in the background, format does not run as a background task. It is timing dependent and needs to keep control of the system.

Article Change History:  
08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:7842



# Tech Info Library

## System 7: Temporarily Disabling Virtual Mem. at Startup (2/95)

Revised: 2/15/95  
Security: Everyone

System 7: Temporarily Disabling Virtual Mem. at Startup (2/95)

=====

Article Created: 5 July 1991  
Article Reviewed/Updated: 15 February 1995

TOPIC -----

Is there a way to turn off System 7.x Virtual Memory at startup without disabling the system extensions?

DISCUSSION -----

Yes, holding down the Command key at startup will disable Virtual Memory but still load system extensions. When you restart the system, Virtual Memory will be turned on again.

If you check the Memory control panel after booting with the Command key held down, it will show Virtual Memory On and also show how much memory will be available on restart.

Article Change History:  
15 Feb 1995 - Reviewed for technical accuracy, revised keyword.  
08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7843



# Tech Info Library

## System 7: 24-bit Addressing with More than 8MB of RAM

Revised: 7/24/91  
Security: Everyone

System 7: 24-bit Addressing with More than 8MB of RAM

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Article Created: 5 July 1991

### Article Change History

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08/21/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

How does the Macintosh operating system handle more than 8MB of physical RAM when it is not using 32-bit addressing?

### DISCUSSION -----

When a Macintosh is running in 24-bit mode (that is, when System 7's 32-bit Addressing is turned off or the Macintosh is running System 6.0.x) any physical memory over 8MB is allocated to the System, provided the Macintosh can see the memory in the first place, but it's not actually used. Even though the hardware can see all of the physical RAM, 24-bit addressing allows the use of only 8MB. You may see a large System allocation when checking "About this Macintosh" or "About the Finder" and think something is wrong, when in fact this is the way it should work.

System 7's 32-bit Addressing allows up to 1GB of total memory (including both physical and virtual memory).

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7846



# Tech Info Library

## System 7: Defaults for Labels Control Panel Colors

Revised: 9/14/92  
Security: Everyone

System 7: Defaults for Labels Control Panel Colors

=====

Article Created: 19 June 1991

### Article Change History

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09/11/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How can I reset the colors of my Labels settings to the original defaults?

### DISCUSSION -----

To reset the colors, either remove the existing System file and reinstall System 7, or manually reset the values.

To manually reset the values, open the Labels control panel, click on the color bars displayed on the left, and set the default values as follows:

#### Color for "Essential"

|             |       |
|-------------|-------|
| Hue:        | 4223  |
| Saturation: | 64884 |
| Brightness: | 65535 |
| Red:        | 65535 |
| Green       | 25738 |
| Blue        | 652   |

#### Color for "Hot"

|             |       |
|-------------|-------|
| Hue:        | 108   |
| Saturation: | 63573 |
| Brightness: | 56683 |
| Red:        | 56683 |
| Green       | 2242  |
| Blue        | 1698  |

Color for "In Progress"

|             |       |
|-------------|-------|
| Hue:        | 59733 |
| Saturation: | 63286 |
| Brightness: | 62167 |
| Red:        | 62167 |
| Green       | 2134  |
| Blue        | 34028 |

Color for "Cool"

|             |       |
|-------------|-------|
| Hue:        | 35756 |
| Saturation: | 64907 |
| Brightness: | 60159 |
| Red:        | 577   |
| Green       | 43860 |
| Blue        | 60159 |

Color for "Personal"

|             |       |
|-------------|-------|
| Hue:        | 43690 |
| Saturation: | 65535 |
| Brightness: | 54272 |
| Red:        | 0     |
| Green       | 0     |
| Blue        | 54272 |

Color for "Project 1"

|             |       |
|-------------|-------|
| Hue:        | 23764 |
| Saturation: | 65535 |
| Brightness: | 25775 |
| Red:        | 0     |
| Green       | 25775 |
| Blue        | 4528  |

Color for "Project 2"

|             |       |
|-------------|-------|
| Hue:        | 5332  |
| Saturation: | 61619 |
| Brightness: | 22016 |
| Red:        | 22016 |
| Green       | 11421 |
| Blue        | 1316  |

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Tech Info Library Article Number:7847





# Tech Info Library

## System 7.x: Creating and Using Custom Icon Folders (2/95)

Revised: 2/9/95  
Security: Everyone

System 7.x: Creating and Using Custom Icon Folders (2/95)

Article Created: 19 June 1991  
Article Reviewed/Updated: 9 February 1995

TOPIC -----

This article describes how to create folders that use custom icons and how to repair folders when a folder's icon becomes damaged or deleted, or when a folder loses its link to an ICON file.

DISCUSSION -----

System 7 lets you modify the existing icons any non-system file, folder, or volume. Custom icons are saved directly into a file's resource fork, and an attribute bit is set to alert the Finder to display a custom icon. Folders and volumes do not have resource forks, however, so custom icons are saved instead to an invisible file named ICON. This file is located at the root level of the folder or volume.

Creating a Folder That Uses a Custom Icon  
=====

Follow these steps to create a folder that uses a custom icon:

Step 1:  
Select the graphic to use for an icon. An icon in the Get Info window of any document is one possible source. You can also use a graphic application to create your own.

Step 2:  
Copy the graphic to the Clipboard by choosing Copy from the Edit menu.

Step 3:  
In the Finder, select the icon you want to change.

Step 4:

Choose Get Info from the File menu.

Step 5:

Ensure that the Locked box in the lower-left corner of the Get Info window is not checked. You cannot customize the icon of a locked file.

Step 6:

Click the icon at the upper-left of the Get Info window or press the Tab key to select it.

Step 7:

Choose Paste from the Edit menu.

Step 8:

Click the Close box to close the Get Info window.

If the selected graphic is bigger than the icon in the Get Info window, it automatically shrinks to fit.

#### Custom Icon Repair

=====

Sometimes custom icons created for files, folders, or hard disks become damaged or deleted. If the link between the folder or volume and the ICON file is lost, the Finder may display a generic document icon in place of the custom icon. When attempting to edit this icon through Get Info, you get an error message saying that the item cannot be found. If you have a damaged custom icon on a folder, follow these steps:

Step 1:

Create a new folder.

Step 2:

Copy the damaged folder's contents into the new folder.

Step 3:

Place the empty folder in the trash.

Step 4:

Give the new folder a custom icon by following the steps in the preceding section.

If you have a damaged custom icon on a volume, you can try a public domain utility called Disk Rejuvenator to correct it. You can try the steps outlined in the next section if you have a disk or file utility that lets you make invisible files visible. Another option is to reformat the volume.

WARNING! Formatting a volume erases all data; back up first.

#### ResEdit and File Utilities for Repairing Custom Icons

=====

There is a Finder attribute for folders and volumes called "Custom Icon". You can turn this attribute off using ResEdit. When the folder reverts to a normal folder icon, you can attach a new icon to it. ResEdit cannot access this attribute for volumes. You can also try to correct the problem by following these steps:

Step 1:

From the Finder, create another custom icon for a folder by following the steps in the preceding "How to Create a Custom Icon Folder section".

Step 2:

Using a file utility such as ResEdit, find the ICON file for this newly-created custom icon (it is at the root level of the folder to which it is attached) and make that file visible. Also make visible the ICON file at the root level of the affected volume.

Step 3:

In the Finder, copy the now-visible ICON file from the folder to the root level of the volume. You may receive the message "Are you sure you want to replace the older file..." If so, click OK. This restores the icon file.

Step 4:

Using the file utility, make the ICON file invisible again.

Step 5:

Click on the volume once to select it and choose Get Info from the File menu. You can now edit or delete this icon.

If you correct a damaged icon and it becomes damaged again before long, you might consider removing the icon from your system.

Article Change History:

09 Feb 1995 - Changed article; added keyword; completely updated.

12 Dec 1994 - Clarified some parts of the Discussion.

17 Oct 1994 - Reviewed for consistency, and updated format.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7848



# Tech Info Library

## System 7: LaserWriter Driver and Adobe Font Downloader

Revised: 9/18/92  
Security: Everyone

System 7: LaserWriter Driver and Adobe Font Downloader

=====

Article Created: 19 June 1991

### Article Change History

-----

09/17/92 - UPDATED

- With contact information.

### TOPIC -----

I receive the error message "Couldn't open the printer driver" when trying to use Adobe's Font Downloader under System 7. How do I fix this?

### DISCUSSION -----

Font Downloader expects the LaserWriter driver to be in the System Folder, while System 7 normally installs it in the Extensions folder. Simply move the LaserWriter icon from the Extensions folder into the System Folder to correct this problem. System 7 will still be able to locate the LaserWriter driver without a problem.

For the most current information on Adobe Font Downloader, including upgrades that may change this situation, contact Adobe directly. To locate Adobe's address and phone number, use the vendor name as a search string.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7849



# Tech Info Library

## System 7: Installing Adobe Font Library

Revised: 7/19/91  
Security: Everyone

System 7: Installing Adobe Font Library

=====

Article Created: 19 June 1991  
Article Last Reviewed: 13 July 1992  
Article Last Updated: 13 July 1992

TOPIC -----

This article gives instructions for installing the Adobe Font Library on a Macintosh running System 7.

DISCUSSION -----

- To install bitmap (screen) fonts, simply drag the font suitcase to the System Folder icon and System 7 will automatically install them in the System file. System 7 does not require Font/DA Mover to install bitmap fonts.
- To install outline (printer) fonts, simply drag the font icons (not the folder containing them) to the System Folder. System 7 will automatically install them in the Extensions Folder.

NOTE: If you are using a version of Adobe Type Manager prior to 2.03, you must move outline fonts from the Extensions Folder to the System Folder to work properly. If you are using 2.03 or later, ATM should work properly with outline fonts inside the Extensions folder - but make sure to completely remove older versions of ATM before installing the updated version.

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Tech Info Library Article Number:7850



# Tech Info Library

## System 7: What Happens to Your Old Fonts

Revised: 9/2/92  
Security: Everyone

System 7: What Happens to Your Old Fonts

=====

Article Created: 19 June 1991

### Article Change History

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09/02/92 - REVIEWED  
• For technical accuracy; edited.

### TOPIC -----

What happens to the fonts already installed in my System 6.0.x System when I upgrade to System 7?

### DISCUSSION -----

Bitmapped fonts already installed in the System file will remain there.

PostScript fonts located in the System Folder will remain there. PostScript fonts installed after an upgrade to System 7 (by dragging them over the System Folder icon) are placed in the Extensions folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7851



# Tech Info Library

## System 7: How to Install and Run Adobe TypeAlign

Revised: 9/3/92  
Security: Everyone

System 7: How to Install and Run Adobe TypeAlign

=====

Article Created: 19 June 1991

### Article Change History

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09/02/92 - REVISED

- To be more clear and with version information.

### TOPIC -----

When I access TypeAlign, I get the error message "TypeAlign can't run until you have rebooted with the TypeAlign Startup in your System Folder". Is there a special way to install this program under System 7?

### DISCUSSION -----

Installing Adobe TypeAlign under System 7 is similar to installing it under previous versions of the Macintosh operating system. Here are the steps:

- 1) Drag the TypeAlign, TypeAlign Startup, and TypeAlign Help icons from the master floppy disk to your System Folder.
- 2) When "Some of these items need to be stored in special places... Put them where they belong?" dialog appears, click OK. The system will place TypeAlign in the Apple Menu Items Folder, TypeAlign Help in the System Folder, and the TypeAlign Startup in the Extensions Folder.
- 3) In order for TypeAlign to run properly, move the TypeAlign Startup icon from the Extensions Folder to the root level of the System Folder.

Note that at least TypeAlign version 1.0.5 is available. Contact Adobe for the most recent version information.

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Tech Info Library Article Number:7853





# Tech Info Library

## System 7: Adobe Type Manager 2.0 and 32-bit Addresssing

Revised: 7/19/91  
Security: Everyone

System 7: Adobe Type Manager 2.0 and 32-bit Addresssing

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Article Created: 19 June 1991  
Article Last Reviewed: 13 July 1992  
Article Last Updated: 13 July 1992

TOPIC -----

I'm using Adobe Type Manager 2.0 and 32-bit addressing under System 7. The system crashes whenever I select a font menu. What is the workaround?

DISCUSSION -----

The workaround is to disable 32-bit addressing. Adobe Type Manager 2.0 is compatible with 24-bit addressing, but incompatible with 32-bit addressing under System 7. Upgrade to a more recent version of ATM (at least 2.03), for 32-bit addressing to work properly.

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Tech Info Library Article Number:7855



# Tech Info Library

## System 7: TypeAlign Font Not Available Error

Revised: 9/3/92  
Security: Everyone

System 7: TypeAlign "Font Not Available" Error

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Article Created: 19 June 1991

### Article Change History

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09/02/92 - UPDATED

- To provide contact and version information.

### TOPIC -----

The error message, "Outline Font Not Available" appears when I enter text into TypeAlign running under System 7. What causes this?

### DISCUSSION -----

This can be caused by two things:

- The outline (printer) fonts may be in the wrong location. Open the System Folder and verify that the outline fonts are there. If not, locate them and move them to the System Folder.
- If you are using TrueType versions of Helvetica, Courier, Times, and Symbol, TypeAlign will be unable to find an Adobe Type 1 version. TypeAlign currently does not support TrueType. Either remove the TrueType version of the font or use an Adobe Type 1 font instead.

For fullest compatibility, you should be using at least 1.0.5 of Adobe TypeAlign. Contact Adobe for the latest information; search for Adobe for contact information.

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Tech Info Library Article Number:7856



# Tech Info Library

## System 7: DataDesk Keyboard Compatibility (11/94)

Revised: 11/8/94  
Security: Everyone

System 7: DataDesk Keyboard Compatibility (11/94)

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Article Created: 19 June 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

This article gives compatibility information for DataDesk keyboards used with System 7.

DISCUSSION -----

Some older DataDesk Macintosh 101 keyboards do not allow you to disable extensions under System 7 by holding down the Shift key during startup. There is no known workaround for this problem, short of temporarily replacing the DataDesk keyboard with an Apple keyboard.

Specific compatibility issues:

- Macintosh 101 Keyboard (Macintosh Plus) Version 1.0  
Incompatible INIT - Currently won't recognize any keys pressed during startup. Requires an upgrade to use extended part of the keyboard.
- Macintosh 101 keyboard (ADB) Version 1.0  
No INIT is needed - Won't recognize any keys pressed during startup.  
This keyboard is likely to be at least three years old.
- Macintosh 101 Keyboard (ADB or Macintosh Plus) Version 1.1  
Compatible with System 7.
- Macintosh 101e Keyboard (ADB or Macintosh Plus)  
Compatible with System 7.
- Macintosh Switchboard (ADB or Macintosh Plus)  
Compatible with System 7.

For further information, contact DataDesk. The address and phone number is in a separate article in the Tech Info Library.

Article Change History:

08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7858



# Tech Info Library

## System 7: Initialize Drive if Disk First Aid Can't Repair

Revised: 8/25/92  
Security: Everyone

System 7: Initialize Drive if Disk First Aid Can't Repair

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Article Created: 19 June 1991

### Article Change History

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08/24/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What should I do if Apple's "Disk First Aid" utility reports that it is unable to repair a disk's directory?

### DISCUSSION -----

If the Macintosh has been started up with the System 7 "Disk Tools" floppy disk and Disk First Aid cannot repair a hard drive's directory, the drive must be reinitialized with an appropriate formatting utility. Apple hard drives are initialized with Apple's HD SC Setup utility. Third-party hard drives require System 7-compatible initializing/formatting software supplied by the vendor.

IMPORTANT: Before initializing the drive, make at least one backup of the drive using System 7-compatible backup software, otherwise you will lose everything on the drive.

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Tech Info Library Article Number:7859



# Tech Info Library

## System 7: Using Personal LaserWriter SC and LaserWriter IISC

Revised: 7/11/94  
Security: Everyone

System 7: Using Personal LaserWriter SC and LaserWriter IISC

Article Created: 19 June 1991  
Article Reviewed/Updated: 11 July 1994

TOPIC -----

I've installed System 7, and now I can't print to my LaserWriter IISC. The installer did not replace my old LaserWriter SC driver. I keep getting print errors when I use the driver that came with the printer. How do I fix this?

DISCUSSION -----

The LaserWriter IISC printer software is not compatible with any version of System 7. You might be able to print using the LaserWriter IISC print driver if background printing is turned off, but this is not recommended. To permanently fix this problem, you need to use the Personal LaserWriter SC printer driver from the Printing disk to print to this printer.

Copy the Personal LaserWriter SC driver from the System 7 Printing disk to the Extensions folder on your startup volume. Select the Personal LaserWriter SC icon in the Chooser.

You can use the Personal LaserWriter SC driver with both the Personal LaserWriter SC and the LaserWriter IISC. This is true for versions prior to System 7 as well.

### Article Change History:

24 Aug 92 - Incorporated similar articles and clarified that the Personal LaserWriter SC driver is the same as the LaserWriter IISC driver.  
11 Jul 94 - Clarified that the LaserWriter IISC driver is not system 7 compatible.

Support Information Services

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Tech Info Library Article Number:7861



# Tech Info Library

## System 7: CD Technology Drive and CD Setup

Revised: 9/3/92  
Security: Everyone

System 7: CD Technology Drive and CD Setup

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Article Created: 19 June 1991

### Article Change History

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09/02/92 - UPDATED

- To give contact information.

### TOPIC -----

I have a CD-ROM drive from CD Technology, Inc. After I load System 7 on my Macintosh IIx, and run the installer on the Macintosh CD Setup disk as instructed in the Group Upgrade Guide, I cannot connect the CD-ROM drive. How can I connect the CD Technology ROM drive?

### DISCUSSION -----

The CD Technology CD-ROM drive uses the system access modules on the System 7 CD Setup disk, but not the driver. After running the installer, delete the Apple CD-ROM and Apple CD Remote from the Extensions folder. Install the CD Technology driver version 1.32 (or later) in the System Folder.

NOTE: CD Technology version 1.32 causes system errors on 68000-based systems, but works correctly on 68020- and 68030-based systems.

Contact CD Technology, Inc. for the most recent information on their product; search on CD Technology for contact information.

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Tech Info Library Article Number:7862



# Tech Info Library

## System 7: Cannot Be Installed on a 1MB Macintosh

Revised: 7/19/91  
Security: Everyone

System 7: Cannot Be Installed on a 1MB Macintosh

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Article Created: 19 June 1991

### Article Change History

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08/17/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I install System 7 on a Macintosh system with one megabyte of RAM?

### DISCUSSION -----

No. The System 7 Installer will not run on a one megabyte Macintosh. It will give an error message stating the machine does not have enough memory to run System 7.

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Tech Info Library Article Number:7864





# Tech Info Library

## Macintosh System Software 6.0.7: Troubleshooting (1 of 2)

Revised: 7/15/91  
Security: Everyone

Macintosh System Software 6.0.7: Troubleshooting (1 of 2)

=====

Article Created: 18 June 1991  
Article Last Reviewed: 22 July 1992  
Article Last Updated: 22 July 1992

TOPIC -----

This article outlines the steps for troubleshooting system software version 6.0.7. Perform these operations in the order presented here.

DISCUSSION -----

### WDEF Virus

-----

The number one known problem is the WDEF virus. In version 6.0.5 and earlier versions of the system software, the WDEF virus might exist without creating major problems. This is not true in version 6.0.7. The presence of the WDEF virus can cause problems from the moment the computer is turned on. The most common results are the three error messages - "Bus Error," "Address Error," and "Coprocessor not Installed." Floppy disk copy procedures are known to suffer in particular, but the difficulties can appear at any time without any warning.

### Solution:

Use Disinfectant 2.4 (or later) or SAM 2.0.5 (or later) to detect and remove the WDEF virus. Disinfectant is available from various online services. Search on "Disinfectant" using BB Pathfinder in the AppleLink Information icon. SAM is available from Symantec. Other anti-virus applications may also assist in detection and removal.

### Incompatible Applications

-----

Incompatible applications cause the next most common problem. Older versions of applications are often incompatible. Some of the most commonly reported incompatibilities have been with Microsoft Works 2.00a and

MacWrite 5.0x. Fully compatible versions of these two programs are Microsoft Works 2.00e and MacWrite II 1.1v2.

An application that causes things to go wrong may not be the application that is currently running; it may be an application that ran previously. An application might corrupt some portion of memory and then never reference that area of memory during the remainder of its running time. However, an application launched later (possibly, an application that tested as compatible) may make a reference to the corrupted memory created by the earlier application. The result is a system error, most likely one of the three previously mentioned - "Bus Error," "Address Error," or "Coprocessor not Installed."

Solution:

Check with the publisher of any software package you are wondering about concerning compatibility with the 6.0.7 environment.

INITs and CDevs

-----  
The next possibility is closely related to applications. INITs and cdevs can be considered mini-applications. INITs are programs that run at startup and continue to run during the entire time that the Macintosh is on. Some cdevs can have a split personality. First, a cdev can exist only as a Control Panel item; but second, a cdev can also contain an INIT that may not be visible to the user.

Other cdevs that do not contain an INIT will not affect the operation of the system unless they are chosen from the Control Panel. This form of cdev can be thought of as a mini-program. If it isn't chosen by the user, it isn't run.

INITs and cdevs that contain INITs, are a different matter. They can affect a system from the early part of the startup process. If there are any incompatibilities with these items, a system can display error dialogs at any time. Then again, depending on what has been done since the Macintosh was started up, they may never cause any problem.

Solution:

Remove all INITs and cdevs that were not installed by Apple's System Software Installer program. Then test the Macintosh to see if the previous difficulties have gone away.

If the difficulties have gone away, and you must have the use of INITs and cdevs, reinstall one INIT or cdev at a time and then test for difficulties after each installation. Repeat this sequence until after the installation of one of the INITs or cdevs difficulties begin appearing. Then take one step back and remove the last installed INIT or cdev. Check with the publisher of that removed item to see if a later and compatible version is available. If it isn't, you will need to find a way to achieve those functions in a different manner until the publisher can provide an update.

### Third-Party SIMMs

-----

Some third-party SIMMs do not meet Apple's specifications. There are two SIMM issues listed here.

- The PC board on which the RAM chips are mounted is too thin to provide proper contact to both sides of the SIMM socket. The results are system error dialogs. There appears to be a very small sample of boards that are affected by this issue.
- The timing of the PAL chip on some SIMMs has proven to be out of specification. The 2MB SIMMs appear to be the most common offenders. Timing issues can also result in system error dialogs. Third-party vendors have been informed of the considerations involved with timing.

### Solution:

To determine if the SIMMs are at fault, replace the third-party SIMMs with Apple SIMMs and run tests to see if the previous problems continue. If the Apple SIMMs resolve the appearance of system error dialogs, replace the SIMMs.

### Hard Disk Drivers

-----

Hard disk driver software can have trouble performing correctly when installed in certain ways, or if the driver software is out of date. This is a problem with either Apple HD SC hard disks or various third-party hard disks. Before reinstalling system software, try this step, which is not as involved as doing a system software reinstallation.

### Solution: Procedure for Apple Hard Disks

Use the Apple HD SC Setup that ships with 6.0.7 (or later) to update the driver on the hard disk. The version of this hard disk driver is at least 2.0.3. Use the Drive button to select the hard disk that will be the startup disk. Press the Update button to update the hard disk driver software on the hard disk.

### Solution: Procedure for Third-Party Hard Disks

Some third-party hard disk drivers which are installed with an "Installer" type of program may have difficulties if the installer was launched from a System 6.0.5 (or earlier) environment.

Usually this means that the third-party installer was shipped on a floppy disk which has System 6.0.5 (or earlier) on the disk. The installer disk is used to boot for the installation. In this way, the hard disk driver is installed from 6.0.5 (or earlier) into 6.0.7. Sometimes a Macintosh system which has been in place for a while is updated to version 6.0.7. The third-party hard disk drivers were in place prior to the 6.0.7 update.

In either case, follow these steps to resolve the problem:

- 1) Create a third-party hard disk installer disk with System 6.0.7 (not 6.0.5) on it. Make a new installer disk or update the installer disk to version 6.0.7.
- 2) Boot from the third-party hard disk installer with 6.0.7 on it.
- 3) Launch the third-party hard disk installer.
- 4) Update the third-party hard disk's driver. (Most installers have an Update selection.)
- 5) Restart and test for previous difficulties.

If you have worked through all of the procedures described in this document and you still have problems, you need to reinstall System Software 6.0.7. Search for the second part of this article on System 6.0.7 Troubleshooting for advice on reinstalling the system software.

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Tech Info Library Article Number:7867



# Tech Info Library

## Macintosh System Software 6.0.7: Troubleshooting (2 of 2)

Revised: 7/15/91  
Security: Everyone

Macintosh System Software 6.0.7: Troubleshooting (2 of 2)

=====

Article Created: 18 June 1991  
Article Last Reviewed: 22 July 1992  
Article Last Updated: 22 July 1992

TOPIC -----

If the difficulties persist after you work through the four steps outlined in part 1 of this article, review the installation of the system software. This document (part 2 of the article) gives the proper procedures for reinstalling system software 6.0.7.

DISCUSSION -----

Do not use Minimum Install. The Minimum Install option of the System Software Installer is meant for creating bootable floppy disks and may not contain all the resources you need for a complete system.

You may install using the "Easy Install" option or by customizing which system resources are written to your disk. Below is the first of two custom installation procedures.

- 1) Start up from the Installer floppy disk.  
(800K=System Tools; 1.4MB=System Startup).
- 2) Remove from the System Folder any items that you wish to save, and that weren't installed with Apple's Installer.
- 3) Drag the System Folder to the Trash.
- 4) Empty the Trash.
- 5) Launch the Installer. Now you have the choice to do an Easy Install, or to customize your installation. This will be more involved, but may be the best approach. To do this, click on the Customize button. This will present a scrolling text field. Here are the choices you must make:

- AppleShare (workstation software)
- Software for AppleTalk Responder
- 32-Bit QuickDraw
- Printer
- Model of Macintosh

You will want AppleShare if you are using AppleShare file servers. The network administrator may want you to have AppleTalk Responder. Some applications (usually graphic programs) require 32-Bit QuickDraw. You will need to know which printer to use. In the case of the ImageWriter, you need to know whether it is an AppleTalk network printer or a locally attached printer. And finally, you will need to know which model of Macintosh you are using.

Shift-click on each of the choices in the scrolling text field.

- 6) Make sure you see the disk displayed on which you want to install the system software, and click the Install button.

The following steps are for the second custom installation method. Use this procedure with understanding and caution. This solution is not verified, however it solved difficulties with 6.0.7 at certain sites. This is more involved than the last procedure, and requires more patience when trying this sequence. Certain rules appear to be violated, but for good reasons.

- 1) Start up from the Installer floppy disk.  
(800K=System Tools; 1.4MB=System Startup)
- 2) Remove from the System Folder any items that you wish to save, and you didn't install with Apple's Installer.
- 3) Drag the System Folder to the Trash.
- 4) Here is where the rules are bent. Empty the Trash and drag a copy of the System Folder from the Installer floppy disk onto the hard drive. BUT don't stop here! Now continue with step 5 of the first custom installation sequence.

There are no guarantees with this procedure. But it is worth the time if you continue to have difficulties.

If you still have difficulties after attempting all of these procedures, make backups of all important files. Then reformat the hard drive and reinstall system software 6.0.7. On Apple hard disks be sure to use Apple HD SC Setup v2.0.3 or later to reformat (reinitialize). For third-party hard disks, use their formatting or installation software.

If you continue to have problems, ask your service provider to check for hardware problems.

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# Tech Info Library

## Macintosh System Software 6.0.7: Compatibility Report (6/95)

Revised: 6/6/95  
Security: Everyone

Macintosh System Software 6.0.7: Compatibility Report (6/95)

Article Created: 6 February 1991  
Article Reviewed/Updated: 6 June 1995

TOPIC -----

The following is a list of third-party software applications that Apple tested with system software 6.0.7. This list should be used as a snapshot of compatibility as of the day of 6.0.7 introduction.

DISCUSSION -----

This report does not cover all Macintosh application software, it covers only those applications that Apple reviewed. For more detailed information on compatibility of an application and system software 6.0.7, contact the developer or publisher of that product.

Apple did not test every feature of the application. Instead, each application was run through a series of common functions: launch, open a simple document, open DAs, cut/paste, and print).

This report reflects compatibility information on the version number of the application listed, and in some instances does not reflect the most currently available version of a particular application. This list is not intended as an endorsement nor advertisement of any product. This list is meant to provide you with the most current information regarding compatibility of system 6.0.7.

### Note:

Testing was done on the Macintosh Classic, Macintosh LC, Macintosh IIsi, Macintosh Plus, Macintosh SE, Macintosh SE/30, Macintosh IICx, Macintosh IIX, Macintosh IICI, Macintosh IIfx, and Macintosh Portable personal computers using system software 6.0.7. Ratings for all applications indicate performance of the application running on released CPUs and released system software.

The following products passed our compatibility tests. If any additional comments were needed, then they are mentioned in the "COMMENTS" field.



| APPLICATION             | VERSION | DEVELOPER                | COMMENTS         |
|-------------------------|---------|--------------------------|------------------|
| -----                   | -----   | -----                    | -----            |
| 4th Dimension           | 2.0.11  | ACI US, Inc.             |                  |
| Adobe Illustrator       | 1.9.3   | Adobe                    |                  |
| AutoCAD                 | v10c4a  | AutoDesk                 | Requires an FPU. |
| Canvas                  | 2.1     | Deneba Systems           |                  |
| Claris CAD              | 1.0v4   | Claris                   |                  |
| ConcertWare+            | 4.05    | Great Wave Software      |                  |
| ConcertWare+ MIDI       | 5.1     | Great Wave Software      |                  |
| Cricket ColorPaint      | 1.0     | Computer Associates      |                  |
| Cricket Draw            | 1.1.1   | Computer Associates      |                  |
| Cricket Graph           | 1.3     | Computer Associates      |                  |
| Cricket Paint           | 1.0     | Computer Associates      |                  |
| Cricket Presents        | 2.0     | Computer Associates      |                  |
| Crystal Quest           | 2.2c    | Greene Inc.              |                  |
| Design Studio           | 1.0     | Letraset Corp.           |                  |
| Digital Darkroom        |         | Aldus Consumer Division  |                  |
| Dreams                  | 1.1     | Innovative Data Design   |                  |
| EcoDisk 1989            |         | Educorp                  |                  |
| FileMaker II            | 1.1v2   | Claris                   |                  |
| Freehand                | 2.0.2   | Aldus                    |                  |
| FullWrite Professional  | 1.1     | Borland International    |                  |
| Full Impact             | 1.1     | Borland International    |                  |
| Galaxy                  | 1.0.2   | Opcode                   |                  |
| Guide                   | 2.01    | Owl International        |                  |
| HyperCard               | 2.0     | Claris                   |                  |
| HyperSound              | 2.0.2   | Farallon Computing       |                  |
| Mac3D                   | 2.1     | Challenger Software      |                  |
| MacDraw II              | 1.1v2   | Claris                   |                  |
| MacPaint                | 2.0     | Claris                   |                  |
| MacProject II           | 2.0v1   | Claris                   |                  |
| MacroMind Director      | 2.0     | MacroMedia               |                  |
| MacTerminal             | 2.3.1   | Apple                    |                  |
| MacTerminal             | 3.0     | Apple                    |                  |
| MacWrite II             | 1.1v1   | Claris                   |                  |
| Mathematica             | 1.2     | Wolfram Research         |                  |
| Microsoft Excel         | 2.2a    | Microsoft                |                  |
| Microsoft Mail          | 2.0     | Microsoft                |                  |
| Microsoft Word          | 4.0b    | Microsoft                |                  |
| Microsoft Works         | 2.0b    | Microsoft                |                  |
| More II                 | 2.0.1   | Symantec                 |                  |
| More II                 | 3.02    | Symantec                 |                  |
| PageMaker               | 3.0.2   | Aldus                    |                  |
| PageMaker               | 4.0     | Aldus                    |                  |
| Persuasion              | 2.0     | Aldus                    |                  |
| PhotoMac                | 1.1     | Avalon Development Group |                  |
| PixelPaint Professional | 1.0     | SuperMac                 | Requires an FPU. |
| PixelPaint              | 2.0     | SuperMac                 | Requires an FPU. |
| PowerPoint              | 2.0.2   | Microsoft                |                  |
| QuarkXpress             | 2.12    | Quark                    |                  |
| Reader Rabbit           | 2.2     | The Learning Company     |                  |
| ReadySetGo              | 4.5     | Letraset                 |                  |
| Sound Designer II       | 1.21    | DigiDesign               |                  |

|                          |       |                          |                  |
|--------------------------|-------|--------------------------|------------------|
| Sound Designer Universal | 1.3   | DigiDesign               |                  |
| Sound Edit               | 2.0.2 | Farallon Computing       |                  |
| SoundMaster              | 1.6   | Bruce Tomlin - Shareware |                  |
| Statview II              | 1.02  | Abacus Concepts          |                  |
| Statview SE              | 1.03  | Abacus Concepts          |                  |
| Studio/1                 | 1.0   | Electronic Arts          |                  |
| Studio/8                 | 1.1   | Electronic Arts          | Requires an FPU. |
| Super 3D (bw)            | 2.1   | Aldus Consumer Division  |                  |
| Super 3D (color)         | 2.1   | Aldus Consumer Division  | Requires an FPU. |
| SuperCard                | 1.0   | Aldus Consumer Division  |                  |
| SuperPaint               | 2.0   | Aldus Consumer Division  |                  |
| Swivel 3D (bw)           | 1.1L  | Paracomp                 |                  |
| Swivel 3D (color)        | 1.1S  | Paracomp                 | Requires an FPU. |
| THINK C                  | 4.0   | Think Technologies       |                  |
| Trapeze                  | 2.1   | Data Tailor              |                  |
| Turbosynth               | 2.0   | DigiDesign               |                  |
| VersaCAD II              | 2.1.2 | VersaCad Corp.           | Requires an FPU. |
| VersaCAD SE              | 2.1.1 | VersaCad Corp.           |                  |
| VersaTerm Pro            | 3.1.1 | Synergy                  |                  |
| Vision                   | 1.1   | Opcode                   |                  |
| Wingz                    | 1.1   | Informix                 |                  |

Article Change History:

06 Jun 1995 - Reviewed for technical accuracy.

10 Feb 1995 - Formatting updated and removed unnecessary keyword.

15 Mar 1993 - Updated vendor names.

Support Information Services

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Tech Info Library Article Number:7869



# Tech Info Library

## AppleShare File Server: Allowing Apple II Network Startup

Revised: 7/24/91  
Security: Everyone

AppleShare File Server: Allowing Apple II Network Startup

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Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article tells how to set up your AppleShare File Server software so that Apple IIGS and Apple IIe systems can start up over the network.

An earlier version of this article appeared in the June 1990 "TechBeat" and in the "Apple II Tech Bulletin" for February-March 1990. Since then, new versions of the Apple IIGS and Macintosh operating systems have been released, requiring updated documentation.

DISCUSSION -----

Assuming the hardware is already set up, the installation process should take from one to two hours. This article assumes you are installing AppleShare on a newer Macintosh running System 6.0.7. Note: If you are installing on one of the older Macintosh computers, for example an SE/30, System 6.0.5 would be an acceptable replacement for System 6.0.7.

This article also applies to those with existing AppleShare File Servers. Where necessary, we will explain what material to skip over.

Besides Macintosh system software, you need the AppleShare File Server software (version 2.0.1), Apple part number M0548/B. Finally, you need Apple IIGS System Software Update Version 5.0, Apple part number A0013LL/A. (This version is now shipping with version 5.0.4 in the box.)

Note that IIGS System 5.0.4 is a three-disk set. The third disk, a Macintosh disk called "Apple II Setup", is essential. You will need to buy at least one IIGS System 5.0 Software Update, because this third disk does not ship with new IIGS systems. Table 1 lists the disks required. You also need one blank 800K disk.

Note: For future reference, if a new version of IIGS system software is released, use the complete three-disk set from that system instead of version 5.0.4.

Table 1: Required Disks

| Disk Name                              | Format      | Comment                    |
|----------------------------------------|-------------|----------------------------|
| System Startup 6.0.7                   | Mac 1.44MB  |                            |
| System Additions 6.0.7                 | Mac 1.44MB  |                            |
| Network Products Installer 6.0.7       | Mac 1.44MB  |                            |
| AppleShare File Server 2.0.1 Installer | Mac 800K    | Part of A'Share 2.0.1.     |
| AppleShare File Server 2.0.1 Admin     | Mac 800K    | Part of A'Share 2.0.1.     |
| Apple II Setup 2.0.1                   | Mac 800K    | Part of A'Share 2.0.1.     |
| -->Obsolete disk!                      |             |                            |
| /System.Disk                           | ProDOS 800K | Part of IIGS System 5.0.4. |
| /System.Tools                          | ProDOS 800K | Part of IIGS System 5.0.4. |
| Apple II Setup 2.1.3                   | Mac 800K    | Part of IIGS System 5.0.4. |
| -->New version.                        |             |                            |

## 1. Setting up the AppleShare File Server

-----  
Follow these steps to set up the AppleShare File Server:

- 1) If you have an existing server, start up from the Network Products Installer disk and install "Apple II Setup (v2.0.1)". (Others should skip to the next paragraph.)
- 2) When the Installer prompts you for the "Apple II Setup" disk, insert the Apple II Setup version 2.1.3 disk that came with IIGS System Software 5.0.4.

Do not insert the obsolete Apple II Setup disk that comes in the box with AppleShare 2.0.1. For those with an existing file server, proceed to Section 2, "Preparing AppleShare for Apple II Users".

If you haven't set up your server yet, here is how to do it:

- 1) Boot the Macintosh with the System Startup disk
- 2) Launch HDSC Setup and initialize the hard disk. When giving the hard disk a name, use a short name that fits ProDOS conventions. The name must begin with a letter (A to Z) and contain nothing but letters, numerals and periods. No spaces. Lower case is permitted. For this example, we will name the server volume "A2".
- 3) After the hard disk has been initialized, quit HDSC Setup and launch the Installer. Click "Easy Install".

- 4) When the installation is complete, quit the Installer.
- 5) Double-click on the hard disk icon and open the System Folder.
- 6) Drag "Easy Access," and any printer drivers you don't need, to the Trash. You can also delete MultiFinder. If you won't be doing any printing from the file server, you can throw away Backgrounder and PrintMonitor.
- 7) When you are done, select "Empty Trash" from the Special menu and close all open windows. Then select "Shut Down" from the Special menu.

With the cleanup out of the way, it's time to install the software:

- 1) After the Macintosh ejects the System Startup disk, restart from the Network Products Installer disk.
- 2) Launch the Installer and select "AppleShare File Server (v2.0.1)" and holding down the Shift key, select "Apple II Setup (v2.0.1)".
- 3) Click Install. The Installer will prompt you for the "AppleShare File Server" disk (that's the AppleShare Installer disk), and shortly thereafter, the "AppleShare Administration" disk.
- 4) When it prompts you for the "Apple II Setup" disk, insert the Apple II Setup version 2.1.3 disk that came with IIGS System Software 5.0.4.

Important: Do not insert the obsolete Apple II Setup disk that comes in the box with AppleShare 2.0.1

- 5) When the Installer is finished, quit and restart the Macintosh, letting it start up from the hard drive.
- 6) The hard drive isn't an AppleShare File Server yet, so you must set it up. Open the System Folder on the hard drive and double-click "AppleShare Admin".
- 7) When asked if you want to "Prepare volume 'A2' for use with AppleShare?", click OK. You'll be asked to give the file server a name, for example, "Apple II Forever".
- 8) Next, the system will prompt you for a Users and Groups file. Open the Server Folder and click "New". Create users and groups according to your needs and preferences, starting with the Administrator.
- 9) When you are done, select "Save Users and Groups as..." from the File menu and save the Users and Groups in the Server folder.

## 2. Preparing AppleShare for Apple II Users

-----  
Here's how to prepare AppleShare for Apple II Users:

- 1) If you haven't done so, get into the AppleShare Admin program. (There is no need to shut down your server to do this.)
- 2) Under the Server menu select "Server Info" and click on the check box marked "Apple II Features".
- 3) Click "Save". Quit the AppleShare Admin program.
- 4) If you were updating an existing file server, shut down the server and restart. Others can merely select "Restart" from the Special menu to restart the Macintosh. It will come up as an AppleShare File Server.

If you want the file server to support network startup only for Apple IIe users, the server is now ready to start them up over the network, once you set the access privileges on the volume. Users must be able to "See Files, See Folders" to start up.

To set the access privileges, follow these steps:

- 1) Get into AppleShare Admin and select "Volume List" from the Volume menu.
- 2) Double-click the server volume.
- 3) Set the access to "See Files, See Folders" and apply the changes to all enclosed folders -- unless you have an existing file server, in which case you will probably need to assign access by folder.

Apple IIe users need "See Files, See Folders" access to the top level of the server startup volume. Whether you set these changes for the Administrator only, all users, or just the particular groups, depends on how you have planned your server.

If you want IIGS users to be able to start up over the network, you should continue with the next section, which tells you how to install IIGS system software onto the server, over the network. This step is required only if the IIGS users will be starting up over the network. If the IIGS workstations have hard drives, you should set them up to start up GS/OS on their hard drives, and install AppleShare. This way, they can mount server volumes on the desktop, just like Macintosh users.

### 3. Installing IIGS System Software over the Network

-----  
Make sure you have the AppleShare File Server and the Apple IIGS connected via LocalTalk or similar network cabling. The IIGS should have a minimum of 1MB of RAM and one Apple 3.5 Drive. (You'll save time if you equip the IIGS with two Apple 3.5 Drives.)

When you turn on the IIGS, hold down the Control Open-Apple Escape keys to get into the text Control Panel. If you have defined a RAM disk, make sure you leave the system with at least 1MB of memory. Under Slots, ensure that the Startup Slot is set to 5, and that Slot 5 is set to "SmartPort" and Slot 7 to "AppleTalk" or "Built-In AppleTalk". Slot 1 should be set to

"Your Card", or on a ROM 03 IIGS to "Built-In AppleTalk". Exit from the Control Panel and turn off the computer.

Be sure you have the original (unmodified) System.Disk and System.Tools diskettes. Lock both diskettes to prevent accidental deleting of critical files. You will also need one blank 800K disk to use as an AppleShare startup disk. Follow these steps:

- 1) Insert the System.Disk and power on the IIGS.
- 2) When the Finder desktop appears, insert the blank disk and initialize it. Call it "AppleShare".
- 3) Launch the Installer from System.Tools. If you have two drives, eject the System.Disk. If you have one drive, eject the System.Tools disk.
- 4) Insert the blank "AppleShare" disk you just initialized and click the "Disk" button until its name appears.
- 5) Select the installer script entitled "AppleShare on 3.5 Disk" and click Install. Before installing, the system will display an alert message explaining not to install this on your only copy of the system disk. Click "Perform This Update" to continue. Some disk swapping will be required.
- 6) When the installation is complete, make sure the AppleShare startup disk you just created is in drive 1, and restart. To save time, you can hold down the Control Open-Apple Reset keys rather than quitting to the Finder and doing a Shutdown.
- 7) When the Finder desktop is on the screen, use the mouse to select the graphic Control Panel under the Apple menu. If it isn't already highlighted, click on AppleShare.
- 8) Select the file server and connect using the Administrator name and password. Then select the AppleShare File Server volume and mount it. Close the graphic Control Panel.
- 9) Run the Installer on System.Tools. Click the "Disk" button until the file server name appears -- in our example, "A2".

Here is how to install some files over the network onto the file server volume:

- 1) Select the following scripts: Server Network Startup, Server Quick Logoff and optional scripts.

For optional scripts, select anything that IIGS systems staring over the network will require. For instance, if you need access to a network printer, like a LaserWriter or an AppleTalk ImageWriter, install those scripts.

- 2) Select the optional scripts you need by holding down the Open Apple key

when you click on them.

Caution: do not try to install "Latest System Files" or "Latest System Files (No Finder)", or IIGS users will not be able to start up over the network. Note: There was an error in the original version of this article that indicated you should install the "Latest System Files (No Finder)" script. It was corrected in a subsequent issue of "TechBeat."

When you click "Install", the system installs the IIGS system software over the network. To show network activities, double arrows at the top left of the screen will flash. The installation may take some time.

- 3) Before you run off to grab a coffee, wait for the alert message telling you to "install this update only on a file server's startup volume". Click "Perform This Update" to continue.
- 4) When the installation is complete, hold down the Control Open-Apple Escape keys to enter the text Control Panel.
- 5) Under Slots, set the startup slot to 7. The next time you start up the IIGS, it will be over the network. First, however, you have to set up the server for IIGS users. See section 4 below.

#### 4. Setting up the File Server for IIGS Users

-----  
Follow these steps:

- 1) Leaving the file server running, get into the AppleShare Admin program.
- 2) Use the Shift-click method to highlight all the IIGS users you want to start up over the network.
- 3) Select "Set Startup" under the Apple II menu.
- 4) To have IIGS users start up into the Finder, select "Finder" under the System folder. You can also select a default network printer if one is available, and if you installed the drivers for them in section 3. Note that any printers to be selected must be powered up and visible over the network.

For Apple IIe users, you can set the startup application to be any ProDOS 8 application (file type SYS). Apple IIe systems that will start up over the network must be equipped with AppleShare Workstation cards and 128K of RAM. They must also be enhanced. (If you will be running Aristotle Admin, you'll need an Apple II Memory Expansion card with at least 256K of RAM. IIGS users who want to run Aristotle Admin need to define a RAM disk with 256K of RAM.) IIGS users can also start up to any ProDOS 8, ProDOS-16, or GS/OS application.

When you have finished setting up the startup information for your Apple II users, all that remains is setting the access privileges:



- 1) Under the "Volumes" menu, select "Volume List", double-click on the server volume, and a dialog box will be displayed.
- 2) Set the access privileges so that everyone can "See Files, See Folders", and apply changes to all enclosed folders, unless you have an existing server.

In such a case, you should not apply changes to enclosed folders, as there may be folders you do not want IIGS users to have access to. IIGS users need "See Files, See Folders" access to the top level of the server startup volume, the System Folder, and all folders within it. They will also need the same access to the Icons folder, which holds IIGS Finder icons. Users may experience errors if they don't have sufficient access for various operations. If you find some IIGS software that needs write access to a particular folder, you should lock that folder so that adventurous users can't throw it away.

- 3) When you are finished setting up access privileges, quit from the AppleShare Admin program.

## 5. Booting over the Network

-----  
You should now be able to start up over the network with a IIGS or a IIe. A IIGS starting up over the network displays several different screens during the startup process. You can verify you installed the correct version of the Apple II Setup on your file server by watching the "Starting up over the network" screen. It should say "2.1.3 GS.OS" at the top right if you used version 2.1.3, which comes with IIGS System 5.0.4.

After a few moments, the system prompts the user for a user name or allow guest access, if it is enabled. Be sure to test server logon as a normal user, and not just as the Administrator. That way you can uncover any access privilege problems. If you ever see an error message, take note of any error codes and compare them to the list in the back of the "ProDOS Technical Reference Manual" or in the "Apple IIGS GS/OS Reference." Two of the most common errors are listed in the Appendix at the end of this article. You'll find that most errors are easily explainable unless you mixed up software versions during installation.

You have now completed the installation of software to allow IIGS and IIe users to start up over the network.

## Appendix: Common Errors

-----  
Cannot load file Start.GS.OS

Error = \$0046

This is the message you get if you failed to follow Step 3 correctly. It is a ProDOS file system error \$46, which means "Path not found". The GS/OS files the system requires to start up could not be found on the file server. If you have multiple file-server volumes, verify you installed the IIGS System Software over the network onto the server startup volume.

Unable to load descriptors

Error was \$004E

This message denotes an access privileges problem. It is a ProDOS file system \$4E error. This means the user had insufficient access privileges to complete the required operation, or, possibly, the file was locked. Most likely, you haven't given the user who experienced the error "See Files, See Folders" access to the top level of the server startup volume, the System folder, and all folders within it.

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Tech Info Library Article Number:7870



# Tech Info Library

## Macintosh LC, Ile Card: Printer Port already in use Message

Revised: 7/2/92  
Security: Everyone

Macintosh LC, Ile Card: "Printer Port already in use" Message

=====

Article Created: 5 June 1991  
Article Last Reviewed: 2 June 1992  
Article Last Updated:

TOPIC -----

Why do I get a "Printer Port is already in use" message when starting up the Apple Ile Card application program?

DISCUSSION -----

This message comes up when the Macintosh is trying to use the Printer Port for a LocalTalk (network) connection and the Apple Ile card is trying to use the port for serial data. This resulting conflict causes the "Printer Port is already in use" message.

If you are connected to a LocalTalk network in the Printer Port, use the "Network Printer" icon and not the "Printer Port" icon in the Slots menu. See the manual for information on selecting the network printer.

If you are connected to a serial printer in the Macintosh printer port, return to the Macintosh Chooser and select "AppleTalk Inactive". This removes the conflict, and the port-in-use message will no longer appear when you start the Ile application.

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Tech Info Library Article Number:7871



# Tech Info Library

## Apple IIe Card: ProDOS 1.9. Corrects AppleWorks Date Errors

Revised: 7/2/92  
Security: Everyone

Apple IIe Card: ProDOS 1.9. Corrects AppleWorks Date Errors

=====

Article Created: 6 June 1991  
Article Last Reviewed: 2 June 1992  
Article Last Updated:

TOPIC -----

When I'm running the Apple IIe Card, AppleWorks does not seem to access the clock correctly: the date is wrong.

DISCUSSION -----

Update the version of ProDOS on your AppleWorks disk to version 1.9. This version of ProDOS is shipping on the Apple II System Utilities version 3.2.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7872



# Tech Info Library

## Apple IIe Card: Joystick Support

Revised: 7/2/92  
Security: Everyone

Apple IIe Card: Joystick Support

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

Does the Apple IIe Card support 16-pin joysticks or annunciators?

DISCUSSION -----

No, the card supports only the 9-pin joystick/paddle connector.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7875



# Tech Info Library

## Apple IIe Card: Memory Card Only Supports 1 MB

Revised: 7/2/92  
Security: Everyone

Apple IIe Card: Memory Card Only Supports 1 MB

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

With the Apple IIe Card, can the memory card support more than 1MB?

DISCUSSION -----

To avoid compatibility problems, the memory card supports only 1MB, even if the Macintosh LC has more memory.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7876



# Tech Info Library

## Apple IIe Card: No Support for Parallel Printers

Revised: 7/2/92  
Security: Everyone

Apple IIe Card: No Support for Parallel Printers

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

Can you print to parallel printers with the Apple IIe Card?

DISCUSSION -----

No, the card supports only the ImageWriter and LaserWriter printers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7877



# Tech Info Library

## Apple IIe Card: Troubleshooting Apple IIe Applications

Revised: 8/3/95  
Security: Everyone

Apple IIe Card: Troubleshooting Apple IIe Applications

=====

Article Created: 7 June 1991  
Article Last Reviewed/Updated: 03 August 1995

TOPIC -----

If an Apple IIe application doesn't seem to work properly on the Apple IIe Card, see the troubleshooting procedures in this article.

DISCUSSION -----

Changing General Option Panel Settings:

-----

- If text is hard to read, use monochrome monitor or switch to monochrome mode on a color display. Text is hard to read, because of the higher resolution of Mac monitor.
- If an application won't boot, when set to Fast speed, run at it at Normal speed.
- If an application seems slow, run it at Fast speed to get best performance.
- On some applications, do not turn Type Ahead "On". Program will lock up when you start to type.
- On some applications, if the Auxiliary Memory is turned on, the Memory Expansion card is ignored, even if it is installed in a slot. Do not turn on Auxilliary Memory, unless the application asks for it.

How to Change Slot Settings in the Option Panel

-----

Change them one at a time in the following order:

- 1) If the application won't boot, the program seems to hang, or garbage appears on screen, remove the clock card.



- 2) If the application won't boot, the program seems to hang, or garbage appears on screen, remove the memory card.
- 3) If the application won't boot, the program seems to hang, or garbage appears on screen, remove all unnecessary cards.
- 4) If the application is still not working, study the configuration of the Apple IIe that the program is currently running on. Then, set up the Apple IIe Card's slots so that they are the same as those in the actual Apple IIe.
- 5) Some applications can only print directly to an ImageWriter with the printer icon only in slots 1 and 2.
- 6) Some applications can only print directly to ImageWriter with printer icon only in slot 1.

#### Changing SmartPort Settings in the Option Panel

-----

Due to copy protection, some 3.5-inch application disks must be booted from the external UniDisk Drive (white 3.5-inch drive). Make the external drive, slot 5 drive 1.

#### Hardware Configurations

-----

- 1) Some programs have mouse and joystick conflict. This also happens on the Apple IIe computer. To use the mouse, remove the joystick. Otherwise, the mouse will appear erratic.
- 2) With some programs, it is better to use the keyboard or joystick control, because the mouse is very sensitive. (The same thing happens less apparently on the Apple IIe.)
- 3) Some programs must use two 5.25-inch disk drives. This is not a problem; you just need two 5.25-inch disk drives (the Apple 5.25-inch Drive, which is the only Grey drive).

#### Problems That Cannot Be Overcome

-----

- An application tries to access Apple-IIe-specific hardware (due to copy protection or poor code). Generally, these programs won't work on the Apple IIGS either.
- An application does not print to a serial printer, only a parallel printer, and there is no parallel port on the LC. (Possibly a serial-to-parallel converter would work, but we did not test this).
- If the application uses special cards that are not available in the Slot Settings, the program will not work.

In general, rules that apply to an Apple IIe application running on the IIe are still in effect on the Apple IIe Card. If the application requires the KeyCaps to be down, the KeyCaps must be down. If DOS 3.3 must first be loaded, DOS 3.3

must be loaded first.

Article Change History:

03 Aug 1995 - Corrected minor typo.

Support Information Services

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Tech Info Library Article Number:7878



# Tech Info Library

## Apple II Workstation Card: Description (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II Workstation Card: Description (11/96)

Article Created: 15 July 1991  
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article describes the Apple II Workstation Card. This product has been discontinued and is no longer available from Apple.

DISCUSSION -----

The Apple II Workstation Card connects the Apple IIe computer to an AppleTalk network using the LocalTalk Cabling System. This card includes a built-in Super Serial port for direct connection to serial devices such as ImageWriter printers. This card is ideally suited to educational environments where users want to share printers and reduce the amount of time spent handling disks.

The Apple II Workstation Card, together with the AppleShare IIe Workstation software included with it, gives users of enhanced Apple IIe computers access to AppleShare file servers, network printers (such as LaserWriter and ImageWriters), and to AppleShare print servers. Also, in conjunction with an AppleShare file server connected to an AppleTalk network, allows Apple IIe users to start up from the file server without using local disk drives.

Apple IIe users can print to network printers and share information stored on AppleShare file servers. At the same time, other Apple II, Macintosh, and MS-DOS users can access folders, documents, applications, and shared storage. Using an AppleShare file server or network printer is as easy as using a local ProDOS disk or serial printer.

### System and Network Requirements

An enhanced Apple IIe computer with 128K RAM, monitor, LocalTalk cabling and Apple II Workstation Card installed.

An Apple IIGS system (in which the function of the Apple II Workstation Card is

built-in).

If the network doesn't include an AppleShare file server, each workstation requires a 3.5-inch disk drive.

To initially load workstation software onto an AppleShare file server, a 3.5-inch disk drive is required at one of the workstations.

#### Recommended Equipment

-----  
The following are recommended, but not required.

One or more AppleShare file servers (for diskless startup and file server access).

One or more LaserWriter, ImageWriter II, or ImageWriter LQ printers.

#### Technical Specifications

-----  
Processor: 65C02, two-megahertz clock speed

Memory: 16K RAM, 64K ROM

Two 8-pin minicircular (RS-422) ports:

- one LocalTalk port
- one Super Serial port

#### Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7881



# Tech Info Library

## 80-Column Text Card: Specifications (11/96)

Revised: 11/18/96  
Security: Everyone

80-Column Text Card: Specifications (11/96)

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Article Created: 31 May April 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

This article describes the Apple IIe 80-Column Text Card. This card has been discontinued and is no longer available from Apple.

DISCUSSION -----

The Apple IIe 80-Column Text Card doubles the standard display of an Apple IIe to 80 characters per screen line. With a video monitor connected to the computer, you can view 24 lines of either 40 or 80 characters each; and from the keyboard, easily switch between these modes.

### Installation

-----

The 80-Column Text Card plugs directly into the Auxiliary Connector slot inside the computer, requiring no cables or additional connectors.

### System Requirements

-----

To use the Apple IIe 80-Column Text Card, you need:

- an Apple IIe (64K RAM or more)
- an available Auxiliary Connector slot
- a suitable high resolution video display device

### Article Change History:

14 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7882



# Tech Info Library

## Apple II Memory Expansion Cards: Decsription (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II Memory Expansion Cards: Decsription (11/96)

Article Created: 31 May 1991  
Article Reviewed/Updated: 15 November 1996

TOPIC -----

This article describes Apple's three Apple II Memory Expansion Cards.

DISCUSSION -----

### Overview

-----  
An Apple Memory Expansion Card adds up to one megabyte (1MB) RAM to any Apple II personal computer, allowing it to run more sophisticated applications and to create larger files. On the Apple IIGS personal computer, memory expansion lets you run high-performance programs that take full advantage of the computer's sound and graphics capabilities.

Three cards are available:

- Apple IIGS Memory Expansion Card
- Apple IIc Memory Expansion Card (for Apple IIc only, not Apple IIc Plus)
- Apple II Memory Expansion Card (for Apple IIe, Apple II Plus, and Apple II computers)

These cards are compatible with three operating systems: ProDOS, DOS 3.3, and Pascal 1.3. (Earlier versions of Pascal can be upgraded to version 1.3.) DOS 3.3 programs cannot be booted from the Memory Expansion Card.

Environmental requirements are the same for all three cards:

- ambient temperature: 50 to 104 degrees F (10 to 40 degrees C)
- relative humidity: 0% to 95% (non condensing)

Voltage is the same for all three cards: 4.75 to 5.25 volts DC

Apple IIGS Memory Expansion Card

-----

This card is used with an Apple IIGS personal computer with a monitor and disk drive.

Power Consumption:

- operating: 200 milliamps in 256K configurations  
600 milliamps in 1MB configuration
- standby: 140 milliamps in 256K configuration  
370 milliamps in 1MB configuration

Apple IIc Memory Expansion Card/Kit

-----

The Apple IIc Memory Expansion Card is used with an Apple IIc personal computer (model number A2S4100).

The Apple IIc Memory Expansion Kit is used with an Apple IIc personal computer (model number A2S4000).

Power Consumption:

- operating: 100 milliamps in 256K configurations  
200 milliamps in 1MB configuration
- standby: 90 milliamps in 256K configuration  
180 milliamps in 1MB configuration

Apple II Memory Expansion Card

-----

The Apple II Memory Expansion Card is used with an Apple IIe personal computer (preferably enhanced) that has a monitor and disk drive, or with an Apple II Plus or Apple II personal computer with a monitor and disk drive.

Power Consumption:

- operating: 100 milliamps in 256K configurations  
200 milliamps in 1MB configuration
- standby: 50 milliamps in 256K configuration  
150 milliamps in 1MB configuration

Apple II Memory Expansion Card Technical Reference

=====

The Memory expansion card looks like, operates as, and is accessed exactly the same way as an Apple Protocol Converter device.

There are only two ways to access the card:

- as an Apple Protocol Converter device
- as a RAM disk.

# ..TIL07883-Apple\_II\_Memory\_Expansion\_Cards-Decsription\_11-96.pdf

Through the protocol converter, you can access all the memory on the card at any time.

## Article Change History:

15 Nov 1996 - Revised formatting.

30 Aug 1994 - Reviewed for technical accuracy.

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Tech Info Library Article Number:7883





# Tech Info Library

## Apple II Video Overlay Card: Description (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II Video Overlay Card: Description (11/96)

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Article Created: 31 May 1991  
Article Reviewed/Updated: 18 November 1996

TOPIC -----

This article describes the Apple II Video Overlay Card. This card has been discontinued and is no longer available from Apple.

DISCUSSION -----

### Overview

-----

The Apple II Video Overlay Card offers Apple II computer owners a wealth of possibilities for learning and creativity by merging video and computing.

The Apple II Video Overlay Card lets you superimpose Apple II screen images on video from a variety of sources: VCR, video disc, video camera, or television. It also allows you to display the combined images of an RGB or composite monitor and to record them on a VCR.

You start by using the Apple II application of your choice to create your own text, graphics, or animations. Then with VideoMix, the software included with the card, you control where these overlays appear and blend them with the video to achieve the effects you want.

With the Apple II Video Overlay Card and an Apple IIGS or IIe computer, you can add your own captions and notes to educational videos. You can also create your own video productions and interactive application for use at home or in school.

### System Requirements

-----

To use the Apple II Video Overlay Card, you will need one of the following systems:

- an Apple IIGS personal computer with at least 512K of RAM, ROM version

01 or 03, and at least one 800K 3.5-inch disk drive; and a VCR, videodisc player, or video camera

- an Apple IIe personal computer with 128K of RAM and an enhanced main logic board (revision B); and a VCR, videodisc player, or video camera

To display your videos, you can use the Apple IIGS or IIe computer with either the AppleColor RGB Monitor or the AppleColor Composite Monitor. The AppleColor RGB Monitor comes with the required DB-15 connector. The AppleColor Composite Monitor comes with the required RCA cable.

#### Technical Specifications

- NTSC output: the output of the Apple II Video Overlay Card meets RS-170A output specifications with RS-170A input.
- Environmental requirements
  - Operating temperature: 50 to 104 degrees F (10 C to 40 degrees C)
  - Storage temperature: -40 to 116.6 F (-40 to 47 degrees C)
  - Relative humidity: 20% to 95% (noncondensing)
  - Altitude: 0 to 10,000 ft. (0 to 3,048 m)

#### Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7884



# Tech Info Library

## Apple 3.5 Drive: Specifications (Discontinued)

Revised: 7/12/94  
Security: Everyone

Apple 3.5 Drive: Specifications (Discontinued)

=====

Article Created: 31 May 1991  
Article Reviewed/Updated: 12 July 1994

TOPIC -----

This article describes the Apple 3.5 Drive.

DISCUSSION -----

The Apple 3.5 Drive stores 800K of data on a single 3.5-inch disk. It's a flexible, economical choice for owners of the Macintosh Plus, Macintosh SE, and Apple IIGS personal computers who want high capacity-storage in a small inexpensive package.

### System Requirements

-----

To use the Apple 3.5 Drive, you need one of the following systems:

- Macintosh Plus
- Macintosh SE
- Macintosh 512K Enhanced
- Apple IIGS

### Technical Specifications

-----

- Recording medium
  - disk diameter: 3.5 inches
  - recording surfaces: 2
  - tracks per inch: 80
  - formatted data capacity: 800K
  - Unformatted data capacity: 1,246 kilobytes
  - Track density: 135 TPI

Use nothing but certified double-sided disks in the Apple 3.5 Drive.

- Drive Characteristics
  - seek time (track to track): 6 milliseconds maximum

settle time: 30 milliseconds maximum  
drive startup time: 600 milliseconds maximum  
Disk speed:  
Data transfer rate: 489.6 kilobits per second  
Heads: 2

- Head position accuracy:  $\pm$  0.035mm

- Interfaces

Connects directly to the disk-drive port of the Macintosh 512K Enhanced, Macintosh 512K with ROM upgrade, Macintosh Plus, Macintosh SE, or Apple II GS. With the Apple II GS, an additional drive can be daisy-chained to the first drive.

- 19-pin D-style connector for one additional drive
  - Apple 3.5
  - Apple 5.25
  - UniDisk 3.5

- Electrical requirements

+12 Volts

standby: 10 microamps  
typical: 120 milliamps  
peak: 600 milliamps  
(during eject only: 2-second maximum duration)

+5 Volts

standby: 19 milliamps  
typical: 360 milliamps

- Environmental requirements

operating temperature: 40 to 122 degrees F (5 to 50 degrees C)  
storage temperature: -40 to 140 degrees F (-40 to 60 degrees C) with no condensation  
relative humidity: 5% to 90% with maximum wet bulb temperature of 85 degrees F (29 degrees C) and no condensation

- Weight and dimensions

height: 2.01 in. (51 mm)  
width: 4.72 in (120 mm)  
depth: 7.87 in. (200 mm)  
weight: 2.8 lb. (1.3 kg)

Article Change History:

12 Jul 1994 - Combined with another document that contained similar information

Support Information Services

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Tech Info Library Article Number:7885



# Tech Info Library

## Apple 5.25 Drive: Specifications

Revised: 7/11/94  
Security: Everyone

Apple 5.25 Drive: Specifications

=====

Article Created: 31 May 1991  
Article Reviewed/Updated: 11 July 1994

TOPIC -----

This article describes the Apple 5.25 Drive.

DISCUSSION -----

The Apple 5.25 Drive is ideal for users who need compatibility with thousands of Apple II software programs.

The unit adds 143K of on-line storage to an Apple II system. You can further increase storage capacity by connecting an additional drive directly to it. Depending on which computer system you have, you may be able to "daisy chain" several drives (including 3.5-inch drives) in this manner.

### System Requirements

-----

The Apple 5.25 Drive can be used with any Apple II personal computer:

- Apple IIGS
- Apple IIe\*
- Apple IIc Plus
- Apple IIc
- Apple II Plus\*
- original Apple II\*

\* the Apple IIe, Apple II Plus, and Apple II require the Apple 5.25  
Controller Card

### Technical Specifications

- 
- Recording medium  
recording surfaces: 1  
tracks per surface: 35

- Capacity  
Formatted data capacity: 143K, 16 sectors  
Available data capacity:
  - ProDOS or Pascal: 137K
  - DOS 3.3 (16 sectors): 124K
- Drive Characteristics  
Seek/settle time (track to track): 30 milliseconds maximum  
Drive-motor startup time: 500 milliseconds maximum  
Data transfer rate: 250 KBytes/second  
Disk rotational speed: 299 RPM  
Seek/settle time (track to track): 30 milliseconds max.  
Drive motor start time: 500 milliseconds max.  
Number of read/write heads: 1  
Head positioning:
  - Adjusted to a tolerance of 0.002 inches maximum deviation from ideal on trackTracks per surface: 35  
Tracks per inch: 48  
Data surfaces: 1
- Power consumption  
+12 ( $\pm 0.6$ ) volts DC  
    typical: 800 milliamps  
    maximum: 1.6 amps  
  
-12( $\pm 0.6$ ) volts DC  
    typical: 10 milliamps  
    maximum: 20 milliamps  
  
+5( $\pm 0.25$ ) volts DC  
    typical: 200 milliamps  
    maximum: 400 milliamps
- Head Positioning  
Adjusted to  $\pm 0.002$  inches maximum deviation from ideal on track
- Interfaces  
one built-in cable with 19-pin D-style plug
  - Plugs directly into the disk drive port of an Apple IIGS, Apple IIc Plus, or Apple IIc.
  - Plugs into the Apple 5.25 Controller Card installed in an Apple IIe, Apple II Plus, or Apple II.one 19-pin D-style jack for connection of additional drive
- System Configuration
  - Replaces UniDisk as standard floppy disk drive
  - Can be "daisy chained" or connected to the back of another drive using the disk drive port of the Apple IIGS, the disk drive port of the Apple IIc, or using UniDisk controller card in the Apple II series computers Apple II, Apple II Plus, Apple IIe, or Apple IIGS.

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- Environmental requirements  
operating temperature: 50 to 105 degrees F (10 to 46 degrees C)  
operating humidity: 20% to 80% (noncondensing)  
maximum wet bulb temperature: 85 degrees F (29.4 degrees C)
- Dimensions and Weight  
height: 3.13 in. (7.96 cm)  
width: 6.37 in (16.2 cm)  
depth: 8.50 in. (21.6 cm)  
weight: 4.62 lb. (2.1 kg)

## Article Change History:

11 Jul 1994 - Added more information from another Tech Info Library article.

## Support Information Services

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Tech Info Library Article Number:7886



# Tech Info Library

## Access II: Specifications (Discontinued)

Revised: 10/7/93  
Security: Everyone

Access II: Specifications (Discontinued)

Article Created: 31 May 1991

TOPIC -----

This article describes Apple Access II communication software.

DISCUSSION -----

Overview

-----  
Apple Access II provides intelligent and easy-to-use terminal software to Apple II users. It uses the power of the computer for automatic communications and full disk support, including file transfer. Apple Access II incorporates the AppleWorks user interface, making its operation is clear and easy to understand.

Apple Access II allows the user to send and receive any type of ProDOS file via modem. Apple Access II supports all features of Apple Modems, including automatic dialing of telephone numbers. In addition, it allows users to automatically log on to remote computers. Procedures for automatic log-on to Dow Jones, CompuServe, and the Source are included on the disk.

Apple Access II can be used with any modem that operates through an RS-232 port, or by direct connection to another computer. The software supports speeds up to 9600 baud. (It does not support split speeds, modems that send at one rate and receive at another.) Apple Access II provides complete TTY, ANSI (VT100), and VT52 terminal emulation for advanced users (less graphics).

A training disk, included with the software, allows users of all levels of proficiency to see results quickly. The Reference Manual explains introductory as well as advanced concepts of telecommunications.

Equipment Requirements



-----

Apple Access II requires:

- either an Apple IIc, or an Apple IIe with 64K RAM and a Super Serial Card in Slot 2
- either a disk drive, or RS-232 (Serial) connection to either a modem or to another computer or terminal

Apple Access II does not work with the following equipment:

- Apple II or Apple II Plus
- Apple III in Apple II emulation mode
- Any modem for the Apple IIe that comes with its own interface card.

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Tech Info Library Article Number:7887



# Tech Info Library

## Apple II Monochrome Monitors: Specifications (Discontinued)

Revised: 9/13/93  
Security: Everyone

Apple II Monochrome Monitors: Specifications (Discontinued)

Article Created: 31 May 1991

TOPIC -----

This article describes two Apple II Monochrome Monitors:

- the Apple Monochrome Monitor (for the Apple IIGS, Apple IIc Plus, or Apple IIc)
- the Apple Monochrome Monitor IIe (for the Apple IIe, Apple II Plus, or Apple II)

DISCUSSION -----

Both these monitors display crisp, easy-to-read text and sharp graphics. Their 12 inch high-resolution antiglare screens are easy on your eyes, making them the low-cost displays of choice for text-based applications and other applications that don't require color.

### System Requirements

- To use an Apple Monochrome Monitor IIe, you need an Apple IIe, Apple II Plus, or Apple II personal computer.
- To use an Apple Monochrome monitor, you need an Apple IIGS, Apple IIc Plus, or Apple IIc personal computer. If you have an Apple IIc Plus or Apple IIc, you may also wish to purchase an Apple Monitor Stand.

### Picture Tube

- Apple Monochrome Monitor IIe  
12 inches (30.5 centimeters) diagonal  
High-contrast  
Antiglare  
90 degrees diagonal deflection  
Green Phosphor (EIA Type P31)

- Apple Monochrome Monitor  
12 inches (30.5 centimeters) diagonal  
High-contrast  
Antiglare  
90 degrees diagonal deflection  
White Phosphor (EIA Type P4)

#### Active Display Area

- both monitors:  
215mm horizontal by 160mm vertical (remainder of area is used for border)

#### Scanning

- both monitors:  
EIA standard: 525 lines; 30 frames, 60 fields/second; overscan

#### Scan Rates

- both monitors:  
Horizontal: 15.7 kilohertz  
Vertical: 59.9 hertz

#### Input Signal

- both monitors:  
Composite video, 1.0 ( $\pm 0.1$ ) volts peak-to-peak, negative sync

#### Video Bandwidth

- both monitors:  
Less than 3 decibels down at 10 megahertz

#### Display Capability

- Apple Monochrome Monitor IIe  
With Apple IIe: 560 dots horizontally by 192 dots vertically
- Apple Monochrome Monitor  
With Apple IIc Plus or Apple IIc: 560 dots horiz. by 192 dots vert.  
With Apple IIGS: 640 dots horizontally by 200 dots vertically

#### Text display

- both monitors: up to 80 columns by 25 lines

#### Horizontal linearity

- both monitors: less than 10%

#### Vertical linearity

- both monitors: less than 7%

#### Video Input Connector

- both monitors: RCA-style phone jack (75 ohm)

#### Controls

- Apple Monochrome Monitor IIe  
Front: power on/off, contrast  
Rear: brightness, vertical hold, height
- Apple Monochrome Monitor  
Side: power on/off, contrast  
Rear: brightness, vertical hold, vertical amplitude

#### Electrical Requirements

- both monitors:  
Line voltage 108 to 132 volts AC  
Frequency 50 to 60 hertz  
Power consumption  
Typically less than 20 watts  
Maximum 45 watts

#### Environmental requirements

- Apple Monochrome Monitor IIe  
Operating temperature: 41 to 104 degrees F (5 to 40 degrees C)  
Maximum humidity: 90%  
Altitude: 0 to 10,000 ft. (0 to 3,048 m)
- Apple Monochrome Monitor  
Operating temperature: 32 to 122 degrees F (0 to 5 degrees C)  
Maximum humidity: 90%  
Altitude: 0 to 10,000 ft. (0 to 3,048 m)

#### Dimensions

- Apple Monochrome Monitor IIe  
Height: 10.63 in. (27.0 cm)  
Width: 14.56 in. (37.0 cm)  
Depth: 12.50 in (31.8 cm)  
Weight: 18 lbs. (8.16 kg)
- Apple Monochrome Monitor  
Height: 10 in. (25.5 cm)  
Width: 12.3 in. (31.0 cm)  
Depth: 14.3 in (37.5 cm)  
Weight: 18 lbs. (8.16 kg)

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Tech Info Library Article Number:7888



# Tech Info Library

## Apple IIGS (1MB, ROM 03): Specifications (Discontinued 12/92)

Revised: 9/13/93  
Security: Everyone

Apple IIGS (1MB, ROM 03): Specifications (Discontinued 12/92)

Article Created: 31 May 1991

TOPIC -----

This article describes the Apple IIGS personal computer model with 1MB of RAM and ROM version 03.

DISCUSSION -----

### OVERVIEW

-----  
The Apple IIGS combines the best of the previous Apple II computers: built-in accessory ports for easy addition of peripherals, as well as versatile expansion slots for system customization. The Apple IIGS also provides an easy-to-use interface similar to that of the Macintosh personal computer. It also offers powerful features such as high-resolution color graphics, 15-voice sound capability, and the advanced 65C816 microprocessor.

The Apple IIGS features GS/OS, an operating system developed exclusively to take advantage of the computer's hardware features. GS/OS offers high-performance capabilities such as rapid disk access and program launching, while increasing the system's ease of use.

### SYSTEM SOFTWARE

-----  
The Apple IIGS Personal computer features Version 5.0.4 of Apple IIGS System Software, including the following:

- GS/OS Operating System. Exclusively created for the Apple IIGS personal computer, GS/OS dramatically increases the speed of both disk access and program launching. It also includes File System Translators (FSTs) that allow applications to directly access files created using other file systems, such as the ISO/High Sierra file system used by CD-ROM devices.

- Finder. The Apple IIGS Finder has been revised extensively to take full advantage of the GS/OS operation system. In addition to providing support for disk partitions and other new features, the Apple IIGS Finder is easier to use, faster, and more informative than the earlier version. The Finder also supports the AppleShare File Server, allowing you to share program files and data with other AppleShare users.
- Advanced Disk Utility. With its graphics-based interface, the Advanced Disk Utility makes it easy to initialize, name, erase, and partition hard disks, as well as to work with both 5.25- and 3.5-inch floppy disks.
- Installer. This program allows you to update your startup disks with the latest system software. It also lets you add special system files to customize startup disks for use with your particular system configuration.

#### TECHNICAL SPECIFICATIONS

##### Central Processing Unit (CPU)

Microprocessor: 65C816  
Clock speed: 2.8 or 1.02 megahertz; user- or software selectable  
Address bus: 24 bits  
Data bus: 8 bits  
Address range: 16,777,216 bytes  
16-bit registers: accumulator, two index registers, direct register, stack pointer, and program counter  
8-bit registers: data bank, status  
Addressable memory: up to 8MB of ROM

##### Memory

1MB RAM, expandable to 8MB  
256K ROM, expandable to 1MB (ROM revision 03)

##### Text Display Modes

40 columns by 24 lines  
80 columns by 24 lines

##### Graphics Display Modes

###### Super-high-resolution:

- 320 dots horizontally by 200 dots vertically, in up to 16 colors per screen, from a palette of 4,069 colors
- 640 dots horizontally by 200 dots vertically, in 4 or more colors per line and 128 colors per screen from a palette of 4,096 colors.

Double-high-resolution (560 dots horizontally by 192 dots vertically; 16 colors)

Double-low-resolution (80 dots horizontally by 48 dots vertically; 6 colors)

High-resolution (280 dots horizontally by 192 dots vertically; 6 colors)

Low-resolution (40 dots horizontally by 48 dots vertically; 16 colors)

#### Sound Capability

-----

An Ensoniq 32-oscillator digital synthesizer chip with dedicated 64K RAM:

- produces up to 15 voices simultaneously.
- uses external speaker or headphones via audio output jack (volume is set through the Control Panel).

#### Character Sets

-----

32 letters (uppercase and lowercase), 32 special characters, 32 MouseText characters, and 12 unique characters for each of these international character sets: U.S., U.K., French, Danish, Spanish, Italian, German, and Swedish.

#### Keyboard

-----

- Standard typewriter-style
- 80 keys, plus 14 key numeric keypad
- Two Apple Desktop Bus (ADB) connectors (one for attaching the keyboard to the computer; one for daisy-chaining additional input devices)
- Keyboard layouts, selectable through the Control Panel:
  - QWERTY (Sholes)
  - Dvorak
  - Nine international (all those listed under Character Sets, plus French Canadian)

#### Interfaces

-----

- One multipurpose RAM/ROM memory expansion slot
- Seven general-purpose input/output slots for peripherals control cards, all fully buffered, with interrupt and DMA priority
- Serial ports: two 8-pin minicircular connectors (either can be used to connect AppleTalk devices); utilize SCC communications chip
- Disk drive port: one 19-pin D-style connector (allows daisy-chain connection of up to four Apple 3.5, Apple 5.25, or UniDisk disk drives)
- Video output
  - Analog RGB, via 15-pin D-style connector
  - Composite color, via RCA phone connector
- Apple Desktop Bus port; one 4-pin mini-circular connector on back of computer
- Game I/O: 9-pin D-style connector for joysticks, graphics tablet, and similar devices
- Audio
  - RCA mini headphone/speaker output jack with programmable volume control
  - Input/Output connector on main logic board

#### Operating Systems Supported

- GS/OS
- ProDOS 16 and ProDOS 8
- Pascal
- DOS 3.3
- CP/M (with appropriate co-processor card)

#### Other Features

- Real-time clock (set through Control Panel)
- Battery backup for Control Panel settings

#### Electrical Requirements

- Line voltage: 107 to 132 volts AC; 50 to 60 hertz
- Power consumption:  
Typical: 11 watts  
Maximum: 60 watts
- Supply voltages:  
+5 volts ( $\pm 3\%$ )  
+12 volts ( $\pm 6\%$ )  
-5 volts ( $\pm 10\%$ )  
-12 volts ( $\pm 10\%$ )
- Maximum supply currents:  
+5 volts: 2.5 amps  
+12 volts: 1.5 amps  
-5 volts: 250 milliamps  
+12 volts: 250 milliamps

#### Environmental Requirements

- Operating temperature: 32 to 113 degrees F (0 to 45 degrees C)
- Maximum temperature on power supply case: 130 degrees F (55 degrees C)
- Relative humidity: 5% to 85%

#### Safety and EMI Qualifications

- FCC Part 15 Class B Computing Devices
- CSA 22.2, NO. 154-1979
- UL 114 - Office Appliances and Business Equipment

#### Dimensions and Weight (main unit only)

- Height: 4.6 in. (11.7 cm)
- Width: 11.2 in (28.4 cm)
- Depth: 13.7 in. (34.8 cm)
- Weight: 8.72 lb. (3.96 kg)

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Tech Info Library Article Number:7889





# Tech Info Library

## Apple IIGS: System Fan (2/97)

Revised: 2/18/97  
Security: Everyone

Apple IIGS: System Fan (2/97)

=====

Article Created: 31 July 1991  
Article Reviewed/Updated: 17 February 1997

TOPIC -----

Why does the Apple IIGS need a fan?

DISCUSSION -----

If your Apple IIGS has three or more expansion cards, they can cause a noticeable buildup of heat inside the computer. The Apple IIGS System Fan maintains the proper internal case temperature under these conditions, prolonging the life of your computer's components.

This fan is not compatible with the Apple IIGS Upgrade for Apple IIe computers.

Article Change History:  
17 Feb 1997 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7890



# Tech Info Library

## Aristotle: Specifications (Discontinued)

Revised: 6/1/94  
Security: Everyone

Aristotle: Specifications (Discontinued)

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is Aristotle?

DISCUSSION -----

Overview

-----

Aristotle is a software package designed especially for schools. It gives student and teachers individual Apple II workstations fast and easy access to ProDOS application programs stored on a AppleShare file server.

Aristotle consists of two interrelated programs: menu display and menu management. The menu display program presents students and teachers with menus that list teacher names, the classes they teach, and the application programs available for each class. The menu management program allows teachers or network administrators to tailor the menus, including which applications will be available for each user.

System Requirements

-----

A 3.5- inch disk drive is required to load the Aristotle software onto the AppleShare file server, but is not required after that.

To use the menu management program of Aristotle, you need a LocalTalk Locking Connector Kit, plus one of the following systems:

- an Apple IIGS system with ROM 03, or an Apple IIGS system with ROM 01 and a Memory Expansion Card.
- an enhanced Apple IIe computer with an AppleMouse IIe, Apple II

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Workstation Card, and an Apple IIe Memory Expansion Card (256K minimum)

To use the menu display program of Aristotle, you need a LocalTalk Locking Connector Kit, plus one of the following systems:

- an enhanced Apple IIe with 128K of RAM and an Apple II Workstation Card (with AppleShare IIe Workstation installer disk).
- an Apple IIGS with a total of 768K RAM (256K on the main logic board and 512K on an Apple IIGS Memory Expansion Card), and AppleShare IIGS Workstation Software for your AppleShare file server.

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Tech Info Library Article Number:7891



# Tech Info Library

## Apple II High-Speed SCSI Card: Description (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II High-Speed SCSI Card: Description (11/96)

Article Created: 31 May 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

This article describes the Apple II High-Speed SCSI Card. This card has been discontinued and is no longer available from Apple.

DISCUSSION -----

### Overview

-----  
The Apple II High-Speed SCSI Card lets you connect an Apple IIe or Apple IIGS computer to any device using the SCSI standard. Such devices include hard disk drives, CD-ROM drives, scanners, tape drives, and laser printers. Using DMA (direct memory access) data transfer, this card offers impressive data throughput. It functions more than 10 times faster than the earlier Apple II SCSI Card. The Apple II High-Speed SCSI Card comes with software utilities for use with hard disk drives and CD-ROM drives.

### System Requirements

-----  
To use the Apple II High-Speed SCSI Card, you need an Apple IIGS or Apple IIe computer with a 65C02 microprocessor. This includes all Apple IIe systems manufactured in 1986 or later, as well as any earlier models that have been enhanced with the Apple IIe Enhancement Kit. If you have an early-model Apple IIe that has not been enhanced, contact your dealer about the enhancement kit.)

A 3.5-inch disk drive (Apple IIGS or Apple IIe) or a 5.25-inch disk drive (Apple IIe)

A device with an SCSI port, appropriate SCSI cabling, and one SCSI terminator.

### Technical Specifications

-----

Interface: DB-25 SCSI port

Maximum data throughput

- 1MB per second (Apple IIGS)
- 511K per second (Apple IIe)

Environmental requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Relative humidity: 20% to 95% (noncondensing)

Article Change History:

14 November 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7892



# Tech Info Library

## HyperCard IIGS: Specifications

Revised: 7/15/91  
Security: Everyone

HyperCard IIGS: Specifications

=====  
Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes HyperCard IIGS.

DISCUSSION -----

Overview

-----

HyperCard for the Apple IIGS personal computer lets users create a custom environment for exploring and managing information. Because of its flexibility, HyperCard IIGS can be used in an almost unlimited number of ways, for example:

- to manage personal information,
- to create interactive multimedia presentations and tutorials, and
- to build interfaces to on-line information services.

Like HyperCard for the Macintosh, HyperCard IIGS is based on a universal tool for storing information: the index card. But in HyperCard IIGS, index cards can contain information not only in text form, but as photographs, graphics, video, and sound as well.

HyperCard "buttons" (active areas on a card) give you the freedom to work with information at your own pace and in the order you prefer. When you point to a button and click with the mouse, the computer carries out a specific task. For example, it will move to another card so you can explore a related subject, define a term you don't understand, control a video from a laser videodisc player, prompt you for further information, or run another computer program.

HyperCard IIGS can work for beginners right away. HyperCard IIGS comes with ready-to-use stacks for storing personal information, creating

stories, and more. You can also use HyperCard IIGS to run commercially available stacks, including stacks originally created for Macintosh computers that have been converted for Apple IIGS use.

HyperCard IIGS also offers easy ways to create your own stacks. You can create and edit buttons and fields, create artwork with the full-color Paint Tools, and create advanced HyperCard programs using HyperTalk (HyperCard's powerful English-like scripting language).

As an expansion of the HyperCard line of software for Macintosh computers, HyperCard for the Apple IIGS is the ideal tool for all who want to work with information more effectively, and those with special knowledge, talents, or experience that they want to share with others.

## User Levels

-----

HyperCard IIGS provides five distinct user levels: Browsing, Typing, Painting, Authoring, and Scripting. Each user level includes all the features of the level before it.

- Browsing  
Use stacks (but not alter stacks)
- Typing  
Enter and edit text in fields  
Create and delete cards
- Painting  
Draw transparent or opaque graphics  
Draw shapes  
Draw with different brushes  
Magnify image 8 times for "fat bits" editing  
Rotate, Flip, or Stretch images  
Select the last object drawn  
Choose ColorSet for Card, background, and stack  
Import ColorSet for card and background  
Import and export graphics from and to other files
- Authoring  
Create, delete, and change styles of fields and buttons  
Create links to other cards and stacks
- Scripting (HyperTalk scripting language)  
Object-oriented message passing  
Any button, field, card, background, or stack can have a script.  
Each script can have any number of "handlers" for messages generated by the system or the user.  
Edit any script  
Search or print a script  
Full-screen script editor with automatic formatting  
Maximum script length: 30,000 characters

## System Requirements

-----

To use HyperCard IIGS, you need the following:

- an Apple IIGS computer with a minimum of 1.5MB of RAM (2MB is recommended)
- an 800K floppy disk drive, plus either a hard disk or a network environment
- System software version 5.0.4 or later

To convert stacks that have been created using Macintosh HyperCard 1.2.2 or 1.2.5 for use with HyperCard IIGS, you need access to a Macintosh personal computer and the HyperMover program.

## Technical Specifications

-----

- Number of cards per stack: limited only by available disk or file-server storage.
- Maximum stack size: up to 512MB, depending on available disk or file-server storage
- Card Size: 640 horizontal pixels by 200 vertical lines (the size of an Apple IIGS screen)
- Graphics: color bitmaps with opaque and transparent areas
- Number of text fields per card: limited only by available memory and disk space
- Maximum amount of text per field: 30,000 characters
- Number of buttons and links per card: limited only by available memory and disk space
- Number of active variables: limited only by available memory
- Control structures
  - Repeat until condition
  - Repeat with loop counter
  - If/then/else conditionals
  - Exit loop or procedure
  - Pass message/send message
- Data types
  - Conversion to SANE numerics (9-place accuracy)
  - Conversion to date and time
- Variables
  - Contents of any field
  - Dynamically created local variables
  - Global variables



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Tech Info Library Article Number:7893



# Tech Info Library

## IIGS Memory Expansion Card: Description (11/96)

Revised: 11/21/96  
Security: Everyone

IIGS Memory Expansion Card: Description (11/96)

Article Created: 31 May 1991  
Article Reviewed/Updated: 19 November 1996

TOPIC -----

This article describes the Apple IIGS Memory Expansion Card.

DISCUSSION -----

### Overview

-----  
The Apple IIGS Memory Expansion Card gives your computer the internal memory needed to run sophisticated applications, and gives complete access to the advanced capabilities of the Apple IIGS.

Although the 256K of RAM resident in the computer already lets you keep large documents and many applications close at hand, the Memory Expansion Card will hold even larger files and programs, further reducing time-consuming disk access.

The Apple IIGS Memory Expansion Card adds up to a full megabyte (1MB) of RAM to the computer, in 256K increments. This means the total RAM in your system can be as high as 1.25MB with ROM 01, or 2MB with ROM 03. You can configure and install the card yourself, and increase its capacity at any time.

### System Requirements

-----  
To use the Apple IIGS Memory Expansion Card, you need an Apple IIGS or an Apple IIe with the Apple IIGS Upgrade installed. (This card is not compatible with other computers in the Apple II family.)

### Technical Specifications

-----  
Electrical:

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Voltage requirements: 4.75 to 5.25 volts DC Power consumption

Operation: 200 milliamps in 256K configuration  
600 milliamps in 1MB configuration

Standby: 140 milliamps in 256K configuration  
370 milliamps in 1MB configuration.

## Environmental requirements

- Ambient temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Relative humidity: 10% to 95% (non condensing)

## Article Change History:

19 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7894



# Tech Info Library

## Super Serial Card: Description (12/96)

Revised: 12/18/96  
Security: Everyone

Super Serial Card: Description (12/96)

=====

Article Created: 15 July 1991  
Article Reviewed/Updated: 16 December 1996

TOPIC -----

This article describes the Super Serial Interface Card.

DISCUSSION -----

### Overview

-----

The Apple II Super Serial Card provides a configurable RS 232 interface, allowing an Apple II, Apple II Plus, or Apple IIe computer to exchange data with other computers, modems, printers, terminals, and accessories employing a bidirectional RS-232-C interface in serial format (one bit at a time).

The Super Serial Card features an on-board switch allowing the operation of a printer, modem, or other serial device. This switch also eliminates the need for special connection cables such as modem eliminators.

### System Requirements

-----

To use the Apple II Super Serial Card, you need:

- \* an Apple II, Apple II Plus, or Apple IIe computer system with an available expansion slot; and
- \* a printer, modem, or other serial device.

### Technical Specifications

- 
- \* Single Level: EIA RS-232-C
  - \* Connector Type: DB-25 socket
  - \* On-Board ROM: 2K x 8 bit (2316 or equivalent)
  - \* ACIA: S6551 or equivalent
  - \* Baud Rate Selection: via on-board DIP switches (default) or via software

commands

- \* Data word format: 1 start bit, 1 or 2 stop bits, 7 or 8 data bits; odd, even, or no parity
- \* Available baud rates: 50, 79, 110, 134.6, 150, 300, 600, 1200, 1800, 2400, 3400, 9600, 19200
- \* RS-232-C Signals Supported: RTS (Request to Send), CTS (Clear to Send), DTR (Data Terminal Ready), DSR (Data Set Ready), DCD (Data Carrier Detect), RXD (Receive Data), TXD (Transmit Data), (SG) Signal Ground.

Internal Cable Pinout

-----

| 10 Pin<br>Connector | 25 Pin<br>Connector | Signal Name           |
|---------------------|---------------------|-----------------------|
| pin 1               | pin 1               | Frame Ground          |
| pin 2               | pin 2               | Transmit Data         |
| pin 3               | pin 3               | Receive Data          |
| pin 4               | pin 4               | Request to Send (RTS) |
| pin 5               | pin 5               | Clear to Send (CTS)   |
| pin 6               | pin 6               | Data Set Ready (DSR)  |
| pin 7               | pin 19              | Secondary CTS         |
| pin 8               | pin 7               | Signal Ground         |
| pin 9               | pin 20              | Data Terminal Ready   |
| pin 10              | pin 8               | Data Carrier Detect   |

Pin Explanation

-----

FRAME GROUND: Provides electrical connection to give both devices connected a common frame ground. Usually tied to Signal Ground inside the cabinet of one of the devices.

TRANSMIT DATA: This pin conveys serial data sent from the Super Serial card. This is one of the pins that may need to be crossed over if the peripheral device is a DTE. The MODEM/TERM plug can perform this crossover.

RECEIVE DATA: This pin receives serial data sent from the device the Super Serial card connects the computer to. This is one of the pins that may need to be crossed over if the peripheral device is a DTE. The MODEM/TERM plug can perform this crossover.

REQUEST TO SEND (RTS): This signal is used by the computer to ask the peripheral device if it is ready to receive computer data. Often a device such as a printer will ignore this signal (will not have a pin connected to it) because the signals primary use is to control half duplex modems.

CLEAR TO SEND (CTS): This pin receives the peripheral's ready to receive data response to an RTS from the computer. Again this pin is used most often by modems.

DATA SET READY (DSR): This pin receives the signal generated by the peripheral that indicates that the peripheral is turned on and ready to communicate. This

is one of the pins that may need to be crossed over if the peripheral device is a DTE. The MODEM/TERM plug can perform this crossover.

SECONDARY CTS: Some modems can transmit and receive on two channels (that is two separate communications on the same line). The Secondary CTS pin would be used to receive the peripheral's ready to receive data response to an RTS for the second channel from the computer.

SIGNAL GROUND: When this pin is connected between two RS232 devices it provides a common electrical level that the devices can reference the RS232 signals to.

DATA TERMINAL READY: This pin becomes active when the computer and SSC are ready to go on line. This is one of the pins that may need to be crossed over if the peripheral device is a DTE. The MODEM/TERM plug can perform this crossover. Also this pin can be used for flow control protocol handshaking.

DATA CARRIER DETECT: This pin receives the signal generated by a modem when it senses a carrier on the telephone line. The SSC would then respond by telling the computer that data was going to be coming from the modem.

#### Jumper Block

-----  
The jumper block has two positions, Terminal and Modem. The jumper block eliminates the need for special connection cables such as modem eliminators.

#### Switches

-----  
The fourteen switches, split into two banks named SW1 and SW2, are diagonally opposite the slot contacts. Holding the card so that the switches are at the top left, the two banks are arranged like this:

|                   |                   |
|-------------------|-------------------|
| SW1 1 2 3 4 5 6 7 | SW2 1 2 3 4 5 6 7 |
| ON                | ON                |
| OFF               | OFF               |

The markings SW1, SW2, ON, and OFF may not appear exactly as shown. If the lever on a switch is pointing towards the top of the card, the switch's contact is closed and the switch is ON. Use a sharp but soft point, like a pencil point, to move the levers.

#### Switch 1

|            | 1  | 2   | 3   | 4   |
|------------|----|-----|-----|-----|
| Baud Rate: |    |     |     |     |
| 50         | On | On  | On  | Off |
| 75         | On | On  | Off | On  |
| 110        | On | On  | Off | Off |
| 135        | On | Off | On  | On  |
| 150        | On | Off | On  | Off |
| 300        | On | Off | Off | On  |

|       |     |     |     |     |
|-------|-----|-----|-----|-----|
| 600   | On  | Off | Off | Off |
| 1200  | Off | On  | On  | On  |
| 1800  | Off | On  | On  | Off |
| 2400  | Off | On  | Off | On  |
| 3600  | Off | On  | Off | Off |
| 4800  | Off | Off | On  | On  |
| 7200  | Off | Off | On  | Off |
| 9600  | Off | Off | Off | On  |
| 19200 | Off | Off | Off | Off |

Switch 2

5 6

Auto linefeed after CR:

|          |     |
|----------|-----|
| Enabled  | On  |
| Disabled | Off |

Passage of interrupts from ACIA to CPU:

|          |     |
|----------|-----|
| Enabled  | On  |
| Disabled | Off |

Mode Switches

-----

The setting of the Mode switches (SW1 5 and 6) determines the function of the remaining switches in one of two modes, Communications mode or Printer Mode. Printer Mode includes two modes for printer PROM emulation.

Switch 1

5 6

Mode:

|                   |     |     |
|-------------------|-----|-----|
| Communications    | On  | On  |
| Printer           | Off | On  |
| SIC P8 Emulation  | On  | Off |
| SIC P8A Emulation | Off | Off |

Communications Mode

-----

The remaining switches have the following functions:

Switches SW1-7 and SW2-7

SW1 7 SW2 7

Protocol:

|         |    |     |
|---------|----|-----|
| RS-232C | On | Off |
|---------|----|-----|

Switches SW2-1, SW2-2, SW2-3, SW2-4

SW2 1 2 3 4

Data format:

|               |     |     |
|---------------|-----|-----|
| 8 data/1 stop | On  | On  |
| 7 data/1 stop | On  | Off |
| 8 data/2 stop | Off | On  |
| 7 data/2 stop | Off | Off |

Parity:

|      |     |     |
|------|-----|-----|
| None | N/A | On  |
| Odd  | On  | Off |
| Even | Off | Off |

Printer and Printer PROM Emulation Mode

-----  
The remaining switches have the following functions:

Switches SW1-7 and SW2-7

| SW1 | 7 | SW2 | 7 |
|-----|---|-----|---|
|-----|---|-----|---|

Protocol:

|                                |     |     |
|--------------------------------|-----|-----|
| Normal Clear to Send (RS-232C) | On  | Off |
| Secondary Clear to Send        | Off | On  |

Switches SW2-1, SW2-2, SW2-3, SW2-4

| SW2 | 1 | 2 | 3 | 4 |
|-----|---|---|---|---|
|-----|---|---|---|---|

Data format:

|               |     |
|---------------|-----|
| 8 data/1 stop | On  |
| 8 data/2 stop | Off |

Delay after carriage return:

|                 |     |
|-----------------|-----|
| 32 milliseconds | On  |
| None            | Off |

Line Width (Printer mode has no parity):

|     |     |     |
|-----|-----|-----|
| 40  | On  | On  |
| 72  | On  | Off |
| 80  | On  | Off |
| 132 | Off | Off |

Important Information

-----  
There is a problem with using the Super Serial Card (SSC) terminal firmware at 1200 baud on an unenhanced IIe. The IIe 80-column card can't keep up with the data stream and eventually loses characters. Avoid this problem with faster, more sophisticated programs that can handle interrupts, such as Access II or third party terminal software. The proper terminal software also will allow use of the Extended Text Card with a modem at 1200 baud.

Article Change History:

16 Dec 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:7895





# Tech Info Library

## Apple IIGS System Software Version 5.0.4: Specifications

Revised: 7/15/91  
Security: Everyone

Apple IIGS System Software Version 5.0.4: Specifications

=====

Article Created: 31 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes Apple IIGS System Software Version 5.0.4.

DISCUSSION -----

Overview

-----

Apple IIGS System Software Version 5.0.4 gives you all the advantages of the latest system software for the Apple IIGS personal computer. It features GS/OS, an operating system that improves the startup time and speeds up disk access, program launching, and file copy and transfer tasks.

GS/OS includes File System Translators (FSTs), which enable applications to directly access files created using other file systems. For example, the ISO/High Sierra FST allows you to run CD-ROM applications that follow the ISO/High Sierra standard, and the AppleShare FST gives you access to files on AppleShare file servers.

Apple IIGS System Software Version 5.0.4 also offers several features that significantly improve the computer's functionality and ease of use.

The Finder (a graphics-based interface that allows you to manipulate files on the desktop) is now easier to use, faster, and more informative than earlier versions. It has also been revised to allow access to the AppleTalk Network System, so you can share programs and data located on an AppleShare file server, as well as networked printers, with other AppleShare users.

Another important feature is the new graphics-based Control Panel, which you access from the Finder via the Apple menu. You can use the Control

Panel to set the time and date; raise or lower the sound volume; log on to network servers; configure slot assignments; and change the colors of screen borders, background, and text.

Version 5.0.4 includes the Advanced Disk Utility, which features an easy-to-use graphics-based interface and allows you to initialize, erase, and partition hard disks, as well as both 5.25- and 3.5-inch floppy disks. You also get the Installer utility, which lets you update your startup disks and customize their configuration for your system and its attached peripherals.

## System Requirements

-----

To use Apple IIGS System Software Version 5.0.4, you need an Apple IIGS computer with:

- at least 1MB of RAM
- ROM Version 01,03
- at least one 800K 3.5-inch disk drive

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Tech Info Library Article Number:7896



# Tech Info Library

## X Windows for A/UX: Where To Get xmh (9/94)

Revised: 9/14/94  
Security: Everyone

X Windows for A/UX: Where To Get "xmh" (9/94)

=====

Article Created: 5 March 1991  
Article Last Reviewed: 13 September 1994

TOPIC -----

Where I can get a copy of xmh? It is part of the MIT X11R4 Windows distribution, but I have noticed that this item is absent from Apple's X Windows for A/UX product.

DISCUSSION -----

As you may have noticed from the "Getting started with X Window System for A/UX" documentation, only the "display server" and "xstdcmap" client applications are from X11R4. Other client applications, such as the programmer libraries and the X toolkit, are still from X11R3. Since "xmh" is from X11R4 client applications, it is not included in our current release of X Window System for A/UX.

Apple's "X Window System 2.1 for A/UX" product includes xman, but not xmh. xmh requires the "mh" mail handling tools that are not included in either X11 or A/UX.

To locate xmh, connect to ftp.uu.net on the internet.

Article Change History:  
13 Sep 1994 - Reviewed. Updated ftp server address.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:7898



# Tech Info Library

## A/UX 2.0: AT&T LP Spooler and Macintosh IIfx IOP Problem (6/93)

Revised: 8/13/93  
Security: Everyone

A/UX 2.0: AT&T LP Spooler and Macintosh IIfx IOP Problem (6/93)

=====

Article Created: 25 January 1991  
Article Reviewed/Updated: 23 June 1993

TOPIC -----

On a Macintosh IIfx the "cancel" command under the AT&T Line Printer spooler system can't gracefully shut off the child process of "lpsched". Therefore, the remaining entries in the printer queue can't be printed. Eventually, this hangs the printer port (on a direct connected ImageWriter II). The problem only happens on the Macintosh IIfx. We suspect the problem is on the A/UX 2.0 Macintosh IIfx IOP serial driver tty settings.

DISCUSSION -----

As a workaround, the "Macintosh IIfx Serial Switch" Macintosh OS CDEV seems to work for A/UX 2.0, which lets Macintosh IIfx serial ports be set to be Macintosh IIfx IOP-"compatible" for applications that use printer or modem ports that don't operate properly.

The Macintosh IIfx "Serial Switch" is available on AppleLink, here is the path:

Software Sampler  
  Apple SW Updates  
    Macintosh  
      Supplemental System Software  
        Serial Switch 1.1

Article Change History:  
23 Jun 1993 - Reviewed for technical accuracy and updated.

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Tech Info Library Article Number:7899



# Tech Info Library

## Macintosh Portable: Set Internal SCSI Drive to ID 0

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Set Internal SCSI Drive to ID "0"

=====

Article Created: 17 July 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

Why does the Macintosh Portable internal hard drive need to be set to SCSI address "0"?

DISCUSSION -----

If the Macintosh Portable internal hard drive is set to a SCSI address other than "0", the Portable CDEV does not operate properly. The hard drive starts up, but the Portable CDEV does not display the "Minutes Until Automatic Sleep" option for the hard drive, and the function is disabled. This is like starting up the Macintosh Portable with no internal hard drive.

Jumpers E1, E2, and E3 on the Conner drives are used to set the SCSI address. They use a binary counting system with E1 the least significant bit. No jumpers across E1, E2, and E3 (the factory setting) sets the drive to SCSI address "0", which is the standard Conner SCSI ID system.

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Tech Info Library Article Number:7904



# Tech Info Library

## Macintosh: Tempest Information

Revised: 6/1/92  
Security: Everyone

Macintosh: Tempest Information

=====

Article Created: 17 July 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated:

TOPIC -----

A customer needs to modify our mouse devices to Tempest standards. Where can I get information on Tempest standards?

DISCUSSION -----

Tempest is a term used to describe the modifications that must be made to a computer for it to pass strict government data security tests.

For information about Macintosh and Tempest standards, contact Apple's Washington, D.C. office at 703-264-5100.

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Tech Info Library Article Number:7905



# Tech Info Library

## DRAM: General Information

Revised: 9/11/92  
Security: Everyone

DRAM: General Information

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Article Created: 18 July 1991

Article Change History

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09/11/92 - REVIEWED

- For technical accuracy.

TOPIC -----

- 1) What information is stored in DRAM?
- 2) What happens to the information in DRAM when the Macintosh is turned off?
- 3) Is DRAM volatile?

DISCUSSION -----

- 1) DRAM is the memory used by the Macintosh to temporarily hold the information or data that the user is working on until it is saved to a hard disk, floppy disk, or another storage medium.
- 2) Once power is no longer supplied to RAM, the contents is lost. If a user is working on a Macintosh and turns the system off without saving the work, what was in DRAM during the work session will be lost. The data lost is the data that the user was working on before the power was removed.
- 3) Yes, DRAM is volatile. That's the nature of DRAM (Dynamic Random Access Memory); it needs to be constantly powered with electricity to remember its contents. The same applies to SRAM (Static Random Access Memory); however, SRAM does not need to be refreshed the way DRAM does, and this provides data retention for extended periods, which is why this type of RAM is used in Macintosh Portable computers.

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Tech Info Library Article Number:7907





# Tech Info Library

## Personal LaserWriter: Transparency Specifications

Revised: 7/23/91  
Security: Everyone

Personal LaserWriter: Transparency Specifications

=====

Article Created: 20 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

A customer used a generic brand of transparencies, and they melted inside the Personal LaserWriter LS. What are the transparency specifications for the Personal LaserWriter printers?

DISCUSSION -----

Always use transparencies that are made for use with a laser printer. The transparency must be able to withstand 200 C (392 F). Apple recommends that you use the face-up tray to prevent the transparency from curling.

Personal LaserWriter Transparency Specifications

-----

|                    |                                      |
|--------------------|--------------------------------------|
| Thickness:         | 0.100 to 0.110 mm<br>3.9 to 4.3 mils |
| Cutting Dimension: | 0.7 to 0.79 mm (0.028 to 0.031 inch) |
| Cutting Angle:     | 90+/-0.2 degrees                     |

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Tech Info Library Article Number:7909



# Tech Info Library

## Apple Ethernet NB Card: Power Consumption

Revised: 7/23/91  
Security: Everyone

Apple Ethernet NB Card: Power Consumption

=====

Article Created: 09 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How much current does the Apple Ethernet NB Card draw?

DISCUSSION -----

The Apple Ethernet NB Card draws 3.96 watts at 5 volts. The recommended wattage limit for each NuBus slot is 13.9 watts.

The overall power-draw audit of the Ethernet NB Card (including power consumed by an external AAUI transceiver) is 1.165A.

AAUI cabling should not exceed 1.5m.

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Tech Info Library Article Number:7914



# Tech Info Library

## LaserWriter Family: Toner Cartridge Compatibility

Revised: 8/2/95  
Security: Everyone

LaserWriter Family: Toner Cartridge Compatibility

Article Created: 09 July 1991  
Article Last Reviewed/Updated: 02 August 1995

TOPIC -----

Can Canon copier toner cartridges be used in the LaserWriter family of printers?

DISCUSSION -----

Toner cartridges made specifically for Canon copiers are not compatible with the LaserWriter, LaserWriter Plus, LaserWriter II, and Personal LaserWriter printers. Cartridges made for the Canon Laser Printer and Hewlett-Packard cartridges made for the HP LaserJet are compatible.

Here is a list of cartridge types for the LaserWriter printers:

| Printer<br>-----               | Cartridge Type<br>----- |
|--------------------------------|-------------------------|
| LaserWriter                    | EP                      |
| LaserWriter Plus               | EP                      |
| LaserWriter II Series          | EPS                     |
| Personal LaserWriter NT,NTR,LS | EP-L                    |
| Personal LaserWriter 300       | EP-P                    |
| LaserWriter Pro 600 Series     | EP-E                    |
| LaserWriter Pro 800 Series     | EP                      |

Apple does not recommend the use of refilled toner cartridges in the LaserWriter printers. For more information, search the Tech Info Library under "LaserWriter and Toner and Cartridge".

### Article Change History:

02 Aug 1995 - Corrected EP-P compatibility information.  
03 Mar 1994 - Added LaserWriter Pro 800 series cartridge information.

# ..TIL07915-LaserWriter\_Family-Toner\_Cartridge\_Compatibility.pdf

18 Oct 1993 - Added LaserWriter Select cartridge information.

Support Information Services

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Tech Info Library Article Number:7915



# Tech Info Library

## Macintosh IIfx: 4MB SIMM Configuration (11/94)

Revised: 11/8/94  
Security: Everyone

Macintosh IIfx: 4MB SIMM Configuration (11/94)

Article Created: 25 July 1991  
Article Reviewed/Updated: 08 November 1994

TOPIC -----

I have a Macintosh IIfx with 4MB of RAM and a Macintosh Display Card 8•24 GC installed. When I add the 8•24 GC CDEV to the System Folder and try to start up the system, it hangs at the "Welcome to Macintosh" message. When I remove the 8•24 GC CDEV from the System Folder, the system starts up and operates normally. (This does not happen with a Macintosh IIfx with 8MB of RAM installed.)

DISCUSSION -----

This problem is peculiar to the Macintosh IIfx with 4MB of RAM installed. Apple states that, when using only 4MB of RAM in the Macintosh IIfx, the SIMMs MUST BE installed in bank A. Although the Macintosh IIfx may work normally in some configurations with the SIMMs installed in bank B; in others, it doesn't.

To eliminate the problems you are experiencing with the Macintosh IIfx, make sure the RAM SIMMs are in bank A.

Article Change History:  
08 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7931



# Tech Info Library

## StyleWriter: HyperCard 2.X Card Printing Problem/Fix (12/94)

Revised: 12/5/94  
Security: Everyone

StyleWriter: HyperCard 2.X Card Printing Problem/Fix (12/94)

=====

Article Created: 25 July 1991  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

Vertical lines do not align perfectly when printing to a StyleWriter from HyperCard 2.X using the "Print Card" option. This problem does not happen with horizontal lines or when using the "Print Stack" option.

Is this a known problem?

DISCUSSION -----

Yes, StyleWriter output has vertical-line registration problems when using the "Print Card" option in HyperCard 2.X.

Claris is aware of the issue and is investigating it. The registration problem is caused by the HyperCard printing code, not by the StyleWriter.

The registration problem can be avoided by using the "Mark Card" option:

- 1) Go to the card you want to print.
- 2) Display the "message box".
- 3) Type "Mark Card" into the message box and press either the Return or Enter key. Note that more than one card can be marked at a time.
- 4) Select "Print Stack" from the "File" menu.
- 5) Select the "Marked Cards" option.
- 6) Click the "Print" button.
- 7) Type "unMark Card" in the message box and press either the Return or Enter key. This unmarks the card so it doesn't print the next time.

this procedure is used.

Article Change History:

05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7932



# Tech Info Library

## StyleWriter: How to Avoid Paper Jams

Revised: 7/30/91  
Security: Everyone

StyleWriter: How to Avoid Paper Jams

=====  
  
Article Created: 25 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Have there been any reported paper-jamming problems with the StyleWriter printers?

DISCUSSION -----

We haven't received any reports of paper-jamming problems with the StyleWriter printers.

The StyleWriter has a detachable cut-sheet feeder that easily connects to the printer. When the sheet feeder is connected properly, the product performs flawlessly. When attaching the sheet feeder, ensure that the sheet feeder is locked in place and that the paper support is installed; it's also important to press the release button on the sheet feeder to snap the paper panel forward for proper positioning. The sheet feeder holds up to 50 sheets of 20-pound paper and automatically feeds the paper while printing.

The StyleWriter can be used without the sheet feeder with front or rear manual feed. The front and rear manual-feed options simplify the printing of single-sheet paper, envelopes, labels, and transparencies.

### Paper-Feed Features

- 
- Detachable cut-sheet feeder accurately feeds up to 50 sheets automatically.
  - Rear manual-feed slot is ideal for printing materials like envelopes, labels, transparencies, and heavy paper.
  - Front manual-feed slot provides easy access for standard paper.



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Tech Info Library Article Number:7934



# Tech Info Library

## LaserWriter: Print Engine Specifications (8/94)

Revised: 8/31/94  
Security: Everyone

LaserWriter: Print Engine Specifications (8/94)

Article Created: 30 July 1991  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

What are the print quality standards for LaserWriter printers?

NOTE: This product has been discontinued and is no longer available.

DISCUSSION -----

The printing engine shall maintain these print quality standards:

Skew of Vertical Lines

-----  
Skew of vertical lines shall not exceed 1.5 mm over a 260-mm span (letter- size paper).

Horizontal Line Position Accuracy

-----  
A horizontal line shall be within 2 mm of the position specified by the printing software. The positions from the leading edge shall be measured in the middle of the sheet to avoid the effects of paper skew. Horizontal line position shall be (repeatably) +/-1 mm, page-to-page.

Vertical Line Position Accuracy

-----  
A vertical line shall be within 2 mm of the horizontal position specified by the printing software: +/-1 mm, page-to-page.

Print Quality Measurement Procedure

-----  
These test conditions must be used when measuring print quality:

- Use a freshly opened, recommended paper and an unopened toner cartridge.
- Allow the packaged cartridge and paper to stand in the environment for 2

hours minimum.

- Open both the cartridge and paper.
- Print 15 pages of horizontal lines, 5% coverage, before printing samples for measurement.
- Print 10 pages of various patterns for measurement.

#### Environmental Definition

- 17.5 to 25 degrees C
- 30 to 70% humidity

#### Article Change History:

31 Aug 1994 - Removed "Discontinued" from title. Reviewed and updated.

#### Support Information Services

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Tech Info Library Article Number:7940



# Tech Info Library

## Display Monitors and Geometric Distortion

Revised: 8/5/91  
Security: Everyone

Display Monitors and Geometric Distortion

=====  
Article Created: 30 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This articles explains why computer display monitors experience geometric distortion, and describes some remedies.

DISCUSSION -----

General  
-----

The earth's magnetic field often distorts a monitor's visible raster, which is the lighted portion of the display. A monitor properly adjusted at the factory may appear significantly different when it is set up in its new environment. The raster may be tilted, off-center, or have areas of various forms of distortion such as "soft corners" or raster edges that may not be perfectly straight.

The influence of the earth's magnetic field is not peculiar to Apple monitors. All monitors are affected to some degree. The extent of the distortion depends on the location of the monitor. This can be demonstrated by moving the monitor to another location or by rotating it 90 degrees. The movement may either improve or worsen the shape and position of the raster. In most cases, the effects of the earth's magnetic field are primarily cosmetic. The active area of the screen, where work is actually performed, is still very usable.

Here are some tips to help you determine whether a monitor exhibiting geometric distortion needs to be repaired or is simply being influenced by some environmental interference.

Change Location  
-----

If your monitor has a distorted raster, move the monitor to another location and note any changes in the display. If the display changes when the monitor is moved or rotated, the monitor's environment is the source of the distortion. Servicing the monitor will make no difference.

#### Remove Metal Objects From the Area

-----

Operating a monitor near large metal objects such as desks, file cabinets, or bookshelves may worsen the problem. If possible, rearrange the work area so that large metal objects are as far from the monitor as possible.

#### Look for Other Environmental Influence

-----

If the raster jitters or has bars or lines in the display, this may indicate another type of environmental interference. If the monitor is close to another monitor, electrical appliance, or other units of electronic gear, turn off the power to the other unit(s) to see if the monitor returns to normal operation.

Fluorescent lighting fixtures are also common sources of external interference. The lights can arc internally (even though the lights don't flicker) and cause interference with the monitor. In these cases, turn off the lights momentarily to see if the display distortion stops.

#### How To Verify Environmental Interference as the Cause of Distortion

-----

The best way to verify environmental interference as the cause of the distortion is to remove the unit from the building and check for the same symptoms at another location. If the problem is intermittent, look for electric devices that operate intermittently. These include, but are not limited to, coffeemakers, copy machines, and refrigerators.

#### Caution

-----

You can compensate for some of the geometric distortions mentioned by performing various monitor adjustments. However, Apple does not recommend these "corrections." Remember that the monitor left the factory within specifications. Although a particular environment can distort a properly adjusted monitor, by adjusting the monitor to suit a particular environment, you are actually changing the monitor's correct factory settings. If the monitor is moved, or the environment in which it operates is changed (including everything from rearranging furniture to the construction of a nearby building), the resulting geometric distortion could be worse because the monitor is no longer set to its factory specifications.

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Tech Info Library Article Number:7941



# Tech Info Library

## System 7: Using Retrospect 1.3 with File Sharing Active (8/93)

Revised: 9/3/93  
Security: Everyone

System 7: Using Retrospect 1.3 with File Sharing Active (8/93)

=====

Article Created: 2 August 1991  
Article Reviewed/Updated: 27 August 1993

TOPIC -----

My System hangs after requesting either Restore or Retrieve in Retrospect 1.3 with file sharing turned on.

DISCUSSION -----

The System hang is caused by a corrupted desktop file following a backup with Retrospect 1.3. Here's how to solve this problem:

- 1) Rebuild the Macintosh's desktop file by holding the Command and Option keys down while restarting the system.
- 2) Install either  
    System 7 Tune-Up (if using System 7.0 or System 7.0.1)  
    System 7.1

Contact Dantz Development for the latest information about Retrospect versions and updates; search on Dantz for contact information.

Article Change History:  
27 August 1993 - revised solution with information from Dantz.  
2 September 1992 - Updated with contact information.

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Tech Info Library Article Number:7944



# Tech Info Library

## System 7: Memory Errors in PrintMonitor

Revised: 9/18/92  
Security: Everyone

System 7: Memory Errors in PrintMonitor

Article Created: 2 August 1991

### Article Change History

09/17/92 - UPDATED  
• With information about System 7 Tune-Up.  
05/11/92 - REVIEWED  
• For accuracy.

### TOPIC -----

When trying to print in the background, PrintMonitor delivered the following message: "Not enough memory to print. PrintMonitor will try to print again when more memory is available." The document was saved in the PrintMonitor queue and never printed.

I've encountered this problem on Macintosh II and Macintosh SE computers with 2MB to 8MB of RAM installed. I turned off virtual memory. I printed from various applications, including the Finder.

### DISCUSSION -----

In low-memory situations this is a valid error message; for instance, if PrintMonitor needs more memory allocated to it, or if there is not enough available RAM to launch PrintMonitor. But if the suggested memory size for PrintMonitor is adequate, and there is plenty of RAM for PrintMonitor to expand, this error message indicates there is a problem with the PrintMonitor application.

When trying to print in the background under System 7, a "Not enough memory" error might indicate a damaged PrintMonitor application. When this occurs, install a new copy of PrintMonitor from the Install 1 disk. Either install this file using the Installer program, or simply drag it over. The waiting print jobs will print as soon as you install the new PrintMonitor.

You may also want to run Disk First Aid, but this isn't always necessary. To avoid this kind of damage to PrintMonitor in the future, upgrade your system software with the System 7 Tune-Up. Revised LaserWriter drivers in the Tune-Up prevent PrintMonitor from getting damaged as it occasionally did before. The current version of System 7 Tune-Up is 1.1.1.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7945





# Tech Info Library

## System 7: Intercharacter Spacing, Kerning in 6.x and 7.0

Revised: 8/9/91  
Security: Everyone

System 7: Intercharacter Spacing, Kerning in 6.x and 7.0

=====

Article Created: 2 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any difference between intercharacter spacing and kerning pairs in system software 7.0 and 6.x? What is the difference between bitmap and TrueType spacing?

DISCUSSION -----

Spacing and Kerning

-----

Apple didn't change spacing with the bitmap characters in System 7, but matched each bitmapped character width in 6.x to the corresponding character in 7.0. New bitmap characters created just for System 7 will have spacing differences.

Apple didn't changed the kerning pairs either. Many applications allow you to change kerning.

Bitmap and TrueType Spacing Differences

-----

Bitmaps use integer widths, while outline fonts (TrueType) use fractional widths. Fractional widths allow exact size adjustments for intercharacter spacing as well as kerning. Integer widths limit these adjustments to whole sizes. This is one of the main advantages of TrueType.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7946



# Tech Info Library

## System 7: Reserved Fonts are Invisible

Revised: 8/9/91  
Security: Everyone

System 7: Reserved Fonts are Invisible

=====

Article Created: 2 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I was moving fonts between my System 6 and System 7 Macintosh computers. I didn't see some of the basic fonts, like Geneva 9 or Chicago 12, on my System 7 Macintosh. When I moved the same suitcases back to System 6, I saw them with no problem using Font/DA Mover. Why?

DISCUSSION -----

In System 7.0, reserved fonts such as Geneva 9 or Chicago 12 are made invisible by the Finder. This prevents novice users from removing these fonts from the System suitcase, which would cause crashes. Reserved fonts are invisible in both System font suitcases and regular font suitcases under System 7.

Reserved fonts include:

- Geneva 9
- Geneva 12
- Chicago 12
- Monaco 9

Although this prevents serious damage to system files, it is confusing to users who moved the fonts using Font/DA Mover under System 6.

Font/DA Mover can view and copy these fonts. Remember that Font/DA Mover version 4.1 is necessary to use suitcases that contain TrueType fonts.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:7947



# Tech Info Library

## System 7: Problem with Stationery's Save In Option

Revised: 8/9/91  
Security: Everyone

System 7: Problem with Stationery's "Save In" Option

=====

Article Created: 31 July 1991

### Article Change History

-----

08/19/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

The Finder seems to restart itself or crash occasionally when I try to save a copy of a stationery document. This happens when I double-click the document in the Finder and attempt to save the copy to a floppy disk.

### DISCUSSION -----

There is a known problem with the Save In option of stationery documents created from older "stationery-unaware" applications.

The problem occurs after you double-click on a stationery document, choose Save In, and then insert a floppy disk. When you choose to save the document on the floppy disk, you will either get an error or the system will return to the Finder without saving the document.

The problem does not occur when you mount a floppy disk before you open the stationery document.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7948



# Tech Info Library

## System 7: CloseView's Command Keys

Revised: 9/25/92  
Security: Everyone

System 7: CloseView's Command Keys

Article Created: 31 July 1991

### Article Change History

09/25/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I was trying to open a folder in System 7, when suddenly a big black box appeared around my pointer. I can make it go away if I turn off extensions at startup (by holding down the shift key), but I don't understand what's going on.

### DISCUSSION -----

You have inadvertently activated CloseView, a utility designed to aid the visually impaired. To turn off CloseView, type Command-Option-O. To learn how to use CloseView, refer to the Macintosh User's Guide.

When using CloseView, notice that its shortcut keystrokes are very similar to shortcut keystrokes built into the new Finder. When trying to open the folder, you may have inadvertently used the keystroke to activate CloseView. In general, the slight differences between the Finder and CloseView commands may cause confusion.

For example:

|            |                  |                           |
|------------|------------------|---------------------------|
| Finder:    | Command-O        | Opens window              |
| CloseView: | Command-Option-O | Turn on/off CloseView     |
| Finder:    | Command-X        | Cut                       |
| CloseView: | Command-Option-X | Turn on/off magnification |

|         |                 |                         |
|---------|-----------------|-------------------------|
| Finder: | Command-UpArrow | Go to next higher level |
|---------|-----------------|-------------------------|

|            |                        |                              |
|------------|------------------------|------------------------------|
| CloseView: | Command-Option-UpArrow | Increase magnification level |
|------------|------------------------|------------------------------|

|         |                   |                                       |
|---------|-------------------|---------------------------------------|
| Finder: | Command-DownArrow | Go to next lower level<br>(open icon) |
|---------|-------------------|---------------------------------------|

|            |                          |                              |
|------------|--------------------------|------------------------------|
| CloseView: | Command-Option-DownArrow | Decrease magnification level |
|------------|--------------------------|------------------------------|

It is unlikely that a novice or casual user would stumble across CloseView, because it is never installed by the System 7 Installer (not even by Easy Install). In fact, if a pre-System 7 version of CloseView was in the System Folder, the System 7 Installer deletes it. To install CloseView, drag it into the Control Panels folder or the System Folder.

CloseView was designed for the visually impaired who may not be able to see their keyboard. A mis-keyed command could cause them a great deal of confusion.

CloseView does not display zoom effects when windows open or close. For many people, the zoom effects are useful for visual orientation, showing what the computer is activating or putting away. Without the zoom effects, items just appear and disappear from the screen.

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Tech Info Library Article Number:7950



# Tech Info Library

## System 7: Finder Doesn't Allow Renaming Fonts

Revised: 8/9/91  
Security: Everyone

System 7: Finder Doesn't Allow Renaming Fonts

=====

Article Created: 31 July 1991

### Article Change History

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08/25/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I'm using System 7, and I'm trying to rename some fonts in the Finder, but it won't let me. I can rename any of my sounds, but none of my fonts. What's wrong?

### DISCUSSION -----

You can't change the names of bitmap or TrueType fonts in the System 7 Finder.

There are a few legitimate reasons why end users would want to rename their fonts, but allowing that freedom in the Finder would cause most users considerable confusion. Specifically, if a font name changes, you have to manually update all instances of that font in documents. For instance, if you changed "Palatino" to "MyFont," you would have to open any documents that used "Palatino," select the text, and choose "MyFont" from the font menu. Likewise, transferring files with renamed fonts between Macintosh computers would generate many problems. Therefore, System 7 does not allow changing font names in the Finder.

Utilities such as ResEdit and many font design applications can change the names of fonts.

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Tech Info Library Article Number:7951



# Tech Info Library

## System 7: Printing Problem with LaserJet IIP (12/94)

Revised: 12/5/94  
Security: Everyone

System 7: Printing Problem with LaserJet IIP (12/94)

Article Created: 31 July 1991  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

My Hewlett-Packard LaserJet IIP doesn't print since I installed System 7.

DISCUSSION -----

To use the Hewlett-Packard driver version 1.3, turn off background printing and don't use TrueType fonts. With background printing off and TrueType fonts present, the error "cannot find LaserPrep file" sometimes appears.

Hewlett-Packard is aware of this issue, please contact them for current update information.

Article Change History:  
05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7952



# Tech Info Library

## System 7: Adobe Illustrator 3.0.1 Incompatible with TrueType

Revised: 8/9/91  
Security: Everyone

System 7: Adobe Illustrator 3.0.1 Incompatible with TrueType

=====

Article Created: 31 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

In Adobe Illustrator, the characters I type appear either as vertical lines or not at all.

DISCUSSION -----

The latest version of Adobe Illustrator 3.0.1 does not allow use with TrueType fonts. The only solution is to remove the TrueType fonts from the system.

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Tech Info Library Article Number:7954





# Tech Info Library

## Macintosh Plus: Effects of Extreme Cold

Revised: 7/27/92  
Security: Everyone

Macintosh Plus: Effects of Extreme Cold

Article Created: 1 August 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

What are the long-term effects of storing a Macintosh Plus in extreme cold (-40 degrees) for an extended period?

DISCUSSION -----

Here are the operational and non-operational (storage) condition specifications for the Macintosh Plus:

Temperature

-----

|           | Degrees<br>Fahrenheit | Degrees<br>Celsius |
|-----------|-----------------------|--------------------|
|           | -----                 | -----              |
| Operating | 50 to 104             | 10 to 40           |
| Storing   | -40 to 122            | -40 to 50          |

Humidity

-----

All conditions: 5% to 90% relative humidity

Altitude

-----

0 to 4615 meters  
0 to 15,000 feet

If you expect the Macintosh Plus to be at -40 (F or C) for a long period, especially if there are occasional dips significantly below -40 degrees, you may encounter some, all, or none of these conditions:

## ..TIL07957-Macintosh\_Plus-Effects\_of\_Extreme\_Cold\_(TA46512).pdf

- Possible thermal stress of the electrolytic capacitors to the extent that they crack, leak, or fail when thawed.
- Possible thermal stress of the fiberglass/epoxy resin of the circuit boards, leading to hairline fractures of the printed circuit board.
- Possible thermal stress of the CRT, leading to hairline fractures of the glass.
- Possible thermal stress of the cables inside the Macintosh Plus, leading to hairline fractures of the insulation or conductor.
- Possible thermal stress of the junctions inside the integrated circuits caused by the variation in thermal expansion of the plastic case and the metal wires.

Any of these scenarios can lead to failure of one or more parts of the system. We recommend that you keep the Macintosh Plus in a closet or in some other heated living quarters. If this is not an option, after removing the system from this extreme temperature, allow the Macintosh Plus to return to a normal operating temperature slowly, possibly over a period of days. By allowing the components to warm gradually, if there hasn't been any irreversible damage, the system should be fine.

If the capacitors have cracked, you may notice some fluid dripping down the left side of the case or some discoloration in this area. In that case, or if the system behaves erratically or you hear crackling or popping on startup, shut down the system immediately and take it to your authorized service center for examination.

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Tech Info Library Article Number:7957



# Tech Info Library

## AppleShare PC: Needs Version 3.1 or Later of DOS Message

Revised: 8/9/91  
Security: Everyone

AppleShare PC: "Needs Version 3.1 or Later of DOS" Message

=====

Article Created: 2 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When loading AppleShare PC to an IBM PC, a customer is getting this error message: "needs version 3.1 or later of DOS". The customer tried DOS versions 4.0 and 5.0 and got the same message.

DISCUSSION -----

The problem is associated with the REDIR subdirectory file located in the AppleShare PC DIR. In all probability, your customer is using an AppleShare PC version older than 2.X, which works effectively only with DOS versions through the 3.X series. Your customer needs to upgrade to the more current Farallon version of the AppleShare PC software.

This error message also has been reported by customers when they haven't properly followed the directions for loading files for DOS 5.0. The customer should pay close attention to the instructions regarding "expanding" (see the DOS 5.0 User's Manual, page 28).

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Tech Info Library Article Number:7965



# Tech Info Library

## MacX25: Multiple Workstation Support

Revised: 8/9/91  
Security: Everyone

MacX25: Multiple Workstation Support

=====

Article Created: 2 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How many workstations does the MacPAD software (shipped with MacX25) support?

DISCUSSION -----

If each workstation uses only one virtual circuit, 64 workstations can access the MacX25 server simultaneously. However, applications can be written so that multiple circuits can be accessed by one workstation; therefore, the number of workstations that can be supported depends on how the application is written.

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Tech Info Library Article Number:7966



# Tech Info Library

## Personal LaserWriter: How To Determine Page Count

Revised: 8/10/91  
Security: Everyone

Personal LaserWriter: How To Determine Page Count

=====

Article Created: 05 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can you determine the page count on the Personal LaserWriter LS?

DISCUSSION -----

There is no way to determine the actual number of pages that have been printed on a Personal LaserWriter LS and Personal LaserWriter SC controller board or print engine. The Personal LaserWriter NT controller board stores the number of pages that the controller board has printed, but not the number of pages the engine has printed.

With the Personal LaserWriter NT, the customer can keep track of the page count using the controller board (user test print). If the controller board is never changed, the page count should be accurate. If the board is repaired or replaced, the page count will change, and it is the customer's responsibility to monitor the printer's page count. Since the Personal LaserWriter LS and Personal LaserWriter SC do not have the controller count capability, the customer needs to keep track of the page count. To assist customers with this task, Apple offers the Repair Log Label (part number 826-0481).

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Tech Info Library Article Number:7976



# Tech Info Library

## Macintosh Portable: Caps Lock Function and System Sleep

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Caps Lock Function and System Sleep

=====

Article Created: 5 August 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

The Macintosh Portable loses the Caps Lock key function when reactivated from the "sleep" mode.

DISCUSSION -----

In the following situation, the Caps Lock key function is lost:

- 1) The Caps Lock key is pressed and locked in the down position.
- 2) The Macintosh Portable is put into the "sleep" mode.
- 3) The Macintosh Portable is reactivated by pressing a key.

Even though the Caps Lock key is still locked in the down position, the system reverts to lowercase. This happens because the "Caps Lock flag" stored in the register is temporary and is lost during the sleep mode.

To reinstate Caps Lock after reactivating the Macintosh Portable from the "sleep" mode, press the Caps Lock key twice: once to unlock it and a second time to reset it.

This applies to both the original Macintosh Portable and the revised Macintosh Portable with the backlit screen. No "fix" is expected. This problem does not exist with the PowerBooks.

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Tech Info Library Article Number:7980



# Tech Info Library

## System 7: Importing and Saving Documents with Excel 3.0

Revised: 8/15/91  
Security: Everyone

System 7: Importing and Saving Documents with Excel 3.0

=====

Article Created: 8 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Excel 3.0 does not seem to be saving changes under System 7.

DISCUSSION -----

Under System 7, if you open an Excel 2.2 document or text file with Excel 3.0, then Save, the Save dialog box opens automatically to the folder where the Excel application resides. According to Microsoft, this is a feature because the file is "new" (converted). The original document, in a different folder, is not overwritten.

If you later open the original document, you might think your changes were never saved.

Here are two workarounds:

- Before saving, navigate back to the original folder and replace the old file.
- Keep Excel 3.0 and your Excel documents in the same folder.

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Tech Info Library Article Number:7982



# Tech Info Library

## System 7: Page Size in Page Preview

Revised: 9/18/92  
Security: Everyone

System 7: Page Size in Page Preview

=====

Article Created: 8 August 1991

### Article Change History

-----

09/17/92 - REVISED

- To take out version numbers of applications.

### TOPIC -----

Under System 7, with the LaserWriter Driver, if I select one of the custom paper sizes such as "Envelope - Edge Feed" and then switch over to Page Preview (if the application has Page Preview), I see a letter-size paper, not an envelope size paper. Why is this?

### DISCUSSION -----

Most applications ignore the resource that holds the information about the selected custom paper size. FileMaker Pro shows an envelope when you select this option. Currently, Microsoft Word, Excel, 4th Dimension, and other applications do not.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7983





# Tech Info Library

## System 7: Don't Unmount a Floppy Disk from a Desk Accessory

Revised: 8/26/92  
Security: Everyone

System 7: Don't Unmount a Floppy Disk from a Desk Accessory

=====

Article Created: 8 August 1991

### Article Change History

-----

08/25/92 - REVIEWED  
• For technical accuracy; edited.

### TOPIC -----

Under System 7, whenever I use a desk accessory to unmount (but not eject) a floppy disk, my system crashes.

### DISCUSSION -----

A third party incompatiblity causes this. This involves only those few desk accessories (DiskTop is one) that have an unmount feature. The only workaround is to avoid unmounting disks from within desk accessories. There's no problem with simply ejecting floppy disks (leaving their icons visible on the desktop).

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7984



# Tech Info Library

## System 7: Installer on Printing Tools Disk is for System 6

Revised: 9/18/92  
Security: Everyone

System 7: Installer on Printing Tools Disk is for System 6

=====

Article Created: 5 August 1991

### Article Change History

-----

09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I removed my printer drivers from the Extensions folder and deleted them. When I reinstalled the system software, the Printing disk displayed this message: "The selected disk 'Hard Disk' does not require a printer update." However, when I chose Customize and "Software for LaserWriter" it installed the proper driver. Is the Installer confused?

### DISCUSSION -----

If the PrintMonitor is in the Extensions folder, the Installer on the Printing disk will indicate that you don't need to update. The Installer on the Install 1 disk will allow you to install a specific driver using Customize. Remove the PrintMonitor to do an Easy Install.

There's a good reason for this. The Installer on the Printing Tools disk is for System 6. The preferred method is to use Customize from the Installer on the Install 1 disk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7985



# Tech Info Library

## System 7: Problem Printing AP Newswire Maps

Revised: 9/22/92  
Security: Everyone

System 7: Problem Printing AP Newswire Maps

Article Created: 5 August 1991

### Article Change History

-----  
09/21/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I installed system software 7.0 on one Macintosh in a network. I then updated the printer drivers of the other Macintosh computers, which are running system software 6.0.3, to the system 7.0 printer drivers. All the computers are getting PostScript Errors "Error: Limit Check, offending command: Closed Path" when printing from MacDraw II version 1.1. The documents are maps in MacDraw II that come from the AP Newswire via Satellite.

### DISCUSSION -----

Once you have eliminated all system-related software conflicts, we suspect System 7 drivers and Postscript are creating this conflict.

According to Claris Tech support, this is a known issue with AP Newswire maps. The objects in these documents have too many vertices. They must be simplified by removing vertex points using MacDraw II. The System 7 LaserWriter drivers are less tolerant of this problem than the System 6 drivers.

### Workarounds:

- Do not print these documents running System 7 or the System 7 printer drivers, or
- Simplify them with MacDraw II.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7987



# Tech Info Library

## System 7: Virtual Memory Page Size

Revised: 8/18/92  
Security: Everyone

System 7: Virtual Memory Page Size

=====

Article Created: 5 August 1991

### Article Change History

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08/17/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

What is the page size for virtual memory and the largest swap of memory at one time?

### DISCUSSION -----

The page size is 4K for virtual memory. In other words, with virtual memory turned on, System 7 will read and write memory to disk in 4K chunks.

The largest amount of RAM swapped to or from disk at one time is one megabytes.

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Tech Info Library Article Number:7988



# Tech Info Library

## System 7: When the Finder Loses Its Colors

Revised: 9/11/92  
Security: Everyone

System 7: When the Finder Loses Its Colors

Article Created: 5 August 1991

### Article Change History

09/11/92 - UPDATED

- To provide additional information.

### TOPIC

My colors sometimes disappear in the Finder. Especially my desktop patterns, labels, and window frame colors. Also, my general control panel colors sometimes switch to black and white. Why is this?

### DISCUSSION

When an application, INIT or control panel "takes away" colors from the Finder, the Finder tries to replace the colors. Unfortunately, the Finder is not "intelligent" about this. A "used" color is no longer available to the Finder. This is very noticeable in 4-bit mode, 16 colors. When the Finder doesn't have enough choices, it often defaults to black and white until the colors are "given back." Restarting the computer is one of the actions that restores the colors. It may also be necessary to restore the label colors to their original values. Search on label colors for more information.

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Tech Info Library Article Number:7989



# Tech Info Library

## System 7: Three-D Desktop Background Patterns

Revised: 9/11/92  
Security: Everyone

System 7: Three-D Desktop Background Patterns

=====

Article Created: 5 August 1991

### Article Change History

-----

09/11/92 - REVISED

- For clarity.

### TOPIC -----

How do I get those neat background patterns that I see advertised with System 7?

### DISCUSSION -----

If you install System 7 over another system, you won't see the new patterns. This is because System 7 saves the old patterns over the new desktop patterns when you install over the old system. Install System 7 on a clean drive (a drive from which you have removed the System Folder) to see the new patterns.

For larger images and patterns, look for shareware or commercial utilities like Wallpaper which provide this capability.

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Tech Info Library Article Number:7990



# Tech Info Library

## System 7: How Apple PostScript Printers Handle TrueType (11/93)

Revised: 11/9/93  
Security: Everyone

System 7: How Apple PostScript Printers Handle TrueType (11/93)

Article Created: 5 August 1991  
Article Reviewed/Updated: 9 November 1993

TOPIC -----

With what Apple PostScript printers will TrueType work?

DISCUSSION -----

First, a little history on TrueType and PostScript:

The TrueType format places all PostScript devices into one of three class categories depending on the device and its TrueType capabilities. The three classes are:

- 1) Class A devices are those with a TrueType scaler embedded in the PostScript device (the ROM.) For example, the LaserWriter IIx/IIg, LaserWriter Pro 600/630, and the LaserWriter Select 360 all fall into this category.
- 2) Class B devices are those that depend on the TrueType scaler to be downloaded to the device separately from the font itself. Most third-party 680x0 PostScript printers and the LaserWriter Pro 810 fall into this category.
- 3) Class C devices do not have TrueType available in any form.

Here's how TrueType works with Apple LaserWriter Printers:

LaserWriter  
-----

The original LaserWriter, containing a 68000 microprocessor, can't print TrueType. The TrueType rasterizer CANNOT be downloaded to the original LaserWriter which has ROM version 1.0 (PostScript version 23.0). Thus, it CANNOT print TrueType fonts. The TrueType rasterizer can only be



downloaded to LaserWriters with PostScript version 38.0 or ABOVE.  
PostScript version 38.0 or 47.0 ROMs are LaserWriter Plus ROMs which can be installed on an original LaserWriter, making it a LaserWriter Plus.

In terms of which LaserWriter driver to use, version 6.1 or greater is required to print TrueType.

#### LaserWriter Plus

-----

The LaserWriter Plus, also 68000-based, does not download the scaler code, but TrueType will work. It converts TrueType code to encrypted Type 3 instructions (better known as unhinted Type 1) before delivering it to the printer. Performance is slow due to memory management constraints in that version of ROM. Memory constraints affect performance when converting and downloading large numbers of TrueType fonts.

#### LaserWriter IINT

-----

The LaserWriter IINT, also 68000-based, downloads the scaler code and TrueType does work. The performance and handling of multiple fonts is faster than the previous printers but slower than the LaserWriter IINTX.

#### LaserWriter IINTX and IINTX-J (Kanji version)

-----

The LaserWriter IINTX and IINTX-J, which contain a 68020 microprocessor, download the scaler code and TrueType does work. Performance and handling with multiple fonts is faster than with the earlier printers. How much faster depends on the RAM available size.

#### Personal LaserWriter NTR

-----

The TrueType Scaler is in ROM for optimum TrueType font performance.

#### LaserWriter IIx & IIg

-----

The TrueType Scaler is in ROM for optimum TrueType font performance.

#### LaserWriter Select 310

-----

The LaserWriter Select 310 downloads the scaler code and TrueType does work.

#### LaserWriter Pro 600 & 630

-----

The TrueType Scaler is in ROM for optimum TrueType font performance.

#### LaserWriter Select 360

-----

The TrueType Scaler is in ROM for optimum TrueType font performance.

#### LaserWriter Pro 810

-----

The LaserWriter Pro 810 supports TrueType using the downloaded scaler.

Article Change History:

9 November 1993 - Added all Apple PostScript printers to date.

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Tech Info Library Article Number:7991



# Tech Info Library

## System 7: When LaserWriter Driver Doesn't Appear in Chooser

Revised: 9/11/92  
Security: Everyone

System 7: When LaserWriter Driver Doesn't Appear in Chooser

=====

Article Created: 5 August 1991

### Article Change History

-----

09/11/92 - REVISED  
• With more information.

### TOPIC -----

I can't select the LaserWriter icon in the Chooser. What's the problem?

### DISCUSSION -----

You probably have a damaged driver. Only the LaserWriter (PostScript) driver is affected. To fix this, reinstall the driver. Make sure you reinstall the correct version, from your original disks.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:7992



# Tech Info Library

## System 7: TrueType and the Original LaserWriter

Revised: 5/14/93  
Security: Everyone

System 7: TrueType and the Original LaserWriter

=====

Article Created: 5 August 1991

### Article Change History

-----

05/13/93 - REVISED  
• For technical accuracy

### TOPIC -----

When I try to print to an original LaserWriter using the TrueType fonts under System 7.0, I get a PostScript error, but Adobe Fonts print fine.

### DISCUSSION -----

The bottom line is that the TrueType rasterizer CANNOT be downloaded to the original LaserWriter which has ROM version 1.0 (PostScript version 23.0). Thus, it CANNOT print TrueType fonts. The TrueType rasterizer can only be downloaded to LaserWriters with PostScript version 38.0 or ABOVE. PostScript version 38.0 or 47.0 ROMs are LaserWriter Plus ROMs which can be installed on an original LaserWriter, making it a LaserWriter Plus.

In terms of which LaserWriter driver to use, version 6.1 or greater is required to print TrueType.

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Tech Info Library Article Number:7996



# Tech Info Library

## System 7: Fix for Lost Microsoft Word Custom Icons (12/94)

Revised: 12/5/94  
Security: Everyone

System 7: Fix for Lost Microsoft Word Custom Icons (12/94)

Article Created: 6 August 1991  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

Under System 7, whenever I save a Microsoft Word file with a custom icon, the icon becomes the generic document icon. Also, the comments in the Get Info box disappear. How can I fix this?

DISCUSSION -----

Microsoft Word is one of the few programs that completely rewrites an existing document when it saves, rather than updating the original. This deletes the custom icon and the Get Info comments from the file. But the file is still marked to use a custom icon, and the Finder deals with this by assigning it the generic document icon.

To fix the icon, use ResEdit or another resource utility to reset the "Use custom icon" bit to off. Pasting in a custom icon will not fix the problem; you will get the error message "The command could not be completed because an error of type -39 occurred."

Here is a workaround for Word files saved in normal format (this doesn't work for Word text files):

- 1) In Microsoft Word, choose Commands from the Edit menu.
- 2) Choose Fast Save Enabled, and click Add.
- 3) Save the change, replacing the current Word Settings.
- 4) Cancel out of the Commands window.
- 5) Under MS Word's Edit Menu, make sure Fast Save Enabled has a check next to it.

- 6) You should now be able to change the document without losing the custom icon.

CAUTION: The use of ResEdit is not recommended for anyone unfamiliar with its use. Irreparable damage to your software is possible, always work from a backup. If you are unfamiliar with its use, DO NOT USE IT.

Article Change History:

05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:7997



# Tech Info Library

## System 7: When Finder Icons Seem to be Stacked On One Another

Revised: 9/10/92  
Security: Everyone

System 7: When Finder Icons Seem to be Stacked On One Another

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Article Created: 6 August 1991

### Article Change History

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09/10/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I use file sharing to make a folder available to a co-worker. When I open the folder and view by icon, I see only one document because all the icons in the folder are stacked on top of each other.

### DISCUSSION -----

This is not a bug, and there is no difference in the way Finder handles icons for file sharing. With the "Always snap to grid" feature turned on in the Views control panel, it is possible for icons to share the same place on the grid. This feature allows more items to fit in a window. If you prefer not to stack icons, you can turn off the "snap to grid" feature.

Here's how to "unstack" the icons:

- 1) Choose "by Icon" or "by Small Icon" from the View menu.
- 2) Hold down the Option key while choosing Clean Up by Name from the Special menu.

We were able to duplicate icon stacking when we dropped the documents one-by-one into an open folder at approximately the same location with snap to grid turned on. The result was the same with either straight or staggered grid. Icon stacking does not happen when moving documents to closed folders.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:7998





# Tech Info Library

## System 7: Switching Among Keyboard Maps (2/95)

Revised: 2/15/95  
Security: Everyone

System 7: Switching Among Keyboard Maps (2/95)

Article Created: 6 August 1991  
Article Reviewed/Updated: 15 February 1995

TOPIC -----

I installed multiple keyboard maps into the System file to allow switching between languages like English and Spanish.

Here are two ways I switch maps:

- Open the Keyboard control panel and select it from a list, or
- Press a Command-Option-Spacebar sequence to "rotate" between the maps.

The problem is some applications use the Command-Option-Spacebar sequence for other operations. If I use this sequence to perform the application's command, the command is performed as expected, but the operating system also "rotates" the keyboard maps. Is there a workaround?

DISCUSSION -----

This key sequence is a reserved part of the operating system which should not be used by an application. Applications may also use this key sequence for other operations but there will be conflicts if multiple keyboard maps are present.

Here are three workarounds:

- Don't install more than one keyboard map into the System if you can avoid it. System 7.5 installs all keyboard maps as a default. You can remove those you will not be using by opening up the System suitcase and dragging them to the trash.
- After using the key sequence, open the Keyboard CDEV and change the map with the mouse.
- Use the mouse to perform the application's command, rather than the key sequence.

A checkbox will be added to the Keyboard Control Panel to disable this feature in System Update 1.0 for System 7.5.

Article Change History:

15 Feb 1995 - Reviewed for technical accuracy.

19 Jan 1995 - Updated for System 7.5.

05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:7999



# Tech Info Library

## Why Macintosh Portable & PowerBook Computers Won't Sleep (9/96)

Revised: 9/5/96  
Security: Everyone

Why Macintosh Portable & PowerBook Computers Won't Sleep (9/96)

Article Created: 8 August 1991  
Article Reviewed/Updated: 5 September 1996

TOPIC -----

Sometimes Macintosh Portable and PowerBook computers running any version of System 7.x will not go into Sleep mode, regardless of the sleep time settings in the Portable or PowerBook control panel. Why is this?

DISCUSSION -----

The following activities may prevent the Macintosh Portable or PowerBook computer from sleeping UNLESS a low-power condition occurs:

Common Causes

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- The "Stay awake when plugged in" option is selected in the Portable control panel, AND you are plugged into AC power.
- The PowerBook control panel slider selections are set to "Never sleep."
- The serial driver is open and active.
- AppleTalk is active (Check the Chooser). Note: A volume does not need to be mounted nor do you need to be connected to an AppleTalk network.
- When an internal modem's auto-answer is on.

Further Troubleshooting Tips

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- PowerBook 5300 and 190: There is a known issue with the password security feature on the PowerBook 5300 and 190 series computers. If you open the Password Security control panel and set the password security is turned on and is set for

ask password on wake, the unit will not sleep. One workaround is to turn off the "ask for password on wake" feature. If this is done, the PowerBook will be able to sleep. This issue can be resolved by installing the System 7.5 Update 2.0 (or later system software) which includes the Password Security 1.0.3 control panel.

- Check to make sure that there are no INITs (extensions) or control panels in the System Folder that may be causing the computer to assume that the system is busy. (For example, the FocalPoint II INIT has been shown to cause this; others may also.)

- Make sure there are no applications currently running which would keep the system busy. (For example, Microsoft Word's automatic repagination option will keep the system awake.)

- An extension called Insomnia came on the Install Me First disk with some versions of the system software. If this extension is mistakenly put into the Extensions folder in the active System folder on the hard drive, the PowerBook will not sleep. It should be removed from the hard drive. Insomnia is an extension that keeps the PowerBook from going to sleep during the installation process when starting from the Install Me First disk.

#### Technical Details

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For the more technically inclined, the following system activities also prevent the machine from entering the sleep or rest mode:

- A call to Read or Write through IOCore.
- Calling PostEvent.
- OSEventAvail returning true.
- Generating a sound.
- Execution of an ADB completion routine.
- A call to SetCursor (that really changes the cursor).
- The watch cursor is the active cursor.

This article was published in the Information Alley on 5 September 1996.

#### Article Change History:

05 Sep 1996 - Added more reasons to the list.  
24 Jun 1996 - Clarified AppleTalk connection.  
17 Aug 1992 - Updated to include PowerBooks.

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Tech Info Library Article Number:8000



# Tech Info Library

## System 7: Disk Space for Minimal and System-Specific Installs

Revised: 9/18/92  
Security: Everyone

System 7: Disk Space for Minimal and System-Specific Installs

Article Created: 7 August 1991

### Article Change History

09/14/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the difference in disk space required for a Minimal Install ("Minimal Install for...") and a System Specific Install ("System Software for...")?

### DISCUSSION -----

We installed system software 7.0 on several Macintosh computers to answer this question. For the minimal installs, we chose Customize and then "Minimal Install for..." For the system specific installs, we chose Customize and then installed software configurations for the specific Macintosh.

System software requires about 1593K, averaging Minimal Installs and Full Installs together.

A minimal install placed the following items in the System Folder of a Macintosh SE/30:

| Name                     | Type     | Size |
|--------------------------|----------|------|
| -----                    |          |      |
| Apple Menu Items         | (folder) | --   |
| - Control Panels [alias] | (file)   | 2K   |
| Control Panels           | (folder) | --   |
| Finder                   | (file)   | 356K |
| System                   | (file)   | 756K |

There are no Extension or Preference folders. The system builds them at startup. The only font that you can see is the Geneva (Italic) 9 used for alias filenames.

Here is a table of differences in disk space needed for Minimal Installs and System Specific Installs (SSI):

| Computer           | SSI  | Minimal | Difference |
|--------------------|------|---------|------------|
| Macintosh Plus     | 2496 | 975     | 1521       |
| Macintosh SE       | 2499 | 974     | 1525       |
| Macintosh Classic  | 2508 | 974     | 1534       |
| Macintosh SE/30    | 2737 | 1116    | 1621       |
| Macintosh LC       | 2670 | 1049    | 1621       |
| Macintosh Portable | 2541 | 971     | 1570       |
| Macintosh II       | 2737 | 1116    | 1621       |
| Macintosh IIX      | 2737 | 1116    | 1621       |
| Macintosh IISi     | 2669 | 1049    | 1621       |
| Macintosh IICx     | 2737 | 1116    | 1621       |
| Macintosh IICI     | 2666 | 1045    | 1621       |
| Macintosh IIIfx    | 2671 | 1050    | 1621       |

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Tech Info Library Article Number:8001



# Tech Info Library

## System 7: Compatibility of E-Machines Products

Revised: 9/3/92  
Security: Everyone

System 7: Compatibility of E-Machines Products

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Article Created: 8 August 1991

### Article Change History

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09/02/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What are the System 7-compatible versions of the E-Machines monitor driver software?

### DISCUSSION -----

Here are the versions of E-Machines monitor driver software required for System 7:

- For the 8-bit cards: version 3.0.2 or later
- For the 24-bit accelerated cards: version 3.2 or later

The only known compatibility issue is with E-Machines' 17-inch Big Picture monitor. After you choose Shutdown, it displays a restart screen.

For the latest version and compatibility information, contact E-Machines directly; search on E-Machines for contact information.

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Tech Info Library Article Number:8003





# Tech Info Library

## System 7: Why the Clean Up Command Leaves Gaps Between Icons

Revised: 9/11/92  
Security: Everyone

System 7: Why the Clean Up Command Leaves Gaps Between Icons

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Article Created: 6 August 1991

### Article Change History

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09/11/92 - REVISED

- To add more information.

### TOPIC -----

Why is it that when I use the Finder's "Clean Up by Name" command, with the Option key held down, the result is often large gaps between the icons in the window?

### DISCUSSION -----

This is a feature of System 7's Finder. It prevents the overlapping of long filenames so you can read each icon's complete name, regardless of its length.

System 7 allows a long filename on an icon to run into the next spot on the grid rather than placing another icon there. The Finder skips one spot on the grid and places the next icon in the next available spot. This creates extra space between icons. The Finder does this regardless of the "Always snap to grid" choice in the Views control panel. If you don't like the extra space, you can manually place the icons where you want them. Alternatively, try shortening the name of the file or folder that is causing the gap.

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Tech Info Library Article Number:8004



# Tech Info Library

## System 7: MacPlot Driver Configuration

Revised: 9/22/92  
Security: Everyone

System 7: MacPlot Driver Configuration

Article Created: 7 August 1991

### Article Change History

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09/21/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I can't print to my Hewlett Packard plotter from MacDraw Pro. Why not?

### DISCUSSION -----

The MacPlot driver for the Hewlett Packard plotter must be configured in a particular way under System 7. According to Microspot's technical support, this is the setup:

- 1) Put the driver in the Extensions folder.
- 2) Select the plotter in the Chooser.
- 3) Pull the driver out of the Extensions folder to the top level of the System Folder.
- 4) Configure the plotter through the Configure Application.
- 4) Put the driver back into the Extensions folder.
- 5) Make an alias of the driver and place it at the top level of the System Folder.

The driver is bundled with MacDraw Pro and is also sold separately by Microspot. If the driver was bundled with a Claris product, please call Claris for technical support instead of Microspot. To locate a vendor's

address and phone number, use the vendor name as a search string.

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Tech Info Library Article Number:8005



# Tech Info Library

## System 7: Purpose of Cerulean Data File

Revised: 9/18/92  
Security: Everyone

System 7: Purpose of Cerulean Data File

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Article Created: 5 August 1991

### Article Change History

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09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I don't know if I installed system software 7.0 correctly. What is this Cerulean Data file on the Install 2 disk, and why didn't the Installer put it on my hard disk?

### DISCUSSION -----

The System file is so large that it can't fit on a single 800K floppy disk. To distribute it on 800K floppy disks, many of the resources that are part of the System file are in the Cerulean Data file. The Installer combines the System and Cerulean Data files into a single System file on your hard disk. The Installer displays the message, "Building file: System" when it is joining the files on the hard disk.

The resources stored in the Cerulean Data file include icons, desktop patterns, instructions for displaying menus, dialog boxes and alert messages, and other code to make the system work. Because the Installer adds all of these items to the System file, you don't need a copy of the Cerulean Data file on your hard disk.

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Tech Info Library Article Number:8006



# Tech Info Library

## System 7: Compatibility Checker Stack and Newer Applications

Revised: 9/3/92  
Security: Everyone

System 7: Compatibility Checker Stack and Newer Applications

=====

Article Created: 5 August 1991

### Article Change History

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09/02/92 - UPDATED

- With information about version 1.1 and with information from related articles.

### TOPIC -----

I just got the latest version of an application that the developer assures me is System 7-compatible. But when I ran the Compatibility Checker, it flagged the application as incompatible and told me I needed an update. What's going on?

### DISCUSSION -----

The Compatibility Checker version 1.0 was compiled from information sent to Apple by developers before System 7's release. Since then, many developers have released newer versions of their software. Because the Compatibility Checker looks at specific version numbers of applications, it can't recognize the newer versions, and flags them as incompatible.

If you have questions, contact the application developer for a definitive answer, including compatibility regarding file sharing, 32-bit addressing, and virtual memory.

Note: even when application developers state explicitly that their products are System 7-compatible, there is no guarantee that those applications are problem-free; issues still may occur when other variables are brought in such as third party INITs and cdevs, also known as system extensions and control panel devices.

Compatibility Checker 1.1, which updates the original, has 165 new records, as well as updated product compatibility information and corrected phone numbers. It also offers compatibility information on third-party drivers. But with new versions of applications coming out constantly, the same problem may be encountered as with the original version.

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Tech Info Library Article Number:8007



# Tech Info Library

## System 7: Role of Font/DA Mover 4.1 (9/94)

Revised: 9/16/94  
Security: Everyone

System 7: Role of Font/DA Mover 4.1 (9/94)

Article Created: 5 August 1991  
Article Reviewed/Updated: 15 September 1994

TOPIC -----

In the System 7 Group Upgrade Kit, there's a copy of Font/DA Mover 4.1, but no instructions for using it. The only reference to it is on page 64 of the "Group Upgrade Guide," which says that it isn't compatible with System 7. Why did Apple include it on the CD?

DISCUSSION -----

Using with System 7  
-----

Font/DA Mover 4.1 IS COMPATIBLE with System 7, although it's unnecessary to use if you want to manipulate fonts in the System file and other suitcases directly in the Finder. However, the Font/DA Mover 4.1 is necessary to use with System 7 if you want to manipulate/add/delete fonts WITHIN a specific application such as MusicProse or Finale! by Coda Music.

It is also possible to use Font/DA Mover with System 7 to recover fonts from a damaged System file, but Apple does not recommend or support this use of the Font/DA Mover.

Using with System 6  
-----

Font/DA Mover 4.1, along with the TrueType extension, is included on the System 7 CD-ROM so customers can use TrueType fonts on Macintosh computers running System 6. Font/DA Mover 4.1 allows System 6 users to manipulate TrueType fonts (view, copy, and remove) in their System file and other suitcases, in addition to bitmap fonts and desk accessories. It is otherwise identical to earlier versions of Font/DA Mover.

The TrueType extension (INIT) allows System 6 users to create, display and print documents that use TrueType fonts. It's fully compatible with

system software 6.0.7 and 6.0.8. It may also work with version 6.0.5, but Apple hasn't fully tested it, and doesn't support this use of it.

You can also obtain Font/DA Mover 4.1 from AppleLink.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

Article Change History:

15 Sep 1994 - Removed binary file.  
25 Feb 1993 - Revises to add how it is used with System 7.  
18 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8008





# Tech Info Library

## System 7: Restoring from HD Backup

Revised: 9/3/92  
Security: Everyone

System 7: Restoring from HD Backup

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Article Created: 5 August 1991

### Article Change History

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09/02/92 - REVISED

- To add additional information.

### TOPIC -----

How do I restore a backup of my hard disk that I made with HD Backup if I've installed System 7? I heard that HD Backup is incompatible with System 7.

### DISCUSSION -----

HD Backup is incompatible with System 7, but there are a number of workarounds if you need to restore an HD Backup set of data onto a volume.

- You can start up from a volume that has System 6 on it, such as a second hard disk or floppy disk. This works even if you have only a single floppy drive and no extra hard disk (although you'll be swapping floppy disks a lot). To start from the other drive, insert a System 6 floppy disk before startup, or choose the other hard disk using the Startup Disk control panel.
- Another workaround is to pull individual files from floppy disks in the backup set onto the hard disk. This works best if there are a few files that need to be restored, but not the entire backup set. You may have a problem if HD Backup split large files across multiple floppy disks.
- The most drastic workaround is to reinstall System 6 on the hard disk and then run HD Backup. Note that this may be a problematic

procedure in itself, and the details of that procedure aren't covered in this article. Specifically, most new Macintosh models require System 7 to operate and would not be able to move back down to System 6.

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Tech Info Library Article Number:8009



# Tech Info Library

## System 7: Precautions When Installing Over System 6

Revised: 9/22/92  
Security: Everyone

System 7: Precautions When Installing Over System 6

=====

Article Created: 6 August 1991

### Article Change History

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09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Be careful when installing System 7 over any version of System 6, especially versions earlier than 6.0.5. This article tells you the steps to take and the precautions to observe when installing System 7 over System 6.

### DISCUSSION -----

- 1) Be sure to search the entire hard disk for multiple system folders, and remove all but the main System Folder.

Use the Find File DA in System 6 to find multiple system folders. Note that you may have to do this a number of times. If there are multiple system folders, THROW AWAY any extras and empty the Trash.

IMPORTANT NOTE: Altering a System Folder by renaming it and removing the Finder does not work with versions earlier than 6.0.5; the Macintosh may crash or hang on startup.

- 2) Run the Compatibility Checker.
- 3) There are two ways to proceed in this step:

- Install System 7 over System 6.

To do this, simply start up from the Install 1 disk and run the

Installer program.

- Alternatively, trash the remaining System and Finder files, rename the System Folder, and install System 7.

Use this procedure if you've had problems installing over System 6. The Installer won't move any of the System 6 files into the new System Folder. You can manually move some files from the old System Folder, such as INITs, cdevs, fonts, and application Preference files or folders. Unknown or untested software may conflict.

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Tech Info Library Article Number:8010



# Tech Info Library

## System 7: Using the Before You Install Stack

Revised: 9/21/92  
Security: Everyone

System 7: Using the "Before You Install" Stack

=====

Article Created: 6 August 1991

### Article Change History

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09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

The menus don't seem to work in the Before You Install HyperCard stack. I get messages telling me to click on an arrow when I make a selection.

### DISCUSSION -----

The stack named "Before You Install" demonstrates the features of System 7 in a HyperCard window that greatly resembles the real system, but is only a demonstration program. Items that you would normally select with the mouse such as menus, icons, or windows, are just pictures, and are not actually interactive. If you try to use the mouse to select any items on screen, you get the following message: "This example desktop is for System 7 demonstration only. To move ahead in any topic, click the forward arrow, below."

The program displays the current topic at the lower left of the HyperCard window. On the lower right are buttons to help navigate through the stack (left and right arrows, Contents and/or Topics). If you can't see these items at the bottom of the window, it may be that the window is too low on your screen. You can't reposition this HyperCard window when it doesn't have a title bar.

To reposition the window, quit HyperCard (type Command-Q), and again launch the Before You Install stack. The title bar, "Before You Install System 7," should now appear at the top of the window. Use the mouse to reposition the window properly so that you can see "Contents" (the topic

name) and the Quit button at the bottom of the window.

One other problem you may find is that Before You Install has no close box or button, only a Quit button. Since it is possible to have more than one HyperCard stack open with HyperCard versions later than 2.0, quitting will close all open HyperCard stacks.

The sample applications mentioned in Before You Install, such as MemoWriter and Let's Draw, are fictional and are not included with System 7 or HyperCard.

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Tech Info Library Article Number:8011



# Tech Info Library

## Disk II: Controller Card Pinouts

Revised: 8/20/91  
Security: Everyone

Disk II: Controller Card Pinouts

=====  
Article Created: 6 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the pinouts for the Disk II controller card?

DISCUSSION -----

The pinouts for the Disk II controller card are:

| Pin #       | Description             |
|-------------|-------------------------|
| -----       | -----                   |
| 1,3,5,7     | Gnd                     |
| 2           | Stepper Motor Phase 0   |
| 4           | Stepper Motor Phase 1   |
| 6           | Stepper Motor Phase 2   |
| 8           | Stepper Motor Phase 3   |
| 9           | -12 volts               |
| 10          | Write Request           |
| 11,12       | Vcc (+5 volts)          |
| 13,15,17,19 | +12 volts               |
| 14          | Drive Enable (motor on) |
| 16          | Read Data               |
| 18          | Write Data              |
| 20          | Write Protect           |

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Tech Info Library Article Number:8014



# Tech Info Library

## Apple 5.25 Drive: Controller Card Pinouts

Revised: 8/20/91  
Security: Everyone

Apple 5.25 Drive: Controller Card Pinouts

=====  
Article Created: 6 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the pinouts for the Apple 5.25 Drive controller card?

DISCUSSION -----

The pinouts for the Apple 5.25 Drive controller card are:

| Pin # | Description           |
|-------|-----------------------|
| ----- | -----                 |
| 1,2,3 | Gnd                   |
| 4     | n/a                   |
| 5     | -12 volts             |
| 6     | +5 volts              |
| 7,8   | +12 volts             |
| 9     | Drive 2 Select        |
| 10    | Write Protect Input   |
| 11    | Stepper Motor Phase 0 |
| 12    | Stepper Motor Phase 1 |
| 13    | Stepper Motor Phase 2 |
| 14    | Stepper Motor Phase 3 |
| 15    | Write Request         |
| 16    | n/a                   |
| 17    | Drive 1 Select        |
| 18    | Read Data             |
| 19    | Write Data            |

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Tech Info Library Article Number:8015





# Tech Info Library

## A/UX: No Yellow Pages for Non-Privileged Accounts

Revised: 8/16/93  
Security: Everyone

A/UX: No Yellow Pages for Non-Privileged Accounts

=====  
Article Created: 8 August 1991  
Article Reviewed/Updated: 31 June 1992

TOPIC -----

The Yellow Pages appears to be broken, at least on a non-privileged account. When I try to log in, login fails with several error messages written to the screen. These are quickly erased before returning to the login screen.

DISCUSSION -----

The problem is that non-privileged accounts cannot log in. Root can still log in. This isn't a Yellow Pages problem; it's a disk space problem.

The default file system for A/UX is a Berkeley file system. The Berkeley file system reserves a percentage of the disk for use exclusively by root. The default "high water mark" is 10 percent, although you can adjust this with the tuneefs command.

If the unused space on the file system is less than the high water mark, non-privileged users cannot log in. This is to prevent situations where you cannot do anything because the disk is too full. Root can still login and remove files to enable other logins.

Article Change History:  
31 Jun 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:8022



# Tech Info Library

## Printing: Background Printing Is Normally Slower

Revised: 8/15/91  
Security: Everyone

Printing: Background Printing Is Normally Slower

=====

Article Created: 8 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Documents printed with non-TrueType screen fonts under background printing take several minutes per page on the Personal LaserWriter LS. Why?

DISCUSSION -----

This is normal. The advantage of background printing is that it lets you work on a task while a document is printing. Printing in the background means that printing must share the processor with some other process instead of taking all the processing speed. Therefore, it is slower. What you see is normal.

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Tech Info Library Article Number:8023



# Tech Info Library

## DAL 1.2: Simultaneous Users Require Unique UICs

Revised: 6/29/92  
Security: Everyone

DAL 1.2: Simultaneous Users Require Unique UICs

=====

Article Created: 8 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

Only one user can use DAL at a time. When someone else tries to connect, the message "could not find ADSP server" appears. We are using AppleTalk for VMS 3.0 and DAL 1.2.

DISCUSSION -----

Give each user an individual account. Without a unique UIC, the second connect attempt fails.

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Tech Info Library Article Number:8024



# Tech Info Library

## DAL: When RDB Locks Entire Database

Revised: 6/29/92  
Security: Everyone

DAL: When RDB Locks Entire Database

=====

Article Created: 8 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 4 November 1991

### TOPIC -----

When I use DAL to insert data into RDB, the whole system locks until the user doing the insert does a commit. It should only lock the current record, not the entire database.

### DISCUSSION -----

When using DAL with RDB, each user should have a distinct VMS account, including unique UICs and login directories. With a DBMS like Oracle, which has its own user account validation system with the DBMS, you don't need distinct VMS accounts.

However, RDB relies on VMS to let it know who is using which record. If RDB can't distinguish between the different accounts, it can't tell which record is being updated, so it locks all records opened by the current user. Because, in this case, everyone is effectively the same user, all records are locked for everyone until the commit is complete.

This issue was addressed in RDB 4.0 and DAL 1.3.

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Tech Info Library Article Number:8025



# Tech Info Library

## DAL and MVS/TSO Server: Troubleshooting Tips

Revised: 6/30/92  
Security: Everyone

DAL and MVS/TSO Server: Troubleshooting Tips

=====

Article Created: 12 August 1991  
Article Last Reviewed: 30 June, 1992  
Article Last Updated: 30 June 1992

TOPIC -----

If the login sequence seems to work, but attempts to open tables and retrieve data fails, try these troubleshooting steps.

DISCUSSION -----

From the Begin prompt with the DAL Tester or DAL Debugger, enter the command:

```
describe DBMS;  
printall;  
go
```

If DB2 isn't listed as a choice, then something is wrong with the DAL installation on the host. If DB2 is listed as an available DBMS, then try to open it with:

```
open DB2 DBMS;  
go
```

If the DBMS opens successfully, then try:

```
describe databases;  
printall;  
go
```

A list of available subsystem IDs should appear. If nothing comes back, then the environment file is empty or inaccessible.

Next, open the desired database and see what's in it with:

```
open db2 database '_____' ;  
describe tables ;  
printall ;  
go
```

If the only tables listed are not correct, or if a -551 error is returned, see Appendix B of the "Data Access Language Server Installation and Operating Guide for MVS/TSO." Appendix B describes how to set up views for DAL users to access the DB2 tables.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8041



# Tech Info Library

## DAL 1.2: DB-2 Query with Sum Statement Crashes Server

Revised: 6/29/92  
Security: Everyone

DAL 1.2: DB-2 Query with Sum Statement Crashes Server

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

This DB2 query crashes the DAL server on the mainframe:

```
select column1, sum(column2) from table group by column1;
```

Without the sum statement, the query works without any problems. The same query works fine in native DB2 SQL.

DISCUSSION -----

This is a known bug in DAL 1.2. It's fixed in DAL 1.3.

A sum fails in DAL 1.2 if the column to be summed is of type 9 (VARCHAR) with nulls allowed. It doesn't matter if there actually are nulls in the table or not.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8052



# Tech Info Library

## DAL: Userbreak Function

Revised: 6/29/92  
Security: Everyone

DAL: Userbreak Function

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

Page 191 of the "DAL Programming Guide" talks about a user break function.  
Is it part of the standard DAL distribution?

Userbreak is referred to as a "provided function," but it is not in the  
library. Where can I get it?

DISCUSSION -----

The example in the book is a program fragment. Userbreak is a user-written  
function.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8064





# Tech Info Library

## DAL 1.1: Large Amounts of Data Kill Processes

Revised: 8/29/91  
Security: Everyone

DAL 1.1: Large Amounts of Data Kill Processes

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I have a DAL application that sends large amounts of data down the network and often kills the DAL server process, while it's running.

DISCUSSION -----

That's a known problem with DAL 1.1. This is fixed in version 1.2.

.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8068



# Tech Info Library

## DAL: Insert Command Blocks Other Users

Revised: 6/29/92  
Security: Everyone

DAL: Insert Command Blocks Other Users

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am using DAL, using the same account name as other users in my group. When one user does an insert, no one else can do anything (no selects, for example) until that person finishes the insert and does a commit.

DISCUSSION -----

Because all of the users are using the same account name, the system freezes until someone finished the insert command. To ensure data integrity, DAL locks the database until the command is completed. The only solution is to provide each user with a unique account.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8069



# Tech Info Library

## DAL: No Support for Double Byte Characters

Revised: 8/29/91  
Security: Everyone

DAL: No Support for Double Byte Characters

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does DAL support Double Byte characters?

DISCUSSION -----

No.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8070



# Tech Info Library

## DAL: How to Sort by Month and Year

Revised: 7/13/92  
Security: Everyone

DAL: How to Sort by Month and Year

=====

Article Created: 12 August 1991  
Article Last Reviewed: 6 July 1992  
Article Last Updated: 6 July 1992

TOPIC -----

I am using DAL and want to order a selection by the month and year, not necessarily by date. DAL only orders things by the full date, not month and year.

DISCUSSION -----

The DBMS is the one actually doing the ordering (sorting). The SQL statement can only request ORDER BY against a column name -- not a portion of a column. Your only option is to retrieve the data, parse it yourself for the desired portions, and sort on those in your Macintosh application.

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Tech Info Library Article Number:8071



# Tech Info Library

## MacDFT: File Transfer AID

Revised: 8/29/91  
Security: Everyone

MacDFT: File Transfer AID

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The installation instructions for MacDFT refer to a "file transfer AID" that has be enabled. I can't find this in any of the configuration options for MacDFT.

DISCUSSION -----

The "file transfer AID" is found on a 3174 controller and needs to be enabled for you to do file transfer. To enable this, set option 125, bit 6 to 1.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8072



# Tech Info Library

## MacDFT: When the CDEV Does Not Appear

Revised: 8/29/91  
Security: Everyone

MacDFT: When the CDEV Does Not Appear

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to configure MacDFT, but the CDEV does not appear in the Control Panel.

DISCUSSION -----

The CDEV appears only if one of the three supported hardware platforms is installed in the machine.

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Tech Info Library Article Number:8073



# Tech Info Library

## System 7: Troubleshooting Compatibility Checker Problems

Revised: 9/21/92  
Security: Everyone

System 7: Troubleshooting Compatibility Checker Problems

Article Created: 2 August 1991

### Article Change History

-----  
09/14/92 - REVISED  
• For accuracy.

### TOPIC -----

This article tells what to do if the Compatibility Checker will not launch, or if it fails before completing the check. Also included is a table with the correct versions of HyperCard to use with various system software versions.

### DISCUSSION -----

#### Procedures for System Software 6.0.5 or Later

- 
- System 6.0.5 requires HyperCard 1.2.5 or higher; make sure you have the right version.
  - Start from the System 7 Disk Tools disk and run Disk First Aid, then try Compatibility Checker again.
  - Copy the HyperCard application and Home stack from the System 7 HyperCard disk and the Compatibility Checker stack from the "Before You Install" disk to your hard drive. Now try running the Compatibility Checker from the hard drive.
  - If the Compatibility Checker still won't launch, there may be a problem with the current System 6 software. Start up with the System 6 System Tools disk or the version 6.0.7 System Startup disk and install the operating system with Installer.

- Back up your hard disk, start from the Install 1 disk and install System 7 first. After the installation is complete, restart the computer with the shift key down to temporarily disable all system extensions.

#### Procedures for System Software 6.0.4 or Earlier

-----

- Make sure you are using the correct version of HyperCard. See the Operating System/HyperCard Requirements section of this article to find the HyperCard version you need.
- You must upgrade to System 7 before using the Compatibility Checker if:
  - You don't have the correct version of HyperCard on your hard disk and can't locate it on a floppy disk.
  - You are using a version of the system software earlier than 4.1.

There are more instructions for this procedure on page 11 of the "How to Install System 7" manual, included with System 7. After the installation, restart the computer while pressing the shift key to temporarily disable all system extensions.

#### Operating System/HyperCard Requirements

-----

| System Version | Recommended HyperCard Versions |
|----------------|--------------------------------|
| -----          | -----                          |
| 7.0            | 2.1 or later                   |
| 6.0.5 - 6.0.7  | 1.2.5, 2.0 or later            |
| 6.0.4          | 1.2.5                          |
| 4.1 - 6.0.3    | 1.2.2                          |
| Prior to 4.1   | n/a                            |

For information about Compatibility Checker error messages, search under "System 7" and "Compatibility Checker".

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Tech Info Library Article Number:8075





# Tech Info Library

## System 7.x: Compatibility Checker Error Messages (11/93)

Revised: 11/17/93  
Security: Everyone

System 7.x: Compatibility Checker Error Messages (11/93)

Article Created: 12 August 1991  
Article Reviewed/Updated: 17 November 1993

TOPIC -----

This article tells you what to do when the Compatibility Checker displays these error messages.

DISCUSSION -----

Since the Compatibility Checker was made into an application with version 2.0, which comes with System Software 7.1, and it's newer version 7.1.1, which comes with System 7 Pro, you no longer receive HyperCard error messages.

If you are using the HyperCard based Compatibility Checker that comes with System 7.0, the following information lists common error messages:

- Error: "New file format requires a new version of HyperCard."

After you convert the Compatibility Checker stack to HyperCard 2.0 format, you CANNOT run it under earlier versions of HyperCard. This converted stack needs system software 6.0.5 or later, and HyperCard 2.0 or later. If you don't have the required software, follow these steps:

- 1) Copy the HyperCard application and Home stack from the System 7 "HyperCard" disk, and the Compatibility Checker from the "Before You Install" disk to your hard disk.
- 2) Start the Macintosh with the System 7 "Disk Tools" disk.
- 3) Double click on the Compatibility Checker. Because the Compatibility Checker can check for compatible INITs and CDEVs only in the System Folder of the startup disk, it won't check the System Folder on your hard disk. But you can still check the applications on your hard disk.

- Error: "This stack has not been converted. It must be converted before it can be modified."

Manually copy the Compatibility Checker stack to the hard disk before launching it.

- Error: "You need an additional 193K of space on 'Before You Install System 7:Compatibility Checker 1.0' to use Compatibility Checker"

The Compatibility Checker displays this message when running from an unlocked floppy disk. The only option is to quit, lock the floppy disk, and try again.

For more Compatibility Checker troubleshooting information, search under "System 7: Troubleshooting Compatibility Checker Problems".

Article Change History:

14 Sep 1992 - Reviewed for technical accuracy.

17 Nov 1993 - Updated with Compatibility Checker v2.0 and v7.1.1

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Tech Info Library Article Number:8076



# Tech Info Library

## System 7: Corrupted Suitcase and/or System File (11/94)

Revised: 11/10/94  
Security: Everyone

System 7: Corrupted Suitcase and/or System File (11/94)

=====

Article Created: 5 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

I have a corrupted suitcase and/or System file. How can I retrieve my fonts or sounds?

DISCUSSION -----

Unfortunately, we have no recommended fix. While we don't recommend it, as a last resort you may want to take the following steps:

- 1) Start from the disk tools disk.
- 2) Open the System Folder on your hard disk.
- 3) Rename your System file.
- 4) Throw the Finder in the Trash.
- 5) Empty the Trash.
- 6) Reinstall system software 7.0.
- 7) Restart from the hard disk
- 8) Open the renamed System file with Font/DA mover 4.1, holding down the option key.
- 9) Resave the fonts and sounds into new suitcases.
- 10) One-by-one, open up the fonts in System 7 by double-clicking on the suitcase, and then open the document inside that suitcase. Do not use Font/DA mover 4.1 to do this.

A bad font or sound will either cause a system crash or it won't open.

Do not reinstall the corrupted font or sound in the System Folder.  
Use the original provided by the vendor.

Article Change History:

10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8077



# Tech Info Library

## System 7: MS Mail Send Note Window Doesn't Close

Revised: 6/30/92  
Security: Everyone

System 7: MS Mail "Send Note" Window Doesn't Close

=====

Article Created: 19 August 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

TOPIC -----

My MS Mail "Send Note" window does not close when I click the close box.  
I have MS Mail, Suitcase II, and DAL extensions loaded.

DISCUSSION -----

To correct this problem, change the loading order of the extensions, so  
that DAL loads after MS Mail and Suitcase II. Another alternative would  
be to remove the DAL extension from the System Folder, if it's not needed.

This may no longer be a problem with DAL 1.3 or greater, System 7 w/  
Tune-up, and/or MS Mail 3.0.

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Tech Info Library Article Number:8080



# Tech Info Library

## System 7: Error Type -192 Appears when Removing Fonts

Revised: 8/23/91  
Security: Everyone

System 7: Error Type -192 Appears when Removing Fonts

=====

Article Created: 19 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

While trying to remove fonts from the System suitcase, a dialog box appears saying that the system is preparing to move them. It also shows the number of fonts. Then this error message appears: "The command could not be completed because a type -192 error occurred."

DISCUSSION -----

This error message is being generated, because you have a SAM (Symantec Anti Virus for the Macintosh) version earlier than 3.0 installed. This version of SAM recognizes that the System file is being altered, but doesn't know why. Just upgrade to the latest version.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8081



# Tech Info Library

## System 7: GemStart 030 Accelerator Ctrl. Panel Upgrade (10/94)

Revised: 10/28/94  
Security: Everyone

System 7: GemStart 030 Accelerator Ctrl. Panel Upgrade (10/94)

Article Created: 19 August 1991  
Article Reviewed/Updated: 28 October 1994

### TOPIC -----

I have a Macintosh Plus with a GemStart 030 Accelerator installed. When I open the Users & Groups control panel and then open a user icon, the window freezes. I cannot move, make changes to, or close the window, but I can access the menu bar.

Also, whenever I get a system error, I see only the upper portion of the dialog box. The lower portion isn't visible.

### DISCUSSION -----

The GemStart 030 Accelerator control panel version 1.3.3 is neither System 7 nor AppleTalk Phase 2 compatible and, therefore, may cause file-sharing and printing problems. To prevent the problem with the missing portion of the dialog box, try turning off the GemStart "Copy ROM into RAM" option.

There are two workarounds to this problem:

- MicroMac Technology, Inc. reports that GemStart version 2.03 or later is fully compatible with version 7.0 and AppleTalk Phase 2. Update the control panel with this version, which is a free upgrade.
- Until you get the update, remove the GemStart control panel from the Control Panels folder and restart the machine.

For more information, search on MicroMac Technology, Inc.

### Article Change History

-----  
28 Oct 1994 - Changed company as product changed hands.

02 Sep 1992 - Updated to provide contact information.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8082





# Tech Info Library

## System 7: SideKick 2.0 Is Not Being Updated for System 7

Revised: 9/3/92  
Security: Everyone

System 7: SideKick 2.0 Is Not Being Updated for System 7

=====

Article Created: 19 August 1991

### Article Change History

-----

09/02/92 - UPDATED

- To provide accurate contact information.

### TOPIC -----

SideKick 2.0 crashes with a bus error when I try to open a name in the address book.

### DISCUSSION -----

When running SideKick, turn off 32-bit addressing, and this feature will work.

Note that Borland International Technical Support said that SideKick 2.0 (which is not being updated) should not be used with any system software later than version 6.0.3. Otherwise, data could be lost or the machine may crash. The information can be exported to a text file and used with other programs.

For details, contact Borland Technical Support; search on Borland International for contact information.

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Tech Info Library Article Number:8083



# Tech Info Library

## System 7: Compatibility Checker 1.0 Thinks Numeric HD Name Is ID

Revised: 9/21/92  
Security: Everyone

System 7: Compatibility Checker 1.0 Thinks Numeric HD Name Is ID

=====

Article Created: 19 August 1991

### Article Change History

-----

09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Compatibility Checker 1.0 doesn't run properly on a hard drive that has only numeric characters as the volume name.

### DISCUSSION -----

This is a known problem. This is a HyperCard limitation and cannot be fixed through Compatibility Checker itself. The program thinks that the numeric string, used as a hard-drive name, is a HyperCard button ID rather than a volume name.

The workaround is to rename the hard drive with a non-numeric name before running the Compatibility Checker.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8084



# Tech Info Library

## System 7: Purpose of Notification Manager

Revised: 8/18/92  
Security: Everyone

System 7: Purpose of Notification Manager

=====

Article Created: 19 August 1991

### Article Change History

-----

08/18/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Sometimes a diamond appears next to an application in the Application menu that is running in the background. What does the diamond signify?

### DISCUSSION -----

The diamond next to a running application in the Application menu indicates that the program has a message or an alert to display. The Notification Manager lets processes running in the background notify the user of messages or alerts without disrupting the process running in the foreground.

An example of an application that uses the Notification Manager is PrintMonitor. Rather than PrintMonitor taking control of the screen and becoming the active application, PrintMonitor alternates its icon with the Apple icon in the menu bar, when it requires the user's attention. In addition, a small diamond is placed next to the application name in the Application menu.

The Notification Manager provides three alert levels:

- Polite: A blinking icon appears in the menu bar.
- Audible: The system beeps once.
- Alert Box: A dialog appears that the user must acknowledge.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8085



# Tech Info Library

## Apple IIe Card: Software Version 2.0.x Features & Changes 5/94

Revised: 5/31/94  
Security: Everyone

Apple IIe Card: Software Version 2.0.x Features & Changes 5/94

Article Created: 15 August 1991  
Article Reviewed/Updated: 31 May 1994

TOPIC -----

This article describes the new features and benefits of the Apple IIe Card Version 2.0.x software.

DISCUSSION -----

Version 2.0.x software has added many new features to the Apple IIe Card for the Macintosh LC. Here are the highlights:

The Macintosh LC IIe Card works in:

- Macintosh LC, LC II, LC III, LC 520
- Performa 400, 405, 410, 430, 450, 460, 466, 467, 550
- Macintosh Color Classic
- any future model that has an LC slot or LC-compatible slot.

To use the Apple IIe Card on a Macintosh LC II, Macintosh LC III, or Performa 400 series running System 7.1 or System 7.1P, you need version 2.2.1 of the Apple IIe Card software. You should upgrade to version 2.2.1 ONLY if you are using your Macintosh LC II with System 7.1. You can use the Apple IIe Card software version 2.2 with the original Macintosh LC, but it's not required.

### System 7 Compatibility

Version 2.0 of the Apple IIe Card software is not compatible with System 7.0. Version 2.1 is compatible with both System 6.0.8 and System 7.0.1. The Macintosh LC II requires version 2.1 of the Apple IIe Card software. Apple recommends that users use 2.1 only if they need System 7 or Macintosh LC II compatibility.

Hard Disk Support

-----

- Apple IIe files and programs can be stored on the Macintosh hard disk.
- Apple IIe ProDOS files and disks can be seen and manipulated on the Macintosh desktop.
- Apple IIe files and programs can be opened by double-clicking their icons.
- Apple IIe files can be moved, copied, renamed, and trashed in the usual Macintosh ways.

#### File Server Support

-----

If a Macintosh LC has an Apple IIe Card installed, you can connect to file servers that contain Apple IIe files and programs.

- When connected to a file server over a network, you can use AppleShare Workstation software to connect to the file server.
- Starting up from a file server (sometimes called "network booting") is much faster than it was using the original Apple IIe.

#### MultiFinder Support

-----

You can run the Apple IIe Card simultaneously with Macintosh programs, switching between them without quitting either.

#### Option Panel Changes

-----

The Option Panel works in the same way. However, many improvements have been incorporated:

- When the Option Panel is open, the menu bar can be used to access desk accessories and, if running MultiFinder, to switch to other programs.
- The Option Panel is in a movable window.
- A new combination keystroke can be assigned to open the Option Panel (in addition to using Control-X-Esc).
- The Auxiliary Slot Memory Card option in the General Controls panel has been removed. To expand the amount of memory, use the Memory Expansion Card.
- There are two new ways to limit access to the Apple IIe Prefs file:
  - The Get Info command in the Macintosh Finder can be used to lock the file to prevent any changes.
  - The file can be hidden by dragging it to the System Folder to prevent anyone from accidentally trashing it.
- The General Controls panel has been rearranged.
- The Mouse panel has two additional options to make the mouse even more sensitive to your movements.

#### Card and Slot Changes

-----

- An AppleShare Card has been added.
- A Printer Card has been added. Use this card to connect the printer to your computer either directly or over a network.
- The Network Printer Card has been removed.
- The Printer Port and the Modem Port cards both have been renamed Serial Cards. (Note that these two Serial Cards should not be used for printers; use the Printer Card instead.)

- The Serial Cards have special settings for both Apple modems.

#### Enhanced Printer Support

-----

You can print to most Macintosh-compatible printers--whether the printer is connected directly or on a network. Also, you can set up and select Apple IIe printers using simple Macintosh methods.

#### Printing Changes

-----

Once the cards, slots, and printing software have been set up, Apple IIe files are printed in much the same way as with the original software. However, the setup method has changed significantly. In the earlier version of the Apple IIe Card software, the Network Printing Card or a Super Serial Card was used. In version 2.0, the Printer Card and a Macintosh desk accessory called Chooser are used. Specific printing changes include:

- The Network Printing Card has been removed from the Option Panel.
- The Printer Card should be used for all printers, whether the printer is connected to your computer directly or over a network. The Super Serial Cards should not be used for printers.
- Regardless of the printer, when using the Printer Card, the Apple IIe program should treat the printer as if it is an ImageWriter II.
- The new printing system supports all Apple printers.
- The Macintosh Chooser desk accessory is used to select the printer.

#### Saving and Printing Apple IIe Screens

-----

- Several menu commands can be used in the Option Panel to save, copy, print, and display Apple IIe screens.

#### Support Information Services

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Tech Info Library Article Number:8086



# Tech Info Library

## System 7: Installing AppleShare without Installing File Sharing

Revised: 9/21/92  
Security: Everyone

System 7: Installing AppleShare without Installing File Sharing

=====

Article Created: 16 August 1991

### Article Change History

-----

09/14/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I install AppleShare software on my Macintosh without installing the File Sharing software at the same time?

### DISCUSSION -----

To install AppleShare software without installing the File Sharing software, use the Installer's "Customize" option and select either "System Software for Any Macintosh" or "System Software for [your particular Macintosh model]."

Using the Installer's "Easy" option installs both AppleShare and File Sharing software.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8088





# Tech Info Library

## System 7: Installing on Macintosh Portable RAM Disk

Revised: 7/29/92  
Security: Everyone

System 7: Installing on Macintosh Portable RAM Disk

=====

Article Created: 19 August 1991

### Article Change History

-----

07/29/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I use the RAM Disk on my Macintosh Portable to install System 7?

### DISCUSSION -----

Yes. The Macintosh Portable let you create and use a RAM disk. You can install System 7 on a RAM Disk for faster performance and less hard disk access, which can extend the life of the battery.

To create a RAM disk on the Macintosh Portable:

- 1) Select the Portable control panel from the Control Panels folder.
- 2) Click the box next to "RAM Disk Size" and select the size. If the size you want is not listed, select "other" from the menu and choose the desired size. Note that a minimal System 7 install for a Macintosh Portable is about 971K.

A dialog box appears telling you that the new RAM disk will be created when the system is restarted.

- 3) After closing the control panel, select Restart from the Special menu.

To make the RAM disk the Startup disk with a System Folder:

- 1) Run the Installer program as you would with any other volume.
- 2) When the installation process is finished, open the Control Panels folder and choose the Startup Device control panel.
- 3) Click the RAM disk to use as your startup volume.
- 4) After closing the control panel, select Restart from the Special menu.

Concerned about losing the information on a RAM disk? There are only two ways to erase a RAM disk on the Macintosh Portable:

- Remove all files from the RAM disk and select "none" from the "RAM Disk Size" pop-up menu in the Portable control panel.
- Remove both batteries from the Macintosh Portable.

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Tech Info Library Article Number:8090



# Tech Info Library

## Macintosh: How to Slow It Down

Revised: 7/2/92  
Security: Everyone

Macintosh: How to Slow It Down

=====

Article Created: 3 June 1991  
Article Last Reviewed: 2 June 1992  
Article Last Updated: 2 June 1992

TOPIC -----

I am trying to use a Macintosh SE/30 running SoftPC, so I can download from a DOS device directly into the SE/30 through a port. My problem is that the SE/30 is going so fast that it is not reading the information I am trying to dump. Is there some way I can slow it down?

DISCUSSION -----

If you're using System 6, try launching MultiFinder and running one or more applications in the background. This should slow down processing somewhat. In System 7, just launch some applications. Turning on file sharing will also slow down processing.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8094



# Tech Info Library

## AppleShare File Server: Forcing Applications to Run Concurrently

Revised: 9/6/91  
Security: Everyone

AppleShare File Server: Forcing Applications to Run Concurrently

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I tried to install a program on my AppleShare server to run concurrently. I followed the instructions (which basically were to copy it to the server folder and then restart) but cannot get it to show up on the file menu. The program is Netway 3287, which routes CMS printing to the LaserWriter Any hints?

DISCUSSION -----

It's possible to force an application to run concurrently with the AppleShare File Server, but if the application isn't already set up that way, you may run into problems. Contact CMS for the details. For contact information, search the Tech Info Library under "CMS".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8095



# Tech Info Library

## AppleTalk: Internet Router Phase I vs Phase II Fix

Revised: 9/6/91  
Security: Everyone

AppleTalk: Internet Router Phase I vs Phase II Fix

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We are running an AppleTalk Phase I network with six zones connected via a Banyan Vines server to an Ethernet network with a single zone. One AppleTalk zone is connected via a Hayes Interbridge to another AppleTalk network in another location. The problem is that the AppleTalk internet router won't cross the Hayes internet bridge to the AppleTalk network at the remote site. My goal is to run Microsoft QuickMail with Banyan's Quick Mail through the Hayes internet bridge to my remote site. If the Internet Router is not compatible with the Hayes internet bridge, then I must find something else.

DISCUSSION -----

You probably have an AppleTalk Phase I versus Phase II problem. Most Hayes Interbridges are Phase I devices, while an unaltered Internet Router is Phase II. An "upgrade utility" -- an INIT -- comes with the Internet Router. Once installed in the System Folder of the router CPU, the INIT lets the Router pass Phase I packets. As a short-term workaround, you can install this to get up and running.

Due to the complexity of the network, we advise upgrading all devices to AppleTalk Phase II. With the zones and routers you mentioned, the Phase II protocols will be more efficient. Usually, this upgrade can be done through software. The Interbridge is the exception: it requires a ROM upgrade.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8096



# Tech Info Library

## Apple II: Conflict between Versions of ProDOS and Backup II

Revised: 9/6/91  
Security: Everyone

Apple II: Conflict between Versions of ProDOS and Backup II

=====

Article Created: 4 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I backed up my hard disk with Backup II version 1.01, and the drive went down (total loss of data). While trying to restore from the backup I get through 13 of 34 disks, and then I get a DATE/TIME STAMP DO NOT MATCH error. I have looked for the date and time stamp bytes on the disks to no avail.

Can I fix Backup II to not look for a DATE/TIME STAMP? Which bytes should I look for on the bad disks? I have looked at the information on the disks in question and the data is there.

DISCUSSION -----

The actual problem may be with your versions of ProDOS and Backup II. Specifically, versions of Backup II before 1.1.1 are not compatible with any ProDOS version greater than 1.1.1. If your Backup II and ProDOS are incompatible, you have two options:

- Use Backup II v1.1.1, which will read your backup disks
- Downgrade ProDOS to 1.1.1.

The Date/Time stamps for a ProDOS volume reside in bytes \$1C-\$1F of block 2. Matching these against previous volumes may solve the problem.

To help you find block 2, here is a good formula for converting ProDOS blocks to DOS 3.3 sectors:

Block = (8 \* Track) + SectorOffset

|                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sector:        | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| SectorOffset:  | 0 | 7 | 6 | 6 | 5 | 5 | 4 | 4 | 3 | 3 | 2 | 2 | 1 | 1 | 0 | 7 |
| Half of Block: | 1 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 2 |

It looks like the bytes you need are on Track 0, Sector 11 (first half of block

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8097



# Tech Info Library

## Macintosh Classic, Classic II: Screen Brightness Adjustment

Revised: 5/21/92  
Security: Everyone

Macintosh Classic, Classic II: Screen Brightness Adjustment

=====

Article Created: 4 June 1991  
Article Last Reviewed: 18 May 1992  
Article Last Updated: 18 May 1992

TOPIC -----

I saw that the Macintosh Classic and Classic II's screen brightness is adjusted via System software. If I use System 6.0.3 in my Classic or Classic II, how can I control the screen brightness?

DISCUSSION -----

The Macintosh Classic is incompatible with any System Software version earlier than 6.0.7. Even if there were a way to use the Brightness CDEV with System 6.0.3, the Classic would not start up. The Macintosh Classic II needs to use System 7.01 in order to function correctly.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8099





# Tech Info Library

## Macintosh Classic: Internal Drive Questions

Revised: 11/29/95  
Security: Everyone

Macintosh Classic: Internal Drive Questions

=====

Article Created: 4 June 1991  
Article Reviewed/Updated: 29 November 1995

TOPIC -----

- 1) What is the drive seek time of the Macintosh Classic?
- 2) What is the initial interleaving?
- 3) Can dealers install third-party drives without voiding the computer's warranty?
- 4) Who makes the drives, and does Apple have multiple sources?

DISCUSSION -----

- 1) Question: What is the drive seek time of the Macintosh Classic?

Answer: The seek time for all Apple 1/3-height drives is 25 milliseconds.

- 2) Question: What is the initial interleaving?

Answer: The interleaving is based on how fast the circuits can keep up with the data flow. The Classic has an interleave ratio 1:1.

- 3) Question: Can dealers install third-party drives without voiding the computer's warranty?

Answer: As long as you make no modifications to the Classic (the dealer must use Apple's mounting scheme, not drill new holes, and the like) then yes.

- 4) Question: Who makes the drives, and does Apple have multiple sources?

Answer: Apple cannot comment on drive vendors; vendors may change from model to model. The guarantee is, however, that any hard drive will have an average access time of 25 milliseconds.

Article Change History:

29 Nov 1995 - Updated format.

16 Oct 1992 - Corrected the interleave ratio.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8100



# Tech Info Library

## Macintosh: Error 51 Unserviceable Slot Interrupt

Revised: 9/9/91  
Security: Everyone

Macintosh: Error 51 "Unserviceable Slot Interrupt"

=====

Article Created: 4 June 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated:

TOPIC -----

What is error ID=51? I get a system bomb when I try to log on to my Ethernet network.

DISCUSSION -----

That error is: "Unserviceable slot interrupt."

In general, this type of error is caused by a corrupt operating system, Ethernet driver, or a software incompatibility between any of these and INITs or CDEVs. Try trashing and re-installing the operating system and Ethernet drivers. If that fails to solve the problem, try removing all unnecessary third-party INITs and CDEVs. If the system works at this point, re-install them one at a time and restart each time to find the culprit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8101



# Tech Info Library

## Apple IIGS: \$8002 Error

Revised: 9/9/91  
Security: Everyone

Apple IIGS: \$8002 Error

=====

Article Created: 4 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've been getting the "\$8002 error" when I drag anything over to my second partition under GS/OS 5.0.2. After pulling out other cards, I'm left with my high-speed SCSI card and my Applied Engineering memory expansion board. This is on an older GS "01" board.

DISCUSSION -----

There are two possibilities.

The first, less likely, possibility is that there is a soft error somewhere on your hard drive, and it's preventing GS/OS (actually, the SCSI driver) from reading some necessary information from the second partition. If re-installing GS/OS and the High-Speed SCSI drivers doesn't solve the problem, you probably will have to reformat the hard drive.

The second is slightly more likely: Some Applied Engineering cards use the DMA channel to move information. The IIGS has only one DMA channel, and the High-Speed SCSI card may be fighting the AE card for access to the channel.

Here are two things to try: Either turn off the DMA access on the High-Speed SCSI (DIP switch 1) or remove the AE card completely from the system and then test. I believe that Applied Engineering has an update for some of their memory cards to deal with this situation. If you find that this is the problem, try contacting them for a possible fix.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8102



# Tech Info Library

## Apple IIGS: System Disk Tutorial Folder Is Not Functional

Revised: 9/9/91  
Security: Everyone

Apple IIGS: System Disk "Tutorial" Folder Is Not Functional

=====

Article Created: 4 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I access the Tutorial that I see on the Apple IIGS System disk?

DISCUSSION -----

That folder is for show. It (and the folders and files within it) is there only to illustrate how folders work. Remove it if you want. Note: the "GS/OS System Disk Owner's Guide" does not mention the Tutorial folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8104



# Tech Info Library

## Macintosh II: Upgrade Kits (Discontinued)

Revised: 9/15/95  
Security: Everyone

Macintosh II: Upgrade Kits (Discontinued)

=====  
Article Created: 4 June 1991  
Article Reviewed/Updated: 15 September 1995

TOPIC -----

I want to upgrade my Macintosh II to a Macintosh IIfx. What is the correct upgrade part number? Also, when upgrading to a 1.4MB internal drive, must I install a new ROM kit at the same time? Or is the kit included with the IIfx upgrade?

DISCUSSION -----

Apple has discontinued the Macintosh IIfx Logic Board Upgrade Kit.

As of June 1992, the only logic board upgrade offered for the Macintosh II is the Macintosh IIfx Logic Board Upgrade Kit, Finished Goods part number M0375LL/A.

Once you have upgraded, you needn't buy a complete FDHD (SuperDrive) Upgrade Kit. You need only the internal drive (Finished Goods part number M0247). The FDHD/SuperDrive upgrade has been discontinued.

Article Change History:  
15 Sep 1995 - Revised to show discontinued upgrade.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8105



# Tech Info Library

## Macintosh Plus, SE, and Classic: Speed Comparisons

Revised: 7/2/92  
Security: Everyone

Macintosh Plus, SE, and Classic: Speed Comparisons

=====

Article Created: 4 June 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

A Macintosh SE seems noticeably faster than a Macintosh Plus. Yet, their spec sheets show the same processor and MHz speeds.

### Macintosh SE Spec Sheet

Processor: MC68000, 32-bit internal architecture, 7.8336 MHz clock frequency

### Macintosh Plus Spec Sheet

Processor: MC68000  
1. 32-bit architecture  
2. 8 (7.8336) MHz frequency

### Macintosh Classic Spec Sheet

- Microprocessor: 8 MHz MC68000 CPU  
- Internal architecture: 32-bit

Is MHz a reliable measure of apparent speed? How does the Classic compare with each of them?

DISCUSSION -----

The clock speed of the computer is not always the overriding factor in performance. For example, a hideously-complicated program can takes an hour to draw a picture, but a better-written program can do it in ten minutes. Here, it depends on how compact the code is, not the processor speed.

The clock speeds are identical, but the software burned into ROM is different, causing the three systems to run at slightly different speeds.

The Macintosh SE is possibly 15 percent faster than the Plus, and the SE/30 is four times faster. In any event, the Classic is faster than the Plus by a maximum of 25 percent. That assumes that you're doing only those functions that have been optimized in the Classic. Usually, you'll see a slight increase in performance, and in some you'll see no difference. It all depends on what you're doing.

There are hundreds of things that influence performance. At the bit level, all three machines process a single processor instruction in exactly the same time. Things like processor caching will decrease the time it takes for that instruction to be loaded from memory, so performance increases a little there. Taking from the example above, if a routine is more compact, then it will do its job in fewer instructions. This means the system does the function faster. All this goes into determining the phrase, "...up to 25 percent faster than the Macintosh Plus."

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8106





# Tech Info Library

## AppleShare Print Server: Correcting False Usernames

Revised: 2/12/92  
Security: Everyone

AppleShare Print Server: Correcting False Usernames

=====

Article Created: 4 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We are using AppleShare Print Server as a server for both IBM and Macintosh computers.

But, there are occasions when an IBM user prints, and the statistics for that print job don't appear. That is, the username comes up as "Untitled", and the number of pages isn't correct. What's going on? We are using Apple and DayStar Digital cards in the IBMs. Neither card seems to make a difference.

We tried turning the server off and printing a job from the PC and then one from the Macintosh. Here's what we got: We tried using both Microsoft Word and WordPerfect (on the PC) and WriteNow and MS Word (on the Macintosh). The dialog box we got alternated between "Waiting for LaserWriter", "preparing data", and "printing" until it actually started printing the Macintosh document. There was no mention of the user or document that we were waiting for. So, it appears that the drivers are not doing what they should be.

Another server problem is that there have been occasions when a person prints a paper (on a Macintosh) and the title and username are not correct, but seem to be substituted from a previous job. For example, user "James" prints document "Thesis", and the cover sheet is correct. Then user "Sue" prints document "Junk" and the cover sheet (and name on the server log) is "James". We have replaced the server software already, and this has fixed the problem for a few days, but then it re-appears.

DISCUSSION -----

Both of these problems could be related to a single cause. Following the steps below may solve both problems:

- 1) "Uncapture" any captured printers.
- 2) Restart the server with a diskette (if this server is also an AppleShare File Server, use the Admin diskette).
- 3) Inside the ServerFolder, locate the captured printers' folders and trash them. Their names will be in the format:

Q\_<printername>\_\*

where \* could be a zone name.

- 4) Restart the server again from diskette, rebuilding the Desktop on the hard drive.
- 5) If this is an AppleShare File Server, run the Admin program from the floppy to re-prepare the hard drive and quit immediately.
- 6) Restart as usual, and recapture the printers.

This should solve any type of directory problems the server may be having, and force the Print Server to create new spool folders.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8108



# Tech Info Library

## Macintosh: SCSI Interleave Factor

Revised: 9/9/91  
Security: Everyone

Macintosh: SCSI Interleave Factor

=====

Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the SCSI interleave factor for the Macintosh Classic, LC, and IIsi?

DISCUSSION -----

The interleave factor for the Classic, LC and IIsi are all 1:1 because of improved SCSI circuitry.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8110



# Tech Info Library

## Macintosh: Two-Page Display and Built-in Video

Revised: 6/1/92  
Security: Everyone

Macintosh: Two-Page Display and Built-in Video

=====

Article Created: 5 June 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated: 20 May 1992

TOPIC -----

Why doesn't the built-in video of the Macintosh IIci, IIsi, and Macintosh LC support the Apple Two-Page Display? Couldn't you just allocate more RAM to video?

DISCUSSION -----

With the Two-Page Display and built-in video, the issue was not the amount of RAM needed to drive the display, but the amount of "cycle stealing" that would occur. The degree of performance degradation for the microprocessor was unacceptable, so Apple removed the option entirely.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8111



# Tech Info Library

## Macintosh XL: Unwanted Shutdown

Revised: 9/9/91  
Security: Everyone

Macintosh XL: Unwanted Shutdown

=====

Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh XL intermittently dims its screen and shuts off. While the screen dims, the HD still runs. The dim effect is not a normal tube shut-down. Rather, it is the XL dimming the screen just as it does when you normally choose Shut Down from the Finder's Special menu.

The problem is not application-specific and does not seem to follow any type of schedule. It seems random.

DISCUSSION -----

As the intermittent shutdown procedure is the same as a forced-shutdown (via the menu), and that procedure is stored in software rather than firmware, you are looking at a software or software-related cause. On the hardware side, you could have damaged RAM or motherboard, but it's not very likely. You would see many more problems than this if you had a failing component.

We suspect either MacWorks Plus, system software, or (possibly) an INIT or CDEV. Something is either corrupted or conflicting with another piece of software.

Try reloading MacWorks Plus and reinstalling the operating system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8112



# Tech Info Library

## Holaday Industries

Revised: 7/9/93  
Security: Everyone

Holaday Industries

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Article Created: 06/03/91  
Article Reviewed: 07/09/93  
Article Updated: 04/03/92

Holaday Industries

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14825 Martin Drive  
Eden Prairie, MN 55344

612-934-4920

612-934-3604 Fax

Company Profile:

Hardware, specializing in instruments such as the HI3600-02 ELF/Power  
Frequency EMF Survey Meter.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8113



# Tech Info Library

## Ad-Vance Magnetics

Revised: 7/2/93  
Security: Everyone

Ad-Vance Magnetics

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Article Created: 06/05/91  
Article Reviewed: 07/02/93  
Article Updated:

Ad-Vance Magnetics  
-----

625 Monroe Street  
Rochester, IN 46975

219-223-2368

Fax: 219-223-2524

Company Profile:  
Specializing in magnetic monitor shields.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8114



# Tech Info Library

## Amuneal Manufacturing Corporation

Revised: 7/2/93  
Security: Everyone

Amuneal Manufacturing Corporation

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Article Created: 06/05/91  
Article Reviewed: 07/02/93  
Article Updated:

Amuneal Manufacturing Corporation

-----

4737 Darrah Street  
Philadelphia, PA 19124

215-535-3000

215-743-1715 Fax

Company Profile:  
Specializing in magnetic monitor shields.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8115





# Tech Info Library

## Communication Intelligence Corporation

Revised: 7/7/93  
Security: Everyone

Communication Intelligence Corporation

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Article Created: 06/05/91  
Article Reviewed: 07/07/93  
Article Updated: 12/21/92

Communication Intelligence Corporation

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275 Shoreline Dr.  
6th Floor  
Redwood Shores, CA 94065-1413

415-802-7888

415-802-7777 Fax

Company Profile:  
Specializing in a Kanji handwriting input device for the Macintosh and  
pen-based technology.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8116



# Tech Info Library

## Cut Craft, Inc.

Revised: 7/7/93  
Security: Everyone

Cut Craft, Inc.

=====

Article Created: 06/05/91  
Article Reviewed: 07/07/93  
Article Updated: 12/01/92

Cut Craft, Inc.  
-----

1501 Northpark Dr.  
Fort Worth, TX 76102

817-332-6151

817-332-3304 Fax

Company Profile:  
Specializing in DMI/RFI shields (not for monitors), insulators, display  
lenses, gaskets, and rubber feet.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8118



# Tech Info Library

## Digital Vision, Inc.

Revised: 7/7/93  
Security: Everyone

Digital Vision, Inc.

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Article Created: 06/04/91  
Article Reviewed: 07/07/93  
Article Updated:

Digital Vision, Inc.

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270 Bridge Street  
Dedham, MA 02026

617-329-5400

617-329-6286 Fax

Company Profile:  
Digital Vision, Inc., specializing in video digitizers for the  
Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8119



# Tech Info Library

## Eagle Magnetic Company, Inc.

Revised: 7/8/93  
Security: Everyone

Eagle Magnetic Company, Inc.

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Article Created: 06/05/91  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Eagle Magnetic Company, Inc.

-----

P.O. Box 24283  
Indianapolis, IN 46224

317-297-1030

317-299-1323 Fax

Company Profile:  
Specializing in magnetic monitor shields.

Article Change History: 07/08/93 Address Information Added

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8120



# Tech Info Library

## Imaging Products

Revised: 7/12/93  
Security: Everyone

Imaging Products

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Article Created: 06/05/91  
Article Reviewed: 07/12/93  
Article Updated: 07/12/93

Imaging Products

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12696 Rockhaven Road  
Chesterland, OH 44026

216-285-2813

216-285-4516 Fax

Company Profile:

Specializing in LaserWriter products, i.e. labels (also custom and diskette labels), post cards, rollodex, no-tear paper, transfer film, index cards, transparency film (clear and color), light opec films, and NCR paper, strip chart recorder pens and paper, XY recorders pens and papers.

Article Change History: 07/12/93 New product information added

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8121



# Tech Info Library

## Optima Technology

Revised: 4/4/97  
Security: Everyone

Optima Technology

=====

Article Created: 4 June 1991  
Article Reviewed/Updated: 4 April 1997

Optima Technology

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17526 Von Karman  
Irvine, CA 92714

714-476-0515

714-476-0613 Fax

Company Profile:  
Hardware, specializing in hard drives for the Macintosh and IBM PC.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8122



# Tech Info Library

## Personal LaserWriter LS: Missing Excel Page Setup Options

Revised: 9/9/91  
Security: Everyone

Personal LaserWriter LS: Missing Excel Page Setup Options

=====

Article Created: 7 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When printing from Excel 2.2 or 3.0, some of the Page Setup options are dimmed and not accessible. Do I have a problem with my Personal LaserWriter LS driver?

DISCUSSION -----

No. Microsoft Technical Support has verified that certain options under Page Setup are not accessible when printing from Excel 2.2 or 3.0 to the Personal LaserWriter LS. The inaccessible options include 75% and 50% under the Size option and the Precision Bitmap Alignment option under Printer Effects. There is no workaround at present.

Microsoft Word and Microsoft Works take full advantage of all of the Personal LaserWriter LS options.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8124



# Tech Info Library

## SynOptics Communications, Inc.

Revised: 7/19/93  
Security: Everyone

SynOptics Communications, Inc.

=====

Article Created: 7 June 1991  
Article Reviewed/Updated: 19 July 1993

SynOptics Communications, Inc.

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4401 Great America Parkway  
P.O. Box 58185  
Santa Clara, CA 95052-8185

Shipping  
4401 Great America Parkway  
Santa Clara, CA 95054

408-988-2400

800-776-6895

Fax: 408-988-5525

Company Profile:  
Specializing in LattisNet, the transceiver system that Apple uses to transmit  
Ethernet over twisted-pair wiring.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8125





# Tech Info Library

## Macintosh: Advantages of System 6.0.5 for Some Products

Revised: 9/9/91  
Security: Everyone

Macintosh: Advantages of System 6.0.5 for Some Products

=====

Article Created: 1 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Not all Macintosh users will upgrade to System Software 7.0, choosing instead to use System Software 6.0.x. For those users, this article describes the advantages of using System Software version 6.0.5 with some Apple products, including some that are compatible with System Software 7.0.

DISCUSSION -----

The Macintosh IIcx and some display cards require system software version 6.0.5 or later. Additionally, system software 6.0.5 may be appropriate for other Macintosh systems in the installed base. System software 6.0.5 transparently coexists in networked environments with Macintosh system software versions 6.0.2, 6.0.3, and 6.0.4.

The following products require system software 6.0.5 or later:

- Macintosh IIcx
- Macintosh Display Card 8•24 and Macintosh Display Card 8•24 GC
- Third-party software or hardware products that say "Requires 6.0.5 or later" on the box.

Apple recommends 6.0.5 (or later) for the following products:

- Macintosh Portable
- Macintosh IIfx
- 32-Bit QuickDraw

Here is a brief description of the changes made in system software 6.0.5 to better support these Apple products.

- Macintosh Portable

System 6.0.5 fixes two problems associated with the Macintosh Portable.

- 1) A communications problem occurs when the Macintosh Portable is connected to serial devices.  
Symptom - The Macintosh Portable loses track of printers and modems after coming out of Sleep mode.
- 2) A power-consumption problem is encountered when the Macintosh Portable is shut down while connected to AppleTalk.  
Symptom - The battery discharges quickly when shut down under these conditions.

- Macintosh IIfx

System 6.0.5 addresses two compatibility problems.

- 1) Control-break characters received through the serial port cause a system crash.
- 2) 32-Bit QuickDraw version 1.2 is unable to use zero-width characters.  
Music programs and accented characters use zero-width characters extensively.

- 32-Bit QuickDraw

System 6.0.5 increases performance and offers additional dithering capabilities as well as support for variable-resolution PICT images.  
(Font information is stored in PICT images.)

For more information about System 7, search the Tech Info Library using the search string "System 7:@"

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8126



# Tech Info Library

## **Aisin World Corporation of America (formerly Aisin USA, Inc.)**

Revised: 7/2/93  
Security: Everyone

Aisin World Corporation of America (formerly Aisin USA, Inc.)

=====

Article Created: 06/05/91  
Article Reviewed: 07/02/93  
Article Updated: 12/04/92

Aisin World Corporation of America  
-----

24330 Garnier Street  
Torrance, CA 90505

310-326-8681

310-533-8271 Fax

### Company Profile:

Formerly Aisin USA, Inc., hardware and software, specializing in a computerized embroidery machine that connects to a Macintosh called POEM system.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8127



# Tech Info Library

## LaserWriter: Labels from Imaging Products

Revised: 9/9/91  
Security: Everyone

LaserWriter: Labels from Imaging Products

=====

Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes LaserWriter labels offered by Imaging Products.

DISCUSSION -----

Imaging Products provides labels for the LaserWriter. Here is a list of some of their products:

- Standard Laser Labels - 33, 24, 20, 14 , or 8 labels per sheet
- Laser Transparency Film - available in clear, blue, yellow, red, and green
- No Tear Laser Paper - 8.5" x 11"
- Custom Laser Labels - self-adhesive for bar coding

The address and phone number for Imaging Products is in a separate article in the Tech Info Library.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8129



# Tech Info Library

## Macintosh: Mac Handwriter for Kanji Input

Revised: 9/23/92  
Security: Everyone

Macintosh: Mac Handwriter for Kanji Input

=====

Article Created: 5 June 1991

### Article Change History

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09/22/92 - REVISED

- To clarify Mac Handwriter is not currently distributed in the U.S.

### TOPIC -----

This article describes the Macintosh input device marketed by Communication Intelligence Corporation.

### DISCUSSION -----

Communication Intelligence Corporation offers a product that lets Macintosh computers read handwritten Chinese and Japanese characters. Currently this product is not distributed in the U.S..

The Mac Handwriter lets computer users give commands or data to Apple's Macintosh computers by writing characters on a small pad. This eliminates the need for a keyboard.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8130



# Tech Info Library

## Monitors: Magnetic Shielding Products

Revised: 9/9/91  
Security: Everyone

Monitors: Magnetic Shielding Products

=====

Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article lists companies that offer magnetic monitor shields.

DISCUSSION -----

Here's a list of companies that sell shields that allow the use of monitors side by side without causing interference:

- Ad-Vance Magnetics, Inc.
- Amuneal Manufacturing
- Bomco
- Cut Craft, Inc.
- Eagle Magnetic Company
- Magnetic Shield Company

You can find the addresses and phone numbers of these companies in separate articles in the Tech Info Library.

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Tech Info Library Article Number:8131



# Tech Info Library

## Macintosh: DiskTwin for Disk Duplexing

Revised: 9/9/91  
Security: Everyone

Macintosh: DiskTwin for Disk Duplexing

=====

Article Created: 5 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article is about DiskTwin, a product sold by Golden Triangle Computers, Inc.

DISCUSSION -----

DiskTwin is a Macintosh software package that works with a NuBus card and a second SCSI bus, to make a copy of the contents of a primary hard drive onto a secondary hard drive. Technically, this operation is known as disk duplexing.

Disk duplexing is a technology widely used in the mainframe and minicomputer world and in large microcomputer networks to ensure continuous operation where users cannot afford to lose any data or experience down time.

Here are the steps required to use DiskTwin:

- 1) Drop the DiskTwin control panel device (CDEV) into your System Folder.
- 2) Place the DiskTwin NuBus card in your Macintosh.
- 3) Attach a drive of the same kind as your primary disk onto the DiskTwin card. For example, if you have an Apple Quantum 80 internal, connect an Apple Quantum 80 external to the DiskTwin card.
- 4) Restart your computer, and select the drive you want to copy. The twin is invisible to the Macintosh desktop so it can't be used accidentally.

When you do need it, you can immediately mount the twin onto the desktop from the DiskTwin control panel.

DiskTwin runs continuously, creating a copy of your primary disk as often as you save to disk. DiskTwin won't slow your system. When your hard disk fails, mount the twin and you're back in business. Should the Macintosh SCSI hardware fail, your DiskTwin SCSI port remains operational.

You can find the address and phone number for Golden Triangle Computers, Inc. in a separate article in the Tech Info Library.

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Tech Info Library Article Number:8132





# Tech Info Library

## System 7: Third-Party Drives and Virtual Memory

Revised: 9/3/91  
Security: Everyone

System 7: Third-Party Drives and Virtual Memory

=====

Article Created: 6 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We update the hard disk drivers for Apple drives if the user is to make use of virtual memory. Do users of third-party hard disks need to update their drivers?

DISCUSSION -----

No. The update corrects something in Apple's SCSI drive. Third-party drives don't need the update unless their manufacturer says they do.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8134



# Tech Info Library

## System 7: Disk Drive Activity Light

Revised: 9/3/91  
Security: Everyone

System 7: Disk Drive Activity Light

=====

Article Created: 6 June 1991

### Article Change History

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08/18/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

When running System 7 without virtual memory and during periods of no user activity, the disk drive becomes active for a few seconds. What causes the disk drive light to flash?

### DISCUSSION -----

The light flashes because the Finder is busy updating. If you'd like this not to happen, turn the file system cache up, and the Finder won't need to update as often.

The disk drive light will also flash when File Sharing is turned on and other people are accessing the disk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8135



# Tech Info Library

## System 7: No Need for HeapFixer and HeapTool Utilities

Revised: 8/18/92  
Security: Everyone

System 7: No Need for HeapFixer and HeapTool Utilities

=====

Article Created: 6 June 1991

### Article Change History

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08/18/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How has memory management changed in System 7 relative to system heap and INITs? Specifically, will utilities like HeapFixer and HeapTool still be necessary for people who are running a lot of INITs?

### DISCUSSION -----

HeapFixer and HeapTool don't do anything in System 7. The system has changed such that these utilities won't be needed. The function HeapFixer and HeapTool perform is done by the new boot code in System 7. The system heap will now dynamically grow as extensions allocate more space.

HeapFixer had value with system software version 6.0.X because INITs would add to the system heap, and the heap filled up. Looking at the system bar in the About box and adjusting the size so that enough space is left over won't work any more.

The system software indicator in System 7 includes a lot more than just the system heap, so it can't be used as an indicator of how much space is currently available. And since the system heap is dynamic in System 7, even during startup, any adjustments made by the HeapFixer and HeapTool utilities will just be overridden by the system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8136



# Tech Info Library

## System 7: Use of Virtual and Physical Memory

Revised: 9/5/91  
Security: Everyone

System 7: Use of Virtual and Physical Memory

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Article Created: 6 June 1991

### Article Change History

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08/20/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

When using System 7, why can systems that are not 32-bit compatible access 13MB of virtual memory, but only 8MB of physical memory?

### DISCUSSION -----

The memory map in a 24-bit system only allows for 8MB of RAM, 6MB NuBus, and 2MB ROM and I/O. Virtual memory will use the allocated memory of a NuBus card that is not in use. If you were to put more physical RAM in a Macintosh II running in 24-bit mode, the system would use only 8MB, and the rest would be ignored.

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Tech Info Library Article Number:8137



# Tech Info Library

## System 7: Rarely Need to Initialize HD Before Installing (5/96)

Revised: 5/27/96  
Security: Everyone

System 7: Rarely Need to Initialize HD Before Installing (5/96)

Article Created: 6 June 1991  
Article Reviewed/Updated: 27 May 1996

TOPIC -----

Do I need to reinitialize my hard disk before installing System 7?

DISCUSSION -----

In most cases, there is no need to reinitialize any hard disk on which you plan to run System 7.0, unless the disk has been damaged in some way.

If you are using a third party hard drive, you should contact the manufacturer to get the suitable driver to update the SCSI driver before installing System 7.

Also, if your Apple drive was updated with an older version of Apple HD SC Setup, your partition size will be smaller, so if you then, update your drivers again with a more recent version of HD SC Setup, you will be told you do not have enough room. If you run into this situation, you will need to reinitialize your hard drive and then install System 7.

If you are planning to run Virtual Memory, use HD SC Setup version 7.0 to update the SCSI driver. This requires that you start up from the Disk Tools floppy disk, choose the target drive, and click on Update. This process takes a second or two to complete, and does not require any reformatting, or reinitializing, of your hard drive.

Note: Be sure to backup your hard drive before you initialize your drive. It is also a good idea to backup before you update to System 7.

### Article Change History:

27 May 1996 - Corrected minor typographical errors.  
30 Oct 1992 - Clarify the use of third party drives and HD SC Setup.

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Tech Info Library Article Number:8138



# Tech Info Library

## System 7: Group Upgrade and Compatibility on Novell NetWare

Revised: 12/11/92  
Security: Everyone

System 7: Group Upgrade and Compatibility on Novell NetWare

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Article Created: 6 June 1991

### Article Change History

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09/15/92 - REVIEWED

- For accuracy.

12/11/92 - REVISED

- Added more compatibility information.

### TOPIC -----

Why does the System 7 group upgrade fail when using Novell NetWare server version 3.11?

### DISCUSSION -----

Version 1.1 of the Migration Guide corrects the Novell NetWare upgrade station problem. With version 1.0 of the Migration Guide, you can't use Novell NetWare servers (both version 2.15 and 386, now called version 3.11) as upgrade stations when performing System 7 group upgrades.

The problem occurs only when the creation time of the System 7 files ends in an odd-numbered second. This is due to the way MS-DOS and the Novell server keep time. They understand only even-numbered seconds. In the released version of System 7, all files have creation times with even-numbered seconds.

Versions of Novell NetWare for the Mac that are compatible with System 7 are:

- Novell NetWare 286 Server, NetWare for the Mac version 2.0 is partially compatible. Version 2.2 is fully compatible.

- Novell NetWare 386 Server, NetWare for the Mac version 3.0.1 or 3.0.1.1.

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Tech Info Library Article Number:8139





# Tech Info Library

## SCSI Termination and External Hard Drives

Revised: 9/6/91  
Security: Everyone

SCSI Termination and External Hard Drives

=====  
Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

I am having some problems with my Apple 160MB hard drive. I have a Macintosh IIci, two monitors, an internal HD, and a SCSI cable (which is about four feet long with one SCSI extender) with a SCSI terminator attached.

When the system is set up without the external 160MB drive, it works fine. But when I attach the drive, the Macintosh IIci won't start up. I've replaced terminators and swapped some SCSI cables. However, if I put an Apple 40MB hard drive in place of the 160MB drive, it works.

DISCUSSION -----

SCSI termination problems are difficult to diagnose. Besides the suggestions below, there are a number of other articles that may be of help by searching under "SCSI" and "termination".

- 1) Make sure the external drive is turned on before the Macintosh is.
- 2) Make sure the SCSI ID on the external drive is not set to zero. It should be between 1 and 6.
- 3) Try the 160MB drive on another machine, preferably without an internal hard disk. If it has problems it could be the cable or the hard disk.
- 4) Swap the cable and the terminator if necessary.

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Tech Info Library Article Number:8140



# Tech Info Library

## AppleTalk Printing: Apple IIe Workstation Card Slot

Revised: 9/6/91  
Security: Everyone

AppleTalk Printing: Apple IIe Workstation Card Slot

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to connect a Macintosh II and an Apple IIe to an ImageWriter II over AppleTalk.

A Workstation card was installed in the Apple IIe, the necessary LocalTalk cables were used, SW-4 was switched for AppleTalk, and AppleTalk was selected in the Chooser. This did not work.

I then installed AppleShare into the Macintosh II. The Macintosh now prints, but the Apple IIe does not. Instead, it gives the message "No boot server -- trying other slots".

What am I doing wrong?

DISCUSSION -----

The Workstation card must be installed in a higher-numbered slot than the disk interface card, otherwise the Apple IIe will try to start up over the network.

- If you WANT the Apple IIe to start up over the network, you must also install the Apple II Setup on the Macintosh II file server. This is a separate disk (AppleShare File Server Apple II Setup Disk). You would also need to copy Chooser.II to the server.
- If you DON'T want the Apple IIe to start up from the server, but rather to print to the ImageWriter II, then move the workstation card to a lower-numbered slot than the disk interface card and boot your workstation disk and run Chooser.II.

One other problem might be that you are running Chooser.II, getting a connection, and then inserting your application disk and restarting. This doesn't work. You have to run Chooser.II from the application disk or launch the application by pathname after running Chooser.II from the workstation disk.

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Tech Info Library Article Number:8142



# Tech Info Library

## EtherTalk: Troubleshooting Slow Performance

Revised: 9/6/91  
Security: Everyone

EtherTalk: Troubleshooting Slow Performance

=====

Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

I am having problems with an EtherTalk card running very slow on my Macintosh. My EtherTalk software is version 2.01.

DISCUSSION -----

The version that you are using should be fine, although there has been a slight upgrade to the driver in the new version, v2.02. This new version is installed by using the Network Products Installer disk and the EtherTalk 2.0 disk.

Make sure the network is properly terminated. Also, try a utility, such as Apple's Inter•Poll to track the network's performance. This will show if an unusual number of packets are getting damaged or lost.

Check software, network (termination, topology, etc.), and the card as well.

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Tech Info Library Article Number:8144



# Tech Info Library

## AppleShare Print Server: Stack underflow Is PostScript Error

Revised: 9/6/91  
Security: Everyone

AppleShare Print Server: "Stack underflow" Is PostScript Error

=====

Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

Are there any conflicts between AppleShare Print Server v2.01 and  
Microsoft Excel for Macintosh v2.2?

I am having difficulty printing Excel spreadsheets to a captured  
LaserWriter. I get no error messages at the workstation, but I get an  
error page with a message about a 'Stack underflow' error and the job  
doesn't print. If I print the document several times (half dozen or so)  
the job finally prints.

DISCUSSION -----

"Stack underflow" is a PostScript error. Adobe's description of the error  
is: "An attempt has been made to remove an object from the operand stack  
when it is empty. This usually occurs because some operator did not have  
all of its required operands on the stack."

There is no way a user can cause this error. The more likely problem is a  
software incompatibility. Excel 2.2 and AppleShare Print Server 2.01 have  
no known problems. To see if the problem is actually related to the Print  
Server, try a bypass print. If the same document works consistently when  
printing directly, assume there is a conflict with Print Server and  
something else.

The problem could be related to the System file on the server. Reinstall  
System 6.0.5 on the server then use the Network Products Installer disk to  
reinstall AppleShare and Print Server. This process ensures that no  
resources in the System file get downgraded in the installation process.

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# Tech Info Library

## Apple's Bar Code Format

Revised: 9/6/91  
Security: Everyone

Apple's Bar Code Format

=====

Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

I'm trying to read the bar codes on the boxes of Apple products. What format does Apple use, and what software must be used to reliably read the bar codes?

DISCUSSION -----

The bar code standard that Apple uses is code 39, a very common code. Apple's bar code software is proprietary, developed for internal use only, and cannot be released to anyone.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8146



# Tech Info Library

## AppleShare: IBM Software Can't be Fully Copy-Protected

Revised: 9/5/91  
Security: Everyone

AppleShare: IBM Software Can't be Fully Copy-Protected

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Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

Is it true that IBM software on AppleShare server cannot be fully copy protected?

I am running an AppleShare file server (v2.01) containing a number of IBM software items. These application files have been marked as "copy protected" using the AppleShare administrator. Logging in from a Macintosh and examining the files with MacTools shows them to have the "protected" bit set. They cannot be dragged to a local Macintosh hard disk; if I try, I get the message "Cannot be duplicated or copied".

However, these items can be copied by IBM users, using normal command-line copy commands! As far as I can determine, there is no way to prevent piracy of any IBM software placed on the AppleShare server.

DISCUSSION -----

AppleShare's copy protection feature was put in as an aid for Macintosh users, and it built on an old feature of the Macintosh file system. MS-DOS is not even aware of our copy protection bits, so there is no way to get a COPY command to respect this level of protection without being extremely intrusive into the operating system (and causing a good chance of incompatibilities with future operating system releases).

We don't know of a way to keep DOS users from copying applications from the server while still having access to run the program.

One solution is to distribute applications to the individual users who need them and use the file server only for data.



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Tech Info Library Article Number:8147



# Tech Info Library

## Apple Serial Numbers are Mostly Random Digits

Revised: 9/5/91  
Security: Everyone

Apple Serial Numbers are Mostly Random Digits

=====

Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

I'm trying to track down the Macintosh model that these model and serial numbers apply to:

M5525 Macintosh IIfx? sn F3026MEAC40  
M5780 Macintosh IIci? sn F1031DBY740

DISCUSSION -----

It is sometimes impossible to tell what the factory configuration was by the model number printed (or stamped) onto the unit. The model number designates a "family" of computers and has only one absolute requirement: the first letter (M = Macintosh, A = Apple II, etc.). The other digits are essentially random.

That last 5-6 digits in the serial number usually end with the model number, for example, F1234HYD34M5000. The M5000 is the model number.

In some specific cases you can figure it out, though: there was only one Macintosh 128K, for instance. In your case, however, we can't determine what the initial configuration was (which would enable us to discover the Finished Goods part numbers, eventually).

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Tech Info Library Article Number:8148



# Tech Info Library

## Shiva NetSerial: Capable of NetComm Hunt Group

Revised: 9/5/91  
Security: Everyone

Shiva NetSerial: Capable of NetComm "Hunt Group"

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Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

I have an AppleTalk network (40 workstations, two servers, bridge, etc.). I need to add about 10 shareable serial ports to bridge into an existing Wang system.

Ideally, I'd like to find some device like a comm-port server; something with up to ten ports that would manage the allocation of the ports. I have considered using ten Shiva NetSerials, but I don't like the "trial and error" method of finding an available NetSerial.

Does anyone make a device like this? Apparently there is something like this in the Novell world, where a PC is dedicated to be a comm server, and manages all shared-port access. Any ideas?

DISCUSSION -----

From your description, it sounds as if you desire a network communication "hunt group"-type service, where if the first communication server is busy, it will hunt automatically for the next available communication server.

You can do this right now with the Shiva NetSerials. Simply choose all of NetSerials you wish have in your "hunt group" via the Chooser, and your call will be routed through whichever NetSerial is available. And of course, because the NetSerial is an independent (after initial configuration) network device, you won't need to dedicate a computer to manage it.

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Tech Info Library Article Number:8149



# Tech Info Library

## Apple IIGS: Troubleshooting Out of RAM 04 Message

Revised: 9/5/91  
Security: Everyone

Apple IIGS: Troubleshooting "Out of RAM 04" Message

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Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

How much memory does an Apple IIGS need to run System v5.0.2?

I was told 768K, but when I tried to boot a system disk on an Apple IIGS with an expansion board installed, and with the entire first bank populated (top line of card full, top jumper not connected, bottom one connected), I got an "out of RAM" 04 message on the Apple IIGS.

I want to run GS/OS 5.0.2 over the net from a server, but if it can't even boot standalone, what do I need to run the net? Is 768K enough? Isn't that what I have? (256 + 512 (logic + add on))

DISCUSSION -----

GS/OS should boot on a standalone Apple IIGS with 512K of RAM. If network services are going to be used, 768K is required.

Check to see if you have a RAM disk created in the Control Panel. Perhaps the RAM on the logic board or the memory expansion card is faulty; try running diagnostics. The card could be misidentifying the amount of RAM (because the jumpers aren't read correctly by the card even though they are set correctly).

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Tech Info Library Article Number:8150



# Tech Info Library

## LaserWriter IINTX: Q & A on Storing Fonts on Hard Drive

Revised: 9/5/91  
Security: Everyone

LaserWriter IINTX: Q & A on Storing Fonts on Hard Drive

=====

Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

I'm using a 20MB SCSI hard drive with my LaserWriter IINTX. There didn't seem to be any problems, and the Laser Installer software recognized the hard drive as being online to the LaserWriter IINTX.

Then I installed all my Laser fonts to the hard disk, but when I ran the Laser Installer software, it did not recognize any of the fonts installed to the hard disk. It did not even recognize that a hard disk was connected (although the Laser did start up with the hard drive attached, and the drive-active light was on).

The software only gave a readout of the internal laser fonts -- not those installed on the hard disk.

- 1) How do I ensure that the hard drive is correctly connected and available as a font resource?
- 2) Can I install screen fonts on the hard drive, or only printer fonts?
- 3) Do I remove all printer (and screen) fonts from the System Folder on my Macintosh after they are installed to the LaserWriter IINTX hard disk?
- 4) My hard drive crashed, and my System Folder was corrupted while I was installing screen fonts to the system file using Font/DA Mover. What might have caused this? Is there a limit to the number of screen fonts that I can have installed to the system file? Is there a limit to the number of items that I can have in any folder?
- 5) Where do I get more complete information on the installation and support

of this environment?

DISCUSSION -----

It sounds like the problem was either with what fonts were installed or the process you used to install them.

- 1) When you run the LaserWriter Font Utility, if the drive is recognized and does format, then the drive is connected properly and operational.
- 2) No, you can't install screen fonts.
- 3) You will need the screen fonts on the workstation. Downloadable fonts on the workstation are unnecessary, but do not harm anything.
- 4) There is no theoretical limit to the number of screen fonts you could install in your System file, but you would eventually run out of RAM or disk space. The limit of files per folder is 64,000.
- 5) The LaserWriter IINTX manual shows how to make the connections properly and format the disk. If these processes work, the drive is operational.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8151



# Tech Info Library

## LaserWriter IINT: Memory Allocation

Revised: 9/5/91  
Security: Everyone

LaserWriter IINT: Memory Allocation

=====

Article Created: 14 May 1991  
Article Last Reviewed: 23 May 1991  
Article Last Updated:

TOPIC -----

I have a LaserWriter IINT with 2MB of memory. I would like to download additional fonts.

What is the memory allocation for the fonts and what is taken up for the buffer out of the 2MB? When I download three additional fonts, a "not enough memory" message appears.

What can I do to download more fonts?

DISCUSSION -----

Of the 2MB of RAM in a LaserWriter IINT, 616K is used for fonts. Of this amount, approximately 500K is available for downloading additional fonts.

Although there is no memory upgrade for the LaserWriter IINT, you can upgrade it to a LaserWriter IINTX, which can be expanded to 12MB. You can also use the fonts "dynamically" -- which means they are simply placed in the System Folder and the fonts are removed and downloaded dynamically by the operating system.

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Tech Info Library Article Number:8152



# Tech Info Library

## Lisa: Error 38 is No Boot File on Disk

Revised: 9/5/91  
Security: Everyone

Lisa: Error 38 is "No Boot File on Disk"

=====

Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

When I try to boot a MacWorks disk on my Lisa, I get an error code 38.

This error is placed under an icon with a check in it. It only accesses the floppy for a brief moment and then gives the error code. It then prompts me to continue or to choose a startup device (STARTUP FROM...). When I continue, the above occurs again, over and over. If I choose a startup device, it gives me the option of the floppy only -- not the HD.

What's going on?

DISCUSSION -----

Error 38 is "No Boot File on Disk." It sounds like the MacWorks disk was erased. If the disk was good to begin with, you have a hardware problem with the floppy drive.

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Tech Info Library Article Number:8153





# Tech Info Library

## Macintosh: Error -39 End Of File Meaning (10/94)

Revised: 4/21/97  
Security: Everyone

Macintosh: Error -39 "End Of File" Meaning (10/94)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 26 October 1994

TOPIC -----

I am getting a -39 error when I try to open a document.

What does the error mean and what might be the problem?

DISCUSSION -----

The -39 error is an "End Of File" error. The most likely cause of the error is a corrupt data file. The only real fix is to restore the data file from a backup or recreate it if there isn't a good backup available.

Article Change History:  
26 Oct 1994 - Clarified explanation of error.

Support Information Services

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Tech Info Library Article Number:8159



# Tech Info Library

## Apple II: Wrong Version of Setup Causes Aristotle Problems

Revised: 9/3/91  
Security: Everyone

Apple II: Wrong Version of Setup Causes Aristotle Problems

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

I'm having a problem in setting up a lab network using a Macintosh SE/30 as a server, with a combination of Apple IIGS and Apple IIe workstations. I am also using Apple II Setup v2.0.1.

I get the following error message when I try to log on to Aristotle as Administrator from an Apple IIGS: "an error occurred loading the file /volumename/System/System.Setup/Cdev.Init".

When I try using a different startup application (such as BASIC.SYSTEM), I get this message: "Bad OS ver 0011" I'm using version 5.0.2 to install Server Network Startup, and Server Quick Logoff.

Also, I've been getting a System Error when setting up a Macintosh SE/30 as a server and installing System 6.0.3 from the Install menu of the File Server installation disk. Reinstalling System 6.0.5 seems to cure this, however.

DISCUSSION -----

The problem you are seeing with Aristotle is a result of using the wrong version of the Apple II Setup. You have to use Apple II Setup v2.1 or 2.1.1, not v2.0.1, when setting up the software.

As for the problem of installing 6.0.3 from the File Server installation disk, it could be that there is something corrupted in the installation scripts for that version. Nothing you described is a wrong procedure.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8160



# Tech Info Library

## AppleShare: Server Maintenance and Backup Questions

Revised: 9/3/91  
Security: Everyone

AppleShare: Server Maintenance and Backup Questions

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

What is the best and safest way to operate a file server? AppleShare 2.0 and an Internet router on a Macintosh IIfx.

When I need to install software on the server, I need access to the Server Folder. I have to shut down the server and start up a floppy. This presents a problem, because the Internet router is running -- which disconnects my users from printer access. I know I could move the Router to another unit, but it seems more appropriate to have it on a dedicated unit.

Also, I need to have the database users log off of the databases in order to do a clean backup, so perhaps an automatic backup software package would be better so it could run at night. Also, the backup software selected must be compatible with AppleShare's concurrent software philosophy.

Other than installing software through a remote node, I don't know of any way of installing software on an AppleShare server short of bringing the server down to do it. Secondly, it seems impossible to back up a database that is in use on a server.

DISCUSSION -----

You are correct in your assumptions of the way the system works. To install the software on the server you must bring the system down, which will cause the router to go down. The best time to do network maintenance and upgrades on a large network or on a network that cannot be brought down is at night or on the weekend.

If you back up a database file that is opened, you will not get a proper backup. Any files that are open will not be saved. It is best to do this after hours, also.

There are many backup programs that start at a specified time. That should be the best solution.

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Tech Info Library Article Number:8161



# Tech Info Library

## AppleTalk PC Card: Code Versions and Compatibility

Revised: 9/5/91  
Security: Everyone

AppleTalk PC Card: Code Versions and Compatibility

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to add some AT&T PCs to my AppleTalk network. I have some old AppleTalk PC cards available (part number M2313). They print all right, but I am worried about conflicts with newer versions of the LaserWriter drivers, etc.

The versions on the PC side are:

- AppleTalk PC DA 1.0
- AppleTalk PC Print driver 1.0
- AppleTalk PC Driver 2.0

Are there newer versions than these, and if so, how can I obtain them on an IBM format disk?

DISCUSSION -----

The cards are the same even though the part numbers are different. The issue is what's bundled with the card. Originally, the card had a utility to handle printing. Then the utility was removed from the package and the card was shipped alone. Currently, the card is shipped with AppleShare PC, so it has a different finished goods part number. You should have no problem using a more current version of the print driver.

The AppleTalk PC card is now referred to as the LocalTalk PC Card. For more information on this card, please contact Farallon.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

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Tech Info Library Article Number:8162



# Tech Info Library

## Apple II Workstation Card: Magic Slate Printing Issue (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II Workstation Card: Magic Slate Printing Issue (11/96)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 18 November 1996

TOPIC -----

When attempting to print from Magic Slate v2.0 using an Apple IIe and a Workstation Card connected to an ImageWriter II, using AppleTalk, we get the message "includeProcSet IWEm 1 1" on the printout. Is there a fix for this problem?

DISCUSSION -----

Magic Slate thinks it is talking to a LaserWriter instead of an ImageWriter II. Because the Apple II Workstation card emulates a Super Serial Card, you should select that interface in the Magic Slate program.

Also, on an Apple IIe, you always have to run Chooser.II before you run an application and without powering off the computer, see below.

- 1) Launch your Apple II workstation disk.
- 2) Choose your printer.
- 3) Quit Chooser.II, but DO NOT power off.
- 4) Launch Magic Slate by ProDOS pathname. For example,  
-/volumename/application name.
- 5) Configure Magic Slate to print to an ImageWriter at the slot that contains the workstation card.

If this doesn't work, perhaps Magic Slate is not flexible in the slot location or is clearing the Chooser.II info on launch.

Article Change History:

18 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:8163





# Tech Info Library

## Macintosh: Troubleshooting ID=10 Trap Error Bombs (4/94)

Revised: 4/5/94  
Security: Everyone

Macintosh: Troubleshooting ID=10 Trap Error Bombs (4/94)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 5 April 1994

TOPIC -----

I am repeatedly getting the system bomb "ID=10" on my Macintosh. What does it mean?

DISCUSSION -----

ID=10 is a line 1111 trap error caused by software problems. The first thing that you need to do is:

- 1) Remove all extensions (INITs) and control panels from the System Folder and restart.
- 2) If you're no longer getting ID bombs, replace the extensions and control panels, one at a time, until you get the error again. The last one put in is likely the cause of the crashes.

If you are still getting the crashes after removing everything, remove the entire System Folder and reinstall a new copy from your System disks using the Installer. If you still get the bombs at this point, determine whether this always happens when using a particular application? If so, replace that application. Also, verify that your application is the most current version available and fully compatible with your Macintosh model.

Article Change History:  
5 April 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8164



# Tech Info Library

## Apple Video Cards that Support Two-Page Monitor (11/94)

Revised: 11/28/94  
Security: Everyone

Apple Video Cards that Support Two-Page Monitor (11/94)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

With what Apple video cards support the Two-Page Display monitor?

DISCUSSION -----

The Macintosh Display Card 4•8, Macintosh Display Card 8•24, and Macintosh Display Card 8•24 GC all support the Two Page Display. These cards use the DB15-to-DB25 cable (part number 590-0615).

Article Change History:  
28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8165



# Tech Info Library

## AppleShare: Slow Startups with CD-ROMs on Network

Revised: 9/5/91  
Security: Everyone

AppleShare: Slow Startups with CD-ROMs on Network

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I have a CD-ROM as a volume on my AppleShare network. I normally shut down the server on Friday afternoons and restart it on Monday morning, leaving it on all week. When I first turn on the server and get the message: "Checking volume 'CD-ROM 4.0' this may take a few minutes", it normally takes anywhere from 15 to 30 minutes for the server to come up. Lately I have seen that message for over two hours and have had to give up and restart the server without the CD-ROM. All the time the message is on the screen, the CD-ROM is being accessed, so the Server isn't locking up.

DISCUSSION -----

The newest version of CD-ROM drivers (3.0.2) speed up access to CD-ROM drives from AppleShare File Servers. Actually, the newer drivers don't let AppleShare do all of the prepping beforehand, and will provide that information on demand at a later time.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8166



# Tech Info Library

## LaserWriter II: Printing from DecNet Terminal Server

Revised: 9/3/91  
Security: Everyone

LaserWriter II: Printing from DecNet Terminal Server

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I'm looking for a product that will allow a DecNet Terminal Server to print to an Apple LaserWriter II.

DISCUSSION -----

If you want to print from a DEC VAX supporting PostScript or from Macintoshes on LocalTalk to a LaserWriter connected to a terminal server port, the following paragraphs may give you some ideas:

Attaching a LaserWriter to a DEC terminal server port is similar to attaching it to the serial port on the VAX. Normally, some steps have to be done by the VAX systems manager to define the terminal server port to be used by the queue manager.

On the Macintosh, you need a cable, with the appropriate pinouts, connecting the LaserWriter to the terminal server port. You have to set the LaserWriter communications settings, such as parity and baud rate, to the same settings as those on the terminal server port. Some installations get by with only 3-pin wiring: transmit, receive, and ground. However, you will lose data when the printer is turned off. You need full modem control port on the terminal server to support all XON/XOFF features.

On the DEC hosts, normally a virtual port is defined for the printer. A command is issued to map the virtual port to the physical port on the terminal server. The physical port on the terminal server should be set as: Accessing mode, Break disabled, Autobaud disabled, and Broadcast disabled. A print queue is then initialized with LATSYM as the name of the processor. PostScript software should be run on the VAX to support PostScript printer queuing. All DEC hosts on the Ethernet with the print

queue defined through the terminal server can print to this LaserWriter.

Only the LaserWriter IINTX can be connected to both the serial port and the LocalTalk port and be switchable between them via soft switches. To allow Macintoshes on LocalTalk to print to the LaserWriter on a VAX queue, you may want to look into PacerPrint from Pacer Software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8167



# Tech Info Library

## Desktop Manager: Use Only on an AppleShare Server

Revised: 9/3/91  
Security: Everyone

Desktop Manager: Use Only on an AppleShare Server

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I have heard about a file called Desktop Manager, which supposedly speeds up Desktop maintenance over a network and is included with AppleShare in System 6.0 and later. I have also heard that it can be used on any Macintosh, even a single system.

Can this file be used on a single Macintosh to update the Desktop file faster? I don't have AppleShare. Can this file be distributed as a single file with proof of Macintosh ownership? Or can this file be found elsewhere?

DISCUSSION -----

We recommend using the Desktop Manager only on an AppleShare server; we do not recommend its use in any other manner.

The Desktop Manager that comes with the AppleShare File Server software is not to be distributed freely. It is part of the AppleShare File Server software and is covered by the same software licensing agreement that applies to the AppleShare File Server software.

The Desktop Manager contains an INIT that allows the server to handle directory information faster and more efficiently. This file/INIT appears to work properly with most Macintosh system configurations. The Desktop Manager causes problems with the AppleCD SC and has not been officially tested for compatibility with other software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8168



# Tech Info Library

## Macintosh 128K and 512K: SCSI Hard Drives

Revised: 9/27/91  
Security: Everyone

Macintosh 128K and 512K: SCSI Hard Drives

=====

Article Created: 14 May 1991  
Article Last Reviewed: 27 September 1991  
Article Last Updated: 27 September 1991

TOPIC -----

Can I connect a hard drive to a Macintosh 512K?

DISCUSSION -----

To our knowledge, there is no plug-and-play hard drive for the Macintosh 512K or 128K currently still being manufactured. The Apple HD20, a non-SCSI drive which does work with the 128K and 512K Macintoshes, was made obsolete by the evolution of SCSI devices which brought about Apple's line of SCSI hard drives around the beginning of 1986. SCSI drives require a SCSI port, which is not included with a Macintosh 128, 512K or 512K Enhanced Macintosh. It was first included with the Macintosh Plus. SCSI drives transfer data many times quicker than non-SCSI drives.

In summary, you either need to find a used HD20 non-SCSI drive, or have a SCSI port installed, which would be a third-party product. Dove is one company that makes add-on SCSI ports.

WARNING: Improper installation of these kits may damage the Macintosh logic board beyond service exchangeability.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

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Tech Info Library Article Number:8169



# Tech Info Library

## Macintosh Plus: No SuperDrive Support

Revised: 9/5/91  
Security: Everyone

Macintosh Plus: No SuperDrive Support

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Article Created: 14 May 1991  
Article Last Reviewed: 31 MAY 1991  
Article Last Updated:

TOPIC -----

Does the Apple SuperDrive work with the Macintosh Plus?

DISCUSSION -----

The Macintosh Plus does not support SuperDrive. We are aware of no third-party solution. At this date, the closest Macintosh to the Plus that supports the SuperDrive is the Macintosh SE.

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Tech Info Library Article Number:8170





# Tech Info Library

## Macintosh Display Card 8•24 GC: Supported Monitors (7/95)

Revised: 7/27/95  
Security: Everyone

Macintosh Display Card 8•24 GC: Supported Monitors (7/95)

Article Created: 14 May 1991  
Article Last Reviewed/Updated: 27 July 1995

TOPIC -----

What monitors are compatible with the Macintosh Display Card 8•24 GC?

DISCUSSION -----

The Macintosh Display Card 8•24 GC (along with the Macintosh Display Card 4•8 and 8•24) with the appropriate cable, supports any display, whether from Apple or from another vendor, that meets one of the following specifications:

| .                          | Hor x Vert         | Bandwith | Vert Refrsh | Horiz Scan |
|----------------------------|--------------------|----------|-------------|------------|
| Display                    | (Pixels)           | (Mhz)    | (hz)        | (Khz)      |
| -----                      | -----              | -----    | -----       | -----      |
| Apple 21-in. Color Display | 1152 x 870         | 100      | 75          | 68.7       |
| Apple Multiple Scan 20     | -----Variable----- |          |             |            |
| Apple Two-Page Monitor     | 1152 x 870         | 100      | 75          | 68.7       |
| Apple Multiple Scan 17     | -----Variable----- |          |             |            |
| Apple 16-in. Color Display | 832 x 624          | 57.63    | 75          | 50         |
| Apple Portrait Display     | 640 x 870          | 57.2832  | 75          | 68.9       |
| Apple Multiple Scan 15     | -----Variable----- |          |             |            |
| AudioVision 14 Display     | 640 x 480          | 30.24    | 66.7        | 35.0       |
| Apple 14-in. Color Display | 640 x 480          | 30.24    | 66.7        | 35.0       |
| Apple Color Plus Display   | 640 x 480          | 30.24    | 66.7        | 35.0       |
| Performa Display           | 640 x 480          | 30.24    | 66.7        | 35.0       |
| Performa Plus Display      | 640 x 480          | 30.24    | 66.7        | 35.0       |
| 13-in. AppleColor High-Res | 640 x 480          | 30.24    | 66.7        | 35.0       |
| . RGB Monitor              |                    |          |             |            |
| 12-in. Apple High-Res      | 640 x 480          | 30.24    | 66.7        | 35.0       |
| . Monochrome Monitor       |                    |          |             |            |

Article Change History:  
27 Jul 1995 - Corrected misspellings; reviewed and updated.

# ..TIL08171-Macintosh\_Display\_Card\_8-24\_GC-Supported\_Monitors\_7-95.pdf

01 Apr 1994 - Added Apple Multiple Scan 20 display, reformatted.

05 Jan 1993 - Added Apple Color Plus Display.

Support Information Services

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Tech Info Library Article Number:8171



# Tech Info Library

## Apple IIGS: Using with a MicroNet Hard Drive

Revised: 9/9/91  
Security: Everyone

Apple IIGS: Using with a MicroNet Hard Drive

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Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

I'm having a problem getting an Apple IIGS to talk to a MicroNet SCSI 30MB HD. I have an Apple High-Speed SCSI card, MicroNet HD, and a 1MB Apple IIGS. I also have v2.0 of the High-Speed SCSI Card Utilities.

Although my Apple II SCSI Utilities see the HD, I can't get GS/OS (v5.0.2) to see the drive.

DISCUSSION -----

Assuming the hard drive is compatible with the Apple IIGS (check with MicroNet) here's what you need to do:

Make a new bootable System Tools disk, using the Installer from the SCSI utilities disk, and specifically install the SCSI driver from the new utilities disk that came with the SCSI card. This makes the disk realize there is a SCSI device attached. As the system starts up, it looks for SCSI devices and if it finds one that should be readable but is not, it will then ask if you want to initialize.

Make sure the slot the SCSI card is installed in is properly set in the Control Panel. (That slot should say "your card".)

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Tech Info Library Article Number:8172



# Tech Info Library

## LaserWriter: Driver Versions and Macintosh System Versions

Revised: 9/5/91  
Security: Everyone

LaserWriter: Driver Versions and Macintosh System Versions

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Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

I'm told that LaserWriter Driver 6.0 is associated with System 6.0.4.  
LaserWriter Driver 6.0.1 comes with System 6.0.5.

Can you use LaserWriter Driver 6.0.1 with System 6.0.4? If not, why? What about using LaserWriter Driver 6.0 with System 6.0.5?

If one Macintosh on an AppleTalk network is running LaserWriter Driver 6.0 and another is running Driver 6.0.1, will the LaserWriter be re-initialized each time one Macintosh goes to print after the other has just printed? (For instance, if one Macintosh was using Driver 5.2 and another was using Driver 6.x.x.)

DISCUSSION -----

The LaserWriter will reinitialize if it sees someone trying to print with a different version of LaserWriter and Laser Prep, regardless of the size of the difference in version numbers.

The drivers are not truly "associated" with a particular system release, they just happen to be distributed with that release. You can use 6.0.1 LaserWriter and LaserWriter Prep with System 6.0.2 if you like, just as you can use version 5.2 LaserWriter and LaserWriter Prep with System 6.0.5.

Use the suggested print driver that is best for the software, and standardize the whole network on that version to avoid loss of time due to reinitialization of the printers.

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Tech Info Library Article Number:8173



# Tech Info Library

## CD-ROMs and Startup Volume's Desktop File

Revised: 9/5/91  
Security: Everyone

CD-ROMs and Startup Volume's Desktop File

Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

I am told that the Desktop on the startup volume is updated every time the Finder sees an icon it doesn't already have on its own Desktop . . . but that this doesn't apply to CD-ROMs, due to the amount of info they carry.

That must mean that in the case of exploring a couple of very large capacity hard drives (like 600MB) that are SCSI-chained to a Macintosh, the desktop file on the boot volume must get really huge. And the only way to bring it back to "normal" is to rebuild it after you unchain the external drives.

Also, if there are a number of SCSI drives chained to your Macintosh that are up and running and visible on your Macintosh desktop, and then you restart the Macintosh while holding down Option-Command, what desktop files get rebuilt? Only the boot volume or the other ones as well? How would you rebuild the desktop on a non-startup external SCSI volume? (Doing it to a 3.5-inch disk is easy, but a big MacInStor won't fit in the diskette slot!)

DISCUSSION -----

You're right, the Desktop file on the volume can be huge, depending on what storage devices are attached it. On the other hand, how many of these zillions of files are actually unique? The actual file information (where it is physically, how long it is, etc.) is stored in the Desktop on that volume, not the startup volume. Only the icon (and other related) info is stored in the startup volume's Desktop.

Anyway, you can have a googleplex worth of MacWrite II documents, but the startup volume's Desktop will have only the one icon entry for all of them.

So yes, it can get really large--but probably not as big as you think.

The CD-ROM drivers have patches that keep the Finder from going bonkers over the file information there.

As for rebuilding the Desktop: the Finder looks for the Option and Command keys only during the "moment of mounting" -- which is why you can hold down the two keys while you insert a diskette, and get them rebuilt.

To rebuild attached hard drives, it's safest to just hold the keys down all the way through the startup. To do multiple drives, just keep holding the keys down until all of them are done; you'll actually get separate dialog boxes for each volume, and you can either okay (to rebuild) or cancel (to skip) -- just keep holding the keys down. It really does work. All this also means that the Finder will attempt to rebuild the volumes in mounted order, whatever that may be.

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Tech Info Library Article Number:8174



# Tech Info Library

## Macintosh LC: Apple Ile Card Enables Network Printing

Revised: 7/2/92  
Security: Everyone

Macintosh LC: Apple IIe Card Enables Network Printing

=====

Article Created: 14 May 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

If I connect several Macintosh LC computers via LocalTalk connector kits and have a couple of ImageWriter printers attached, will the software recognize the printer location when using the Apple IIe emulation card?

Specifically, most standalone software for the Apple IIe looks for slot 1 to print. If I use the LocalTalk option card in the ImageWriter and connect up via LocalTalk, will it recognize the placement of the printers? Will I be able to print using the Apple IIe Card and Apple IIe software under this scenario?

DISCUSSION -----

When using the Apple IIe card in the Macintosh LC, you can print to serial devices using PR#1, and print to LaserWriters and ImageWriters on a LocalTalk network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8175



# Tech Info Library

## Macintosh: How To Tell if You Have a Coprocessor Installed

Revised: 9/5/91  
Security: Everyone

Macintosh: How To Tell if You Have a Coprocessor Installed

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Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I tell if my Macintosh has a coprocessor installed?

DISCUSSION -----

If you want to know if you have an adapter (with a coprocessor) installed in your Macintosh without checking the computer physically, you need to use a software utility: nothing in the Macintosh operating system gives you this information.

There are several shareware CDEVs that report system configuration, as well as many disk and file utilities, such as SUM II and MacTest. Also, some applications (Microsoft Excel is one) report the presence of a coprocessor.

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Tech Info Library Article Number:8176





# Tech Info Library

## AppleShare: Installing on Macintosh IIfx/IIci

Revised: 9/5/91  
Security: Everyone

AppleShare: Installing on Macintosh IIfx/IIci

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I'm about to install AppleShare on a Macintosh IIfx. I've heard that AppleShare requires some 'patches' for the Macintosh IIfx. Is that true?

DISCUSSION -----

There's only one hitch to installing AppleShare on a Macintosh IIfx or Macintosh IIci: You need to use the Network Products Installer diskette to perform the actual installation, rather than the Installer that comes with AppleShare.

The operating system version on the AppleShare Installer diskette is too low to run on the Macintosh IIfx; the Installer on the NPI diskette is 6.0.5 (which will run), and it includes the necessary scripts to install AppleShare File Server, Print Server, Internet Router, EtherTalk, and TokenTalk.

You will still need to have the original File/Print Server (or whichever) diskettes handy, as the NPI has only the scripts, not the actual programs.

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Tech Info Library Article Number:8178



# Tech Info Library

## Macintosh: Troubleshooting Error -42 tmfoErr (4/94)

Revised: 4/5/94  
Security: Everyone

Macintosh: Troubleshooting Error -42 "tmfoErr" (4/94)

Article Created: 14 May 1991  
Article Reviewed/Updated: 5 April 1994

TOPIC -----

My Macintosh keeps getting the "Error in printing this document -42". I'm using background printing under MultiFinder printing a Microsoft Works document.

DISCUSSION -----

Error -42 is tmfoErr, or a "too many files open" error. You might have reached the default maximum number of files that can be open at any one time.

During our testing of Microsoft Excel, when we reached the maximum number of open files allowed on our system (40), we couldn't create a print job nor open any other files. We got a variety of error messages: Print Monitor error, "file is damaged" error, or a Print Manager error, and "Error Printing on LaserWriter (driver version) you are using". Other programs that we tried to open trapped the system error and reported it differently.

Many programs open numerous files when launching -- 4th Dimension and Suitcase are two examples -- so you might want to investigate what you have open at the time of the error if this scenario fits.

If you're NOT encountering the maximum number of open files limit, you might have a directory problem. Try running Disk First Aid (or a similar program), or reinitialize and reinstall the software on the hard disk to see if this corrects the problem.

Article Change History:  
5 April 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8179



# Tech Info Library

## GIFF-to-PICT Conversion: Reduced Resolution Is Lost Lookup Table

Revised: 9/5/91  
Security: Everyone

GIFF-to-PICT Conversion: Reduced Resolution Is Lost Lookup Table

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

Why is it that when you convert a 256 color GIFF-formatted graphics file to a PICT file, the image quality is worse (the color mapping is off)?

I've been downloading graphic GIFF files from a variety of public bulletin boards and on-line information services. I want to import these graphic images into Macintosh programs that support PICT files, using such Macintosh programs as PICTureThis and Giffer to convert GIFF files to PICT files.

Invariably, the converted PICT image is worse in image quality than the original GIFF image that is displayed on the Macintosh screen using Giffer. It appears that the colors used in the original GIFF image don't completely map to the colors displayed in the PICT image.

DISCUSSION -----

The problem is that somewhere along the line the color lookup table is being lost. The GIFF file has its own custom lookup table that is either not being converted to the PICT file, or the program used to display the PICT file is not using the custom lookup table.

Contact the vendors of the utilities you are using to see if they know of a workaround.

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Tech Info Library Article Number:8180



# Tech Info Library

## AppleWorks GS: How to Print Foreign Characters

Revised: 9/5/91  
Security: Everyone

AppleWorks GS: How to Print Foreign Characters

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

On an Apple IIGS, why can't I print foreign characters from AppleWorks GS to a LaserWriter?

DISCUSSION -----

The Chooser II application in ProDOS supports only the standard character set. It doesn't print foreign characters displayed on the screen. With AppleWorks GS, anything other than Draft will print as a bitmapped version of what is displayed on the screen. This allows you to print foreign characters.

The only other option is to get an application that supports foreign languages. For more information, search on "Claris".

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Tech Info Library Article Number:8181



# Tech Info Library

## Macintosh IIci Built-in Video: RAM Should Be Installed in Bank A

Revised: 7/10/92  
Security: Everyone

Macintosh IIci Built-in Video: RAM Should Be Installed in Bank A

=====

Article Created: 14 May 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

My Macintosh IIci won't start up when a monochrome monitor is attached to the on-board video port. At first I thought it was a memory problem, so I replaced all four 256K SIMMs -- that didn't help.

Then I found that if I unplug the monitor it starts up fine. I have installed the Macintosh II video card and it works fine.

Will the Macintosh IIci internal video port work with only 1MB of RAM installed?

DISCUSSION -----

The Macintosh IIci's built-in video will function with only 1MB of RAM, provided that the RAM is located in Bank A. You will only be able to select monochrome display in the Monitors CDEV. If the RAM is in Bank B, then the Macintosh IIci ignores the video port entirely.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8182



# Tech Info Library

## Macintosh IIfx Upgrade: Some Symptoms of Bad RAM

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx Upgrade: Some Symptoms of Bad RAM

=====

Article Created: 14 May 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I upgraded my Macintosh II to a Macintosh IIfx by purchasing the Macintosh IIfx logic board upgrade and two 4MB Macintosh IIfx memory upgrades.

This is actually the second logic board that I've ordered. The first was returned to Apple because it had the multichime error sound when first turned on with the full 8MB of RAM. However, it worked properly with only 4MB installed.

The second logic board has a similar problem. If 8MB of RAM is installed, the unit acts strangely. Here are some symptoms:

- The desktop is extremely slow to update at startup, particularly when it tries to read the hard drive.
- When an icon is moved, multiple remnants of the icon are left behind on the desktop.
- Inserting a locked, known good floppy disk into the drive causes a dialog "Disk is damaged and can't be used". Reinserting the same disk into a Macintosh IIci or Macintosh SE results in normal response.
- The system has trouble launching programs and eventually crashes with a system error = 03 or 10 error.
- Disks that were not write-protected were permanently damaged and could not be repaired with Norton Utilities for the Mac. When opened on any other system, the disk would indicate that it had used space, but no icons appeared.

- Disks inserted would often be missing several icons. When those same disks are inserted into other systems or this system running 4MB, all icons appear.

The interesting thing is that if the machine is reduced to 4MB of RAM populated in bank A, it works just fine. It doesn't matter which RAM chips are placed in Bank A -- as long as Bank B is empty, the system is normal.

#### DISCUSSION -----

We have heard of this problem before. It turned out to be bad RAM causing the crashes and erratic behavior. Replace the memory in the back bank with four new SIMMs of a different brand.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8183





# Tech Info Library

## Macintosh Volume Drag-Copy: Why Installer May Be Needed

Revised: 8/30/91  
Security: Everyone

Macintosh Volume Drag-Copy: Why Installer May Be Needed

=====

Article Created: 14 May 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated: 14 July 1992

TOPIC -----

If I completely drag-copy an entire mass-storage volume, including the System Folder, to another volume, do I still need to use the Installer to rewrite the System on the target volume?

DISCUSSION -----

Various Macintosh models have slightly different ROM codes. The Installer determines which model it is installing to, and installs the appropriate ROM patches for each model.

If you have already run the Installer on a volume and you want to transfer that System to another volume that will be used on the same or similar computer, there should be no problem.

Also, if you do a customized install, and choose "System Software for any Macintosh", there should be no problem using that volume on different Macintosh models.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8184



# Tech Info Library

## LaserWriter IINTX: LaserJet Compatibility and Bitmapped Fonts

Revised: 9/4/91  
Security: Everyone

LaserWriter IINTX: LaserJet Compatibility and Bitmapped Fonts

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I have a Macintosh/DOS cluster running under TOPS with a LaserWriter IINTX as a common printer. The TOPS system is the latest versions. The LaserWriter IINTX is being set up as a LaserJet Plus as described in the manual.

The output from the DOS software is ragged and poorly defined. The resolution looks like it came from a dot-matrix printer (72 dpi).

If the software output is printed to a direct HP LaserJet, the quality of the output is just what I want (300 dpi).

My questions:

- 1) How fully does the LaserWriter IINTX emulate the LaserJet Plus? Is the compatibility only 80-85%, or will the LaserWriter IINTX fully become a LaserJet?
- 2) Is there a limit to the number of times the printer can be reset (resetting from a LaserWriter mode to a LaserJet mode)?

DISCUSSION -----

- 1) Adobe Systems has performed tests comparing LaserWriter IINTX and LaserJet Plus. Their finding is that a LaserWriter IINTX in LaserJet Plus emulation mode is generally faster than a LaserJet Plus, and is more than 95% compatible. The newer ROMs in the LaserWriter IINTX will increase compatibility even more.

The LaserWriter IINTX in LaserJet emulation does not fully support

LaserJet bitmapped fonts, but does support PostScript fonts. This may explain your problems with the "jagged" output, if you're using LaserJet bitmapped fonts.

- 2) The minimum number of "switches" is 100,000, if all performed via software. We don't have the number for the DIP switches, as there are too many variables to take into account.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8187



# Tech Info Library

## Macintosh IIci: Does Not Use VRAM

Revised: 7/10/92  
Security: Everyone

Macintosh IIci: Does Not Use VRAM

=====

Article Created: 14 May 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Is 512K VRAM available on the Macintosh IIci?

DISCUSSION -----

The Macintosh IIci does not use VRAM (video RAM), nor can be expanded with VRAM. The computer uses main system RAM from Bank A of the logic board.

If there is at least 2MB of RAM on the logic board, you will be able to access the maximum pixel depth for the attached monitor: for a High-Resolution RGB Monitor set to 256 colors, that amounts to 384K of RAM taken for video.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8189



# Tech Info Library

## Personal LaserWriter NT: ROM and PostScript Versions

Revised: 9/5/91  
Security: Everyone

Personal LaserWriter NT: ROM and PostScript Versions

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What ROM versions are in the Apple Personal LaserWriter NT?

DISCUSSION -----

The Personal LaserWriter NT has Postscript version 51.8 included on the ROMs. The ROMs themselves are version 1.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8191



# Tech Info Library

## Apple Scanner: Troubleshooting SCSI Problems

Revised: 9/5/91  
Security: Everyone

Apple Scanner: Troubleshooting SCSI Problems

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When using an Apple Scanner with my Macintosh SE/30, I keep getting a message about not being able to find any device attached to the SCSI port. I checked the SCSI number to make sure we did not have any conflicts, made sure there was a terminator attached properly, checked the cable itself, and reinstalled the AppleScan software. The serial port is working fine.

The hard drive in the Macintosh SE/30 doesn't always start up the first time the computer is turned on. My dealer said that the hard drive may be the cause of the problem, and that I may need to replace a chip on the I/O board.

DISCUSSION -----

This type of problem is usually a SCSI termination problem that originates in the drive or the scanner. The problem could be with the hard drive, but not with the PROM that needs replacing. (Note: This service program is for replacement of a chip of the drive, not the drive itself.)

First try moving the terminator to another location. If the terminator is on the end of your cable, move it to the scanner's empty SCSI port. If it's on the empty port, move it to the end of the cable. If this doesn't do anything, try removing the terminator completely.

Next, check the scanner to confirm that its internal terminators have been removed. Finally, try using a different hard drive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8192



# Tech Info Library

## LaserWriter IINTX: Can Use Some Macintosh SIMMs

Revised: 9/5/91  
Security: Everyone

LaserWriter IINTX: Can Use Some Macintosh SIMMs

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I use Macintosh IIfx 4MB SIMMs in a LaserWriter IINTX?

DISCUSSION -----

The LaserWriter IINTX accepts only 256K and 1MB SIMMs. Macintosh IIfx 1MB SIMM modules can be used in the LaserWriter IINTX, but not the other way around.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8195



# Tech Info Library

## Macintosh: SIMM Speed Configurations

Revised: 6/1/92  
Security: Everyone

Macintosh: SIMM Speed Configurations

=====

Article Created: 14 May 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated:

TOPIC -----

Can I mix and match SIMM speeds when upgrading memory on my Macintosh?

DISCUSSION -----

As a general rule, SIMM speeds should match within a bank, can be different between banks, and all must be compatible for the specific Macintosh model. In other words, as long as all the SIMMs in Bank A match in speed, all the SIMMs in Bank B match, and all the SIMMs in the system are at least 120ns, you should have no problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8196





# Tech Info Library

## AppleShare: Troubleshooting Auto Log-On Problems

Revised: 9/5/91  
Security: Everyone

AppleShare: Troubleshooting Auto Log-On Problems

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

All the computers on my AppleShare network have been configured for Auto Log-On. Now suddenly, everyone needs to log on manually.

DISCUSSION -----

It is possible that your AppleShare Prep file is corrupt or lost. Try throwing away your AppleShare Prep and rechoosing your printers and the servers. Also, check for a conflicting INIT loading before AppleShare or if there is more than one System on your startup drive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8197



# Tech Info Library

## Macintosh: Troubleshooting a File that Won't Go Away

Revised: 6/15/92  
Security: Everyone

Macintosh: Troubleshooting a File that Won't Go Away

Article Created: 14 May 1991  
Article Last Reviewed: 26 May 1992  
Article Last Updated:

### TOPIC -----

I have been trying to delete a mysteriously named file ("tmp.aaa0034") that appeared on my Desktop after a system crash a few weeks back. I have been able to trash the document but it always reappears eventually. I have tried holding down the option key while trashing also, in case it could be locked, but again it reappears.

### DISCUSSION -----

If you trash the file, use the Empty Trash command, and the file still reappears, you have an application program that isn't cleaning up after itself very well. We're not familiar with that particular file name format, so we're not sure what application is causing the problem. We suggest reinstalling those applications you use most often, in the hopes of finally getting rid of whatever corruption there may be.

If the above doesn't work, try rebuilding the Desktop file by holding down the Command and Option keys at startup. If that doesn't help, you will probably have to reformat your hard drive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8198



# Tech Info Library

## AppleShare Print Spooler: Ways to Speed Performance

Revised: 9/5/91  
Security: Everyone

AppleShare Print Spooler: Ways to Speed Performance

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm currently running an AppleShare Print Spooler on a Macintosh Plus with an external HD20. Would the speed and throughput of the spooler be increased if I upgraded it to a faster Macintosh or if I added more memory to my Macintosh Plus?

DISCUSSION -----

Anything EXCEPT memory would increase the performance of your spooler. RAM performance improvements are incremental, but usually not enough to justify the cost of the RAM. This depends on how many utilities you may have running on your server, but if you're running a stripped-down server, you don't really need more memory.

Here are the items that will most improve the performance of your server:

- Cabling type (using Ethernet instead of LocalTalk)
- Getting a faster computer
- Getting a faster hard drive

We can't really provide any hard statistics on performance because there are far too many variables and that change from moment to moment during network use.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8199



# Tech Info Library

## Apple IIe: Utility for Partitioning Hard Drives

Revised: 9/5/91  
Security: Everyone

Apple IIe: Utility for Partitioning Hard Drives

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to add a high-speed SCSI card and a 85MB hard drive to my Apple IIe.  
Is there a ProDOS utility that can partition such a large drive?

DISCUSSION -----

The utilities disk that comes with the high-speed SCSI card can handle the partitioning. The only problem is that the Apple IIe can only see two partitions of 32MB each. So, only 64MB of the disk will be used; the rest of the space will be inaccessible.

The only other option is to search for a third party solution.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8200



# Tech Info Library

## LaserWriter IINT ROMs: Solving Peripheral Test Problem

Revised: 9/5/91  
Security: Everyone

LaserWriter IINT ROMs: Solving Peripheral Test Problem

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I've run across a problem with Peripheral Tests, Vol. II, #1. There are LaserWriter IINT boards that work correctly but cannot be tested with this diagnostic (ROM/SIMM tests).

I recently purchased a large quantity of ROMs as I had found they were frequently the problem. Is there something I can do to make those tests work?

DISCUSSION -----

Some LaserWriter IINT I/O boards have serial chip timing problems that prevent the correct timing of the signal sent from the ROM to the serial port and back. This problem affects only the ROM diagnostic -- it has no effect on the LaserWriter's performance.

If the "No Communication" window is displayed in the LaserWriter NT/NTX ROM and SIMM Test, the I/O board may not have detected the LaserWriter II Test Connector. Check the status LEDs on the side of the printer during power up: if the Ready LED flashes briefly and then glows steady, all tests have passed and the I/O board is good.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8201



# Tech Info Library

## Apple IIGS: 25-Inch Monitor Not Recommended

Revised: 9/5/91  
Security: Everyone

Apple IIGS: 25-Inch Monitor Not Recommended

=====

Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

Is there a way to hook-up an Apple IIGS to a 25-inch monitor?

DISCUSSION -----

Because the Apple IIGS only supports up to 640 x 200 pixel resolution (with no optional video cards available) we don't recommend adding a large screen monitor.

All you would accomplish in any case is magnifying the screen -- no desktop space would be added. Also, the enlarged screen would look grainy.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8203



# Tech Info Library

## Apple III: Connecting an Epson Parallel Printer

Revised: 9/5/91  
Security: Everyone

Apple III: Connecting an Epson Parallel Printer

=====

Article Created: 14 May 1991  
Article Last Reviewed: 22 May 1991  
Article Last Updated:

TOPIC -----

I have an Apple III. Is there a port on it that I can use to hook up an Epson Parallel Printer? If not, what do I need to do to connect the printer?

DISCUSSION -----

No, the Apple III does not have a built-in parallel port.

Instead, you need the Universal Parallel Interface Card 661-91007 and cable 590-0036. The driver is a printer driver with the following configuration block:

|    |    |    |    |    |
|----|----|----|----|----|
| 0  | 1  | 2  | 3  | 4  |
| 0E | 00 | 00 | 00 | 00 |

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8204



# Tech Info Library

## Apple DMP Card: How to Identify (2/97)

Revised: 2/12/97  
Security: Everyone

Apple DMP Card: How to Identify (2/97)

=====

Apple DMP Card: How to Identify (2/97)

Article Created: 30 August 1991  
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article describes how to identify the DMP card, how to find the Apple part number and its use.

DISCUSSION -----

The Module Identification manual can be used to match the card with its photograph. The Module Identification manual will also have the part's service part number: 661-XXXX.

The card was used for connecting the Apple DMP (parallel printer) to an Apple II family computer.

Article Change History:  
12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8208





# Tech Info Library

## PostScript: Where To Get a Complete Set of Commands

Revised: 9/5/91  
Security: Everyone

PostScript: Where To Get a Complete Set of Commands

=====

Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

Where can I get a complete set of PostScript commands?

DISCUSSION -----

Addison/Wesley publishes a book entitled "PostScript Language Reference Manual." This book is available at bookstores, or from Apple's Programmers and Developers Association.

For more information, search under: "APDA"

Adobe also has reference manuals available as well.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8209



# Tech Info Library

## ImageWriter I: Not AppleTalk-Compatible

Revised: 9/9/91  
Security: Everyone

ImageWriter I: Not AppleTalk-Compatible

=====

Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

Is the ImageWriter I printer AppleTalk compatible? If so, what is the interface card?

DISCUSSION -----

The ImageWriter I is NOT AppleTalk compatible. The only possible way we know that you might be able to make the printer available on a network might be using something like a Shiva NetSerial device.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8211



# Tech Info Library

## Macintosh LC: Security Connector

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Security Connector

=====

Article Created: 14 May 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

The new Macintosh LC seems to have a different type of molded-in security "hole".

Previous Macintosh computers had a hole that would accommodate a clip-in metal eye through which a cable could be run and padlocked to a table. The Macintosh LC has a different kind of security connector, a "slot".

Is the security slot on the Macintosh LC the same as that on keyboards, and will the same gadgets that I now use for the keyboard still work?

DISCUSSION -----

The security connector on the Macintosh LC is best described as an underpass where the security cable would pass under a small bridge of plastic on the underside of the case.

It does not use the plug-in connector as does the Macintosh Plus keyboard.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8212



# Tech Info Library

## Macintosh XL: Connecting to a LaserWriter (10/94)

Revised: 10/17/94  
Security: Everyone

Macintosh XL: Connecting to a LaserWriter (10/94)

Article Created: 14 May 1991  
Article Reviewed/Updated: 17 October 1994

TOPIC -----

How do I connect a LaserWriter to my Macintosh XL?

DISCUSSION -----

The Macintosh XL has AppleTalk built into the ROM so you can print to the LaserWriter as you would from a Macintosh 512k. You need a DB-25 LocalTalk cable to connect to the Macintosh XL's serial port.

Once you have the cabling connected between the Macintosh XL and the LaserWriter, make sure the LaserWriters mode switch is set for "AppleTalk", use the Control Panel to make AppleTalk active, and then use Chooser to select the LaserWriter.

Here are the pinouts needed to make an adapter from a Macintosh AppleTalk Connection Module (DB-9) to a Macintosh XL connector (DB-25).

| Macintosh<br>DB-9 Female | Macintosh XL<br>DB-25 Male | Signal<br>Mnemonic |
|--------------------------|----------------------------|--------------------|
| -----                    | -----                      | -----              |
| 8                        | 19                         | RXD+               |
| 4                        | 20                         | TXD+               |
| 9                        | 3                          | RXD-               |
| 5                        | 2                          | TXD-               |
| SHIELD                   | SHIELD                     | GND                |

A word of caution is necessary. Because there are signal losses in cables longer than 18 inches, the AppleTalk Connection Module cable is supposed to be no longer than 18 inches, and the modules are constructed with an 18-inch cable already on them. There is a risk in connecting an adapter from the module to the Macintosh XL because the extra cable in the adapter might create signal losses that result in erratic operation of the Macintosh XL node. To minimize

this risk, make the adapter's wiring as short as possible.

CAUTION! To avoid FCC Class B signal violation, this cable should be fully shielded, as the data is at a very high rate and is not attenuated by the connection boxes normally used in AppleTalk.

Article Change History:

17 Oct 1994 - Reviewed for technical accuracy, combined similar articles.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8213



# Tech Info Library

## Personal LaserWriter NT: Counter Keeps Resetting to Zero Problem

Revised: 7/1/92  
Security: Everyone

Personal LaserWriter NT: Counter Keeps Resetting to Zero Problem

=====

Article Created: 14 May 1991  
Article Last Reviewed: 1 July 1992  
Article Last Updated: 1 July 1992

TOPIC -----

I have a Personal LaserWriter NT, and for some reason it does not count the pages printed, (that is, the first page out of the printer is always '0') -- and, for some reason, the printer cannot be renamed.

DISCUSSION -----

It sounds like the I/O board itself is having some trouble in firmware (ROM). Have an authorized Apple technician swap the controller board into another Personal LaserWriter to see if the problem follows the controller board. If so, you may need to have it replaced.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8214



# Tech Info Library

## AppleShare: Internal Bridging Support

Revised: 9/9/91  
Security: Everyone

AppleShare: Internal Bridging Support

=====

Article Created: 14 May 1991  
Article Last Reviewed: 27 May 1991  
Article Last Updated:

TOPIC -----

Does AppleShare support internal bridging in the server (I want to use AppleTalk and EtherTalk), or must I only use EtherTalk and then use an Ethergate to convert back to LocalTalk?

DISCUSSION -----

AppleShare itself does not inherently support internal bridging. If you wish to use a software bridge, the Apple Internet Router will bridge between the two physical media and run in the background of an AppleShare server.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8215



# Tech Info Library

## LaserWriter IINTX: Attached Drives Must Give Capacity Info

Revised: 9/9/91  
Security: Everyone

LaserWriter IINTX: Attached Drives Must Give Capacity Info

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

Can a SyQuest removable media SCSI drive be used as a SCSI device on the LaserWriter IINTX?

DISCUSSION -----

The only limiting factor, and this holds true for all SCSI drives when attached to the LaserWriter IINTX, is that the drive must relay information on its capacity back to the LaserWriter. This information allows the LaserWriter controller to determine how much disk space is available for caching and storage and reports this info back to the LaserWriter Font Utility.

You'll need to get clarification from the drive manufacturer most likely.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8216





# Tech Info Library

## Apple II: Muffin Is on DOS 3.3 System Master

Revised: 9/6/91  
Security: Everyone

Apple II: "Muffin" Is on DOS 3.3 System Master

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

Where can I find the program Muffin?

DISCUSSION -----

It's on the DOS 3.3 System Master.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8217



# Tech Info Library

## Apple IIGS: System Error 0027 -- File Map Destroyed

Revised: 9/6/91  
Security: Everyone

Apple IIGS: System Error 0027 -- "File Map Destroyed"

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

I get a "system error 0027" on my Apple IIGS when I try to launch a certain game. What does it mean?

DISCUSSION -----

Error \$0027 in GS/OS means "File Map Destroyed." If you're seeing this error only when launching a certain program, and all other software works correctly, we would guess the diskette or file is damaged or corrupted. If the software is on a hard drive, you can try reinstalling it.

If the problem persists, consider formatting and possibly replacing the hard drive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8218



# Tech Info Library

## Apple Modems: CCITT Compatibility

Revised: 9/9/91  
Security: Everyone

Apple Modems: CCITT Compatibility

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

Are both Apple modems CCITT compatible?

DISCUSSION -----

The 2400 baud modem is CCITT V.22A/B, CCITT V.22bis compatible. The personal modem is not.

CCITT is the International Telephone and Telegraph Consultative Committee.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8219



# Tech Info Library

## LaserWriter: Two-Side Printing Not Recommended

Revised: 9/9/91  
Security: Everyone

LaserWriter: Two-Side Printing Not Recommended

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

Is it safe to print on both sides of the page when using an Apple  
LaserWriter?

DISCUSSION -----

It is NOT recommended that you print on both sides of the paper with the  
LaserWriter.

The reason for this is that when the paper passes through the printer twice  
you are heating the toner again, making it brittle. This toner can then  
break off, getting onto the rollers and then possibly being transferred to  
the next piece of paper through the printer.

It would be probably be better to use a copy machine for that.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8220



# Tech Info Library

## Macintosh Display Card 4•8: Color Problems

Revised: 7/2/92  
Security: Everyone

Macintosh Display Card 4•8: Color Problems

=====

Article Created: 14 May 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

TOPIC -----

I have a Macintosh with a two page monochrome monitor and a Macintosh Display Card 4•8 video card.

When the control panel has the card set to black-and-white, the monitor drops pixels at random. When the card is set for four shades or 16 shades it works fine.

Is this normal, or should I replace the card?

DISCUSSION -----

That is most definitely NOT the normal function of that video card -- we would recommend replacing it, as the video memory is probably damaged. In fact, you may be able to see slight discolorations (when the monitor is in color mode) in the upper-left corner of the screen because of RAM failure. Even if you don't see the discolorations, we would advise replacing the video card anyway.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8221



# Tech Info Library

## Macintosh 512e: Not Enough Memory For HP Laserjet

Revised: 9/9/91  
Security: Everyone

Macintosh 512e: Not Enough Memory For HP Laserjet

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

I want to interface my Macintosh 512e with an HP Laserjet II. Is there a cable I can use?

DISCUSSION -----

We suspect that this can't be done due to memory constraints -- the drivers necessary to run the Laserjet require more than the 512e's 512K of RAM.

We would recommend that you contact the printer manufacturers for further information and a possible workaround for the memory issue.

For more information, search under: "Hewlett-Packard"

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8222



# Tech Info Library

## Macintosh SE: SCSI Port Same World-Wide

Revised: 8/7/92  
Security: Everyone

Macintosh SE: SCSI Port Same World-Wide

=====  
Article Created: 14 May 1991  
Article Last Reviewed: 6 August 1992  
Article Last Updated:

TOPIC -----

I purchased a Macintosh SE in France, but it originally came from Ireland. Here in the United States I am considering purchasing an internal or external hard drive.

Are there any special problems I should know about?

DISCUSSION -----

No. The specifications for the Macintosh SE's SCSI port (both internal and external) are the same world-wide; it's only the power supply/analog boards that cause the confusion. You should be able to purchase any internal or external SCSI device and attach it to the Macintosh SE without a problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8223



# Tech Info Library

## AppleShare: Permissions Not Copied Together with Folders

Revised: 9/6/91  
Security: Everyone

AppleShare: Permissions Not Copied Together with Folders

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 May 1991  
Article Last Updated:

TOPIC -----

I need to copy a subset of a folder hierarchy from one volume on an AppleShare server to another volume on the same server. A straight copy-via-drag did not preserve the AppleShare attributes having to do with access permissions.

What would you recommend I do to accomplish this copy without having to go into each folder copied and reset the AppleShare attributes afterwards? If it can't be done with a standard Apple product or procedure, is there a third-party package or utility that would allow me to do this in one step, short of dumping the folder tree out on a backup and then a subsequent restore?

DISCUSSION -----

Currently, as of December 1991, there really isn't a clean way of preserving access privileges for this type of copy operation.

The privileges are not stored with the files or folders, which complicates the issue. Until a better way comes along, you're going to have to manually reset them after copying.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8225





# Tech Info Library

## Macintosh Classic: Can Use Extended ADB Keyboard

Revised: 7/2/92  
Security: Everyone

Macintosh Classic: Can Use Extended ADB Keyboard

=====

Article Created: 14 May 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

Is there any problem using an older extended keyboard with a Macintosh Classic?

DISCUSSION -----

There is no problem with using the other Macintosh ADB keyboards with the Macintosh Classic.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8227



# Tech Info Library

## Macintosh Classic: Should Have Internal SCSI Terminator

Revised: 7/2/92  
Security: Everyone

Macintosh Classic: Should Have Internal SCSI Terminator

=====

Article Created: 14 May 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

I recently set up a Macintosh Classic single floppy with an external SCSI hard drive, but could not get the hard drive to boot. When I ran SCSI Probe on that Macintosh it tells me "bus not terminated".

Is the SCSI bus not terminated on the motherboard of the single drive Classic? If not, can I get a terminator that can fit on to the motherboard's SCSI port?

DISCUSSION -----

The Macintosh Classic is (or should be) self-terminated internally, through the use of an internal SCSI Terminator. This is similar to the Macintosh IIIfx Internal SCSI Terminator, and plugs into the internal SCSI port on the Classic's logic board. If you're missing the terminator, or you need to replace it, the service part number is 630-0408.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8228



# Tech Info Library

## Apple IIe: How to Transfer files to a PC

Revised: 9/3/91  
Security: Everyone

Apple IIe: How to Transfer files to a PC

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to transfer files between an Apple IIe and an IBM PC. Can I "print" out of my Super Serial card into the RS-232 port of the PC? What cable should I use?

DISCUSSION -----

Connect your two computers with a RS-232 null modem cable, and use a terminal emulation package on the PC to capture the file. When you tell the Apple IIe to print, the PC needs to be in the file-receive mode.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8230



# Tech Info Library

## Apple IIGS: Contiguous RAM Depends on Memory Board

Revised: 9/6/91  
Security: Everyone

Apple IIGS: Contiguous RAM Depends on Memory Board

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

If RAM is added to the Apple IIGS in slot(s) 1-7 instead of the expansion slot -- with an Apple memory card, for instance -- will it be contiguous RAM?

DISCUSSION -----

It depends on the memory board used. The Apple II Memory Expansion card will not be used as contiguous RAM, but can be used as a RAM disk (in fact, both GS/OS and ProDOS automatically make it a RAM disk at startup).

Some other manufacturers make memory boards that reside in an "other" slot and maps to contiguous RAM space.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8232



# Tech Info Library

## Apple IIGS: Visit Monitor and Memory Peeker are Ghost DAs

Revised: 9/6/91  
Security: Everyone

Apple IIGS: "Visit Monitor" and "Memory Peeker" are Ghost DAs

=====

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

While setting up an Apple IIGS, I discovered that when I access the control panel through command-option-esc, not only do I get "Control Panel" and "Alternate Display", but I also get "Visit Monitor" and "Memory Peeker".

DISCUSSION -----

These two Classic Desk Accessories are, basically, undocumented and unsupported -- in other words they are "ghost DAs", attempts at programmer's aids that were originally intended to be full-blown tools, but now just "hang out" in the ROMs.

You can manually bring these CDAs up by issuing a '#' command in the Monitor on any Apple IIGS.

(NOTE: These extra CDAs will go away, all by themselves, in a few days.)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8233



# Tech Info Library

## Macintosh IIsi: Needs RGB-NTSC Converter For NTSC Video

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Needs RGB-NTSC Converter For NTSC Video

=====

Article Created: 14 May 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Does the Macintosh IIsi video port support interlaced video devices, or do I need to add a Macintosh Display Card 4•8 with a video converter? I need an inexpensive solution for a simple VCR connection.

DISCUSSION -----

The Macintosh IIsi does NOT support interlaced video devices. You will need to attach an RGB-NTSC converter to the video port, or to an installed video interface.

For more information, search under "Macintosh IIsi" and "NTSC".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8234



# Tech Info Library

## Macintosh Portable: Use Portable INIT 1.3 with Modem (9/94)

Revised: 9/19/94  
Security: Everyone

Macintosh Portable: Use Portable INIT 1.3 with Modem (9/94)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 19 September 1994

TOPIC -----

I can't get a modem to work with the Macintosh Portable. I have tried two different modems and verified that they work when plugged into another Macintosh model running the same software.

DISCUSSION -----

The Macintosh Portable INIT version 1.3 helps with these types of problems.

You might also want to reset the power manager by depressing the reset button and the programmer's switch at the same time.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

Article Change History:

19 Sep 1994 - Revised locating a binary attachment.  
02 Feb 1993 - Updated to explain how to locate binary attachment.

Support Information Services

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8236



# Tech Info Library

## Laser Fonts: Corrupted Font Problems

Revised: 9/3/91  
Security: Everyone

Laser Fonts: Corrupted Font Problems

Article Created: 14 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I'm experiencing an intermittent problem when using the font "Times 12".

It sometimes does not use the whole line. No characters are lost; it simply prints the rest of the line on the next line.

Some documents do work, others don't. Generally if I take a file that does not work and either change the font style or size, it prints correctly. I tried re-installing the fonts with no success. I've taken the "bad" file and printed it on another computer and laser printer and it works!

DISCUSSION -----

This type of problem is usually caused by a corrupt font installed in the System; we would recommend at least replacing the font with Font/DA Mover, if not trashing and reinstalling the operating system with Installer.

If the problem persists, try reloading the application from diskette.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8238





# Tech Info Library

## Macintosh IIsi: Logic Board ROM Slot is for Upgrades

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Logic Board ROM Slot is for Upgrades

=====

Article Created: 14 May 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Some Macintosh IIsi computers have a slot and a board next to the NuBus/030 expansion slot. I can't find any information about the slot in the manuals or recent magazines.

DISCUSSION -----

The ROM SIMM slot is for upgrading Macintosh IIsi ROMs. There are actually two versions of the logic board being shipped as of December 1990: One type has the ROM surface-mounted to the logic board; the other does not have this ROM at all (only a space for it) but does have the SIMM installed.

The rule-of-thumb for the ROM SIMM: If a board has it, don't remove it; if it doesn't, don't put one in.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8239



# Tech Info Library

## Macintosh Portable: What Monitors can be Attached

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: What Monitors can be Attached

=====

Article Created: 14 May 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 29 July 1992

TOPIC -----

What monitors can be connected to the Macintosh Portable's monitor port?

DISCUSSION -----

The Macintosh Portable needs a monitor adapter to connect a monitor to its video port. Various third party adapters are available.

For more information, search under "Portable" and "video".

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8240



# Tech Info Library

## Apple Printers: How To Print KanjiTalk Documents

Revised: 9/17/92  
Security: Everyone

Apple Printers: How To Print KanjiTalk Documents

=====

Article Created: 30 August 1991

### Article Change History

-----

09/16/92 - UPDATED

- To include information on locating Kanji resellers.

### TOPIC -----

If I'm using Kanji Talk and a Japanese word processing package, such as Kanji Word, do I need to make any special modifications to print to a LaserWriter?

### DISCUSSION -----

You'll need an Apple LaserWriter IINTX-J, a Kanji-compatible LaserWriter, which is available in Japan as well as a limited but growing number of resellers in the United States. You can call 1-800-882-8856 to find a reseller in your area.

You can also use Kanji TrueType or ATM-J with any QuickDraw printer, such as a StyleWriter or Personal LaserWriter LS.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8244



# Tech Info Library

## Apple IIGS: Memory Requirements for an AppleShare Network

Revised: 9/3/91  
Security: Everyone

Apple IIGS: Memory Requirements for an AppleShare Network

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have Apple IIGS computers (ROM version 01, 512K RAM) on an AppleShare network. When I try to logon to the server from a workstation, I get garbage on the screen that looks like:

```
                                2.1(GS/OS)
00/1179:    00 00          BRK00
A=0201      X=01E0      Y=000E      S01E2      D=0000      P=01
B=00        K=00        m=0c        Q=9E        L=1        m=0        x=0        e=0
```

This occurs about half way through the login process (thermometer bar half way across).

The settings are correct according to the manual (Slot 1 = Your card, Slot 7 = AppleTalk, Startup Slot = 7). My RAM disk is set for 256 Minimum, 256 maximum its only possible setting).

The one Apple IIGS that logs on without a problem has ROM version 3 and 1MB of RAM.

DISCUSSION -----

Your Apple IIGS computers don't have enough memory: they require 768k to run. Check your memory expansion cards and verify that they don't have more than eight chips on the cards.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8245



# Tech Info Library

## ImageWriter II: Problems Feeding Form Paper

Revised: 9/3/91  
Security: Everyone

ImageWriter II: Problems Feeding Form Paper

=====  
Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My ImageWriter II's four-page form paper is falling out of the sprockets when feeding. I tried cleaning the platen and the bottom guide.

DISCUSSION -----

Assuming you're not using both the friction and manual feed settings simultaneously, there's really only one adjustment you can make: Reset the clear plastic paper guide that mounts on the ribbon carriage assembly.

The rule of thumb is: Loosen the paper guide and put your four-part form AND one additional piece of paper through the printer. Press the paper guide up to the mass of paper -- not too tight -- and tighten the guide's screws. This gives the proper clearance for the four-part form plus a slight amount for margin-of-error. You may also have to run your forms with the paper bail up (not riding the platen).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8246



# Tech Info Library

## Apple IIGS: Daisy Chaining DuoDisks

Revised: 9/3/91  
Security: Everyone

Apple IIGS: Daisy Chaining DuoDisks

=====

Article Created: 14 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Apple IIGS has a 3.5-inch drive plugged in to the internal port. Can I daisy-chain a DuoDisk off the 3.5-inch drive or does the DuoDisk need its own separate controller in slot 6?

DISCUSSION -----

Older Apple IIGS computers (ROM 01), you can connect the DuoDisk directly to the SmartPort or to a drive attached to the SmartPort.

Newer Apple IIGS computers (ROM 03) need a DuoDisk interface card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8247



# Tech Info Library

## Macintosh Portable: Number of Times Battery can be Discharged

Revised: 7/30/92  
Security: Everyone

Macintosh Portable: Number of Times Battery can be Discharged

=====

Article Created: 14 May 1991  
Article Last Reviewed: 30 July 1992  
Article Last Updated:

TOPIC -----

How many times can a Macintosh Portable's battery be completely discharged before it no longer holds a charge?

DISCUSSION -----

Just one complete discharge of the Macintosh Portable's lead acid battery can damage the battery's cells to the point where it could no longer hold a charge.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8248



# Tech Info Library

## Macintosh: Error -61 Write Permissions Error

Revised: 9/6/91  
Security: Everyone

Macintosh: Error -61 "Write Permissions Error"

=====

Article Created: 14 May 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated:

TOPIC -----

Using a Macintosh IIsi and System 6.0.7, I keep getting an error -61 when playing sound in the Control Panel, especially when recording and saving sound files.

DISCUSSION -----

A -61 error is a "Write Permissions Error" where the Macintosh System is keeping the active application from making changes to a file or directory structure. If the problem is occurring in the Control Panel, this suggests a locked file somewhere in the System Folder (basically, no System file should ever be locked) or a corrupt Desktop.

If all of the System files are unlocked and the problem persists, we recommend trashing and reinstalling the System Folder using the Installer on your system disks.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8249





# Tech Info Library

## Display Card 8•24: How to output NTSC without a converter

Revised: 7/2/92  
Security: Everyone

Display Card 8•24: How to output NTSC without a converter

Article Created: 14 May 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated:

### TOPIC -----

Can the Macintosh Display Card 8•24 be used to display images from the Macintosh on a video display or a TV without an NTSC converter?

### DISCUSSION -----

The Display Cards 8•24 and 8•24 GC do not use software for switching to the NTSC interlaced mode. To put the Display Card 8•24 into the NTSC mode, a properly configured cable is all that is required. Most NTSC devices use an RCA-type phono-connector, so this diagram uses that as a reference point.

Adjust the phono-connector side to whatever type of connector is used. "Tip" is the pin in the center of the connector (the signal); the sleeve is flanged around the outer edges of the connector (the chassis ground).

| Card Connector                              | RCA-Type Phono-Connector |
|---------------------------------------------|--------------------------|
| -----                                       | -----                    |
| 4        MON.ID1    (sense0) --\| |  |
| 7        MON.ID2    (sense1) --\| |  |
| 11       C&VSYNC.GND -----\| |  |
| 5        GRN.VID    -----> Tip (signal)     |                          |
| Shell    CHASSIS.GND -----> Sleeve (ground) |                          |

By grounding pin 4 and pin 7 to pin 11, the video cards are told that an interlaced (NTSC) monitor is attached. The actual black and white video signal is on pin 5 and connects to the center (Tip) of the phono-plug. The shell of the card connector connects to the sleeve of the phono-plug.

To acquire a color NTSC signal from any Apple Macintosh display card, an

RGB-to-NTSC converter is required.

For more information, search under "NTSC video encoding".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8256



# Tech Info Library

## System 7: Background Printing and PageMaker

Revised: 12/11/92  
Security: Everyone

System 7: Background Printing and PageMaker

Article Created: 8 August 1991

### Article Change History

-----  
09/02/92 - REVIEWED  
    • For technical accuracy.  
12/10/92 - UPDATED  
    • To include PageMaker 4.2 information.

### TOPIC -----

I want to use background printing with PageMaker 4.0. PageMaker normally uses the Aldus drivers, which don't use PrintMonitor. Is there a way I can do this?

### DISCUSSION -----

You can use the Apple LaserWriter driver by holding down the option key, selecting print from the menu, and then clicking the print button. This uses the Apple driver instead of the APD. The next dialog will be the standard Apple LaserWriter 7.0 page setup dialog followed by the Apple LaserWriter 7.0 print dialog. If background printing has been turned on in the Chooser, it should work, but may not. Aldus Technical Support provided this information.

There are other reasons for selecting the Apple driver instead of the Aldus driver. Apple drivers will print PICT files better, whereas the APD prints TIFF and PostScript better.

Version 4.2 of PageMaker is System 7 savvy. The Aldus print drivers can take advantage of background printing unlike the prior versions.

Contact Aldus Technical Support for further clarification.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8257



# Tech Info Library

## Ares Software

Revised: 4/4/97  
Security: Everyone

Ares Software

=====

Article Created: 08/09/91  
Article Reviewed: 07/01/93  
Article Updated: 04/04/97

Ares Software  
-----

P.O. Box 4667  
Foster City, CA 94404

415-578-9090

415-378-8999 Fax

Company Profile:  
Software, specializing in desktop publishing-oriented applications for  
bridging PostScript and TrueType technologies for the Macintosh. Also  
developing new font technologies.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8260



# Tech Info Library

## Omnishore Electronics Manufacturing

Revised: 7/15/93  
Security: Everyone

Omnishore Electronics Manufacturing

=====

Article Created: 9 August 1991  
Article Reviewed/Updated: 1 December 1992

Omnishore Electronics Manufacturing

-----

1700 Forrest Way  
Carson City, NV 89706

800-982-3232

702-687-2800

702-687-2836 Fax

### Company Profile:

Formerly First Class Peripherals, hardware and software, specializing in external disk drives, CD-ROMs, and tape backup products for the Apple IIE, and GS systems

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8261



# Tech Info Library

## Hearlihy and Co. (USA)

Revised: 7/9/93  
Security: Everyone

Hearlihy and Co. (USA)

=====

Article Created: 08/09/91  
Article Reviewed: 07/09/93  
Article Updated: 04/03/92

Hearlihy and Co. (USA)

-----

714 W. Columbia Street  
Springfield, OH 45504

800-622-1000

513-324-2260 Fax

### Company Profile:

Hardware and software, including drafting and plotter supplies, and software for the Macintosh, Apple II, and IBM PC computers, specializing in integrating technology into industrial education.

### Mailing Address

P.O. Box 8690  
Springfield, OH 45501

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8262



# Tech Info Library

## **Novy, Inc. (Formerly System Technology Corporation)**

Revised: 4/4/97  
Security: Everyone

Novy, Inc. (Formerly System Technology Corporation)

=====

Article Created: 9 August 1991  
Article Reviewed/Updated: 4 April 1997

Novy, Inc.  
-----

107 E. Palm Wy.  
Suite 14  
Edgewater, FL 32132

904-428-0411 (Technical Support)

800-553-2038 (Orders only)

Fax: 904-428-0765

Company Profile:  
Formerly System Technology Corporation, hardware and software, specializing in  
expansion cards and software development tools for the Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8263





# Tech Info Library

## Taylorred Graphics

Revised: 4/4/97  
Security: Everyone

Taylorred Graphics

=====

Article Created: 9 August 1991  
Article Reviewed/Updated: 4 April 1997

Taylorred Graphics, software, specializing in Macintosh products for the vinyl-cutting and sign-making industries.

Taylorred Graphics  
P.O. Box 1900  
Freedom, CA 95019  
408-761-2481  
Fax: 408-761-2185

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8264



# Tech Info Library

## Tulin Technology

Revised: 7/20/93  
Security: Everyone

Tulin Technology

=====

Article Created: 9 August 1991  
Article Reviewed/Updated: 20 July 1993

Tulin Technology  
-----

2156H O'Toole Avenue  
San Jose, CA 95131

408-432-9025  
408-432-9057

Fax: 408-943-0782

Company Profile:  
Hardware and software, specializing in storage subsystems for the Macintosh  
and Apple II computers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8266



# Tech Info Library

## TSP Software

Revised: 4/4/97  
Security: Everyone

TSP Software

=====

Article Created: 6 September 1991  
Article Reviewed/Updated: 4 April 1997

TSP Software

-----

4790 Irvine Blvd.  
Suite 105-294  
Irvine, CA 92720

714-731-1368

Fax: 714-832-8568

Company Profile:  
Software, specializing in database software for the Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8267



# Tech Info Library

## Bureau of Electronic Publishing, Inc.

Revised: 7/6/93  
Security: Everyone

Bureau of Electronic Publishing, Inc.

=====

Article Created: 06/03/91  
Article Reviewed: 07/06/93  
Article Updated: 12/01/92

Bureau of Electronic Publishing, Inc.

-----

141 New Road  
Parsippany, NJ 07054

201-808-2700

800-828-4766

201-808-2676 Fax

Company Profile:  
Source for multimedia

Article Change History: 07/06/93 New Product Information Changed

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8271



# Tech Info Library

## ITT Power Systems Corporation

Revised: 7/19/93  
Security: Everyone

ITT Power Systems Corporation

=====

Article Created: 3 June 1991  
Article Reviewed/Updated: 19 July 1993

ITT Power Systems Corporation

-----

3400 East Britannia Drive  
Suite 122  
Tucson, AZ 85706

602-889-7600

Fax: 602-294-1808

Company Profile:  
Specializing in manufacturing regular and custom backup power supplies.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8272



# Tech Info Library

## NoRad Corporation

Revised: 7/14/93  
Security: Everyone

NoRad Corporation

=====

Article Created: 3 June 1991  
Article Reviewed/Updated: 14 July 1993

NoRad Corporation

-----

1160 East Sand Hills Ave.  
Carson, CA 90746

800-262-3260

310-395-0800

310-605-5051 Fax

Company Profile:  
Specializing in radiation and glare shields for computer screens.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8274



# Tech Info Library

## Optical Data Corporation

Revised: 4/6/94  
Security: Everyone

Optical Data Corporation

=====

Article Created: 3 June 1991  
Article Reviewed/Updated: 6 April 1994

Optical Data Corporation

-----

30 Technology Dr.  
Warren, NJ 07059

800-524-2481

914-591-5500 (Technical Support for Visual Almanac Product)

908-668-1322 Fax

Company Profile:  
Specializing laser-disk educational publishing.

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8275



# Tech Info Library

## Pacific Business Data Systems

Revised: 4/9/92  
Security: Everyone

Pacific Business Data Systems

=====

Article Created: 6 June 1991  
Article Last Reviewed:  
Article Last Updated:

Pacific Business Data Systems, specializing in printer repair.

Pacific Business Data Systems  
258 Lindbergh Avenue  
Livermore, CA 94550  
Fax: 415-294-1736

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8276





# Tech Info Library

## Preowned Electronics

Revised: 7/15/93  
Security: Everyone

Preowned Electronics

=====

Article Created: 3 June 91  
Article Reviewed: 15 July 1993

Preowned Electronics

-----

205 Burlington Road  
Bedford, MA 01730

800-274-5343

617-275-4600

617-275-4848 Fax

Company Profile:

Hardware, specializing in used Apple II equipment and discontinued Macintosh equipment

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8277



# Tech Info Library

## Daisy Wheel Printer Repair

Revised: 9/9/91  
Security: Everyone

Daisy Wheel Printer Repair

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Where can I get a daisy wheel printer repaired?

DISCUSSION -----

Pacific Business Data Systems will repair almost any daisy wheel printer.

You can find the address and phone number for this company in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8278



# Tech Info Library

## CD-ROMs: Catalog of Titles

Revised: 9/9/91  
Security: Everyone

CD-ROMs: Catalog of Titles

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Where can I get information about CD-ROMs and drives?

DISCUSSION -----

The Bureau of Electronic Publishing, Inc. publishes a catalog called "The Source for CD-ROM." The catalog lists a large selection of CD-ROM titles, drives and accessories for the Macintosh and PC.

Search under the title of the company (Bureau of...) to find more info.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8279



# Tech Info Library

## AppleWriter to AppleWorks Upgrade

Revised: 9/9/91  
Security: Everyone

AppleWriter to AppleWorks Upgrade

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I upgrade AppleWriter software to AppleWorks?

DISCUSSION -----

AppleWriter users can upgrade to AppleWorks 3.0 by contacting Claris Corporation Customer Relations. Additionally, customers who already own ANY version of AppleWorks may upgrade to AppleWorks GS.

You can find the address and phone number for Claris Corporation in a separate article in the Tech Info Library. Search under "Claris".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8280



# Tech Info Library

## Apple II: Sources of Used Equipment

Revised: 10/7/93  
Security: Everyone

Apple II: Sources of Used Equipment

=====

Article Created: 3 June 1991

TOPIC -----

I want to purchase discontinued Apple II equipment. Where can I find it?

DISCUSSION -----

Preowned Electronics has a large selection of used Apple II equipment.

Sun Remarketing is another source as well.

You can find the address and phone number for these companies in a separate article on the Tech Info Library. Search under the name you want to find.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8281



# Tech Info Library

## Macintosh II: Personal Vision Frame Grabber from Orange Micro

Revised: 9/10/91  
Security: Everyone

Macintosh II: Personal Vision Frame Grabber from Orange Micro

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes a product called Personal Vision, available from Orange Micro.

DISCUSSION -----

Personal Vision is a frame grabber and video digitizer card that is also capable of importing live video directly into a window on a Macintosh II.

The address and phone number for Orange Micro is in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8283



# Tech Info Library

## Macintosh: Telephone Call Routing System

Revised: 9/10/91  
Security: Everyone

Macintosh: Telephone Call Routing System

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the TFLEX Telephone Call Routing System available from Magnum Software Corporation.

DISCUSSION -----

TFLEX is an automated phone-handling system that uses a Macintosh to route calls to an appropriate department or provide voice mail services. It uses a voice digitizer connected to a Macintosh serial port. TFLEX stores incoming messages on a Macintosh hard disk. Full picture programming allows the user to customize the software. TFLEX works with video phones. The FAX module requires a FAX modem.

You can find the address and phone number for Magnum Software Corporation in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8284



# Tech Info Library

## Monitor Glare & Radiation Shields from NoRad

Revised: 9/10/91  
Security: Everyone

Monitor Glare & Radiation Shields from NoRad

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the NoRad Shield™ available from the NoRad Corporation.

DISCUSSION -----

The NoRad Shield eliminates through-screen non-ionizing electromagnetic radiation while disposing of glare, reflections, and static electric field.

You can find the phone number and address of the NoRad Corporation in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8285





# Tech Info Library

## Macintosh: Video Digitizers

Revised: 9/10/91  
Security: Everyone

Macintosh: Video Digitizers

=====  
  
Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes two video digitizers available for the Macintosh.

DISCUSSION -----

MacVision 2.0

-----  
MacVision 2.0 Video digitizer, from Koala Technologies, offers 256 shades of gray and 640 x 480 resolution. It runs on a 512K or later Macintosh.

MacVision allows a user to put digitized pictures and graphics into a Macintosh, or take video images from a VCR or laserdisc player.

Here are the features of MacVision:

- Accepts any video source
- Images both flat and three-dimensional objects
- Ten different scanning techniques
- Compatible with all major software
- Works as both a desk accessory and a desktop application

ComputerEyes

-----  
ComputerEyes Video digitizer, from Digital Vision, Inc., runs on a 512KE or later Macintosh, and requires 1MB of RAM.

ComputerEyes is a hardware and software system that digitizes images from any standard video source (video camera, VCR, videodisc, and others). Under software control, the system scans the video signal and captures images into the graphics memory of the computer. It then displays images on

the screen, and allows modification with several image-manipulation options. Images are saved to disk for use with other graphics programs.

The ComputerEyes system software supports the graphics capabilities of all Macintosh computers. On a Macintosh II, images display with 256 grays for a near-photographic image. On other Macintosh systems, images display with several options of dither patterns to maximize image quality for all types of images.

Captured images may be saved to disk in a number of formats independent of the computer's display capabilities. Formats supported by ComputerEyes include MacPaint, PICT, gray-scale, and bit-mapped TIFF and Encapsulated PostScript.

With these file formats, ComputerEyes images can be imported to graphics programs, desktop publishing programs, image databases, drawing or painting programs, authoring systems, and animation programs for image display or printing.

#### Contact Information

-----  
You can find the addresses and phone numbers for Digital Vision and Koala Technologies in separate articles in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8286



# Tech Info Library

## LaserWriter Utility: Supersedes The Namer Utility (1/96)

Revised: 1/8/96  
Security: Everyone

LaserWriter Utility: Supersedes "The Namer" Utility (1/96)

Article Created: 13 May 1991  
Article Reviewed/Updated: 8 January 1996

TOPIC -----

Is there an upgraded version of "The Namer" that allows me to name a LaserWriter under System 7.x? I have version 2.1 of The Namer application, and I keep getting the alert:

"No printer or device files can be found on your boot disk!"

DISCUSSION -----

The Namer 2.1 utility is not fully compatible with System 7.0 or later. An updated version of The Namer, 7.0 is available online. However to name LaserWriter printers, The Namer was superseded by the LaserWriter Utility. The latest version of the LaserWriter Utility is version 7.7.

The LaserWriter Utility 7.7 is backward compatible with all PostScript Apple LaserWriter printers. The latest version of the LaserWriter Utility can be found on online services.

You must continue using The Namer to name an ImageWriter II printer with a LocalTalk Option Card installed. However, because The Namer is unable to locate the printer driver in the Extensions folder of a System 7.x system folder, use the following workaround to name an ImageWriter II with a LocalTalk Option Card installed:

Step 1  
-----

Move the ImageWriter driver up one level from the Extensions folder to the System Folder. Do this by dragging the AppleTalk ImageWriter II driver from the Extensions folder to your open System folder.

Step 2  
-----

## ..TIL08289-LaserWriter\_Utility-Supersedes\_The\_Namer\_Utility\_1-96.pdf

- Launch The Namer application.
- Click the AppleTalk ImageWriter icon to search for the printer you want to name.
- Click in the Available devices window on the left to select the printer you want to name.
- Name your printer in the New Name of Device text box on the right.
- Click the Rename button.
- Quit The Namer application.

### Step 3

-----

Move the AppleTalk ImageWriter printer driver back into the Extensions folder.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

### Article Change History:

08 Jan 1996 - Reviewed for technical accuracy.

03 Aug 1995 - Added information on workaround for ImageWriter II.

30 Jan 1995 - Updated with current version and obtaining the latest version.

### Support Information Services

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Tech Info Library Article Number:8289



# Tech Info Library

## AppleTalk Internet Router: How To Install with System 7 (3/94)

Revised: 3/23/94  
Security: Everyone

AppleTalk Internet Router: How To Install with System 7 (3/94)

=====

Article Created: 9 October 1991  
Article Reviewed/Updated: 23 March 1994

TOPIC -----

How do I install Internet Router 2.0 on a System 7 Macintosh?

DISCUSSION -----

Important Note: Internet Router 2.0 is NOT compatible with System Software 7.1. Machines running System Software 7.1 will require the Apple Internet Router 3.0 Basic Connectivity Package.

If you are running a system software version prior to 7.1, then there are two ways to correctly install the AIR 2.0 Macintosh running System 7.

The best and easiest way to install the AIR 2.0 on a System 7 Macintosh is to use the latest Network Software Installer (NSI) disk. To do this, run the Installer and select the "Customize" option. Select the "AppleTalk Router (v 2.0) for System 7" option and install. The installer will ask for the AIR 2.0 disk and properly install the software.

The second method is to manually install the files from the AIR 2.0 disk. Here is the installation procedure as found on page 100 of the "System 7 Group Upgrade Guide":

- 1) Install System 7 along with EtherTalk or TokenTalk.
- 2) Insert the AppleTalk Internet Router 2.0 disk.
- 3) Open the System file on the router disk. The System window lists desk accessories and fonts.
- 4) Drag the Router desk accessory to the System Folder icon on your System 7 hard disk. A dialog asks "Put this desk accessory into the Apple Menu Items folder?"
- 5) Click OK.
- 6) Close the System window.
- 7) From the AppleTalk Internet Router 2.0 disk's System Folder, drag the

following files to your System Folder:

- LocalTalk (Modem)
- LocalTalk (Built-in)
- Router

A dialog asks, "Put these items into the places they belong?"

8) Click OK.

9) Restart your Macintosh computer.

Article Change History:

12 Jan 1994 - Updated with information on NSI.

23 Mar 1994 - Updated that 7.1 requires AIR 3.0.

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Tech Info Library Article Number:8290



# Tech Info Library

## AccessPC v1.1: Requires AppleCD SC Driver v3.1

Revised: 9/10/91  
Security: Everyone

AccessPC v1.1: Requires AppleCD SC Driver v3.1

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

When AccessPC v1.1 is installed, I cannot mount a CD that has been formatted using the ISO 9660 File Access method. Before the CD driver can determine that a different file access method is required to mount the CD, AccessPC takes over and reports the volume an uninitialized.

I am using System 7.0 with the latest CD drivers (Apple CD-ROM extension v3.0).

DISCUSSION -----

We were able to duplicate the problem you describe. The solution is to use the latest version of the AppleCD SC drivers (version 3.1).

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Tech Info Library Article Number:8293



# Tech Info Library

## Macintosh Classic and Macintosh SE: Memory Map

Revised: 9/10/91  
Security: Everyone

Macintosh Classic and Macintosh SE: Memory Map

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the memory map of the Macintosh Classic and Macintosh SE?

DISCUSSION -----

The Macintosh Classic and the Macintosh SE share the same memory map; here it is:

| Range:                | Used for:          |
|-----------------------|--------------------|
| -----                 |                    |
| \$00 0000 - \$3F FFFF | RAM                |
| \$40 0000 - \$43 FFFF | ROM                |
| \$44 0000 - \$57 FFFF | No device assigned |
| \$58 0000 - \$5F FFFF | SCSI               |
| \$60 0000 - \$8F FFFF | No device assigned |
| \$90 0000 - \$9F FFFF | SCC read           |
| \$A0 0000 - \$A9 FFFF | No device assigned |
| \$AA 0000 - \$AF FFFF | Expansion enable   |
| \$B0 0000 - \$BF FFFF | SCC write          |
| \$C0 0000 - \$CF FFFF | No device assigned |
| \$D0 0000 - \$DF FFFF | IWM                |
| \$E0 0000 - \$E7 FFFF | No device assigned |
| \$E8 0000 - \$EF FFFF | VIA                |
| \$F0 0000 - \$FF FFFF | No device assigned |

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Tech Info Library Article Number:8295





# Tech Info Library

## EtherTalk NB Card: System 7 and Compatibility Issues

Revised: 9/10/91  
Security: Everyone

EtherTalk NB Card: System 7 and Compatibility Issues

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is the EtherTalk NB Card, Rev K, required for System 7 users or does it not matter?

DISCUSSION -----

System 7 does not pose any compatibility issues for EtherTalk cards. Here is a list of the Apple EtherTalk NB and Ethernet NB Cards that are compatible with the various Macintosh II class systems:

- Macintosh II or Macintosh IIX:

EtherTalk NB Card (M0410LL/A), Rev. J, K, L, or M  
Ethernet NB Card (M0417LL/A)

- Macintosh IICx, Macintosh IISI, or Macintosh IICI:

EtherTalk NB Card (M0410LL/A), Rev. K, L, or M  
(Rev L or M on Macintosh IICI with on-board video)  
Ethernet NB Card (M0417LL/A)

- Macintosh IIfx:

EtherTalk NB Card (M0410LL/A), Rev. K, L, or M (Rev J WON'T work)  
Ethernet NB Card (M0417LL/A)

Note: There is a remaining bug that affects Macintosh IICI owners who use the EtherTalk revision K card. Ethernet performance is adversely affected

when a user starts up the Macintosh IIci in 2-bit (4 colors) or more, using on-board video. To workaroud this problem, the user can use a revision L or M card, or not use on-board video (i.e. use a video card), or use only black-and-white video.

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Tech Info Library Article Number:8296



# Tech Info Library

## AppleShare PC: How to Run Microsoft Mail on a UngermannBass LAN

Revised: 9/10/91  
Security: Everyone

AppleShare PC: How to Run Microsoft Mail on a UngermannBass LAN

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the most reliable setup for running and printing Microsoft Mail over AppleTalk from an IBM that is also on a UngermannBass LAN?

DISCUSSION -----

Here's what we suggest for a setup:

NOTE: There are two lines below that have a character known as the "at symbol", which is above the number 2 on most standard keyboards. When you see "<at symbol>" listed in the code below, you type in the actual symbol, not the string "<at symbol>." AppleLink does not allow use of that character in an article.

- PS/2 80
- 4MB RAM
- DOS 3.3, Windows 3.0
- an UngermannBass Card
- DayStar AppleTalk card
- AppleShare PC 2.01 software
- Microsoft Mail for DOS software.

Here's what happens when under Windows (with the UngermannBass network drivers and Windows already loaded):

- 1) Program Manager calls Mail.PIF
- 2) Mail.PIF calls MSMAIL.BAT
- 3) MSMAIL.BAT loads AppleShare PC software

4) MSMAIL.BAT starts Microsoft Mail for PC.

5) When exiting Microsoft Mail, MSMAIL.BAT unloads the AppleShare PC drivers.

A key thing you'll need to duplicate this setup is the MSMAIL.BAT file.  
Here it is:

```
echo off
D:\ASPC\LSL > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\DSTARLT /NAME=DSTARLT > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\ATALK > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\PAP_WS > nul
    if errorlevel 1 goto aspc_err
d:\aspc\compat > nul
REM *** Memory usage for the above programs is approximately 75K bytes.
goto skip_aspc
:aspc_err
echo *** A fatal error has occurred while loading AppleShare PC. ***
pause *ASPC*
:skip_aspc
d:
cd\msmail2
mail
d:\aspc\anet remove all
```

Here are some autoexec.bat, config.sys, and Mail.PIF files:

```
config.sys
device=C:\himem.sys
device=C:\dasddrvr.sys
shell=c:\command.com /P /E:768
DEVICE=BRIDGE_B.DRV /PS80:1B
device=c:\mouse.sys /Y
device=C:\WIN3\smartdrv.sys 2048 512
device=c:\LANMAN\NETPROG\NETCICOM.DRV
files=30
BUFFERS=10
stacks=0,0
break=ON
lastdrive = z
```

```
autoexec.bat
C:\WIN3\AD-DOS.COM
<at symbol>echo off
set TEMP=C:\temp
prompt $p$g
PATH
```

```
C:\EXCEL3;d:\bat;c:\;c:\dos;c:\win3;c:\winword;D:\ASPC;c:\excel;d:\designer;c:
\
p
hon;c:\lanman\netprog
if exist %TEMP%\~????????.tmp erase %TEMP%\~????????.tmp
net start workstation
goto skip
:bad_pw
echo Please re-enter your password
:skip
net logon t7697 *
net view \\pdosrv1
if errorlevel 1 goto bad_pw
call c:\accessw\startei.bat
win
```

MS Mail Icon calls Mail.PIF. Mail.PIF has the following settings:

Program Filename: MSMAIL.BAT

Window Title: Mail

Optional Parameters:

Start-up Directory: D:\MSMAIL2

Memory Requirements: KB Required 128 KB Desired 640

Display Usage: Full Screen

Execution:

Close Window on Exit: (checked)

Advanced options...

all set to default values

The above is a simple PIF that calls MSMAIL.BAT MSMAIL.BAT follows...

```
<at symbol>echo off
D:\ASPC\LSL > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\DSTARLT /NAME=DSTARLT > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\ATALK > nul
    if errorlevel 1 goto aspc_err
D:\ASPC\PAP_WS > nul
    if errorlevel 1 goto aspc_err
d:\aspc\compat > nul
REM *** Memory usage for the above programs is approximately 75K bytes.
goto skip_aspc
:aspc_err
echo *** A fatal error has occurred while loading AppleShare PC. ***
pause *ASPC*
:skip_aspc
d:
cd\msmail2
mail
d:\aspc\anet remove all
```

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# Tech Info Library

## Macintosh/A/UX: No Support for AT&T's Remote File System (RFS)

Revised: 9/10/91  
Security: Everyone

Macintosh/A/UX: No Support for AT&T's Remote File System (RFS)

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Any way to support RFS (AT&T's Remote File System) from Macintosh OS or A/UX?

DISCUSSION -----

Neither the versions of A/UX are based on SYS V.2.2 (5.2.2) nor the Macintosh O/S support RFS.

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Tech Info Library Article Number:8298



# Tech Info Library

## VideoSync: How To Use with System 7 (9/93)

Revised: 9/3/93  
Security: Everyone

VideoSync: How To Use with System 7 (9/93)

=====

Article Created: 13 May 1991  
Article Reviewed/Updated: 3 September 1993

TOPIC -----

VideoSync hangs under System 7 when I launch Monitors Control Panel and select "Options" button (with or without Option key down). When I remove VideoSync things seem to work fine.

DISCUSSION -----

VideoSync is an extension of the Monitors Control Panel. VideoSync needs to be in the same folder as the Monitors Control Panel for the VideoSync controls to show in the Options section of the Monitors Control Panel.

VideoSync stores information in its resource fork. VideoSync expects itself to be at the root level of the System Folder.

For VideoSync to work properly, it needs to be in the same folder as the Monitors Control Panel and be at the root level of the System Folder. With System 6, this isn't a problem, in fact it is the only way it will work. With System 7, you need to be a little more creative. The Monitors Control Panel doesn't resolve aliases, so an alias for VideoSync in the Control Panels folder doesn't work.

One solution is to put a copy of VideoSync in the Control Panels folder and at the root level of the System Folder. This isn't good since the VideoSync INIT is loaded twice at startup.

The best solution is to put VideoSync and the Monitors Control Panel at the root level of the System Folder and put an alias of the Monitors Control Panel in the Control Panels folder (for convenience). Then restart your Macintosh.

Those using the 8•24 GC software will have to remove it.

Article Change History:

21 August 1992 - Revised to clarify explanation of needing VideoSync in two places, and combined with another article of a similar topic.  
3 September 1993 - Added note about 8•24 GC software.

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Tech Info Library Article Number:8299





# Tech Info Library

## A/UX 2.0 and 2.0.1: f77 open() Problem Workaround

Revised: 9/16/92  
Security: Everyone

A/UX 2.0 and 2.0.1: "f77 open()" Problem Workaround

=====

Article Created: 13 May 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

The f77 open() BUG is a long-standing problem in the f77 I/O runtime library (libI77.a), and I have seen this problem in other f77 implementations based on UNIX System V. The reason this problem hasn't been fixed is because it doesn't show up in the Fortran Compiler Validation Suite, the principle test suite for f77.

### DISCUSSION -----

Here are two files, named err.o and open.o, you can use while waiting for a version of A/UX that doesn't have this problem. You can either include these files when linking f77 programs, or these files can replace the f77 I/O runtime library files. (Replacing the files makes them a permanent part of the f77 system.)

To include the files in an f77 link, simply add their names to the list of files being linked together by the f77 command. For example:

```
f77 -o test test.f err.o open.o
```

To replace these files into the f77 I/O runtime library, enter the following command (you must be super-user to do this):

```
ar rv /usr/lib/libI77.a err.o open.o
```

Once you replace the files in the library, any f77 programs you link will

be fixed automatically.

This has been fixed in A/UX 3.0.

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Tech Info Library Article Number:8302



# Tech Info Library

## A/UX: 14-Character Filename Limit in SVFS (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: 14-Character Filename Limit in SVFS (8/94)

Article Created: 13 May 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

The filenames on my A/UX partition are limited to 14 characters. If the filename has more than 14 characters it's truncated to just 14.

How can I change this, so that the system lets me use a filename with more than 14 characters?

DISCUSSION -----

In A/UX, there is a 14-character limit in a filename in any SVFS (System V File System) partition. These files must be in an A/UX SVFS partition. However, UFS (Berkeley Fast File System) does not have this limit; it can be up to 255 characters long.

Copy your files to an UFS file system and rename them with a longer filename. Or, convert a SVFS into an UFS:

- 1) Back up all SVFS files.
- 2) Create a new UFS partition.
- 3) Copy the files to the new UFS partition.
- 4) Rename the files to longer filenames in the UFS partition.

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8303



# Tech Info Library

## A/UX 2.0.1: Correction to CD-ROM Installation Instructions

Revised: 9/24/92  
Security: Everyone

A/UX 2.0.1: Correction to CD-ROM Installation Instructions

=====

Article Created: 13 May 1991

### Article Change History

-----

08/31/92 REVIEWED

- For technical accuracy.

### TOPIC -----

I've just received the complete A/UX 2.0.1 package and I've found some minors problems installing it.

Just as I did with A/UX 2.0, here's what I'm doing:

- 1) Initialize and partition the disk with Apple HD Setup.
- 2) Install Macintosh System 6.0.7 on the Macintosh partition.
- 3) Copy the contents of the disks "A/UX Startup" and "A/UX Startup Utilities" onto the Macintosh partition.
- 4) Launch A/UX Install from the disk "Floppy Launch".
- 5) Insert the disk "Floppy Root" at prompt.
- 6) Answer the questions and then reboot.
- 7) Launch the application "Read disk".
- 8) At this point I can't find the disk "Kernel Archive". The shipping list doesn't mention this disk. Then, I searched in the installation documentation (which is an A/UX 2.0 version and it indicates that I have to launch "Read disk".

9) Finally, I launch A/UX Startup and the installation is complete.

So, my questions are:

- What is "Read disk" for, since I don't need this application to install A/UX 2.0.1?
- Why doesn't the documentation contain an addendum to indicate the change in the installation procedure?

#### DISCUSSION -----

There is problem when installing a complete A/UX 2.0.1 from CD-ROM by following the installation instructions in the A/UX 2.0 Installation Guide.

When installing a complete A/UX 2.0.1 from a CD-ROM, ignore steps 17 through 20, and double-click A/UX Startup instead. The "Kernel Archive" disk is not included in A/UX 2.0.1, and the "read disk" is no longer needed for installing A/UX 2.0.1

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Tech Info Library Article Number:8304



# Tech Info Library

## A/UX 2.0 and 2.0.1: adduser Problem

Revised: 9/18/92  
Security: Everyone

A/UX 2.0 and 2.0.1: adduser Problem

Article Created: 13 May 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
    • For technical accuracy.  
08/31/92 - Updated  
    • To include information on version problem was fixed.

### TOPIC -----

Is there a bug in /etc/adduser, specifically in /usr/lib/addusersub A/UX 2.0?

### DISCUSSION -----

Yes there is a problem with the adduser in both A/UX 2.0 and A/UX 2.0.1.

When adding users in interactive mode the first available UID>=1000 is used. But if an entry in the /etc/passwd has a UID>=1000 and the password field is empty (for example, tom::1007:50:Tom van Peer,ois,,:/users/tom:/bin/ksh), this UID is used for the new user.

This has been fixed in A/UX 3.0.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8305



# Tech Info Library

## Unix Shell Scripts for Remote Printing (9/94)

Revised: 9/8/94  
Security: Everyone

Unix Shell Scripts for Remote Printing (9/94)

Article Created: 13 May 1991  
Article Reviewed/Updated: 7 September 1994

TOPIC -----

Do you have any information regarding Unix shell scripts for printing from SystemV to SystemV or from SystemV to BSD and vice versa?

DISCUSSION -----

Thank's to Gilles Allain for sending us UNIX scripts that print from SystemV to SystemV or from SystemV to BSD and vice versa. These scripts have been written by Alslys (ADA from A/UX) which is allowing us to freely distribute them.

-----

```
#!/bin/sh
#####
#                               /usr/spool/lp/model/remote4BSD                               #
#                               #                                                           #
#       Alslys lp interface for remote printer on 4.xBSD host                             #
#       Copyright (C) Alslys, 1987. All rights reserved.                               #
#                               #                                                           #
# Options recognized:                                                                #
#       nb | -nb           do not output banner page (to save paper)                   #
# Other options are passed to remote 4.xBSD lp                                         #
#####

#####
# Installation instructions for printing on remote 4.xBSD host "Xyz":  #
# - make sure Xyz is correctly reachable by local system's lp:         #
#   - Xyz's /etc/hosts.equiv file must have an entry for local system  #
#   - A user named lp must exist on Xyz                                   #
#   - Xyz's lpr command must recognize the "-h" option                 #
# - create a dummy device file remotelp (needed for scheduler's sake): #
#       ln /dev/null /dev/remotelp                                         #
```



## ..TIL08306-Unix\_Shell\_Scripts\_for\_Remote\_Printing\_9-94\_(TA46759).pdf

```
# - install this model for "printer" XYZ:                                     #
#      /usr/lib/lpadmin -v/dev/remotelp -pXYZ -mremote4BSD                   #
#####

# Save the arguments to the model

# Define remote system from "printer" name
remote=`basename $0`
reqid=$1
user=$2
title=$3
copies=$4
tempfile=./request/$remote/$reqid

# Handle disable and cancel traps.

trap "echo '\nCANCELLED!!!';rm -f $tempfile;exit 1" 15

# Determine which options have been invoked

banner="yes"
remoteopts=""

for i in $5
do
    case "$i" in
        -nb | nb) # Do not print banner page
            banner="";;
        *)        # other options passed to remote 4.xBSD lpr
            remoteopts=$remoteopts" "$i;;
    esac
done

# Assume that the rest of the arguments are files

shift; shift; shift; shift; shift
files="$*"

# Redirect output to temporary file

exec > $tempfile

if [ -n "$banner" ]
then
    # Print the header

    x1="  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX  A/UX"
    x2="A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX"
    echo "$x1\n$x2\n$x1\n$x2\n"
    echo "\t\t" `uname -a` "\n\n"
    banner "$user"
```

```
        echo "\n"
        banner @"hostname`
        echo '\n'
        user=`grep "^$user:" /etc/passwd | line | cut -d: -f5`
        if [ -n "$user" ]
        then
            echo "User: $user\n"
        else
            echo "\n"
        fi
        echo "Request id: $reqid      Remote printer: $remote\n"
        date
        echo "\n"
        if [ -n "$title" ]
        then
            banner "$title"
        fi
        echo "\014\r\c"
    fi

# Print the spooled files

i=1
while [ $i -le $copies ]
do
    for file in $files
    do
        cat "$file" 2>&1
        echo "\014\r\c"
    done
    i=`expr $i + 1`
done

# Stop redirection

exec > /dev/null

# Send to remote 4.xBSD system print spooler (without remote banner)

if cat $tempfile | /usr/bin/remsh $remote lpr -h $remoteopts
then
    status=0
else
    status=$?
    disable -r"can't access $remote host" $remote
fi

# Remove temporary file
rm $tempfile

exit $status

-----
```

```
#!/bin/sh
#####
#                               /usr/spool/lp/model/remoteSysV                               #
#                               #                                                           #
#       Alsys lp interface for remote printer on System V host                           #
#       Copyright (C) Alsys, 1987. All rights reserved.                                #
#                               #                                                           #
# Options recognized:                                                                #
#       nb | -nb          do not output banner page (to save paper)                    #
# Other options are passed to remote System V lp                                    #
#####

#####
# Installation instructions for printing on remote System V host "Xyz": #
# - make sure Xyz is correctly reachable by local system's lp:           #
#   - Xyz's /etc/hosts.equiv file must have an entry for local system    #
#   - A user named lp must exist on Xyz                                  #
#   - Xyz's default lp interface model must recognize the "-nb" option  #
# - create a dummy device file remotelp (needed for scheduler's sake):  #
#   ln /dev/null /dev/remotelp                                           #
# - install this model for "printer" Xyz:                                  #
#   /usr/lib/lpadmin -v/dev/remotelp -pXyz -mremoteSysV                 #
#####

# Save the arguments to the model

# Define remote system from "printer" name
remote=`basename $0`
reqid=$1
user=$2
title=$3
copies=$4
tempfile=./request/$remote/$reqid

# Handle disable and cancel traps.

trap "echo '\nCANCELLED!!!';rm -f $tempfile;exit 1" 15

# Determine which options have been invoked

banner="yes"
remoteopts=""

for i in $5
do
    case "$i" in
        -nb | nb) # Do not print banner page
            banner="";;
        *)        # other options passed to remote SysV lp
            remoteopts=$remoteopts" -o"$i;;
    esac
done
```

```
done

# Assume that the rest of the arguments are files

shift; shift; shift; shift; shift
files="$*"

# Redirect output to temporary file

exec > $tempfile

if [ -n "$banner" ]
then
    # Print the header

    x1="  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX  A/UX"
    x2="A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX"
    echo "$x1\n$x2\n$x1\n$x2\n"
    echo "\t\t" `uname -a` "\n\n"
    banner "$user"
    echo "\n"
    banner @`hostname`
    echo '\n'
    user=`grep "^$user:" /etc/passwd | line | cut -d: -f5`
    if [ -n "$user" ]
    then
        echo "User: $user\n"
    else
        echo "\n"
    fi
    echo "Request id: $reqid      Remote printer: $remote\n"
    date
    echo "\n"
    if [ -n "$title" ]
    then
        banner "$title"
    fi
    echo "\014\r\c"
fi

# Print the spooled files

i=1
while [ $i -le $copies ]
do
    for file in $files
    do
        cat "$file" 2>&1
        echo "\014\r\c"
    done
    i=`expr $i + 1`
```

```
done

# Stop redirection

exec > /dev/null

# Send to remote SysV system print spooler (without remote banner)

if cat $tempfile | /usr/bin/remsh $remote lp -onb $remoteopts
then
    status=0
else
    status=$?
    disable -r"can't access $remote host" $remote
fi

# Remove temporary file
rm $tempfile

exit $status

-----

#!/bin/sh
#####
#                               /usr/local/lib/rsys5lpf                               #
#                                                                                       #
#      Alsys "if" lpr input filter for remote printer on SystemV host #
#      Copyright (C) Alsys, 1988. All rights reserved. #
#####

#####
# - to be used with a printcap entry of the type: #
#      # Remote printer on SystemV host Xyz. #
#      Xyz|Xyz|remote printer on Xyz:\ #
#              :lp=/dev/null:if=/usr/local/lib/rsys5lpf:\ #
#              :af=Xyz:sd=/usr/spool/lpd/Xyz:tr=: #
# - kludge needed for this to work: "af" file name must be same as #
#      remote system hostname (Xyz). Printer name may be different. #
#####

# A lpr if filter is invoked with the following arguments:
#      filter [-c] -wWIDTH -lLENGTH -iINDENT -n LOGIN -h HOST ACCOUNTING_FILE
# %%% WARNING: this may vary slightly from one version of lpr to the other;
%%
# %%% check for your system and modify parameter setup below as appropriate
%%

# Kludge optional -c argument (-l lpr option)
#      into sort of -h option (suppress banner page)
if [ "$1" = "-c" ]
then
```

```
        banner=""
        shift
    else
        banner="yes"
    fi

# Setup print job parameters from appropriate filter arguments
remote=$8      # kludge: define remote host name from "accounting file" name!
local=$7       # local host name
user=$5        # job owner's login name
userttys=`who | awk '/^'$user'/ {ORS=" ";print $2}` ` # job owner's tty(s)

printfile=/usr/spool/lpd/$remote/pf${}$remote
messfile=/usr/spool/lpd/$remote/mf${}$remote

# Handle interrupt traps
trap "echo '\nCANCELLED!!!';rm -f $printfile $messfile;exit 1" 2 15

# Redirect errors to temporary file
exec 2> $messfile

# Redirect output to temporary file
exec > $printfile

if [ -n "$banner" ]
then
    # Print the header
    x1="  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX  A/UX"
    x2="A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX  A/UX
A/UX  A/UX  A/UX"
    echo "$x1\n$x2\n$x1\n$x2\n"
    echo "\t\t\t" `uname -nrvm` "\n\n"
    banner "$user"
    echo "\n"
    banner @$local
    echo '\n'
    name=`grep "^$user:" /etc/passwd | line | cut -d: -f5`
    if [ -n "$name" ]
    then
        echo "User: $name\n"
    else
        echo "\n"
    fi
    echo "Remote printer: $remote\n"
    date
    echo "\n"
    echo "\f\r\c"
fi

# "Print" the spooled file to temporary file
cat 2>&1
```

```
# Stop output redirection
exec >&2
echo "\007\nlpr: $remote: \c"

# Send to remote SysV system print spooler (without remote banner)
# %%% this supposes that remote spooler's default lp interface model %%%
# %%% recognizes "-nb" option for banner suppression (modify if needed) %%%
if cat $printfile | /usr/bin/remsh $remote lp -onb
then
    status=0
else
    status=2
    echo "lpr: can't access $remote host"
fi

# Send message to job owner's tty(s)
for usertty in $userttys
do
    cat $messfile > /dev/$usertty
done

# Remove temporary files
rm -f $printfile $messfile

exit $status
```

Article Change History:

07 Sep 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8306



# Tech Info Library

## MacX 1.1: Command-B Copy Problem

Revised: 9/10/91  
Security: Everyone

MacX 1.1: Command-B Copy Problem

=====  
Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using MacX 1.1 with an HP 9000 via MacTCP. Using a Macintosh IIfx, Macintosh IIfx, and Macintosh IIfx, here is the setup:

- System 6.0.5
- MacX application, memory size 5000K
- 8MB RAM

When I do a Command-B copy in MacX to the clipboard, the graphic pastes to the clipboard only for the Macintosh IIfx--the Macintosh IIfx and the Macintosh IIfx produce a white box in the clipboard.

Any ideas on what may be causing this problem? Is the processing speed of the Macintosh IIfx and the Macintosh IIfx too slow on the network to handle the copy? I'm not copying a large or complex graphic from the HP 9000.

DISCUSSION -----

We haven't seen this problem before. We have a Macintosh IIfx running Macintosh OS 6.0.7 and MacX 1.1. For us, Command-B for copying selected area works properly. We don't see any processing speed slowdowns on Command-B Copy on our Macintosh IIfx either. There is, however, a release note on MacX 1.1 that states:

MacX requires the presence of 32-bit QuickDraw to support one feature: the conversion of color PICTs to X11 selections. If you do install 32-bit QuickDraw on your machine (or have a machine at least as new as a Macintosh IIfx), you will have this capability--MacX will offer to convert clipboard contents to color PIXMAP and COLORMAP style. If MacX can't find the 32-bit QuickDraw features, MacX will only offer to



convert to BITMAP.

Note that 32-bit QuickDraw also adds some performance enhancement and bug fixes on machines older than Macintosh IIci. Also note that 32-bit QuickDraw is built into System 7.0 and later for all machines that support Color QuickDraw.

Is 32-bit QuickDraw installed on your Macintosh IICx or Macintosh IIX?

Since Command-B was not described very clearly, here are steps to follow:

- 1) In MacX, do "Command-B" or select "Copy Screen to Clipboard" from the Window menu. The mouse pointer becomes '+' sign.
- 2) Select whatever area of screen you want. The selected area (graph or text) will be copied to the Clipboard.

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Tech Info Library Article Number:8307



# Tech Info Library

## A/UX: Missing Toolbox ROM Routines (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Missing Toolbox ROM Routines (9/94)

Article Created: 13 May 1991  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

Using A/UX 3.0, I can't compile my programs because four routines aren't found by the linker.

Here's a sample program that demonstrates missing routines:

-----ttt.c-----

```
#include <printing.h>
#include <osutils.h>

main()
{
    int      rom,machine;

    GetDateTime();
    Environs (&rom, &machine);
    PrStlInit();
    PrDlgMain();
}
```

-----Makefile-----

```
# makefile for testing ttt.c

CFLAGS = -O -I /usr/include/mac -B /usr/lib/big/
LDFLAGS = /usr/lib/low.o -lmac_s -lat -lld -lmr -lc_s /lib/crtn.o \
        /usr/lib/low.ld

SRC = ttt.o
```

```
ttt: $(SRC)
      ld /usr/lib/mac crt0.o /lib/crt2.o -o ttt $(SRC) \
      $(LDFLAGS)

-----StdOut/StdErr-----

$ make
      cc -O -I /usr/include/mac -B /usr/lib/big/ -c ttt.c
      ld /usr/lib/mac crt0.o /lib/crt2.o -o ttt ttt.o \
      /usr/lib/low.o -lmac_s -lat -lld -lmr -lc_s /lib/crtn.o
```

/usr/lib/low.ld

| undefined | first referenced |
|-----------|------------------|
|-----------|------------------|

| symbol | in file |
|--------|---------|
|--------|---------|

|             |       |
|-------------|-------|
| GetDateTime | ttt.o |
|-------------|-------|

|          |       |
|----------|-------|
| Environs | ttt.o |
|----------|-------|

|           |       |
|-----------|-------|
| PrStlInit | ttt.o |
|-----------|-------|

|           |       |
|-----------|-------|
| PrDlgMain | ttt.o |
|-----------|-------|

ld fatal: Symbol referencing errors. No output written to ttt

Make: \*\*\* Error: Update of ttt terminated with exit code 13

Make: [line 10 in /home/dumais/Makefile]

-----

I've found alternate ways of getting the time and the machine type, but I can't find a solution for the printing routines.

Where are these routines implemented in A/UX? I have searched the /usr/lib/libmac.a and /usr/lib/libmac\_s.a libraries for the missing routines.

#### DISCUSSION -----

In A/UX 2.0, 2.0.1, and 3.0 we have verified this problem. The above A/UX Toolbox ROM routines are not included in any of the Macintosh libraries and aren't supported by A/UX.

#### Article Change History:

08 Sep 1994 - Reviewed.

31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8308



# Tech Info Library

## Macintosh: Printing from Macintosh OS Via A/UX Spooler (4/95)

Revised: 4/26/95  
Security: Everyone

Macintosh: Printing from Macintosh OS Via A/UX Spooler (4/95)

=====

Article Created: 13 May 1991  
Article Reviewed/Updated: 26 April 1995

TOPIC -----

Can I use an A/UX spooler (Berkeley or System V) to spool AppleTalk printing? For instance, if I'm running under the Mac OS and want to print to a LaserWriter, can I access a spooler on A/UX (as A/UX can do for other UNIX systems)?

DISCUSSION -----

The Columbia AppleTalk Package for UNIX (CAP) from Columbia University does what you want. The CAP package includes CAP libraries and utility programs like:

look - finds and reports AppleTalk entities on the network.

looks - finds "LaserWriters" on the network and returns their status.

papif - spools jobs from UNIX to a LaserWriter over AppleTalk

lsrv/lwsrv/iwsrv - receives jobs from Macintosh by pretending to be a LaserWriter or AppleTalk ImageWriter.

AUFS - stands for AppleTalk Filing Protocol UNIX File Server. It is the server implementation of AFP running on UNIX corresponding to Apple's AppleShare server for the Macintosh. AUFS is not AppleShare, however. AUFS requires that the AppleShare workstation software be installed on the client Macintosh.

For more information about CAP and Kinetic Internet Protocol (KIP), including where to get them, search under "CAP and KIP".

Article Change History:

26 Apr 1995 - Made correction of typographical errors.  
18 Jun 1993 - Revised to give accurate source info for KIP & CAP.  
31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8310



# Tech Info Library

## A/UX 2.0.1: No Toolbox Change from A/UX 2.0

Revised: 9/4/92  
Security: Everyone

A/UX 2.0.1: No Toolbox Change from A/UX 2.0

Article Created: 13 May 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
•For technical accuracy

### TOPIC -----

I need a list of all Macintosh OS managers not supported under A/UX 2.0.1.

### DISCUSSION -----

According to A/UX Engineering, there are NO changes in the support of A/UX Toolbox from A/UX 2.0 to 2.0.1. Therefore, the ROM library support information in "A/UX 2.0 Toolbox: Macintosh ROM Interface" documentation is still accurate.

The following are ROM libraries NOT supported by A/UX 2.0 Toolbox:

- Apple Desktop Bus
- Deferred Task Manager
- SCSI Manager

The following are PARTIALLY supported by A/UX 2.0:

- AppleTalk Manager
- Event Manager, Operating System
- File Manager
- Gestalt facility
- Script Manager
- Segment Loader
- Serial Driver
- Slot Manager
- Sound Manager
- Utility, Operating System
- Vertical Retrace Manager

The following are supported, but the FUNCTIONALITY is not identical:

- Event Manager, Toolbox
- Floating-Point Arithmetic and Transcendental Functions Packages
- Shutdown Manager
- System Error Handler
- Time Manager

For more detailed information, refer to Chapter 5 of Inside A/UX Macintosh in A/UX Toolbox: Macintosh ROM Interface documentation.

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Tech Info Library Article Number:8311



# Tech Info Library

## GNU C compiler for A/UX: Where To Find It

Revised: 9/16/92  
Security: Everyone

GNU C compiler for A/UX: Where To Find It

=====

Article Created: 13 June 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Where can I find the latest version of the GNU C compiler for A/UX?

### DISCUSSION -----

The GNU C compiler for A/UX, a public domain program, is available on both aux.support.apple.com (130.43.6.2) and afsg.apple.com (192.1.34.2) systems via 'anonymous' ftp.

If you are on the Internet, 'ftp' to either of the systems, in aux.support.apple.com, do 'cd aux.patches/unsupported/2.0', in afsg.apple.com, do 'cd pub'

The files you need are:

README.gcc  
gcc-1.39.bin.tar.Z

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Tech Info Library Article Number:8312





# Tech Info Library

## A/UX 2.0.1: Description of the International Script Manager

Revised: 9/16/92  
Security: Everyone

A/UX 2.0.1: Description of the International Script Manager

Article Created: 13 June 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I need a detailed description of the relationship between the International Script Manager and A/UX.

### DISCUSSION -----

According to A/UX Engineering, the following functions and procedures of Script Manager are currently supported under A/UX 2.0.1:

```
PROCEDURE KeyScript (scriptCode: Integer);  
FUNCTION CharByte (textBuf: Ptr; textOffset: Integer): Integer;  
FUNCTION CharType (textBuf: Ptr; textOffset: Integer): Integer;  
FUNCTION Transliterate (srcHandle, dstHandle: Handle; target: Integer;  
                        srcMask: LongInt): Integer;  
FUNCTION GetScript (script, verb: Integer): LongInt;  
FUNCTION SetScript (script, verb: Integer; param: Longint): OSErr;  
FUNCTION GetEnvirons (verb: Integer): LongInt;  
FUNCTION SetEnvirons (verb: Integer; param: LongInt): OSErr;
```

Other functions and procedures of Script Manager under Macintosh OS Toolbox (Inside Macintosh Volume V pages 293-322) are not supported.

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Tech Info Library Article Number:8313



# Tech Info Library

## A/UX: TextEditor Problem (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: TextEditor Problem (8/94)

=====

Article Created: 13 June 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

I just found a new small bug in A/UX. This bug appears when using TextEditor with an extended keyboard. If you hit the HELP key, an alert appears on the screen. In this alert you can read:

Unable to open the help file "MPW.Help".  
#OS error -43 (Error message file not available)

DISCUSSION -----

I have verified the problem. It is a TextEditor bug on both A/UX 2.0 and 3.0.

Article Change History:  
29 Aug 1994 - Updated for A/UX 3.0

Support Information Services

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Tech Info Library Article Number:8314



# Tech Info Library

## A/UX 2.0 kohrnerstone Benchmark?

Revised: 9/14/92  
Security: Everyone

A/UX 2.0 "kohrnerstone" Benchmark?

=====

Article Created: 9 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

Are there any benchmarks for a Macintosh IIcx with A/UX 2.0.X running the Kohrnerstone or similar benchmarks that take into account I/O speed?

### DISCUSSION -----

Here are the results of benchmarks compiled with the standard compilers (C, Fortran) included in the A/UX package.

|         | Macintosh IIci | Macintosh IIcx | Macintosh IIcx                        |
|---------|----------------|----------------|---------------------------------------|
| mips    | 3,02           | 2,00           | 5,30 (Joy Mips)                       |
| dhrynr  | 3332,00        | 2105,00        | 5630,00 (dhrystone no register)       |
| dhryr   | 3545,00        | 2228,00        | 5828,00 (dhrystone register)          |
| dhrynro | 5529,00        | 3494,00        | 10270,00 (no register with -o option) |
| dhryro  | 5571,00        | 3507,00        | 10101,00 (register with -o option)    |
| Kwhets  | 928,00         | 595,00         | 1347,00 (whetstone single precision)  |

|                                                                    |        |        |                                         |
|--------------------------------------------------------------------|--------|--------|-----------------------------------------|
| Kwhetd                                                             | 858,00 | 540,00 | 1381,00 (whetstone double<br>precision) |
| linpackrsKflops                                                    | 164,00 | 103,00 | 264,00                                  |
| (linpackrs, single precision,with optimisation,rolled):264 Kflops) |        |        |                                         |
| linpackusKflops                                                    | 173,00 | 110,00 | 284,00                                  |
| (linpackus, single precision,with optimisation,unroll):264 Kflops) |        |        |                                         |
| linpackrdKflops                                                    | 152,00 | 95,00  | 246,00                                  |
| (linpackrd, double precision,with optimisation,rolled):264 Kflops) |        |        |                                         |
| linpackudKflops                                                    | 159,00 | 99,00  | 257,00                                  |
| (linpackud, double precision,with optimisation,unroll):264 Kflops) |        |        |                                         |

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Tech Info Library Article Number:8315



# Tech Info Library

## Informix: Compatible A/UX Products

Revised: 9/14/92  
Security: Everyone

Informix: Compatible A/UX Products

=====

Article Created: 9 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

Is Fourgen's 4-GL product compatible with A/UX?

### DISCUSSION -----

According to Informix, their current version of Informix-4GL v4.0 works under A/UX 2.0. Other Informix products that also work under A/UX 2.0 include:

Informix-SQL v4.0  
Informix-ESQL/C v4.0  
C-ISAM v4.0  
OnLine v4.0

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Tech Info Library Article Number:8316



# Tech Info Library

## A/UX: Manual Pages of launch(1) are Wrong (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Manual Pages of launch(1) are Wrong (8/94)

=====

Article Created: 13 June 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

I'm using launch to start Macintosh Applications from a motif menu in a rooted MacX, mwm window. I'm having difficulty with this due to differences between the manual pages and the /mac/bin/launch executable. Specifically, under both A/UX 2.0 and 2.0.1, the manual page for launch[1] gives the options of:

```
launch -p[it] filename document...
```

Commando gives the same options. The usage provided by the command is:

```
usage: launch [-padr] appName [docName ...]
```

Is this a bug?

DISCUSSION -----

There is a conflict with the usage of launch(1) between the manual page and the launch program itself. The usage of manual pages of launch(1) are wrong. This is resolved in A/UX 3.0

Article Change History:  
29 Aug 1994 - Updated for A/UX 3.0.

Support Information Services

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Tech Info Library Article Number:8317



# Tech Info Library

## A/UX: Powerfail Feature Not Supported

Revised: 9/18/92  
Security: Everyone

A/UX: Powerfail Feature Not Supported

=====

Article Created: 13 June 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I want to use the powerfail calls in A/UX 2.0. I want to use the /etc/powerfail script to clean up when someone pulls the plug on a computer (or hits the reset programmer's switch).

Can the /etc/powerfail script be used this way? Will the system have enough time to execute these commands?

### DISCUSSION -----

The /etc/powerfail doesn't work under A/UX because the Macintosh hardware doesn't have enough backup battery power.

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Tech Info Library Article Number:8318



# Tech Info Library

## Sony GDM-1901-12 Monitor: Incompatible with Macintosh

Revised: 9/10/91  
Security: Everyone

Sony GDM-1901-12 Monitor: Incompatible with Macintosh

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

Can I connect a Sony GDM-1901 (from Masscom) monitor to my Macintosh?

DISCUSSION -----

Sony's tech support has stated that no version of the GDM-1901 will work on any Macintosh.

The GDM-1901 was an OEM product from Sony to a variety of vendors. It is now an obsolete product. When these were manufactured each vendor specified their requirements for timing to Sony; thus, each vendor's version of the GDM-1901 is specific to that vendor's computer system. To find out more about a particular vendor's version, contact Sony's monitor tech support at 408-944-4181.

For more information, search under: "Sony"

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Tech Info Library Article Number:8320





# Tech Info Library

## Macintosh LC: Jumpers are for Apple IIe Card

Revised: 6/21/94  
Security: Everyone

Macintosh LC: Jumpers are for Apple IIe Card

=====

Article Created: 13 May 1991  
Article Reviewed/Updated: 21 June 1994

TOPIC -----

What are the three jumpers for on the logic board of the Macintosh LC? I believe one is for the Apple IIe card, but I'd like to know what the other two do.

DISCUSSION -----

Installation of a jumper connection on the third set of jumper pins (the ones closest to the "CPE" silk screen marking on the logic board) locks out the Control Panel of the Apple IIe card. The other two sets of jumper pins are reserved by Apple and should never be connected. These jumpers also exist on the Macintosh LC II and Performa 405 logic boards, however the silk screen reads "J17".

When the jumper is installed on the logic board, users will continue to have access to the following Apple IIe Option Panel buttons:

- Quit IIe
- Eject Disk
- Restart IIe
- Return

However, users will not have access to any of the panels used to change Option Panel settings.

Article Change History:  
21 June 1994 - Updated to include information on LC II and Performa 405.

Support Information Services

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Tech Info Library Article Number:8321



# Tech Info Library

## System 7: No Need to Install the Communications Toolbox

Revised: 9/21/92  
Security: Everyone

System 7: No Need to Install the Communications Toolbox

=====

Article Created: 13 May 1991

### Article Change History

-----

09/14/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Do I still need to install the Communications Toolbox with System 7?

### DISCUSSION -----

With System 7.0, you no longer need to install the Communications Toolbox. Everything that previously needed to be manually installed into the System under the 6.0.x is now included with System 7.0.

Also, there is no longer a Communications Folder. All tools are placed in the Extensions Folder instead. If you are upgrading from System 6.0.x to System 7.0, move the tools to the Extensions Folder and delete the Communications Folder.

The System 6.0.x version of the Communications Toolbox is 1.0; only minor changes were made for System 7.0, and that version is labeled 1.0.1. As long as you have the latest version of System 7.0 you'll have the latest version of the Communications Toolbox.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8322



# Tech Info Library

## Macintosh Portable: Screen Dimming with System 7.0 on Network

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Screen Dimming with System 7.0 on Network

=====

Article Created: 13 May 1991

### Article Change History

-----

07/29/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I cannot get my Macintosh Portable to dim its screen under System Software 7.0. No matter what the Macintosh Portable Control Panel settings are, the screen never dims. The hard drive does spin down at the appropriate time, however.

### DISCUSSION -----

The reason the screen does not dim is because dimming of the screen will disable your AppleTalk connection, so the decision was made for Macintosh Portable computers connected to a LocalTalk network that the screen will not dim even if the "sleep" timers expire.

If you are not connected to a LocalTalk network, make AppleTalk inactive, and the screen will dim as you would normally expect. Of course, based on the above information, if you are connected to a LocalTalk network you do not want the screen to dim.

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Tech Info Library Article Number:8323



# Tech Info Library

## System 7: Edition Manager Edition Files

Revised: 9/22/92  
Security: Everyone

System 7: Edition Manager Edition Files

=====

Article Created: 13 May 1991

### Article Change History

-----

09/22/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I have a question about how edition files are handled. I experienced the following with both Excel and Resolve:

- 1) Open a spreadsheet.
- 2) Make some columns of data.
- 3) Publish them on my local hard disk.
- 4) Close the spreadsheet, saving changes so the edition file remains.
- 5) Move the edition file to a different place on the hard disk. When I open, modify, and close the spreadsheet, the edition file is properly updated (just to see that the spreadsheet can follow the edition).
- 6) Close the spreadsheet, mount a file server, and copy the edition file to the file server, deleting the edition file on my local hard drive after the copy is complete.
- 7) Open the spreadsheet.

At this point, the application creates a new edition file in the location that the local edition file was last placed, ignoring the edition file on the file server.

Is this behavior application-specific, or is System 7.0 doing this? Am I doing something wrong?

DISCUSSION -----

When an application opens a document, it registers every publisher contained within that document with the Edition Manager. If the Edition Manager cannot find the edition, it creates an empty edition in the last known location, and informs the application that it needs to write to this new file.

Therefore, this is standard behavior enforced by the Edition Manager, and applications using the Edition Manager will most likely conform to this behavior.

For more information, consult "Inside Macintosh", volume VI, pp 4-19.

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Tech Info Library Article Number:8324



# Tech Info Library

## HD SC Setup: Multiple Macintosh Partitions (7/93)

Revised: 7/19/93  
Security: Everyone

HD SC Setup: Multiple Macintosh Partitions (7/93)

Article Created: 13 June 1991  
Article Reviewed/Updated: 16 July 1993

TOPIC -----

Is it possible to use HD SC Setup to partition Apple drives for two different versions of the Macintosh OS? Does Apple support multiple Macintosh operating systems on a partitioned hard disk?

DISCUSSION -----

Yes, you can partition one hard disk into multiple partitions having different versions of the Macintosh operating system. However, the HD SC Setup will only allow one of the partitions to be a Macintosh OS partition. This doesn't mean that Apple doesn't support multiple Macintosh OS partitions on the same hard disk. Third-party utilities allow multiple Macintosh partitions and we've never heard of problems with them.

In most cases the typical Macintosh user will equate the terms volume and hard drive. If a hard drive has been partitioned into multiple Macintosh volumes then it's important to distinguish between the terms. Each partition will look like a volume to the operating system. Apple doesn't recommend putting more than one System Folder on a volume. If one hard drive contains multiple partitions then there's no reason why each partition couldn't have a System Folder on it. This would be no different than having multiple hard drives attached, each with a System Folder on it.

Third-party products such as Cobra software or SilverLining can do this. Be aware that many third-party drive software developers are either revising or have already revised their software for System 7.0 compatibility. Be sure you use a version that the developer explicitly states support for System 7.0

Article Change History:

07/16/93 - Revised to expand an explanation of Apple support for multiple Macintosh operating systems on a partitioned hard disk.

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Tech Info Library Article Number:8325



# Tech Info Library

## HyperCard IIGS: Script for Setting TextColor

Revised: 9/10/91  
Security: Everyone

HyperCard IIGS: Script for Setting TextColor

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the HyperCard IIGS script to highlight text on a card field to a certain color?

DISCUSSION -----

Field properties (as listed and documented in the HyperTalk Beginners Guide) include frameColor and textColor. FrameColor cannot be changed using a script.

TextColor can be changed to one of the sixteen current colors in the colorSet. Here is the script:

```
set the textColor of card field field1 to n
```

where n is a number from 1 to 16. The highlight color is always black; the text within the highlight becomes the compliment of the textColor.

Note: Be careful about being misled by the actions of the "color" section of the "field info" dialog where the highlight color is the same as the textColor and the text within the highlight becomes white.

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Tech Info Library Article Number:8326





# Tech Info Library

## Works-to-Works 2.0: Available From Microsoft

Revised: 9/10/91  
Security: Everyone

Works-to-Works 2.0: Available From Microsoft

=====  
Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to use Apple File Exchange (AFE) and the Microsoft Works-to-Works Transporter to convert Appleworks 3.0 data to Macintosh Microsoft Works via AppleShare. AFE only recognizes the Appleworks data as ProDOS files on a ProDOS floppy disk. AFE treats these files as Macintosh data when it appears on the file server.

Is there a way to bring up the ProDOS-to-Mac menu under AFE?

DISCUSSION -----

Works-to-Works Transporter 2.0 will convert Appleworks 3.0 files to Microsoft Works files. You can get a copy of the utility from Microsoft by calling them and requesting Works-to-Works Transporter 2.0.

For more information, search on "Microsoft".

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Tech Info Library Article Number:8327



# Tech Info Library

## DaynaFile: Use Driver Version 2.8 with Macintosh IIfx

Revised: 9/11/91  
Security: Everyone

DaynaFile: Use Driver Version 2.8 with Macintosh IIfx

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I connected a DaynaFile floppy drive to the Macintosh IIfx. Everytime I insert a disk into the drive, the drive reads it and then the system locks up.

Any ideas?

DISCUSSION -----

Dayna's Tech Support group told us that version 2.8 of the driver is required to use the DaynaFile on the Macintosh IIfx. Customers can get a copy of the driver by contacting Dayna directly.

For more information, search under: "Dayna"

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Tech Info Library Article Number:8329



# Tech Info Library

## StyleWriter: Use Of Power Converter Suggested Overseas

Revised: 9/11/91  
Security: Everyone

StyleWriter: Use Of Power Converter Suggested Overseas

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

Is a power adapter or transformer necessary to use the StyleWriter in Europe and the Soviet Union? This is to convert 110/60 to 220/50.

DISCUSSION -----

While it is possible to run the StyleWriter on 220V/50Hz with the aid of a power converter (see the AppleLink Tech Info Article "Using Apple Equipment Overseas"), the cleanest solution would be to purchase an Apple AC Adapter (transformer) appropriate to the local power conditions.

Transformers of all kinds can be ordered by any Authorized Service Provider. The current service price list shows transformers available for the following areas:

|           |           |
|-----------|-----------|
| USA       | 699-2050  |
| Japan     | J699-2050 |
| UK        | B699-2050 |
| Australia | X699-2050 |
| Europe    | Z699-2050 |

If you don't have time for a local service provider to order the transformer, it can be purchased from an Apple dealer at your destination.

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Tech Info Library Article Number:8330



# Tech Info Library

## LaserWriter: How To Determine PostScript Version, ROM Revision

Revised: 9/11/91  
Security: Everyone

LaserWriter: How To Determine PostScript Version, ROM Revision

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

Is there a way to determine the version of the PostScript driver on an Apple LaserWriter?

Is there a way to determine the disk driver version on the Hard Drive?

Is special software is used to determine either of the above?

DISCUSSION -----

To determine the PostScript version and ROM revision levels on a LaserWriter, use the code below in a PostScript dump utility. We used PostHaste, but there are many others. Microsoft Word 4.0 will also send PostScript directly to the printer.

```
serverdict begin 0 exitserver
/Helvetica findfont
15 scalefont
setfont
/str 40 string def
72 700 moveto
(LaserWriter Name:  ) show
statusdict begin str printername show
72 675 moveto
(PostScript version:  ) show
statusdict begin version show
72 650 moveto
(ROM revision level:  ) show
statusdict begin revision str cvs show
showpage
```

The output will look something like:

LaserWriter Name: xxxxxxxxx

PostScript version: xx.x

ROM revision level: x

Determining the version of a disk driver is different for each manufacturer. As far as we know, there is no package that will return the information on any drive.

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Tech Info Library Article Number:8331



# Tech Info Library

## Personal LaserWriter LS: Total Effective RAM

Revised: 9/11/91  
Security: Everyone

Personal LaserWriter LS: Total Effective RAM

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

I understand that with the standard 256K RAM, the Personal LaserWriter LS will effectively appear to have 1.5MB. With the addition of the 1MB upgrade, does one get an effective 2.5MB RAM?

DISCUSSION -----

The compression/decompression scheme allows the Personal LaserWriter LS to image documents that would not normally fit in 512K of RAM. The amount of compression depends on the image, and is not really predictable. Apple's testing showed that the only pages that could not fit in the standard RAM (U.S. Letter paper) were graphics containing patterns that don't lend themselves to effective compression. It was somewhat easier to overflow RAM when printing on legal sized paper.

With the additional RAM installed (making the total 1MB), Testing was unable to find a document that the printer would not image.

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Tech Info Library Article Number:8332



# Tech Info Library

## LaserWriter Driver: Missing BoundingBox Parameters

Revised: 9/11/91  
Security: Everyone

LaserWriter Driver: Missing BoundingBox Parameters

=====

Article Created: 13 May 1991  
Article Last Reviewed: 31 May 1991  
Article Last Updated:

TOPIC -----

Why doesn't Apple software put values in the PostScript EPS file for the BoundingBox parameter? How can I get values inserted there if they cannot be generated? I need this info for output to DEC PostScript printers.

Sample output:

```
%!PS-Adobe-2.0
%%Title: Clone of Contacts
%%Creator: PrintMonitor
%%CreationDate: Wednesday, May 8, 1991
%%Pages: (atend)
%%BoundingBox: ? ? ? ?
%%PageBoundingBox: 30 31 582 761
```

DISCUSSION -----

The %%BoundingBox comment is a PostScript document structuring convention (DSC) used mainly for Encapsulated PostScript Files (EPSF). Its primary purpose is to inform an application importing the EPSF of the actual page mark boundaries. This allows the application to properly prepare for, and clip, the imported image. BoundingBox coordinates are determined by computing the smallest rectangle that would enclose the sum of all pages in a job. This rectangle's coordinates are based on PostScript's default user space: origin at the lower left, with X increasing to the right and Y increasing to the top.

As an example, consider a two-page document. Given the following enclosing coordinates of page 1 and 2, the BoundingBox is the rectangle that completely encloses the sum of both pages:

|             | Lower |     | Upper |     |
|-------------|-------|-----|-------|-----|
|             | Left  |     | Right |     |
|             | X     | Y   | X     | Y   |
| Page 1      | 95    | 102 | 500   | 700 |
| Page 2      | 120   | 225 | 557   | 600 |
|             | ---   | --- | ---   | --- |
| BoundingBox | 95    | 102 | 557   | 700 |

The LaserWriter driver doesn't include the BoundingBox coordinates because it doesn't know what they would be at the time the BoundingBox comment must be generated. We would have to run through the entire print job once to compute the BoundingBox, and then a second time to actually print the document. That would be very slow. What you see instead is that BoundingBox is sent with its question mark arguments, but PageBoundingBox is computed for the first page and sent with the job. Since PageBoundingBox only applies to a single page, its values can be computed for the first page as it is generated. It has little real value in the context of a large (multi-page) document, but it is still included, mainly for historical reasons. We've supplied it since the early versions of the LaserWriter driver.

The only way to create usable BoundingBox numbers would be to supply those that enclose the largest possible rectangle. This would ensure that nothing is ever clipped by the receiving program. The outside borders of any page can be defined by the following BoundingBox:

|  | Lower |   | Upper |     |
|--|-------|---|-------|-----|
|  | Left  |   | Right |     |
|  | X     | Y | X     | Y   |
|  | 0     | 0 | 612   | 792 |

Therefore, supplying these numbers as the BoundingBox would be valid for any printable page or job. Unfortunately there is no simple way to substitute these numbers for the question marks currently used. If the print job were dumped to a disk file, it could be edited to include the numbers, but this seems like it would be very annoying for multiple print jobs.

It seems unlikely that the BoundingBox comment is absolutely required for DEC laser printers, so it would help to know that the information was needed for a spooler or some printer host software. PostScript itself doesn't generally use the BoundingBox comment. As mentioned earlier, it is used so that importing software can know what to expect, and sometimes for spooling software.

It's important to note that our LaserWriter driver performs many PostScript operations that are not compatible with the EPSF format. This is not in any way abnormal for a print driver, but the result of importing a complete LaserWriter job in another document would produce very unpredictable results. The files generated by the LaserWriter driver are not EPSF compliant.



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Tech Info Library Article Number:8333



# Tech Info Library

## Shiva EtherGate: Supports Remote TCP/IP

Revised: 9/11/91  
Security: Everyone

Shiva EtherGate: Supports Remote TCP/IP

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does Shiva's EtherGate support TCP/IP over remote networks?

TCP/IP-->Ethernet ---->EtherGate --->modem--modem EtherGate---Ethernet--  
TCP/IP

DISCUSSION -----

Shiva Tech Support states that the above configuration should work. If you are using dynamic address, the local and remote devices have to be in the same zone. If you are using static address, it does not matter.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8334



# Tech Info Library

## MacDFT: Upgrade for System 7 Status

Revised: 9/11/91  
Security: Everyone

MacDFT: Upgrade for System 7 Status

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the status on the MacDFT upgrade for System 7?

DISCUSSION -----

MacDFT will not be upgraded for System 7. The replacement product, SNA•ps, was announced at the end of June 1991. Search under SNA•ps for more details

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Tech Info Library Article Number:8335



# Tech Info Library

## Ethernet: Minimum Packet Lengths and cisco Routers

Revised: 9/12/91  
Security: Everyone

Ethernet: Minimum Packet Lengths and cisco Routers

=====

Article Created: 13 May 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the minimum length of an Ethernet packet?

Since AppleTalk frequently uses small packets for NBP, ZIP, and so forth, does it pad packets to this "minimum" length?

Are there any known interoperability issues with cisco routers, AppleTalk, and minimum length packets?

DISCUSSION -----

The IEEE 802.3 standard specifies that the minimum length of an Ethernet packet is 60 bytes. If the total length of a packet is less than 60 bytes, pad bytes must be added after the data to bring the packet size up to 60 bytes.

An additional four-byte cyclic-redundancy check (CRC) is appended to the end of the packet and is checked by the receiver to determine whether an error occurred.

Traffic less than 64 bytes in length (60 byte packet plus a four-byte CRC) is considered an error by cisco routers and is ignored.

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Tech Info Library Article Number:8338



# Tech Info Library

## Pers. LaserWriter: Problems Caused by Too-Small Margins (12/94)

Revised: 12/5/94  
Security: Everyone

Pers. LaserWriter: Problems Caused by Too-Small Margins (12/94)

=====

Article Created: 13 May 1991  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

I want to print legal size documents on a Personal LaserWriter LS. The left and right margins are cutting into the text. The margins are set up at 0.265 left and right.

Is this because of the limited memory? Will a memory upgrade fix this problem?

DISCUSSION -----

The problem you've reported exists in both the Personal LaserWriter LS and Personal LaserWriter SC drivers. A memory upgrade will not address the problem.

According to the Personal LaserWriter specifications, the imageable area left and right margins of 0.25 inch should be the same for both US Letter and US Legal sized documents.

Article Change History:  
05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8340



# Tech Info Library

## InBox: Using with Macintosh System Software 7.0

Revised: 7/23/93  
Security: Everyone

InBox: Using with Macintosh System Software 7.0

=====

Article Created: 13 June 1991  
Article Reviewed/Updated: 22 July 1993

TOPIC -----

Can I use InBox with the file sharing capabilities of Macintosh System Software 7?

DISCUSSION -----

The following is from Sun Select (formerly Sitka Corporation):

Sun Select Tech Note 1404: InBox and Apple's System 7.0

Sun Select- 5/22/91

InBox and Apple's System 7.0 InBox for Macintosh and InBox Plus for Macintosh provide full messaging, routing and administrative functionality under Apple System 7.0. Follow the instructions below to install and use InBox under System 7.0.

Upgrading an InBox Client from System 6 to System 7.0

- 1) If InBox is installed as a Desk Accessory, use the Font/DA Mover to remove the InBox DA.
- 2) Use the Apple Installer to upgrade to System 7.0.
- 3) If the Apple Installer moved the InBox INIT to the Control Panels Folder, drag it back to the root level of the System Folder.
- 4) Drag the InBox Preferences file from the Preferences Folder to the root level of the System Folder.
- 5) If you wish to access InBox from the Apple Menu, drag the InBox application into the Apple Menu Items Folder. Do not install the InBox DA

into the Apple Menu Items Folder. The InBox DA should not be used on System 7.0 machines.

Note: The InBox INIT must reside at the root level of the System Folder. You can double-click on it to access the Control Panel settings. If you wish to access it from the Control Panels Folder itself, you can make an Alias for it, and drag the Alias to the Control Panels Folder.

Upgrading an InBox Mail Server Message Center from System 6 to System 7.0

\* No special procedures are required. The InBox Server INIT will be moved to the Control Panels Folder.

Upgrading an InBox File Server Message Center from System 6 to System 7.0

\* No special procedures are required.

Installing an InBox Client on a Macintosh under System 7.0

\* No special procedures are required. If you wish to access InBox from the Apple Menu, make sure you install InBox into the System Folder. Then drag the InBox application into the Apple Menu Items Folder. Do not install the InBox DA into the Apple Menu Items Folder. The InBox DA should not be used on System 7.0 machines.

Note: The InBox INIT must reside at the root level of the System Folder. It can be double-clicked on to access the Control Panel settings. If you wish to access it from the Control Panels Folder itself, you can make an Alias for it, and drag the Alias to the Control Panels Folder.

Installing an InBox Mail Server Message Center on a Macintosh under System 7.0

\* After using the InBox Administrator to create a Mail Server Message Center on a machine running System 7.0, you must drag the InBox Server INIT from the root of the System Folder to the Control Panels Folder, in order to access the Server INIT from the Control Panel.

Installing an InBox File Server Message Center on a Macintosh under System 7.0

\* Copy the InBox Administrator to the hard drive of the Message Center Macintosh launch it from there. Do not launch the Administrator from a floppy disk when creating a File Server Message Center under System 7.0.

Note: To Create a File Server Message Center over the network under System 7.0 (those wishing to create a File Server Message Center on an AppleShare Server might wish to do this), launch the InBox Administrator from an AppleShare Client Macintosh. When you attempt to open the remote volume in the Administrator, you will get the following message: "That name is already used by a folder." Click OK. The remote volume will still be selected in the list box. Click once inside the text box, enter the name of the Message Center, and click the SAVE button.

The System 7.0 Compatibility Checker: If you run the System 7.0 Compatibility Checker on an InBox Client, the InBox INIT will be placed in a folder called "May Not Work with System 7.0". If you run the System 7.0 Compatibility Checker on an InBox Mail Server Message Center, the InBox Server INIT will be placed in this folder as well.

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To locate a vendor's address and phone numbers, use vendor name as a search string

Article Change History:

14 July 1993 - Updated company names.

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Tech Info Library Article Number:8341





# Tech Info Library

## OITC, Inc.

Revised: 4/4/97  
Security: Everyone

OITC, Inc.

=====

Article Created: 23 April 91  
Article Reviewed/Updated: 4 April 1997

OITC, Inc.

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### Company Profile:

Software, specializing in high security and classified data protection for Macintosh computers to meet government security requirements.

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Tech Info Library Article Number:8342



# Tech Info Library

## System 7: Novell's Notify Extension is Incompatible (10/93)

Revised: 10/22/93  
Security: Everyone

System 7: Novell's Notify Extension is Incompatible (10/93)

Article Created: 2 July 1991  
Article Reviewed/Updated: 22 October 1993

TOPIC -----

The Notify extension from Novell is incompatible with System 7.x.

DISCUSSION -----

The Notify extension version 2.1 from Novell causes severe performance degradation on Macintosh systems running System 7.x. These performance problems extend beyond network performance slowdowns and include actions as simple as opening your hard drive. You should use the latest release of the Notify INIT which is version 3.0.

Below is an excerpt from the Read Me regarding the release:

"NOTIFY v 3.0

This version of the Notify INIT addresses several issues. It includes the fix for a problem with Notify loading on a System 6.x Macintosh with over 8 MB of RAM. It resolves several performance issues when running System 7. And the frequency at which it polls the Netware server for messages has been decreased, which resolves some performance problems on large networks."

Article Change History:  
22 Oct 1993 - Included information on the Notify extension v 3.0.

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Tech Info Library Article Number:8343



# Tech Info Library

## StyleWriter: Screen Dimmers May Cause Lost Characters

Revised: 9/12/91  
Security: Everyone

StyleWriter: Screen Dimmers May Cause Lost Characters

=====

Article Created: 5 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The StyleWriter printed output occasionally is missing characters. How do I fix this?

DISCUSSION -----

Start up from a floppy and print some directories. Also use TeachText to print out the Read Me files on the startup disk. If these files print with no problem, check for screen savers or timeout INITs

Screen dimmers that timeout when the machine is processing a job for the StyleWriter can interfere with the print job transmission and processing to create these intermittent lost characters.

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Tech Info Library Article Number:8344



# Tech Info Library

## System 7: Features and Benefits

Revised: 8/18/92  
Security: Everyone

System 7: Features and Benefits

Article Created: 5 July 1991

### Article Change History

08/18/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

This article describes the features and benefits of System 7, and the upgrade offers available.

### DISCUSSION -----

System 7 works on all Macintosh computers from the Macintosh Plus on. System 7 is compatible with most of the more than 4,000 Macintosh applications currently shipping, and has inspired many new products.

### Benefits

Customers who upgrade to System 7 will receive the immediate benefits of new features such as TrueType™ font technology, Virtual Memory, File Sharing, System 7 Finder®, Multitasking, Balloon Help™ and 32-Bit Addressing.

### TrueType

System 7 offers all Macintosh users high-quality text at any size on any Macintosh screen and on the printed page with TrueType, Apple's outline font technology. TrueType is compatible with most existing applications and bitmap fonts and provides users with smooth type quality on the screen and on any output device such as PostScript® and non-PostScript printers, imagesetters, and film recorders.

## Finder and Balloon Help

-----

The System 7 Finder, also known as the user's desktop, has been simplified so that customers can quickly locate and use their information. All aspects of the Finder--including fonts, desk accessories, control panels and even the System--can be opened by double-clicking on them. In addition, the new System 7 Finder facilitates system management and set-up: files, folders, and applications can now be added to the Apple Menu; users can have outline views of all files and folders; and fonts, system extensions, and control panels, can easily be installed by dragging them to the System Folder.

System 7 also provides Macintosh users with an interactive System-wide Help system. Apple's Balloon Help is non-modal, allowing users to get help while continuing to work. When customers turn on Balloon Help and point to any object on the screen, a balloon appears that describes the object they are pointing to and how to use it. Macintosh software application developers are also incorporating Balloon Help into new releases of their programs. This feature will enable users to learn applications more quickly by providing an easily accessible reference to more features.

## Finder and File Sharing

-----

The new Find capability offers users fast and easy access to their files. The user can select Find, then type a word or phrase, and the system searches the disk for files whose names include the word or phrase. Find also offers more advanced options so users can perform more detailed searches. For example, users can find all files that they worked on today or files that were labeled with a specific color.

File sharing allows any user to share designated items (files, folders, and even whole volumes of information) with any other user over the network, without a dedicated file server. File sharing follows Apple File Protocol (AFP) standards, which means that any System 7 user can share files with any Macintosh System 6 user, and--by using third-party products-- with DOS and Windows users. File Sharing includes a complete security model that lets users provide levels of access and password protection.

Aliases allow all Macintosh users to organize their systems the way they prefer and makes it easier to access information. An alias, usually about 2K in size, of a file, folder, application, or volume (even a file server), acts as a pointer to the original object. With aliases, users can have access to documents, folders, and applications from more than one location. For example, a user may work with a particular word processor each day and would like to have it on the desktop but also organized within an applications folder. With aliases, users can do both without taking up much additional space on the hard disk.

Aliases and file sharing work in combination to provide more capabilities. For example, Macintosh users can carry an "office on a disk" by making an alias of their hard disk, placing it on a floppy disk, and when the user

goes to any system on a network (across the hall, downstairs, or anywhere else) the user has access to the hard disk by double-clicking on the alias and typing a password.

#### Memory and Multitasking: Virtual Memory and 32-Bit Addressing

-----

Multitasking is a standard part of Macintosh System 7, allowing users to work on several tasks concurrently. For example, a user can recalculate a spreadsheet, print a file, sort a database, and upload a file to a network while continuing to work on a word processor document. System 7's Virtual Memory expands the Macintosh's memory through software so that Macintosh users can run more and larger applications. Virtual Memory uses the hard disk as an extension to RAM, providing users with more memory when it's needed. In addition, 32-bit addressing allows users to install and access more than 8MB of RAM. The additional memory users can access will provide additional power for large applications and tasks such as animation, computer-aided design, and scientific visualization.

#### Publish and Subscribe

-----

In 1984, the Apple Macintosh introduced the concept of "copy and paste," allowing users to share graphics and text among different files within different applications. With System 7, Apple has taken "copy and paste" one step further with dynamic document links known as "publish and subscribe." Publish and Subscribe enables users to link any two documents--regardless of the application--to automatically update the information. This capability of System 7 even works over a network.

#### Apple Events

-----

Apple events is the underlying messaging language that applications use for communication with other applications. It provides the foundation for applications to seamlessly work together sharing information and features on the same machine or over a network. Through new applications that support Apple events, users will be able to use features of a variety of applications while working in one application. For example, an accounting package can pass inventory data to a spreadsheet, instruct the spreadsheet to graph the data, and retrieve the graph for display in its own report.

#### Data Access Manager

-----

The Data Access Manager, which ships as a standard component of System 7, provides Macintosh applications with the underlying technology that enables data access from remote host computers, regardless of the host computer, the connecting networks, or the database software.

#### Upgrade Path

-----

System 7 offers all existing Macintosh users an upgrade path. Apple's design goals required that System 7 run on all Macintosh computers from the Macintosh Plus, Portable, and Classic on up to the latest, most powerful models. In addition, Apple has developed a suite of tools for customers that make the transition to System 7 as easy as possible.

## Before You Install

-----

Apple developed a HyperCard® stack called Before You Install, to give users a better understanding of System 7 and system compatibility. Before You Install features two sections of information: What's New in System 7, and Compatibility Checker. What's New in System 7 helps customers find out more about System 7 and explore some of the new features before upgrading. The Compatibility Checker provides customers with an automated tool for checking application, desk accessory, and control panel compatibility before moving to System 7. The Compatibility Checker, available in the United States, includes information on over 650 products. A printed Compatibility Guide is also available.

## Network Install

-----

As part of the System 7 Group Upgrade Kit, Apple includes a network-install version of the software. Users will be able to upgrade multiple systems over a network with the Macintosh one-button install. This process will alleviate the network administrator's task of manually upgrading many systems in sequence.

## Upgrade Kits

-----

System 7 works with all Macintosh computers--from the Macintosh Plus, Portable, and Classic on up--with 2MB of RAM (though 4MB is recommended) and a hard disk. System 7 is available to users in two versions: the System 7 Personal Upgrade Kit, and the System 7 Group Upgrade Kit.

The Personal Upgrade Kit includes ten floppy disks containing System 7 software, the Before You Install stack, and HyperCard version 2.1. The kit contains 90 days of upgrade phone support, new user manuals, and the System 7 Compatibility Guide.

The Group Upgrade Kit includes everything that is in the Personal Upgrade Kit, plus a System 7 CD-ROM, 180 days of upgrade phone support, site license, and Group Upgrade Guide. The System 7 CD-ROM includes a System 7 configuration that can be installed over a network, an array of utilities, and on-line documentation. The Group Upgrade Guide offers network administrators a resource for upgrading small and large groups of users in varied network environments.

## Trademarks

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Tech Info Library Article Number:8346



# Tech Info Library

## Biomation

Revised: 7/6/93  
Security: Everyone

Biomation

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Article Created: 07/08/91  
Article Reviewed: 07/06/93  
Article Updated: 12/04/92

Biomation  
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Hardware and software, specializing in multi-module logic analyzers.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8348





# Tech Info Library

## System 7: File Sharing Activates AppleTalk Automatically

Revised: 9/10/91  
Security: Everyone

System 7: File Sharing Activates AppleTalk Automatically

=====

Article Created: 18 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does AppleTalk need to be active before I start file sharing?

DISCUSSION -----

If you start file sharing when AppleTalk is not active, AppleTalk will be activated automatically.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8351



# Tech Info Library

## System 7: Creating Groups for File Sharing

Revised: 9/10/92  
Security: Everyone

System 7: Creating Groups for File Sharing

=====

Article Created: 18 July 1991

### Article Change History

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09/10/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How do I create Groups for file sharing?

### DISCUSSION -----

Whenever more than one user needs access to a particular folder on your system, you can create a group. The group contains the names of all the users who belong to it. Each user can be a member of as many groups as desired. Once the group is created, access permission can be controlled at the group level.

After creating all the individual users, create a group to which they all belong. Here's how to create a group:

- 1) Open the Users & Groups control panel.
- 2) Choose New Group from the File menu. A new double-headed icon appears, ready to have a name typed in to replace the default name "New Group". Type in whatever you want to name the group.
- 3) To include each user you want in the new group, drag the user's icon onto the group icon. Note that even though the user is added to the group, the user's icon stays in the Users & Groups window as well.
- 4) Open the group icon to see who is in the group. To remove a user from

a group, drag the user's icon out of the group and throw it away.

- 5) When you open the user icon after a user has been added to a group, the names of the groups to which that user belongs appear in the user's Groups box.

Remember that anyone who walks up to your system can change file sharing passwords and permissions. You may want to consider getting a System 7 compatible password locking screen saver.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8352



# Tech Info Library

## System 7: What is Disk Cache? (4/96)

Revised: 4/26/96  
Security: Everyone

System 7: What is Disk Cache? (4/96)

=====  
Article Created: 18 July 1991  
Article Reviewed/Updated: 26 April 1996

TOPIC -----

What is disk cache?

DISCUSSION -----

Disk cache is a static area in RAM set aside to help the Macintosh work more quickly and efficiently.

When a program asks for data from the disk (such as a part of a document), many times the next piece of data the program will need (such as the next part of the document) can be anticipated. Therefore, instead of transferring from disk to memory only the amount of data you are immediately working with, the system puts a larger amount (the size-of-disk-cache) of data into memory. This way, instead of spending the time to search for data on the disk again, the next piece of information will already be available. Disk cache works better on non-fragmented disks.

It may seem that the size-of-disk-cache should be configured to be quite large so that the need to search on the disk is greatly reduced. But this is not so because the memory allocated to disk cache cannot be used for opening more applications or documents. Thus, giving disk cache a huge amount of memory only makes that unavailable for use as RAM; it will not result in an increase in performance.

If the total memory of your system software appears to be very large under "About this Macintosh..." you should consider decreasing the memory allotted to disk cache. Open the Memory control panel, and click the down arrow in the Disk Cache box.

This article was published in the Information Alley on 19 April 1996.

Article Change History:

26 Apr 1996 - Added alley information.

11 Jan 1993 - Updated technical information.

17 Sep 1992 - Updated technical information.

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Tech Info Library Article Number:8353



# Tech Info Library

## System 7: Notes on File Sharing

Revised: 9/10/92  
Security: Everyone

System 7: Notes on File Sharing

=====

Article Created: 18 July 1991

### Article Change History

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09/10/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Here is some information you need to know when you use the Sharing option from the File menu to share a folder.

### DISCUSSION -----

Even after you have configured your Sharing Setup control panel, no one, not even the Guest account, can gain access to your system until you have configured folders or disks to be shared. File sharing won't happen until you give access to something to be shared--either folder or disk.

The appearance of a shared folder changes. When a folder has been configured to be shared, there will be network cables pictured at the bottom of the folder. When another user is using the folder, faces appear on the folder.

Once a folder has been shared, no folder above it in the disk hierarchy, or the disk itself, can be shared. If you try to do this, a dialog box will tell you the item could not be shared.

For example, if you share a folder on a hard disk, and then try to share the hard disk, the system will complain. You must turn off sharing on the folder before the system will allow you to mark the entire disk for sharing.

However, the opposite is not true. If folder A contains folder B, and folder A is shared, you may still share folder B. This enables you to set different permissions on folder B from those on folder A.

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Tech Info Library Article Number:8354



# Tech Info Library

## System 7: Permission Decisions for File Sharing

Revised: 9/10/92  
Security: Everyone

System 7: Permission Decisions for File Sharing

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Article Created: 18 July 1991

### Article Change History

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09/10/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Once you have configured disks or folders for file sharing, you need to make decisions on file access permissions.

### DISCUSSION -----

First decide who is allowed to share on your system.

The center section of the Sharing dialog box determines the permissions of the files and folders within the folder or disk you are sharing.

There are three categories of users to define and specify permissions for:

- Owner is defined, by default, as the owner of the system as configured in the Sharing Setup control panel. The Owner name is a pop-up menu containing all of the users you have defined on your system. Defining someone else as the owner of a shared item will allow them to change all permissions pertaining to that folder or disk. You should change the owner of a folder or disk with care.
- The User/Group box allows either a user or a group to have the specified permissions set in the three check boxes.
- The Everyone category covers those users who are not defined in the Owner or User/Group category. This includes the user named Guest.



By default, the Guest may log on to any system on the network without a password.

Therefore, for maximum security, always set the Everyone permission settings to off.

If the item you are sharing is a folder inside an already shared folder, you will have a "Same as enclosing folder" check box. Clicking this check box copies the same privileges of the enclosing folder to the currently selected folder.

Once permissions are set, you can click "Make all enclosed folders like this one" to make the same privileges to all folders beneath the folder on which you are setting permissions.

Second, decide what those users and groups can share.

For each of the three categories -- Owner, User/Group, and Everyone -- you must decide what permissions you wish to grant.

- The permission See Folders indicates that users will have the icons of folders visible when they log on to your system. If this box is not checked, the corresponding user will not see any folders inside the shared item.
- The permission See Files is the same as See Folders, but pertains to files. Without this box checked the corresponding user category will not see any files. Users who can see a file can also copy it.
- When checked, the permission Make Changes allows the corresponding user to alter or throw away files and folders. Otherwise, the user will be able to open the file for viewing but not save any changes.

Once you have checked the permission boxes to reflect how you want your system configured, close the box in order for the changes to take place. Dialog boxes will appear, confirming your changes. Click OK to save your changes, or Cancel to disregard them.

Important: If you do not change any permissions when you select an item for sharing, the default configuration is to have the folder or disk open for view, change, and removal by anyone on your network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8355



# Tech Info Library

## System 7: Controlling Whether Users Can Change Their Passwords

Revised: 9/10/92  
Security: Everyone

System 7: Controlling Whether Users Can Change Their Passwords

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Article Created: 18 July 1991

### Article Change History

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09/10/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I allow users to change their file-sharing passwords? Can I prevent them from changing their passwords?

### DISCUSSION -----

- 1) Open the Users & Groups Control Panel.
- 2) Open the user's icon. A dialog box appears.
  - To allow the user to change his or her own password, click the check box marked Allow User to Change Password such that an X appears there.
  - To prevent the user from changing the password, click the check box marked Allow User to Change Password such that no X appears there.
- 3) Close the dialog box, saving your changes.

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Tech Info Library Article Number:8356



# Tech Info Library

## System 7: Removing a User's Access to Your System

Revised: 9/10/92  
Security: Everyone

System 7: Removing a User's Access to Your System

=====

Article Created: 18 July 1991

### Article Change History

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09/10/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How do I take away a user's ability to connect to my system?

### DISCUSSION -----

- 1) Open the Users & Groups Control Panel.
- 2) Open the user's icon. A dialog box appears.
- 3) Remove the X from the Allow User to Connect check box.
- 4) Close the dialog box, saving your changes.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8357



# Tech Info Library

## System 7: Virtual Memory and Disk Cache Contrasted

Revised: 9/12/91  
Security: Everyone

System 7: Virtual Memory and Disk Cache Contrasted

=====

Article Created: 18 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the difference between virtual memory and disk cache?

DISCUSSION -----

Virtual memory uses disk space as if it were RAM, to increase the amount of memory the system believes it can use for running applications

Disk cache tries to make the system run more efficiently with the memory available.

For more details, see the separate Tech Info Library articles on these subjects.

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Tech Info Library Article Number:8358



# Tech Info Library

## System 7: TrueType Large Text Sizes

Revised: 9/10/91  
Security: Everyone

System 7: TrueType Large Text Sizes

=====

Article Created: 26 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When using TrueType, is there a limit to how large text size may be?

DISCUSSION -----

One of the benefits of TrueType is that characters can now be generated at any point size up to 32,000 points. However, almost all applications currently limit text size to 127 points. Also, some limit the number of size selections possible. Some applications do their own scaling for sizes above 60 points.

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Tech Info Library Article Number:8359



# Tech Info Library

## System 7: File Sharing Security

Revised: 9/10/92  
Security: Everyone

System 7: File Sharing Security

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Article Created: 25 July 1991

### Article Change History

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09/10/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

GUEST ACCESS is AUTOMATICALLY granted when File Sharing is activated.

### DISCUSSION -----

Therefore, you must TAKE ACTION to limit access to shared items.

- 1) To eliminate anonymous access:  
Deactivate "Guest Access"
- 2) To grant access to specific individuals:  
Use the "User and Group" Functions
- 3) In all cases, when designating shared items:  
Immediately configure permissions for "owner," "group," and "everyone."

Please note: An "item" is at minimum a folder and at maximum a volume  
(which may consist of an entire hard drive).

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Tech Info Library Article Number:8360



# Tech Info Library

## Data Translation

Revised: 7/7/93  
Security: Everyone

Data Translation

=====

Article Created: 07/25/91  
Article Reviewed: 07/07/93  
Article Updated:

Data Translation

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Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8361



# Tech Info Library

## System 7: Program Linking and InterApplication Communication

Revised: 4/12/93  
Security: Everyone

System 7: Program Linking and InterApplication Communication

=====

Article Created: 26 July 1991

### Article Change History

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08/18/92 - REVISED

- To include text of another article detailing steps of setting up program linking.

### TOPIC -----

When do I need to turn on Program Linking? Is Program Linking necessary to send AppleEvents between programs?

### DISCUSSION -----

With AppleEvents, there are two possible configurations to take into account. The two communicating applications can be on the same computer, or they can be on different computers.

If the two applications are on the same computer, they simply use AppleEvents to communicate, with no other setup needed.

However, if the two programs are on different computers, permissions must be put in place to regulate the other system's ability to communicate with the programs on your system. When others are actively linking to your programs, your system may be slower to respond than usual.

You must turn on Program Linking to enable the InterApplication Communications (IAC) features of applications that are System 7-compatible. Program Linking is the switch that lets applications communicate with each other by sharing commands and data over AppleTalk networks. It provides security measures that prevent unauthorized use of programs and data from remote computers. To activate IAC, permission must be granted at System and Application levels.



### How to Turn On Program Linking

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To respond to events from remote computers, you must explicitly let network users link to your computer. To do this, follow these steps:

- 1) Open the Control Panel folder.
- 2) Open the Sharing Setup Control Panel.
- 3) Enter your name, password, and your computer's name.
- 4) Click the Start button for Program Linking.

The Sharing Setup Control Panel then states "Program Linking is on. Click Stop to prevent other users from accessing shared programs." To prevent other computers from initiating sessions, click Stop underneath Program Linking.

### Selecting Specific Applications

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Here's how to select specific applications:

- 1) Select an application from the Finder.
- 2) Choose Sharing from the File menu.
- 3) Click the Allow Remote Program Linking checkbox.

### What Else You Must Do

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In addition to letting remote users initiate conversations between applications via Program Linking, you must:

- Permit physical access to their programs and data by enabling File sharing from the Sharing Setup Control Panel
- Choose which other users to interact with via the Users and Groups Control Panel.

To establish access for other users and guests, follow these steps:

- 1) Open the Users & Groups icon in the Control Panels folder.
- 2) To specify a particular new user, choose New User from the File menu.
- 3) Type the user's name and password.

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Tech Info Library Article Number:8363



# Tech Info Library

## System 7: Program Linking versus Publish and Subscribe

Revised: 9/22/92  
Security: Everyone

System 7: Program Linking versus Publish and Subscribe

=====

Article Created: 26 July 1991

### Article Change History

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09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How does publish and subscribe differ from program linking?

### DISCUSSION -----

Publish-and-subscribe uses a transition file called the edition file. In program linking, the two programs talk directly to each other.

You probably would publish a report generated from a database, but not the cells of the database. For example, a word processor gets the top ten salespeople from a database.

Publish and subscribe, by which a change in one document effects a change in another document, has some of the flavor of program linking. However, it is important to note the differences, and corresponding strengths, of each feature.

The publish and subscribe feature is good for allowing programs (and their documents) to share data, while program linking using AppleEvents allows programs to communicate with each other--not only to send and receive data, but also to provide services to and request services from the other program.

Publish and subscribe are used when:

-----

- you would otherwise copy and paste the same data;

- the data involved will probably not be changed by the users who subscribe to it;
- the data is likely to be widely distributed--as in a large writing project;
- one document needs data from several other documents.

Applications use AppleEvents to:

- 
- get data from another program if the details of the request change slightly each time;
  - get another program to manipulate and return a set of data;
  - configure and control a variety of programs.

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Tech Info Library Article Number:8364



# Tech Info Library

## System 7: Program Linking versus File Sharing

Revised: 9/10/92  
Security: Everyone

System 7: Program Linking versus File Sharing

=====

Article Created: 26 July 1991

### Article Change History

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09/10/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How is program linking different from file sharing?

### DISCUSSION -----

File sharing and program linking both provide the ability to manipulate files, but program linking is a more comprehensive approach to the task.

File sharing strengths are based on the accessibility of files to others on your network. File sharing can make folders, hard disks, and CD-ROMs available to others. Users manipulate the files as if the files were local to their systems.

Program linking, on the other hand, is an automated programming effort in which applications are working with and manipulating other applications.

In configuring program linking, one element is similar to file sharing. To make a program available for linking, you choose Sharing from the File menu. There is never a conflict between the two because you may share only disks or folders, and you may link only application programs.

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Tech Info Library Article Number:8365



# Tech Info Library

## NetWare for Macintosh 3.0

Revised: 9/12/91  
Security: Everyone

NetWare for Macintosh 3.0

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Article Created: 10 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

On February 11, 1991, at NetWorld in Boston, Novell, Inc. announced NetWare for Macintosh 3.0, a complete AppleTalk protocol-suite implementation that fully integrates Macintosh desktop systems into the NetWare v.3.11 network computing environments (formerly named NetWare 386 v.3.x).

Apple does not endorse or recommend any third-party products mentioned in this article, which was first published in AppleGram, May 1991.

DISCUSSION -----

NetWare for Macintosh 3.0

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NetWare for Macintosh 3.0 provides file and print services to Macintosh clients in a NetWare environment using the AFP and PAP, AppleTalk protocols. This means Macintosh users connect to a NetWare v.3.11 server in the same way as they connect to any other AppleShare® file server--by logging in and selecting volumes through the Chooser. Printing to a PostScript printer connected to the Novell server is also done in the familiar Macintosh way.

NetWare for Macintosh 3.0 provides Network Administrators easy and complete solutions for integrating Macintosh systems into NetWare v.3.11 environments. The implementation of the full AppleTalk® stack as a set of NetWare Loadable Modules (NLMs) provides the architecture necessary for integrating Macintosh with other Novell services, such as NetWare Communications.

Macintosh Integrates Into Multivendor Networking Environments

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NetWare for Macintosh 3.0 is an important milestone for Macintosh users in multivendor networking environments. Macintosh users can now share resources with DOS, Windows, OS/2 and UNIX® desktops when in an advanced networking environment. NetWare for Macintosh 3.0 also offers enhanced security, fault tolerance, and high performance to all client desktops. Macintosh users in this large network environment will find accessing these remote network resources as easy as accessing their local file servers and printers.

#### Macintosh Administration Capabilities

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Additional features of NetWare for Macintosh 3.0 include:

- Macintosh client software that allows any Macintosh user on the network to control NetWare capabilities such as setting rights, assigning trustees, managing print queues and sending messages to other networked users
- Macintosh client software that allows designated Macintosh users to perform administrative tasks such as adding or deleting users and groups, assigning passwords, and setting file attributes
- Support for AppleTalk Phase 1 and Phase 2

#### AppleTalk Routing

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NetWare for Macintosh v.3.0 includes an AppleTalk Router as one of its core technologies. That means that users can share AppleTalk resources on different AppleTalk networks that are connected by the server.

#### NetWare for Macintosh 3.0

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AppleShare products are the ideal solutions in environments that are primarily Macintosh and where the network services required are primarily file and printer sharing. NetWare for Macintosh uses the same AppleTalk protocols and user interface model as Apple's AppleShare products. Using Apple's model, Novell is able to integrate many of the advantages of AppleShare into a more advanced networking environment where multivendor connectivity, enhanced security, fault tolerance, and high performance are critical user requirements.

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Tech Info Library Article Number:8366



# Tech Info Library

## System 7: Running the Compatibility Checker

Revised: 9/3/92  
Security: Everyone

System 7: Running the Compatibility Checker

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Article Created: 15 July 1991

### Article Change History

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09/02/92 - REVISED

- To add information about flagging new software as incompatible and version 1.1.

### TOPIC -----

How do I run the System 7 Compatibility Checker and how does it work?

### DISCUSSION -----

The Compatibility Checker is a HyperCard stack that checks the programs on your system against a database of applications contained within the stack. It then reports the compatibility status as provided by developers. Note that if your software is brand new, the Compatibility Checker may flag it as incompatible simply because it doesn't recognize the new version number. Also, check that you have version 1.1 of Compatibility Checker, which adds much new software to the list and updates existing information.

Here's how to use it:

- 1) Open the Before You Install stack.
- 2) Click Compatibility Checker.
- 3) Click the Set Up button.
- 4) Select the disk(s) to check.
- 5) Click the Start Checking button.

The stack starts checking: first for viruses, then for applications, INITs, cdevs, rdevs, and DAs. Depending on the number of items, this may take a while. The stack displays progress on a bar chart.

- 6) Once the check is complete, you are given a choice of moving any potentially incompatible items out of your System Folder. Click the Move Items button if you want the Compatibility Checker to move the items for you. Click the Don't Move Items button if you prefer to move them yourself.
- 7) The program provides a report, which lists all of the items checked and their compatibility status.
- 8) Click the Print Report button to print the report, or the Save Report button to save the report to disk.
- 9) Click the Quit button to exit the stack.

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Tech Info Library Article Number:8367





# Tech Info Library

## System 7: Activating Finder Windows

Revised: 9/11/92  
Security: Everyone

System 7: Activating Finder Windows

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Article Created: 15 July 1991

### Article Change History

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09/11/92 - UPDATED

- To give additional tips.

### TOPIC -----

I've noticed that directory windows sometimes become active when I release the mouse. Is this a new feature of System 7?

### DISCUSSION -----

Yes. This is an enhanced feature of System 7. It prevents active windows from getting in your way while you are moving icons.

To make a window active, simply click the window. If you click an icon, the window activates when you release the mouse button. If you click elsewhere in the window (not an icon), the window activates when you press the mouse button.

This is different from System 6, in which windows are always activated on mouse-down.

This allows you to move an icon from an inactive window to another window without having the inactive window become active and possibly cover other items on your desktop.

Moving an icon from an inactive window to another inactive window leaves the currently-active window active. This way you can move an icon from an inactive window to an inactive window without making either active. Also, if you want to move a window without making it active, hold down the

# ..TIL08368-System\_7-Activating\_Finder\_Windows\_(TA46813).pdf

Command key and drag the window (by clicking in the title bar).

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Tech Info Library Article Number:8368



# Tech Info Library

## System 7: Locating the Original of an Alias

Revised: 9/12/91  
Security: Everyone

System 7: Locating the Original of an Alias

=====

Article Created: 15 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I find the original of an alias?

DISCUSSION -----

The Finder can show you both the original and its pathname. Follow these steps:

- 1) Select the alias.
- 2) Choose Get Info from the File menu.

The path to the original is listed after the heading "Original" in the Info window.

- 3) Click the Find Original button.

A Finder window containing the selected original opens.

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Tech Info Library Article Number:8369



# Tech Info Library

## System 7: Findable Attributes

Revised: 9/11/92  
Security: Everyone

System 7: Findable Attributes

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Article Created: 15 July 1991

### Article Change History

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09/11/92 - REVISED

- To add additional information.

### TOPIC -----

Can I use the Finder's Find command to search for files by attributes?

### DISCUSSION -----

Yes. The Find command seeks out the file you want to locate and selects it based on a variety of file attributes, allowing you to refine your searches to be as specific as you want. For example, you can find all the files created between May 21 and July 27 that are larger than 15K.

You can search for files by:

- Name
- Size
- Kind
- Label
- Date Created
- Date Modified
- Version
- Comments
- Lock

You can find files using any or all of the criteria above, singly or in combination. (Warning: rebuilding the desktop removes all comments on a drive.) If you want to search using multiple attributes, just do your first search, checking the "all at once" box. Then, with all the selected files

still highlighted, do another search for your secondary attribute. You may do this until you narrow the search down to the desired level.

The Search pop-up menu near the center of the dialog box lets you search on any currently mounted disk or server.

The choices available in a pop-up menu depend on the contents of the pop-up menu(s) to its left.

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Tech Info Library Article Number:8371



# Tech Info Library

## System 7: Customized Installation

Revised: 9/21/92  
Security: Everyone

System 7: Customized Installation

=====

Article Created: 10 September 1991

### Article Change History

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09/14/92 - REVISED

- For technical accuracy.

### TOPIC -----

How do I do a customized installation of System 7?

### DISCUSSION -----

You may want to custom install:

- To limit the installation of certain features (for example, File Sharing)
- To minimize the amount of disk space the system occupies

The following instructions are for an installation from floppy disk.  
(Installation from CD-ROM is similar, except that you don't have to swap disks.)

- 1) Restart your Macintosh with the Install 1 disk in the floppy drive.
- 2) Open the Installer application on the Install 1 disk.
- 3) Click OK to proceed past the welcome box.
- 4) Verify that the disk named on the Installer screen is the drive on which you want the software to be installed. Click Switch Disk if you want to install on a different drive.

- 5) Click the Customize button.

The custom installation screen appears, showing the parts of the system software and a choice of standard or minimal system files for each model of Macintosh.

- 6) Scroll through the list of items and Shift-click the ones you want to install. As you select items, their names appear in the lower-left portion of the dialog box.
- 7) Click Install to install this software configuration onto the selected disk.

The Installer will decide which disks are required, and then prompt you to insert them as needed.

- 8) Click Quit when you see a message indicating that the installation was successful.
- 9) Click Restart in the dialog box that appears when you quit the Installer.

Note: When installing on an external hard drive that might be used on another system, it's best to choose the "For any Macintosh" option.

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Tech Info Library Article Number:8372



# Tech Info Library

## System 7: Keyboard Navigation

Revised: 8/25/92  
Security: Everyone

System 7: Keyboard Navigation

=====

Article Created: 15 July 1991

### Article Change History

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08/24/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

System 7 provides shortcuts to navigate around your files. This article tells how to use these techniques.

### DISCUSSION -----

Here's where you can use navigation shortcuts:

- In Finder windows
- In the Chooser
- In the list displayed in a directory dialog box
- On the desktop

Typing any alphabetic character moves the selection to the first item whose name begins with that character, or the next closest successive character in the alphabet.

For example, if you type the character "s", your selected icon may be the System Folder, if no other files or folders come before the word System in alphabetical order.

The speed at which you type in the characters is important. If there are



several files beginning with the character "s", you can type more of the name to select the desired icon. If you type too slowly, though, the system will think you want an icon beginning with a letter other than "s".

Pressing the Tab key moves the selection to the next icon in alphabetical order. Pressing Shift-Tab moves the selection to the previous icon in alphabetical order.

Finally, the arrow keys select the next icon in the direction of the arrow.

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Tech Info Library Article Number:8373



# Tech Info Library

## System 7: Using Multiple Applications

Revised: 9/11/92  
Security: Everyone

System 7: Using Multiple Applications

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Article Created: 15 July 1991

### Article Change History

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09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

In addition to the ways System 6 allowed use of multiple applications, System 7 provides two more methods.

### DISCUSSION -----

To switch from one application to another:

- Click one of the application's windows. (If the application you want is the Finder, click anywhere on the desktop.)
- Select an application from the Application menu (right end of the menu bar).

To start additional applications:

- Drag a document icon onto the icon of the application (new feature).
- Select the application from the Apple menu (new feature).
- Double-click the application's icon (or its alias).
- Select the application and choose Open from the File menu in the Finder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8374



# Tech Info Library

## System 7: Pop-up Title Bars

Revised: 9/11/92  
Security: Everyone

System 7: Pop-up Title Bars

=====

Article Created: 16 July 1991

### Article Change History

-----

09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

In the Finder, pop-up menus provide another shortcut for quickly moving around your desktop.

### DISCUSSION -----

To access the pop-up menu of the active window, simultaneously:  
- hold down the Command key,  
- put the pointer over the name at the top of the window, and  
- press the mouse button.

The pop-up menu not only shows you the path of the active window, but if you choose a folder from the pop-up menu, the system makes that window active. If the window is not already open, it opens and is made active.

To simultaneously choose a new window to open and to close the currently active window, hold down the Option key as well as the Command key.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8375



# Tech Info Library

## System 7: Zoom Box Improvements

Revised: 9/11/92  
Security: Everyone

System 7: Zoom Box Improvements

=====

Article Created: 16 July 1991

### Article Change History

-----

09/11/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

The Zoom box works a little differently under System 7.

### DISCUSSION -----

When the Zoom box of a Finder window is clicked, the window shrinks to the minimum size necessary to show the window's entire contents (unless the contents are too big to fit on the screen).

Clicking the Zoom box again returns the window to its original size.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8377



# Tech Info Library

## System 7: How to Use Control Panels

Revised: 9/13/91  
Security: Everyone

System 7: How to Use Control Panels

=====

Article Created: 10 September 1991

### Article Change History

-----

08/25/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

This article explains how to use control panels in System 7 to customize your system.

### DISCUSSION -----

In System 7, control panels open as though they were applications. Just double-click their icons, and you have access to the control panel you want.

An alias for the Control Panels folder is in the Apple Menu Items folder, making the control panels even easier to use. The alias in the Apple menu also provides interface compatibility for System 6.0.x users. You can have more than one Control Panel open at the same time.

To install a new control panel, simply drag its icon onto the System Folder icon. It will automatically be put into the Control Panels folder. (You can move control panels directly to the Control Panels folder yourself, of course.) Control panels can be put anywhere for quick access: on the desktop, in a folder, in the Apple menu, and so on. But if a control panel has INIT code that needs to be loaded at startup, it must be in the System Folder or the Control Panels folder.

Some functions that once were adjustable only with ResEdit™ can now be modified by control panels. The settings you can adjust in the control

panels include, but are not limited to:

- Font and type size used by the Finder for icon names
- Icon size and attributes listed in list views
- Icon layout in icon views
- Memory control
- Pattern and colors of the desktop
- Date, time, and display of time
- Speaker volume and alert sound
- Relative distance the pointer moves on screen when you move the mouse
- Relative positions of multiple monitors
- Number of colors or shades of gray displayed
- Disk drive to be used for startup (startup volume)
- Label names and colors available for icons
- Special aids for using the keyboard and mouse
- File sharing setup and program-to-program connections  
(available to Macintosh computers on a network)
- Remote user access

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8378



# Tech Info Library

## System 7: Installing Fonts and Sounds

Revised: 9/13/91  
Security: Everyone

System 7: Installing Fonts and Sounds

Article Created: 17 July 1991

### Article Change History

-----  
08/25/92 - REVISED  
• To make more clear. Added topic.

### TOPIC -----

What is the correct way to install fonts and sounds in System 7?

### DISCUSSION -----

In System 7, there are two ways to install a font or sound:

1. Drag the resource icon onto the System Folder icon.
2. Drag the resource icon into the open System file (in System 7, the System file can be opened as if it were a folder).

To have the system software automatically install the font or sound in the correct location:

- 1) Quit all programs that are currently open.
- 2) Select the icon of the font or sound you want to install.
- 3) Drag the selected icon onto the System Folder icon of your startup disk. A dialog box appears asking if the item should be installed in the System file.
- 4) Click OK to complete the installation.



To install the font or sound yourself:

- 1) Quit all programs that are currently open.
- 2) Open the System file. Opening the System file may take some time, if the file is large.
- 3) Select the icon of the font or sound you want to install.
- 4) Drag the selected icon into the System file window.
- 5) Close the System file.

You get a warning if you try to install a resource when any applications (other than the Finder) are open. If you don't get a dialog box after dragging a sound to the System Folder icon, the sound is probably the wrong resource type. Open the System Folder and see if the sound was left sitting inside that folder instead of being installed in the System file itself.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8379



# Tech Info Library

## System 7: Removing Fonts and Sounds

Revised: 9/10/91  
Security: Everyone

System 7: Removing Fonts and Sounds

=====

Article Created: 17 July 1991

### Article Change History

-----

08/25/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

A new feature of System 7 allows you to remove fonts and sounds by dragging the resource icon out of the open System file. This article details how to do this.

### DISCUSSION -----

Fonts and sounds are removed by dragging them out of the System file.

- 1) Quit all programs that are currently open. You'll get an error message if you try to remove a font or sound when any programs (other than the Finder) are open.
- 2) Open the System file. This may take a few moments if the file is large.
- 3) Select the icon of the font or sound you want to remove.
- 4) Drag the icon out of the System file window. To discard the font or sound, drag it into the trash. To save it for future use, drag it anywhere outside of the System file.

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Tech Info Library Article Number:8381



# Tech Info Library

## System 7: System Sounds

Revised: 9/10/91  
Security: Everyone

System 7: System Sounds

=====

Article Created: 17 July 1991

### Article Change History

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08/25/92 - REVISED

- To provide more detail; rewrote topic.

### TOPIC -----

How do I recognize a sound file? How do I play a sound when it is installed in the System Folder?

### DISCUSSION -----

Sounds are identified by their unique icons. Under System 7, you can play a sound by double-clicking the sound file, whether it is inside the System file or loose on the disk.

Sounds installed in the System file must be sound resources, in particular, resources with the type "snd". (You can check the resource type by using ResEdit.) If you are able to drag a sound file into the System file, then it is in the proper format. There are several third-party sources for sound resource conversion applications.

To change the system alert sound:

- 1) Open the Sound control panel. This is usually located in the Control Panels folder within the System Folder, or accessed via the Control Panels menu item in the Apple menu.
- 2) Click the name of the sound you want. The sound is played.
- 3) Adjust the volume, if desired. The alert sound is played to

demonstrate what it sounds like at the new volume.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8382



# Tech Info Library

## System 7: Changes to the System File

Revised: 9/13/91  
Security: Everyone

System 7: Changes to the System File

=====

Article Created: 17 July 1991

### Article Change History

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08/25/92 - RETITLED  
• For clarity.

### TOPIC -----

In System 6.0.x, you had to use the Font/DA Mover to open the System file. In System 7, the System file behaves as an ordinary folder that can be opened from the Finder.

### DISCUSSION -----

To open the System file, double-click it. When open, the System file displays all of the fonts, keyboard layouts, and sounds installed in it -- as though it were a folder. While fonts and sounds are actually resources, they are treated as though they were simply files within a folder. (Because resources are special files, aliases cannot be substituted for them.)

You can double-click any font to see a sample of that font. You can double-click any sound to hear the sound.

Many of the functions that used to be contained in the System file have been moved to specific control panels. Modifying such things as icon layout no longer requires manipulation of the System file with ResEdit or other tools.

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Tech Info Library Article Number:8383



# Tech Info Library

## System 7: Edition Files

Revised: 9/22/92  
Security: Everyone

System 7: Edition Files

Article Created: 17 July 1991

### Article Change History

-----  
09/22/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

This article discusses operations performed with edition files.

### DISCUSSION -----

You, the user, make the choice of when a publisher will update its edition file. Generally, the two choices are to update the edition either:

- automatically when the file containing the publisher is saved, or
- manually when the Send Edition Now button is pressed from the Publisher Options dialog.

Different applications may have different options. Links between publishers and their edition files are effective until they are specifically canceled. If an edition file is thrown away without canceling the link, a new edition file will be created when the document containing the publisher is saved.

You cannot directly change the edition files, though you can open them to examine their contents. When you open an edition, the contents of the file are displayed and you get a dialog box asking if you want to open the publisher, presumably to make changes.

You also make the choice of when a subscriber will receive edition updates. Again, there are generally two options; a subscriber may update:

- automatically when the file containing the subscriber is opened, or
- manually when the Get Edition Now button is pressed from the Subscriber Options dialog.

If you cancel a subscriber, the current information will remain, but it will no longer be updated. If a subscriber's linked edition file has been removed, a warning dialog is issued.

The System software keeps track of which edition files are linked to which publishers and subscribers, in the same way it keeps track of alias files. If an edition file is moved, the system updates its pathname. Making a copy of an edition file does not copy its linkages, however.

Publishing is different from program linking. Publishers update an intermediate file, and subscribers update from that intermediate file. In program linking, an application sends commands (AppleEvents) directly to another application; there is no intermediary.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8384



# Tech Info Library

## System 7: Using Stationery

Revised: 9/10/91  
Security: Everyone

System 7: Using Stationery

=====

Article Created: 17 July 1991

### Article Change History

-----

08/18/92 - REVISED

- Combined two articles into this one.

### TOPIC -----

What is stationery? How can I use it? Does it work with all applications?

### DISCUSSION -----

Stationery is a System 7 feature with which you create "template" documents. For example, if you have a memo form that you use frequently, you can create a stationery document that gives you a fresh version of the memo every time you open it.

Stationery works with all applications. Some applications are stationery-aware. That is, you can specify whether a document should be treated as stationery when you first save the document using the "Save As..." command. Although other applications are not stationery-aware, there is another way to create a stationery document.

### How to Create a Stationery Document

-----

Follow these steps:

- 1) Create your template document in your application. For example, you might have a document that has "From:" "To:" and "About:" lines.
- 2) Save the document to your disk.



- 3) Switch back to the Finder (desktop).
- 4) Select the document's icon.
- 5) Choose Get Info from the File Menu.
- 6) Click the box marked "Stationery" in the Get Info window.
- 7) Close the Get Info window.

When you open the stationery document, you get a copy of the document for your use.

A stationery pad can be opened like any other document -- by double-clicking its icon, by selecting it and then opening it from the File menu, or by opening it from within an application.

When a stationery pad is opened for an application that supports this feature, a new file with the title "Untitled" is created. This file is a copy of the stationery pad, containing all the formats and information of the original. You make changes to the "Untitled" document, naming it when you save the new document. The new document is saved as a regular document -- not as a stationery pad -- unless you specify otherwise.

For applications not yet supporting the stationery option, you name the new document when you open the stationery pad. Double-click the icon of the stationery pad you want to open. A dialog box appears asking you to name the document. Type a name for the new document. After saving the document, you can then proceed to make the desired changes.

You can make changes in a stationery pad by turning off the "Stationery pad" attribute through the Info box, making the desired changes, then turning the attribute back on.

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Tech Info Library Article Number:8385



# Tech Info Library

## CD-ROMs: Accessing Multiple Discs Remotely

Revised: 9/13/91  
Security: Everyone

CD-ROMs: Accessing Multiple Discs Remotely

=====

Article Created: 12 July 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a lot of essential data on several CD-ROMs. Rather than carry them all -- plus a drive -- with me on customer calls, I'd like to keep them in a multi-disc CD-ROM changer in my office and access them with my Macintosh Portable from remote sites. What hardware and software would I need?

DISCUSSION -----

What you propose is very workable.

Hardware and Software Requirements

-----

At Your Home Base:

- a Macintosh system with Timbuktu Remote installed
- a modem connected to a telephone line
- a multi-CD changer (such as the Pioneer DRM 600)
- multiple CD-ROMs mounted on the desktop

The Remote System:

- a Macintosh (Portable or other model) with Timbuktu Remote installed
- a modem connected to a telephone line

The Procedure

-----

Use the remote system (with Timbuktu Remote and modem) to dial in to the home base. You can then manipulate the home-base system as though you were there. You will have access to the information on all of the CD-ROMs (as well as resources such as printers, file servers, etc.) back at your office.

For Further Information

-----

For contact information, search the Tech Info Library on "Farallon"  
(Timbuktu Remote) and "Pioneer".

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Tech Info Library Article Number:8386



# Tech Info Library

## System 7: How to Customize the Puzzle

Revised: 9/11/91  
Security: Everyone

System 7: How to Customize the Puzzle

=====

Article Created: 12 July 1991

### Article Change History

-----

08/25/92 - REVIEWED

- For accuracy.

### TOPIC -----

Can I customize the color Puzzle in System 7's Apple menu?

### DISCUSSION -----

Yes. Start by making a duplicate of the Puzzle, so that after making a custom Puzzle, you'll still have the original.

- 1) Put a graphic, one that is about the same size as the Puzzle itself, on the Clipboard.

Some possible sources:

- a HyperCard or MacPaint bitmap
- a screen dump or other PICT copied using System 7's new TeachText program.

- 2) Open the Puzzle, and choose Paste from the Edit menu. The graphic is copied from the Clipboard into the Puzzle, and scrambled.  
(To see the graphic unscrambled, choose Show Clipboard from the Finder's Edit menu.)

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8387



# Tech Info Library

## System 7: Starting Filenames with Space Character

Revised: 9/11/92  
Security: Everyone

System 7: Starting Filenames with Space Character

=====

Article Created: 12 July 1991

### Article Change History

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09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Earlier versions of Macintosh system software didn't allow filenames to begin with a space character, but System 7 does allow this.

### DISCUSSION -----

If you begin a filename with a space character, then use "View by Name", that file will appear at the top of the list. This is a good way to force important files to the top of the alphabetical list.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8389



# Tech Info Library

## System 7.x: Changing Sequence of Apple Menu Items (2/95)

Revised: 2/21/95  
Security: Everyone

System 7.x: Changing Sequence of Apple Menu Items (2/95)

Article Created: 25 July 1991

TOPIC -----

I have installed so many desk accessories in my Macintosh system that my Apple menu is longer than my monitor is high. Further, some of the menu items I use most often are near the bottom of the list, and scrolling to them is annoying. Is there a way to force a few of my menu items to the top of the alphabetical list -- without renaming them?

DISCUSSION -----

There is an easy way to force a few of your menu items to the top of the alphabetical list - without renaming them.

For example, if you change "Scrapbook" to " Scrapbook" (with a leading space), then it appears in the Apple menu ahead of "Alarm Clock" and "Chooser".

In the Finder, open your System Folder, then your Apple Menu Items folder, and change the names of the menu items as you would any other filenames.

You might also want to experiment by putting various punctuation symbols at the beginning of the items in your Apple menu to see how this affects the sequence. If you still feel the menu is cluttered, make an empty folder named simply with a row of hyphens (or any other character) and use it as a divider (with leading spaces to position it appropriately) between, say, folder aliases and application aliases in your menu.

### Article Change History:

21 Feb 1995 - Added keywords; made several technical updates.  
25 Aug 1992 - To provide additional information and tips.

Support Information Services

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# Tech Info Library

## Conrac Display Products, Inc.

Revised: 7/7/93  
Security: Everyone

Conrac Display Products, Inc.

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Article Created: 06/27/91  
Article Reviewed: 07/07/93  
Article Updated:

Conrac Display Products, Inc.

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1724 South Mountain Avenue  
Duarte, CA 91010

818-303-0095

818-303-5484 Fax

Company Profile:  
Hardware, specializing in display monitors for the Macintosh.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8392





# Tech Info Library

## ALKI Software Corporation

Revised: 7/6/93  
Security: Everyone

ALKI Software Corporation

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Article Created: 06/11/91  
Article Reviewed: 07/02/93  
Article Updated: 07/02/93

ALKI Software Corporation

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300 Queen Ann Ave. N.  
Suite 410  
Seattle, WA 98109

206-286-2600

206-286-2785 Fax

### Company Profile:

Software, specializing in Microsoft Word dictionaries in Dutch, French, German, Italian, Spanish, Swedish, British English, plus Medical and Legal dictionaries in American English, Masterword-adds toolbar to Word, expansion thesaurus, reference book for word in computer form

Article Change History: 07/02/93 New Product Information Added

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Tech Info Library Article Number:8393



# Tech Info Library

## **Bomco, Inc.**

Revised: 7/6/93  
Security: Everyone

Bomco, Inc.

=====

Article Created: 06/10/91  
Article Reviewed: 07/06/93  
Article Updated: 03/31/92

Bomco, Inc.  
-----

Route 128  
Blackburn Circle  
Gloucester, MA 01930

508-283-9000

508-283-2882 Fax

Company Profile:  
Specializing in metal spinnings.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8394



# Tech Info Library

## Liebert Corporation

Revised: 7/12/93  
Security: Everyone

Liebert Corporation

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Article Created: 06/09/91  
Article Reviewed: 07/12/93  
Article Updated: 12/01/92

Liebert Corporation

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1050 Dearborn Drive  
P.O. 29186  
Columbus, OH 43229

614-888-0246

614-841-6973 Fax

Company Profile:

A division of Emerson Computer Power, specializing in backup power supplies.

(Customer Service and Support)

250 E. Wilson Ridge Rd.  
Suite 100  
Worthington, OH 43085

614-841-6400

614-841-6362 Fax

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Tech Info Library Article Number:8395



# Tech Info Library

## Magnetic Shield Corporation

Revised: 7/13/93  
Security: Everyone

Magnetic Shield Corporation

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Article Created: 06/10/91  
Article Reviewed: 07/13/93  
Article Updated:

Magnetic Shield Corp.  
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Perfection Mica Company  
740 North Thomas Drive  
Bensenville, IL 60106

708-766-7800

708-766-2813 Fax

Company Profile:  
Specializing in magnetic monitor shields.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8396



# Tech Info Library

## LattisNet System 3000

Revised: 9/13/91  
Security: Everyone

LattisNet System 3000

=====

Article Created: 7 June 1991  
Article Last Reviewed:  
Article Last Updated:

### TOPIC -----

This article describes the LattisNet System 3000, manufactured by SynOptics

### DISCUSSION -----

SynOptics' Network Utility Architecture defines local area networks as utilities, and combines three elements: connectivity, internetworking and network management. Physical layer connectivity includes access methods such as Ethernet, Token Ring and Fiber Distributed Data Interface (FDDI). Internetworking, used in larger networks, refers to bridges and routers. Network management systems keep complex networks running reliably and efficiently.

The LattisNet System 3000 provides integrated LAN data Communications, internetworking and network management functions within a single network utility. Modular components satisfy a variety of network needs.

System 3000 concentrators provide a common platform to support the Network Utility Architecture. The Model 3000 Premises Concentrator and the Model 3030 Department Concentrator hold the modular components that provide basic connectivity, integrated bridging, and network management utility functions.

A modular backplane supports IEEE 802.3-compatible Ethernet at 10 megabits per second (MB/s) and IEEE 802.5 Token Ring at 4MB/s and 16MB/s. System 3000 concentrators offer increased LattisNet module and port density to support more nodes with less equipment.

System 3000 host modules offer network connectivity. Ethernet host modules

provide media flexibility by offering twisted pair and FOIRL fiber optic interconnections. Token Ring host modules operate over twisted pair wire. Auto-partitioning functions disable port connections under specific Ethernet fault conditions to ensure network integrity. Front-panel LEDs indicate link status, partitioning, and network management activity. System 3000 Token Ring ring-in/ring-out modules connect to other Token Ring-compatible devices to create larger LANs. Ethernet retiming modules help satisfy the IEEE 802.3 repeater function.

The bridge hardware and bridge management software provide integrated modular local bridging capabilities. LattisNet Ethernet local bridge modules have attachment unit interface (AUI) and fiber optic connector options to interconnect network segments and form single, transparent LattisNet networks. LattisNet local bridges filter operator-defined data packets and include a Spanning Tree Algorithm function which provides a redundant network path for rapid recovery from bridge or link failures.

The network management capabilities include planning, data monitoring, problem determination and fault isolation from a centralized console. Network management modules offer AUI and fiber optic connector options. Real-time network information is displayed graphically as a network hierarchy with Expanded Views of individual concentrators. A report generator captures and stores specific data on request. LattisNet Network Management permits individual port partitioning. It also allows the network manager to set module- and port-level activity and fault thresholds based on media access control (MAC)-level parameters and statistics.

LattisNet products implement IEEE 802.3-compatible Ethernet over twisted-pair wire and fiber optic cable. They also support both IEEE 802.5 Token Ring and 802.5-compatible networks over twisted-pair wire.

You can find the phone number and address for SynOptics in a separate article in the Tech Info Library.

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Tech Info Library Article Number:8397



# Tech Info Library

## Network Guidelines

Revised: 9/13/91  
Security: Everyone

### Network Guidelines

=====

Article Created: 11 June 1991  
Article Last Reviewed:  
Article Last Updated:

### TOPIC -----

This article offers some guidelines for getting the best service from a network.

### DISCUSSION -----

- All devices on Ethernet need to be using the Phase II EtherTalk driver.
- Be sure that computers using Ethernet have EtherTalk cards, revision L or later.
- If you are using Ethernet, don't crimp or tightly wrap the cables. This degrades network performance.
- Install Responder in the System Folder of any Macintosh running 6.0.x. (Responder is built into System 7.)
- All Macintosh IIfx computers must have the Macintosh IIfx Serial Switch INIT in the System Folder. Set the Serial Switch to compatible mode to work with dial-up-connection applications and the old Star Controller model.
- Be sure all System 7 users have the same version, and no versions older than Beta 4. Inter•Poll can help find out what versions are in your network group.
- Don't daisy-chain any devices. This creates a heavy load on the network that often exceeds the capacity of the specifications.
- All spoolers must be on the same network (not just zone) as the

LaserWriter they spool to.

- Use Inter•Poll to observe the workgroup use and traffic patterns on the network.
- Check the types of software used on the network. A beta-test environment can degrade network service.

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Tech Info Library Article Number:8398





# Tech Info Library

## System 7: EtherPort Driver Compatibility

Revised: 12/14/92  
Security: Everyone

System 7: EtherPort Driver Compatibility

Article Created: 11 June 1991

### Article Change History

-----  
12/10/92 - UPDATED  
• To give current version information.

### TOPIC -----

I need a list of System 7 compatible drivers for EtherPort Ethernet cards available.

### DISCUSSION -----

Shiva no longer supports Etherport products. Eagle Technology supports these products.

Here's a list of the compatible driver versions:

| Product                                                               | Current Version | Minimum Needed for System 7 |
|-----------------------------------------------------------------------|-----------------|-----------------------------|
| EtherPort II<br>(Nubus card 7-8 inches long)                          | 4.2             | 4.2                         |
| EtherPort<br>(Older Nubus Card 12 inches long. Not 32-bit compatible) | 2.6             | 2.6                         |
| EtherPort SE                                                          | 2.6             | 2.6                         |
| EtherPort SE30                                                        | 4.2             | 4.2                         |
| EtherPort SI                                                          | 4.2             | 4.2                         |

EtherPort LC

4.2

4.2

No company supports the EtherPort SC (SCSI unit).

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Tech Info Library Article Number:8399



# Tech Info Library

## Visual Almanac LaserDisc Product

Revised: 9/13/91  
Security: Everyone

Visual Almanac LaserDisc Product

=====

Article Created: 3 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the Visual Almanac, a product available from Optical Data Corporation.

DISCUSSION -----

The Visual Almanac is an interactive multimedia kit that combines a videodisc with the Macintosh computer running HyperCard.

It features three segments:

- a collection of 7,500 moving and still images and sounds
- a composition workspace for manipulating text, images, and sounds
- 14 student activities in science, the arts, social studies, and mathematics

The package contains a 2-sided LaserDisc, a CD-ROM disc, a cable to connect the Macintosh to several different popular LaserDisc players, and documentation.

Call Optical Data Corporation for an order form. You can find the phone number and address in a separate article in the Tech Info Library.

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Tech Info Library Article Number:8401



# Tech Info Library

## AppleWorks Users Group (NAUG)

Revised: 9/13/91  
Security: Everyone

AppleWorks Users Group (NAUG)

=====

Article Created: 17 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article gives information about the National AppleWorks Users Group (NAUG).

DISCUSSION -----

NAUG is an international user group that provides members with AppleWorks information through a monthly newsletter, plus technical support through a network of support volunteers. They publish the AppleWorks Forum and maintain a public-domain library.

You can subscribe and become a member of NAUG by calling their number, which is listed in a separate article in the Tech Info Library.

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Tech Info Library Article Number:8402



# Tech Info Library

## C. M. Hoskins Company, Inc.

Revised: 7/7/93  
Security: Everyone

C. M. Hoskins Company, Inc.

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Article Created: 06/11/91  
Article Reviewed: 07/07/93  
Article Updated: 03/31/92

C.M. Hoskins Company, Inc.

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7353 15th N.W.  
Seattle, WA 98117

206-789-1600

206-789-1604 Fax

### Company Profile:

Distributes Quake/Grip, a specially designed Velcro product that secures office equipment from damage in an earthquake. Fasteners come in a variety of sizes to support different types and weights of equipment.

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Tech Info Library Article Number:8403



# Tech Info Library

## National AppleWorks Users Group (NAUG)

Revised: 7/14/93  
Security: Everyone

National AppleWorks Users Group (NAUG)

=====

Article Created: 17 June 1991  
Article Reviewed/Updated: 14 July 1993

National AppleWorks Users Group (NAUG)

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Tech Info Library Article Number:8404



# Tech Info Library

## Macintosh: Displaying Same Image on Two Monitors (12/95)

Revised: 12/20/95  
Security: Everyone

Macintosh: Displaying Same Image on Two Monitors (12/95)

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Article Created: 14 June 1991  
Article Reviewed/Updated: 20 December 1995

TOPIC -----

I have two video cards installed in my Macintosh II with two monitors attached.  
Can I display the same image on both monitors?

DISCUSSION -----

With the base Macintosh hardware and software, it is not possible to display a mirror image on two different displays. Video mirroring is built-in on some PowerBooks, and an add-on option to both the Macintosh LC 580 and Power Macintosh 5200 and 5300 computers.

Apple offers another solution for video mirroring called the Apple Presentation System. This external device attaches to any standard Macintosh DB-15 video port and allows you to mirror your screen on a second monitor or to a standard NTSC device such as a television or VCR.

Article Change History:  
20 Dec 1995 - Added information on the Apple Presentation system.  
30 Nov 1994 - Updated information on video mirroring.

Support Information Services

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Tech Info Library Article Number:8405



# Tech Info Library

## System 6.0.6: Don't Use It

Revised: 9/13/91  
Security: Everyone

System 6.0.6: Don't Use It

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How come I shouldn't use System 6.0.6 on ANY Macintosh? And why should I use System 6.0.7 only on newer Macintosh computers?

DISCUSSION -----

System 6.0.6 has compatibility problems with the new Macintosh computers. System 6.0.6 was pulled from production and replaced by System 6.0.7. There are a few versions of System 6.0.6 floating around that were sent out before the software was pulled from production.

You should use System 6.0.5 (or System 7) on most Macintosh computers made before the Macintosh Classic, Macintosh LC, and Macintosh IIsx. System 6.0.7 has features in it that only benefit newer Macintosh computers. This does not mean that you can't use System 6.0.7 on older products, it just means that it is not the recommended system.

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Tech Info Library Article Number:8407





# Tech Info Library

## Display Card 8•24 GC: Compatibility With Other Video Cards

Revised: 6/11/92  
Security: Everyone

Display Card 8•24 GC: Compatibility With Other Video Cards

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Article Created: 14 June 1991  
Article Last Reviewed: 10 June 1992  
Article Last Updated:

TOPIC -----

How do I use a Macintosh Display Card 8•24 GC in conjunction with a third-party video card? Specifically, I'm trying to use a RasterOps Video ColorBoard 364 with the Macintosh Display Card 8•24 GC. With both cards in a Macintosh, only one card works -- depending on which slots I've put the cards in. The card that's in the slot closest to the power supply is the one that's recognized, while the other card doesn't work at all.

RasterOps says that the Macintosh Display Card 8•24 GC might not be releasing control of the bus to other graphics cards. Is this what's happening?

DISCUSSION -----

The card nearest the power supply becomes the "bus master". If your Macintosh Display Card 8•24 GC is in the bus master slot, it will take control of the bus and prevent another card with a processor on it to run.

If your third-party card is in the bus master slot, the third-party card may or may not release control of the bus, depending on its design.

Essentially, you can have only one accelerator card running at a time. If you turn the acceleration of the Macintosh Display Card 8•24 GC off, you should be able to use both video cards.

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Tech Info Library Article Number:8408



# Tech Info Library

## A/UX 2.0: Programmer's Tools and X Windows

Revised: 9/16/92  
Security: Everyone

A/UX 2.0: Programmer's Tools and X Windows

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Article Created: 14 June 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

- 1) What is the minimum-sized A/UX partition? (Can A/UX be totally installed on a SyQuest Drive?)
- 2) What do the Programmer's Tools include?
- 3) Is the X Window package included with the Programmer's Tools?
- 4) Can X Windows applications be created with the X Window package, or is another programming tool necessary?

### DISCUSSION -----

- 1) The partition that contains the complete A/UX is 70+ MB. If you are willing to remove utilities, you can get it down to 50+ MB.
- 2) The Programmer's Tool Kit includes the standard AT&T set of utilities.
- 3) X Windows is sold separately.
- 4) Yes. It includes libraries for X11R3.

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Tech Info Library Article Number:8409



# Tech Info Library

## AppleShare Workstation: Use Installer that Comes With Computer

Revised: 9/13/91  
Security: Everyone

AppleShare Workstation: Use Installer that Comes With Computer

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I use the AppleShare Workstation Installer 2.0 to prep a Macintosh IICx workstation using the Macintosh II option (only that option was offered), my computer doesn't restart. I had to totally reinstall the System with the Installer along with Installer's AppleShare workstation option.

DISCUSSION -----

AppleShare software has not been updated in over 2 years. The installer scripts that come with AppleShare do not work properly with computers that have been introduced since that time. New computers come with their own installers that install both the AppleShare workstation and server.

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Tech Info Library Article Number:8411



# Tech Info Library

## AppleShare: Finder Copying Causes ID=1 Errors

Revised: 9/13/91  
Security: Everyone

AppleShare: Finder Copying Causes ID=1 Errors

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I do a Finder copy of files onto my AppleShare server folders, why do I get an ID=1 error?

DISCUSSION -----

This is because you're putting information onto your server without AppleShare being "aware" that you've done this. When you put information on the hard drive of the server with AppleShare off, the AppleShare PDS file doesn't update correctly.

You need to run the AppleShare Admin program and verify the volume to update the PDS file. A way to prevent this is to copy files to your server over the network. This updates the PDS file as your files are copied.

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Tech Info Library Article Number:8413



# Tech Info Library

## AppleCD SC: How To Use with AppleShare

Revised: 9/13/91  
Security: Everyone

AppleCD SC: How To Use with AppleShare

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I use an AppleCD SC Drive on an AppleShare Network?

DISCUSSION -----

Here are the steps:

- 1) Install the AppleCD SC driver on the AppleShare Admin diskette and the file server volume.
- 2) Start up from the AppleShare Admin diskette and use the "Prepare volume for use with AppleShare" command.

The name of the CD-ROM will appear and AppleShare will create a parallel directory structure for the CD. That's all it takes.

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Tech Info Library Article Number:8414



# Tech Info Library

## AppleShare: Problems Installing with System 6.0.5

Revised: 9/13/91  
Security: Everyone

AppleShare: Problems Installing with System 6.0.5

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm trying to set up an AppleShare file server on a Macintosh SE/30 with System 6.0.5. I used the Installer on the AppleShare File Server Installation disk, choosing only the AppleShare installation (in other words, not using the Macintosh System installation option). So far so good.

However, when I attempt to load files from the Server Administration disk, I get the message that the System file on that disk is not a recent enough version (it was System 6.0.3).

DISCUSSION -----

You need to run the Installer from a System 6.0.5 disk and create a new floppy using the option to install minimum system files for the Macintosh SE/30. After you create that startup disk, drag the AppleShare Admin program onto that floppy. You'll then be able to start up from the floppy and run the AppleShare Admin program.

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Tech Info Library Article Number:8415



# Tech Info Library

## Apple IIGS: How To Start Up from Floppy Disk Using Aristotle

Revised: 9/13/91  
Security: Everyone

Apple IIGS: How To Start Up from Floppy Disk Using Aristotle

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using Apple IIGS computers with a menu management program and a Macintosh file server. The menu management program is set as the startup application. I'm not using a network startup or "boot disk" and I don't want to. Here's my setup:

|         |           |
|---------|-----------|
| Slot 1  | AppleTalk |
| Slot 7  | AppleTalk |
| Startup | AppleTalk |

I don't want to reconfigure my Control Panel just to be able to start up from a floppy disk. But with my current settings, if I press Control-Open-Apple-Reset, the floppy drives don't do anything.

I need a way to start up from a floppy without changing any of my Control Panel settings. Can I create a program in BASIC and put it in my menu management program? Would this BASIC program, when selected, cause my Apple IIGS to start up from the floppy drive?

DISCUSSION -----

There are two ways to do what you want:

First Method

-----

- 1) Interrupt the boot process by pressing Control-Reset while the system is booting. This will give you the "]" prompt.
- 2) Type "PR#6" to tell the computer to start up from the controller card in slot 6. (If you're starting up from a 3.5-inch floppy disk, use

5 instead.)

## Second Method

-----

To do the same thing through Aristotle, simply create a BASIC program with the following line:

10 PR#6

Save this program and set it up as an Aristotle menu item. The problem here is that you must start up all the way into Aristotle before you'll get back to the ability to boot from a local drive. Control-Reset will give you the ability to boot from a local drive much sooner.

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Tech Info Library Article Number:8416





# Tech Info Library

## Macintosh: Desktop Manager

Revised: 9/13/91  
Security: Everyone

Macintosh: Desktop Manager

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have more than 1000 files on my Macintosh hard drive and am running System 6.0.5. I have an ongoing problem with fragmentation and am constantly optimizing, formatting, or reinstalling all data on my hard drive.

I've read that the Desktop file was designed back in the 400K floppy days. Should I put "Desktop Manager" in my System Folder (from the AppleShare disk)?

DISCUSSION -----

The Desktop file is capable of managing 64,000 files. The Finder really bogs down if you have more than 800 files per folder level. The Desktop Manager is not needed for only 1000-2000 files. On the other hand, it won't hurt to have it and it might increase the reliability and even make some functions more efficient.

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Tech Info Library Article Number:8417



# Tech Info Library

## Macintosh: Dayna Drive for Transferring MS-DOS Files

Revised: 9/13/91  
Security: Everyone

Macintosh: Dayna Drive for Transferring MS-DOS Files

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to transfer MS-DOS files from 5.25-inch disks to my Macintosh. Is there any way of connecting an external 5.25-inch disk drive to a Macintosh SE/30?

DISCUSSION -----

Yes. Dayna Communications makes a drive called the Dayna File that connects through the SCSI port.

For more information, search the Redgate Buyer's Guide icon under "Dayna".

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Tech Info Library Article Number:8418



# Tech Info Library

## EtherTalk 2.0.2: Where to Find ENET Driver

Revised: 9/13/91  
Security: Everyone

EtherTalk 2.0.2: Where to Find ENET Driver

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Where can I find an EtherTalk 2.0.2 driver?

DISCUSSION -----

The .ENET driver resource file installs as part of the System file when the EtherTalk driver is installed using the Network Products Installer disk that is shipped with all new computers.

Remember, there are two different drivers: one is the actual EtherTalk driver, which you can see in the System Folder; the other is the .ENET driver, which you cannot see.

If you have an older version, 2.0.2 can be acquired from AppleLink or any Apple Authorized Dealer.

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Tech Info Library Article Number:8419



# Tech Info Library

## **EtherTalk: How To Install for AppleTalk Phase 2 Compatibility**

Revised: 9/13/91  
Security: Everyone

EtherTalk: How To Install for AppleTalk Phase 2 Compatibility

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Where can I find a copy of the EtherTalk Interface driver that's compatible with AppleTalk Phase 2?

DISCUSSION -----

You need to run the Network Product Installer disk and tell it you want to install EtherTalk. When it asks for the disk, insert the EtherNet Installer Disk 2.0.1. This will install the AppleTalk Phase 2 drivers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8420



# Tech Info Library

## Macintosh IIfx: NuBus/SCSI Speed

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: NuBus/SCSI Speed

=====

Article Created: 14 June 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I'm a little confused about SCSI data transfer. Several sources say that the speed of the SCSI port on a Macintosh IIfx is between 1.4MB and 4.0MB per second. I know that synchronous mode is needed to obtain the higher rates, but if a drive is only rated at 13 kilobytes per second with an access time of 11.9 milliseconds, how do I get rates of 2 or 3 megabytes per second?

Also, if the NuBus slots are rated at 10MB per second, wouldn't I gain by using these slots?

DISCUSSION -----

It's not the access time of the drive that matters, but rather the sustained transfer rate. Any SCSI hard drive that can sustain transfer rates above 1.25MBps will operate faster on a Macintosh IIfx compared to any other Macintosh system. None of Apple's present drives take advantage of this potential.

If a SCSI card was designed to operate with NuBus it would be limited to 10MB per second, which is faster than the Macintosh IIfx's 3MB per second spec, but much faster than any of our other drives, at this point.

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Tech Info Library Article Number:8422



# Tech Info Library

## Apple IIGS: System Software after 4.0 Requires 512K RAM

Revised: 9/13/91  
Security: Everyone

Apple IIGS: System Software after 4.0 Requires 512K RAM

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a 256K Apple IIGS. What's the latest Apple IIGS system software version for a 256K Apple IIGS without a memory expansion card?

When I try to load System 4.0 through 5.0.2, I get a "RAM Disk Too Large" error message. When I go into the Control Panel, RAM disk is set to 0K, 84K RAM in use, and 171K free. Why is this?

DISCUSSION -----

Apple IIGS system software after version 4.x requires at least 512K of RAM. Without at least this much you'll be limited to version 3.x or earlier of system software.

We strongly suggest that you upgrade to at least 512K of memory, even if you're only going to use the earlier system software.

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Tech Info Library Article Number:8424



# Tech Info Library

## ImageWriter LQ: Resetting ASCII Escape Codes

Revised: 9/13/91  
Security: Everyone

ImageWriter LQ: Resetting ASCII Escape Codes

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using an ImageWriter LQ with a Macintosh IIsi. I want to reset the ImageWriter LQ to print 8 1/2-inch pages at 10 cpi character setting.

My document is from a program called Pacersshare on a DEC VAX. I thought I had inserted the correct ASCII escape codes (from the ImageWriter LQ owner's manual) as the first commands in the document. The ImageWriter LQ does not respond to these codes, and prints only in the default 12 cpi, 11-inch page length. Any suggestions?

DISCUSSION -----

All escape codes are overruled by the ImageWriter LQ driver. Your desired page description must be set up in the application program's Page Setup.

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Tech Info Library Article Number:8426



# Tech Info Library

## LaserWriter: Be Sure To Use Labels Rated for Laser Printing

Revised: 9/13/91  
Security: Everyone

LaserWriter: Be Sure To Use Labels Rated for Laser Printing

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using a LaserWriter II to print 50 sheets of standard Avery labels at a time. I'm concerned that so many labels will begin to stick to the printer's drum. Avery, the label manufacturer, claims there will be no problems. Are there any problems printing this quantity of labels on a LaserWriter?

DISCUSSION -----

If the labels are rated for use in Laser printers or copiers, there shouldn't be problems with that quantity. We strongly suggest that you use manual feed input and the face-up output tray.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8427





# Tech Info Library

## Macintosh LC: Maximum Video Depth

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Maximum Video Depth

=====

Article Created: 14 June 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated: 12 February 1992

TOPIC -----

What is the maximum video depth the Macintosh LC's built-in video supports?

DISCUSSION -----

The Macintosh LC's built-in video supports a maximum video depth determined by two variables:

- The size of the monitor connected to the Macintosh LC, and
- The amount of video RAM installed in the Macintosh LC.

If the Macintosh LC has 256K of video RAM installed, then the bit depth for the Macintosh 12-inch RGB display will be 8 bits per pixel, and for the 13-inch High Resolution RGB Monitor, the depth will be 4 bits per pixel.

If the Macintosh LC has 512K of video RAM installed, then the bit depth for the Macintosh 12-inch RGB display will be 16 bits per pixel, and for the 13-inch High Resolution RGB Monitor, the depth will be 8 bits per pixel.

Four bits per pixel will give you 16 colors or shades of gray on the screen at one time. Eight bits will give you 256 colors or shades of gray. Sixteen bits will give you thousands of colors.

It's possible to achieve 24 bits per pixel on the Macintosh LC through third-party Macintosh LC PDS video cards.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8428



# Tech Info Library

## Macintosh LC: Using with Third-Party Color Monitors

Revised: 10/28/92  
Security: Everyone

Macintosh LC: Using with Third-Party Color Monitors

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Article Created: 14 June 1991

### Article Change History

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10/28/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I want to get more than the 256 colors on a Macintosh LC. Will the optional 512K VRAM SIMM that provides 32,000 colors on an Apple 12-inch RGB monitor be any benefit to a third-party monitor?

Is it true that a third-party monitor won't be "plug and play" on a Macintosh LC without an additional video card?

### DISCUSSION -----

Yes, the expansion option will benefit other monitors. The amount of pixel depth will depend on the size of the monitor. For a 12-inch monitor, there will be 32,000 colors; a 13-inch monitor will have 256 colors.

Third-party compatibility depends on the monitor. If the monitor matches scan rates and resolution, it should work. Ask the manufacturer for compatibility information.

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Tech Info Library Article Number:8429



# Tech Info Library

## Macintosh LC: Expansion Board Not Necessary for RAM Upgrade

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Expansion Board Not Necessary for RAM Upgrade

=====

Article Created: 14 June 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

My Macintosh LC Owner's Manual says that the Macintosh LC comes with 2MB of RAM on the motherboard that can be upgraded by adding another board AND THEN adding SIMMs to this additional board.

It certainly looks like I can put two or more 1MB SIMMs right onto what looks like two SIMM slots on the system board. To the left of these slots is a big chip. Is that the 2MB of RAM is this a ROM chip? If it's a ROM chip, are those four little chips to the left of that the RAM?

DISCUSSION -----

The Macintosh LC doesn't need a memory expansion card. If the manual states that, it is incorrect. Simply adding two SIMMs will upgrade the memory.

Macintosh LC RAM is on four chips on the other side of the ROM SIMM socket. These RAM chips are labeled "DRAM".

To see the possible memory chips and configurations for the LC, search under "DRAM Specifications".

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Tech Info Library Article Number:8430



# Tech Info Library

## ImageWriter LQ: Troubleshooting Color Ribbon Problems

Revised: 9/18/91  
Security: Everyone

ImageWriter LQ: Troubleshooting Color Ribbon Problems

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Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I print a multi-page, multi-color color document on an ImageWriter LQ, each page prints in one color only. Each subsequent page prints in a different color.

DISCUSSION -----

Your printer is behaving as though it has a solid black ribbon. When a black ribbon is installed, the ribbon moves one line every page to distribute the wear on the printer ribbon.

The switch that tells the printer whether the ribbon is black or color may be broken. Check the operation of this switch manually, then have an Authorized Reseller check it with an Ohmmeter.

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Tech Info Library Article Number:8431



# Tech Info Library

## Macintosh IIsi: Has No Video Convolution Filter

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Has No Video Convolution Filter

=====

Article Created: 14 June 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated: 17 July 1992

TOPIC -----

Does the Macintosh IIsi built-in video provide a convolution filter like the Macintosh Display Card 8•24 GC does?

DISCUSSION -----

Only the Macintosh Display Card 8•24 GC and the Macintosh Quadra computers provide a convolution filter for the video signal. It is not available on any other product.

A convolution filter is used to stabilize flicker rate on monitors.

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Tech Info Library Article Number:8432



# Tech Info Library

## Macintosh Plus, SE, Classic: 1MB SIMMs Only

Revised: 7/2/92  
Security: Everyone

Macintosh Plus, SE, Classic: 1MB SIMMs Only

=====

Article Created: 14 June 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated: 19 May 1992

TOPIC -----

I know that System 7 allows a Macintosh II-class system or a Macintosh SE/30 to access more than 8MB of physical DRAM, and the use of higher-density SIMMs. Is the same true for the Macintosh Plus and Macintosh SE? Can I now put in four 4MB SIMMs and have 16MB of RAM in my Macintosh Plus, Macintosh SE, or Macintosh Classic?

DISCUSSION -----

Neither the microprocessor nor the system software determines the type of SIMMs the system can use. This depends on the electrical design and the Memory Manager. The Macintosh Plus, Macintosh Classic, and Macintosh SE have address lines that support only 1MB SIMMs.

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Tech Info Library Article Number:8433



# Tech Info Library

## Macintosh II Family: Monitor Noise at Startup is Normal

Revised: 9/16/91  
Security: Everyone

Macintosh II Family: Monitor Noise at Startup is Normal

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Many Macintosh II monitors make a loud noise when powering up. The high-resolution monochrome and color models seem to make this noise consistently. Is there a problem with these monitors, or is this just a characteristic of the monitor?

DISCUSSION -----

The sound that you hear is the degaussing coil being activated on power-up. Color monitors are subject to impurities from other magnetic fields. This is countered by putting a neutralizing field around the front of the CRT on power-up or by pressing the degaussing coil button on the back of the monitor.

The sound is simply the coil energizing and is in no way a sign of current or future problems.

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Tech Info Library Article Number:8434





# Tech Info Library

## EtherTalk: When To Use the Network CDEV

Revised: 9/16/91  
Security: Everyone

EtherTalk: When To Use the Network CDEV

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I just upgraded my Macintosh to System 6.0.7 and suddenly my Network 2.0 System file no longer works. Where can I find another copy of Network 2.0?

DISCUSSION -----

When you install the EtherTalk or other alternative network driver, the Network CDEV is installed. The CDEV is not necessary unless you are on a network other than LocalTalk. If you are on a non-LocalTalk network, running the Network Products Installer to install EtherTalk will also install the CDEV.

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Tech Info Library Article Number:8435



# Tech Info Library

## AppleTalk: One Damaged Macintosh Can Crash a Network

Revised: 9/16/91  
Security: Everyone

AppleTalk: One Damaged Macintosh Can Crash a Network

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

If a broken but turned-on Macintosh is attached to a network, can it cause the network to crash? For example, if a screen is flickering or intermittently goes out, can that Macintosh cause a network bomb or cause other computers on the network to crash?

DISCUSSION -----

In addition to a bad LocalTalk box or cable, it's possible for a damaged Macintosh to send out enough interference on a network to cause the network to crash. It wouldn't cause other systems to crash, though.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8436



# Tech Info Library

## PATHWORKS for Macintosh: Using the Installer and System 6.0.7

Revised: 9/16/91  
Security: Everyone

PATHWORKS for Macintosh: Using the Installer and System 6.0.7

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I put System 6.0.7 on the PATHWORKS install disk?

DISCUSSION -----

The PATHWORKS for Macintosh Installer Disk is just like a normal System Software 6.0.7 bootable diskette. The disk has AppleShare Workstation software so you can have access to a VAXshare file server. All the PATHWORKS for Macintosh programs are located a the VAXshare file server. The PATHWORKS Installer Disk will work if your Macintosh is connected to the Digital network through LocalTalk and a router, or through an Apple EtherTalk NB card (EtherTalk software must be installed on this Installer Disk for this use).

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Tech Info Library Article Number:8437



# Tech Info Library

## PATHWORKS for Macintosh: Sources of Support

Revised: 9/11/91  
Security: Everyone

PATHWORKS for Macintosh: Sources of Support

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Who supports PATHWORKS, Apple or DEC?

DISCUSSION -----

PATHWORKS for Macintosh is supported by Digital Equipment Corporation. All Digital customers should call the Digital local office, or call Digital Atlanta Support (CSC) at 1-800-332-8000. CSC can contact Apple Direct Response Center (DRC) to discuss the problems. Problems that can't be solved by Digital CSC escalate to Digital CSSE, which can contact Apple Technical Communications to work on the problem. Digital CSSE and Apple Technical Communications escalate problems to their engineering departments, if necessary.

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Tech Info Library Article Number:8438



# Tech Info Library

## Apple High Resolution RGB Monitor: Technical Q&A

Revised: 9/16/91  
Security: Everyone

Apple High Resolution RGB Monitor: Technical Q&A

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have some technical questions about the Apple 13-inch High-Resolution RGB monitor:

- 1) What is the pixel size?
- 2) What's the pixel interleave?
- 3) How much time does it take to turn pixels on and off?
- 4) What's the wavelength range from blue to red?
- 5) What's the maximum brightness of the screen?
- 6) Can the Macintosh hardware handle programming to command video cards to display objects on the desktop (circles, squares, and so on, with different colors?)

DISCUSSION -----

- 1) Pixel size (also known as "dot pitch" or "grill pitch") is 0.25mm.
- 2) There are no specifications on pixel interleave. If the request is for the sequence of placing pixels on the screen, then the following discussion should assist in understanding how the monitor works.

Video cards that drive the AppleColor High Resolution RGB Monitor use an approximation of the RS343 display signal. (RS video standards are set by the Electronic Industries Association.) The RS343 display standard is essentially a monochrome video signal combined with a

composite sync signal (horizontal and vertical scan control) with timings that produce a non-interlace, or progressive, scan. This means that the horizontal and vertical scan rates are timed to cause the display electron guns to produce even progressively horizontal scans. This is by comparison to the interlaced video standards. The importance of the RS343 standard is its provision for a timing and voltage level signal that allows the display and generation of high resolution video.

While the Macintosh II version of the RS343 signal varies somewhat, it essentially follows the guidelines necessary for connection to RS343 display devices. The major differences are:

- the separate TTL level composite sync signal found on pin 3
- the separate video lines used to produce RGB color
- a vertical scan rate of 66.67Hz to reduce screen flicker
- a voltage white level of 1 volt for its red and blue signals and 1.3 volts on its green signal

RS343 provides for a 60hz signal but has been changed to 66.67Hz on the Macintosh II Video Card, to prevent the screen flicker visible at 60Hz.

- 3) The pixel clock frequency is 30.24 MHz. The only other specification that would appear to relate to this issue is phosphor persistence, which is rated by phosphor vendors as medium-short.
- 4) Due to contractual agreements, this information is not available.
- 5) Luminance level is 20 footlamberts with the brightness control in the center detent position. With the brightness control in the full-open position, the luminance level is 25 footlamberts.
- 6) The Macintosh firmware (the Macintosh Toolbox) has QuickDraw routines to handle the creation of the desired objects. Typically, the video cards are not "commanded" to display objects. Video cards will display the information that is placed in the video buffer. QuickDraw is used to place the information in that video buffer. The only possible exception is when a graphics coprocessor card is placed in the Macintosh. However, the Macintosh interface to these specialized video cards is still through QuickDraw. Although, now QuickDraw is being executed by the graphics coprocessor, not by the system's primary CPU.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8439



# Tech Info Library

## PostScript: How To Create PostScript Text Files

Revised: 9/12/91  
Security: Everyone

PostScript: How To Create PostScript Text Files

=====

Article Created: 14 June 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

I want to output PostScript files from my Macintosh to a VAX. I plan to use a conversion utility to interpret the PostScript file and translate it into SIXEL graphic data for output to a laser printer.

How do I get the Macintosh to create this PostScript text file?

DISCUSSION -----

Here's how to print a PostScript image "to disk" rather than to a printer:

First, use the Chooser to select a LaserWriter. Then, choose Print... from the File menu.

Under System 7, click "PostScript File" instead of "Printer" in the Destination option of the Print dialog, and click Okay.

Under System 6, click Okay, then immediately hold down the Command key and press either:

- The "K" key (to dump a PostScript image with LaserPrep), or
  - The "F" key (to dump PostScript without LaserPrep).
- Hold the keys down until you see the Print Status dialog box.

A text file will appear containing the PostScript text.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8440



# Tech Info Library

## Apple IIGS: How To Print from BASIC or Pascal over AppleTalk

Revised: 9/12/91  
Security: Everyone

Apple IIGS: How To Print from BASIC or Pascal over AppleTalk

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using an Apple IIGS, how do I print from Applesoft BASIC or Pascal to an AppleTalk ImageWriter or to a LaserWriter running ImageWriter emulation?

DISCUSSION -----

It is similar to printing through a serial connection, except that Chooser II has to be on the boot disk the first time and a printer must be chosen.

- 1) Boot from disk with chooser II
- 2) Run Chooser and select Printer.
- 3) To print from BASIC, use PR#1 on a new 1MB Apple IIGS; use PR#7 on an older Apple IIGS.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8441





# Tech Info Library

## ProDOS: Converting Files from 5.25-inch Disks to Macintosh

Revised: 9/12/91  
Security: Everyone

ProDOS: Converting Files from 5.25-inch Disks to Macintosh

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm trying to transfer files from 5.25-inch ProDOS disk to Macintosh SE 3.5-inch disks using a 5.25 drive with a Macintosh SE Bus Controller Card. This works fine with IBM disks, but AFE won't read ProDOS disks (or even give me the option select to select a ProDOS driver).

DISCUSSION -----

The Apple PC 5.25 Drive for the Macintosh SE can see MS-DOS files, but not ProDOS files.

Use the utilities on the Apple II to do a file copy from a 5.25-inch to 3.5-inch, then open the file in the Macintosh SE and convert it using Apple File Exchange with your Apple SuperDrive (formerly Apple FDHD).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8442



# Tech Info Library

## Macintosh II Family: Specifications for Rear Case Screw

Revised: 7/6/92  
Security: Everyone

Macintosh II Family: Specifications for Rear Case Screw

=====

Article Created: 14 June 1991  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

On the back of all Macintosh II computers, there's a hole where a small machine screw can be threaded. A screw can go through this hole when the cover is on and lock the cover down.

I want to use special security screws in these holes so that no one can remove the cover. I need to know the proper screw size and length to use for the Macintosh LC, Macintosh IIsi, Macintosh IIfx, and Macintosh IIfx.

DISCUSSION -----

The case screw size (identical for all Macintosh II systems including the Macintosh II, IIfx, IIfx, IIfx, IIfx, and IIsi) is M 3.5 x 0.6 x 8.

The Macintosh IIsi and the Macintosh LC are shipped without case screws. It was determined during the design phase that no screw was needed, so it was left off. However, the case was not changed and the hole in the power supply of the Macintosh IIsi remained.

It is possible that the hole will not be present in future revisions. In that case, if a power supply had to be replaced, it would be possible to receive one without the hole. This would make it impossible to use a case screw. The Macintosh LC has a screw hole in the case, but it does not align with anything inside the system. Therefore, no screw can be used in the Macintosh LC.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8444



# Tech Info Library

## LaserWriter IISC: Can't Have Two Computers Using Its SCSI Ports

Revised: 9/12/91  
Security: Everyone

LaserWriter IISC: Can't Have Two Computers Using Its SCSI Ports

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I connect two Macintosh computers to the two SCSI ports on a LaserWriter IISC? Can I hook up any SCSI device to these ports (scanners, hard drives)?

DISCUSSION -----

Having two Macintosh computers connected via the SCSI port to one LaserWriter isn't an Apple-supported configuration. If something gets damaged as a result of a connection like this, it will void your warranty.

You can connect other peripheral SCSI devices, such as hard drives or scanners, but not other computers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8445



# Tech Info Library

## AppleShare: Dealing With No Valid Startup Volume Found Message

Revised: 9/12/91  
Security: Everyone

AppleShare: Dealing With "No Valid Startup Volume Found" Message

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've been using a Macintosh AppleShare File Server for about six months with no problems. Suddenly, when it was restarted after a power failure, I got a message that I needed to run AppleShare Admin again.

I ran the Admin program, then after restart, I got the error message "No valid startup volume found".

DISCUSSION -----

Here are the steps you should take:

- 1) Do a file-by-file backup of your volume. Keep in mind that a file-by-file backup will not retain access privileges, so you'll have to recreate them if you need to restore from this backup.
- 2) Since the volume is not available to the application, you will have to re-prepare the volume for use with AppleShare and recreate the parallel directory structure (PDS). You will lose access privileges doing this -- but you'll lose no data. This should get you back to a functioning server.
- 3) If the problem persists, reinitialize your volume, prepare for use with AppleShare, and restore all your files from the backup you did before starting.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8446



# Tech Info Library

## Macintosh: Troubleshooting Non-Apple Disk Error

Revised: 9/12/91  
Security: Everyone

Macintosh: Troubleshooting "Non-Apple Disk Error"

=====

Article Created: 14 June 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated: 21 July 1992

TOPIC -----

My Macintosh keeps giving me a "Non-Apple Disk Error" when I insert a floppy disk, and asks me if I want to reformat the disk.

DISCUSSION -----

If it occurs only with one or two diskettes, there may be a problem with those disks and not the drive. If this problem only occurs when using disks of a certain brand or density, consider trying another brand of diskette. If a given diskette produces the same error in another computer, then almost certainly the problem is with that disk.

However, if this happens no matter what disk you insert - even master application disks - the problem most likely is with the disk drive itself.

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Tech Info Library Article Number:8447



# Tech Info Library

## IBM SCSI Drives: Using them in a Macintosh

Revised: 9/12/91  
Security: Everyone

IBM SCSI Drives: Using them in a Macintosh

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a difference between Apple SCSI and everyone else's SCSI? What are the differences between IBM SCSI and Apple SCSI, particularly with hard drives? Can I use an IBM 20MB SCSI hard drive in a Macintosh? Any warranty problems (would it void your warranty or AppleCare)?

DISCUSSION -----

If you swap just the hard drive mechanism, it should work. The controller will be different--the ROM in particular.

There really isn't an Apple SCSI vs. Standard SCSI. ANSI determines the SCSI standards, and Apple provides input to the standard. The problem is that SCSI is an evolving standard.

ANSI is the American National Standards Institution

This would not be an approved repair for an Apple Warranty or AppleCare.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8449



# Tech Info Library

## Ultrasonic Humidifiers and Computer Equipment (11/94)

Revised: 11/10/94  
Security: Everyone

Ultrasonic Humidifiers and Computer Equipment (11/94)

=====

Article Created: 14 May 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

The inside of my computer is coated by something other than dust. The only source of contamination seems to be my cool mist humidifier.

Is there any information regarding ultrasonic humidifiers and their effects when placed close to computers? Specifically, can the mineral mist be attracted to the electrical components inside a Macintosh or LaserWriter?

DISCUSSION -----

Dust in general is not good for computers: it causes heat build up and gets between the various connectors, particularly the SIMMs which can cause errors or other operational problems.

An ultrasonic humidifier should not cause any more damage than common dust.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8450



# Tech Info Library

## Apple IIGS: Use Third-Party Memory Cards with HyperCard

Revised: 9/17/91  
Security: Everyone

Apple IIGS: Use Third-Party Memory Cards with HyperCard

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We have a classroom with 15 original Apple IIGS computers and one instructor station. Each workstation has an Apple 1MB board installed. We will be teaching using HyperCard for the Apple IIGS. What is the cheapest way to add more memory to our computers?

DISCUSSION -----

Apple does not offer a memory expansion card for the original Apple IIGS that goes beyond 1.25MB of memory. There are several third-party memory cards for the Apple IIGS that can handle HyperCard's memory requirements.

Check the Redgate Macintosh Registry on AppleLink for further information.

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Tech Info Library Article Number:8453





# Tech Info Library

## Apple Monitors: Nearby Interference can Cause Horizontal Lines

Revised: 9/17/91  
Security: Everyone

Apple Monitors: Nearby Interference can Cause Horizontal Lines

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why is there a horizontal scan line that keeps cycling across my 12-inch color monitor screen?

DISCUSSION -----

The line you are seeing is caused by a 60Hz noise somewhere near the monitor. The horizontal scan rate of the monitor is 60.15Hz so it is very susceptible to external noise in the 60Hz area. The only solution is to find the source of the noise and move it or the monitor. The noise could be from a lamp or anything else plugged into a nearby outlet.

You may also want to try turning the monitor in different directions to see if things improve at all. The interference may change due to magnetic fields regarding the north and south poles.

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Tech Info Library Article Number:8454



# Tech Info Library

## Macintosh: Daisy-Chaining 3.5-Inch Floppy Drives Not Supported

Revised: 9/17/91  
Security: Everyone

Macintosh: Daisy-Chaining 3.5-Inch Floppy Drives Not Supported

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I daisy-chain two or more 3.5-inch drives on a Macintosh?

DISCUSSION -----

You can't daisy-chain floppy drives with any Macintosh computer.  
Daisy-chaining works only on the Apple II product line.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8455



# Tech Info Library

## Display Card 8•24 GC: Problems with PC 5.25 Drive Card (11/94)

Revised: 11/10/94  
Security: Everyone

Display Card 8•24 GC: Problems with PC 5.25 Drive Card (11/94)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

I've been having problems with my Macintosh Display Card 8•24 GC with a PC 5.25 Drive card. I removed the Apple PC 5.25-inch Drive card from my Macintosh, re-accelerated the Macintosh Display Card 8•24 GC, and everything works fine.

DISCUSSION -----

The Apple PC 5.25 Drive sometimes clashes with the NuBus clock. This happens because the card has a 13-inch trace and six leads on that line. Symptoms of this issue include other installed NuBus cards not functioning properly. For example, NuBus video cards do not appear installed, and networking cards do not provide access to a network.

Putting the card in slot \$E helps minimize the problem. If you experience a problem, try running with the PC 5.25 Drive card in slot \$E.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8456



# Tech Info Library

## Apple IIe Card: Macintosh Compatibility (11/96)

Revised: 11/15/96  
Security: Everyone

Apple IIe Card: Macintosh Compatibility (11/96)

Article Created: 14 June 1991  
Article Reviewed/Updated: 14 November 1996

TOPIC -----

Which Macintosh computers are compatible with the Apple IIe Card?

DISCUSSION -----

The Apple IIe card is only compatible with computers that have the LC style processor direct slot (PDS) and do not require 32-bit addressing. This includes:

- Macintosh Color Classic
- Performa 400 series
- Macintosh LC/Performa 500 series computers (except the Macintosh LC 580 and Performa 580)
- Macintosh LC series computers except: Macintosh 630 family, Power Macintosh 5200 and 5300 LC, Macintosh Performa 5200, 5300, 6200, 6300 series.

The Macintosh LC 580, Macintosh 630 Family, Power Macintosh 5200 and 5300 LC, Performa 5200/5300 and 6200/6300 series only operate in 32-bit addressing mode. Since the Apple IIe card is not compatible with 32-bit addressing, the Apple IIe Card is not compatible with these computers.

The Power Macintosh 5400 and 6400 series and the Macintosh Performa 6400 series and 6360/160 computers do not have LC-PDS slots. These computers have PCI expansion slots. Thus, they do not support the Apple IIe card.

Note:

The following computers are in the Macintosh 630 family: Performa 630, Performa 635, Performa 636, Performa 637, Performa 638, LC 630, and Quadra 630.

Begin\_Table

Compatibility Table

=====

| Computer                    | Apple IIe Card Compatible? |
|-----------------------------|----------------------------|
| -----                       | -----                      |
| Macintosh LC                | Y                          |
| Macintosh Color Classic     | Y                          |
| Macintosh LC II             | Y                          |
| Macintosh LC III            | Y                          |
| Macintosh LC 475            | Y                          |
| Macintosh LC 520            | Y                          |
| Macintosh LC 550            | Y                          |
| Macintosh LC 575*           | Y                          |
| Macintosh LC 580            | N                          |
| Macintosh LC 630            | N                          |
| Macintosh Quadra 605        | Y                          |
| Macintosh 630 Family        | N                          |
| Macintosh Performa 4xx      | Y                          |
| Macintosh Performa 55x      | Y                          |
| Macintosh Performa 56x      | Y                          |
| Macintosh Performa 57x*     | Y                          |
| Macintosh Performa 63x      | N                          |
| Power Macintosh 5200/75 LC  | N                          |
| Power Macintosh 5300/100 LC | N                          |
| Power Macintosh 5400 Series | N                          |
| Power Macintosh 6400/200    | N                          |
| Performa 6200 Series        | N                          |
| Performa 6300 Series        | N                          |
| Performa 6400 Series        | N                          |
| Performa 6360/160           | N                          |

End\_Table

\* Note:

The 68040 versions of the Macintosh LC 5xx and Performa 5xx series do not recognize the Apple IIe Card when there is a communication card occupying the Communication Slot.

This article was published in the Information Alley on 15 November 1996.

Article Change History:

15 Nov 1996 - Added new Performa computers.

16 Oct 1995 - Added new Performa and LC models.

02 Aug 1995 - Clarified and updated compatibility.

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Tech Info Library Article Number:8458



# Tech Info Library

## Apple IIGS: Where To Find Hard Disk Backup Utilities

Revised: 9/17/91  
Security: Everyone

Apple IIGS: Where To Find Hard Disk Backup Utilities

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a backup utility in ProDOS or GS/OS?

DISCUSSION -----

There's no backup utility built in to the operating system of the Apple IIGS. Third parties have written backup utilities for the Apple IIGS that are currently available and are quite effective.

If you have access to AppleLink, search in the Redgate directory.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8459



# Tech Info Library

## CD-ROM Driver 3.0.2: Has Same Code as Version 3.0.1

Revised: 9/18/91  
Security: Everyone

CD-ROM Driver 3.0.2: Has Same Code as Version 3.0.1

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I just downloaded the "new" CD-ROM Drivers from the Apple Software Updates folder on AppleLink. The creation and modification dates are the same on both versions 3.0.1 and 3.0.2. How could these files have different version numbers but have the same modification dates?

DISCUSSION -----

The actual difference between the two versions amounts to a date change in one of the files, but there was no actual code changes between the two drivers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8463



# Tech Info Library

## Macintosh Classic: Power & Size Requirements for Internal Drives

Revised: 7/6/92  
Security: Everyone

Macintosh Classic: Power & Size Requirements for Internal Drives

=====

Article Created: 14 June 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

What are the limitations regarding the Macintosh Classic and third-party internal hard drives, specifically power consumption and physical size?

DISCUSSION -----

An internal hard drive for the Macintosh Classic drive must not be more than "1/3 height" (meaning one inch) in height. There simply isn't any room for larger hard drive.

The exact power figure for the Macintosh Classic's drive connector is 10 watts, but power consumption isn't an issue for most 1/3 height drives.

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Tech Info Library Article Number:8465





# Tech Info Library

## Apple IIe: Control-Reset Function Can't Be Turned Off

Revised: 9/18/91  
Security: Everyone

Apple IIe: Control-Reset Function Can't Be Turned Off

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I disable the Control-Reset function on an Apple IIe?

DISCUSSION -----

The Control-Reset is a hardware function that can't be overridden by software.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8466



# Tech Info Library

## Macintosh Display Card 8•24 GC: How DRAM Improves Performance

Revised: 6/11/92  
Security: Everyone

Macintosh Display Card 8•24 GC: How DRAM Improves Performance

Article Created: 14 June 1991  
Article Last Reviewed: 10 June 1992  
Article Last Updated:

TOPIC -----

What does the DRAM expansion kit do when it is added to the Macintosh Display Card 8•24 GC? How does more DRAM affect the image capture capabilities of the display card?

DISCUSSION -----

When you add the DRAM expansion kit it allows the Macintosh Display Card 8•24 GC to boost the performance of applications that use off-screen bitmaps and other graphics techniques. This way, when you scroll a picture through a window, more of it has already been drawn and the image scrolls without jittering.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8467



# Tech Info Library

## EPS Files: Programs that can View Them

Revised: 9/18/91  
Security: Everyone

EPS Files: Programs that can View Them

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do you know of any programs (shareware or otherwise) that can view and manipulate EPS files?

DISCUSSION -----

There are many programs that can open and modify EPS files. These include: Freehand by Aldus, Illustrator by Adobe, PageMaker by Aldus, and Ready-Set-Go by Letraset. There are others.

Use the two product libraries on AppleLink (Menu and the Redgate Buyer's Guide) to compare features of the different programs, if you have access to that.

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Tech Info Library Article Number:8468



# Tech Info Library

## EtherTalk Driver: Where To Find One

Revised: 9/18/91  
Security: Everyone

EtherTalk Driver: Where To Find One

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Asante EtherTalk card and need an Apple EtherTalk driver version 2.02. Where can I find one?

DISCUSSION -----

You need a EtherTalk 2.0 disk and the Network Products Installer disk 6.0.5 or 6.0.7. When you run the installer on the NPI disk and it asks for the EtherTalk driver disk, 2.02 is installed.

The difference between EtherTalk 2.0 and 2.02 is the .enet driver that is installed into the System file, not the actual driver.

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Tech Info Library Article Number:8469



# Tech Info Library

## HP DeskWriter: Problems Using with Macintosh (12/94)

Revised: 12/5/94  
Security: Everyone

HP DeskWriter: Problems Using with Macintosh (12/94)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 05 December 1994

### TOPIC -----

There are problems using the HP DeskWriter with certain Macintosh models. The printer seems to go from serial mode to AppleTalk mode by itself and displays the message "Error Trap 10864".

HP says the problem is with Apple's Logic Boards. What is Apple's position on using the HP DeskWriter?

### DISCUSSION -----

Apple and Hewlett-Packard have discovered a component failure on the logic boards of some Macintosh models that causes the HP DeskWriter printer to go into AppleTalk mode and flash an error on its control panel.

Apple has taken steps to assure that all service parts are free of this failure. If you experience this problem, please contact your dealer for resolution.

Article Change History:  
05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8471



# Tech Info Library

## HyperCard 2.0: Unlocking Stacks Made in HyperCard 1.0

Revised: 9/12/91  
Security: Everyone

HyperCard 2.0: Unlocking Stacks Made in HyperCard 1.0

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When trying to open a HyperCard 1.0 stack with HyperCard 2.0, the file locks up. The problem is that the "Protect Stack" option is dimmed and can't be unlocked. Is this always the case with HyperCard 2.0 and old stacks or is there a way to unlock these stacks and edit them?

DISCUSSION -----

When you launch a HyperCard 1.0 stack under HyperCard 2.0 the stack is protected and cannot be modified. If you want to convert the stack, use the "convert" command in HyperCard 2.0.

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Tech Info Library Article Number:8472



# Tech Info Library

## AppleCare: Serial Number Missing on CPU

Revised: 9/12/91  
Security: Everyone

AppleCare: Serial Number Missing on CPU

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need to put some kind of identification number on my Macintosh in order to purchase AppleCare. Apparently the identifying number on the rear of my Macintosh case was changed after it was repaired for a crack.

DISCUSSION -----

If the serial number is what is absent, you need to see a dealer to take of the problem. A dealer cannot perform warranty work or place equipment on AppleCare if the serial number is not present. You either need a new case with a serial number on it, or get a serial number generated which extremely hard to do.

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Tech Info Library Article Number:8473



# Tech Info Library

## Macintosh II Family: Troubleshooting Power-On Problems (4/94)

Revised: 4/6/94  
Security: Everyone

Macintosh II Family: Troubleshooting Power-On Problems (4/94)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 5 April 1994

TOPIC -----

When I shutdown my Macintosh II, I can't power it on again without unplugging the computer for about two minutes. What could be causing this?

DISCUSSION -----

Have an Apple Authorized Dealer try the following:

Check the battery levels on the logic board. The voltage should be 3.6VDC. If it is 3.3VDC or less, replace the battery. If the battery is fine, try another power supply (even if you've replaced it already) and a new keyboard.

Article Change History:  
5 April 1994 - Reviewed for technical accuracy, revised formatting.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8474





# Tech Info Library

## Laser Prep: Must Be In Sync With LaserWriter Driver

Revised: 7/23/92  
Security: Everyone

Laser Prep: Must Be In Sync With LaserWriter Driver

=====

Article Created: 14 June 1991  
Article Last Reviewed: 15 July 1992  
Article Last Updated: 15 July 1992

TOPIC -----

I'm having problems with printing from my Macintosh since upgrading my Laser Prep file. I keep getting "Print Monitor unexpectedly quit" errors and lock-ups.

DISCUSSION -----

There is no upgrade of just the Laser Prep file. LaserWriter and Laser Prep must be upgraded together. For example, you need to use LaserWriter 5.2 with Laser Prep 5.2 or LaserWriter 6.0 with Laser Prep 6.0.

Note however that Laser Prep is no longer required as of version 7.0 of the LaserWriter driver. The System 7 version of the driver sends the prep information along with each print job. Any Laser Prep files that for some reason remain in the System Folder will not cause any damage, but also will not help printing. They can be trashed.

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Tech Info Library Article Number:8475



# Tech Info Library

## LaserWriter to PC: LaserWriter Switch Settings

Revised: 9/12/91  
Security: Everyone

LaserWriter to PC: LaserWriter Switch Settings

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a serial cable that was specifically designed to connect my Apple LaserWriter IINTX to a DOS machine.

What are the switch settings on the LaserWriter that will allow my Compaq computer to transmit data serially and have PostScript access?

I want to transmit at least 9600 Baud, but not greater than 19,200 Baud.

DISCUSSION -----

Here are your LaserWriter switch settings:

For 9600, XON/XOFF handshake and PostScript:

Off On Off Off Off Off

For 9600, XON/XOff handshake and text (screen dumps, text only Applications):

Off On On Off Off Off

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8478



# Tech Info Library

## Macintosh II Family: Improving Sound Sampling Rate

Revised: 7/6/92  
Security: Everyone

Macintosh II Family: Improving Sound Sampling Rate

=====

Article Created: 14 June 1991  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

I want to get better sound quality out of my Macintosh IIsi. I've read that the Macintosh IIsi can sample sound at 11kHz and 22kHz. How can I change my sampling rate to 22kHz? Can I also upgrade my sound chip from 8-bit to 12-bit?

DISCUSSION -----

The sampling rate for the Macintosh IIsi is set at 11khz by the software that comes with the Macintosh IIsi. Third parties will be delivering software that will take advantage of the greater sound capabilities of the Macintosh IIsi in the near future.

There's no way for you to upgrade the Macintosh IIsi sound chip as it is soldered to the logic board. Any upgrade has to be done by Apple at the factory.

In terms of hearing a better output, you hook up your Macintosh to a stereo system, or simply attach some speakers to the Sound Port on the back of the Macintosh. Bose is one company that makes speakers that are popular with the Macintosh.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8479



# Tech Info Library

## Macintosh IIsi: Math Co-Processor Not On Logic Board

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Math Co-Processor Not On Logic Board

=====

Article Created: 14 June 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

Are the math co-processors on the Macintosh IIsi adapter boards socketed  
(and removable) or are they hard-wired?

DISCUSSION -----

The co-processors are soldered onto the Macintosh IIsi adapter boards  
(this is true of both the Macintosh IIsi 030 Direct Slot Adapter Card and  
the Macintosh IIsi NuBus Adapter Card).

The co-processors are not soldered onto the IIsi logic board itself.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8480



# Tech Info Library

## Macintosh II Family: Troubleshooting Mysterious Restarts

Revised: 7/6/92  
Security: Everyone

Macintosh II Family: Troubleshooting Mysterious Restarts

=====

Article Created: 14 June 1991  
Article Last Reviewed: 25 June 1992  
Article Last Updated:

TOPIC -----

My Macintosh II restarts when I do a shutdown from the Finder.

DISCUSSION -----

Here are things that can cause this problem:

- Power-on switch locked down
- A damaged keyboard
- INITs, particularly keyboard macros

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8481



# Tech Info Library

## Macintosh Guided Tours: Don't Use with Two-Page Monitor

Revised: 7/21/92  
Security: Everyone

Macintosh Guided Tours: Don't Use with Two-Page Monitor

=====

Article Created: 14 June 1991  
Article Last Reviewed: 2 June 1992  
Article Last Updated:

TOPIC -----

My Macintosh IIX Tour Disk bombs at various points and never runs successfully. I'm using a two-page monitor display.

DISCUSSION -----

The tour disks were not written to take advantage of monitors larger than the 13 inches. Try running the tour on a standard black and white or color monitor. This will take care of your problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8482



# Tech Info Library

## ImageWriter II: Problems with Jamming and Ribbon Tension

Revised: 9/18/91  
Security: Everyone

ImageWriter II: Problems with Jamming and Ribbon Tension

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My ImageWriter II printer randomly jams if its printer ribbon is snug. The same ribbon works fine on other printers.

Are there any specifications regarding the tightness of the ribbon for the ImageWriter II printer?

DISCUSSION -----

There are no specifications for the tightness of winding the ribbon.

If the same ribbon works in another printer it should work in your printer. Try replacing the ImageWriter II's ribbon wire. A new spring may be all that's needed to get your ribbon advancing.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8483



# Tech Info Library

## Macintosh IIfx: Use and Support in Japan

Revised: 7/10/92  
Security: Everyone

Macintosh IIfx: Use and Support in Japan

=====

Article Created: 14 June 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Will a USA Macintosh IIfx work in Japan? If something goes wrong, who should I call?

DISCUSSION -----

The Macintosh IIfx will work in Japan. It has a power rating of 100v-240v AC, with a frequency of 50-60 hertz. The Macintosh IIfx is auto-configuring, just plug it in and it works.

If you have any problems, contact:

Apple Computer  
25 Mori Bldg. 23/24F  
1-4-30 Roppongi, Minato-ku  
Tokyo 106, Japan

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8484





# Tech Info Library

## Macintosh LC: IIe Mode to HP Deskwriter

Revised: 7/24/92  
Security: Everyone

Macintosh LC: IIe Mode to HP Deskwriter

=====

Article Created: 14 June 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

Can my Macintosh LC, in Apple IIe mode, print to an HP DeskWriter?

DISCUSSION -----

As long as the DeskWriter's driver works with the Macintosh LC and System 6.0.7, you can print. A Macintosh LC with an Apple IIe emulation card can access LocalTalk and serially connected printers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8486



# Tech Info Library

## Apple IIe Card Doesn't Support IIGS Software

Revised: 2/3/93  
Security: Everyone

Apple IIe Card Doesn't Support IIGS Software

=====

Article Created: 14 June 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

Does the Apple IIe card for the Macintosh LC support Apple IIGS software?

DISCUSSION -----

The Apple IIe card does not support Apple IIGS software.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8487



# Tech Info Library

## Macintosh Plus: Keyboard Cable Shouldn't Exceed 10 Feet

Revised: 7/27/92  
Security: Everyone

Macintosh Plus: Keyboard Cable Shouldn't Exceed 10 Feet

=====

Article Created: 14 June 1991  
Article Last Reviewed: 27 July 1992  
Article Last Updated:

TOPIC -----

How long can a Macintosh Plus' keyboard cable be extended without losing the signal?

DISCUSSION -----

Keyboard extension cables should not exceed 10 feet in length.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8488



# Tech Info Library

## Third-Party Hard Drives: Changing Their Desktop Icons (4/95)

Revised: 4/3/95  
Security: Everyone

Third-Party Hard Drives: Changing Their Desktop Icons (4/95)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 03 April 1995

TOPIC -----

Even though I've completely reformatted my third-party hard drive, the drive keeps appearing on my Desktop with the third-party's icon. How can I do a low-level drive format to remove their icon?

DISCUSSION -----

Apple does not supply a low-level formatting utility with any of our system software. This level of formatting is handled by the third-party vendor before they ship their drives. Apple's drive utility software only initializes the drive.

You might want to try Silverlining from LaCie. Silver Lining can give you back the generic icon. There are also some icon altering utilities.

To locate a vendor's address and phone number, use the vendor's name as a search string in the Tech Info Library.

Article Change History:  
03 Apr 1995 - Corrected wording of Silverlining.

Support Information Services

Copyright 1991-95 Apple Computer, Inc.

Tech Info Library Article Number:8489



# Tech Info Library

## Macintosh 128K: 400K Floppy Drives Not Available from Apple

Revised: 9/18/91  
Security: Everyone

Macintosh 128K: 400K Floppy Drives Not Available from Apple

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does Apple still sell an external floppy drive for the Macintosh 128K? If not, where do I find one?

DISCUSSION -----

Apple no longer sells an external 400K drive for the Macintosh 128K. Try contacting Sun Remarketing, since they resell many of Apple's older products.

For more information, search on "Sun Remarketing".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8490



# Tech Info Library

## Macintosh 512K: How To Connect To LocalTalk Network

Revised: 9/18/91  
Security: Everyone

Macintosh 512K: How To Connect To LocalTalk Network

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it possible to connect a Macintosh 512K to an AppleTalk network?

DISCUSSION -----

You do not have to make any modifications to the Macintosh 512K to connect it to a LocalTalk network. All you need is a LocalTalk Locking Connector Kit-DB9, part number M2065.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8491



# Tech Info Library

## Macintosh: Holding Down Keys While Loading INITs

Revised: 9/18/91  
Security: Everyone

Macintosh: Holding Down Keys While Loading INITs

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I hold down the "esc" key while booting up my Macintosh some of my INITs don't load.

What exactly does the "esc" key do?

DISCUSSION -----

The keyboard itself does not have any special function with INITs. What's happening is that some of your INITs have a bypass function mapped to the esc key.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8493



# Tech Info Library

## Macintosh IIfx: Problems Getting Internal Hard Drives to Start

Revised: 11/6/92  
Security: Everyone

Macintosh IIfx: Problems Getting Internal Hard Drives to Start

=====

Article Created: 14 June 1991

### Article Change History

-----

11/04/92 - UPDATED

- To explain that there is a small power trace difference on the Macintosh II and Macintosh IIfx logic boards.

### TOPIC -----

My internal hard drive stopped working after upgrading my Macintosh II to a Macintosh IIfx. The drive just clicks and won't spin up.

I've been told by the drive's manufacturer that this is because the power trace on the Macintosh IIfx motherboard is half the size of the same power trace on the Macintosh II. Is this correct?

### DISCUSSION -----

There is small difference in the power trace from the Macintosh II to the Macintosh IIfx. However, the difference would be within the limits of the power draw specifications that we require drive manufactures to meet.

If your particular drive is drawing more than Apple allows, you'll need to swap drives for one that does not require so much power to spin up.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8494





# Tech Info Library

## AppleShare: Macintosh LC vs. Macintosh SE/30 Performance

Revised: 9/19/91  
Security: Everyone

AppleShare: Macintosh LC vs. Macintosh SE/30 Performance

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the advantages and disadvantages of using the Macintosh LC as an AppleShare file server compared to a Macintosh SE/30 or Macintosh II (besides the available expansion slots in the Macintosh II)? Does AppleShare take advantage of the MC68881/MC68882 math co-processors? Are there any compatibility problems between AppleShare 2.01 and the Macintosh LC?

DISCUSSION -----

Compared to a Macintosh SE/30, the Macintosh LC is slower. The Macintosh LC uses a 68020 chip where the Macintosh SE/30 uses the 68030 processor.

There are no known compatibility issues between AppleShare 2.0.1 and the Macintosh LC. If speed is not an issue and price is, the Macintosh LC would be a good choice for a file server.

AppleShare really doesn't utilize a math co-processor so this is not really a factor.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8495



# Tech Info Library

## Macintosh LC: Memory Speeds of SIMMs and On-Board DRAM

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Memory Speeds of SIMMs and On-Board DRAM

=====

Article Created: 14 June 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

What is the recommended speed for additional 1MB memory SIMMs for a Macintosh LC? What is the speed of the memory on the system board?

DISCUSSION -----

The recommended speed for the Macintosh LC SIMMs is 100ns or faster. The speed of the DRAM soldered onto the logic board is 80ns.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8496



# Tech Info Library

## Macintosh Classic: MIDI Interface Box Plugs Into Modem Port

Revised: 4/7/93  
Security: Everyone

Macintosh Classic: MIDI Interface Box Plugs Into Modem Port

=====

Article Created: 14 June 1991

Article Change History

-----

03/30/93 - REVISED  
• To clarify information.

TOPIC -----

Does the sound-out port on a Macintosh Classic work with MIDI? If not, how do I run MIDI on a Macintosh?

DISCUSSION -----

You need an Apple MIDI Interface box, part number A9M0103. This box plugs into the modem port of the Macintosh. There are also third-party products for running MIDI on a Macintosh; they offer varied sets of features.

Copyright 1991, 1993, Apple Computer, Inc.

Tech Info Library Article Number:8497



# Tech Info Library

## Apple Monitors: Can't Be Swapped Between Macintosh & Apple IIGS

Revised: 9/19/91  
Security: Everyone

Apple Monitors: Can't Be Swapped Between Macintosh & Apple IIGS

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I know that a Macintosh LC can't use an Apple IIGS color monitor, but can  
an Apple IIGS use a low-cost Macintosh color monitor?

DISCUSSION -----

The Macintosh 12-inch RGB Display can only be used on a Macintosh computer  
with a built-in video port or an appropriate video card, such as the  
Macintosh Display Card 4•8 or the Macintosh Display Card 8•24.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8498



# Tech Info Library

## ProDOS: Muffin and Converting DOS Files

Revised: 9/19/91  
Security: Everyone

ProDOS: Muffin and Converting DOS Files

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a current version of the utility called Muffin found on the Apple IIe Master Disk? I have the version that converts DOS 3.2 files, but I need the version that converts DOS 3.3 and DOS 4.0.

DISCUSSION -----

The last version of DOS was 3.3. Muffin converts from DOS 3.2 to DOS 3.3. There is only one version of Muffin.

If you are talking about converting from DOS 3.3 to ProDOS, then you can use your ProDOS system utilities to copy the files from a DOS 3.3 disk to a ProDOS-formatted disk. The conversion is automatic during the copy.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8499



# Tech Info Library

## Macintosh: Troubleshooting Multiple Hard Drive Icons (12/95)

Revised: 12/6/95  
Security: Everyone

Macintosh: Troubleshooting Multiple Hard Drive Icons (12/95)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 05 December 1995

TOPIC -----

When I start up my Macintosh, multiple icons of my hard drive mysteriously appear on my Desktop.

DISCUSSION -----

There are several causes of this symptom, including SCSI ID conflicts, damaged system software, or corrupted PRAM.

The most common cause is having a SCSI device with a SCSI ID 7, which is the same address reserved for the computer. To resolve this, check to see if either the internal or external hard drive or other SCSI device has a SCSI ID 7. If so, change it to a unique number; all devices on the SCSI bus must have different SCSI ID numbers.

Next, try starting up from the system software CD or Disk Tools floppy disk. If you do not see multiple hard disk icons when starting up this way, then you likely need to reinstall your system software. If you still see multiple hard disk icons, use HD SC Setup or Drive Setup to update the hard disk driver.

If the multiple SCSI disk icons persist, then reset the PRAM. To do this, hold down the Command-Option-P-R keys simultaneously as you start up the computer. Do not release the keys until you hear two startup chimes.

### Article Change History:

05 Dec 1995 - Updated with additional causes.  
24 Oct 1994 - Revised to show that any SCSI device can cause the problem.

Support Information Services

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Tech Info Library Article Number:8500



# Tech Info Library

## Apple IIe: Profile Drives can be Swapped with Apple SCSI Drives

Revised: 9/19/91  
Security: Everyone

Apple IIe: Profile Drives can be Swapped with Apple SCSI Drives

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

On an Apple IIe, is it okay to replace a Profile with an Apple SCSI hard drive with an Apple high-speed SCSI card without compatibility problems?

DISCUSSION -----

Yes, that should work fine. ProDOS is ProDOS.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8503





# Tech Info Library

## Macintosh Portable: How To Get Ethernet Capability (8/94)

Revised: 8/8/94  
Security: Everyone

Macintosh Portable: How To Get Ethernet Capability (8/94)

=====

Article Created: 14 June 1991  
Article Reviewed/Updated: 8 August 1994

TOPIC -----

Are there any Ethernet cards that work with a Macintosh Portable?

DISCUSSION -----

We do not know of any Ethernet cards for the Macintosh Portable, but there are other Ethernet solutions available. At least two companies produce Ethernet adapters that connect to Macintosh SCSI ports. These adapters tend to have slower maximum throughput than NuBus or PDS Ethernet cards, but they are still a vast improvement over LocalTalk speeds. Contact the following companies for detailed information on their products:

- EtherSC from Kinetics, a division of Excelan, Inc.
- Ether+ from Compatible Systems Corp.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:  
08 Aug 1994 - Removed Dove Computer from list of vendors.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8506



# Tech Info Library

## AppleShare: Problems Using Chooser with Apple II Computers

Revised: 9/20/91  
Security: Everyone

AppleShare: Problems Using Chooser with Apple II Computers

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I recently set up an AppleShare Network with Apple II and Macintosh computers. All seemed well except for a small item on the Apple II side.

Using Aristotle, everything works fine except the Chooser.

When trying to use Chooser, the window opens to show the application just short of finishing. The Chooser then stops with a message that it cannot load or open:

/System/System.Setup/ATInit

How can I repair the above file without reinstalling the entire AppleShare network?

DISCUSSION -----

If you're using Apple IIGS computers, you don't need to use the Chooser anymore. Select printers with the Control Panel.

If you're using Apple IIe computers, be sure you use the AppleShare Apple II Setup Disk 2.1.1 or greater when setting up your server.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8507



# Tech Info Library

## Macintosh: Using IBM PC SIMMs

Revised: 9/11/91  
Security: Everyone

Macintosh: Using IBM PC SIMMs

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I use IBM SIMMs in a Macintosh II? The SIMMs are the same size as Macintosh SIMMs and are rated at 80ns. The only real difference is that they have a parity bit. Will this extra bit cause a problem or can the Macintosh just ignore the parity bit?

DISCUSSION -----

The memory should be compatible, the parity chip will be ignored by the Macintosh. We would not expect any damage if the SIMM is incompatible, the machine just won't work.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8508



# Tech Info Library

## Macintosh SE/30: 68030 Chip is Soldered to the Logic Board

Revised: 9/19/91  
Security: Everyone

Macintosh SE/30: 68030 Chip is Soldered to the Logic Board

=====

Article Created: 14 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How is the Macintosh SE/30's processor chip attached to the logic board?

DISCUSSION -----

Early in the Macintosh SE/30's development, the chip was socketed. As a cost reduction enhancement, the 68030 processor chip is soldered onto the Macintosh SE/30's logic board.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8509



# Tech Info Library

## Macintosh IIsi: NuBus Card Shouldn't Touch Internal Hard Drive

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: NuBus Card Shouldn't Touch Internal Hard Drive

=====

Article Created: 14 June 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

In a Macintosh IIsi, the adapter board makes a 90 degree turn so a NuBus card can be parallel to the motherboard. Is a NuBus card supposed to actually touch the internal hard drive?

DISCUSSION -----

The NuBus card rests just above the hard drive. There is about 1/2-inch clearance between the drive and the NuBus card depending on the card type. The card doesn't rest on the hard drive.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8510



# Tech Info Library

## Macintosh: Spooling to Speed Typesetting

Revised: 6/15/92  
Security: Everyone

Macintosh: Spooling to Speed Typesetting

=====

Article Created: 25 June 1991  
Article Last Reviewed: 26 May 1992  
Article Last Updated: 26 May 1992

TOPIC -----

I have a typesetter connected to my Macintosh II. When I print, the computer is tied up for a long time. If I had an AppleShare server and used the print spooler feature, would this free up my system sooner?

DISCUSSION -----

Because the typesetter can be put on a LocalTalk network, it can be captured by the AppleShare print spooler. This would certainly free up your system sooner. Alternatively, you should find out if your typesetter supports background printing directly from your Macintosh. This would also free up your system sooner. If the option for turning on background printing is available in the Chooser, try turning it on.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8511



# Tech Info Library

## Hard Disk 20SC: How to Connect to an Apple IIe/IIGS

Revised: 9/19/91  
Security: Everyone

Hard Disk 20SC: How to Connect to an Apple IIe/IIGS

=====

Article Created: 25 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What do I need to connect an Apple HD20 SC to an Apple IIe or Apple IIGS?

DISCUSSION -----

Apple sells a High-Speed SCSI Card for the Apple II to use a SCSI hard drive. The part number for the card is A0220LL/A. You also need SCSI cables.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8512



# Tech Info Library

## Macintosh Classic and IIsi: Checking for Memory Upgrade

Revised: 7/6/92  
Security: Everyone

Macintosh Classic and IIsi: Checking for Memory Upgrade

=====

Article Created: 25 June 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

How do I check a memory upgrade for a Macintosh Classic and Macintosh IIsi?

DISCUSSION -----

There are no memory diagnostics available for those systems.

The only way to verify the amount of memory in these systems is to click the Apple menu and select About This Finder, when you are at the finder level. If the upgrade is installed correctly and is good, the numbers will appear in Total Memory.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8513





# Tech Info Library

## Macintosh Trash Can: You Can't Hide It, but You Can Stop It

Revised: 9/19/91  
Security: Everyone

Macintosh Trash Can: You Can't Hide It, but You Can Stop It

=====

Article Created: 25 June 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated: 14 July 1992

TOPIC -----

Can one hide the Trash Can with ResEdit? Or remove the menu item "Empty Trash"?

DISCUSSION -----

You cannot hide the Trash with ResEdit. You can, however, remove the menu item "Empty Trash" with ResEdit. We suggest you get the ResEdit manual or a ResEdit book for steps on how to remove "Empty Trash" from the menu.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8514



# Tech Info Library

## Apple IIe to Epson LX-86: Cable Recommendations

Revised: 9/11/91  
Security: Everyone

Apple IIe to Epson LX-86: Cable Recommendations

=====

Article Created: 25 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We are having trouble connecting an Apple IIe configured with an Apple Parallel card to an Epson LX-86. Both the printer and Apple IIe test work okay separately. The only questionable item seems to be the cable.

DISCUSSION -----

We couldn't find anything on connecting the Epson LX-86 printer to an Apple IIe. However, there is an article in the Tech Info Library that may help: "Epson FX 80: Connecting it to an Apple II Plus or Apple IIe".

We recommend that you contact Epson to verify that the connection is the same. If the pinouts on the LX are different from the FX, get the pinouts of the LX from Epson. You can find the pinouts of the Parallel card in the "Peripheral Interface Guide" on page 2.4 with the DIP switch settings for the Parallel card on that page.

To find the article, search the Tech Info Library under "Epson" and "FX 80".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8515



# Tech Info Library

## HyperCard 2.0: 32K Limit for Scripts and Fields

Revised: 9/19/91  
Security: Everyone

HyperCard 2.0: 32K Limit for Scripts and Fields

=====

Article Created: 25 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I know there was a 32K limit to the number of characters in a HyperCard script. Is this still true in HyperCard 2.0?

DISCUSSION -----

Yes, the limit remains 32K for the number of characters you can have in a HyperCard script or field. This limit does not apply to variables.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8516



# Tech Info Library

## Macintosh: Opening Documents and Differing Application Versions

Revised: 9/19/91  
Security: Everyone

Macintosh: Opening Documents and Differing Application Versions

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When I double-click on a document, the Macintosh Finder also launches the application that created the document. However, when there is more than one copy of an application on a volume, the copy of the application that gets launched isn't predictable.

- 1) How does the Finder determine which application to launch?
- 2) Can I control which version of the application will be launched?

This problem is especially annoying when still working with HyperCard 1.2.x and 2.x.

DISCUSSION -----

- 1) There are two different answers to this question, one for System 6 and one for System 7:

In System 6, a volume that has two or more copies of an application, or where there are different versions that use the same creator, the last copy installed on that volume is the one that launches.

In System 7, the application with the most recent creation date is the one that launches.

- 2) There is no way to change this. However, a sure way to eliminate the version confusion is to change the Creator of the applications you don't want to launch.

For example, use ResEdit to change the creator of HyperCard from "WILD" to "FRED". When you double-click on a stack, the system will go looking for the application whose creator matches the creator of the document (stack). If you have another copy of HyperCard (say, 2.0v2) on a mounted device, it will be launched. Saving files from the changed application is unaffected (they still have "WILD" for their creator).

So, your solution is to change the creator of all non-current HyperCard applications to something other than "WILD" (try "DLIW"; it's probably not used by other applications). All stacks launched will come up in HyperCard 2.0v2. Opening the stacks in other versions is done by launching the application and using "Open..." in the file menu.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8521



# Tech Info Library

## MacWrite II: Early Versions Don't Fully Support TrueType

Revised: 9/13/91  
Security: Everyone

MacWrite II: Early Versions Don't Fully Support TrueType

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using MacWrite II version 1.1, when I create text in TrueType Times above the 127 point size, and have the strike-through feature, the strike-through line appears above the text. When I try to edit the text, the "I" beam doesn't go where I click.

Is this a problem with MacWrite or TrueType?

DISCUSSION -----

MacWrite II 1.1v1 and earlier versions do not support TrueType when using font sizes larger than 127 point. Claris is working on a new version of MacWrite II that will solve this problem.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8522



# Tech Info Library

## A/UX 2.0.1: Solution for syschk Error Problem

Revised: 11/9/92  
Security: Everyone

A/UX 2.0.1: Solution for "syschk" Error Problem

Article Created: 13 May 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I'm having a problem with the System Checker disk of the A/UX v2.0.1 release: the shell script syschk is not executable (protection 444 instead of 555). I changed the protection to the right value and then I got an error message when running the syschk command: "Message too long".

### DISCUSSION -----

We have verified the problem. The 'syschk' Korn Shell script file in the A/UX 2.0.1 distributed System Checker disk seems to be missing some "echo" statements before the displayed error message. The echo statements should be inserted before the displayed message, around lines 145 and 168 in the syschk script file. They should be changed to the following:

```
        if [-n $noopt"]; then
        echo "\n          <===== inserted
Error - insufficient room in / partition.
At least $need more free blocks needed to install optional files.
Optional file (manuals, games) disregarded in calculations.
"          <===== inserted

        if [-n $noopt"]; then
        echo "\n          <===== inserted
Error - insufficient room in /usr partition.
At least $usrneed more free blocks needed to install optional files.
Optional file (manuals, games) disregarded in calculations.
```

"

<===== inserted

Note: If the script was written in Korn Shell not Bourne Shell, use 'ksh syschk' instead of 'sh syschk'. The 'syschk' file is unnecessarily changed to executable if it is invoked by 'ksh syschk'. The "Message too long" message results from the Bourne Shell.

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Tech Info Library Article Number:8523





# Tech Info Library

## A/UX Sockets and FASYNC Signal

Revised: 9/24/92  
Security: Everyone

A/UX Sockets and FASYNC Signal

Article Created: 13 June 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

I'm trying to port a BSD sockets-based application to A/UX. I'm running on Sun and DEC Ultrix platforms.

My problem is I can't find support for sending asynchronous signals via sockets. Other platforms have a flag in the file control header /usr/include/fcntl.h called "fasync". The flag is needed to send asynchronous signals.

Does Apple support this feature?

### DISCUSSION -----

We looked into the /usr/include/fcntl.h file on an Apple Campus UNIX machine (apple.com, a BSD 4.3 UNIX system), and the FASYNC flag is defined in the /usr/include/fcntl.h header file. In A/UX, instead of defining in the /usr/include/fcntl.h file, it is defined in the "/usr/include/sys/file.h" file with this statement:

```
#define FASYNC 0x00000040 /* signal pgrp when data ready */
```

Therefore, we think it is supported in A/UX because the BSD socket library is supported under A/UX.

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Tech Info Library Article Number:8524



# Tech Info Library

## MacTCP: Broadcast Address Ranges, Problems & Workarounds (6/94)

Revised: 6/29/94  
Security: Everyone

MacTCP: Broadcast Address Ranges, Problems & Workarounds (6/94)

Article Created: 13 June 1991  
Article Reviewed/Updated: 29 June 1994

TOPIC -----

I am running into a problem with the TCP connection tool. I'm trying to run MacX and Telnet/TCP. Both are failing. I can run Telnet that uses its own TCP/IP, so I know that the physical connection is there.

When I try to run MacX, I get the message, "none of the connection tools are working at the moment...". And with Telnet/TCP 2.3, I get the familiar flash of the screen and then it quits to the Finder. I've worked with MacX and MacTCP on several occasions, so I don't think it's an installation Error.

I have gotten this same error message when a gateway has been down. That leads me to believe that there is a configuration problem on the host/network side.

Host:  
Sun 128.0.0.2  
subnet FFFF0000  
broadcast 128.0.0.0 had them change to 128.255.255.255

- 1) What are the valid IP address ranges for class A, B, and C IP nodes?  
Is this documented in any specific RFC?
- 2) Is it true that if a host TCP/IP implementation uses zeros for broadcast address bits, that:
  - Can't interoperate with it and A/UX or MacTCP?
  - The host must have a new implementation of TCP/IP added to make it interoperable?
- 3) Do you know of any "standard" written down in an RFC?

DISCUSSION -----

MacTCP does NOT support 0's as broadcast address bits, so your systems need to be reconfigured to support 1's as broadcast bits. Changing your Sun and MacTCP values fixes the problem:

Hosts:

Sun: 128.1.1.1

subnet: 255.255.0.0

broadcast: 128.0.255.255

Macintosh: 128.1.1.4

subnet: 255.255.0.0

broadcast: 128.0.255.255

MacTCP-based application error messages often leave out the most common error possibility -- an invalid address. MacX, for example, gave the error message to check installation of the MacTCPTool, when in fact it was the IP addressing scheme itself that was wrong.

MacTCP DOES accept "INVALID" TCP/IP addresses without complaining, and will then fail to attempt any connections with those addresses. You can configure "invalid" addresses, like 128.0.0.0 or 0.0.0.255, without any complaints, but there will not be any support for application services on top of them.

1) Here are the valid IP address ranges for:

Valid Class A IP addresses: 1.0.0.1 through 127.255.255.254. In a class A IP address, the first octet contains the network number. The second, third, or fourth octet must contain a non-zero value. Examples of valid addresses include: 17.5.0.0; 45.0.0.200; and 50.0.120.0.

Valid Class B IP addresses: 128.0.0.1 through 191.255.255.254. In a class B IP address, the first and second octets contain the network number. The third or fourth octet must contain a non-zero value. Examples of valid addresses include: 135.0.17.0; 160.0.0.210; and 180.22.120.0.

Valid Class C IP addresses: 192.0.0.1 through 223.255.255.254. In a class C IP address, the first, second, and third octets contain the network number. The fourth octet must contain a non-zero value. Examples of valid addresses include: 221.5.0.1; 198.0.0.200; and 202.0.120.23.

Also internet addresses in the range 128.0.rrr.rrr, and 192.0.0.rrr are reserved. MacTCP doesn't allow use of this address, and issues a "bac ip or LAP configuration error".

2) MacTCP, under the Macintosh OS, uses 255 for broadcasts, not zero. In other words, a broadcast on a class network would use an address like this: 17.255.255.255, not 17.0.0.0. A/UX, or MacTCP running under A/UX, can be configured to use zero for broadcasts (for example 17.0.0.0).

You cannot use MacTCP, under the Macintosh OS, on a network that does

not use 255 for broadcasts.

3) RFC 1166 is the document with the information you need.

Article Change History:

29 Jun 1994 - Updated information for accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8525



# Tech Info Library

## A/UX 2.0.1: Problem Recognizing 800K Drives with Macintosh IIfx

Revised: 8/17/93  
Security: Everyone

A/UX 2.0.1: Problem Recognizing 800K Drives with Macintosh IIfx

Article Created: 13 June 1991  
Article Reviewed/Updated: 17 August 1993

TOPIC -----

I am using A/UX on a Macintosh II that has been upgraded to a Macintosh IIfx.

A/UX seems to think my 800K floppy drive is a 400K drive and that it is bad. In fact, we can format floppies to 800K and otherwise use the drive. But the A/UX Finder and DOSMounter certainly believe that the drive is 400K and will only format it or use it as 400K.

An Apple Macintosh IIfx with an FDHD and an 800K drive, booting under A/UX release 2.0.1 version SVR2 has the following symptoms:

- The 800K floppy drive is only recognized as a 400K drive.
- Part of the message from the A/UX kernel during boot reads "FD:floppy driver ver. 1.9; iop swim, D1 is 400K (1 head), D0 is an FDHD drive."  
"FD: D1 400K drive unusable."
- If the unit is not booting under A/UX, the 800K drive operates as expected.

DISCUSSION -----

It is a floppy driver incompatibility in A/UX 2.0.1 with a Macintosh IIfx. On a Macintosh IIfx, the driver incorrectly identifies the drive as a 400K drive, and claims it's unusable because 400K drive hardware isn't supported on the Macintosh II series systems. If you insert a blank floppy, however, you can format it, but only as 400K single-sided floppy. The drive is still usable as a 400K drive.

You can still read and write existing 800K floppies, even though the drive says you can't.

This problem has been fixed with A/UX 3.0 and above.

Article Change History:

17 Aug 1993 - Updated to include information on A/UX 3.0 and above.

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Tech Info Library Article Number:8526



# Tech Info Library

## A/UX: How To Do Screen Shots (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: How To Do Screen Shots (8/94)

=====

Article Created: 13 June 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

How do I do screen shots under A/UX?

DISCUSSION -----

With A/UX 3.0 or later, press CMD-Shift 3. This will take a snapshot of the screen.

Article Change History:  
29 Aug 1994 - Updated for A/UX 3.0

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8528



# Tech Info Library

## Color Picker: Relationship of Values to RGB Gun Voltages

Revised: 6/15/92  
Security: Everyone

Color Picker: Relationship of Values to RGB Gun Voltages

=====

Article Created: 13 June 1991  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

Is there any relationship between the 65535 values (for example, of the Color Picker) and the analog voltages of RGB guns in color monitors?

DISCUSSION -----

There isn't a direct relationship between the two, but there is a proportional relationship.

A zero setting of the Color Picker's red field causes minimum volts at the red gun of the monitor. The 65535 setting of the Color Picker's red field gives maximum voltage at the red gun. The same is true of the blue gun and the green gun.

No two monitors have the same voltage settings, because of differences in the gamma tables, the analog adjustments of the monitor, and the monitor's voltage specifications.

(The following discussion assumes the ability to measure the voltages of the guns in the color monitor.)

To get the exact voltage relationship to Color Picker values requires selecting the uncorrected gamma table in the Monitors CDEV.

- 1) Hold down the option key while selecting the option button in the CDEV.
- 2) Once the uncorrected gamma table is in use, set each of the red, blue, and green values of the Color Picker to 0 (zero). Measure the voltage of the guns. This will be the minimum voltage of the guns.



- 3) Set each value of the red, blue, and green Color Picker fields to 65535. Now measure the voltage of the guns. This will be the maximum voltage produced by the guns.

As long as the uncorrected gamma table is in use, there should be a linear relationship between the Color Picker values and the gun voltages.

However, the analog adjustments of the monitor can affect the linear nature of this relationship. Also, if a corrected gamma table is selected, the linear relationship is further perturbed.

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Tech Info Library Article Number:8529



# Tech Info Library

## Apple IIe: No Support for the StyleWriter

Revised: 7/7/92  
Security: Everyone

Apple IIe: No Support for the StyleWriter

=====

Article Created: 13 June 1991  
Article Last Reviewed: 7 July 1992  
Article Last Updated: 7 July 1992

TOPIC -----

Can I use the StyleWriter with an Apple IIe?

DISCUSSION -----

No, the Apple IIe does not support the StyleWriter.

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Tech Info Library Article Number:8530



# Tech Info Library

## System 7: Virtual Memory and Largest Unused Block (9/93)

Revised: 9/23/93  
Security: Everyone

System 7: Virtual Memory and Largest Unused Block (9/93)

Article Created: 13 June 1991  
Article Reviewed/Updated: 23 September 1993

TOPIC -----

My Macintosh has 4MB of RAM, and I set it to 24-bit addressing mode with 13MB of virtual memory. I see the following distribution of RAM according to "About This Macintosh."

|                      |         |
|----------------------|---------|
| Built-in memory      | 4,096K  |
| Total memory         | 13,312K |
| System Software      | 1,577K  |
| Largest Unused Block | 7,319K  |

System Software added to Largest Unused Block equals 8,896K. This leaves 4,416K missing.

When I set the Macintosh to 32-bit mode, I see the following distribution of RAM:

|                      |         |
|----------------------|---------|
| Built-in memory      | 4,096K  |
| Total memory         | 13,312K |
| System Software      | 1,577K  |
| Largest Unused Block | 11,712K |

System Software plus Largest Unused Block equals 13,289K.

Why does there appear to be more memory available with 32-bit addressing turned on?

DISCUSSION -----

Virtual memory in 24-bit addressing mode fragments the memory available when you set the memory size to greater than 8MB. Virtual memory in 32-bit addressing doesn't face this limitation. The following examples show how

this happens.

#### 24-Bit Addressing

-----  
Setting your Macintosh to 24-bit addressing mode makes 16MB available to the computer. Here's what the memory map looks like in 24-bit mode:

| MB    | Function               |
|-------|------------------------|
| --    | -----                  |
| 1-8   | Physical & Virtual RAM |
| 9     | ROM                    |
| 10-15 | NuBus slots            |
| 16    | I/O                    |

When you set virtual memory greater than 8MB, the location of ROM in the memory map fragments the free memory. So the largest block available will always be 8MB minus memory any running applications use, until you exceed 8MB. After exceeding 8MB, the largest available blocks are the memory mapped into NuBus slot space.

The memory available to applications (application heap) includes the first 8 megabytes, plus any memory the NuBus cards (10-15) aren't using that has been mapped as memory by virtual memory. This is where the RAM available under virtual memory becomes fragmented. In the example of RAM distribution for 24-bit addressing, 11,735K of RAM is really available for the application heap even though the Largest Unused Block shows as only 7,319K.

#### 32-Bit Addressing

-----  
Setting the Macintosh to 32-bit mode prevents fragmenting available memory because it maps ROM and I/O to the top of the memory map. This makes 1GB available to the computer. Here's what the memory map looks like in 32-bit mode:

| Memory | Function               |
|--------|------------------------|
| -----  | -----                  |
| 1GB    | Physical & Virtual RAM |
| 256MB  | ROM                    |
| 2.5GB  | NuBus slots            |
| 256MB  | I/O                    |

Virtual memory in 32-bit mode only accesses the 1GB RAM memory space. This leaves the memory space between system heap and ROM available. The application heap is a contiguous block in the top thousand megabytes of the memory map. In the example for 32-bit addressing, the Largest Unused Block (11,712K) is equal to the total RAM available for the application heap.

#### Article Change History:

23 September 1993 - Reviewed for technical accuracy.

22 January 1993 - Expanded information about 32-bit addressing.

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# Tech Info Library

## HyperCard 1.2.5: Workaround for Sound Problems with System 6.0.7

Revised: 9/11/91  
Security: Everyone

HyperCard 1.2.5: Workaround for Sound Problems with System 6.0.7

=====

Article Created: 13 June 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've read somewhere that HyperCard 1.2.5 doesn't run properly under System 6.0.7, especially when sound is involved.

System 6.0.7 is required for a Macintosh LC, so how can one resolve this problem without going to HyperCard 2.0 for the time being?

DISCUSSION -----

It's true. HyperCard 1.2.5 is not fully compatible with System 6.0.7. If you never "play" a sound, it works fine, but because Apple can't guarantee that sounds will never be played, the software is listed as "incompatible".

Claris suggests turning the volume all the way down; in effect, turning the sound off.

Here's another workaround for turning the sound down: add the following two handlers to Home's stack script:

```
on play
    --stops most play commands getting through to HyperCard, it's unlikely
    --that a stack would have used "send play ... to HyperCard".
end play

on beep -- flash the menu bar instead of beeping
    type space with commandkey
    type space with commandkey
end beep
```

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# Tech Info Library

## Backlit Macintosh Portable: System 6 Requires Control Panel 1.3

Revised: 7/30/92  
Security: Everyone

Backlit Macintosh Portable: System 6 Requires Control Panel 1.3

=====

Article Created: 13 June 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 30 July 1992

TOPIC -----

The backlit Macintosh Portable requires a new Control Panel document to adjust the intensity of the back lighting. Where can I get the new control Panel?

DISCUSSION -----

Version 1.3 of the Macintosh Portable Control Panel is required for the backlit Macintosh Portable with System 6.0.x. It wasn't included with System 6.0.7. If you're using System 6.0.7 or System 7.0.x, you can use the Brightness control panel to adjust the brightness.

Version 1.3 of the Macintosh Portable control panel shipped only with new Macintosh Portable computers, or with the Macintosh Portable Backlight Screen Upgrade, but is now available on AppleLink. Please see the article "Macintosh Portable: Use Macintosh Portable INIT with Modem", the control panel is attached to that article.

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Tech Info Library Article Number:8534





# Tech Info Library

## PostScript: Displaying Output on Macintosh Screen

Revised: 6/16/92  
Security: Everyone

PostScript: Displaying Output on Macintosh Screen

=====

Article Created: 13 June 1991  
Article Last Reviewed: 26 May 1992  
Article Last Updated: 26 May 1992

TOPIC -----

I want to create a PowerPoint presentation using a "screen shot" from a VAX workstation. I've made a PostScript file on the VAX that I downloaded to my Macintosh as a text file. On my Macintosh, the file shows up as a series of PostScript commands, as opposed to an image that the Macintosh can display properly.

Other than Display PostScript, do you know of any way to read in a PostScript file and have it displayed on-screen as it would appear on the printer? Is there a utility that would 'interpret' the PostScript file into a QuickDraw-generated screen display?

DISCUSSION -----

It is possible to display an EPS (Encapsulated PostScript) file with many Macintosh applications, including Adobe Illustrator.

To display full PostScript files under the Macintosh OS, use an application like LaserTalk from Emerald City Software or PostShow from Lincoln & Co.

It's possible that your PostScript files generated on the VAX wouldn't be well-behaved enough to work with PostShow. Extremely complex images can have problems. It also may not be worth it to buy this product for a one-time need. Many users duplicate the displays of non-Macintosh computers by hiring an artist to draw it using a Macintosh graphics program. The decision is usually based on how many times the conversion will be required.

Search on company names for contact information.

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Tech Info Library Article Number:8535



# Tech Info Library

## LaserWriter II: Intelligent Controller Box

Revised: 7/27/93  
Security: Everyone

LaserWriter II: Intelligent Controller Box

=====

Article Created: 13 June 1991

TOPIC -----

Is there an intelligent controller box for a LaserWriter II that allows both AppleTalk and serial communications without resetting the printer?

DISCUSSION -----

BridgePort, from Extended Systems, allows input from RS-232, parallel, and LocalTalk sources. Unfortunately, BridgePort only outputs via parallel or RS-232. This works with a LaserWriter, but does not take advantage of the LocalTalk port. You can use it with non-Apple PostScript printers that don't have a LocalTalk interface.

To locate a vendor's address and phone numbers, use vendor name as a search string.

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Tech Info Library Article Number:8536



# Tech Info Library

## Macintosh IIfx: Problems Using with UB MaxTalk

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: Problems Using with UB MaxTalk

=====

Article Created: 13 June 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I am using Ungermann-Bass Access/One to connect Macintosh computers via the LocalTalk port to the UB MaxTalk card. Everything works fine with all Macintosh models except the Macintosh IIfx. The connection is weak or very slow.

I've installed the Serial Switch CDEV, and that solves the problem. My Macintosh computers are using only AppleShare Workstation software and System Software 6.0.7 to connect to the AppleShare server.

Some questions:

- 1) Have you heard of problems with the Macintosh IIfx and the UB MaxTalk Card?
- 2) Can you give me more details on the Serial Switch CDEV?
- 3) Is this an Apple problem or because the Ungermann-Bass product doesn't follow AppleTalk guidelines?

DISCUSSION -----

- 1) Ungermann-Bass Tech Support confirms the problem. They also state that using the Serial Switch CDEV solves the problem.
- 2) The Serial Switch CDEV for the Macintosh IIfx lets you bypass the IOP for the SCC chip, enabling compatibility with serial devices that don't work with the IOP. The I/O Processor (IOP) is an Apple custom IC designed to provide intelligent support for I/O controllers. There are two of these IOP chips in the Macintosh IIfx computer: one for the SWIM

and ADB and one for the SCC. The IOP sits between the main processor and the I/O controllers.

The features of the IOP include:

- A built-in microprocessor (6502 running at 2 MHz)
- A 17-bit timer
- Two DMA controllers: one for each serial I/O channel (only used in the Serial IOP)
- Address and data buses for RAM used by the IOP and host processor
- Two digital I/O ports for controlling the ADB (on the SWIM-ADB IOP)
- 32K of external memory of IOP code and data storage

The 68030 communicates with the IOP through a set of control registers in the IOP that are mapped into the main processor's I/O space. The main processor can interrupt the IOP using a bit in one of the control registers, whereas the IOP can interrupt the 68030 by using an interrupt line.

Each IOP has 32K of external RAM that holds the driver and acts as a buffer for the data processed by the processor. The IOP contains a 16-bit auto-incrementing address register and an 8-bit data port that the host processor uses for access to the shared RAM.

- 3) It's not AppleTalk guidelines that need to be followed, but serial port guidelines. The reason Apple put an SCC IOP in the Macintosh IIIfx was to handle the interaction with both serial ports. The SCC IOP handles LocalTalk to relieve the CPU from interrupts created by the LocalTalk transmission. Unfortunately, many applications accesses the SCC chips directly instead of the serial driver. Therefore, the Serial Switch CDEV was distributed for those applications to bypass the IOP.

We're not sure what the UB software does exactly and could not get the information from UB, but it is likely that they might be accessing SCC directly.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:8537



# Tech Info Library

## System 7: MacIrma Versions for System 7

Revised: 9/21/92  
Security: Everyone

System 7: MacIrma Versions for System 7

Article Created: 14 August 1991

### Article Change History

-----  
09/15/92 - UPDATED  
• To provide search information.

### TOPIC -----

What is the correct version of MacIrma software to use with System 7?

### DISCUSSION -----

MacIrma Entry Emulation 1.2.6 (cut mode only) and MacIrma Workstation 1.1.2 (cut and DFT) are the System 7-compatible versions of MacIrma software. These versions are currently available and shipping from DCA.

To locate the vendor's address and phone numbers, use "Digital Communications Associates, Inc. (DCA)" as a search string.

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Tech Info Library Article Number:8539



# Tech Info Library

## MacX: TCP/IP and SLIP Support

Revised: 4/24/92  
Security: Everyone

MacX: TCP/IP and SLIP Support

=====

Article Created: 22 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a product that will allow MacX to support TCP/IP and SLIP?

DISCUSSION -----

MacTCP (version 1.1) is capable of supporting alternate LAPs (Link Access Protocol) including token ring and SLIP (Serial Line Internet Protocol). However, a third party must develop the SLIP driver for Macintosh.

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Tech Info Library Article Number:8541



# Tech Info Library

## X Window System for A/UX 2.1: Xt and Athena Widget Set

Revised: 9/18/92  
Security: Everyone

X Window System for A/UX 2.1: Xt and Athena Widget Set

=====

Article Created: 23 August 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

X Window System for A/UX 2.1 supports Xlib and the X Toolkit. Is the X Toolkit the same as the Xt toolkit? Does the X Toolkit include the MIT Athena Widget set? What makes up the MIT Athena Widget set, and what is its relationship to X Toolkit?

### DISCUSSION -----

The X Toolkit in X Window System 2.1 for A/UX is the standard toolkit from MIT known as the X Toolkit. The Xt is short for X Toolkit.

In order to better understand the components of X, here is a summary of each component:

- Xlib (/usr/lib/libX11.a)  
The standard C language library interface to X, which defines an extensive set of functions that provides complete access and control over the display, windows, and input devices such as mouse and keyboard.
- X Toolkit (/usr/lib/libXt.a)  
The high-level toolkits designed for use with X to build applications easily.

The X Toolkit consists of two parts:

- The Xt Intrinsics



Xt Intrinsics supports many different widget sets. Yes, X Window System 2.1 for A/UX supports the Athena Widget Set from MIT.

- The X Widgets set

The X Widgets set implements user interface components which include scroll bars, menu, and buttons. The Xt Intrinsics provides a framework that allows the programmer to combine these components to produce a complete user interface. The entire MIT Athena Widgets Set for X Window System 2.1 for A/UX has been built and kept in the /usr/lib/libXaw.a library. You can see all modules (Box, Form, Scrollbar, and so on) of the Widget set from the output of "ar-tv /usr/lib/libXaw.a".

Both the Xt Intrinsics and the X Widgets set are written in C and built on top of Xlib. In short, the X Toolkit includes a layer known as the Xt Intrinsics which defines an architecture for combining user interface components known as widgets to create an application user interface.

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Tech Info Library Article Number:8542



# Tech Info Library

## A/UX: Uses 7-bit Character Set for Filenames

Revised: 11/9/92  
Security: Everyone

A/UX: Uses 7-bit Character Set for Filenames

=====

Article Created: 22 August 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does A/UX 2.0.1 support an 8-bit or a 7-bit character set? I would have guessed 8-bit, but I've not been able to use special characters in filenames.

### DISCUSSION -----

ASCII is a 7-bit character set code with values ranging from 0 to 127. Binary data uses the 8-bit character set, with code values ranging from 0 to 255.

A/UX supports 8-bit binary files, which are usually executable applications and binary data files. A/UX 2.0.1 recognizes only 7-bit filenames, which means you can't create filenames with character values greater than 127. Special characters prohibited by 7-bit ASCII include '/', '|', and so on.

However, Macintosh HFS filenames can use the 8-bit character set.

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Tech Info Library Article Number:8543



# Tech Info Library

## System 7: Compatibility Checker 1.1

Revised: 9/3/92  
Security: Everyone

System 7: Compatibility Checker 1.1

=====

Article Created: 13 August 1991

### Article Change History

-----

09/02/92 - UPDATED

- To add availability information.

### TOPIC -----

Is there an updated version of the Compatibility Checker to reflect third-party upgrades and broader testing of existing products?

### DISCUSSION -----

There is a new version of the Compatibility Checker. Compatibility Checker 1.1 is now available. You can get it from AppleLink, Apple service providers, and Users Groups. The System 7.0 upgrade kits now include it.

Compatibility Checker 1.1 has 165 new records, as well as updated product compatibility information and corrected phone numbers. It also offers compatibility information on third-party drivers.

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Tech Info Library Article Number:8544



# Tech Info Library

## System 7: When an Application Doesn't Support Stationery

Revised: 9/12/91  
Security: Everyone

System 7: When an Application Doesn't Support Stationery

=====

Article Created: 14 August 1991

### Article Change History

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08/18/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

The Stationery feature seems to have a counter-intuitive user interface. If I check both Stationery and Locked in a document's Get Info box, and then open the document, I get an untitled document with the contents of the selected Stationery document. Is this how it should work?

### DISCUSSION -----

Yes, this is how it should work. But the application must support Stationery for it to work correctly. If the application doesn't provide support, the Finder substitutes fundamental actions. What you see are the Finder actions taken in the absence of Stationery support from the application.

When you double-click a Stationery Pad in the Finder, you open a copy of the document. If a document is marked as Stationery, the Finder checks the application to see if it supports Stationery. If the application doesn't support Stationery, the Finder creates a new document from the template and prompts you for a name. The Finder then makes a copy of the document and displays the copy dialog.

When you open a Stationery document from an application that doesn't support Stationery, an alert box warns that you are opening the Stationery Pad itself, not a copy of it. Opened from the application, you make changes to the Stationery document as if it were an ordinary

document. It is possible in such a case to change a Stationery document even when you didn't intend to alter the template.

If the application supports Stationery, the Finder won't perform auxiliary actions. The application takes responsibility for what happens. The specifications for Stationery support require that the application copy the template's contents into a new document and open the document in an untitled window.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8545



# Tech Info Library

## Grimes Security Kit: Macintosh LC Requires Two Loops

Revised: 9/19/91  
Security: Everyone

Grimes Security Kit: Macintosh LC Requires Two Loops

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Here in Sweden, we sell a Grimes Universal Security Kit. It's supposed to fit all Macintosh computers, but it doesn't cover both the Macintosh LC and its keyboard because the kit includes only one loop. Can we get a second loop separately?

DISCUSSION -----

Grimes is in the process of repackaging their security product. The current kit contains one keyboard loop. To use the product on a Macintosh LC, you need two loops. Contact Grimes for additional loops.

You can find the address and phone number for Grimes, Inc. in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8549



# Tech Info Library

## Grimes, Inc.

Revised: 7/8/93  
Security: Everyone

Grimes, Inc.

=====

Article Created: 07/13/91  
Article Reviewed: 07/08/93  
Article Updated: 07/08/93

Grimes, Inc.

-----

1841 Enterprise Blvd.  
West Sacramento, CA 95691

916-373-8888

916-371-3631 Fax

Company Profile:  
Hardware, specializing in security kits for the Macintosh.

Article Change History: 07/08/93 Address Information Changed, Phone Number Changed

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8553



# Tech Info Library

## Instant Pascal is Compatible with Apple ILe Card

Revised: 6/11/92  
Security: Everyone

Instant Pascal is Compatible with Apple ILe Card

=====

Article Created: 13 August 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

Can you use Instant Pascal on the Apple ILe Card and Macintosh LC?

DISCUSSION -----

We tested Instant Pascal and found it was compatible with the Apple ILe Card in the Macintosh LC. Even on the Apple II, Instant Pascal displays poorly on RGB monitors. This condition also appears on the Apple ILe Card/Macintosh LC combination. We suggest black-and-white display for best results.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8554





# Tech Info Library

## Macintosh Display Cards: Identifying PAL-Compatible Versions

Revised: 7/6/92  
Security: Everyone

Macintosh Display Cards: Identifying PAL-Compatible Versions

=====

Article Created: 15 August 1991  
Article Last Reviewed: 12 June 1992  
Article Last Updated:

TOPIC -----

There are PAL versions for the Macintosh Display Cards. The label appends "/A" for NTSC, and "/B" for the PAL version.

Is there a visible difference on the card to identify the PAL version?

DISCUSSION -----

The Macintosh Display Card 8•24 GC (M0122LL/C) has always had PAL capability. The current ROM version is 1.1.

On the other cards, there is no visible difference (8•24 M0507PA/B; 4•8 M0121PA/B). The only change is a ROM revision.

Apple introduced a new ROM for the Macintosh Display Cards 4•8 and 8•24 in July. The card uses sense-pin combinations to determine NTSC or PAL. We ship all new cards with this ROM (version 1.2, part number 341-0868). You can get upgrades for older cards (fee involved; see the August Service Mailing).

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8555



# Tech Info Library

## Macintosh Computers and LaserWriters: Noise Levels (8/96)

Revised: 8/2/96  
Security: Everyone

Macintosh Computers and LaserWriters: Noise Levels (8/96)

Article Created: 23 August 1991  
Article Reviewed/Updated: 2 August 1996

TOPIC -----

Do you have information about noise levels from Macintosh computers and Apple LaserWriters?

DISCUSSION -----

LaserWriters:

|                               | Standby | Printing |
|-------------------------------|---------|----------|
|                               | -----   | -----    |
| LaserWriter, LaserWriter Plus | < 45 db | < 50 db  |
| LaserWriter II                | < 50 db | < 60 db  |
| Personal LaserWriter          | < 40 db | < 54 db  |
| Personal LaserWriter 300/320  | 36 db   | 46 db    |
| LaserWriter Select 300        | 36 db   | 43 db    |
| LaserWriter Select 360        | 36 db   | 47 db    |
| LaserWriter Pro 600/630       | 34 db   | 49 db    |
| LaserWriter 4/600             | 36 db   | 46 db    |
| LaserWriter 16/600            | 34 db   | 52 db    |
| LaserWriter Pro 810           | 40 db   | 53 db    |
| LaserWriter 12/640 PS         | 31 db   | 50 db    |
| Color LaserWriter 12/600 PS   | 45 db   | 55 db    |

Macintosh Computers:

Measured at normal sitting distance from system.

|                        | floppy only*            | with internal<br>HD** |
|------------------------|-------------------------|-----------------------|
|                        | -----                   | -----                 |
| Macintosh Plus         | floppy drive noise only |                       |
| Macintosh SE (old fan) | < 49 db                 |                       |

|                            |         |                      |
|----------------------------|---------|----------------------|
| (new fan)***               | < 38 db | (Miniscribe) < 39 db |
|                            |         | (Quantum) < 41 db    |
| Macintosh SE/30            | < 38 db | (Miniscribe) < 39 db |
|                            |         | (Quantum) < 41 db    |
| Macintosh Classic          |         | < 41 db              |
| Macintosh Classic II       |         | < 40 db              |
| Macintosh LC               |         | < 41 db              |
| Macintosh LC II            |         | < 41 db              |
| Macintosh LC III           |         | < 40 db              |
| Macintosh II               |         | < 50 db              |
| Macintosh IIX              |         | < 50 db              |
| Macintosh IICi             |         | < 50 db              |
| Macintosh IISi             |         | < 50 db              |
| Macintosh IIfx             |         | See Notes            |
| Macintosh Quadra 605       |         | < 40 dB              |
| Macintosh Quadra 610       |         | < 40 dB              |
| Macintosh Quadra 660AV     |         | < 40 dB              |
| Macintosh Quadra 650       |         | < 40 dB              |
| Macintosh Quadra 700       |         | < 40 db              |
| Macintosh Quadra 800       |         |                      |
| Floor                      |         | < 38 dB              |
| Desktop                    |         | < 42 dB              |
| Macintosh Quadra 840AV     |         |                      |
| Floor                      |         | < 38 dB              |
| Desktop                    |         | < 42 dB              |
| Macintosh Quadra 900       |         | < 40 db              |
| Macintosh Quadra 950       |         | < 40 db              |
| Power Macintosh 6100       |         | < 40 db              |
| Power Macintosh 7100       |         | < 40 db              |
| Power Macintosh 8100       |         |                      |
| Floor                      |         | < 38 dB              |
| Desktop                    |         | < 42 dB              |
| Macintosh Portable         |         | < 51 db              |
| Macintosh PowerBook Family |         | See Notes            |

#### Notes

-----

\*The floppy disk drives were not reading a disk during the "floppy system" tests; the hard drives were spinning and seeking during the "hard disk system" tests.

\*\*The hard drive noise levels vary within the same model from the same company and may result in slightly different results than that reported above.

When we use drives from a manufacturer not listed above, our desire is to keep the overall noise level emitted by Macintosh SEs or Macintosh SE/30s containing those drives at or below 40-41db.

\*\*\*The test results for the Macintosh SE with the updated fan apply equally to a Macintosh SE with 800K drives or SuperDrives -- they use the same fan. The noise level was not checked with the drives

reading or writing to a disk.

The noise levels in the Macintosh IIfx will vary since it uses a variable speed fan:

| Macintosh IIfx configuration | db   |
|------------------------------|------|
| -----                        | --   |
| 1 NuBus card                 | 39   |
| 1 NB card/1 internal HD      | 42.5 |
| 6 NuBus cards                | 42.5 |
| 6 NuBus cards/1 internal HD  | 44   |

PowerBook computers are noise free except for floppy or hard disk use.

#### Article Change History:

02 Aug 1996 - Added CLW 12/600 and LW 12/640.

31 Aug 1995 - Added LaserWriter 4/600 and 16/600 noise specifications.

03 Jan 1995 - Removed speed ratings from Power Macintosh models.

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Tech Info Library Article Number:8556



# Tech Info Library

## Printing PostScript From a PC

Revised: 6/15/92  
Security: Everyone

Printing PostScript From a PC

=====  
Article Created: 13 August 1991  
Article Last Reviewed: 26 May 1992  
Article Last Updated:

TOPIC -----

I need to print, on an Apple LaserWriter, some Macintosh PostScript files that were transferred to an IBM. Do you know of any programs for the PC that can send a PostScript file to a PostScript printer (similar to SendPS on the Macintosh)?

DISCUSSION -----

The nature of connections between PCs and printers eliminates the need for a SendPS type of utility. On a Macintosh, SendPS sets up a PAP session with a LaserWriter and downloads the specified file. With a PC, the LaserWriter connects to one of the serial ports directly, or via a network card that allows mapping of COM or LPT ports to the LaserWriter. In either case, you can COPY a desired file to the port to print it.

Assuming your LaserWriter is connected serially, these are the required steps:

- 1) Set up the COM port with the MODE command. Typical settings are 8 data bits, 1 stop bit, and no parity.
- 2) With these settings, and assuming the use of COM1, the command looks like this:

```
MODE COM1:9600,n,8,1,p
```

Note that you execute this command only once each time you start the computer. Because the settings remain until the next startup, this command is frequently placed in the AUTOEXEC.BAT file.

## ..TIL08557-Printing\_PostScript\_From\_a\_PC.pdf

3) To print a PostScript file to the LaserWriter, use the COPY command:

```
COPY myfile.ps COM1
```

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Tech Info Library Article Number:8557



# Tech Info Library

## Improving Server Performance

Revised: 9/12/91  
Security: Everyone

Improving Server Performance

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Which makes more sense to increase network performance when getting files from the hard drive of a file server?

- Upgrade the server to a faster CPU? (e.g. from a Macintosh II to IIfx)
- Add SCSI Cards to speed up performance of the disk drive?

DISCUSSION -----

It depends on what part of the system is currently the bottleneck and how much you want to spend. Since the target is the CPU and I/O, we assume you're already using EtherTalk and not LocalTalk. This is the most obvious first step to improve performance.

The next step depends on what the most important application is on the server. Upgrading the CPU from a Macintosh II to a Macintosh IIfx can help a number of server operations a little, but it won't make dramatic differences. If a high percentage of the server's time is spent waiting for the disk drive to complete seek operations (such as with multi-user database applications), then speeding up this waiting won't do much good, and you should consider a higher performance disk drive. This may consist of a disk drive with faster seeks and throughput, but could also be a caching SCSI card such as the DayStar SCSI PowerCard with several megabytes of cache RAM. Each contributes unique advantages.

A combination of all of these upgrades would give the highest performance improvement. Since we haven't performed any benchmarks on this subject, we can't provide you with real numbers for comparison. Our recommendation is to obtain a caching SCSI card for evaluation and decide if it provides

the necessary performance improvements.

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Tech Info Library Article Number:8558





# Tech Info Library

## DAL for VM: Fix for IBM's TCP/IP 2.0 Problem

Revised: 9/20/91  
Security: Everyone

DAL for VM: Fix for IBM's TCP/IP 2.0 Problem

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We experience a high failure rate in connecting to the DAL VM Server using IBM's TCP/IP 2.0.

DISCUSSION -----

There is a known conflict with IBM's TCP/IP 2.0 for VM, and an APAR is available from IBM that will fix the problem. The APAR number is PN02784, and has been very successful for the beta site.

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Tech Info Library Article Number:8559



# Tech Info Library

## Mactivity 1991: Jim Groff's Keynote Address

Revised: 9/12/91  
Security: Everyone

Mactivity 1991: Jim Groff's Keynote Address

=====  
Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article summarizes the Mactivity keynote address titled "Macintosh Connectivity: Perspective and Directions" delivered by Jim Groff, Director of Marketing, Enterprise Systems Division.

DISCUSSION -----

Jim opened with a brief review of 1991 so far:

- Apple Ethernet cabling system
- AppleTalk and DAL licensing programs
- The formation of ESD to address large organizations' needs
- System 7.0 with file sharing and IAC
- Additional developments in the Apple/DEC alliance such as Desktop ACMS
- The introduction of Mac SNA•ps
- The recently announced letter of intent with IBM

Next, he reviewed the roots of the business from Apple's perspective--  
PERSONAL computing.

In reality, there are two sets of expectations forming around personal computers, the end-users, and IS. End-users say "I want connection to my organization and my organization's data." IS says "I want a graphic delivery platform for existing host applications, and I want more, cheaper MIPS." Jim noted that these expectations in today's organizations were either overlapping or colliding, depending on your point of reference.

Thus, Apple believes that personal computing is splitting into two businesses: individual personal computing (where miniaturization and mobility are the keywords), and enterprise personal computing (where

standards and control are key).

Broadly speaking, Apple's N&C goals are:

- To address a wide range of users' needs (from very small and mobile, to plug and play LAN, to enterprise-wide).
- To provide the best user experience.
- To build architectures and core products.
- To enable and evangelize network application development.

Jim made a specific point of the "architectures" issue versus products. In reference to the whole, he said "We can't do this all ourselves; no one vendor can."

Next, Jim outlined our four major areas of N&C investment:

#### 1) AppleTalk Network System

Is a benchmark for Macintosh network experience.  
Is the de facto standard.

- Directions:
  - New and enhanced AppleTalk services
  - AT network management
  - Remote network access
- AT services in a "standards" context:
  - "Standards" context includes both OS and net protocol issues. Aggressive AppleTalk licensing.
  - Cross platform integration is a key goal of this program.
  - Macintosh, DOS, Windows, VAX, UNIX, Novell, DEC.
  - LANManager is a key goal.
- Both client/server and peer-to-peer architecture support:
  - A/UX will have a strong role in future client/server architectures.

#### 2) Macintosh in Enterprise-Wide Computing

Four platforms: IBM, Digital, TCP/IP, OSI

- Apple/DEC:
  - No backing away from this relationship is implied in the IBM announcement.
  - PATHWORKS as core product.
  - Highlight DEC's announcement of Desktop ACMS (an on-line transaction processing tool) with strong System 7.0 DAM support.
- Apple/IBM:

- Letter of intent.
- One key goal is to bust myths (only one part of wide ranging goals).  
that Macintosh is a toy.  
that Macintosh can't connect.  
that Macintosh isn't a standard.
- There will be products from Apple, IBM, and ISVs.
- Apple/TCP/IP:
  - Foundation is MacTCP.
  - X, net management are development directions.
  - Customer asked about ship date for MacTCP under System 7. Jim responded "It's on a schedule."
- Apple/OSI:
  - X.25 today.
  - X.400, X.500, X transports, X net management are "areas of significant investment."

### 3) Standards-Based Systems and Networking

- Many very tough issues from customers in this area:
  - Cross platform development
  - Network and systems management
  - Multi-vendor networking
- Both OS and net protocol issue: UNIX, TCP/IP and OSI
- Customers want standards without compromising user experience!
  - It must look like a Macintosh and act like a Macintosh.
  - It must walk, talk, and smell like a standard.
- The problem is that today's standards are "heavy on the plumbing" and "light on the services," whereas today's Macintosh and AT are so much heavier on the services.
- Investing very heavily in this area with A/UX gives the best of Macintosh plus the best of open systems.
- This will also be an area of joint development with IBM.

### 4) Client/Server Tools and Target Applications

- Jim positioned existing products like MacX, MacWorkStation, DAL, APPC on a standard graph showing terminal emulation, front-ending, database access, and full cooperative processing.
- When asked during Q&A "Will Apple step to the client server model fully with a diskless Macintosh and a server to support it?" Jim answered "You will see Apple step up much more strongly to the

client-server proposition in the future, as the relationship with  
IBM moves from letter of intent to contract."

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Tech Info Library Article Number:8560



# Tech Info Library

## Access Privilege

Revised: 4/4/97  
Security: Everyone

Access Privilege

=====

Article Created: 20 Septmeber 1991  
Article Last Reviewed/Update: 4 April 1997

Access Privilege

-----

2000 Route Des Lucioles  
Les Algorithmes - Artistote B  
BP 29  
06901 Sophia Antipolis Cedex  
France

(33) 92 96 01 00

(33) 92 94 48 56 Fax

Company Profile:  
Specializing in network routers.

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Tech Info Library Article Number:8563



# Tech Info Library

## BBN Communications

Revised: 4/4/97  
Security: Everyone

BBN Communications

=====

Article Created: 08/22/91  
Article Reviewed: 07/06/93  
Article Updated: 04/04/97

BBN Communications

-----

150 Cambridge Park Drive  
Cambridge, MA 02140

617-873-4000

617-354-1349 Fax

Company Profile:  
Specializing in network routers.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8564



# Tech Info Library

## Cellular Modems from Cellabs

Revised: 9/12/91  
Security: Everyone

Cellular Modems from Cellabs

=====  
  
Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I would like to use my Macintosh Portable with a cellular phone in the car to access the network in the office. Any ideas?

DISCUSSION -----

Cellabs makes two products that allow you to access your office network using a cellular phone. Both products tie into an existing cellular phone between the handset and base unit.

- One product is Cellmodem 2400. If you don't have a modem, Cellmodem 2400 can provide both 2400 baud modem and Datajack capabilities in one unit.
- Another product, Datajack, allows a cellular phone to work with any internal/external modem you already have.

You can find the address and phone number for Cellabs in a separate article in the Tech Info Library.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8565





# Tech Info Library

## Century Software

Revised: 7/7/93  
Security: Everyone

Century Software

=====

Article Created: 08/22/91  
Article Reviewed: 07/07/93  
Article Updated:

Century Software

-----

5284 South 320 West  
Suite C-134  
Salt Lake City, UT 84107

801-268-3088

801-268-2772 Fax

Company Profile:  
Software, specializing in communication software.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8566



# Tech Info Library

## MacX Server and X Client Source Code

Revised: 9/19/91  
Security: Everyone

MacX Server and X Client Source Code

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to take the source code of an X application and move it to a Macintosh so that the client piece as well as the server piece both will run on the Macintosh?

I know I can run MacX to another X client, but the X client does most of the processing. I want the Macintosh to do all of the processing.

DISCUSSION -----

No, currently there is no way you can take the X client source code compiled under Macintosh OS and run with the MacX server under Macintosh OS. No X11 library and Xt intrinsics are available for Macintosh OS, and there is no way to compile the X client under Macintosh OS. Only the MacX "server" environment is supported under Macintosh OS.

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Tech Info Library Article Number:8569



# Tech Info Library

## Macintosh Monitors: Compatibility with MS-DOS PCs (12/95)

Revised: 12/15/95  
Security: Everyone

Macintosh Monitors: Compatibility with MS-DOS PCs (12/95)

Article Created: 21 August 1991  
Article Reviewed/Updated: 15 December 1995

TOPIC -----

Can a Macintosh monitor be used on a MS-DOS personal computer? I have the pinouts for the Macintosh monitors. If I made a special cable to meet the pinout specifications, could it be done?

DISCUSSION -----

It is unlikely that any video card for MS-DOS computers would work with Apple displays other than the Apple Multiple Scan displays or those that support a VGA output.

The video cards for MS-DOS computers have different timing than the Apple video cards. With the exception of Multiple Scan displays, Apple monitors are locked into a specific scan rate, which matches the Apple video cards, and cannot be changed.

Many third-party monitors adapt to a variety of scan rates, just like Apple's Multiple Scan displays. We do not have a reference list of third-party monitors that are Macintosh and MS-DOS compatible. Contact the monitor manufacturer to determine a monitor's ability to work in both environments. Generally, monitors used with MS-DOS computers are known as EGA-, VGA-, CGA- (or similar "xGA-") compatible.

Article Change History:  
15 Dec 1995 - Updated to include Multiple Scan display information.

Support Information Services

Copyright 1991-95 Apple Computer, Inc.

Tech Info Library Article Number:8570



# Tech Info Library

## Macintosh Access to Btrieve on Netware

Revised: 9/19/91  
Security: Everyone

Macintosh Access to Btrieve on Netware

=====

Article Created: 15 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We have a Novell network (currently upgrading to 3.11) using SoftPC, MagicPC and Btrieve. We would like to use applications that are resident on the Novell server. What can we use to access Btrieve files created in DOS format from a Macintosh? Can we run applications? Will there be a performance penalty?

DISCUSSION -----

Accessing Btrieve files from a Macintosh workstation cannot be done directly from the Macintosh OS as we don't know of an implementation of Btrieve that is Macintosh OS compatible. There are other B-tree library solutions like c-tree Plus from FairCom, but they are not file-compatible with Btrieve. There are, however, several solutions for executing DOS programs on a Macintosh, and these could be those same Btrieve-based applications used on the PCs.

The classic solutions for executing DOS applications on a Macintosh are SoftPC (from Insignia Solutions, Inc.) or a DOS coprocessor card. The coprocessor cards, such as the Orange Micro Mac286 or Mac386, are PCs on a card that plug into a Macintosh and are accessed via a Macintosh program. These hardware solutions tend to be faster, but are also much more expensive.

A third and more recent solution is Novell's Netware Access Server. This product installs on the Netware server and allows up to 16 simultaneous virtual DOS sessions to be distributed over the network to workstations. The workstations run client software that provides the DOS session in a Macintosh window. Since you already have a Netware server installed, this might be the way to go.

Performance of each solution depends on the application. The Mac386 card is likely to give the best performance, but this isn't very cost effective if a number of users need them. The performance potential of the Novell solution is good, especially if the Btrieve files are located on the Netware server with the DOS session server. The only network traffic is for user input and screen updates. With a database application, this may even outperform the DOS coprocessor cards.

We recommend that you first try the PC applications with SoftPC, since you already have that. If the performance isn't to your liking, you may wish to try another solution. Either way, it sounds like you're already very close.

On AppleLink, you can find contact information for the various vendors by clicking the Tech Info Library's 'Library Index' button to view the folder structure. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:8572



# Tech Info Library

## SNA•ps: 510 Error on SDL\_C Connection

Revised: 10/14/92  
Security: Everyone

SNA•ps: 510 Error on SDL\_C Connection

Article Created: 20 August 1991

### Article Change History

-----  
10/15/92 - REVIEWED  
• Reviewed for technical accuracy.

### TOPIC -----

I'm trying to get an SDL\_C connection from the SNA•ps Gateway across an Apple Serial NuBus card. The 3270 Emulator instantly put up a 510 error on connect, and the Message log from SNA•ps Admin indicated a successful connection to Host 01.

The Mainframe people at the remote host site got nothing at all on their FEP port. Communications attached a breakout box to the line and said that the Clear to Send line was held low (although I don't believe that was coming from the Serial card).

Should I use port 2 (A or B) on the Hydra cable instead of Port 1A?  
Can you confirm whether this is the problem?

### DISCUSSION -----

As you might already know, the Apple Serial NB cards, as shipped, are configured with ports 1A and 1B as high-speed V.35/RS-422 types of ports, and ports 2A and 2B as low-speed RS-232-C ports. If you plan to use port 1A or 1B also as RS-232-C ports, you have to remove two small components, called R-paks, from the card. Refer to the Apple Serial NB Card Installation Guide for the location of these R-paks. If you use the V.35 modems, you can use port 1A. Otherwise you need to select ports 2A or 2B in the SDL\_C Line Screen. See if the R-paks were removed from your card, and/or configure the ports correctly, and try again.

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# Tech Info Library

## Ethernet NB Card and DECnet INIT (11/94)

Revised: 11/10/94  
Security: Everyone

Ethernet NB Card and DECnet INIT (11/94)

Article Created: 20 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

In testing the Apple Ethernet NB Card with PATHWORKS to load the DECnet INIT, the system crashes with a bus error. Is a fix available?

DISCUSSION -----

We were able to load DECnet for Macintosh 1.0, and use NetCopy to transfer files from a VAX to our Macintosh without any problems. We also used DECnet for Macintosh 1.1 EFT1 and that also worked fine.

We used a Macintosh IIx, running system software 6.0.5, 4MB RAM, and DECnet for Macintosh 1.0. Our EtherTalk software was installed from the EtherTalk Installer version 2.5.1 that came with the Apple Ethernet NB Card. The other EtherTalk components and versions are EtherTalk Prep 1.0, EtherTalk Phase 2 version 2.2.2, and A/ROSE 1.1.4.

To troubleshoot further, answer these questions:

- Did this happen on every system? Could you try other systems?
- What is the hardware configuration of the Macintosh?
- What are the system software and network software versions?
- Did you try on more than one Apple Ethernet NB card?
- Do you have any INIT or CDEV, which might conflict with Apple software or DECnet software? We suggest trying with a clean system.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8575





# Tech Info Library

## TokenTalk NB Card: SNA•ps and AS/400 Compatibility

Revised: 7/27/93  
Security: Everyone

TokenTalk NB Card: SNA•ps and AS/400 Compatibility

Article Created: 21 August 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

Is the TokenTalk NB card compatible with AS/400? Will SNA•ps work with it?

DISCUSSION -----

You can configure the AS/400 with an optional token ring communications subsystem. Each token ring adapter card supports up to 254 devices on the ring. A Macintosh with an Apple TokenTalk NB Card can connect to a token ring LAN and to the AS/400.

A Macintosh running TokenTalk can also communicate with an AS/400 using a product that supports distributed sessions over AppleTalk networks. An example of this is NetAxxess from Andrew Systems.

SNA•ps is fully compatible with the Apple TokenTalk NB Card. In fact, a Macintosh with an Apple TokenTalk NB card can run as a SNA•ps APPC Gateway. Legent Corporation (formerly by Spectrum Concepts) and Andrew Systems developed products to take advantage of this SNA•ps APPC Gateway. MacXCOM 6.2 from Spectrum Concepts is fully compatible with SNA•ps APPC API and provides Macintosh users with File Transfer, Remote AS/400 Job entry, and a Report Writer. TokenAxxess from Andrew Systems allows a Macintosh in a token ring to access the AS/400 as a 5250 workstation.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

### Article Change History

23 July 1993 - Company title changed from Spectrum Concepts to Legent Corp.  
9 February 1993 - Updated, spectrum Concepts acquired by Legent Corporation.

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# Tech Info Library

## SNA•ps: Third Party Token Ring Cards and Routers (11/94)

Revised: 11/10/94  
Security: Everyone

SNA•ps: Third Party Token Ring Cards and Routers (11/94)

Article Created: 20 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

- 1) I just want to verify that the SNA•ps client piece will run with third-party token ring cards.
- 2) When running SNA•ps Gateway (on an Apple token ring card), are there any issues related to accessing mainframes across routers such as cisco?

DISCUSSION -----

- 1) SNA•ps Gateway requires Apple Token Ring cards. It doesn't support third-party Token Ring cards. SNA•ps Gateway communicates with distributed Macintosh computers via ADSP, so the distributed Macintosh computers can have third-party Token Ring cards as long as they are TokenTalk compatible.
- 2) The Cisco router provides both AppleTalk routing and source routing bridging, so it should work with SNA•ps running either as a gateway or distributed SNA•ps 3270 on AppleTalk (LocalTalk, EtherTalk, and TokenTalk) networks.

To locate a vendor's address and phone number, use the vendor's name as a search string in the Tech Info Library.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94 Apple Computer, Inc.

Tech Info Library Article Number:8577



# Tech Info Library

## DAL Server for MVS/VTAM

Revised: 6/29/92  
Security: Everyone

DAL Server for MVS/VTAM

=====

Article Created: 20 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

I'm about to purchase DAL for VTAM. Is the following information correct?

- 1) TCP/IP is not currently supported.
- 2) SNA support is available via Netway 2000, Avatar, and MacIrma, but not via SNA•ps.
- 3) There are no extra pieces needed on the IBM (in addition to DAL). I have experience with a few other products that require LU6.2. DAL for VTAM does not require LU6.2. DAL for VTAM doesn't run under CICS.

DISCUSSION -----

- 1) This is correct. DAL 1.3 only supports MacTCP connection to IBM host systems running VM.
- 2) The following connections are available using the 3270 display station (LU2) communications protocols:
  - MacDFT Coax/Twinax, TokenTalk NB Card, or Serial NB Card
  - Netway 1000/2000
  - MacMainFrame
  - MacIrma

Additionally, with SNA•ps, you can define a connection using the APPC display station (LU6.2) communications protocol. Use this connection if your Macintosh connects to an IBM mainframe through a LocalTalk or Ethernet network which has access to a SNA•ps 1.0.1 gateway.

3) Correct. CICS 1.7 or later is optional, and is required only if you are using the CICS Passthru program to access the VTAM server.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8578



# Tech Info Library

## MacLANConnect: DOS Systems as AppleShare File Servers (11/94)

Revised: 2/9/95  
Security: Everyone

MacLANConnect: DOS Systems as AppleShare File Servers (11/94)

=====

Article Created: 20 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

I need to access the LAN Manager servers as AFP volumes from the Macintosh computers using Ethernet. I'm aware of Miramar's MacLANConnect, but I have a couple of questions:

- 1) Is the MacLAN Gateway what I really want, or are there better solutions?
- 2) Does the MacLAN Gateway do the routing between Token Ring and Ethernet, or do I need to use a router to change to Ethernet?

DISCUSSION -----

- 1) Currently MacLANConnect is still your only solution to turn a DOS computer into an AppleShare File Server. Microsoft announced that it will incorporate the 3Com technology to allow direct Macintosh access to LAN Manager, but that is not available.
- 2) MacLANConnect is a File and Print server software. It does not perform any routing. You still need a router for this function.

To locate a vendor's address and phone number, use the vendor's name as a search string in the Tech Info Library.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8579



# Tech Info Library

## MacX Over DECnet without PATHWORKS (1/95)

Revised: 1/30/95  
Security: Everyone

MacX Over DECnet without PATHWORKS (1/95)

Article Created: 20 August 1991  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

I want to run MacX on a Macintosh IIci (with Ethernet board) to a VAXstation using the DECnet protocol. Is there a software package to get the DECnet services? I know that I can use MacX with PATHWORKS to run DECnet, but I'm not sure if DEC wrote specialized software. In my case, buying PATHWORKS is not an option.

DISCUSSION -----

Since you aren't buying PATHWORKS for Macintosh, you need to get DECnet software called TSSnet from Thursby Software (Alisa also sells this Thursby TSSnet package). The VAXstation should be running DECnet, which comes with VAX/VMS. You miss the following two things by doing it this way:

- PATHWORKS includes DECwindows fonts that you will need when you run DECwindows clients. If you buy MacX from Apple, you won't get these fonts.
- PATHWORKS provides a DECnet object called MSAX\$CLIENT, which allows automatic execution of DECwindows clients from the remote Macintosh running MacX server. Without this DECnet object (which does not come with standard DECnet), you must:
  - Log on to the VAX using a terminal emulator.
  - Define a DECwindows display using the DCL SET DISPLAY command.
  - Use RUN/DETACH or SPAWN to execute the DECwindows client.

Article Change History:  
30 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8580





# Tech Info Library

## DAL: Out-of-memory Error Due to Application's List of Tables

Revised: 6/29/92  
Security: Everyone

DAL: Out-of-memory Error Due to Application's List of Tables

=====

Article Created: 21 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I'm evaluating DAL on an IBM 3090. I would like to hard code the name of a specific table within a query. Is there a way to avoid maintaining a list of tables in memory that causes an out-of-memory error due to the large list of tables available?

I've been able to use the Excel add-in to do the following tasks:

- Connect to the mainframe
- Access the DAL server
- Open sqlds
- Open the iu database

At this point, the Excel data access add-in appears to be creating a local copy of information about all the tables within the iu database on the mainframe. Why is this necessary? Since the combination of the system, the Finder, and Excel use up about 3.4MB of the 4MB available on our Macintosh IIci 4/80, I get an out-of-memory message box with an OK button.

ClearAccess actually does the same sort of thing. When creating a new query, it fills one component of the query-building window with a scroll box containing all the tables that I have in my view of the iu database. Since I'm running only a desk accessory, there is enough memory for this to happen.

DISCUSSION -----

DAL engineering confirmed that this is an application implementation problem, not a DAL problem. DAL doesn't require a list of tables

kept locally on the workstation.

We recommend that you discuss this issue with the application vendors.

You can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8581



# Tech Info Library

## Ethernet and Routers versus LocalTalk Bridges

Revised: 9/20/91  
Security: Everyone

Ethernet and Routers versus LocalTalk Bridges

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am looking for some network performance information. Specifically, I need to know what the performance advantages are for putting in Ethernet and routers versus LocalTalk bridges to extend a network beyond the standard LocalTalk limitations. My network is in a publishing environment that deals with many large color graphics and images.

The nodes are all Macintosh II series, mostly high-end systems. They are scattered over a number of different floors in a building. I have 48 nodes now, and expect that number to grow significantly.

DISCUSSION -----

It's difficult to make specific statements about the viability of LocalTalk over Ethernet or Ethernet over LocalTalk without knowing more about the customer's environment. Two important factors to consider are the number of potential users on the network, and the actual type of work they do over the network (that is, file sharing, mail, database, and so on). It's not too difficult to come up with a few graphs to show the difference between LocalTalk and Ethernet transfer rates, but it really doesn't tell the whole story or justify the expense of moving to Ethernet.

LocalTalk uses CSMA/CA and Ethernet uses CSMA/CD. A certain amount of overhead is associated with CSMA/CA which is not needed in a CSMA/CD (Ethernet) environment. The bandwidth of a LocalTalk network can be dominated by a single node doing a single file transfer. Ethernet has plenty of bandwidth available, which makes domination by a single node almost impossible. On the other hand, LocalTalk is basically free and Ethernet requires a significant investment in hardware.

Ethernet is definitely the best choice for anyone contemplating large numbers of users accessing a shared resource and/or anyone who may have significant data transfer requirements. It sounds like you fit this description. Remember that networks usually grow larger and more complex. With more demanding network-based applications predicted for the future, LocalTalk may be a viable topology only for small workgroups that only transfer an occasional file and/or read mail.

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Tech Info Library Article Number:8583



# Tech Info Library

## AppleTalk Over X.25 (8/93)

Revised: 8/9/93  
Security: Everyone

AppleTalk Over X.25 (8/93)

=====  
Article Created: 20 August 1991  
Article Reviewed/Updated: 6 August 1993

TOPIC -----

Is it possible to connect two AppleTalk networks using X.25 and two half-routers (like a Shiva TeleBridge)? I understand that this would be much slower than pure LocalTalk, but it might be a nice alternative to a 9600-baud NetModem.

DISCUSSION -----

With the Apple Internet Router 3.0 Wide Area Extension options, you can connect geographically remote workgroups using wide-area telecommunications links. The AppleTalk/X.25 Wide Area Extension (available separately) enables two or more AppleTalk networks to communicate through an X.25 communications link. This wide area extension includes:

- Offers a wide variety of X.25 parameter settings, enabling you to implement the most effective X.25 service.
- Provides a set of standard profiles for the major public packet-switched networks worldwide.
- Allows you to create your own customized profiles for any public or private data network.

Apple's X.25 product, MacX25, can't route AppleTalk over a packet-switched network. You can also explore third-party solutions. Keep in mind that the PDN (Packet Data Network) provider's charges are based on, among other things, the size and number of packets.

One AppleTalk X.25 WAN routing scheme is from Access Privilege, a company in France. Their product named "The Link" is based on the CommToolBox and works with the Apple Internet Router. It provides routing over a variety of links including X.25, and eventually ISDN.

One of the more commonly used AppleTalk tunneling solutions comes from DEC. GatorBox and cisco offer good solutions.

In general, Apple does not control how third parties choose to implement routers and other such products based around AppleTalk. With every solution, we recommend you check with the supplier to find whether their product serves your needs. It's a good idea to request testimonies and account referrals.

The rest of this article lists third-party router manufacturers who can route AppleTalk over X.25.

Ungermann-Bass, Inc.

-----  
A remote router and software for an AppleTalk hub work with the company's Access/One multiprotocol hub system. The ASM 8320 plugs into the same multiprotocol hub as the company's MaxTalk--a 16-port, twisted-pair AppleTalk hub--to connect physically separated networks over several kinds of media. The router connects sites over standard serial lines, 56-Kbps leased lines, high-speed T-1 lines, or X.25 packet-switched networks at data transfer rates of up to 2.05MBps.

The two-port version with router software can route packets locally between AppleTalk networks using any combination of LocalTalk, Ethernet or Token Ring. A separate DOS-based management program lets users configure the router to filter and restrict traffic according to protocol type, port number, or source or destination address. Managers also can identify high-priority packets from a particular address or of a certain type that the router will forward immediately.

New MaxTalk software adds AppleTalk Phase 2 support as well as Phase 1-to-Phase 2 routing to the company's combination AppleTalk hub and TCP/IP gateway. Improved security lets network administrators control access to printers and file servers.

cisco Systems, Inc.

-----  
Like other cisco routers, the AGS+ routes a number of protocols, including TCP/IP, DECnet, OSI, XNS, Apollo Domain, Novell IPX, Banyan VINES, 3Com 3+Open, Ungermann-Bass Net/One, X.25, DDN X.25, and AppleTalk. Optional concurrent bridging and source-route bridging are available to handle non-routable protocols such as DEC's LAT and IBM's SNA and NetBIOS. It also supports multiple routing protocols (RIP, IGRP, BGP, EGP, RTMP) and the Simple Network Management Protocol (SNMP) for remote network monitoring.

Proteon Corp

-----  
Proteon Corp offers the ProNet CNX series of RISC-based communications routers. The ProNet CNX series uses a special multiport shared-memory architecture and AMD's (Advanced Micro Devices) 29000 RISC processor. The CNX 500, the first in the series, runs at 25,000 packets per second. The

router is intended for IBM SNA/multiple-protocol environments, particularly for work groups needing to move from 16M-bps token ring backbones to 100M-bps Fiber Distributed Data Interface (FDDI) backbones. The device routes IBM-environment messages into IPX (Novell Netware), OSI, DECnet, AppleTalk, XNS, and TCP/IP protocol stacks; it supports T1/E1 lines, X.25, and frame-relay fast-packet switching for WANs.

#### NCR Comten

-----  
Mainframe vendor NCR Comten sells a line of intelligent communications servers, the Open Network System (ONS), that function as a freestanding OSI-based backbone for large heterogeneous environments. ONS integrates mixed systems to reduce the amount of interconnecting equipment. It allows growth and control of enterprise-wide computing by offering a configurable and scalable system that is built on industry standards: Intel Corp. processors, MicroChannel bus, SCSI connection, and the UNIX System V operating system.

ONS offers concurrent bridging and routing capabilities. It supports AppleTalk, NetBIOS, Netware IPX, OSI, SNA, TCP/IP, and 3Com 3+ XNS protocols. It supports the RS-232 and RS-422 serial, T1, X.25, and SDLC WAN interfaces. It also supports Stp and token ring source-routing.

#### BBN Communications

-----  
BBN Communications markets the T/200 IPR as part of its internetwork product portfolio. The T/200 is a multi-protocol, multi-media router that supports such protocols as TCP/IP, DECnet, XNS, IPX, AppleTalk, and X.25 in addition to Spanning Tree bridging. The T/20 and T/200 IPRs are a family of products which can be used in the same network or internetwork.

#### AT&T Computer Systems

-----  
AT&T Computer Systems enhanced its Datakit II Virtual Circuit Switch line by adding token ring support, support for AppleTalk networks, and by including access to multiple hosts. Release 2.0 of the product includes the capacity to relay switch, two-way communication between Datakit terminals and X.25 hosts on public and private packet networks. Disk storage was increased to include support of a 40MB SCSI hard disk and tape subsystem. Current users of the product can upgrade. An optional offering is the Maintenance and Redundancy Control Module, an interface which lets you switch the unit from a primary network to a backup.

To locate a vendor's address and phone number, use the vendor name as a search string.

#### Article Change History:

6 August 1993 - Updated article to include the Apple Internet Router 3.0

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Tech Info Library Article Number:8584



# Tech Info Library

## Macintosh: Wyse 60 Terminal Emulation

Revised: 9/20/91  
Security: Everyone

Macintosh: Wyse 60 Terminal Emulation

=====  
Article Created: 21 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am currently using Motorola Models 3640 and 3840 mid-range computers. The PCs connected to them use a Wyse 60 terminal emulation package from Motorola. Motorola offers no support for the Macintosh. They also provide file server/printer server access for PCs, but not for Macintosh computers. I understand that Motorola bought Pacer software technologies to provide these services on the Macintosh.

I need to locate a vendor that offers the Wyse 60 tool to use with PacerTerm for Macintosh terminal emulation.

DISCUSSION -----

We are not aware of an available Wyse 60 tool that PacerTerm could support. Here are two alternatives:

- Wyse 60 Support within the PacerLink Software

PacerLink software (which is available now to OIR as a preferred customer) doesn't support Wyse 60 directly. Pacer engineers told us that many customers use the ADDS 60 option in place of Wyse 60, but it doesn't work in all instances. It's definitely worth trying.

- A Different Terminal Emulation Package that Supports Wyse 60

We realize that this may not be an alternative in your environment, but you may want to consider a different terminal emulation package which does support Wyse 60. Investigate Term from Century Software or MacEmulate from TLC.



On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:8585



# Tech Info Library

## System 7: Sending PostScript Files to a LaserWriter

Revised: 9/25/92  
Security: Everyone

System 7: Sending PostScript Files to a LaserWriter

=====

Article Created: 12 August 1991

### Article Change History

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08/25/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Do you know of a PostScript file download utility that works with System 7 and the System 7 LaserWriter drivers? SendPS version 2.1, doesn't work with the new drivers. This is more important than ever now that we can save a PostScript file from the Print dialog box.

### DISCUSSION -----

The new LaserWriter Utility program can download PostScript files to a LaserWriter via an option in the Utilities menu.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8587



# Tech Info Library

## TransPac Software, Inc.

Revised: 4/4/97  
Security: Everyone

TransPac Software, Inc.

=====

Article Created: 20 September 1991  
Article Reviewed/Updated: 4 April 1997

TransPac Software, Inc.

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Suite 245  
San Jose, CA 95129

408-261-7550

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Company Profile:  
Specializing in Chinese and Japanese word processing software.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8589



# Tech Info Library

## Token Ring: 16MBps Over Synoptics UTP

Revised: 2/11/93  
Security: Everyone

Token Ring: 16MBps Over Synoptics UTP

Article Created: 12 August 1991

### Article Change History

02/09/93 - UPDATED

- h-athree Systems, Corp. now Asante Technologies, Inc.

### TOPIC -----

Is there a solution for connecting our Macintosh II series to a 16MBps Token Ring to an IBM system? We have a Synoptics Model 3000 concentrator (Lattisnet) on unshielded twisted pair, and we would like to connect our Macintosh computers to this Token Ring to do 3270 terminal emulation and DFT.

### DISCUSSION -----

Synoptics confirmed that its Model 300 Concentrator supports 16MBps Token Ring. You will need the UTP (Unshielded Twisted Pair) Token Ring Host Module model 3505.

On the Macintosh, you need one of the following Token Ring adapters:

- Tri-Data LanWay 16/4 Family: This is a 16/4 Token Ring (IEEE 802.5) LAN option that consists of two adapters--one for the Macintosh SE/30, and one for the Macintosh II family. Equipped with the Texas Instruments TMS380C16 Token Ring Processor, the LanWay Token Ring card can operate at both 16MBps and 4MBps in a single adapter. Software switches the card between the two speeds. For high-performance operations, Tri-Data Systems provides 128K of onboard RAM for multiple transmit and receive operations. The board is TokenTalk compatible, so all AppleTalk LAN operations are compatible with the cards.
- Asante Technologies (formerly h-three Systems, Corp.) MacRing NB 16/4: This

is an expansion card (with firmware and software) that connects Macintosh II computers to 16MBps or 4MBps Token Ring networks. The card's speed is hardware- or software-selectable. MacRing NB 16/4 supports third-party software for 3270 connectivity to IBM mainframes and 5250 connectivity to IBM midrange systems over Token Ring networks. It supports AppleTalk Phase 2, IEEE 802.2 LLC (Types 1 and 2) and IEEE 802.5 Token Ring protocols. It supports the Apple LLC IPC interface and IBM source routing. The package consists of the MacRing NB 16/4 expansion card, software, and downloadable firmware on a 3.5-inch disk, a user's guide and a one-year warranty.

You will also need a 4/15MB Medial Filter, such as those offered by Black Box. The media filter connects the Macintosh computers to the MAUs or the Synoptics Token Ring Host Module. It converts the Macintosh's DB-9 connector to a twisted-pair RJ-45 connection.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:8595



# Tech Info Library

## System 7: Installing LaserWriter Drivers to Work with System 6

Revised: 5/11/92  
Security: Everyone

System 7: Installing LaserWriter Drivers to Work with System 6

=====

Article Created: 26 August 1991

### Article Change History

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08/18/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I install the new LaserWriter 7.0 drivers to work properly with System 6?

### DISCUSSION -----

To properly install the new LaserWriter 7.0 drivers under System 6 or later, be sure to use the Installer found on the Printing Tools disk or in the Printing Tools folder (if using a Network Installer found on a local AppleShare File Server). Using the Installer ensures that Print Monitor (which allows printing to a LaserWriter in the background) will work under system software version 6.0.5 or later with MultiFinder.

Note that if you're using the Installer from a floppy disk, you don't need to restart your Macintosh. The Installer can install "live" over system software currently in use.

Follow these steps:

- 1) Launch the Installer.
- 2) Click the OK button when the opening display screen appears.
- 3) You are now at the Easy Install screen. You can click Install to update all of the printer drivers you have currently installed.

Otherwise, click on the Customize button to choose individual printer drivers.

- 4) Once you make your choices and click the Install button, the Installer installs the software and prompts you to quit. A restart is not necessary.
- 5) Please note that the default (suggested) memory size for Print Monitor is 80K.

Note: We recommend system software version 6.0.5 or later when using version 7.0 drivers. Version 6.0.8 comes with version 7.0 drivers. Anything below version 6.0.5 may not be fully compatible.

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Tech Info Library Article Number:8597



# Tech Info Library

## Macintosh: Connecting to SAG's Natural Connection

Revised: 9/20/91  
Security: Everyone

Macintosh: Connecting to SAG's Natural Connection

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want connect a Macintosh directly to an IBM 3174/3274/3276 TCU using Type A coax cabling.

The communication protocol required is IBM 3270 D.S. with support for CUT and DFT modes. There must be file transfer facilities which interfaces with FT/TSO on the IBM host. The software must also be compatible with SAG's Natural/Connection software.

I'm interested in trying MacDFT with Coax/Twinax card, but I need to know if MacDFT is compatible with SAG's Natural/Connection software.

DISCUSSION -----

Software AG does distribute a "Natural Connection for the Macintosh" (and for OS/2, and for MS-DOS). It requires a minimum of a Macintosh Plus, with 1MB of RAM and 2 floppies. Their Macintosh application consumes from 348K of RAM (B/W) to 640K (color) or more depending upon the font selected. For color or MultiFinder support you must use Macintosh System Software 6.0.4 or later. The host Natural software must be version 1.2 or 2.1.

The hardware supported include the Apple Coax/Twinax card, DCA's MacIrma, and Avatar's MacMainFrame. AppleTalk support is provided via the Netway 1000 or 2000. The host and client software also supports dialup connectivity.

For More information, search under: "Software AG"

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Tech Info Library Article Number:8599





# Tech Info Library

## Personal LaserWriter LS: Use Prep with System 6.0.7 (8/93)

Revised: 8/13/93  
Security: Everyone

Personal LaserWriter LS: Use Prep with System 6.0.7 (8/93)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 12 August 1993

TOPIC -----

Do the production disks for Personal LaserWriter LS include a Personal LaserWriter LS icon and a LaserWriter Prep icon? I downloaded the driver from AppleLink and the Prep file wasn't included. I couldn't get it to work on System 6.0.7 without Prep.

DISCUSSION -----

The Personal LaserWriter LS Prep file is in fact a "serial" driver needed for systems running System Software 6.0.7. System 7 contains this new serial driver, making the prep unnecessary.

There are two versions of the Personal LaserWriter LS "printer" driver: the one shipping originally with the printer, version 1.0, and the latest version that ships with System 7, version 7.0. The System 7 driver is preferred as it is faster and contains solutions to earlier problems; this version is compatible with systems running System Software 6.0.7 when used with the (version 1.0) Personal LaserWriter LS Prep file.

Article Change History:  
12 Aug 1993 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8600



# Tech Info Library

## A/UX: Transferring Binary Data to Macintosh OS (8/94)

Revised: 8/24/94  
Security: Everyone

A/UX: Transferring Binary Data to Macintosh OS (8/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 23 August 1994

TOPIC -----

I want to transfer UNIX files that contain binary data (but are not executable) to the Macintosh environment. Normally, the linefeeds in these files are converted to carriage returns, but I don't want to let that happen. Any hints?

DISCUSSION -----

By default, the A/UX file manager converts a line feed into a carriage return when copying a "TEXT" file from an A/UX partition to a Macintosh HFS partition. If the source file was binary executable or a non-executable data file, A/UX file manager copies it intact (without conversion).

In this case, make sure the source file that's going to be copied from an A/UX partition is a Non-TextEdit document (although you want to make sure it IS binary data). The file type can be shown by "Get Info" or the icon on the desktop.

If you are sure it's binary data but you are shown a "TextEdit" document, you have to use the A/UX "setfile" (set attributes for Macintosh files) utility to change its type and creator.

Here is an example: the /usr/lib/font/ftS is a binary data file, but it shows a "TextEdit" document via "Get Info" or icon. Before copying it (without any conversion) to a Macintosh OS HFS partition, do the following to change its file type to binary and creator to A/UX:

```
# setfile -t"BIN " -c"A/UX" ftS
```

NOTE: The file type and creator must be exactly 4 characters long including SPACES.

Article Change History:

23 Aug 1994 - Reviewed and updated.

23 Aug 1991 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8601



# Tech Info Library

## A/UX: FASYNC And Other Asynchronous Flags Supported (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: FASYNC And Other Asynchronous Flags Supported (8/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

Is the FASYNC signal supported in A/UX?

DISCUSSION -----

A/UX supports asynchronous signals (such as FASYNC) on sockets. An asynchronous socket implies that requests will not block.

To receive signals on sockets however, you must do a SIOCSPGRP ioctl call, or a F\_SETOWN fcntl call on the socket that will be receiving signals.

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8602



# Tech Info Library

## Apple Monochrome Monitors: Dot Pitch Not Applicable

Revised: 9/20/91  
Security: Everyone

Apple Monochrome Monitors: Dot Pitch Not Applicable

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the dot pitch specifications for Apple's monochrome monitors?

DISCUSSION -----

The monochrome monitors do not use dot pitch.

Dot pitch is a specification for the placement of the three (red, green and blue) dots that make up one color pixel. Since the monochrome image is made of only one dot, there is no need for a pitch specification since that one dot will be the entire pixel.

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Tech Info Library Article Number:8603



# Tech Info Library

## LaserWriter: Clarifying Serial Switch Documentation

Revised: 9/20/91  
Security: Everyone

LaserWriter: Clarifying Serial Switch Documentation

=====

Article Created: 13 June 1991  
Article Last Reviewed: 23 August 1991  
Article Last Updated:

TOPIC -----

The LaserWriter IINTX manual says that revision 3.0 ROMs can switch between ports using software. The manual says I can disable the RS-422 port to connect an IBM to the RS-232-C port, but it's not clear whether the RS-422 and the RS-232-C ports can be switched while using the IBM.

I have been disabling the RS-232-C port by sending the following program to the printer from the IBM:

```
serverdist begin 0 exitserver
statusdict begin
25 0 0 setsccbatch
25 0 0 setsccinteractive
```

This sets the serial port to a null baud rate. The manual states that the RS-422 port can then be reenabled by typing the same program but using 9 instead of 25 and substituting the desired baud rate for the first zero and the Options Number from the chart labeled C-5 for the second number. This is found on page 141 of the LaserWriter IINTX manual.

However, in apparent contradiction to this, the LaserWriter Reference Manual from Addison Wesley states on page 143 that the setsccbatch and the setsccinteractive commands use the port assignment for the first digit, the baud rate for the second digit, and the parity for the third digit (not the options number!)

Is this third digit supposed to be the options number from the LaserWriter IINTX owners manual, or is it the Parity from the listing of parity digits available on page 144 of the LaserWriter Reference Manual? What IS the options number or the parity selection?

I also am having trouble with the baud rate selection for the AppleTalk port. AppleTalk is supposed to be 235K baud, but there is no selection above 56K baud.

#### DISCUSSION -----

The setscbatch and setscinteractive operators set a port's baud rate, but for asynchronous communications only. More specifically, they set the rate used when the hardwareiomode is set to 0. The only time AppleTalk communications are affected by these operators is if the baud rate of the 9 (or 8) pin port is set to 0.

Setting a port's baud rate to 0 has the effect of disabling it entirely, whether asynchronous serial or AppleTalk is in use. To reactivate the port, either set the baud rate to whatever is desired, or for AppleTalk, set the hardwareiomode to 2 and don't bother with the baud rate.

Page 141 of the LaserWriter IINT/IINTX Owner's Guide contains a misleading paragraph that states the RS-422 port is reactivated by setting its baud rate. You could, in fact, enable it this way for asynchronous communications, but AppleTalk can only be activated by setting hardwareiomode to 2.

As for the apparent contradiction between the Addison Wesley manual and the Owner's Guide, they're both right - they just tell a different part of the same story. The options number used with setscbatch and setscinteractive is an 8-bit value made up of 4 separate bit-fields; 2 bits for parity, 3 bits for flow control, 2 bits for data bits, and 1 bit for stop bits, in that order. They are arranged with parity being the least significant 2 bits, and stop bits being the most significant bit of the byte. Since each parameter can be computed and set independently, any value from the table on page 153 can be used individually. Though it's more common to add each parameter's value and set them all at once, it is possible to use something like "3" for the options value to set mark parity. This will leave the other parameters as they are. Likewise, data bits could be set to 8 by using "64" as the options value. Parity, flow control and stop bits would remain unchanged.

Currently the easiest way to set LaserWriter parameters is to use a PostScript downloading utility to send PostScript programs written in a word processor. This downloading function is available in recent versions (7.0 or later) of the LaserWriter Font Utility. A more direct method is available with Microsoft Word by using its PostScript style. Text that is of the style PostScript will be passed to the LaserWriter as a PostScript program instead of as text to be printed.

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Tech Info Library Article Number:8605



# Tech Info Library

## DAL: Support for PICK Database

Revised: 6/29/92  
Security: Everyone

DAL: Support for PICK Database

=====

Article Created: 13 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

I'm interested in using DAL with a PICK database, or rather a Unidata PICK clone that runs under UNIX and supports SQL (which the real PICK does not).

Have you heard of any such database? If not, do you have any feel for how long it takes to write a new DAL server based on the DAL server package?

DISCUSSION -----

There is no DAL server/adaptor for PICK databases.

There is no facility to enable non-licensed creation of servers or DBMS adapters to work with DAL.

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Tech Info Library Article Number:8606





# Tech Info Library

## Macintosh: Terminal Emulators for UNIX Systems

Revised: 11/6/92  
Security: Everyone

Macintosh: Terminal Emulators for UNIX Systems

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Article Created: 13 August 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I need a UNIX terminal emulator (to run on a Macintosh) that will do the following:

- Toggle between 80 character mode to 132 character display
- reverse video
- Downline load ASCII files

### DISCUSSION -----

UNIX systems support almost all types of terminal available. One of the most popular terminal types supported is the Digital VT100 series. Lots of Macintosh programs support this terminal type, especially the later ones which use the Communications ToolBox.

MacTerminal 3.0 allows you to use the VT102, or the VT320 Tools. In the Screen setting, you can toggle between 80/132-columns, and select inverse video. In the File Transfer setting, you can select files transfer using the Text Tool, or the XModem Tool.

Pacer's PacerTerm and Synergy's VersaTerm-Pro also use the Communications ToolBox and support other Tools besides the Apple Tools.

For more information, search on the above product names.

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# Tech Info Library

## PATHWORKS 1.0: No Official Support for HP LaserJet

Revised: 9/24/91  
Security: Everyone

PATHWORKS 1.0: No Official Support for HP LaserJet

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does PATHWORKS 1.0 support HP LaserJet? Does the print driver from the  
PATHWORKS (either 6.0 or 7.0) support LaserJet?

DISCUSSION -----

Officially, PATHWORKS 1.0 Print Services only support following PostScript  
printers:

| Printer<br>-----   | Connected to the VAX computer through<br>-----              |
|--------------------|-------------------------------------------------------------|
| Digital LPS20      | Ethernet                                                    |
| Digital LPS40      | Ethernet                                                    |
| Digital LPS40 Plus | Ethernet                                                    |
| Digital LN03R      | Serial Connection                                           |
| Apple printers:    | LocalTalk/Ethernet bridge or an RS-232 serial<br>connection |
| LaserWriter Plus   |                                                             |
| LaserWriter IINT   |                                                             |
| LaserWriter IINTX  |                                                             |

The PATHWORKS print drivers are for the above PostScript printers only.

If you need more specific information or you have enhancement requests,  
contact Digital Technical Support directly.

For more information, search under: "Digital"

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Tech Info Library Article Number:8608



# Tech Info Library

## PATHWORKS for Macintosh: Components Updates

Revised: 6/29/92  
Security: Everyone

PATHWORKS for Macintosh: Components Updates

=====

Article Created: 13 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

If I buy "PATHWORKS for Macintosh" licenses from Digital, do they include software updates for Apple software in the bundle (MacX 1.1.7, MacTCP 1.1, MacTerminal, DAL, and so on)?

DISCUSSION -----

The "PATHWORKS for Macintosh" licenses package from Digital does not include automatic software updates.

If you would like to have software updates, you need to order Maintenance Service from Digital, part number QTYPCAA-E5. There is a yearly charge. Contact your local Digital representative or Digital DECdirect Pre-purchase Technical Assistance.

For more information, search under: "Digital"

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Tech Info Library Article Number:8609



# Tech Info Library

## VAXshare: Printer Services and LaserWriter Zones

Revised: 9/24/91  
Security: Everyone

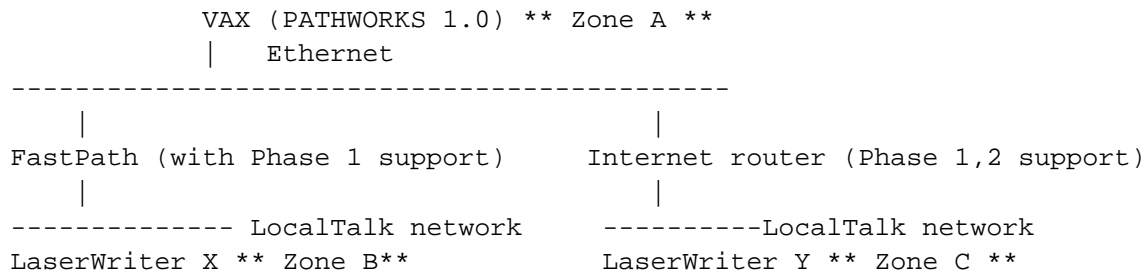
VAXshare: Printer Services and LaserWriter Zones

=====  
Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Apple Technical Support says that a "VAX can be in a different zone than the LaserWriter printers, but there can only be one zone for the non-extended LocalTalk network where the LaserWriter printers are".

Referring to the following diagram, can I configure all printers serially connected to the VAX to be in Zone A and LaserWriter X to be in Zone B, and LaserWriter Y in Zone C (assuming I also upgrade FastPath to support AppleTalk Phase 2)?



DISCUSSION -----

It is not clear from your description that the printer connected to the VAX serially is a Digital PostScript printer or an Apple LaserWriter. Nevertheless, the answer is Yes, you can configure the printers in those zones.

Here is more information:

1. If you connect the LaserWriter directly to the VAX computer as a serial device, follow the following steps from the Digital System Administrator's

Guide:

1.1. Connect a straight through RS-232 cable from the 25 pin connector on the back of the LaserWriter to the serial output connector on the VAX computer.

1.2. Set the printer switches as follows:

| Printer           | Settings                       |
|-------------------|--------------------------------|
| -----             | -----                          |
| LaserWriter       | 4 position mode switch to 9600 |
| LaserWriter Plus  | 4 position mode switch to 9600 |
| LaserWriter IINT  |                                |
|                   | 1 Up                           |
|                   | 2 Down                         |
| LaserWriter IINTX |                                |
|                   | 1 Up or Down                   |
|                   | 2 Down                         |
|                   | 3 Up                           |
|                   | 4 Up                           |
|                   | 5 Down                         |
|                   | 6 Down                         |

1.3. Set the VMS terminal line to which the printer is connected by entering the following command:

```
$ SET TERMINAL device-name:
_$ /NOAUTOBAUD/NOBRDCSTMBX/NOBROADCAST-
_$ /DEVICE_TYPE=UNKNOWN-
_$ /NODISCONNECT/NOECHO/EIGHT_BIT/NOESCAPE-
_$ /FORM/FULLDUP-
_$ /HARDCOPY/HOSTSYNC/LOWERCASE/PASTHRU/PERMANENT-
_$ /SPEED=9600/TAB/TTSYNC/TYPE_AHEAD/NOWRAP
```

For subsequent reboot of the VAX, add the above line to the SYS\$STARTUP:SYSTARTUP\_V5.COM file. Be sure you enter this line before the SYS\$STARTUP:MSA\$STARTUP.COM line.

1.4. Add the VAXshare LaserWriter printer service. The following example creates a LaserWriter printer service called "Serial LaserWriter" with a queue name, "LW\_SERIAL".

```
$ ADMIN/MSA
MSA$MANAGER> ADD PRINTER "Serial LaserWriter"-
_MSA$MANAGER> /QUEUE=LW_SERIAL/DEST=device_name:
MSA$MANAGER> EXIT
```

1.5. To create the queue and start the service, enter the following command:

```
$ ADMIN/MSA START PRINTER "Serial LaserWriter"
```

2. If the printer connected to the VAX is a Digital PostScript printer, you need to specify the Printer Service name and VMS queue name to add a VAXshare printer service for it. You need to know the name of an existing VMS printer queue for which you want to set up printer services. If you do not have an existing queue, create one by using the standard VMS commands. The printer service will appear in the zone the VAX is in, which is Zone A in your example.

```
$ ADMIN/MSA
_MSA$MANAGER> ADD PRINTER "Digital printer"-
_MSA$MANAGER> /QUE=LPS_20_POST-
_MSA$MANAGER> /PARAM=(DATA_TYPE=PostScript)-
MSA$MANAGER> EXIT
```

3. Assuming that your FastPath is upgraded to support AppleTalk Phase 2, both the LaserWriter printers in the LocalTalk network can be added to VAXshare print services. The /DESTINATION will be used to specify the zones where the printers reside. For example, the following defines the LaserWriter X and Y in Zone B and Zone C as LaserWriter X and Y Spoolers.

```
$ ADMIN/MSA
MSA$MANAGER> ADD PRINTER "LaserWriter X Spooler"/QUEUE=LWX_PRINT-
_MSA$MANAGER> /DESTINATION="LaserWriter X@Zone B"-
_MSA$MANAGER> /DEFAULTS=(FLAG, TRAILER, FORM=LTR_12)-
_MSA$MANAGER> /FONTS=MSAP$FONTLIST_APPLE35.TXT
_MSA$MANAGER> ADD PRINTER "LaserWriter Y Spooler"/QUEUE=LWY_PRINT-
_MSA$MANAGER> /DESTINATION="LaserWriter Y@Zone C"-
_MSA$MANAGER> /DEFAULTS=(FLAG, TRAILER, FORM=LTR_12)-
_MSA$MANAGER> /FONTS=MSAP$FONTLIST_APPLE35.TXT
MSA$MANAGER> EXIT
```

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Tech Info Library Article Number:8610





# Tech Info Library

## StyleWriter and ImageWriter: Printer Modes

Revised: 9/24/91  
Security: Everyone

StyleWriter and ImageWriter: Printer Modes

=====

Article Created: 13 August 1991  
Article Last Reviewed: 23 August 1991  
Article Last Updated:

TOPIC -----

I'm using TrueType, a StyleWriter and an ImageWriter. I upgraded to System Software 6.0.7, then to System 7.0. Both printers only work in BEST mode (not in the Draft or Fast mode).

Could this be due to the outline font technology (instead of bitmap)?

DISCUSSION -----

The use of the effect of the "outlined" font has nothing to do with the disabling some of the print quality button selection.

Your problem is probably caused by how the application deals with the printer driver. Often when the application run into an unfamiliar printer driver, it will use the low level printer driver call, SetRsl to set printer resolution to the maximum. If this is done when using the StyleWriter, the "faster mode" push button will be disabled.

Applications like MacWrite, that talks only to the high level print driver, do not have this problem.

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Tech Info Library Article Number:8611



# Tech Info Library

## DAL: How It Accesses DB-2 Tables via VTAM or CICS

Revised: 6/29/92  
Security: Everyone

DAL: How It Accesses DB-2 Tables via VTAM or CICS

=====

Article Created: 13 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

- 1) How does DAL access DB2 tables in the VTAM version and when using the CICS passthru program?
- 2) How does DAL implement "stored procedures" on the host?
- 3) Please explain how the DAL-APPC implementation works?

DISCUSSION -----

- 1) DAL uses the standard "TSO to = specs batch DB2 interface" to communicate with DB2. Security is supported via standard RACROUTE calls. The VTAM server is a multi-user server that runs as a batch job (or a started task) and that has a VTAM API front-end that controls access. The user needs a valid ID and password, but does not log on to TSO. Instead the user issues a "logon applid(\_\_\_\_)" command to connect to the VTAM Server. With the CICS passthru, the user logs on to CICS and requests the CICS transaction which uses APPC (LU62) to connect to the VTAM front-end of the server. CICS can be at version 1.7 but the PUT for LU6.2 support must have been applied to allow DAL VTAM Server access (version 2.1, or better, of CICS includes this LU62 support).
- 2) Stored procedures are kept in the DAL.AUTOEXEC file that is installed with the Server. (Only two sample database connection procedures are shipped with the server.) You can create your own procedures and store them there for general use. See the Server Installation Guide for more detail on this issue.
- 3) APPC communication from the client to the VTAM server (as opposed to from CICS to the VTAM server) requires the Apple product SNA•ps and

its APPC Gateway. This connection type will allow for faster data transfer because it is not using the LU2 protocols (3270 data streams) but instead the LU6.2 protocols (APPC). Only the direct access method ("logon applid(\_\_\_\_\_)") to the VTAM server supports this protocol. The CICS passthru requires 3270 protocols (since CICS requires them) and therefore is supported by all the current network connections that support TSO server access.

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Tech Info Library Article Number:8612



# Tech Info Library

## System 7: How to Have More Than One Trash Can

Revised: 9/11/92  
Security: Everyone

System 7: How to Have More Than One Trash Can

=====

Article Created: 14 August 1991

### Article Change History

-----

09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I have two monitors attached to my Macintosh. I'd like a trash can in each of them. Is this possible?

### DISCUSSION -----

Yes, System 7 lets you make aliases for your trash can -- as many as you like. Here's how:

- 1) In the finder, select the Trash icon.
- 2) Choose Make Alias from the File menu. A new icon appears, named "Trash alias"
- 3) If you like, rename the alias -- anything but "Trash" -- and drag it to the other screen.

If you drag, say, a document into the new trash icon, the document actually goes into the original Trash. The original Trash icon expands to indicate there's something in it (though your alias will not bulge).

If you decide you no longer want an extra trash can, drag it into (you guessed it!) the original Trash.

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Tech Info Library Article Number:8613



# Tech Info Library

## Macintosh LC: Third-Party Solution For Co-Processor

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Third-Party Solution For Co-Processor

=====

Article Created: 13 August 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated: 10 December 1991

TOPIC -----

Is there any way to install a co-processor into a Macintosh LC?

DISCUSSION -----

Apple does not have a co-processor option for the Macintosh LC. However, our information search, which included the Redgate Macintosh Registry on AppleLink, provided these third-party solutions:

- "DataLink LC" and "FastMath LC" from Applied Engineering
- "MacCon+ series" from Asante Technologies
- "DaynaPort E/LC" from Dayna Communications
- "Apex" from Second Wave
- "QuikMath/LC" from System Technology Corp.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:8621



# Tech Info Library

## HD Setup: Differences Between Version 2.0.1 and 2.0.3

Revised: 9/17/91  
Security: Everyone

HD Setup: Differences Between Version 2.0.1 and 2.0.3

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need to find out what the differences are between HD Setup 2.0.1, 2.0.3 and the HD Setup for System 7.0B4.

I am especially interested in how initialization and bad sector mapping have changed and about reentrance code and where it resides on the drive.

DISCUSSION -----

The differences between 2.0.1 and 2.0.3 were very minor minor bug fixes that never did crop up in normal use but the engineers knew they were there and fixed them anyway.

For the System 7 driver, it was modified to include a reentrant driver for support of virtual memory. The driver is written to the disk very early in the boot process to a portion of the drive to which we, as users, do not have access.

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Tech Info Library Article Number:8622



# Tech Info Library

## Apple Does Not Release ELF Radiation Information

Revised: 6/11/92  
Security: Everyone

Apple Does Not Release ELF Radiation Information

=====

Article Created: 13 August 1991  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

How can I get ELF radiation information on Apple products?

DISCUSSION -----

Currently, it is Apple policy not to release this information unless there are extenuating circumstances (eg. a large bid on hold until ratings can be released under non-disclosure.) To date, ELF specific information has not been released to any customers.

At this time there is no standard for measuring and reporting VLF/ELF emissions. Without standards the numbers are meaningless unless they are compared only with other monitors measured in the same manner. Apple is using a Combinova® meter for measuring EMI, and a Radians-inova® meter for measuring ELF/VLF. The results of this testing are kept within the engineering group. Apple is taking the ELF/VLF issue seriously and is promoting significant research to study it.

Apple insures that all of its products meet government regulations for the countries in which they are sold. A great deal of time and energy is being focused on the reduction of ELF/VLF emissions from our products, but at this time no product announcements have been made. Apple's official policy is that ELF/VLF emissions do not appear to pose a threat, and that additional studies need to be done.

Relatively low cost test instruments are available for those who wish to do their own comparison testing. Holaday Industries, Inc. sells test equipment which will measure ELF/VLF emissions. In addition, they offer occasional seminars covering various aspects of VDT emissions related issues. For more information, search under "Holaday Industries".



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Tech Info Library Article Number:8624



# Tech Info Library

## 512K SIMMs: Work Only in Macintosh IIci and Macintosh IIsi

Revised: 7/10/92  
Security: Everyone

512K SIMMs: Work Only in Macintosh IIci and Macintosh IIsi

=====

Article Created: 13 August 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

Can the 512K SIMMs that come in the 3MB Macintosh IIsi be used in any other Macintosh?

DISCUSSION -----

512K SIMMs will ONLY work in the Macintosh IIci and Macintosh IIsi. They will not work in any other Macintosh.

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Tech Info Library Article Number:8626



# Tech Info Library

## System 6.0.7: Compatible With Entire Macintosh Family

Revised: 9/17/91  
Security: Everyone

System 6.0.7: Compatible With Entire Macintosh Family

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a hard drive which I would like to be able to connect to any Macintosh, from a Macintosh Plus to a Macintosh IIfx.

Will the lower-end Macintoshes operate if the hard drive is using System 6.0.7?

DISCUSSION -----

System 6.0.7 is compatible all the way down to the Macintosh Plus; the only real requirements are 1MB of RAM and 800K disk drives. Your hard drive should work fine.

The one thing to remember is that you do not want to use this external hard drive you will be carrying around as the startup drive, because the installer scripts for each machine is different. In other words, you need to set up the system software for a particular machine. This would cause a problem if you used the hard drive as the startup drive on different model macintoshes. The only exception would be if the machine you connect it to is set up with the same installer scripts as the hard drives system software.

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Tech Info Library Article Number:8627



# Tech Info Library

## System 6.0.7: Troubleshooting Font Loading Problems

Revised: 9/20/91  
Security: Everyone

System 6.0.7: Troubleshooting Font Loading Problems

=====

Article Created: 13 August 1991  
Article Last Reviewed: 13 July 1992  
Article Last Updated: 13 July 1992

TOPIC -----

I'm having a problem with the Font/DA Mover on several networked Macintosh computers running System 6.0.7. Only one computer will load some PostScript Fonts. Other machines either lock up or have systems errors.

DISCUSSION -----

Make sure that you are using at least version 3.8 of the utility. You mentioned PostScript fonts, but Font/DA Mover only moves bit images. It is possible that older bit fonts have a problem with the latest Font/DA Mover. These fonts would be fonts that don't include the FOND Resource.

If that is the case, you should open the suitcase containing these fonts and then save them to a new suitcase. This will create a FOND resource for them. Then copy these fonts to the System file.

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Tech Info Library Article Number:8628



# Tech Info Library

## TrueType: Using With Non-Apple Printer

Revised: 9/20/91  
Security: Everyone

TrueType: Using With Non-Apple Printer

=====

Article Created: 13 August 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated: 8 June 1992

TOPIC -----

I have a Macintosh Classic running System 6.0.7 and an NEC SilentWriter 290 PostScript laser printer. I would like to use TrueType fonts for better screen display of text.

Can the TrueType fonts be used with the NEC printer, and what would have to be loaded onto the Macintosh Classic?

DISCUSSION -----

TrueType is compatible with any output device as it is a self-contained driver and font set. Since you are running System 6.0.7, you have to install the TrueType INIT, and the specific TrueType fonts you wish to use. System 7 has the functionality of TrueType built in, so those running System 7 do not have to install the INIT, just the specific fonts they wish to use.

The INIT is available on the StyleWriter and Personal LaserWriter LS diskettes, or through authorized Apple resellers.

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Tech Info Library Article Number:8629



# Tech Info Library

## A/UX 3.0: Root File System Is Full Error Workaround (3/95)

Revised: 3/24/95  
Security: Everyone

A/UX 3.0: "Root File System Is Full" Error Workaround (3/95)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 24 March 1995

TOPIC -----

I think I overfilled one of the drives with data; when I enter any A/UX command, I get "Cannot execute this command. The root file system is full".

I have tried cancelling when booting A/UX, but I still cannot execute any commands, even from that shell. Is there any way to get in and erase some files in my root file system?

DISCUSSION -----

Interrupting A/UX from booting will bring you to the "A/UX Startup" mode or what is called SASH (Standalone Shell). You should get a startup# prompt.

Under startup#, try a "fsck" (file system check and repair) or a "rm" (remove a file).

If neither of these works, try the "chroot" (change root) command to change the current working root directory to a different one, like "Eschatology 1". To change the current working root directory to "Eschatology 1", do the following (where X is the SCSI ID of the A/UX boot drive):

```
startup# pname -cX -s3 "Eschatology 1"  
startup# chroot (X,0,3)/
```

```
startup# rm (X,0,0)/FILES-ON-THE-DEFAULT-ROOT-TO-BE-REMOVED
```

After removing all the files you need, you can change back to the default root directory by issuing the command

```
"chroot (0,0,0)/"
```

Make sure do "fsck" on the default root filesystem to get a "clean" root file

system.

Article Change History:

24 Mar 1995 - Changed title for clarity.

18 Jun 1993 - Retitled for accuracy and clean up article.

31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8630



# Tech Info Library

## A/UX: Questions About Alerts (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Questions About "Alerts" (8/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

1. How do A/UX alerts work? If I am using a Macintosh or hybrid application, when an alert appears, can I switch to another process and/or Mac application?
2. If the process has a fatal system error when running A/UX, do I have to restart the Macintosh or only the process itself? How about a system bomb when running a Mac Application?

DISCUSSION -----

1. You do have to deal with the alert in A/UX before switching to another process. This is the same as modal dialogs under the Macintosh operating system.
2. This is also similar to the Mac OS: it depends on "how fatal" the error is. Some errors, such as Out Of Memory conditions, only affect the active application. Other errors will trash significant portions of A/UX and freeze the system (this is what a Macintosh application will do if it bombs); others may disable the OS, but allow you to gracefully exit the other processes. There are really too many variables to predict exactly what will happen.

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8631





# Tech Info Library

## AppleShare: View By Icon Folders can't be Changed by Users

Revised: 9/17/91  
Security: Everyone

AppleShare: View By Icon Folders can't be Changed by Users

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to keep the folders and/or documents contained on an AppleShare File Server in a set order when viewed by icon? I have a 160MB File Server that has about 40 folders in it. Users are complaining that every time they connect to the server, they can't find a folder where they put it last.

DISCUSSION -----

The actual views that an individual server user sees can be modified by the user but they will revert to the layout that the server administrator set up.

If the users can agree on a set organization of the folders, boot the server with a diskette and rearrange the folders then restart the server.

This is the only way for the folders to stay arranged in such a way as each user wants.

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Tech Info Library Article Number:8632



# Tech Info Library

## AppleShare: Can't Have A Wild Card Volume Name

Revised: 9/18/91  
Security: Everyone

AppleShare: Can't Have A "Wild Card" Volume Name

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a series of Macintosh Laboratories that are set up to use a single, "Campus Standard Startup disk". This disk is a floppy that students can take to any lab on campus, insert into a Macintosh, turn on the machine and have the server volume come up automatically.

All the servers have the name "Server" and there is an "\*" in the AppleShare Prep file that I am told tells the Macintosh to look for the server in "the zone you are in". In the past, when a new lab has been brought up, we have just added the new server volume name to a list in the prep file. This is not working any more.

Is there any way we can get the format of the AppleShare Prep file? Or is there a way we can use the "\*" to tell it to mount "whatever volume is on that server" like the "\*" for zones?

DISCUSSION -----

It is not possible to use a wild card for the volume name. It would appear that you are changing something in the AppleShare Prep file that is being ignored.

This is the "includes" definition for the Boot Mount List (BMLS resource).

|                |     |                |                                        |
|----------------|-----|----------------|----------------------------------------|
| bmlFSElSize    | EQU | 0              | ; size of this FSElement               |
| bmlFSNumVols   | EQU | bmlFSElSize+2  | ; number of volumes for this FSElement |
| bmlUAM         | EQU | bmlFSNumVols+2 | ; UAM chosen value (1,2,3)             |
| bmlFSSTStamp   | EQU | bmlUAM+2       | ; server timestamp                     |
| bmlHasPassword | EQU | bmlFSSTStamp+4 | ; if zero then no password saved       |

|                |     |                   |                             |
|----------------|-----|-------------------|-----------------------------|
| bmlFSPassword  | EQU | bmlHasPassword+2  | ; server password           |
| bmlFSUName     | EQU | bmlFSPassword+8   | ; start of user name string |
| bmlFSSObjName  | EQU | bmlFSUName+32     | ; server NBP object name    |
| bmlFSSZoneName | EQU | bmlFSSObjName+33  | ; server NBP zone name      |
| bmlFSVolInfo   | EQU | bmlFSSZoneName+33 | ; start of volume info      |

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8633



# Tech Info Library

## ImageWriter II: Dip Switch Settings for AppleTalk Card

Revised: 9/17/91  
Security: Everyone

ImageWriter II: Dip Switch Settings for AppleTalk Card

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How should the dip switches be set for an ImageWriter II with an AppleTalk card installed?

DISCUSSION -----

The only switch that needs to be changed is Switch Bank 2, Switch 4. Set it to the on/closed position.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8634



# Tech Info Library

## StyleWriter: Compatible with Adobe Type Manager

Revised: 9/17/91  
Security: Everyone

StyleWriter: Compatible with Adobe Type Manager

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can ATM be used with the StyleWriter?

DISCUSSION -----

Yes, ATM is compatible with the StyleWriter.

ATM is Adobe Type Manager, Adobe Systems' version of outline font technology.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8635



# Tech Info Library

## Macintosh: All Hard Drives have Auto-Parking Heads

Revised: 10/28/92  
Security: Everyone

Macintosh: All Hard Drives have Auto-Parking Heads

=====

Article Created: 13 August 1991

### Article Change History

-----

10/28/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Do Macintosh hard drives have auto-parking heads?

### DISCUSSION -----

All drives used in Macintosh products have auto-parking heads, no utility is necessary to park the head.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8636



# Tech Info Library

## StyleWriter: Remove Bitmapped Fonts To Avoid Default Font Use

Revised: 9/19/91  
Security: Everyone

StyleWriter: Remove Bitmapped Fonts To Avoid Default Font Use

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using a Macintosh Classic and a StyleWriter. I have TrueType fonts and Adobe fonts, and am using Adobe Type Manager.

When I print any document the print quality is very poor, as though it was printed from a dot matrix printer. Installing Adobe Type Manager doesn't seem to have changed anything. What can I do?

DISCUSSION -----

Try removing the bitmapped versions of the fonts. If they are installed, the default printing font will be the bitmapped version.

You will will get over 300 dots per inch when using TrueType fonts.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8637



# Tech Info Library

## Display Card 8•24 GC: Accelerates Any QuickDraw Application

Revised: 7/6/92  
Security: Everyone

Display Card 8•24 GC: Accelerates Any QuickDraw Application

=====

Article Created: 13 August 1991  
Article Last Reviewed: 12 June 1992  
Article Last Updated:

TOPIC -----

Does the Macintosh Display Card 8•24 GC automatically accelerate ALL graphics, or is it necessary for a particular program to access the acceleration capabilities of the card to have any effect?

DISCUSSION -----

The Macintosh Display Card 8•24 GC will accelerate any application that uses QuickDraw correctly.

The only reported application that the card won't accelerate is MacX. As of June, 1992 MacX has not yet been updated to make it compatible with the 8•24 GC's acceleration software.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8639





# Tech Info Library

## Macintosh Display Card 8•24 GC: Best Programs to Demonstrate

Revised: 7/6/92  
Security: Everyone

Macintosh Display Card 8•24 GC: Best Programs to Demonstrate

=====

Article Created: 13 August 1991  
Article Last Reviewed: 12 June 1992  
Article Last Updated:

TOPIC -----

Can You recommend some programs that demonstrate the full capabilities of the Macintosh Display Card 8•24 GC?

DISCUSSION -----

Any program that is graphics intensive (with many redraws or math algorithms) should work. CAD/CAM programs would be a good choice.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8640



# Tech Info Library

## Macintosh Display Card 8•24 GC: What SIMMs To Use

Revised: 6/22/92  
Security: Everyone

Macintosh Display Card 8•24 GC: What SIMMs To Use

=====

Article Created: 13 August 1991  
Article Last Reviewed: 12 June 1992  
Article Last Updated: 12 June 1992

TOPIC -----

Can the 1MB 100ns SIMMs installed in a Macintosh II be used as memory on the Macintosh Display Card 8•24 GC? What about Macintosh IIfx SIMMs?

What are the specifications for SIMMS that work with the Macintosh Display Card 8•24 GC?

DISCUSSION -----

No, Macintosh II or Macintosh IIfx SIMMs will not work.

The main specs are: 1MB, 256K ICs, 64-pin SIMM, 100ns. Use the Macintosh Display Card DRAM Expansion Kit (part number M0505LL/A) to upgrade the card.

There are other specs that are required that we don't publish (we provide it to RAM distributors). You will need to contact the third-party RAM manufacturers and simply ask for SIMMs that will work with the Macintosh Display Card 8•24 GC.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8641



# Tech Info Library

## GS/OS: How To Identify Version Numbers

Revised: 9/19/91  
Security: Everyone

GS/OS: How To Identify Version Numbers

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I recently received the GS/OS 5.04 disks. I searched for a version number and could not find one.

What is the on-screen version number of GS/OS v5.0.4?

DISCUSSION -----

On bootup, hold down space bar and a text screen will appear. If you have version 5.0.4, the first line should say, "Welcome to the World of GS/OS 3.03".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8642



# Tech Info Library

## StyleWriter: Printing Gets Lighter Problem

Revised: 9/19/91  
Security: Everyone

StyleWriter: Printing Gets Lighter Problem

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I use a StyleWriter printer.

When I print a self-test, the print is dark. When I then print from the computer, the print gets continuously lighter.

What can I do?

DISCUSSION -----

1. Purge the ink cartridge
2. Make sure you're using 16 lb. to 24 lb. bond paper.
3. Make sure forms-thickness lever is set in the UP position.
4. Replace the ink cartridge.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8644



# Tech Info Library

## Macintosh Portable: Don't Ignore Battery Icon

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Don't Ignore Battery Icon

=====

Article Created: 13 August 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

How can I remove the battery icon that appears in the upper right hand corner of my Macintosh Portable screen? It interferes with "Balloon" Help and my SuperClock. I can't seem to find a way of controlling its presence in the menu bar.

DISCUSSION -----

One reason for the icon's appearance is running the battery desk accessory; the Application Menu icon will show the DA's battery icon (in the top right corner).

Another possibility is that the battery is low, and the battery DA is flashing its icon as a notification to recharge.

Before you try to suppress it, it's important to know whether it's telling you something important.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8645



# Tech Info Library

## MacTCP: Host File's 7K Storage Limit

Revised: 9/19/91  
Security: Everyone

MacTCP: Host File's 7K Storage Limit

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Only about the first 118 lines of my Hosts file is being read when I press the "Host" button in the "Edit Command" box of MacX. Any items beyond line 118 bring up the message: "that Host cannot be translated", and they do not show up in the list window despite the fact that they are in the Hosts file.

Is there a limit as to how big the Hosts file can be, or can I change a setting to use a larger file? My host file is currently 484 lines.

DISCUSSION -----

Yes, it is a known limitation on MacTCP Hosts file (and was stated in the Release Notes of MacTCP 1.0) that there is a 7K of storage limitation of parsing Hosts file.

The only workaround we can suggest is to use DNR (Domain Name Resolver) in MacTCP. This will reduce the size of the Hosts file.

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Tech Info Library Article Number:8649



# Tech Info Library

## Apple IIe Card: Can't Use Apple II Memory Expansion Cards

Revised: 2/3/93  
Security: Everyone

Apple IIe Card: Can't Use Apple II Memory Expansion Cards

=====

Article Created: 13 August 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

Up to 1MB of the Macintosh LC's memory can be addressed via a "virtual" Apple IIe-style memory expansion card. Does this mean that an Apple IIe memory card can be installed in the Macintosh LC?

DISCUSSION -----

The Apple IIe Card uses the memory of the Macintosh LC. The Macintosh LC cannot utilize Apple II memory expansion cards, for several reasons:

- No slot available in the Macintosh LC.
- Apple II cards are too large for the Macintosh LC.
- The RAM is too slow.

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Tech Info Library Article Number:8650



# Tech Info Library

## Macintosh IIsi: When 8-Bit Color Is Missing (12/93)

Revised: 12/2/93  
Security: Everyone

Macintosh IIsi: When 8-Bit Color Is Missing (12/93)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 2 December 1993

TOPIC -----

I have a Macintosh IIsi and 12-inch monitor. I see only four or 16 colors as selections in the control panel under monitors -- but I should have 8-bit color. What is happening here?

DISCUSSION -----

Here are a few suggestions that might cure your problem:

- Open the Monitors control panel. Click on the Options button. In the dialog box which appears, you can set aside more RAM for displaying colors. Click the button marked: "Up to 256 Colors/Grays" Click the OK button to return to the Monitors control panel.
- ZAP PRAM. Under System 6.0.x, hold down the Command-Option-Shift keys while selecting the control panel. Click OK. Under System 7.x, hold down the Command, Option, P and R keys while starting up your Macintosh. When the Macintosh restarts again, release the keys.
- Restart from a System Tools Disk. If you can then select 8-bit color, trash and then reinstall the System Folder on the hard drive.
- If the above options don't work for you, you may have a problem with the Macintosh IIsi Logic Board.

Article Change History:

2 December 1993 - Added two alternatives for resolving issue and updated specifics.

17 July 1992 -

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# Tech Info Library

## Macintosh IICI and IIfx: 160MB Drives Can Be Interchanged

Revised: 7/10/92  
Security: Everyone

Macintosh IICI and IIfx: 160MB Drives Can Be Interchanged

=====

Article Created: 13 August 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

I want to have interchangeable hard drives between a Macintosh IIfx and Macintosh IICI. Can the 160MB Drive for the Macintosh IICI be transferred at some point to a Macintosh IIfx and plugged in seamlessly?

DISCUSSION -----

You will be able to move your 160MB drive from the Macintosh IICI to the Macintosh IIfx with the addition of a different drive bracket which has just been made available. The drive bracket is Apple Part #805-0952.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8654



# Tech Info Library

## LaserWriter: Serial Printing from MicroChannel System

Revised: 9/20/91  
Security: Everyone

LaserWriter: Serial Printing from MicroChannel System

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a MiniMicro 386 with a microchannel bus. I'm in a Macintosh environment and want to print to the LaserWriter IINT.

I bought a Radio Shack cable 9- to 25-pin with transmit and receive reversed. I put the LaserWriter IINT into Diablo 630 Emulation Mode. When I tried to print, signals were sent to the printer but all that came out was a blank sheet. I then used a straight-through RS-232 cable with a null modem and got the same results.

Any suggestions?

DISCUSSION -----

The problem printing serially could be caused by a number of things, but a straight-through cable with a null modem at the LaserWriter end should provide a workable solution.

However, you also need to make a couple of Mode Command statements to direct the output correctly to the LaserWriter. The commands are:

Mode: LPT1 96,N,8,1,P  
Mode: LPT1 = COM1

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8657



# Tech Info Library

## System 6.0.7 Installer: Problem with TrueType

Revised: 9/20/91  
Security: Everyone

System 6.0.7 Installer: Problem with TrueType

=====  
Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The System 6.0.7 Installer seems to have trouble dealing with reinstalling the System software onto a disk that is using TrueType.

Even when the Installer is just doing a simple installation, it compares the Backgrounder that it has with the one that's been installed, and refuses to continue unless it's given permission to replace the newer Backgrounder with the older one.

Is there a solution to this problem that DOESN'T require extreme acrobatics? Or will I have to install the System software, replacing the new files with the old, then reinstall the TrueType set?

DISCUSSION -----

Unfortunately, here is no way around this situation. The System Software 6.0.7 Installer was released many months before the StyleWriter and Personal LaserWriter LS were introduced. The installer script writers did not anticipate this situation.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8658



# Tech Info Library

## System 6.0.7: EtherTalk, CD-ROM Driver Installation

Revised: 9/20/91  
Security: Everyone

System 6.0.7: EtherTalk, CD-ROM Driver Installation

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh IIsi with a CD-ROM and Ethernet Board. I need drivers for using both of these devices with System 6.0.7 and Installer 3.0 or greater.

DISCUSSION -----

The Installer required to install the EtherTalk drivers are located on the Network Products Installer Disk, which is located in the "Read Me First" manual that came with the Macintosh IIsi.

There isn't an updated installer for the CD-ROM drivers, but there is a workaround. Just drag the following files into the System Folder:

- Apple CD-ROM
- Foreign File Access
- Audio Access
- CD Remote INIT
- ISO 9660 File Access
- High Sierra File Access

Use Font/DA Mover to install the CD Remote desk accessory, then restart the system.

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Tech Info Library Article Number:8659



# Tech Info Library

## Macintosh Display Card 8•24 GC: Memory Configurations

Revised: 6/22/92  
Security: Everyone

Macintosh Display Card 8•24 GC: Memory Configurations

=====

Article Created: 13 August 1991  
Article Last Reviewed: 12 June 1992  
Article Last Updated:

TOPIC -----

What memory configurations are possible on the Macintosh Display Card 8•24 GC? Do both memory slots have to be filled? What are the minimum and maximum memory per slot?

DISCUSSION -----

The card can be upgraded to 2MB with Apple's expansion kit, or up to 8MB with kits available from third-party vendors. Both slots have to be filled with the same density SIMMs:

2MB = 1MB SIMM X2  
8MB = 4MB SIMM X2

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Tech Info Library Article Number:8661



# Tech Info Library

## AppleShare Admin: What To Do If You Lose the Password (10/95)

Revised: 10/6/95  
Security: Everyone

AppleShare Admin: What To Do If You Lose the Password (10/95)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 6 October 1995

TOPIC -----

If I've lost or forgotten the Administrator's password on an AppleShare file server, what do I do?

DISCUSSION -----

If you have forgotten the Admin key, refer to the following sources:

WARNING:  
All of the procedures listed below require a back-up copy of the "Users & Groups" file. Be sure that you have a back-up copy of this file before starting the procedure.

For AppleShare 1.0 or 1.1 File Server

-----

See page 137, chapter 6, in the "AppleShare Administrator's Guide." Below is the information referenced in the "AppleShare Administrator's Guide":

You have forgotten the Admin key

If you forget the Admin key that you use while opening AppleShare Admin and don't have it written down, you'll have to:

- 1) Use the AppleShare Server Installer disk to start up the server's Macintosh Plus.
- 2) While in the Finder, locate the Users & Groups file in the Server Folder of the startup volume, drag it to the Trash, and choose Empty Trash from the Special menu.
- 3) Open the AppleShare Admin application.
- 4) Select the same startup volume that you had before.
- 5) When you're asked to select a Users & Groups file, select the backup

copy of the Users & Groups file.

Click Volume until you see the disk name. Click Eject to insert another disk. If necessary, open any folders in the list until you see the backup copy of the file. Select the file and click Open.

- 6) When asked, type the server name and the new Admin key.
- 7) Continue to follow the procedure for preparing the server.

#### For AppleShare 2.0 or 2.0.1 File Server

-----

See page 204, chapter 7, in the "AppleShare File Server Administrator's Guide." Below is the information referenced in the "AppleShare Administrator's Guide":

You've forgotten the Admin key

If you forget the Admin key that you use to open AppleShare Admin and don't have a written copy, you'll have to use the following procedure.

- 1) Use the Server Administration disk to start up the server's Macintosh.
- 2) While in the Finder, locate the Users & Groups file in the Server Folder of the startup volume, and then drag it to the Trash and choose Empty Trash from the Special menu.
- 3) Open the AppleShare Admin application.
- 4) Prepare the same startup volume you had before.
- 5) When you're asked to select a Users & Groups file, select the backup copy of the Users & Groups file.  
Click Volume until you see the disk name. (If necessary, click Eject and then insert another disk.) Open any necessary folders in the list until you see the backup copy of the file. Select the file and click Open.
- 6) When asked, type the new Admin key.
- 7) Continue to follow the procedure for preparing the server.

#### For AppleShare 3.0 or 3.0.1 File Server

-----

See page 147, chapter 8, in the "AppleShare Server 3.0 Administrator's Guide." Below is the information referenced in the "AppleShare Administrator's Guide":

You've forgotten your Admin key

The Admin key is stored in the Users & Groups Data File. If you forget the Admin key, drag the Users & Groups Data File out of the Preferences folder to the root level of the System Folder. Then restart the Admin program. In a moment the program will ask you to provide a new file server name and Admin key. Enter the same file server name, and a new Admin key.

#### For AppleShare 4.0 File Server

-----

See page 107, chapter 6, in the "AppleShare Administrator's Guide" (p/n 030-4205-A), or see page 93, chapter 5, in the "AppleShare Administrator's Guide" (p/n 030-6925-A) Also remember the serial number. Below is the



information referenced in the "AppleShare Administrator's Guide":

You've forgotten your Admin Key.

The Admin Key is stored in the Users & Groups Data File. If you forget the Admin Key, quit the AppleShare Admin and AppleShare File Server programs. Then drag the Users & Groups Data File out of the Preferences folder to the System Folder. Then restart the Admin program. In a moment the program will ask you to provide a new file server name and Admin Key. Enter the same file server name, and a new Admin Key.

Following this procedure assigns a new Admin Key and creates a new Users & Groups Data File in the Preferences folder. All of the original user and group accounts, passwords, and access privileges for shared volumes are copied from the old Data File in the System Folder. You can now delete the old Data File.

For AppleShare Pro File Server

-----  
See page 106, chapter 6, in the "AppleShare Pro Administrator's Guide." Below is the information referenced in the "AppleShare Administrator's Guide":

You've forgotten your Admin Key.

The Admin Key is stored in the Users & Groups Data File. If you forget the Admin Key, quit the Admin program (and File Server program, if necessary). Then drag the Users & Groups Data File out of the Preferences folder to the top level of the System Folder. Do not drag it out of the System Folder. (Use the System Folder alias to open the System Folder.) Then restart the Admin program. In a moment the program will ask you to provide a new file server name and Admin Key. Enter the same file server name, and a new Admin Key.

Following this procedure merely assigns a new Admin Key. All of the original user and group accounts, passwords, and access privileges for shared volumes are retained. After you've restarted the Admin program, you can throw away the copy of the Users & Groups File you moved from the Preferences folder. It is replaced by a new one within the Preferences folder.

#### Article Change History:

05 Oct 1995 - Added the AppleShare Administrator's Guide information.  
26 Sep 1995 - Added additional information for AppleShare 4.0.  
09 Nov 1994 - Added notation about serial number for AppleShare 4.0.x.

Support Information Services

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Tech Info Library Article Number:8662



# Tech Info Library

## AppleShare: Systems after 6.0.3 Need Network Products Installer

Revised: 9/20/91  
Security: Everyone

AppleShare: Systems after 6.0.3 Need Network Products Installer

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to get AppleShare Installer with System 6.0.5? Can I just make a set of disks with System 6.0.5?

DISCUSSION -----

It's not possible to upgrade the AppleShare Installer to System 6.0.5; disastrous things could happen if you tried the upgrade and then attempted an installation. The AppleShare Admin disk can be upgraded to System 6.0.5, as the application itself doesn't depend on the system version.

If you need to install AppleShare software onto a computer that requires a higher version of the System than 6.0.3 (like a Macintosh IIci or Macintosh IIfx), then you need to use the Network Products Installer Diskette to install the software. This disk is shipped with the computer (not the operating system) and can be found in the "Read Me First" booklet, which is inside the "Open Me First" box.

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Tech Info Library Article Number:8663



# Tech Info Library

## Apple IIGS: Using CD-ROM Volumes on AppleShare

Revised: 9/23/91  
Security: Everyone

Apple IIGS: Using CD-ROM Volumes on AppleShare

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIGS on an AppleShare network with a Macintosh file server. I want to hook up a CD-ROM drive to this network. Is it possible for the Apple IIGS to access the CD-ROM drive? Are there any special drivers that I need to have on the Apple IIGS?

DISCUSSION -----

The Apple IIGS should be able to access the CD-ROM on the AppleShare file server with no additional drivers necessary beyond the standard AppleShare drivers. The CD-ROM will be seen to any workstation as another AppleShare volume.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8665



# Tech Info Library

## Apple IIGS: Using the AppleShare Print Spooler

Revised: 9/19/91  
Security: Everyone

Apple IIGS: Using the AppleShare Print Spooler

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an Apple IIGS on an AppleShare Print Server. The only way I can print is by not spooling. Is there something I'm doing wrong? Will an Apple IIGS spool to ImageWriter?

DISCUSSION -----

The ImageWriter II can be chosen and printed to from an Apple IIGS through the AppleShare Print Server. If you're using Aristotle, the spooled printer must be selected within Aristotle and assigned to yourself.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8666



# Tech Info Library

## Macintosh Classic: Connecting to Ethernet

Revised: 7/6/92  
Security: Everyone

Macintosh Classic: Connecting to Ethernet

=====

Article Created: 13 August 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

Is it possible to put an EtherTalk card in a Macintosh Classic?

DISCUSSION -----

As the Macintosh Classic has no expansion slot, it is not possible to install an EtherTalk card internally.

There are external SCSI EtherTalk adapters, from third parties, which can connect the Macintosh Classic to an Ethernet network.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8667



# Tech Info Library

## AppleTalk and EtherTalk: Basic Differences

Revised: 9/13/91  
Security: Everyone

AppleTalk and EtherTalk: Basic Differences

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the difference between AppleTalk and EtherTalk? What is the speed difference? What is the transfer rate on each network. What type of cabling can you use on AppleTalk and EtherTalk network?

DISCUSSION -----

LocalTalk is cabling used to transmit AppleTalk information between Macintosh computers and printers and other network devices. Its maximum transfer rate is 230.4 KBits per second over a twisted pair wire.

EtherTalk is another protocol that uses either twisted pair or a coax type of cabling to run at up to 10 Megabits per second.

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Tech Info Library Article Number:8668



# Tech Info Library

## A/UX: With StyleWriter or Personal LaserWriter LS (2/94)

Revised: 2/3/94  
Security: Everyone

A/UX: With StyleWriter or Personal LaserWriter LS (2/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 2 February 1994

TOPIC -----

Does A/UX 3.0.2 support the StyleWriter as an lp device? In other words, can it do something like this:

```
# cat tmp99 | lp0
```

DISCUSSION -----

The StyleWriter or Personal LaserWriter LS works in A/UX via the Chooser and through the Command Shell by selecting what you want printed and selecting "print selection" from the file menu. There is no print cap file available for the printer so you cannot use it as an lp printer. This is per the A/UX 3.0 manual under "Setting Up Accounts and Peripherals for A/UX."

Article Change History:  
2 Feb 1994 - Updated for A/UX 3.0.2 and included Personal LaserWriter LS.

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Tech Info Library Article Number:8669



# Tech Info Library

## Apple IIe Card: Includes Applesoft BASIC

Revised: 1/7/94  
Security: Everyone

Apple IIe Card: Includes Applesoft BASIC

=====

Article Created: 13 August 1991  
Article Last Reviewed: 3 June 199  
Article Last Updated:

TOPIC -----

Does the Apple IIe Card for the Macintosh LC have Applesoft BASIC on it?

DISCUSSION -----

The Apple IIe Card for the Macintosh LC is not an emulation card but an actual Apple IIe on a card. Applesoft BASIC is included in ROM. The card provides 98% compatibility with Apple IIe non-copy protected software programs.

The card does not require a startup disk of any sort. It launches right into Applesoft BASIC.

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Tech Info Library Article Number:8670





# Tech Info Library

## LocalTalk: Additional Cable Grounding Not Needed

Revised: 9/13/91  
Security: Everyone

LocalTalk: Additional Cable Grounding Not Needed

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm connecting my Macintosh networks with shielded twisted-pair cable.  
What is the best way to ground this cable?

DISCUSSION -----

There's no need to provide any additional grounding for LocalTalk cabling.  
The shield is already grounded to chassis.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8672



# Tech Info Library

## ImageWriter I: Troubleshooting with Macintosh Classic (2/96)

Revised: 2/5/96  
Security: Everyone

ImageWriter I: Troubleshooting with Macintosh Classic (2/96)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 5 February 1996

TOPIC -----

I cannot get my Macintosh Classic to work with my ImageWriter I.

DISCUSSION -----

Step 1

-----

Make sure that the ImageWriter I printer's switch settings are correct:

Switch 1

1-Off  
2-Off  
3-Off  
4-Off  
5-Off  
6-On  
7-Off  
8-Off

Switch 2

1-ON  
2-ON  
3-OFF  
4-XX

Step 2

-----

Verify that you are using the correct cable. Cable part number 590-0555, or the original Macintosh to ImageWriter DB-9 to DB-25 cable (part # 590-0169) with the

DB-9 to Mini DIN 8 Macintosh Peripheral Adapter cable (part # 590-0553) can be used.

#### Step 3

-----

From the Chooser, verify the following:

- ImageWriter driver is selected
- AppleTalk is off
- The correct port is selected

If this does not work, you may want to start looking for hardware failures: Try the ImageWriter on another computer, then try another printer with your computer.

#### Article Change History:

05 Feb 1996 - Added additional cable information.

Support Information Services

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:8674



# Tech Info Library

## DART: Utility for Duplicating Floppy Disks (10/93)

Revised: 10/6/93  
Security: Everyone

DART: Utility for Duplicating Floppy Disks (10/93)

Article Created: 13 August 1991  
Article Reviewed/Updated: 6 October 1993

TOPIC-----

Is there a Macintosh utility program for duplicating Macintosh, Lisa, Apple II or MS-DOS 3.5-inch floppy disks?

DISCUSSION -----

DART (Disk Archive/Retrieval Tool) is an application that enables you to duplicate Macintosh, Lisa, Apple II, or MS-DOS disks, save disk images, and create disks from image files. DART 1.5 can read disk image files in DART, DiskMaker, or Disk Copy format. DART 1.5 image files are compressed, approaching a reduction in size comparable to that obtained by using a commercial compression utility. DART 1.5 is System 7.0 "savvy", and implements a custom Apple event mechanism to automate the conversion of older DART or Disk Copy files to 1.5 format. The conversion process can be run by "remote control" (even across a network!) using an accompanying HyperCard stack. (For more information, please refer to the DART User Manual.)

Features of DART 1.5

- Data compression: more disk images can be archived in the same amount of space.
- Data checksumming for reliable disk duplication.
- Can read Disk Copy image files.
- Requires only 224K of RAM to run.
- Stack utility enables you to batch-convert DART 1.4 or Disk Copy files.
- Apple events support ("required" AE suite and custom 'cnvt' event.)
- System 7 "drag-and-drop" disk image creation.
- 32-bit clean.
- A/UX compatible.
- Color icons and balloon help.

Where to Obtain DART

-----

The current version of DART may be downloaded from two locations on AppleLink:

1) The Apple SW Updates board. Use the following AppleLink path:

Software Sampler  
Apple SW Updates  
Macintosh  
Utilities

2) On the AppleLink version of the Tech Info Library, posted as an enclosure to the article: "DART 1.5.3: Version Change History (10/93)"

Article Change History:

6 October 1993 - Added new description and features information.

Copyright 199193, Apple Computer, Inc.

Tech Info Library Article Number:8677



# Tech Info Library

## Apple IIe: Best Way to Shut Down with Floppy Drive

Revised: 9/23/91  
Security: Everyone

Apple IIe: Best Way to Shut Down with Floppy Drive

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Which of these is the better way to shut down an Apple IIe with a floppy disk drive?

- 1) Save the work
- 2) Wait until the in-use light is off
- 3) Remove the disk(s) from the drive(s)
- 4) Switch off the power

Or

- 1) Save the work
- 2) Wait until the in-use light is off
- 3) Switch off the power
- 4) Remove the disk(s) from the drive(s)

DISCUSSION -----

Both methods of shutting down will work without any problems most of the time. The safest procedure is to remove the disk before shutting down. You should do that just in case there is some freak signal sent through the drive that corrupts the diskette. This is very rare but does happen.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8678



# Tech Info Library

## A/UX: Driver Needed for Ethernet Compatibility

Revised: 9/25/92  
Security: Everyone

A/UX: Driver Needed for Ethernet Compatibility

=====

Article Created: 13 August 1991

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

Does the correct EtherTalk driver installed into the Macintosh System folder make the Ethernet card compatible with A/UX? Does the A/UX kernel need to be modified for compatibility?

### DISCUSSION -----

The Ethernet driver that you need to use with A/UX is called ae6. You add or remove this driver from A/UX via the newconfig(1M) command. You can check the man pages in A/UX for more information on this command.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8679



# Tech Info Library

## EtherTalk: How To Determine Version Number

Revised: 9/24/91  
Security: Everyone

EtherTalk: How To Determine Version Number

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the proper procedure for determining what version of EtherTalk a Macintosh is running?

DISCUSSION -----

To determine what version of the EtherTalk drivers you're using:

1. Open your System Folder
2. Click on the EtherTalk driver
3. Select Get Info.
4. The Get Info Box will appear along with the version number under "Version".

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8680





# Tech Info Library

## Macintosh SE: Upgrading to use SuperDrive (Discontinued)

Revised: 9/15/95  
Security: Everyone

Macintosh SE: Upgrading to use SuperDrive (Discontinued)

=====

Article Created: 13 August 1991  
Article Review/Updated: 15 September 1995

TOPIC -----

Can I hookup an external FDHD SuperDrive to an older Macintosh SE that has only 800K internal drives?

DISCUSSION -----

The external SuperDrive requires the FDHD ROMs just as the internal SuperDrive does. There is an FDHD upgrade kit available through authorized dealers that allows older Macintosh SE's to use the Apple SuperDrive (formerly Apple FDHD).

This upgrade has been discontinued.

Article Change History:  
15 Sep 1995 - Revised to show discontinued upgrade.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8681



# Tech Info Library

## Apple IIGS: Compatible Toshiba RAM

Revised: 9/23/91  
Security: Everyone

Apple IIGS: Compatible Toshiba RAM

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What Toshiba RAM chips are compatible with the Apple IIGS memory expansion board?

DISCUSSION -----

The only Toshiba chip that we know of to be compatible are part number TMM41256P-15. The chips that are used in the Apple IIGS have to be 150ns, 256K x 1 bit, and CAS before RAS.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8683



# Tech Info Library

## Apple II Plus: Monitor and Drives Compatible with Apple IIe

Revised: 9/23/91  
Security: Everyone

Apple II Plus: Monitor and Drives Compatible with Apple IIe

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I use the monitor and disk drives from an Apple II Plus with an Apple IIe?

DISCUSSION -----

Yes, it's okay to switch the monitor and drives between the two systems.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8684



# Tech Info Library

## Macintosh IIsi: Using with VGA Monitors (8/93)

Revised: 8/9/93  
Security: Everyone

Macintosh IIsi: Using with VGA Monitors (8/93)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 6 August 1993

TOPIC -----

I want to connect a Macintosh IIsi to a Sony CPD-1304 monitor. I've seen several references to the Macintosh LC and Macintosh LC II being used with VGA monitors, but nothing about the Macintosh IIsi.

DISCUSSION -----

Most newer Macintosh models with built-in video support VGA monitors. The Macintosh IIsi, however, requires an adapter before it will support VGA.

Lapis Technologies, Inc. produces a DisplayServer card for the Macintosh IIsi that supports VGA output.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Article Change History:  
6 August 1993 - Removed references to other models with built-in video.

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Tech Info Library Article Number:8685



# Tech Info Library

## Macintosh IIsi: Upgrading from 3MB Configuration

Revised: 7/17/92  
Security: Everyone

Macintosh IIsi: Upgrading from 3MB Configuration

=====

Article Created: 13 August 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

How is the Macintosh IIsi 3/40 configured so it has 3MB of RAM?

Also, do the four memory slots have to be full in order for the Macintosh IIsi to operate?

DISCUSSION -----

The Macintosh IIsi has 1MB on the logic board and four 512K SIMMs installed to give a 3MB configuration.

As in all Macintosh computers, all slots of a particular SIMM bank must be filled for the machine to work properly. In the case of the Macintosh IIsi, all four slots must be filled.

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Tech Info Library Article Number:8687



# Tech Info Library

## Apple Hard Drives: Internal To External

Revised: 9/24/91  
Security: Everyone

Apple Hard Drives: Internal To External

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do you know of any way to turn internal hard drives into external hard drives?

DISCUSSION -----

The mechanisms are no different, but here is what you will need to go through to be able to do it. Is is probably more trouble than it's worth.

- You will need to obtain an external hard drive case
- You will need to obtain a power supply for the external case
- You will need to obtain a different mounting bracket
- You will need to obtain an external SCSI cable and terminator

This is not an easy process, and probably not cost effective when including labor costs.

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Tech Info Library Article Number:8688



# Tech Info Library

## Personal LaserWriter LS: Prints in Shadow and Outline

Revised: 12/15/92

Security: Everyone

Personal LaserWriter LS: Prints in Shadow and Outline

=====

Article Created: 3 August 1991

TOPIC -----

Can the Personal LaserWriter LS print in Bold and Italic, as well as Shadow and Outline?

DISCUSSION -----

The Personal LaserWriter LS prints in Shadow and Outline as well as other text effects.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8690



# Tech Info Library

## AppleScan: Can't Run from Read-only Server

Revised: 9/25/91  
Security: Everyone

AppleScan: Can't Run from Read-only Server

=====

Article Created: 5 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm trying to set up a scanner operation to work remotely. How can I keep AppleScan on a read-only server and make it accessible to those logging on from a scanner at a remote site? (Both are running System 7.)

AppleScan is being "shared" from a Macintosh with "read only" status. Unfortunately, AppleScan needs to write a file when it is launched. An alias doesn't seem to work, because it still launches from the server.

DISCUSSION -----

Because AppleScan creates temporary work files in the folder where it is located, there is no way to make it work in a "read-only" situation. The application would need to be re-written with read-only file server operation in mind. The temporary files would need to be written to another location that is not read-only. In AppleScan, there is no method for designating where the temporary files will be written.

An alias does nothing to improve the situation because it simply points to the original application.

Two possible workarounds:

- Download the application from the server to the remote site and then execute the application at the remote site.
- Place the AppleScan software in a read-write location on the server.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8697





# Tech Info Library

## Macintosh Display Card 8•24: Benefits of ROM Upgrade

Revised: 7/6/92  
Security: Everyone

Macintosh Display Card 8•24: Benefits of ROM Upgrade

=====

Article Created: 5 September 1991  
Article Last Reviewed: 15 June 1992  
Article Last Updated: 5 February 1992

TOPIC -----

Can customers who have the older version of the Macintosh Display Card 8•24 upgrade to the new card for use with the new Macintosh 21" Color Display and the new 16" Color Display?

DISCUSSION -----

The upgrade is primarily for PAL timing capabilities. The original Macintosh Display Card 8•24 is capable of driving the Macintosh 21" Color Display, so there is no need to upgrade the ROM simply to use the Macintosh 21" Color Display.

The ROM Upgrade is needed to support the new 16" Color Display. The original 8•24 Display card does not support the 16" Color Display Apple announced in January 1992.

The ROM upgrade has another benefit: the ability to choose between 9300K (traditional Macintosh Standard White Point) and 6500K (Graphics Industry Standard White Point). If you need to choose the white point of your 21" Color Display, you can upgrade your card by purchasing the Service Upgrade kit (P/N 076-0548) through your service provider.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8698



# Tech Info Library

## System 7: Function of Backgrounder File

Revised: 9/11/92  
Security: Everyone

System 7: Function of Backgrounder File

=====

Article Created: 5 September 1991

### Article Change History

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09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What is the function of Backgrounder (on the System 7 Printing disk)?  
There's no Backgrounder on my hard disk, yet I can print to a LaserWriter  
IINTX successfully in the background.

### DISCUSSION -----

In System 7, the function of the Backgrounder is built into the Finder. You  
don't need the Backgrounder file at all if you're running System 7.

The Backgrounder file is, however, required on System 6.0.x systems that  
use System 7 printer drivers if they are to do background printing.

When you run the Installer on the 7.0 Printing Tools Disk from a 6.0.x  
system, the Backgrounder on that disk is installed on the 6.0.x system.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8699



# Tech Info Library

## NuBus: Recommended Board Placement for 24-bit Mode

Revised: 7/10/92  
Security: Everyone

NuBus: Recommended Board Placement for 24-bit Mode

=====

Article Created: 5 September 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

I've heard that the placement of NuBus boards in Macintosh IIci and IICx computers can affect memory use and performance under System 7. Is it true that the boards should be placed contiguously from left to right in Macintosh IICx computers, and from right to left in Macintosh IIci computers, to maximize memory performance?

DISCUSSION -----

RECOMMENDATIONS

Yes, there are recommendations as to where the NuBus cards should be placed. This has to do with heap fragmentation, not speed.

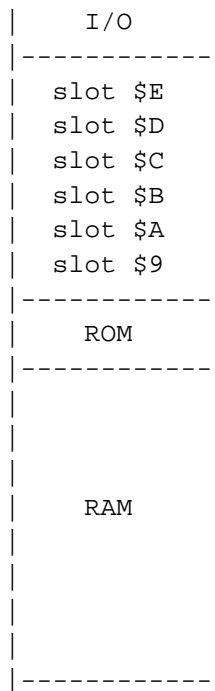
The following recommendations are valid only for 24-bit mode:

- The Macintosh IICx should have the cards placed from left to right.
- The Macintosh IIci should have the cards placed from right to left.
- Any Macintosh with six slots should have the cards placed contiguously from either side.

BACKGROUND

The memory map of any Macintosh running in 24-bit mode is 8MB for RAM, 1MB for ROM, 6MB for slot space, and 1MB for I/O. This is in order from bottom to top as follows:

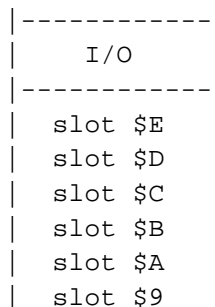
|-----|

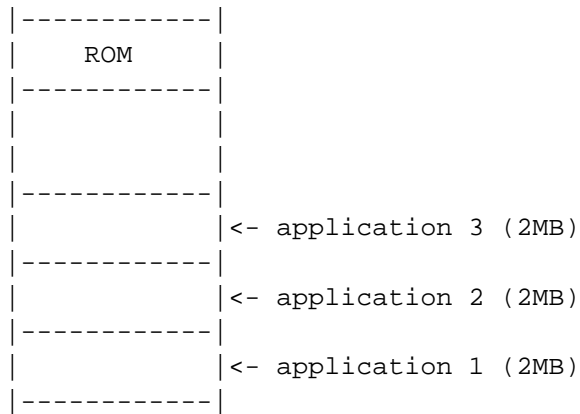


There may be more memory than the amount that shows up as the largest unused block, and thus the amount available for an application to be loaded into, because the memory is fragmented. Say, for example, you had a Macintosh IIfx set for 13MB with virtual memory, with a card in slot \$C. Applications were then loaded one after the other that took 7MB of memory combined. The largest unused block would be 3MB, even though there were 6MB of memory available to use, as only 3MB of it was contiguous. The 1MB below ROM, as well as the 2MB from slots \$D and \$E, could be used, but only as 1MB and 2MB chunks, respectively.

This is the same thing we see when multiple applications are launched, and then one of the middle applications is quit. The memory that the middle application used is not added to the largest unused block.

In the example below, three applications, each using 2MB of memory are loaded. Assume for this example that virtual memory is not on. If you then quit from application 2, the largest unused block would be 2MB, even though 4MB is not being used. If you load another application that used 1MB of memory, you would have 2MB as the largest unused block, because the 2MB on top is still available. This is the same issue as with the NuBus slots and virtual memory. When a card is placed in a NuBus slot, it is the same as having an application permanently loaded in that space.





With that in mind, on a Macintosh IICx, the NuBus slots used are \$9, \$A, and \$B. Therefore, if you fill \$9 first, which is right next to ROM, you have 5MB of contiguous slot address space. If you fill \$A first, you have two chunks, one of 1MB of contiguous slot address space, and the other 4MB of contiguous slot address space, and thus 4MB would be the largest unused block.

A Macintosh IICi uses slot \$B for video RAM. The NuBus slots used are \$C, \$D, and \$E. If you are using built in video, it doesn't matter which way you load the cards. If you are not using built in video, using slot \$E first would give you the most contiguous slot address space.

On a Macintosh with six NuBus slots, it does not matter which direction you fill the slots from, but to get the most contiguous space, they should be loaded one next to the other.

The ordering of the NuBus cards solely affects heap fragmentation. This has NO effect on the speed of virtual memory. Once you load the applications, the speed is the same regardless of where you place the cards. Heap fragmentation gives you less contiguous memory to load things in, but it does not affect the system's speed.

Remember, this is true only in 24-bit mode. Once you go to 32-bit addressing, the whole address map changes, and this is no longer an issue.

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Tech Info Library Article Number:8700



# Tech Info Library

## MacX25 Version 1.0.1: Description

Revised: 9/20/91  
Security: Everyone

MacX25 Version 1.0.1: Description

=====

Article Created: 17 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes version 1.0.1 of MacX25 software, and gives some background information about communication software.

DISCUSSION -----

MacX25 Version 1.0.1

-----

MacX25 version 1.0.1 is updated software for linking Macintosh computers to packet-switched data networks (PSDN) supporting the international OSI and CCITT X.25 recommendation for enterprise-wide communication.

It is now available for Macintosh computers running System 6 or System 7, supporting any Macintosh as an X.25 client and all Macintosh II computers as servers. System 7 offers a range of services for networking, including file sharing and interapplication communication. To ease transition to using X.25 in the newer system software environment, MacX25 version 1.0.1 retains the same set-up configuration and does not alter the interface used in MacX25 version 1.0. Access to host computers and end-user services on the PSDN is distributed from a MacX25 server to Macintosh computers over the AppleTalk network system.

For improved communication with European networks, MacPAD (the client side of MacX25) now supports 8-bit characters. Support for 8-bit characters, in which such symbols as the German ä, French ç, and Spanish ñ are encoded, enables businesses on both sides of the Atlantic to transfer data files transparently and communicate in the appropriate European languages.

The new MacPAD also offers new features for flexibility in communicating across the X.25 network, including the ability to negotiate throughput

parameters and the size of packet windows. In addition, because it is implemented as a connection tool for the Communications Toolbox, MacPAD allows third-party applications, including terminal emulators, to connect to host systems over X.25 networks.

The MacX25 Programming Library, available separately for third-party developers, works in conjunction with the MacX25 server to provide X.25 access to applications. This enables developers to create Macintosh solutions giving users access to PSDNs. The library, which remains unchanged in the new version of MacX25, consists of a toolkit for such routines as initiating and terminating contact with the MacX25 server, establishing and closing down a virtual circuit, and passing data across an established circuit.

For example, an application developed in Italy uses tools in the MacX25 Programming Library to provide Macintosh-to-host access across an X.25 network. List SpA, headquartered in Pisa, developed a cost-effective interbank trading network for the Italian banking system that enables Macintosh computers in each bank to connect to the system's mainframe over the X.25 network.

The MacX25 version 1.0.1 Server kit also includes the MacPAD client software and updated documentation. A MacX25 version 1.0.1 upgrade is available for owners of MacX25 version 1.0. A Macintosh running the MacX25 version 1.0.1 server software requires an Apple Serial NB Card. The MacX25 Programming Library, used by developers of third-party X.25 applications for the Macintosh, remains unchanged.

MacX25 1.0.1 is available in the United States through APDA. Outside the U.S., MacX25 version 1.0.1 is available to developers through APDA and to end-users through Apple dealers. Search on "APDA and 800" to find the 800 numbers for contacting APDA.

The international version of MacX25 version 1.0.1, which will allow the English language version of MacX25 to run on foreign-manufactured Macintosh systems, will be available in Europe.

#### Background

-----  
Apple's MacX25 conforms to the Open Systems Interconnect (OSI) model and Consultative Committee on International Telephone and Telegraph's (CCITT) X.25 recommendation for communication with packet-switched data networks (PSDN). Because of their cost-effective use of leased lines to transmit information over long distances, X.25 PSDNs offer an increasingly popular means for electronic communication internationally.

MacX25 consists of server and client software. The MacX25 server software allows a Macintosh on an AppleTalk network to be set up as a single entry point to the PSDN. Server-based access reduces the cost of global connectivity by maximizing use of expensive resources, such as leased lines. MacPAD client software works in conjunction with the server software to provide packet assembler/disassembler connectivity to the PSDN.

MacX25 features a graphics-based administrator's application that facilitates configuration and administration of the server. An address service allows administrators to set addressing details on the Macintosh server.

Running the server component of MacX25 1.0.1 under System 7 requires 4MB of RAM; the client side needs 2MB. To run MacX25 1.0.1 server software with System 6.0.7 requires 2MB of RAM; the client side needs 1MB.

MacX25 supports the following standards and recommendations:

- CCITT X.25 1980 and 1984 versions
- Packet Assembler/Disassembler (CCITT X.3, X.28 and X.29)

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Tech Info Library Article Number:8701





# Tech Info Library

## DAL: How to Determine Client Version Number

Revised: 6/29/92  
Security: Everyone

DAL: How to Determine Client Version Number

=====

Article Created: 5 September 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

Is there an easy way to tell what version of DAL (client software) a Macintosh is running?

DISCUSSION -----

Use the DAL Installation Checker application, which is included with the DAL ToolKit. This application identifies the DAL driver and network adapters installed on your Macintosh, assesses their compatibility with each other, and identifies which ones, if any, are improperly installed.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8703



# Tech Info Library

## AppleTalk: Length and Distance Determined by Cabling

Revised: 9/25/91  
Security: Everyone

AppleTalk: Length and Distance Determined by Cabling

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the maximum allowable length of a full AppleTalk network from end to end?

What is the maximum allowable distance from one device to another (that is from one device to the next device in the chain)

DISCUSSION -----

The total length of any AppleTalk network depends on the type of cabling. AppleTalk is only a set of protocols: the cabling is what determines the total length and the distance between nodes.

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Tech Info Library Article Number:8705



# Tech Info Library

## AppleWorks 3.0: How To Set Privileges on Network

Revised: 9/25/91  
Security: Everyone

AppleWorks 3.0: How To Set Privileges on Network

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

With the network version of AppleWorks 3.0, how can privileges be set so AppleWorks users can't delete the program or necessary program files?

DISCUSSION -----

If Aristotle is not in use, within AppleShare you can assign a printer to a particular user. You also have the option to select a printer from the Chooser or to type the name. If the name chosen or typed in does not match the spooled printer's name, the printer won't be seen. We suggest verifying what the name of the printer for each user is.

You can set the folder privileges so the users have read-only rights. Don't give users the ability to make changes.

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Tech Info Library Article Number:8706



# Tech Info Library

## Apple IIGS: AppleTalk must be installed Error

Revised: 9/23/91  
Security: Everyone

Apple IIGS: "AppleTalk must be installed" Error

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to print AppleWorks on a LaserWriter from an Apple IIGS over AppleTalk. I downloaded "Apple IIGS: Printing to the LaserWriter from AppleWorks" from Tech Info on AppleLink. When trying to set this up by going into the Chooser, I get the error message "Error: AppleTalk must be installed to run this program."

DISCUSSION -----

The error message is a little misleading. The actual cause is an improper setting of the slots in the Apple IIGS Control Panel.

With the older Apple IIGS (256K of RAM on the logic board), you need to set Slot 1 to "Your Card" and Slot 7 to "Built-In AppleTalk". If you have a newer Apple IIGS (1MB RAM), set only Slot 1 to "AppleTalk". You'll have to restart after making the changes for them to take effect.

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Tech Info Library Article Number:8707



# Tech Info Library

## Aristotle: How To Exceed the 150 Application Limit

Revised: 9/25/91  
Security: Everyone

Aristotle: How To Exceed the 150 Application Limit

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm working with Aristotle on an Apple IIGS school network and have 150 applications listed in our current menu. The Apple IIGS teacher workstation has 2MB of RAM installed.

I want to add additional applications to the network, but run up against the 150 limit. How can I create an additional menu while continuing to work under "Administrator"?

DISCUSSION -----

The Aristotle user manual has a 256K RAM card/cache set for initial setup. By increasing the amount of RAM card/cache, you should be able to exceed the 150 barrier that you encountered. The Users, Teachers and menu information are loaded into the RAM card/cache when you log on to the server.

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Tech Info Library Article Number:8708



# Tech Info Library

## Macintosh: Bad F-line Instruction Error (11/95)

Revised: 11/20/95  
Security: Everyone

Macintosh: "Bad F-line Instruction" Error (11/95)

Article Created: 13 August 1991  
Article Last Reviewed: 20 November 1995

TOPIC -----

I am getting a "Bad F-line Instruction" errors on my 68k Macintosh computer.  
What causes these errors?

DISCUSSION -----

In System 7.x, the "Bad F-line Instruction" error is also referred to as the "Co-processor Not Installed" or "No FPU Installed" error; in System 6.0.7 it is referred to as the ID=10 error.

F-Line instructions are used to access attached processors, such as a floating-point math co-processor. A bad F-Line instruction is a bad Floating Point Unit (FPU) call. However, when you see this on computers without FPUs, or in applications that do not support an FPU, then it is probably a spurious error. These messages often indicate software related errors generated by a program that has extraneous program code. On very rare occasions a hardware failure generates these errors.

With System 6.0.7, these errors do not have a direct relationship with floating point co-processors; you will not resolve this error by installing an FPU. In System 7.x, there may be a problem with the math chip, or it may be an unrelated software error.

The error may be caused by bad code in the application which is calling a processor that is not present or calling a memory location that is not there. There may be a corrupted application or an extension causing some spurious memory problem.

A possible solution is to remove and reinstall the application and/or remove and reinstall the system software.

NOTE: On Power Macintosh computers, there may be additional causes to these

types of errors. See the Tech Info articles, "Power Macintosh Computers: No FPU Installed Error" and "Power Macintosh: Type 11 & No FPU Errors Technote" for additional information.

Article Change History:

20 Nov 1995 - Added additional technical information.  
21 Feb 1995 - Added keyword; made minor technical updates.  
21 Sep 1994 - Reviewed.

Support Information Services

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Tech Info Library Article Number:8709



# Tech Info Library

## Macintosh: Troubleshooting ID=01 Bus Error

Revised: 9/27/91  
Security: Everyone

Macintosh: Troubleshooting ID=01 "Bus Error"

=====

Article Created: 13 August 1991  
Article Last Reviewed: 21 July 1992  
Article Last Updated: 21 July 1992

TOPIC -----

I'm getting a lot of ID=01, "Bus Errors" on my Macintosh.

It has happened when I'm setting up disks (both floppies and external hard disks); it has happened with most of the programs I run; it has happened when I try to print. What does it mean?

DISCUSSION -----

ID=01, or "Bus Error", is one of the more common System errors, along with 02, 03, 10, 25, 28. The main reason you are seeing this type of error is that the programmers have changed their coding of errors from an ID-XX format to a "more helpful" word-based error. A Bus or Coprocessor Error can be caused by any application (including the Finder) trying to access any memory address in the F hexadecimal range, which accounts for approximately 50% of the address ranges in most Macintosh models.

These errors usually represent some sort of software incompatibility. It could be that the application is incompatible with the System version, a system extension or INIT (screen dimmer, startup screens, startup sounds, etc.) is conflicting with another extension, or the extension is incompatible with the System version.

There are three ways to reduce the frequency of this error:

- 1) First try removing all third party extensions (INITs) and control panels from your System Folder, as there may be a potential conflict there. (If running System 7, holding down the Shift key as the Macintosh starts up accomplishes this for the current session.) After restarting, if the Bus Error ceases, the problem is with a conflicting



extension or control panel, or perhaps a combination of them. Move these files back into the System Folder gradually, restarting between each move, until you identify the conflicting file.

- 2) Be sure the computer is free of ANY virus, but particularly the WDEF strain. System 6.0.7 has serious problems with WDEF, and in 90% of the cases we've seen these bus and coprocessor errors were caused by WDEF.
- 3) Throw away the current System Folder and reinstall from known good LOCKED disks.

Use your machine for a day or so before adding extensions or control panels back into the system to see if the same errors come up. If they come up only in certain applications, check with the software manufacturer to make sure you have the most current version, and whether they have seen or heard of the problems you are having.

There is a slight chance the errors are hardware related. If the software fixes don't work, try running diagnostics on the hardware. The following parts are the likeliest problem spots:

- RAM
- Logic board
- Hard drive

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Tech Info Library Article Number:8710



# Tech Info Library

## EtherTalk Installation: How System 6.0.7 and System 7 Differ

Revised: 9/27/91  
Security: Everyone

EtherTalk Installation: How System 6.0.7 and System 7 Differ

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Will System 6.0.7 and System 7.x automatically install EtherTalk 2.0.2 as needed for a Macintosh IIfx?

DISCUSSION -----

System 6.0.7

-----  
System 6.0.7 does not automatically install the EtherTalk Drivers. You must use the Network Products Installer that comes with the computer. This correctly installs the Network CDEV and network drivers.

System 7

-----  
System 7 automatically installs network drivers and CDEVs -- if a network card is installed on the computer. If you find that some networking software you need is not installed, use the Installer program on your System installation disks and use the Customize option. The Customize option lets you install the specific software you want without disturbing the rest of your system.

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Tech Info Library Article Number:8711



# Tech Info Library

## System 6: Non-Opening Folder May Be a Memory Problem 2/93

Revised: 2/4/93  
Security: Everyone

System 6: Non-Opening Folder May Be a Memory Problem 2/93

Article Created: 13 August 1991

### Article Change History

02/02/93 - REVISED

- To indicate that this is valid for System 6 only.

### TOPIC -----

Is there a limit to the number of files that can be placed in a folder? I have over 1,000 files in a Data Club network folder, and it will no longer open.

### DISCUSSION -----

The maximum number of files and folders available on a hard drive is roughly limited to about 4.3 billion total, with a 64,000 file limit. If you're having a problem opening the files, it may be related to Finder memory allocation instead.

Do this:

- 1) Do Get Info on the Finder. (In the Finder, select the Finder file, then choose Get Info from the File menu.)
- 2) Increase the Application Memory Size by 100K.
- 3) If that doesn't work, increase the memory allocation by another 100K.

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Tech Info Library Article Number:8713



# Tech Info Library

## ImageWriter 15-Inch: How To Improve Blurry Printing

Revised: 9/20/91  
Security: Everyone

ImageWriter 15-Inch: How To Improve Blurry Printing

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an ImageWriter 15-inch (wide carriage). When printing in "Best" mode the letters appear blurry.

When the printer puts down the second strike from the other direction during printing it is slightly off, giving the job a blurry look. (I have tried printing the same things with a narrow-carriage ImageWriter I and the print is much sharper.)

I've tried adjusting the carrier wire, replacing the logic board, drive transistor set, carrier motor, carrier wire, and print head, but none of these things helped.

Does the mechanical assembly just wear out after a time, producing a little "slop" that could cause this problem? Is there an adjustment for horizontal linearity? Is there a way to get unidirectional printing in the "BEST" mode?

DISCUSSION -----

Printers, like all mechanical devices, eventually exhibit symptoms of fatigue and general wear and tear. There is a point in every printer's life cycle where the cost to repair exceeds the cost of replacement.

Here's what you can do to help your ImageWriter 15-inch:

- 1) Perform the VR1 adjustment. This adjusts for optimum vertical alignment. This is more of a fine tuning adjustment but should be performed first.

- 2) Clean the Carriage Rails thoroughly. This means buff the rails and make sure they are clean all the way around. A quick wipe will not do the trick.
- 3) Check the carrier wire (Apple Part #970-0818 ) that attaches to the Carrier Assembly. Where the cable mounts to the carrier assembly, a small rubber bushing is used to isolate the Carriage assembly from the cable. As the printer ages, this rubber bushing may deteriorate. If that seems to be the case, order another bushing and see if that solves the problem.

Unidirectional printing in Best mode is not an available option.

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Tech Info Library Article Number:8715



# Tech Info Library

## LaserWriter II: 6MB Configuration Won't Cause Problems (11/94)

Revised: 11/10/94  
Security: Everyone

LaserWriter II: 6MB Configuration Won't Cause Problems (11/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

I've been told that a 6MB RAM configuration in a LaserWriter IIntx can cause problems.

The only documentation I've been able to locate states that the 6MB configuration can be physically installed, but that the printer will recognize only 5MB.

Will leaving excess memory in the otherwise empty slots cause any damage or problems with the printer or the attached systems?

DISCUSSION -----

As you have discovered, 1MB of the 6MB is not be recognized. We are not aware of any problems that could be caused by having 6MB installed in the printer.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8716



# Tech Info Library

## MacX: Uses Standard Macintosh System Color Palette as Default

Revised: 9/26/91  
Security: Everyone

MacX: Uses Standard Macintosh System Color Palette as Default

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When plotting a color bar of 256 colors in MacX, I get a full range of colors on the left side (colors 0 through 128 or so) but get only a solid color on the right (colors 128 to 256). When printed to a Tektronix color printer, the screen dump routine returns a error message "130 colors found". This occurs in both root and rootless windows.

The color bar is complete (256 colors) on both the screen and printer when running White Pine's Exodus II, and matches the color table of the host.

Why isn't MacX displaying all the colors like Exodus II?

DISCUSSION -----

There are many X client applications that use the standard or default X color map. MacX uses the standard Macintosh system palette as the default color map (which it should), and this can lead to the situation you describe because the System palette has 128 colors locked in and no additional colors specified.

If the X client application requests a new color map from MacX, it should get the full 256 colors it requests.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8718



# Tech Info Library

## Apple II: Mouse Memory Locations

Revised: 9/23/91  
Security: Everyone

Apple II: Mouse Memory Locations

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the memory addresses for mouse information on the Apple IIe and Apple IIGS?

DISCUSSION -----

Apple IIe/IIC

-----

With the mouse card in slot four of the Apple IIe, locations are stored as follows:

- low byte x    \$047C
- high byte x   \$057C
- low byte y    \$04FC
- high byte y   \$05FC

(This is different if the card is in a slot other than slot four.)

More data on Apple IIe and IIC applications is on pages 196 through 198 and page 363 of the "Apple IIC Technical Reference Manual" from Addison-Wesley.

Apple IIGS

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Information on the Apple IIGS locations is on pages 200 through 205 of the "Apple IIGS Firmware Reference" from Addison-Wesley.



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Tech Info Library Article Number:8720



# Tech Info Library

## MultiFinder: Application Memory Is Released at Quitting

Revised: 8/4/92  
Security: Everyone

MultiFinder: Application Memory Is Released at Quitting

=====

Article Created: 13 August 1991  
Article Last Reviewed: 28 July 1992  
Article Last Updated: 28 July 1992

TOPIC -----

Under MultiFinder or System 7, does the Memory Manager lock up memory allocated to an already launched application (reserving any extra RAM in that allocation for other calls to memory), or does the Memory Manager allow other programs to reuse allocated memory?

DISCUSSION -----

The memory allocated to an application is reserved for that application when it is running. But when the application is quit, the reserved memory goes back into available memory for other applications to use.

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Tech Info Library Article Number:8721



# Tech Info Library

## SCSI: Apple Supports Both SCSI Group 0 and Group 1

Revised: 9/26/91  
Security: Everyone

SCSI: Apple Supports Both SCSI Group 0 and Group 1

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I understand that computers that use SCSI Group 0 set of commands on drives larger than 1.073742 gigabytes will, when they reach the 1.073742 limit, wrap around to the beginning of the disk, overwriting the first blocks.

I am also told that the SCSI Group 0 set of commands is in some Sun Microsystems -- and virtually ALL Apple -- operating systems.

If this is true, what is the solution if I want to have these large capacity drives? Are the vendors of these large drives responsible for providing a solution?

DISCUSSION -----

Apple's "driver" (software installed to the drive during HD SC Setup and uploaded to the memory during system boot) can be set up to use either 6 bytes (Group 0) or 10 bytes (Group 1) SCSI commands. Although they are using 6 bytes command currently, if the capacity of our drives goes beyond 1.2GB, then the driver can be changed to use Group 1 commands for those drives.

The Macintosh OS can allow different drivers to exist at the same time, so we don't have to change the driver for the current drives, just add the new driver when necessary. Incidentally, our current drives support both group 0 and group 1 commands, too.

Our driver currently supports Group 0, but can easily be modified to support Group 1 when necessary.

NOTE: Apple's driver only supports Apple hard drives. Third-party hard

drives require their own drivers.

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Tech Info Library Article Number:8723



# Tech Info Library

## System 7.0: Put Away Problem Workaround

Revised: 9/11/92  
Security: Everyone

System 7.0: "Put Away" Problem Workaround

=====

Article Created: 13 August 1991

### Article Change History

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09/11/92 - REVISED

- To make more clear.

### TOPIC -----

I'm having a problem with System 7 when I follow these steps:

- 1) Drag an application to the desktop.
- 2) Select it and use the Put Away command on it.
- 3) Close the window the Application is in. Now double-click on any document for that application.
- 4) A message says the application can't be found.

### DISCUSSION -----

Here's a workaround: Don't use Put Away. Instead, drag the application to the desktop again, then drag it back to fix the problem. Rebuild the Desktop file.

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Tech Info Library Article Number:8724



# Tech Info Library

## System 7: Unavailable Published Fonts Default to Geneva

Revised: 9/22/92  
Security: Everyone

System 7: Unavailable Published Fonts Default to Geneva

=====

Article Created: 13 August 1991

### Article Change History

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09/22/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

When a file is published, is its original format maintained? If I publish a paragraph of text with PostScript fonts, does the subscriber get PostScript fonts? What if he has different fonts, or only TrueType fonts?

### DISCUSSION -----

If the font that is used in the published document is not available in the subscriber's system, Geneva is used.

If the font is in the System folder, the subscriber's resident font format determines both screen and printer output.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8725



# Tech Info Library

## MacTCP: System 7 Compatibility Problems and Workaround

Revised: 9/26/91  
Security: Everyone

MacTCP: System 7 Compatibility Problems and Workaround

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a System 7-compatible version of MacTCP?

Since I've upgraded, I've lost my Ethernet connectivity and have to log on to the mainframe via Microphone II, which is very slow in a terminal emulating mode. I've also lost my FTP capabilities.

DISCUSSION -----

Although currently (August, 1991) MacTCP is not fully compatible with System 7, you actually can use MacTCP -- if you put it in the right place.

Take MacTCP out of your Extension folder and put it into the System folder itself. Since you are making your connection via LocalTalk, and since you cannot be running VM, you should be able to make a connection.

This is a workaround, but it should give you the same functionality you used to have until full compatibility with System 7 is available.

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Tech Info Library Article Number:8726



# Tech Info Library

## TrueType: Combining Fonts Under Common Name in Font Menu

Revised: 7/27/93  
Security: Everyone

TrueType: Combining Fonts Under Common Name in Font Menu

Article Created: 13 August 1991  
Article Reviewed/Updated: 27 July 1993

TOPIC -----

I want to combine TrueType family of typefaces into one common name under the Font menu: for example, typefaces like Times-bold & Times-italic appearing under one name (Times) in the Font menu.

I have heard of utilities that do this for PostScript fonts (Fifth Generation Systems', Inc. Suitcase II/Font Harmony being one) and also resolve ID conflicts with different fonts. Is there something similar for TrueType?

DISCUSSION -----

The FOND resource is what makes it possible to have different styles of one font family show as one item in a font menu. The possible styles include plain and any combination of the following: bold, italic, underline, outline, shadow, condensed, and extended. Typically, the font styles you see are plain, bold, italic, and bold-italic. Sometimes you see a condensed font. This mechanism is not intended to combine AvantGard-Demi and AvanteGard- DemiOblique under the same font menu item.

Modifying a FOND resource to support more font styles is not something we recommend, as it is rather tricky. However, if you want to try, please read Macintosh Technical Note #198 and Inside Macintosh Volume IV, chapter 5, specifically page IV-39. These documents provide the information you need to attempt this.

We contacted Fifth Generation Systems, Inc., who told us their Font Harmony product does not currently support TrueType fonts.

Article Change History:

27 July 1993 - Company title updated from Fifth Generation Systrems to Fifth Generation Systems, Inc.



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Tech Info Library Article Number:8728



# Tech Info Library

## AppleShare: Suggestions for Expanding Beyond 50 Users

Revised: 9/26/91  
Security: Everyone

AppleShare: Suggestions for Expanding Beyond 50 Users

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have 35 computers on my AppleShare network and need to add 20 workstations. I have a star controller. Do I need to divide the network into zones? Do I need to add a bridge? Do I need to add another file server?

DISCUSSION -----

If you go over the 50-user limit, not everyone will be able to log on to your server at the same time and the network will slow down.

Another AppleShare file server is needed. We also suggest you add an Apple Internet Router that runs in the background on the servers. This will enable you to break up your network into logical zones. Each Internet Router supports two LocalTalk networks. You also might want to consider using an Ethernet backbone between the servers to speed things up.

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Tech Info Library Article Number:8729



# Tech Info Library

## Aristotle: Troubleshooting Menu Management File Already Open.

Revised: 9/26/91  
Security: Everyone

Aristotle: Troubleshooting Menu Management "File Already Open."

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an AppleShare network with Apple II workstations and a Macintosh file server. My problem is with Menu Management in Aristotle. After I make changes in menu.m and I try to save changes, I get the error "File already open." Even after repeated tries, I still get this error and must quit without saving my changes.

DISCUSSION -----

The problem may be with the Access Privileges in the Administrator's ESP folder.

Aristotle's menu management program creates folders named ESP that are stored within individual users' folders on the server's startup volume. In order for Aristotle to work correctly, access privileges must be set up in a certain way:

- 1) Open AppleShare Admin.
- 2) Display the list of folders.
- 3) Open the Users folder.
- 4) Open the appropriate user's folder.
- 5) Display the access privileges on the ESP folder.
- 6) Ensure that all boxes in Access Privileges are checked EXCEPT "Make Changes: Everyone".

7) Make sure that Teacher appears in the Group box.

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Tech Info Library Article Number:8730



# Tech Info Library

## AppleWorks: Landscape Printing on LaserWriter Not Supported

Revised: 9/26/91  
Security: Everyone

AppleWorks: Landscape Printing on LaserWriter Not Supported

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using a LaserWriter Plus with an Apple IIe and AppleWorks 2.1. I can print to the LaserWriter using either Diablo emulation or the IWEM ImageWriter emulator. (This is a stand-alone configuration, with the Apple IIe printing through a Super Serial Card.)

- 1) Can the Diablo emulation mode print sideways?
- 2) Can I change IWEM for landscape printing, or could AppleWorks be used to send a PostScript "setup string" to the LaserWriter to prepare it to print sideways?

DISCUSSION -----

Landscape LaserWriter printing is not supported using Diablo 630 emulation, just as it is not feasible on a Daisy Wheel Printer. The daisy wheel would need another print head to handle the 90 degree rotation of print.

As far as altering the IWEM to print landscape, this is theoretically possible but we know of no easy way to do this. It would involve a fair amount of PostScript programming changes to the IWEM.

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Tech Info Library Article Number:8731



# Tech Info Library

## Macintosh: Troubleshooting Frequent Hard Disk Access Light

Revised: 9/26/91  
Security: Everyone

Macintosh: Troubleshooting Frequent Hard Disk Access Light

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My hard drive access light comes on every 15 seconds or so, blinks as if it is accessing a file, then stops. This happens all the time. What's going on?

DISCUSSION -----

This behavior is most likely caused by a third-party INIT or CDEV, such as On Location, rather than by a hardware problem. An easy test is to start up your system with a known-good System floppy disk. If the symptoms persist, then you may have a damaged hard drive -- though the problem is most likely in software.

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Tech Info Library Article Number:8732



# Tech Info Library

## Macintosh Portable: Tips for Long-Term Storage

Revised: 7/29/92  
Security: Everyone

Macintosh Portable: Tips for Long-Term Storage

=====

Article Created: 13 August 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated:

TOPIC -----

If I use my Macintosh Portable only once every three months, how should I treat the battery: do nothing or keep the charger attached?

DISCUSSION -----

The Macintosh Portable battery is a sealed lead-acid battery and must be recharged periodically in order to maintain normal battery life. If the battery falls below 5.4 volts, it cannot be recharged.

To prevent the battery from completely discharging, keep it plugged in to the Battery Recharger, or leave the Macintosh Portable plugged in to the power adapter whenever possible.

When neither of these methods is possible, observe these precautions for recharging and storing the battery:

- Do not leave the battery in the Macintosh Portable for longer than TWO WEEKS without plugging in the power adapter.
- If you store the battery, recharge it overnight before storing it, then store it in a cool, dry place.
- Do not leave a battery in storage for longer than SIX MONTHS without recharging it.

Failure to follow these steps for recharging and storing the battery will result in a dead battery that CANNOT be recharged and will need to be replaced.

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Tech Info Library Article Number:8733





# Tech Info Library

## AppleCD SC: 110 VAC Only Label is Incorrect

Revised: 9/26/91  
Security: Everyone

AppleCD SC: "110 VAC Only" Label is Incorrect

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My AppleCD SC is clearly marked "110 VAC Only", yet its specification sheet says it has a universal power supply. Which is it?

DISCUSSION -----

The drive's label is incorrect. The AppleCD SC does indeed have a universal power supply, even though label on the bottom of the unit says otherwise. The power supply is labeled "AC Input: 110-240v, 50/60Hz".

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Tech Info Library Article Number:8734



# Tech Info Library

## Desk Accessories: Troubleshooting Inappropriate Fonts (9/94)

Revised: 9/19/94  
Security: Everyone

Desk Accessories: Troubleshooting Inappropriate Fonts (9/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 15 September 1994

TOPIC -----

When opening the Chooser to select a LaserWriter, the LaserWriter appears, but with its name displayed in the Cairo typeface.

DISCUSSION -----

If everything else on your system seems to be working, something is probably wrong with your Chooser desk accessory. (This can also happen to desk accessories like the System 6.0.x Find File, and so on.) The information about the LaserWriter coming in over the network doesn't have font information. If your other modeless dialog boxes are working, then the problem must be with the information compiled and generated by the Chooser.

There are several repair options here, depending on exactly where the problem is:

- Reinstall Chooser (with Font/DA Mover if your System is earlier than System 7).
- Reload all System fonts from original disks.
- Reinstall the System file with Installer.
- Zapping the PRAM (under System 6.0.x or 7.x) doesn't usually work.
- Reinstalling the system software (6.0.x or 7.x) doesn't always work.
- Run the shareware control panel ApFont to reset your system file default font (normally Geneva 12) This usually fixes the problem.
- Delete the entire System folder, then reinstall with Installer.

The last option is the most drastic, but also has the greatest probability of fixing the problem the first time.

You can obtain ApFont from AppleLink.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

#### Article Change History:

15 Sep 1994 - Removed binary file.

08 Jul 1993 - RETITLED and REVISED

Support Information Services

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Tech Info Library Article Number:8735



# Tech Info Library

## Apple Peripherals & Drivers: Advantage over Third-Party Products

Revised: 9/26/91  
Security: Everyone

Apple Peripherals & Drivers: Advantage over Third-Party Products

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What's the advantage of using an Apple printer instead of one from another manufacturer?

DISCUSSION -----

The Macintosh operating system uses drivers for connecting peripheral devices such as printers. At this time, Apple provides drivers only for its own peripherals, not for third-party products.

Some third-party developers have opted to create drivers for non-apple printers. In most cases these drivers work well. Not all printers or drivers have the same capabilities that our drivers and printers have, while others may have more.

Most software developers develop their software to be compatible with our drivers, but not necessarily with third-party drivers. By sticking with Apple products, you are assured a greater compatibility with off-the-shelf software.

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Tech Info Library Article Number:8737



# Tech Info Library

## CloseView: Conflict Display Cards 4•8, 8•24, 8•24 GC & System 6

Revised: 7/16/92  
Security: Everyone

CloseView: Conflict Display Cards 4•8, 8•24, 8•24 GC & System 6

Article Created: 13 August 1991  
Article Last Reviewed: 9 June 1992  
Article Last Updated: 9 June 1992

### TOPIC -----

I'm having intermittent crashes that seem to be related to the CloseView control panel. I am running System 6.0.x. I frequently need to use CloseView, and my Macintosh crashes almost always when using CloseView.

### DISCUSSION -----

There is a known anomaly with CloseView versions prior to 7.0 (that is, those versions before System 7) and the Macintosh Display Cards 4•8, 8•24, and 8•24 GC in the NuBus Macintosh. Your symptoms are typical of this anomaly. The only workaround for using CloseView with these cards is to upgrade to System 7.

CloseView behaves gracefully under System 6 in other Apple-supplied video environments: Macintosh Classic, Macintosh IIsi built-in video, Macintosh IICx built-in video, Macintosh LC built-in video, Macintosh Plus, Macintosh SE, Macintosh SE/30, Two-Page Display Card, Portrait Display Card, and Macintosh II Video Card. We have no data regarding third-party video cards.

The version of CloseView that ships with System 7 is compatible with the 8•24 style of video cards. Users wishing this functionality are encouraged to upgrade to System 7.

Note that though in very brief testing we didn't encounter any problems using CloseView version 7.0 on Macintoshes running System 6.0.x having an 8•24 video card, Apple did not formally test this configuration nor is this a recommended configuration.

An alternative is to use third party CloseView-like programs, such as Stepping Out from Berkeley Systems, Inc. For more information, search under Berkeley

Systems.

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Tech Info Library Article Number:8739



# Tech Info Library

## Apple Ile Card: Effect of Video RAM in Macintosh LC

Revised: 7/24/92  
Security: Everyone

Apple Ile Card: Effect of Video RAM in Macintosh LC

=====

Article Created: 13 August 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

What effect does the Macintosh LC's video RAM card have when running Apple Ile programs using the Apple Ile card with a color monitor?

DISCUSSION -----

The 13-inch High Resolution RGB monitor works fine on the Macintosh LC in Apple Ile emulation. The video RAM SIMM has no effect on Apple Ile emulation. The VRAM SIMM increases the pixel depth of the monitors so it displays more colors or shades of grey.

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Tech Info Library Article Number:8741



# Tech Info Library

## Daystar PowerCard: Prevents Start-Up from High-Density Floppy

Revised: 9/26/91  
Security: Everyone

Daystar PowerCard: Prevents Start-Up from High-Density Floppy

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can a Daystar 50MHz PowerCard affect SCSI transfers? Does the PowerCard's processor speed adversely affect the SWIM chip upgrade?

DISCUSSION -----

The Daystar 50MHz PowerCard should not affect SCSI transfers.

The SWIM chip that controls floppy drives should not be affected except for one minor problem: you can't start up from a high-density floppy because the accelerator card requires an INIT in order to use high-density disks. High density disks can't be used as startup disks because the INIT must be loaded first.

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Tech Info Library Article Number:8743





# Tech Info Library

## Apple III Drive: Parts Not Interchangeable with DuoDisk, Disk II

Revised: 9/24/91  
Security: Everyone

Apple III Drive: Parts Not Interchangeable with DuoDisk, Disk II

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have some spare Apple III computers equipped with 5.25 disk drives. Is it possible to use the drive mechanisms or other parts from the disk drive in the Apple III computers and replace them with parts in the DuoDisk drive?

DISCUSSION -----

The drive mechanism from the Apple III drive is not compatible with either the Disk II or the DuoDisk, so you would have to purchase the mechanical assembly for the DuoDisk. The part number for that drive's mechanical assembly is 661-72128

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8745



# Tech Info Library

## AFE 1.4: 8•24 GC Acceleration Problem

Revised: 6/18/92  
Security: Everyone

AFE 1.4: 8•24 GC Acceleration Problem

=====

Article Created: 13 August 1991  
Article Last Reviewed: 15 June 1992  
Article Last Updated: 15 June 1992

### TOPIC -----

Apple File Exchange will not make a clean transfer of data to IBM format when the Macintosh Display Card 8•24 GC's acceleration is on. AFE works okay when the accelerator is turned off.

### DISCUSSION -----

This is a known issue with version 1.4 of AFE. The problem occurs with AFE when the Macintosh Display Card 8•24 GC graphic acceleration is turned on and may cause the system to hang, especially when formatting or erasing disks.

The problem does not exist with version 7.0 of AFE. However, AFE 7.0 has only been tested with System 7 and the 7.0.1 version of the 8•24 GC software. The current solution for System 6 users is to turn off graphics acceleration when using disks with AFE 1.4.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8746



# Tech Info Library

## Macintosh IIsi: How to Install EtherTalk

Revised: 9/26/91  
Security: Everyone

Macintosh IIsi: How to Install EtherTalk

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I install the drivers for an Apple Ethernet board on a Macintosh IIsi?

DISCUSSION -----

This procedure will install the EtherTalk drivers as well as the Network CDEV into your System Folder:

- 1) The Macintosh IIsi comes with a disk called Network Products Installer. Start your Macintosh IIsi with this disk.
- 2) Launch the Installer.
- 3) Click OK.
- 4) Select EtherTalk.
- 5) Select the drive you wish to install to.
- 6) Click on Install (at some point during this procedure, the application will ask you for your EtherTalk Installation Disk).
- 7) Quit after installation is complete.
- 8) In the Control Panel, select EtherTalk.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8747



# Tech Info Library

## AppleFax Modem: Explanation of Transfer Speeds

Revised: 9/26/91  
Security: Everyone

AppleFax Modem: Explanation of Transfer Speeds

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The AppleFax Modem's specifications state that it can send at 9600bps, and slower speeds -- presumably to other similar modems' speed.

Is there any detailed information about this modem and the speed at which it transmits files under different conditions?

DISCUSSION -----

The specification you're requesting don't really exist as true benchmarks, as there are too many variables inherent in any data transmission. Most communication hardware specifications cite baud rates and bps ratings, and use that as the basis of comparison with other products.

The AppleFax Modem is an often misunderstood product. It is a Group 3-compatible facsimile device, and communicates with other AppleFax Modems at 9600bps in a modem-like fashion. It's important to note the latter point, as many users mistakenly believe that it also functions as a standard modem.

As far as fax transmission goes, the Group 3 protocols call for extensive error checking, which slows data throughput. In addition, Group 3 fax machines automatically lower their transmission rates based on the noisiness of the phone line. These two factors often make the fax modem appear to be transmitting slower than it actually is.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8748



# Tech Info Library

## Macintosh: Basic Troubleshooting for Font Problems

Revised: 8/5/92  
Security: Everyone

Macintosh: Basic Troubleshooting for Font Problems

=====  
Article Created: 13 August 1991  
Article Last Reviewed: 29 July 1992  
Article Last Updated: 29 July 1992

### TOPIC -----

I'm suddenly having problems with the font in one of my Macintosh applications. The font is breaking up and looks like there is no printer font installed. I've reloaded the program, resources, fonts, everything -- but no change.

### DISCUSSION -----

In general, font problems can be traced to either corrupt system resources or to a corrupt application. Here is a short troubleshooting procedure you can try to determine which of the two it may be:

Start up the computer with a known good System Tools or Disk Tools startup diskette (one which contains a complete System Folder). This effectively eliminates any conflicts you may be having with system extensions or control panels in your main System Folder. If this solves your problem, then go back to your main System Folder and move all items that did not come with the original system software to another temporary folder, moving one item back in at a time until you diagnose which caused the conflict.

One other possible problem is duplicate System Folders. Your Macintosh may be "switching" to another System on your hard disk and you aren't aware of it. You think you're modifying and testing one System Folder, but your Macintosh is actually using the other System.

Use the Find File desk accessory (or System 7's Find command) to search for multiple System Folders. If you find more than one, trash all but the active System Folder. If that remaining System Folder is still a problem, then move any items from it you want saved to a holding folder and drag the remainder of the System Folder to the trash. Then start up from an

Installer disk and reinstall the system.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8750



# Tech Info Library

## Macintosh IIfx: Two Internal Hard Drives Not Supported

Revised: 7/15/92  
Security: Everyone

Macintosh IIfx: Two Internal Hard Drives Not Supported

=====

Article Created: 13 August 1991  
Article Last Reviewed: 14 July 1992  
Article Last Updated:

TOPIC -----

I have a Macintosh IIfx with two internal 3.5 SCSI drives. The drives are daisy-chained, with the last drive having a terminator and the first one without. I also have an external SyQuest drive with internal termination and a short cable.

I'm concerned that somehow this setup will not work with the Macintosh IIfx and its different bus impedance.

It looks to me like:

- 1) I need to remove internal termination of SyQuest and use a Terminator II.
- 2) I need to keep the internal drives the same but add a noise filter, probably at end of internal daisy chain on drive which has termination.

Am I right?

DISCUSSION -----

Your configuration is not an Apple-supported solution. We advise removing the second internal hard drive, particularly with the Macintosh IIfx and its exact termination requirements.

You have the right idea about what it takes to make this work. The termination needs to be augmented with a SCSI Filter on the last internal hard drive and a Terminator II installed on the last external device (and no internal termination).

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Tech Info Library Article Number:8751





# Tech Info Library

## Ethernet: Don't have Different Routers Point to Same Network

Revised: 9/26/91  
Security: Everyone

Ethernet: Don't have Different Routers Point to Same Network

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it possible to have two different zone-creating devices pointing to the same local zone (for example, a Cayman GatorBox and the Internet Router)? Could there be two Ethernet connections, one on the GatorBox and the other on the Internet router, both attached to the same LocalTalk LAN on the other side?

DISCUSSION -----

You can't have two different routers point to the same physical network. An Ethernet backbone is a much better way to access the three different networks.

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Tech Info Library Article Number:8752



# Tech Info Library

## GS/OS 5.04 Upgrade: Correcting Drive Recognition Problem

Revised: 9/26/91  
Security: Everyone

GS/OS 5.04 Upgrade: Correcting Drive Recognition Problem

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I upgraded my Apple IIGS to GS/OS 5.04 on an AppleShare network and it no longer recognizes 5.25 drives.

DISCUSSION -----

When this happens, the 5.25 driver is usually missing from the drivers folder. Run the GS/OS 5.04 Installer again and install the 5.25 drivers.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8753



# Tech Info Library

## Apple HD Backup: Incompatible with SuperDrive Floppies

Revised: 9/26/91  
Security: Everyone

Apple HD Backup: Incompatible with SuperDrive Floppies

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is Apple's HD Backup compatible with High Density 1.44MB floppies?

DISCUSSION -----

HD Backup is incompatible with the Apple SuperDrive. It doesn't correctly format diskettes inserted in this type of drive -- and it tries to format every diskette it's going to back up to.

Apple HD Backup ceased shipping with System Software beginning with System 6.0.5, and is no longer shipping with external disk drives beginning with those bundled with System 6.0.7.

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Tech Info Library Article Number:8754



# Tech Info Library

## Hard Drives: What to Do about Volume BTREE Structure Problems

Revised: 9/26/91  
Security: Everyone

Hard Drives: What to Do about Volume BTREE Structure Problems

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Even though there is plenty of room, suddenly my hard drive says I have no space left on the disk. There are no viruses, and rebuilding the Desktop doesn't help.

Norton Utilities tells me that:

- It can't read BTREE header
- The Volume bit map is incorrect
- The Volume info blocks have errors

DISCUSSION -----

You're experiencing Volume BTREE Structure Corruption. When this happens, the hard drive needs to be reformatted. It is possible for software to bomb or crash hard enough to cause format structure damage to the hard drive. This is one of the main reasons we strongly suggest frequent backups.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8756



# Tech Info Library

## Macintosh Hard Disk 20: How To Verify HFS Formatting

Revised: 9/26/91  
Security: Everyone

Macintosh Hard Disk 20: How To Verify HFS Formatting

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I get a Macintosh Hard Disk 20 to format as an HFS volume?

DISCUSSION -----

Select the Macintosh Hard Disk 20 volume and choose Erase Disk in the Special menu.

You can to see if formatting was successful if there are the two thin lines near the top of the disk window. If you see a one-pixel dot at the left side of those two lines, it is an HFS volume.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8757



# Tech Info Library

## Macintosh IIsi: How To Invoke Interrupt with MacsBug

Revised: 7/20/92  
Security: Everyone

Macintosh IIsi: How To Invoke Interrupt with MacsBug

=====

Article Created: 13 August 1991  
Article Last Reviewed: 17 July 1992  
Article Last Updated:

TOPIC -----

I'm having problems using the programmer switch on a Macintosh IIsi. I'm using MacsBug and have tried Command-Power On and Control-Command-Power On to no avail.

DISCUSSION -----

To invoke the interrupt on a Macintosh IIsi through MacsBug, use the "hot keys" Command-Reset. And it's important that you use the latest version of MacsBug.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8758



# Tech Info Library

## Macintosh XL: No Support for LaserWriter LS

Revised: 9/24/91  
Security: Everyone

Macintosh XL: No Support for LaserWriter LS

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to use a Macintosh XL with a LaserWriter LS. Can System 6.0.7 run on a Macintosh XL?

DISCUSSION -----

All further Apple development on the Macintosh XL was stopped when it was discontinued. At this time, there are no plans for upgrading MacWorks to System 6.0.7 for LaserWriter LS support.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8759



# Tech Info Library

## Macintosh XL: Memory Upgrades

Revised: 9/24/91  
Security: Everyone

Macintosh XL: Memory Upgrades

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are there any Apple memory upgrades available for the Macintosh XL?

DISCUSSION -----

When the Macintosh XL was available, Apple used 512K memory boards, of which two were supported in the system. AST used to manufacture 1MB memory boards, but they have since discontinued that product.

Sun Remarketing is an excellent source for support on the Macintosh XL. They also carry outdated third-party products for many discontinued Apple products. They may have some of those AST board in stock.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

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Tech Info Library Article Number:8760





# Tech Info Library

## Apple II High-Speed SCSI Card: Using with GS (11/96)

Revised: 11/21/96  
Security: Everyone

Apple II High-Speed SCSI Card: Using with GS (11/96)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 15 November 1996

TOPIC -----

I have an Apple IIGS with a High-Speed SCSI Card but am unable to access my SCSI Hard Drive. I am using the drivers that came on the System Tools disk 5.0.2.

DISCUSSION -----

You need to install the drivers on System Tools disk 5.0.4, which should support the High Speed SCSI card. The SCSI card is also self-terminating and any external terminators should be removed.

Article Change History  
15 Nov 1996 - Reviewed for technical accuracy, revised formatting.

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Tech Info Library Article Number:8762



# Tech Info Library

## Apple Products: How To Get Replacement Registration Card

Revised: 6/1/92  
Security: Everyone

Apple Products: How To Get Replacement Registration Card

=====

Article Created: 13 August 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated: 26 September 1991

TOPIC -----

I've lost my product registration form for my Apple equipment. Can I get another one?

DISCUSSION -----

To get a new card, contact the Apple Customer Assistance Center at 800-776-2333.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8763



# Tech Info Library

## LaserWriter: Improving the Speed of a Shared LaserWriter

Revised: 9/26/91  
Security: Everyone

LaserWriter: Improving the Speed of a Shared LaserWriter

=====

Article Created: 29 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a 15-node TOPS network with a shared LaserWriter IINT. I'm not happy with the printing speed across the network and I'm considering upgrading to a LaserWriter IINTX. Most of the documents we print are 1 to 4 pages with only 3 to 4 fonts. Is the bottleneck the LocalTalk speed, or could a LaserWriter IINTX significantly improve printing speed? Can you tell me how a LaserWriter IINTX could increase speed, and how much improvement to expect?

DISCUSSION -----

Upgrading to a LaserWriter IINTX will definitely help performance some, but it's important to consider other factors that may also help. The principal items that affect printing to a PostScript LaserWriter with a given application (not necessarily in this order) are:

- The LaserWriter's CPU performance.
- The type of print job: complex graphics or text.
- Whether the required fonts are resident in the printer or need to be downloaded.
- The type of connection to the host: serial or LocalTalk.
- The host's performance: how fast it can prepare and send data.

The environment may also play a major role in printing performance. Connection to a LocalTalk network adversely affects the performance of many LaserWriters if that network is used for file services such as an

AppleShare File Server or TOPS installation. The LocalTalk bandwidth can be used up, resulting in poor network and printing performance.

From what you've told us about your installation, it doesn't sound like upgrading to a LaserWriter IINTX will help much. You may see a mild improvement in print speeds, but unless you print complex graphics as well as text, you won't see a dramatic change.

The type of Macintosh, the system software versions, and the applications you use can affect speed quite a bit.

Printing slows down if you repeatedly use fonts (TrueType or PostScript) that must be downloaded. If this is the case, we recommend that you make a habit of downloading the most frequently used fonts to the LaserWriter with the LaserWriter Font Utility. Downloading fonts once between power cycles instead of for each print job improves speed on both the LaserWriter IINT and IINTX.

The LaserWriter IINTX does have the advantage of optional memory upgrades for additional fonts and performance. A hard disk is also available for the LaserWriter IINTX to download fonts only once.

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Tech Info Library Article Number:8767



# Tech Info Library

## Apple HD Setup: Why 80MB Drive Formats to Only 76.8MB

Revised: 9/26/91  
Security: Everyone

Apple HD Setup: Why 80MB Drive Formats to Only 76.8MB

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've noticed that the new Apple 80MB internal drives only format to 76,800 Kbytes usable! Is there any reason for this? (The old drives formatted to the entire 80MB.)

DISCUSSION -----

Earlier versions of HD Setup initialized a volume to its maximum formatted capacity. Drives of similar advertised capacity have slightly varying total formatted size.

The release of the Apple Tape Backup unit lets you do a mirror-image backup of your drive. But in order to restore a mirror image backup, the volume that is being restored to must be of like or greater capacity than the volume from which the data came.

If, for instance, you had a failing hard disk that could be formatted to 78MB, did a mirror-image backup, had the drive replaced with one that could be formatted to only 76MB, you wouldn't be able to restore your work.

Apple modified HD Setup so that it formats each series of drive we sell to a like-total formatted size for that series, regardless of vendor. In the case of the nominally 80MB drive, 76MB is the lowest common denominator of all vendors that we use.

You may be able to reclaim some of the unused 4MB by using a third-party initialization application, but this is not guaranteed nor supported by Apple.

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# Tech Info Library

## Macintosh Display Card 8•24 GC: Acceleration Slows Some Apps

Revised: 6/22/92  
Security: Everyone

Macintosh Display Card 8•24 GC: Acceleration Slows Some Apps

=====

Article Created: 13 August 1991  
Article Last Reviewed: 15 June 1992  
Article Last Updated:

TOPIC -----

My Color Studio graphics software runs slower with the Macintosh Display Card 8•24 GC's acceleration turned on than with it off.

DISCUSSION -----

Many graphics programs have been optimized at the hardware level, bypassing the QuickDraw routines. In such cases, turning on software acceleration causes the slowdown you're encountering. We suggest you contact the software vendor for upgrade and compatibility information.

When the accelerator is turned off, the Macintosh Display Card 8•24 GC behaves just like a Macintosh Display Card 8•24.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8770



# Tech Info Library

## Macintosh: Troubleshooting Invisible Folders Problem

Revised: 6/15/92  
Security: Everyone

Macintosh: Troubleshooting Invisible Folders Problem

=====

Article Created: 13 August 1991  
Article Last Reviewed: 20 May 1992  
Article Last Updated: 20 May 1992

### TOPIC -----

When opening a Macintosh-formatted floppy disk from within Microsoft Works to select a file, no folders appear. But the folders appear normally in the Finder directory. The files are all available, but the folders on the disk are invisible. How can we get the disk back to normal?

### DISCUSSION -----

1) It's possible that the disk directory got corrupted, causing the problem you are seeing. Rebuild your Desktop by holding down the Command and Option keys while inserting the diskette. Run Disk First Aid to repair any directory damage.

2) Someone may have made the folders invisible. Use a utility such as ResEdit or Symantec Utilities to check this.

3) If running System 7.0 or 7.0.1, make sure to obtain System 7 Tune-Up version 1.1.1 or greater. Running Tune-Up 1.1.1 or greater will prevent a problem from occurring where folders and files begin to disappear from the desktop, but are in fact still intact and available.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8771





# Tech Info Library

## AppleShare: Not Possible to Expand Server Beyond 50 Users

Revised: 9/26/91  
Security: Everyone

AppleShare: Not Possible to Expand Server Beyond 50 Users

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an AppleShare network that's reached the 50-user limit. I want to be able to stretch and get an additional 5 users on the net. Is there some kind of a patch or workaround to do this?

DISCUSSION -----

There is no known patch for enlarging the number of allowed users for AppleShare. The only solution at this time is to acquire another server.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8772



# Tech Info Library

## A/UX: Can't Run on Macintosh LC (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Can't Run on Macintosh LC (8/94)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 29 August 1994

TOPIC -----

Can I modify a Macintosh LC so it can run A/UX?

DISCUSSION -----

The Macintosh LC can't run A/UX because it lacks the required PMMU. Currently, Apple does not offer a PMMU upgrade for the Macintosh LC. This could be a third-party opportunity, though we aren't aware of any company manufacturing a PMMU for the Macintosh LC at this time.

Refer to the document titled "A/UX and Compatible Macintosh Computers" for a complete list of which Macintosh models are supported by A/UX.

Article Change History:  
29 Aug 1994 - Reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8775



# Tech Info Library

## A/UX: Simultaneous LocalTalk and EtherTalk Connections (4/95)

Revised: 4/17/95  
Security: Everyone

A/UX: Simultaneous LocalTalk and EtherTalk Connections (4/95)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 17 April 1995

TOPIC -----

Does A/UX support simultaneous connections to LaserWriters on LocalTalk and TCP communications over EtherTalk, or is a GatorBox or FastPath required for a simultaneous connections?

DISCUSSION -----

A Macintosh running A/UX will not allow simultaneous network connections via LocalTalk and Ethernet. You can print to a LaserWriter by making it a local printer to your Macintosh as a serial PostScript device under A/UX, or by selecting EtherTalk in the Network control panel in the Macintosh environment under A/UX.

Article Change History:  
17 Apr 1995 - Updated the article for clarity.  
31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:8776



# Tech Info Library

## System 7: Can't Run from Single 800K Floppy Disk

Revised: 9/26/91  
Security: Everyone

System 7: Can't Run from Single 800K Floppy Disk

=====

Article Created: 13 August 1991

### Article Change History

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08/18/92 - CORRECTED

- To clarify that a high density (1.4MB) startup floppy is possible.

### TOPIC -----

Is there a way to create a bootable floppy of System 7?

If not, what is Apple's recommendation for doing diagnostics in the event of a system hang on startup or a hard disk crash?

### DISCUSSION -----

It is not possible to create an 800K system startup floppy disk, though a high density (1.4MB) floppy will hold a minimal System 7. For those Macintoshes that have an Apple (FDHD) SuperDrive, making a bootable floppy is simply a matter of running the System 7 Installer program, choosing customize, and selecting "Min System" for your Macintosh model.

The initial recommendation for troubleshooting System 7 is to hold down the Shift key on startup to temporarily disable any system extensions (INITs). Some other suggestions for system software troubleshooting:

1. Attach an external hard drive that has System 7 on it and set startup. Make sure this hard drive has appropriate and latest virus checkers installed.
2. Run standard hardware diagnostics to check the hardware.

3. Completely replace the System 7 software if removing the system extensions doesn't help. This is where it might be useful to have a 1.4MB startup floppy, so that you can at least get to the hard disk to remove the damaged system files and set aside other files you want to save.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8777



# Tech Info Library

## Macintosh: Explanation of About This Macintosh... (10/93)

Revised: 10/7/93  
Security: Everyone

Macintosh: Explanation of "About This Macintosh..." (10/93)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 7 October 1993

TOPIC -----

When I choose "About This Macintosh..." from the Apple menu, I get information about my computer's memory and how it's being allocated. When I look at how much memory my applications are using, I typically see a grayed bar that's fully or partially filled by a black bar. Sometimes the black bar moves around.

What do the black and grey bars indicate? I've always thought that the gray was for how much memory the program had reserved for itself and that the black was how much memory it was currently using.

DISCUSSION -----

The total bar (black + gray) equals the amount of RAM allocated to the application, with the black portion indicating the amount of RAM currently used by that application. Technically, the program would have to use the operating system's memory manager for the black portion to be completely accurate, and some programs don't do that. The black portion fluctuates in proportion to actual RAM in use.

Notes: Under System 6.0.x, you get the same information with the "About The Finder..." item under the Apple menu.

Under System 7.x, you can get an "About The Finder..." choice under the Apple menu instead of "About This Macintosh..." by holding down the Option key. When you select this menu item, you'll see the mountain Finder graphic.

Performa systems display the same information with the "About This Computer..." item under the Apple menu.

Article Change History:

7 October 1993 - Changed the title and added notes to indicate the titles of the same menu item under different systems.

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Tech Info Library Article Number:8778



# Tech Info Library

## Macintosh SE: SE/30 Upgrade Changes Function of Command-Shift-4

Revised: 8/7/92  
Security: Everyone

Macintosh SE: SE/30 Upgrade Changes Function of Command-Shift-4

=====

Article Created: 13 August 1991  
Article Last Reviewed: 6 August 1992  
Article Last Updated:

TOPIC -----

I've upgraded my Macintosh SE to a Macintosh SE/30. Command-Shift-4 with Caps Lock up used to print the active window. Now it form-feeds one sheet of blank paper on my ImageWriter II.

How do I print the active window on a Macintosh SE/30?

DISCUSSION -----

The screen dump of the active window was discontinued in System 6.X for any system newer than the Macintosh SE.

However, holding down Command-Shift-Caps Lock-4 should give you a screen dump of the desktop, including any active windows.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8779





# Tech Info Library

## Macintosh: Don't Split ADB Signal

Revised: 6/1/92  
Security: Everyone

Macintosh: Don't Split ADB Signal

=====

Article Created: 13 August 1991  
Article Last Reviewed: 22 May 1992  
Article Last Updated:

TOPIC -----

Some of the newer Macintosh computers, like the Macintosh IIsi, have only one ADB port in the back. This can be quite limiting; two ADB ports would be much better.

Can I make up my own ADB "T" plug or "Y" cable, so that two ADB female connections would be provided from the one port? Will the two ADB devices interfere with each other?

Another way to phrase the question: on a Macintosh with two ADB ports on the back, does each port come off a different and separate part of an interface chip, or are the two connections "common", so that pin 1 on connector 1 is connected to pin 1 on connector 2?

DISCUSSION -----

We do not recommend splitting the ADB signal, as it could cause problems with signal integrity. The signal is not very strong, and if split would be even weaker.

On a Macintosh with two ADB ports, both ports both go to the same ADB controller chip, but are physically separated to deliver the full signal down the bus.

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Tech Info Library Article Number:8781



# Tech Info Library

## Macintosh: How To Make Curly Quotation Marks

Revised: 9/27/91  
Security: Everyone

Macintosh: How To Make "Curly" Quotation Marks

=====

Article Created: 13 August 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated:

TOPIC -----

My Macintosh (using New York font) makes quotation marks angled only one way. How can I produce the opposing quotation mark?

DISCUSSION -----

Here's how to produce "curly" quotes from the Macintosh keyboard:

|           |                |
|-----------|----------------|
| for this  | press          |
| character | these keys     |
| -----     | -----          |
| "         | Option-[       |
| `         | Option-]       |
| "         | Option-Shift-[ |
| '         | Option-Shift-] |

Some word-processing applications (MacWrite is one) can be set to automatically produce the appropriate "curly" quotes when you type ' or ".

Here's how to use the Key Caps desk accessory to see what characters are available to you:

- 1) Once you select Key Caps from the Apple menu, you see a display of all characters available in the current font -- actually, all those you can produce without using the Shift, Command, or Option key.
- 2) To see what characters you can make with various combinations of the Shift, Control, and Option keys, just press those keys on the keyboard.

3) To change to another font, select it from the Key Caps menu.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8782



# Tech Info Library

## AppleShare: AppleShare 2.0.1, System 6.0.5 & 6.0.7 Can Co-Exist

Revised: 9/27/91  
Security: Everyone

AppleShare: AppleShare 2.0.1, System 6.0.5 & 6.0.7 Can Co-Exist

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Macintosh SE/30 file server running System 6.0.5 and AppleShare 2.0.1. There are Macintosh LC and Macintosh Classic computers on the network. Will the file server need to be upgraded to System 6.0.7, and is AppleShare 2.0.1 still okay to use?

DISCUSSION -----

You do not need to upgrade the file server's system software, and AppleShare 2.0.1 will work just fine.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8783



# Tech Info Library

## AppleCD SC: IBM PC Compatibility

Revised: 3/26/93  
Security: Everyone

AppleCD SC: IBM PC Compatibility

=====

Article Created: 13 August 1991

Article Change History

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03/25/93 - UPDATED

- With new information

TOPIC -----

Can I use an AppleCD SC with an IBM PC?

DISCUSSION -----

The AppleCD SC and the AppleCD SC+ can be used with MS-DOS systems that have a SCSI connection when the Trantor CD-ROM drivers are installed on the MS-DOS system. Trantor does not support the AppleCD 150 and AppleCD 300 with their current version of driver.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8785



# Tech Info Library

## Apple IIe Card: Using with Apple High Resolution 13-inch Monitor

Revised: 6/11/92  
Security: Everyone

Apple IIe Card: Using with Apple High Resolution 13-inch Monitor

=====

Article Created: 13 August 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated: 3 June 1992

TOPIC -----

Are there any display problems associated with connecting the Apple 13-inch High Resolution Monitor to a Macintosh LC with an Apple IIe Card? Will some objects display with incorrect aspect ratios?

DISCUSSION -----

There shouldn't be any problem using the Apple High Resolution 13-inch Monitor with the Apple IIe Card. Using a 13-inch RGB monitor on the Macintosh LC with Apple IIe emulation should not affect the aspect ratio of any object. Circles should still be circles. However, when running Apple IIe emulation, you can only use certain Apple IIe text display modes:

- 80 columns, 24 lines, 5x7 dot matrix
- 40 columns, 24 lines, 5x7 dot matrix
- All text appears on the screen as normal, inverse, or MouseText characters

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8786



# Tech Info Library

## Apple Monitor Stand: Specifications (Discontinued)

Revised: 6/1/94  
Security: Everyone

Apple Monitor Stand: Specifications (Discontinued)

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the dimensions of the Apple Monitor Stand?

DISCUSSION -----

The dimensions of the stand are:

- height 3.5 inches
- width 11.25 inches
- depth 14.5 inches

The stand has a swivel range of 45 degrees in each direction, and a tilt range of 12 degrees backward and 10 degrees forward.

Copyright 1991-1994 Apple Computer, Inc.

Tech Info Library Article Number:8787



# Tech Info Library

## Apple PC 5.25 Drive: Troubleshooting Slow Disk Recognition

Revised: 9/26/91  
Security: Everyone

Apple PC 5.25 Drive: Troubleshooting Slow Disk Recognition

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Apple PC 5.25-inch floppy takes about a minute for an inserted 5.25-inch disk to be recognized by my Macintosh. Is this normal?

DISCUSSION -----

It depends on the amount of information on the MS-DOS diskette, but there are probably some other factors involved to bring the access time to a full minute. More than likely there are other INITs, CDEVs or applications (if you're running under MultiFinder) that are stealing CPU time away from Apple File Exchange. You can easily check this by starting up with a floppy under Finder-only and launching AFE.

Another possibility is that AFE is running out of memory. If you're running MultiFinder, try boosting the RAM allocation by 200K or so.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8788





# Tech Info Library

## AppleShare Print Server: Prep File and Using with System 7

Revised: 9/26/91  
Security: Everyone

AppleShare Print Server: Prep File and Using with System 7

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I can't make my AppleShare Print Server accept print files from System 7 drivers. The AppleShare Print Server doesn't see the "Prep" file on the server that matches System 7.

DISCUSSION -----

The Laser Prep file is now included in the System 7 LaserWriter driver. Apple also includes a System 7 Prep file that is separate from the LaserWriter driver specifically for the AppleShare Print Server.

Copy both the System 7 LaserWriter Driver and the System 7 LaserWriter Prep file over to the AppleShare Print Server. This prep file is needed only on the server, not your individual workstation.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8789



# Tech Info Library

## AppleCD SC: How to Connect Loudspeakers

Revised: 9/26/91  
Security: Everyone

AppleCD SC: How to Connect Loudspeakers

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to use Bose 101B speakers with the AppleCD SC so we can use the tech procedures off CD. Is all I need some speaker wire to hook these up? Are there speaker lugs on the back of the AppleCD SC player or will I need a cable for the headphone jack?

DISCUSSION -----

The AppleCD SC provides stereo line-out jacks on the back of the unit. The connectors are standard RCA phono plug jacks.

Because the output is non-amplified, an amplifier is needed to drive most loudspeakers. Self-powered speakers, such as the Bose Roommate series, need only be plugged in.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8790



# Tech Info Library

## Apple IIGS: How To Set Slots for AppleShare

Revised: 9/26/91  
Security: Everyone

Apple IIGS: How To Set Slots for AppleShare

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have an AppleShare network with a Macintosh SE server connected to Apple IIGS and Apple IIe computers.

One Apple IIGS has a SCSI hard drive. When I use this Apple IIGS on the network, I have its Control Panel slot settings to Startup Slot=Slot 7, and Slot 7 set for built-in AppleTalk.

I want to install AppleShare and the Apple IIGS Desktop/Finder to the hard drive and use it as a startup device so I can sign on to the server using the Control Panel. Since both AppleTalk and the hard drive seem to require slot 7, how can I use both at the same time?

DISCUSSION -----

The SCSI hard disk does not have to be in slot 7.

- If you want to start up from the hard drive, place the hard drive controller in slot 2 and set your startup slot to 2 in the Control Panel.
- If you want to start up over the network, leave the start-up slot as 7 and set slot 7 as AppleTalk.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8792



# Tech Info Library

## Macintosh: Vibration Tolerance (11/94)

Revised: 11/10/94  
Security: Everyone

Macintosh: Vibration Tolerance (11/94)

=====  
Article Created: 30 August 1991  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

What are the limits of vibration tolerated by Macintosh computers?

DISCUSSION -----

The most sensitive components in a Macintosh system are:

- 1) the floppy disk drive, and
- 2) the hard drive.

Here are the vibration limits for floppy drives:

- Operating Limit: 5 Hz - 500 Hz at Max. .5 G
- Non-Operating Limit: 5 Hz - 500 Hz at Max. 2 G

For vibration limits of hard drives, perform a search on the hard drive itself.  
The specifications for the drive will state its vibration or shock limit.

Article Change History:  
10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8793



# Tech Info Library

## Networks: Selectively Securing Zones and Devices (6/94)

Revised: 6/29/94  
Security: Everyone

Networks: Selectively Securing Zones and Devices (6/94)

Article Created: 29 August 1991  
Article Reviewed/Updated: 29 June 1994

TOPIC -----

Is there any product available that will allow a network administrator to hide zones or services on a selective basis?

I have two divisions on a single network that want to keep their printers separate. Each zone contains printers from only one division.

DISCUSSION -----

There are several products available to isolate a LaserWriter. Some are hardware, some are software, but most work on the level of zones, hiding devices within a zone to the entire Internet.

There are several options available to allow zone and device hiding, some are LocalTalk-to-Ethernet routers, and some are Ethernet-to-Ethernet routers. To locate a vendor's address and phone number, use the vendor name as a search string.

Apple Internet Router

Apple Internet Router supports three "families" of access methods: AppleTalk, half-routing, and tunneling. Each family may include more than one specific access method. For example, LocalTalk, EtherTalk, and TokenTalk are all AppleTalk access methods.

One of the more interesting features of Apple Internet Router is device hiding, which lets you select any device or devices on your local network to be hidden from users on other networks. Device hiding is configured in the "Hide Devices..." dialog, which is accessed by clicking the "Hide..." button in the Port Info window.

You can elect to hide no devices, all devices, only a specific list of devices,

or all devices except a specific list. You can hide your selection from all other ports or from a specific other port.

The administrator must use good judgment when setting up the list of hidden devices (or the list of not hidden devices). If the list contains more than a few devices, it will adversely affect performance.

In order for device hiding to be effective in a loop environment, all routers on a given network must hide the same devices. Otherwise, a "hidden" device would be accessible through another router that isn't hiding it.

Device hiding is not foolproof. Users could obtain a hidden device's AppleTalk address through some means other than looking for it on their network, such as running Inter•Poll on a portion of the internet that does have access to the device. Armed with that information, a user could access the device programmatically, even though the device is theoretically hidden.

#### AppleTalk Router Security Features: LocalTalk-to-Ethernet Routers

-----  
Cayman Systems GatorBox

Zone filtering prevents users in the filtered zone from seeing other zones on the network. This also prevents users in zones outside of the filtered zone from seeing devices in the filtered zone.

Laser filtering is, in a sense, a subset of zone filtering. Where the zone filtering shields all of the devices from the outside, laser filtering allows you to hide only LaserWriter printers from anyone outside of its AppleTalk zone. This also prevents users in the filtered zone from seeing LaserWriter printers in other zones.

Tilde filtering allows you to hide any device with a tilde character (~) at the end of its name from being seen by anyone outside of its zone.

Shiva FastPath

The Stay in Zone option prevents users in the filtered zone from seeing other zones on the network. This also prevents users in zones outside the filtered zone from seeing devices in the filtered zone.

LaserWriter Security is, in a sense, a subset of zone filtering. Where the zone filtering shields all of the devices from the outside, laser filtering allows you to hide only LaserWriter printers from anyone outside of its AppleTalk zone. This also prevents users in the filtered zone from seeing LaserWriter printers in other zones.

Tilde Security allows you to hide any device with a tilde character (~) at the end of its name from being seen by anyone outside of its zone.

NRC 2000

The Insecure option allows you to define sections of your Internet as insecure. Insecure network's routing information is not propagated to any other section of

the network, thus providing a way to control who can and cannot access the secure sections of the Internet.

#### APT

APT Communications announced an update to their AppleTalk routers. They now support device security across zones. Users can, for example, hide their LaserWriter from anyone not in their zone. You can hide other devices, such as file servers and NetModems.

You can allow other users on different zones, different sets of access to different devices. For example, Zone A may have no access to your LaserWriter, but still have access to a File Server, while Zone B has access to all LaserWriter printers, but not AppleTalk ImageWriter printers or NetModems.

APT routers connect multiple LocalTalk, Ethernet, WAN, and Serial networks and support Phase II AppleTalk.

#### AppleTalk Router Security Features: Ethernet-to-Ethernet Routers

-----

##### NRC Multigate Macintosh

The Insecure option allows you to define sections of your Internet as insecure. The Insecure network's routing information is not propagated to any other section of the network, thus providing a way to control who can and cannot access the secure sections of the Internet.

##### Cisco (CGS/MGS/AGS)

The Cisco router offers the ability to set up access lists that allow controlled access to your network. Access lists are set up to filter all inbound network traffic from any network listed in the access list. It excludes traffic from networks listed in the access lists from your network. Traffic from your network is still propagated to all other segments of your Internet.

##### International Transware (InterTalk)

This is a 2-port LocalTalk router that lets the user create blind and private zones. Users in a blind zone cannot see or use the resources of the AppleTalk Internet, but users outside of the blind zone can see and access any of the services in the blind zone. Private zone users have access to the entire Internet, but users outside the private zone cannot see or access any of the services of the private zone.

##### NetCounter

-----

NetCounter limits use of a LaserWriter by using the user name as specified in the Chooser for all accounting and access control. Therefore, NetCounter does NOT provide a secure environment against knowledgeable users who are motivated to circumvent the NetCounter controls. The security can be increased to some degree by removing the Chooser Desk Accessory, if the Chooser is not required.

NetCounter is an application that downloads PostScript code to PostScript printers. Thus, NetCounter does NOT support QuickDraw printers such as the LaserWriter IISC. Because the accounting code executes on the printer rather than on the Macintosh, you install the NetCounter application only on the administrator's Macintosh, not on each Macintosh on the network.

The NetCounter code and log data normally reside in the printer memory. Therefore, in the event of a power failure or printer reset, the log data in the printer memory is lost. A Macintosh running NetCounter can request transfer of log data from the printer to the Macintosh, so the administrator can limit the amount of information lost in the event of a power failure. If the printer has a hard disk attached (like a LaserWriter IINTX with hard disk), the log data is automatically saved to the hard disk, so that no information is lost in the event of a power failure. If the printer has the new PostScript ROMs installed (such as M0445LL/A LaserWriter IINTX Upgrade Kit or M6215/A Printer), you can install the NetCounter PostScript code on the printer's hard disk. This allows NetCounter to start up automatically after a power failure or whenever the printer is turned on, and the code does not need to be manually downloaded. This is the recommended configuration.

Within the constraints described, NetCounter offers the following features:

- Provides a count of the number of pages printed by each user.
- Provides two different approaches to control access to the printer:
  - Grant access to specific users (deny all other users).
  - Deny access to specific users (grant access to all other users).
- Provides miscellaneous control and display of printer parameters  
For example, enable/disable printer startup page, or set the manual feed timeout.
- Prevents the PostScript Trojan horse (which changes the printer's password) from infecting the printer while NetCounter is running.

NetCounter can control multiple printers, but it is awkward, with the current version, to specify a different access control list for each printer.

Article Change History:

29 Jun 1994 - Included the Apple Internet Router.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8794





# Tech Info Library

## DesignCAD, Inc.

Revised: 4/4/97  
Security: Everyone

DesignCAD, Inc.

=====

Article Created: 09/19/91  
Article Reviewed: 07/07/93  
Article Updated: 04/04/97

DesignCAD, Inc.

-----

One American Way  
Pryor, OK 74361

918-825-4848

918-825-6359 Fax

### Company Profile:

DesignCAD, Inc., software, specializing in CAD software for the  
Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8797



# Tech Info Library

## System 7: DesignCAD 2D/3D Compatibility

Revised: 10/13/92  
Security: Everyone

System 7: DesignCAD 2D/3D Compatibility

=====

Article Created: 19 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is DesignCAD 2D/3D, from DesignCAD, Inc., compatible with system software version 7.0?

DISCUSSION -----

DesignCAD 2D/3D works with system software version 7.0 except on the Macintosh Plus, Macintosh SE, and Macintosh Portable. On these Macintosh models, DesignCAD 2D/3D fails to recognize the presence of 32-bit QuickDraw, which is built into version 7.0, and gives the user a message to install 32-bit QuickDraw.

At this time, there is no known workaround.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

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Tech Info Library Article Number:8798



# Tech Info Library

## System 7: Invisible Icon File Sizes Not Included in Folder Size

Revised: 9/11/92  
Security: Everyone

System 7: Invisible Icon File Sizes Not Included in Folder Size

=====

Article Created: 19 September 1991

### Article Change History

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09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

I received an out-of-space error message when I tried to copy some folders to another disk even though the available disk space was more than enough to hold the folders I was moving.

### DISCUSSION -----

When you copy folders with custom icons to another disk, the sizes of the invisible icon files are not included in the total folder size. This can result in the out-of-space error message you received.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8800



# Tech Info Library

## PrintMonitor Alerts: Conflict with LW Manual Feed (11/94)

Revised: 11/10/94  
Security: Everyone

PrintMonitor Alerts: Conflict with LW Manual Feed (11/94)

=====

Article Created: 19 September  
Article Reviewed/Updated: 10 November 1994

TOPIC -----

I use manual feed to print to my Personal LaserWriter SC with background printing turned on. After the print job is finished, I get a dialog box stating, "Please bring PrintMonitor to the front. The Personal LaserWriter SC is waiting for a sheet of paper." If I insert a sheet of paper, I get a second printout of the last page printed, whether it's a 1-page or multi- page document.

Sometimes it asks for another sheet of paper over and over in an endless loop; other times, it asks only once or twice. Occasionally, if I load an extra sheet of paper before printing, I don't get this message and the page prints fine.

DISCUSSION -----

This is related to the PrintMonitor default Preferences settings. To correct the problem, use this procedure:

- 1) Launch the PrintMonitor application.
- 2) Choose Preferences from the File menu.

A Preferences window appears with three section:

- Show the PrintMonitor window when printing:
  - o Yes
  - o No

The default is No.

- When a printing error needs to be reported:

- o Only display diamond in Application menu
- o Also display icon in menu bar
- o Also display alert

The default is to show all displays.

- When a manual feed job starts:

- o Give no notification
- o Display icon in menu bar
- o Also display alert

The default is to give notification and display both icon and alert.

- 3) In the "When a manual feed job starts:" section, click the "Give no notification" button.

If you still have the problem after you've made this adjustment, change the settings in the "When a printing error needs to be reported:" section to "Only display diamond in Application menu" by clicking that button.

This problem seems to be caused by a conflict between alert messages and manual feed and may happen with other LaserWriter printers.

Article Change History:

10 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8801



# Tech Info Library

## HyperCard 2.0: How to Change Address Book's Font Size

Revised: 9/27/91  
Security: Everyone

HyperCard 2.0: How to Change Address Book's Font Size

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to increase the font size of the mailing labels that HyperCard prints from the Address Book? The default point size for the labels is very small.

DISCUSSION -----

To do this, you need HyperCard 2.0, which lets a text field contain multiple fonts, styles, and sizes.

- 1) Select the text you want to change.
- 2) Either choose "Text Style..." from the Edit menu, or make a choice from the Font or Style menu.

You can also use HyperTalk to find or set the attributes of any range of characters.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8805



# Tech Info Library

## NuBus Ethernet Card: 1990 Revision Didn't Change Functionality

Revised: 9/27/91  
Security: Everyone

NuBus Ethernet Card: 1990 Revision Didn't Change Functionality

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Apple introduced a new version of the Macintosh II NuBus Ethernet Card in December 1990, replacing the old version. Both boards have the same part number: M0410LL/A.

What is the difference between the two cards?

DISCUSSION -----

Whenever Apple Manufacturing changes a board layout or card design these are considered "revisions". In the case of the December 1990 revision, it was a board layout change. There were no changes to functionality or power requirements.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8806



# Tech Info Library

## Apple IIe Card: Which Drives are Supported

Revised: 6/10/92  
Security: Everyone

Apple IIe Card: Which Drives are Supported

=====

Article Created: 13 August 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated: 3 June 1992

TOPIC -----

- 1) What disk drives does the Apple IIe Card support?
- 2) Why hook up a UniDisk 3.5-inch to the Apple IIe Card?
- 3) How do I eject the internal 3.5-inch disk?
- 4) If I connect a compatible Apple 5.25 Drive to this Macintosh LC, can I run regular Apple IIe software?

DISCUSSION -----

- 1) The Apple IIe Card supports the following drives:
  - The two Internal Macintosh LC SuperDrive disk drives
  - One UniDisk 3.5-inch (part number A2M2053, white).
  - Two Apple 5.25-inch Disk Drive (part number A9M0107, platinum) connected to the drive cable or UniDisk 3.5. Note: If you hook up a UniDisk 3.5-inch and Apple 5.25-inch, the UniDisk 3.5-inch goes first.

The Apple IIe Card does NOT support:

- The Apple 3.5-inch
- UniDisk (beige 5.25-inch)
- DuoDisk
- Disk II

The older 5.25-inch drives use -12 volts, which the Macintosh LC does not support.



- 2) Some copy-protected applications require a UniDisk 3.5-inch as part of the configuration, or they won't work correctly. Nor do they work on the SuperDrive inside the Macintosh LC.
- 3) To eject a disk from an internal 3.5-inch disk:
  - Press Command-Shift-1
  - Enter the Option Panel (Command-Control-Esc) and press the Disk Eject button.
- 4) Yes. In Apple IIe mode, the Macintosh LC will function exactly as an Apple IIe.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8807



# Tech Info Library

## Apple II BASIC: How to Convert Into Macintosh QuickBasic

Revised: 9/27/91  
Security: Everyone

Apple II BASIC: How to Convert Into Macintosh QuickBasic

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a way to convert Apple IIe/IIGS BASIC files into Microsoft QuickBasic files for the Macintosh?

DISCUSSION -----

Yes, follow these steps:

- 1) Save a listing of the program as an ASCII text file.
- 2) Transfer the file to the Macintosh using Apple File Exchange.
- 3) Import it directly into Microsoft QuickBasic. QuickBasic accepts ASCII Text Files.
- 4) Now, it's just a matter of modification (if needed). According to Microsoft, some programs work even without conversion.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8810



# Tech Info Library

## Apple IIe Card: Doesn't Support Pascal Partitions

Revised: 6/11/92  
Security: Everyone

Apple IIe Card: Doesn't Support Pascal Partitions

=====

Article Created: 13 August 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

Will the software for the Apple IIe Card ever allow Pascal partitioning?

DISCUSSION -----

ProDOS is the only partition that is currently planned to be supported in a future release of the software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8811



# Tech Info Library

## Apple IIe Emulation via ][ In A Mac

Revised: 9/27/91  
Security: Everyone

Apple IIe Emulation via ][ In A Mac

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does the Apple IIe Card work in the Macintosh IIxi? Is the Macintosh LC the only computer available that runs Apple IIe software?

DISCUSSION -----

The Apple IIe Card is designed exclusively for the Macintosh LC.

There is an alternative for Apple IIe emulation in other Macintosh models. The product is called "][ In A Mac". Contact the vendor for compatibility information.

More information is available in the Redgate Product Registry on AppleLink.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8812



# Tech Info Library

## Macintosh Display Card 8•24 GC: Troubleshooting Screen Flicker

Revised: 9/27/91  
Security: Everyone

Macintosh Display Card 8•24 GC: Troubleshooting Screen Flicker

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

My Macintosh IIIfx with a Macintosh Display Card 8•24 GC is having intermittent screen flicker. I've swapped out the Macintosh Display Card 8•24 GC, the DRAM in the Display Card, the monitor, and the logic board.

DISCUSSION -----

The flicker may be caused by the Macintosh Display Card 8•24 GC CDEV. Turn off the CDEV and restart the computer. If the flickering goes away, then the problem is related to software corruption or hardware/software incompatibility. This incompatibility can range to other hardware cards installed, especially other video cards made by third-party vendors, to incompatible software packages or other third-party INITs.

With the Macintosh Display Card 8•24 GC CDEV turned off, the card acts just like a Macintosh Display Card 8•24. If the flickering still occurs, you may be encountering an environment issue related to EMF (electromagnetic interference).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8813



# Tech Info Library

## Macintosh: Troubleshooting Random Sound Problems

Revised: 9/27/91  
Security: Everyone

Macintosh: Troubleshooting Random Sound Problems

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm getting a random monkey alert sound on my Macintosh even though the alarm is off and the regular beep sound is selected in the Control Panel. I have no special sound INITs or CDEVs.

DISCUSSION -----

The sounds selected for the beep are loaded into RAM during startup. It's possible that your System Folder may be corrupted and is pointing to another beep sound.

Try starting up from a locked System disk and let it sit for a while to see if it does random beeps. If this doesn't fix things, trash and reinstall the System Folder. If the problem still persists when you start from the floppy, then you may have a hardware failure.

You also mentioned no special CDEVs and INITs being used. Were you referring to sound-type INITs? Other INITs that have some time/delay activation might also cause similar symptoms: SuperClock, screen savers, and spelling checker CDEVs to name a few.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8814



# Tech Info Library

## Apple IIGS: Little Difference Between 1MB ROMs

Revised: 2/22/93  
Security: Everyone

Apple IIGS: Little Difference Between 1MB ROMs

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What's the difference between ROMs 341-0737/0748 and ROMs 341-0728/0749 on the Apple IIGS 1MB logic boards?

DISCUSSION -----

Aside from some changes in the Toolbox, there weren't many changes to the Apple IIGS ROMs. In fact, that's why Apple doesn't have an upgrade path to the new ROMs. It wouldn't be cost effective for the customer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8815



# Tech Info Library

## Apple IIGS Monitor: How to Set to 60 Hertz

Revised: 9/27/91  
Security: Everyone

Apple IIGS Monitor: How to Set to 60 Hertz

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I change an Apple IIGS monitor from 50Hz to 60Hz?

DISCUSSION -----

Here's how to reset your Apple IIGS to 60 hertz:

- 1) Turn on the Apple IIGS while holding down the option key.
- 2) Press 2 for "2=Set system standards and 60 hertz."

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8816





# Tech Info Library

## Personal LaserWriter NT: Styled Text with AppleWorks GS

Revised: 9/27/91  
Security: Everyone

Personal LaserWriter NT: Styled Text with AppleWorks GS

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to use my Apple IIGS with a Personal LaserWriter NT. How can I get various fonts and styled text (sizes, underline, bold, and so on)?

DISCUSSION -----

Obtain AppleWorks GS from Claris. That version of AppleWorks supports printing using the ROMs in the LaserWriter, giving you various point sizes and font types in PostScript. Without this software you are limited to the one font.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8818



# Tech Info Library

## Macintosh: When System Restarts Instead of Shutting Down (2/95)

Revised: 2/24/95  
Security: Everyone

Macintosh: When System Restarts Instead of Shutting Down (2/95)

=====

Article Created: 13 August 1991  
Article Reviewed/Updated: 24 February 1995

TOPIC -----

My Macintosh restarts when I select Shutdown from the Special menu. Why is this and how can I be assured my computer will actually shut down?

DISCUSSION -----

The first step is to determine if the problem is software related. Restart your computer with the Disk Tools diskette and select Shutdown to see if it works properly. If it does, the likely cause of the problem is corrupted system software. A clean installation of system software is recommended to resolve the problem.

If choosing Shutdown still causes a Restart, try zapping PRAM. For more information on zapping the PRAM, for the Tech Info Library article "Macintosh: How to Reset Parameter RAM".

For Macintosh computers with lockable power switches, such as the Macintosh IIci and Macintosh IIsi, make sure the switch is not locked in the ON position. Rotating the switch 90 degrees to the left should release it so it is not in the locked on position.

If you determine the problem is not related to the power switch or system software, there are three possibilities: a defective keyboard, power supply, or logic board (in that order). As a quick test, disconnect the keyboard and mouse from the Macintosh and try a manual shutdown. If the Macintosh stays off, start replacing ADB devices. If not, have the power supply checked.

If the Macintosh still does not work properly, have the logic board replaced.

Article Change History:  
24 Feb 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8819



# Tech Info Library

## Macintosh IIsi: Half-Height Internal Drive Specifications

Revised: 7/6/92  
Security: Everyone

Macintosh IIsi: Half-Height Internal Drive Specifications

=====

Article Created: 13 August 1991  
Article Last Reviewed: 18 June 1992  
Article Last Updated:

TOPIC -----

Given the power constraints of the Macintosh IIsi, how big an internal hard drive can be placed in the system without exceeding the power supply's limits?

DISCUSSION -----

As long as the drive meets Macintosh IIsi maximum power requirements, size is not the issue. Here are the power specifications for the Macintosh IIsi drives:

3.5-inch low-profile (1-inch) HDA (also known as "half height").

Low powered. Maximum draw is around 4.2 watts

Actuator Type: Rotary Voice-Coil  
Number of Disks: 1  
Data Surfaces: 1  
Data Heads: 1  
Servo: Embedded  
Tracks per Surface: 1026  
Blocks: 82,080

Ave. Seek Time: 25ms  
Interleave 1:1  
Dimensions 1 x 4 x 5.75 inches  
Weight 1.1 pounds

For more information on half-height drives in the Macintosh IIsi, search

under "Half-Height Drives".

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8820



# Tech Info Library

## AppleShare: Leave LaserWriters on for Apple II Workstations

Revised: 9/27/91  
Security: Everyone

AppleShare: Leave LaserWriters on for Apple II Workstations

=====

Article Created: 13 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there a way to download the ImageWriter emulation to a LaserWriter for an Apple IIGS on an AppleShare network at the time the servers are turned on each morning?

DISCUSSION -----

That would be a nice enhancement for AppleShare, but presently there is no way to do this. We suggest you download the emulator and leave the printer on. This won't seriously affect the life of the printer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8823



# Tech Info Library

## AppleFax Modem: Use Apple System Peripheral-8 Cable

Revised: 9/30/91  
Security: Everyone

AppleFax Modem: Use Apple System Peripheral-8 Cable

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What cable is used to connect an AppleFax Modem to a Macintosh?

DISCUSSION -----

Use the Apple System Peripheral-8 Cable (part number M0197).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8826



# Tech Info Library

## AppleShare PC: Does Not Support 3Com EtherLink IITP Card

Revised: 9/27/91  
Security: Everyone

AppleShare PC: Does Not Support 3Com EtherLink IITP Card

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does AppleShare PC support the 3Com EtherLink IITP (twisted pair) card?

DISCUSSION -----

No. AppleShare PC has drivers for only the 3Com 503 and 525 cards.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8827





# Tech Info Library

## AppleTalk Phase 2 Routers: Disappearing Services

Revised: 9/27/91  
Security: Everyone

AppleTalk Phase 2 Routers: Disappearing Services

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I upgraded my routers to AppleTalk Phase 2. Since then, services sometimes disappear.

DISCUSSION -----

Ensure that your seed routers are configured with the same zone name and network range information.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8828



# Tech Info Library

## AppleTalk for VMS: Use Version 2.0.6 with Pacer 5.2b

Revised: 9/27/91  
Security: Everyone

AppleTalk for VMS: Use Version 2.0.6 with Pacer 5.2b

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I installed AppleTalk for VMS 3.0 and am unable to use it when I'm running Pacer 5.2b.

DISCUSSION -----

Pacer 5.2b is a Phase 1 device that takes over the Ethernet card in the VAX when it is running. The two alternatives are to stop running Pacer or to install AppleTalk for VMS version 2.0.6, which is a Phase 1 device.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8829



# Tech Info Library

## AppleTalk for VMS: Use Version 2.1 When Running Informix

Revised: 9/27/91  
Security: Everyone

AppleTalk for VMS: Use Version 2.1 When Running Informix

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am installing DAL 1.2 and AppleTalk for VMS 3.0. The manual states that AppleTalk for VMS 3.0 requires VMS 5.3 or higher. I can't upgrade to VMS 5.3 because I am running Informix, which doesn't support that version.

Is there a workaround for this?

DISCUSSION -----

Yes. Install AppleTalk for VMS version 2.1 instead of version 3.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8830



# Tech Info Library

## MacTerminal: How to Send a Long Break

Revised: 9/27/91  
Security: Everyone

MacTerminal: How to Send a Long Break

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do you send a long break in MacTerminal?

DISCUSSION -----

To send a long break in MacTerminal, press the Shift-Enter keys.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8831



# Tech Info Library

## Macintosh: When Removing Second Monitor, Remove Video Card Too

Revised: 9/27/91  
Security: Everyone

Macintosh: When Removing Second Monitor, Remove Video Card Too

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I had two monitors connected to my Macintosh. After removing one monitor, I was unable to see the icons that were displayed on the monitor I removed.

DISCUSSION -----

If you did not also remove the video card for the monitor you removed, the Macintosh thinks that the monitor is still there. Remove the extra video card to correct this problem.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8832



# Tech Info Library

## SNA Communications Cards: Board IDs

Revised: 9/27/91  
Security: Everyone

SNA Communications Cards: Board IDs

=====

Article Created: 16 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What are the board IDs for the Apple Coax/Twinax, TokenTalk NB, and Serial NB Cards?

DISCUSSION -----

The board IDs are:

| Card               | Board ID |
|--------------------|----------|
| ----               | -----    |
| Apple Coax/Twinax  | 10       |
| Apple TokenTalk NB | 11       |
| Apple Serial NB    | 25       |

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8833



# Tech Info Library

## AppleShare PC w/LocalTalk Card: Includes Printing, File Services

Revised: 9/27/91  
Security: Everyone

AppleShare PC w/LocalTalk Card: Includes Printing, File Services

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do I need anything besides AppleShare PC software and the LocalTalk PC Card to print to network printers?

DISCUSSION -----

No. That bundle includes printing services as well as file services.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8834



# Tech Info Library

## Macintosh Classic: How to Install AppleShare

Revised: 7/6/92  
Security: Everyone

Macintosh Classic: How to Install AppleShare

=====

Article Created: 20 August 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

How do you install AppleShare on a Macintosh Classic?

DISCUSSION -----

To install AppleShare on a Macintosh Classic, use the Network Products  
Installer disk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8835





# Tech Info Library

## DAL: How to Use the \$col Function in a C Program

Revised: 6/29/92  
Security: Everyone

DAL: How to Use the "\$col" Function in a C Program

=====

Article Created: 20 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I tried to use the "\$col" function from within a C program using the example in the DAL documentation, but it did not work. The "\$col" function is supposed to return the number of columns in the selected rowset.

DISCUSSION -----

The example in the DAL documentation is not complete. Put the code into a DAL program string and do `clsend("program text")`.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8836



# Tech Info Library

## DAL: Manufacturers of Compatible 3270 Products

Revised: 9/27/91  
Security: Everyone

DAL: Manufacturers of Compatible 3270 Products

=====

Article Created: 20 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

What third-party companies' 3270 products are compatible with DAL?

DISCUSSION -----

These companies' 3270 products are compatible with DAL:

- Avatar Technology
- Digital Communications Associations, Inc. (DCA)
- Tri-Data Systems, Inc.

On AppleLink, you can find contact information on a company mentioned in this article by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8837



# Tech Info Library

## DAL: Compatible AppleTalk for VMS Versions

Revised: 9/27/91  
Security: Everyone

DAL: Compatible AppleTalk for VMS Versions

=====

Article Created: 20 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

What versions of AppleTalk for VMS work with DAL?

DISCUSSION -----

For Phase 1 networks, use AppleTalk for VMS version 2.0.6.

For Phase 2 networks, use AppleTalk for VMS versions 2.1 and 3.0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8838



# Tech Info Library

## DAL 1.2 & Avatar Coax Card: Driver to use for CUT/DFT Modes

Revised: 9/2/92  
Security: Everyone

DAL 1.2 & Avatar Coax Card: Driver to use for CUT/DFT Modes

=====

Article Created: 20 August 1991

### Article Change History

-----

07/10/92 - REVIEWED

- For technical accuracy

### TOPIC -----

I can't connect to DAL 1.2 on an IBM mainframe using an Avatar coax card in CUT mode.

### DISCUSSION -----

DAL 1.2 requires driver release 3.2 or later to work in CUT mode with the Avatar coax card. To run in DFT mode, use driver release 3.3 or later.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8839



# Tech Info Library

## DAL: longchar Variable Supports a Maximum of 240 Characters

Revised: 9/27/91  
Security: Everyone

DAL: "longchar" Variable Supports a Maximum of 240 Characters

=====

Article Created: 20 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

How many characters does the DAL "longchar" variable support?

DISCUSSION -----

The DAL "longchar" variable supports a maximum of 240 characters.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8840



# Tech Info Library

## **PATHWORKS Oracle Access: Use APDA's DAL Server for the**

Revised: 6/30/92  
Security: Everyone

PATHWORKS Oracle Access: Use APDA's DAL Server for the VAX/VMS

=====

Article Created: 16 August 1991  
Article Last Reviewed: 30 June 1982  
Article Last Updated: 30 June 1982

TOPIC -----

I purchased PATHWORKS for the VAX and received only the network adapter for Rdb. Where can I get the Oracle database adapter?

DISCUSSION -----

PATHWORKS comes only with the Rdb adapter. To talk with Oracle, you need to purchase the DAL Database Adapters for the VAX/VMS from APDA.

For APDA contact information, search the Tech Info Library under "APDA and Cupertino".

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8841



# Tech Info Library

## Apple HD SC Setup: Meaning of Dimmed Update Option

Revised: 9/27/91  
Security: Everyone

Apple HD SC Setup: Meaning of Dimmed Update Option

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I tried to use Apple HD SC Setup to update my hard drive to System 7, but the Update option is dimmed.

DISCUSSION -----

When the Update option in Apple HD SC Setup is dimmed, it means that the hard drive was not initialized using Apple HD SC Setup.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8842



# Tech Info Library

## MacDFT: To Print, Turn Off Background Printing

Revised: 9/27/91  
Security: Everyone

MacDFT: To Print, Turn Off Background Printing

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The "Print" option is dimmed when I try to print from MacDFT.

DISCUSSION -----

To print from MacDFT, the "Background Printing" option must be turned off.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8843





# Tech Info Library

## MacDFT: Supports OS/2 LAN Manager, Not Token Ring to PC-LAN 1.3

Revised: 9/27/91  
Security: Everyone

MacDFT: Supports OS/2 LAN Manager, Not Token Ring to PC-LAN 1.3

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does MacDFT work over Token Ring to an IBM PC-LAN 1.3 gateway?

DISCUSSION -----

No. The IBM PC-LAN 1.3 uses NetBIOS, which MacDFT does not support.  
MacDFT does work with the OS/2 LAN Manager.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8844



# Tech Info Library

## MacDFT: Use Shielded Twisted-pair or Type 3 Cabling

Revised: 9/27/91  
Security: Everyone

MacDFT: Use Shielded Twisted-pair or Type 3 Cabling

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm running MacDFT over the Apple TokenTalk NB Card, and I'm getting a "no cable connected" message.

DISCUSSION -----

You're using unshielded twisted-pair cabling, which is generating a signal too weak for MacDFT to pick up. There are two alternatives:

- Switch to shielded twisted-pair cabling.
- Use Type 3 cabling.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8845



# Tech Info Library

## MacTCP: Needs DDP/IP Gateway For AppleTalk Network (11/94)

Revised: 11/30/94  
Security: Everyone

MacTCP: Needs DDP/IP Gateway For AppleTalk Network (11/94)

=====

Article Created: 20 August 1991  
Article Reviewed/Updated: 30 November 1994

TOPIC -----

Can I run MacTCP over LocalTalk-based AppleTalk network system?

DISCUSSION -----

To run MacTCP over a LocalTalk-based network, you need a DDP/IP gateway like the Apple IP Gateway, Kinetics FastPath, or the Cayman GatorBox.

To locate a vendor's address and phone number, use the vendor name as a search string.

Article Change History:  
30 Nov 1994 - Added Apple IP Gateway to article.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8846



# Tech Info Library

## MacX: Can Be Used to Launch Local Xclients

Revised: 10/1/91  
Security: Everyone

MacX: Can Be Used to Launch Local Xclients

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

If I don't have an Ethernet card, can I run MacX to launch local Xclients?

DISCUSSION -----

Yes, but you must be running under A/UX (not Macintosh OS) and specify "localhost" as the hostname.

You can use a name other than "localhost" if you edit the "/etc/hosts" file and add the name you want to use to the line for the loop address.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8847



# Tech Info Library

## MacX: Macintosh OS Version Is Compatible with A/UX

Revised: 9/18/92  
Security: Everyone

MacX: Macintosh OS Version Is Compatible with A/UX

=====

Article Created: 20 August 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I use the Macintosh OS version of MacX under A/UX?

### DISCUSSION -----

Yes. The Macintosh OS MacX package is compatible with A/UX.

Install MacX and the MacTCP Tool from the Macintosh OS version; however, don't install either MacTCP or AdminTCP because MacTCP is already part of A/UX, and you need the A/UX versions.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8848



# Tech Info Library

## MacX: Does Not Support the Serial Connections Tool (1/95)

Revised: 1/30/95  
Security: Everyone

MacX: Does Not Support the Serial Connections Tool (1/95)

=====

Article Created: 20 August 1991  
Article Reviewed/Updated: 30 January 1995

TOPIC -----

I am using MacX with the Communications Toolbox and cannot select the serial connections tool.

DISCUSSION -----

MacX does not support the serial connections tool. MacX does support the DECnet and MacTCP tools.

Article Change History:  
30 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8849



# Tech Info Library

## System 7: Install MacTCP Tool in the Extensions Folder (7/94)

Revised: 7/22/94  
Security: Everyone

System 7: Install MacTCP Tool in the Extensions Folder (7/94)

=====

Article Created: 20 August 1991  
Article Reviewed/Updated: 22 July 1994

TOPIC -----

Where is the MacTCP Tool installed under System 7?

DISCUSSION -----

|                       |     |                       |
|-----------------------|-----|-----------------------|
| System Software 6.0.x | --> | Communications Folder |
| System 7              | --> | Extensions Folder     |

MacTCP Tool belongs in the Extensions Folder. MacTCP, the control panel device (cdev), goes into the Control Panels folder. The file MacTCP DNR (Domain Name Resolver) will be created by MacTCP and installed at the root level of your System Folder.

Article Change History:  
22 Jul 1994 - Corrected location information of MacTCP and MacTCP Tool.  
22 September 1992 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8850



# Tech Info Library

## TokenTalk: Packet Size Is 256 Bytes

Revised: 10/1/91  
Security: Everyone

TokenTalk: Packet Size Is 256 Bytes

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the packet size for TokenTalk?

DISCUSSION -----

TokenTalk packet size is 256 bytes.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8851





# Tech Info Library

## X11: How to Start Up in Color (3/95)

Revised: 3/30/95  
Security: Everyone

X11: How to Start Up in Color (3/95)

=====  
Article Created: 20 August 1991  
Article Reviewed/Updated: 30 March 1995

TOPIC -----

Can X11 be started up in color?

DISCUSSION -----

Yes. This article describes a recommended method, as well as two others.

The recommended method  
-----

### Step 1

Create a file called ".X11" in the home directory of the user. Ensure that the ".X11" file is executable. The contents of the ".X11" file:

```
X -screen 0 -depth 8
```

### Step 2

Log on, selecting an X Window session at the login dialog.

Here are two other methods  
-----

- Modify the /usr/bin/X11/X file and insert before the \$\* in the startup entry:

```
-screen 0 -depth 8
```

- Start X11 at the command line in color with the command:

```
/usr/bin/X11/X -screen 0 -depth 8
```

Article Change History:

30 Mar 1995 - Made correction for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8852



# Tech Info Library

## X11: How to Display Xclient on a Color Monitor

Revised: 10/1/91  
Security: Everyone

X11: How to Display Xclient on a Color Monitor

=====

Article Created: 20 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am trying to display an Xclient that does not accept the -display option.  
Is there any way to display the client on a color monitor?

DISCUSSION -----

Since the client is reading the DISPLAY variable from the environment, an  
easy way around this is to set the environment as part of the command.

For example:

```
env DISPLAY=hostname:0.3 /usr/bin/X11/xterm.
```

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8853



# Tech Info Library

## AppleShare Volume: How to Copy Without Losing Access Privileges

Revised: 10/1/91  
Security: Everyone

AppleShare Volume: How to Copy Without Losing Access Privileges

=====

Article Created: 23 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do you copy an AppleShare volume without losing access privileges?

DISCUSSION -----

Use the "Copy Volume" command in the "Volume" menu of the AppleShare Administration program.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8854



# Tech Info Library

## AppleTalk: How to Identify AppleTalk Packets

Revised: 10/1/91  
Security: Everyone

AppleTalk: How to Identify AppleTalk Packets

=====

Article Created: 23 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need to filter all AppleTalk packets on my network. How can I identify them?

DISCUSSION -----

AppleTalk packets start with 7B90.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8855



# Tech Info Library

## DAL: DB2 SQL Command Digits Workaround

Revised: 10/1/91  
Security: Everyone

DAL: DB2 SQL Command Digits Workaround

=====

Article Created: 23 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I want to use the DB2 SQL command digits (a NumToString function), but DAL does not support this command.

DISCUSSION -----

The workaround is to build a set of dummy tables to use as a scratch space for doing the conversions. Then use the standard DAL select command to retrieve the result.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8856



# Tech Info Library

## **DAL: Does Not Support DECnet Connection to VAX**

Revised: 6/29/92  
Security: Everyone

DAL: Does Not Support DECnet Connection to VAX

=====

Article Created: 23 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

Does DAL support a DECnet connection to a VAX?

DISCUSSION -----

No. DAL supports only AppleTalk for VMS and asynchronous connections to a VAX and the matching Comm Toolbox tools for them.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8857



# Tech Info Library

## DAL: Error Message 10632

Revised: 6/29/92  
Security: Everyone

DAL: Error Message 10632

=====

Article Created: 23 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am using Oracle 6.029.1, AppleTalk for VMS 3.0, VMS 5.3, and DAL 1.2.  
When I issue the command:

```
open oracle DBMS
open oracle db as user xxx pw xxx; go
```

I get an error message "10632".

DISCUSSION -----

This is a generic error message that may be caused by a number of different problems, including:

- DAL logicals not defined.
- DAL subsystem not installed.
- DAL server not found on the VAX.
- AppleTalk for VMS problem.
- INIT conflict on the Macintosh.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8858





# Tech Info Library

## DAL: Version 1.3 and Later Supports VM/XA

Revised: 7/13/92  
Security: Everyone

DAL: Version 1.3 and Later Supports VM/XA

=====

Article Created: 23 August 1991  
Article Last Reviewed: 6 July 1992  
Article Last Updated: 6 July 1992

TOPIC -----

Does DAL support VM/XA?

DISCUSSION -----

DAL 1.3 (and later) supports VM/XA. DAL 1.2 (and earlier) does not support VM/XA. However, since under XA and ESA for VM IBM does not support the "attach to database" SQL/DS command, you must issue the "Open Database" DAL command with either a null database name or "@ SQL". Using one of these special database names will cause DAL to not attempt to do the "attach" command, but instead to connect to the default database.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8859



# Tech Info Library

## MacAPPC: Does Not Support LU 0

Revised: 10/1/91  
Security: Everyone

MacAPPC: Does Not Support LU 0

=====

Article Created: 23 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does MacAPPC support LU 0?

DISCUSSION -----

No, MacAPPC does not support LU 0.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8860



# Tech Info Library

## System 7: Compatible TokenTalk Drivers

Revised: 9/21/92  
Security: Everyone

System 7: Compatible TokenTalk Drivers

=====

Article Created: 23 August 1991

### Article Change History

-----

09/15/92 - REVIEWED

- For current version information.

### TOPIC -----

What TokenTalk drivers are compatible with System 7?

### DISCUSSION -----

The compatible drivers are TokenTalk 2.2 (or later) and A/ROSE 1.1.3 (or later).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8861



# Tech Info Library

## DAL and DCA Drivers: Use DAL Custom Install

Revised: 10/1/91  
Security: Everyone

DAL and DCA Drivers: Use DAL "Custom" Install

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am trying to use a DCA MacIrma card to make a connection to my DAL server on an IBM mainframe. I get the message "network adapter not loaded, network not found."

DISCUSSION -----

The most common cause of this error message is using "Easy Install" to install DAL. You need to use the "Custom" install option when installing DAL to load the DCA drivers.

Be sure to add a ":1" at the end of your script in your host.cl1 file whether running in CUT or DFT mode. You need to do this for MacIrma DAL driver 1.1.0 (or later), the only version DCA is supporting.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8862



# Tech Info Library

## Ethernet: AAUI Connector Pinouts (3/96)

Revised: 3/5/96  
Security: Everyone

Ethernet: AAUI Connector Pinouts (3/96)

Article Created: 16 September 1991  
Article Reviewed/Updated: 5 March 1996

TOPIC -----

What are the AAUI connector pinouts for: Macintosh Quadra computers, Apple Ethernet NB Card, and LaserWriter IIg printers?

DISCUSSION -----

The AAUI (Apple Attachment Unit Interface) connector is a 14-position, 0.050-inch-spaced ribbon contact connector.

The pinouts are:

| Pin   | Signal Name    | Signal Description                  |
|-------|----------------|-------------------------------------|
| 1     | FN Pwr         | Power (+12V @ 2.1W or +5V @ 1.9W)   |
| 2     | DI-A           | Data In circuit A                   |
| 3     | DI-B           | Data In circuit B                   |
| 4     | VCC            | Voltage Common                      |
| 5     | CI-A           | Control In circuit A                |
| 6     | CI-B           | Control In circuit B                |
| 7     | +5V            | +5 volts (from host)                |
| 8     | +5V            | Secondary +5 volts (from host)      |
| 9     | DO-A           | Data Out circuit A                  |
| 10    | DO-B           | Data Out circuit B                  |
| 11    | VCC            | Secondary Voltage Common            |
| 12    | NC             | Reserved                            |
| 13    | NC             | Reserved                            |
| 14    | FN Pwr         | Secondary +12V @ 2.1W or +5V @ 1.9W |
| Shell | Protective Gnd | Protective Ground                   |

AAUI signals have the same description, function, and electrical requirements as the AUI signals of the same name, as detailed in IEEE

# ..TIL08863-Ethernet-AAUI\_Connector\_Pinouts\_3-96\_(TA47266).pdf

Standard 802.3-1990 CSMA/CD, section 7.

## Article Change History:

05 Mar 1996 - Reviewed for technical accuracy.

06 Jan 1993 - Revised to include the Macintosh Quadra and LaserWriter IIg.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:8863



# Tech Info Library

## AppleColor High-Resolution RGB: Color Temperature (12/94)

Revised: 12/5/94  
Security: Everyone

AppleColor High-Resolution RGB: Color Temperature (12/94)

=====

Article Created: 10 September 1991  
Article Reviewed/Updated: 05 December 1994

TOPIC -----

What is the color temperature of the AppleColor High-Resolution RGB Monitor?

DISCUSSION -----

According to the Level 2 specifications for the AppleColor High-Resolution RGB Monitor:

Each gun is set so that there is approximately 15 foot-lamberts of 9300 degrees.

Article Change History:  
05 Dec 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8866



# Tech Info Library

## Sony SRD2020/SRD2040 Hard Drive: Specifications (11/94)

Revised: 11/11/94  
Security: Everyone

Sony SRD2020/SRD2040 Hard Drive: Specifications (11/94)

=====

Article Created: 20 September 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

I need the following information on a Sony SRD2040 drive:

- Number of heads
- Number of cylinders
- Number of tracks
- Number of sectors per track

DISCUSSION -----

Here are the specifications for the SRD2020 and SRD2040 drives:

- Number of heads:
  - SRD2020A (20MB): 2 heads
  - SRD2040A (40MB): 4 heads
- Number of cylinders:
  - 624 cylinders
- Number of tracks:
  - 624 per head
- Number of sectors per track:
  - 33 sectors per track

Article Change History:  
11 Nov 1994 - Reviewed for technical accuracy.



Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8868



# Tech Info Library

## ImageWriter LQ: Ribbon Specifications (8/94)

Revised: 8/31/94  
Security: Everyone

ImageWriter LQ: Ribbon Specifications (8/94)

=====

Article Created: 19 September 1991  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

What are the ImageWriter LQ ribbon specifications?

NOTE: This product has been discontinued and is no longer available.

DISCUSSION -----

Here are the ImageWriter LQ ribbon specifications:

### Ribbon

-----

- Cassette containing black-inked fabric ribbon, continuous
- Optional: four-color ribbon (black, yellow, magenta, cyan)

### Ribbon Life

-----

- 4 million characters (black)
- 1 million characters/band (color)

### Shelf Life

-----

- Packaged, unwrapped, not exposed to the environment, and stored under cool conditions (80 degrees F): Approximately 2 years
- Unwrapped and exposed to the environment: Approximately 6 months to 1 year

Note: The older the ribbon, the drier it becomes when exposed to sunlight, air, and so on.

Article Change History:

31 Aug 1994 - Removed specsht keyword. Reviewed and updated.

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:8870



# Tech Info Library

## Aristotle: Display and Management Programs Quit Differently

Revised: 10/1/91  
Security: Everyone

Aristotle: Display and Management Programs Quit Differently

=====

Article Created: 12 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

We have Macintosh LC computers with Apple IIe cards installed and Apple IIe software version 2.0 in our lab. When teachers log on to the Macintosh LC and start the Apple IIe over the network, they connect to the server through the Aristotle menu system. Everything works fine, except they can't quit the teacher management menu. We get a screen with /ram2/ at the top and three options at the bottom. Why doesn't it go back to the Aristotle log-on screen?

DISCUSSION -----

The screen displaying the /ram2/ indicates the Aristotle menu management application successfully quit. The /ram2/ screen is a menu system from ProDOS 8 version 1.9. The three options at the bottom of the screen provide the method of navigation through the menu system.

The current ProDOS volume name is /ram2/. To change to a different volume (that is, probably the AppleShare file server volume), press the Tab key. This displays all applications and folders (subdirectories) on the volume. (The "/ram2/" volume shows no applications or folders.) The up and down arrow keys allow you to move to an application or folder. The Return key launches an application, or opens a folder. The ESCape key closes the current folder and moves into the next higher folder.

Previous versions of ProDOS 8 left the user with the "ENTER PREFIX (PRESS "RETURN" TO ACCEPT)" message with the current prefix as the default. After entering the prefix, you need to enter the name of the application. The menu system of ProDOS 8 version 1.9 provides a more useful interface.

The two Aristotle applications, Display and Management, behave differently

when the user exits: the Display program returns the user to the launching application, but Management returns the user to the ProDOS quit location. This is true both for an Apple IIe computer and for a Macintosh LC with Apple IIe Card.

Here are two ways to run Aristotle:

- First, you can run the Management program immediately. To accomplish this, go to the server's Administration program. Select the teacher and set the startup application to Aristotle's Management program. This option returns the teacher to the ProDOS 8 v1.9 menu (the /ram2/ screen).

LOGOFF from the Apple IIe Workstation Card disk provides a graceful sign off from the server. When you use LOGOFF, the log-on list of servers is not in alphabetical order. Open Apple-Control-Reset (Command-Control-Reset) works as well. This is not so graceful, but causes no damage.

- The second variation uses the Management program to set up a "class" of teachers who can run the Management program from the Display program. For example, when teachers log on to the server, their startup program is Aristotle's Display. From within Display's menu, teachers can select Management. This option returns to the Aristotle Display program. You need to quit the Display program to log off the file server.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8873



# Tech Info Library

## Apple IIe Card Software v2.0: Not Tested with System 6.0.7

Revised: 6/10/92  
Security: Everyone

Apple IIe Card Software v2.0: Not Tested with System 6.0.7

=====

Article Created: 16 September 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

Is it essential to install system software version 6.0.8 (that is, 7.0 print drivers) with the Apple IIe Card software version 2.0?

DISCUSSION -----

The Apple IIe software v2.0 was only tested using system software version 6.0.8. There is no known reason for the Apple IIe Card v2.0 software to fail using version 6.0.7. However, Apple cannot stand behind the use of version 6.0.7 due to the lack of testing.

Whatever configuration you decide on, the print driver versions must be the same on all systems. Otherwise, there will be driver conflicts when the printers are used.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8874



# Tech Info Library

## AppleShare Print Server: Transition from System 6 to System 7

Revised: 9/21/92  
Security: Everyone

AppleShare Print Server: Transition from System 6 to System 7

=====

Article Created: 12 September 1991

### Article Change History

-----

09/15/92 - REWRITTEN

- To explain better the existing situation with System 6.0.8, the desired situation, and to note that AppleShare 3.0 is available.

### TOPIC -----

I would like to use the Macintosh IIci as an AppleShare Print Server. I'm running system software version 6.0.8 (equivalent to System 6.0.7 with the addition of System 7 print drivers). I run the Network Products Installer version 6.0.7 to install the AppleShare Print Server, and it doesn't recognize the 7.0 LaserWriter drivers. I must quit the Installer, remove the 7.0 print drivers, install the print server software, and reinstall 7.0 drivers. Is there an easier way to do this?

### DISCUSSION -----

Unfortunately, it doesn't get much easier. The following steps will minimize the confusion:

- 1) Format the hard drive (if it's not already formatted).
- 2) Install system software 6.0.8 (if not already installed).
- 3) Remove the print drivers from the System Folder (in System 6.0.8, they are actually the System 7 print drivers).
- 4) Install the AppleShare Print Server using Network Products Installer 6.0.7.

5) Drag over the LaserPrep version 7.0 file from the 6.0.8 disks.

There is no need to reinstall the print drivers on the Print Server. They aren't used. However, it is VERY important to put the LaserPrep file in the folder with the Print Server's System file.

Note that upgrading to AppleShare 3.0 will eliminate much of this confusion and the steps required to get the print server running successfully with System 7 drivers.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8875





# Tech Info Library

## Kiwi Software

Revised: 4/4/97  
Security: Everyone

Kiwi Software

=====

Article Created: 09/10/91  
Article Reviewed: 07/12/93  
Article Updated: 04/04/97

Kiwi Software

-----

6546 Pardall Road  
Santa Barbara, CA 93117

805-685-4031

805-968-1932 Fax

Company Profile:  
Software, specializing in application and print-utility  
software for the Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8876



# Tech Info Library

## Concurrent 6312 Terminal Emulation

Revised: 7/24/92  
Security: Everyone

Concurrent 6312 Terminal Emulation

=====

Article Created: 10 September 1991  
Article Last Reviewed:  
Article Last Updated: 17 July 1992

TOPIC -----

Is there a product that emulates a Concurrent Computer (formerly Perkin-Elmer) 6312 or 1251 terminal?

DISCUSSION -----

Opal Software sells communication software for the Perkin-Elmer 6312. VIA Systems, Inc. is the U.S. distributor for Opal products.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8877



# Tech Info Library

## System 7: Making KiwiEnvelopes 3 Work with LaserWriter IISC

Revised: 8/26/92  
Security: Everyone

System 7: Making KiwiEnvelopes 3 Work with LaserWriter IISC

=====

Article Created: 10 September 1991

### Article Change History

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08/25/92 - REVIEWED

- For accuracy.

### TOPIC -----

I purchased KiwiEnvelopes 3.1.3 to be compatible with System 7. The version 3.1.3 did not print properly to the LaserWriter IISC with the Personal LaserWriter SC driver (Apple provides this driver for LaserWriter IISC System 7 compatibility).

The Personal LaserWriter SC feeds envelopes from the side of the tray, and the LaserWriter IISC feeds them from the center. Print on envelopes was in the wrong location (shifted downward on the envelope).

How can I get proper printing on the LaserWriter IISC?

### DISCUSSION -----

There are two ways to modify KiwiEnvelopes 3.1.3 to remedy this:

- Throw Away "KiwiFile3".

This causes the software to re-evaluate the printer in use and reset preferences. The software is now compatible with the LaserWriter IISC. However, you lose all names and addresses stored by KiwiEnvelopes.

- Use ResEdit to Remove the "PRTPr" Resource from "KiwiFile3".  
Trashing this resource resets preferences, but retains names and addresses stored in the file.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8878



# Tech Info Library

## Opal Software Ventures Pty. Ltd. (VIA Systems in U.S.)

Revised: 4/4/97  
Security: Everyone

Opal Software Ventures Pty. Ltd. (VIA Systems in U.S.)

=====

Article Created: 10 September 1991  
Article Reviewed/Updated: 4 April 1997

Opal Software Ventures Pty. Ltd.

-----

Lot 3-4, Mount Glorious Rd.  
Mount Glorious, Q.L.D. 4520  
Australia

02-281-8239

(see U.S. Distributor) Fax

Company Profile:  
Software, specializing in communication software.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8879



# Tech Info Library

## LaserWriter IINTX: DIP Switch Positions Affect Renaming

Revised: 10/1/91  
Security: Everyone

LaserWriter IINTX: DIP Switch Positions Affect Renaming

=====

Article Created: 19 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

After moving a LaserWriter IINTX, we could find the printer in the Chooser as "LaserWriter IINTX," but the name should be "LaserWriter IINTX 5/80." On the start page, the name was "LaserWriter IINTX 5/80," but the Chooser again called it "LaserWriter IINTX." We renamed the printer, and the name appeared on the start page, but not in the Chooser. The LaserWriter IINTX printed normally through all this.

We found that the DIP switches 5 and 6 were down. We switched them up, and this fixed the naming problem. Can you explain this behavior?

DISCUSSION -----

Moving switches 5 and 6 to the down position sets asynchronous handshaking to XON/XOFF. The LaserWriter broadcasts the default printer name set in ROM instead of using the changeable version set in the ZPRAM (Zero Power RAM). The startup page still registers the correct name, but the name broadcast over the network doesn't change.

Make sure that both switches are in the up position unless you require another form of handshaking. Other combinations of these switches do not cause the name inconsistencies.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8881



# Tech Info Library

## **Brio Technology, Inc.**

Revised: 7/6/93  
Security: Everyone

Brio Technology, Inc.

=====

Article Created: 09/09/91  
Article Reviewed: 07/06/93  
Article Updated: 03/31/92

Brio Technology, Inc.

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444 Castro Street  
Suite 700  
Mountain View, CA 94041

800-486-2746

415-961-4110

415-961-4572 Fax

Company Profile:  
Hardware and software, specializing in SQL client/server products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8885



# Tech Info Library

## SQL Client/Server Products for Both Macintosh and PS/2

Revised: 7/27/93  
Security: Everyone

SQL Client/Server Products for Both Macintosh and PS/2

=====

Article Created: 9 September 1991  
Article Reviewed/Updated: 23 July 1993

TOPIC -----

Can you provide a list of SQL client/server-based products that work with PS/2, and also have compatible versions for the Macintosh?

DISCUSSION -----

Here is a partial list of SQL Client/Server based products:

- Omnis 5 (Blyth Software) for both Macintosh and Windows environments
- The three DAL query tools, now available for Windows:
  - ClearAccess (Clear Access Corp. <formerly Fairfield Software, Inc.>)
  - DataPrism (Brio Technology)
  - GQL (Andyne Computing)
- Oracle products

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

Article Change History:  
23 July 1993 - Company title changed from Fairfield Software, Inc. to Clear Access Corp.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8886





# Tech Info Library

## Proteon, Inc.

Revised: 7/16/93  
Security: Everyone

Proteon, Inc.

=====

Article Created: 9 September 1991  
Article Reviewed/Updated: 16 July 1993

Proteon, Inc.

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9 Technology Drive  
Westboro, MA 01581

508-898-2800

Fax: 508-870-5724 (Sales)  
Fax: 508-366-7930

Company Profile:  
Hardware, specializing in network routers and other LAN products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8888



# Tech Info Library

## Prism Enterprises, Inc.

Revised: 7/21/93  
Security: Everyone

Prism Enterprises, Inc.

=====

Article Created: 9 September 1991  
Article Reviewed/Updated: 21 July 1993

Prism Enterprises, Inc.

-----

360 Domer Ave.  
Suite 600  
Laurel, MD 20707

301-604-6611

Fax: 301-604-6613

Company Profile:  
Specializing in network security software called NetCounter.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8889



# Tech Info Library

## International Transware, Inc.

Revised: 4/4/97  
Security: Everyone

International Transware, Inc.

=====

Article Created: 10 September 1991  
Article Reviewed/Updated: 4 April 1997

International Transware, Inc.

-----

1503 Grant Rd.  
Suite 155  
Mountain View, CA 94040

415-903-4300

800-999-NETS (6387) (in the U.S. and Canada)

Fax: 415-903-9544

Company Profile:  
Specializing in a range of LocalTalk and Ethernet routers, gateways, and  
serial servers.

Copyright 1991-937, Apple Computer, Inc.

Tech Info Library Article Number:8890



# Tech Info Library

## Internet Router and EtherTalk: Install Router Software First

Revised: 10/1/91  
Security: Everyone

Internet Router and EtherTalk: Install Router Software First

=====

Article Created: 21 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a problem when trying to install an AppleTalk Internet Router on a Macintosh LC with system software 6.0.7.

I use the Network Products Installer for version 6.0.7, and the AppleTalk Internet Router 2.0. Installation seems to be OK, but when I try to start the router (once it is configured with LocalTalk and Ethernet zones) it displays the message "Can't load MBDF."

DISCUSSION -----

You must install the AppleTalk Internet Router software first, and then the EtherTalk software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8894



# Tech Info Library

## System 7: How to Install TokenTalk and EtherTalk Drivers

Revised: 9/21/92  
Security: Everyone

System 7: How to Install TokenTalk and EtherTalk Drivers

=====

Article Created: 12 August 1991

### Article Change History

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09/15/92 - UPDATED

- To provide information on different installation methods.

### TOPIC -----

How do you install the TokenTalk and EtherTalk drivers under System 7 now that there is no longer a Network Products Installer Disk)?

### DISCUSSION -----

Use the System 7 Installer to install the EtherTalk and TokenTalk drivers. Either choose Customize and select the appropriate choice, or do an Easy Install and the Installer will update appropriately those system components you currently have loaded.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8895



# Tech Info Library

## Token Ring Card: How to Determine the Burned-in Address

Revised: 10/1/91  
Security: Everyone

Token Ring Card: How to Determine the Burned-in Address

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I find the burned-in address of the Token Ring card?

DISCUSSION -----

The IEEE 802 committee has assigned Apple the address range 5000E0000000 to 5000EFFFFFFF. To determine the "burned-in" address, start with the lowest number of this range and add to it the serial number on the card (after converting it to hex). The result will be the burned-in address of the card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8896



# Tech Info Library

## AppleShare PC: Problem with Zenith Multi-I/O Card

Revised: 10/1/91  
Security: Everyone

AppleShare PC: Problem with Zenith Multi-I/O Card

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am running AppleShare PC on the LocalTalk PC card on a Zenith Z386 PC (with a Zenith multi-I/O card). When I try to run DA, it says "scanning for zones" and then locks up.

DISCUSSION -----

Remove the Zenith multi-I/O card. The card may be trying to intercept any information sent to the LPT ports, which is what AppleShare PC does.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8897



# Tech Info Library

## CL/1 Version 1.1: Doesn't Run under VMS 5.4

Revised: 10/1/91  
Security: Everyone

CL/1 Version 1.1: Doesn't Run under VMS 5.4

=====

Article Created: 14 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

Does CL/1 version 1.1 run under VMS 5.4?

DISCUSSION -----

No, it doesn't.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8898





# Tech Info Library

## DAL: No Support for Arrays of Variables

Revised: 10/1/91  
Security: Everyone

DAL: No Support for Arrays of Variables

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

Does DAL support arrays of variables?

DISCUSSION -----

No, it doesn't.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8899



# Tech Info Library

## MacDFT: No support for File Transfer to CICS/DISOSS

Revised: 10/1/91  
Security: Everyone

MacDFT: No support for File Transfer to CICS/DISOSS

=====

Article Created: 14 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does MacDFT support file transfer to DISOSS?

DISCUSSION -----

MacDFT does not support file transfer under CICS. (DISOSS runs under CICS). MacDFT only supports file transfer under VM and MVS.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8900



# Tech Info Library

## Macintosh LC: Use EtherTalk 2.5 or higher

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Use EtherTalk 2.5 or higher

=====

Article Created: 14 August 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

I cannot get EtherTalk 2.0.1 to work on my Macintosh LC.

DISCUSSION -----

The Macintosh LC requires EtherTalk 2.5 or higher.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8901



# Tech Info Library

## Ethernet: Apple's New Cabling Is Self-Terminating

Revised: 10/1/91  
Security: Everyone

Ethernet: Apple's New Cabling Is Self-Terminating

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is Apple's Ethernet cabling self-terminated?

If I don't use Apple cabling, but use thin Ethernet cabling instead, will I need a terminator at the end of my network?

DISCUSSION -----

Apple's new Ethernet cabling is self-terminating, so you don't need to terminate both ends of your Ethernet backbone.

If you use thin Ethernet cabling, you need to place a terminator at both ends of the network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8902



# Tech Info Library

## AppleShare PC: Lists Servers in Response Order, Not Alphabetical

Revised: 10/1/91  
Security: Everyone

AppleShare PC: Lists Servers in Response Order, Not Alphabetical

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why doesn't AppleShare PC list all of the servers in alphabetical order in the DA?

DISCUSSION -----

AppleShare PC does a broadcast to get zone information, then lists the servers in the order in which they respond.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8903



# Tech Info Library

## System 7: Tips for Using Memory Efficiently

Revised: 6/29/92  
Security: Everyone

System 7: Tips for Using Memory Efficiently

=====

Article Created: 9 September 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

When it's difficult to open applications or print, these tips will help use Macintosh memory more efficiently. For more information about managing memory, see the Macintosh User's Guide.

To use System 7, your Macintosh needs at least 2MB of memory. If you customarily work with several programs at a time, you may wish to install more memory.

DISCUSSION -----

Use the Available Memory

-----

If you get a message asking if you'd like to open a program using the "available memory," click OK, and the program will open. This message appears when the available memory is greater than the minimum memory required to open the program, but less than the recommended amount. In rare cases, you may be unable to use some features of the program.

Quit Some Open Programs

-----

When you open an application and see the "not enough memory" message, you should quit one or more open programs. Open the Application menu (right end of the menu bar) to see which programs are open.

This message appears when the available memory is less than the minimum required to open the program.

### Reduce a Program's Memory Size

-----

You can often avoid memory problems by reducing a program's current memory size. In rare cases, reducing a program's memory size degrades performance. Follow these steps to reduce a program's memory size:

- 1) Quit the program.
- 2) In the finder, select the program's icon.
- 3) Choose Get Info from the File menu. The program's Info window appears.
- 4) Reset the memory size.
- 5) Close the Info window.
- 6) Try again to open the program.

### Quit Some Programs Before Printing

-----

When you print, you'll sometimes see the Application menu begin to blink. When this happens, follow these steps to quit a program and make more memory available for printing:

- 1) Choose Finder from the Application menu. You'll see an alert box.
- 2) Click OK to close the alert box.
- 3) From the Application menu, choose the program you want to close. The program becomes active.
- 4) Choose Quit from the File menu.

After quitting one or more programs, try printing again.

### Set the Disk Cache to the Smallest Size

-----

The disk cache is a portion of the computer's memory set aside to limit how often the computer must read from a disk. This speeds up the computer's performance. By reducing the size of the disk cache, you can make more memory available for application programs. Follow these steps to adjust the disk cache:

- 1) Choose Control Panels from the Apple menu.
- 2) Open the Memory control panel (double-click the Memory icon).
- 3) In the Memory control panel, click the down arrow repeatedly until the disk cache is the smallest possible size.
- 4) Choose Restart from the Special menu to restart the Macintosh.

#### Drag Optional System Extensions Out of the System Folder

-----

System extensions (also known as INITs) compete with application programs for memory. (System extension icons are often displayed in the bottom-left portion of the screen when the computer starts up.) You can conserve memory by removing system extensions that you don't need. For instance, if your Macintosh is not connected to a host database, you can remove the DAL (Data Access Language) system extension. Likewise, if your Macintosh is not connected to a network, you can remove the AppleShare system extension. Follow these steps to remove system extensions:

- 1) Open the System Folder.
- 2) Open the Extensions folder.
- 3) Drag the system extension icon out of the System Folder to another location on your hard disk.
- 4) Restart the computer.

#### Restart the Computer

-----

If you have opened and closed a number of programs, your Macintosh memory can become fragmented so that you can't open a large program. When this happens, quit all the open programs, and restart the computer.

#### Turn Off Background Printing

-----

When background printing is on, you can print while using the computer for other work. If you don't need background printing, you can reduce the amount of memory required to print by turning it off. Follow these steps to turn off background printing:

- 1) Choose the Chooser from the Apple menu.
- 2) In the Chooser window, select a LaserWriter icon.
- 3) Click the Background Printing: Off button.

#### Turn Off File Sharing

-----

When file sharing is turned on, you can share information on your computer's hard disk with other users on a network. If you don't currently use file sharing, you can conserve memory by turning it off. Follow these steps to turn off file sharing:

- 1) Choose Control Panels from the Apple menu.



- 2) Open the Sharing Setup control panel (Double-click the Sharing Setup icon).
- 3) Click Stop in the File Sharing section of the Sharing Setup control panel. A message appears asking how many minutes the computer should wait until file sharing is turned off.
- 4) Type a number, and click OK.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8905



# Tech Info Library

## Eiki International, Inc.

Revised: 7/8/93  
Security: Everyone

Eiki International, Inc.

=====

Article Created: 09/10/91  
Article Reviewed: 07/08/93  
Article Updated:

Eiki International, Inc.  
-----

26794 Vista Terrace Dr.  
Lake Forest, CA 92630-8113

714-457-0200

714-457-7878 Fax

Company Profile:  
Specializing in audio-visual equipment.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8906



# Tech Info Library

## LaserWriter IIf and IIg: How They Differ from LaserWriter IINTX

Revised: 9/30/91  
Security: Everyone

LaserWriter IIf and IIg: How They Differ from LaserWriter IINTX

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the enhancements of the LaserWriter IIf and IIg, compared to the LaserWriter IINTX.

DISCUSSION -----

The LaserWriter IIf offers a 50% performance improvement over the LaserWriter IINTX. With gray scale mode disabled, the LaserWriter IIg gives twice the performance of the IINTX. The IIg's performance is the same as the IINTX with gray scale mode active.

The LaserWriter IIf and IIg controllers provide twice the processing power of the LaserWriter IINTX. The major controller components include:

- Processors
- Memory
- ASICs (Application Specific Integrated Circuits)
- I/O

These components, plus the PostScript Level 2 software, provide significantly faster performance than LaserWriter IINTX.

The Motorola 68030 in the IIf and IIg improves performance over the 68020 in the LaserWriter IINTX in the following ways:

- The 68030 runs at a faster clock speed. This makes the IIf 25% faster and the IIg 55% faster than the IINTX.

| LaserWriter | Clock Speed |
|-------------|-------------|
| -----       | -----       |
| IINTX       | 16 MHz      |

|     |        |
|-----|--------|
| IIf | 20 MHz |
| IIg | 25 MHz |

- The 68030 has integrated instruction and data cache to give a 15% performance improvement over the IINTX.
- The 68030 has burst-mode RAM access to transfer large amounts of data in less time.

PhotoGrade allows printing more than 65 levels of gray. The LaserWriter IINTX offers 33 levels of gray.

The IIf and IIg use 80ns memory. This means that RAM from the IINTX or IISC can't be used in the LaserWriter IIf or IIg. The Macintosh IIfx uses the same RAM as the LaserWriter IIf and IIg.

Unlike the LaserWriter IINTX, the LaserWriter IIg has three communication ports, and all three can be physically connected at the same time. Arbitration logic controls the activity of the ports. Because PostScript processes one job at a time, only one port has access to the printer at any given time.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8910



# Tech Info Library

## LaserWriter IIf: Description (Discontinued)

Revised: 6/2/94  
Security: Everyone

LaserWriter IIf: Description (Discontinued)

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the LaserWriter IIf.

DISCUSSION -----

The 300 dpi (dots per inch) Apple LaserWriter IIf makes use of Apple's FinePrint technology to smooth jagged edges frequently found in laser-printed documents.

RAM

---

You can upgrade the LaserWriter IIf to 5MB RAM. The upgrade adds Apple's PhotoGrade capabilities and high-quality scanned images and graphics. PhotoGrade allows printing more than 65 levels of gray.

Networking

-----

The LaserWriter IIf comes with built-in LocalTalk networking capabilities for use with an AppleTalk network system. The design of this printer allows simultaneous connection with multiple kinds of networks and computers. There's no need to manually reconfigure the printer to receive data through a particular port.

Performance

-----

The LaserWriter IIf prints documents up to two times faster than the LaserWriter IINTX due to a high-speed controller and Adobe's PostScript Level 2 software. This generation of PostScript language improves printing speed, adds new capabilities, and is compatible with existing applications and drivers. The IIf is also compatible with the Hewlett Packard LaserJet

IIP (PCL 4+) emulation software.

Copyright 1991-1994 Apple Computer, Inc.

Tech Info Library Article Number:8911



# Tech Info Library

## LaserWriter IIf: Specifications (Discontinued)

Revised: 4/6/95  
Security: Everyone

LaserWriter IIf: Specifications (Discontinued)

=====

Article Created: 1 October 1991  
Article Reviewed/Updated: 06 April 1995

TOPIC -----

This article gives the technical specifications for the LaserWriter IIf.

DISCUSSION -----

Marking Engine

- 
- Canon LBP-SX laser

Controller

- 
- 20MHz 68030 CPU, ASICs, and I/O processors
  - Optional upgrade for LaserWriter IISC, IINT, and IINTX

Memory

- 
- 2MB RAM, up to 32MB (increased to 4 MB in 1992)
  - 2MB ROM

Print Quality

- 
- 300 dpi enhanced with FinePrint
  - Optional PhotoGrade for high-quality scanned images by upgrading to 5MB RAM

Fonts

- 
- ITC Avant Garde Gothic, ITC Bookman, Courier, Helvetica, Helvetica Narrow, New Century Schoolbook, Palatino, Symbol, Times, ITC Zapf Chancery, and ITC Zapf Dingbats
  - Supports any TrueType or PostScript fonts

### Speed

-----

- Eight pages per minute maximum

### Interfaces

-----

- RS-422/423 (8-pin circular miniDIN)
- RS-232C (25-pin D shell connector)
- Simultaneous connection to LocalTalk, RS-232, RS-422
- SCSI to attach an external hard disk for font storage

### Recommended Duty Cycle

-----

- Toner cartridge - 4,000 pages at 5% density
- Printer - minimum 300,000 pages (equivalent to printing 200 pages a day, 5 days a week, 52 weeks a year, for more than 5 years)

### Print Materials

-----

- Media
  - Apple recommends 16- to 20-lb. photocopy or typewriter bond [60 to 80 g/m (to the 2nd power)] in normal mode; up to 36-lb. [135 g/m (to the 2nd power)] in manual mode with face-up tray open.
  - Most textured and colored stock
  - Labels, envelopes, and transparencies
- Sizes
  - Paper: U.S. letter, U.S. legal, A4, B5
  - Envelopes: minimum 3.5 x 7 inches (86 x 178mm);  
maximum 7.4 x 10.5 inches (188 x 267mm)

### Capacities

-----

- Paper cassette
  - 200 sheets of 20-lb. [75 g/m (to the 2nd power)] paper
  - Optional envelope cassette: 15 envelopes
  - Manual feed with single sheet feeder

### Printable Surface

-----

- Maximum printable line: 8.1 in. (205.9 mm)
- Minimum top and bottom margins: .197 in. (5.1 mm)
- Minimum left margin: .197 in. (5.1 mm)
- Minimum right margin: .197 in (5.1 mm)

The actual printable area may vary depending on the application and amount of RAM installed.)

### Size and Weight

-----

- Height: 8.6 inches (21.8 cm)
- Depth: 18.5 inches (47.5 cm)
- Weight: 45.0 lb. (20.3 kg)
- Width: 20.0 inches (50.8 cm)



# ..TIL08912-LaserWriter\_IIf-Specifications\_Discontinued.pdf

- Width with letter-size cassette: 26.4 in. (67 cm)

## Power Requirements

-----

- U.S./Japan: 90 to 126 volts AC, 50 to 60 hertz
- Europe/Australia: 198 to 264 volts AC, 50 hertz

## Power Consumption

-----

- Standby: 170 watts average
- Operating: 900 watts maximum at 115 volts  
780 watts maximum at 220 volts  
880 watts maximum at 240 volts

## Operating Environment

-----

- Temperature: 50 to 90 degrees F (10 to 32 degrees C)
- Humidity: 20% to 80%

## Page Description Language

-----

- Adobe PostScript Level 2

## Emulation

-----

- HP PCL4+ (emulates HP LaserJet IIP)

## Article Change History:

06 Apr 1995 - Noted that standard memory level was increased.

## Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8912



# Tech Info Library

## LaserWriter IIg: Description (Discontinued)

Revised: 6/2/94  
Security: Everyone

LaserWriter IIg: Description (Discontinued)

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the LaserWriter IIg.

DISCUSSION -----

The LaserWriter IIg is an expandable network printer that makes use of PhotoGrade technology. The unit can print images with more than 65 levels of gray and smooths jagged edges using FinePrint technology.

### Networking

-----

LocalTalk allows for plug-and-play connection to an AppleTalk network. The LaserWriter IIg has built-in Ethernet features for high-speed EtherTalk networks. You can simultaneously connect the unit to Ethernet, LocalTalk, and other serial interfaces. You can also connect it to multiple types of computers or networks.

The LaserWriter IIg automatically chooses the AppleTalk default zone at the nearest router. You must change the PostScript instructions to set the AppleTalk zone differently.

### Performance

-----

A high-speed controller and Adobe's PostScript Level 2 software increase document printing speed up to twice that of the LaserWriter IINTX. The newest PostScript improves printing speed, adds new capabilities, and is compatible with existing applications and drivers. The IIg is also compatible with the Hewlett Packard LaserJet IIP (PCL 4+) emulation software.

Copyright 1991-1994 Apple Computer, Inc.

Tech Info Library Article Number:8913



# Tech Info Library

## LaserWriter IIg: Technical Specifications (Discontinued)

Revised: 4/6/95  
Security: Everyone

LaserWriter IIg: Technical Specifications (Discontinued)

=====

Article Created: 1 October 1991  
Article Reviewed/Updated: 06 April 1995

TOPIC -----

This article gives technical specifications for the LaserWriter IIg.

DISCUSSION -----

Marking Engine

- 
- Canon LBP-SX laser

Controller

- 
- 25MHz 68030 CPU, ASICs, and I/O processors
  - Optional upgrade for LaserWriter IISC, IIx IINT, and IINTX

Memory

- 5MB RAM, up to 32MB (increased to 8 MB in 1992)
- 2MB ROM

Print Quality

- 
- 300 dpi enhanced with FinePrint
  - Optional PhotoGrade for high-quality scanned images

Fonts

- 
- ITC Avant Garde Gothic, ITC Bookman, Courier, Helvetica, Helvetica Narrow, New Century Schoolbook, Palatino®, Symbol, Times, ITC Zapf Chancery, and ITC Zapf Dingbats
  - Supports any TrueType or PostScript fonts

Speed

-----

- Eight pages per minute maximum

#### Interfaces

-----

- RS-422/423 (8-pin circular miniDIN)
- RS-232C (25-pin D shell connector)
- Ethernet (15-pin [uses Apple's AAUI interface]  
ThinNet, 10Base-T, and ThickNet cabling)
- Simultaneous connection to Ethernet, LocalTalk, RS-232, and RS-422
- SCSI for external hard disk font storage

#### Recommended Duty Cycle

-----

- Toner cartridge - 4,000 pages at 5% density
- Printer - minimum 300,000 pages (equivalent to printing 200 pages a day, 5 days a week, 52 weeks a year, for more than 5 years)

#### Print Materials

-----

- Media
  - Apple recommends 16- to 20-lb. bond from cassette [60 to 80 g/m(to the 2nd power)] ; up to 36-lb. [135 g/m(to the 2nd power)] in manual mode.
  - Unit handles labels, envelopes, and transparencies
- Sizes
  - Paper: U.S. letter, U.S. legal, A4, B5
  - Envelopes: minimum 3.5 x 7 inches (86 x 178mm);  
maximum 7.4 x 10.5 inches (188 x 267mm)

#### Capacities

-----

- Paper cassette: 200 sheets of 20-lb. [75 g/m (to the 2nd power)] paper  
Optional envelope cassette: 15 envelopes  
Manual feed with single sheet feeder

#### Printable Surface

-----

- Maximum printable line: 8.1 inches (205.9 mm)
- Minimum margins: .197 inches (5.1 mm)

#### Size and Weight

-----

- Height: 8.6 inches (21.8 cm)
- Depth: 18.5 inches (47.5 cm)
- Weight: 45.0 lb. (20.3 kg)
- Width: 20.0 inches (50.8 cm)
- Width with letter-size cassette: 26.4 inches (67.1 cm)

#### Power Requirements

-----

- U.S./Japan: 90 to 126 volts AC, 50 to 60 hertz
- Europe/Australia: 198 to 264 volts AC, 50 hertz

#### Power Consumption

-----

- Standby: 170 watts average
- Operating: 900 watts maximum at 115 volts  
780 watts maximum at 220 volts  
880 watts maximum at 240 volts

#### Operating Environment

-----

- Temperature: 50 to 90 degrees F (10 to 32 C)
- Humidity: 20% to 80%

#### Page Description Language

-----

- Adobe PostScript Level 2

#### Emulation

-----

- HP PCL 4+ (emulates HP LaserJet IIP)

#### Article Change History:

06 Apr 1995 - Noted that standard memory was increased.

#### Support Information Services

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Tech Info Library Article Number:8914



# Tech Info Library

## LaserWriter IIf and IIg: Support Issues

Revised: 6/16/93  
Security: Everyone

LaserWriter IIf and IIg: Support Issues

=====

Article Created: 1 October 1991

ArticleChange History

-----  
06/15/93 - REVISED  
• For technical accuracy

TOPIC -----

This article discusses some of the support issues for the LaserWriter IIf and IIg.

DISCUSSION -----

Driver and Level 2 Support

-----  
The driver shipped with LaserWriter IIf and IIg is the LaserWriter driver version 7.0, which doesn't support PostScript Level 2 operators. Access to new Level 2 features is limited to downloaded PostScript programs. The next LaserWriter driver will add Level 2 functionality. The IIf and IIg operate more efficiently even without the new driver because of improved memory management and high speed cache.

Missing Type 1 Fonts In ROM

-----  
Due to extremely limited ROM space, the ITC Zapf Dingbats Type 1 font was removed from LaserWriter IIf and IIg ROMs, and included, as a downloadable font, on the font disk.

Legal Size Printing

-----  
The standard LaserWriter IIf and IIg configurations don't support full legal size printing. At the standard RAM configurations, the LaserWriter IIf can't print full legal pages and the LaserWriter IIg can't print gray-scale legal pages. If you want to use legal size paper with full printing

capability, upgrade the RAM from 2MB to 4MB on a LaserWriter IIf, and from 5MB to 8MB on a LaserWriter IIg.

#### Don't Use Refilled Toner Cartridges

-----  
Refilled cartridges performed poorly during LaserWriter IIg gray-scale testing, and aren't recommended.

#### Kanji Support

-----  
The LaserWriter IIg has composite font support, but due to the HFS disk structure, there is no copy protection for the Kanji fonts. Kanji will be fully supported in the LaserWriter 1.1 ROMs.

#### No Diablo 630 Emulation

-----  
LaserWriter IIg ROMs don't provide Diablo 630 emulation.

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Tech Info Library Article Number:8915





# Tech Info Library

## Apple OneScanner: How it Differs from the Apple Scanner

Revised: 9/30/91  
Security: Everyone

Apple OneScanner: How it Differs from the Apple Scanner

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the Apple OneScanner's enhancements, compared to the original Apple Scanner.

DISCUSSION -----

### Overview

-----

The Apple OneScanner looks like the Apple Scanner flatbed scanner, but supports 8-bit gray scale and provides higher performance. The new scanning application -- called Ofoto -- produces high-quality scans. HyperScan 2.0 scans the images directly into HyperCard to resize the cards and give better image control.

### Features

-----

These features differ from the Apple Scanner:

- 8-bit image depth (256 gray scale resolution)
- Variable resolution from 72-dpi to 300-dpi in 1-dpi increments
- Higher scanning and data transfer speed
- Finer control of brightness and contrast settings
- No ADB port

### Software Compatibility

-----

All of the Apple OneScanner software is backward-compatible with the original Apple Scanner. A software upgrade kit will give the Apple Scanner all the features of the new software. The Apple Scanner is limited to 4-bit gray scale, but the software upgrade produces better images and is much easier to use.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8916



# Tech Info Library

## Apple OneScanner: Description

Revised: 2/28/95  
Security: Everyone

Apple OneScanner: Description

=====

Article Created: 1 October 1991  
Article Reviewed/Updated: 28 February 1995

TOPIC -----

This article describes the Apple OneScanner.

DISCUSSION -----

The Apple OneScanner is a flatbed scanner that makes use of Ofoto scanning software from Light Source, Inc. Ofoto allows automatic scanning, or manual control of each aspect of the scanning process. The OneScanner provides for gray-scale scanning with 256 levels for photographic-quality black-and-white images. High-quality rotation and scaling algorithms enhance image quality. You can use System 7 Balloon Help to find out about OneScanner features.

This unit comes with scaling tools for choosing the exact size of images you plan to scan. You can rotate and manipulate images with no loss of quality. With the OneScanner, you can obtain images through any printer -- from the Apple StyleWriter to professional imagesetters.

The OneScanner comes with HyperScan 2.0 software, allowing for incorporation of high-quality scanned images into HyperCard 2.0 stacks. This unit is compatible with all Macintosh computers and with most Macintosh applications, including word processing, presentation, graphics, database, and page-layout programs. The OneScanner is compatible with PICT, TIFF, EPS, and MacPaint file formats.

Article Change History:  
28 Feb 1995 - Reformatted article.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8917



# Tech Info Library

## Apple OneScanner: Technical Specifications (Discontinued)

Revised: 6/2/94  
Security: Everyone

Apple OneScanner: Technical Specifications (Discontinued)

=====  
Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article gives the technical specifications for the Apple OneScanner.

DISCUSSION -----

### Technical

- 
- Scanner Type: Flatbed
  - Resolution: 72 - 300 dpi in 1 dpi increments
  - Maximum document size: 8.5 by 14 inches
  - Gray-scale levels: 256 levels (8 bits per pixel)
  - Scaling: unlimited
  - Interface: SCSI (Small Computer Systems Interface)

### Electrical Requirements

- 
- Line voltage: 110 volts AC  $\pm$  10%
  - Frequency: 58 to 62 hertz
  - Power: 45 watts maximum

### Environmental Requirements

- 
- Operating temperature: 50 to 104 degrees F  
(10 to 40 degrees C)
  - Storage temperature: 50 to 149 degrees F  
(10 to 47 degrees C)
  - Relative humidity: 5% to 95% noncondensing
  - Altitude: 0 to 10,000 ft.(0 to 3048 m)
  - Noise (maximum): Standby <30 dba, Scanning <55 dba

#### Ofoto Application Software

-----

- Autoscan for setting all parameters, selecting and straightening images
- Adaptive calibration of any printer to deliver the best possible images
- Selection and scaling tools for enlarging or reducing an image
- Virtual imaging system to accommodate large image files by expanding system memory with hard disk space
- High-quality rotation and scaling for image manipulation without loss of quality
- Balloon Help facility for interactive learning
- Support for PICT, TIFF, EPS, and MacPaint file formats

#### HyperScan 2.0

-----

- Variable size scanning to match the size of HyperCard 2.0 stacks
- Controls on palettes for each access
- Built-in help

#### Size and Weight

-----

- Height: 4.4 inches (11.2 cm)
- Width: 13.6 inches (34.5 cm)
- Depth: 21.8 inches (55.4 cm)
- Weight: 23.0 lb. (10.45 kg)

#### System Requirements

-----

- Macintosh system software version 6.0.7 or later
- HyperCard 2.0 to use HyperScan 2.0
- Appropriate SCSI cabling

#### Compatibility

-----

- All Macintosh computers
- Most Macintosh applications, including word processing, presentation, graphics, database, and page layout programs
- PICT, TIFF, EPS, and MacPaint file formats

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Tech Info Library Article Number:8918



# Tech Info Library

## Apple OneScanner: Support Issues (9/94)

Revised: 9/26/94  
Security: Everyone

Apple OneScanner: Support Issues (9/94)

=====

Article Created: 1 October 1991  
Article Reviewed/Updated: 26 September 1994

TOPIC -----

This article gives information about some of the support issues for the Apple OneScanner.

DISCUSSION -----

Software  
-----

The Ofoto software requires LaserWriter drivers 6.0.1 or later. Gray scale images won't print properly with earlier drivers.

Ofoto also requires system software version 6.0.7 or later and 32-bit QuickDraw. It is fully compatible with System 7.

Lamp  
-----

You need to change the lamp after approximately 30,000 scans. The scanning software indicates when it's necessary to change the scanner lamp.

Macintosh Quadra and Power Macintosh  
-----

These computers use a faster SCSI chip, with reset interrupt timing 10 times shorter than previous Macintosh computers. Because of this timing difference, they develop SCSI gridlock and the scanning software indicates that the scanner isn't connected. This occurs only when the scanner is turned on before the Macintosh is turned on.

The solution is to reset the timing by turning the scanner off, then on again. When Ofoto doesn't recognize the scanner, it displays a note in the dialog box telling the user to cycle the scanner power and try again.

The next Apple OneScanner ROM revision (version 2.03) will fix this.

Note: If you are unsure which ROM revision your Apple OneScanner or any other SCSI device has, one easy and quick method to determine this is to connect the SCSI device to a Macintosh computer and launch a product called "SCSI Probe" 3.4 or later. SCSI Probe provides the SCSI ID, device type, vendor info, product name, and version information. In the case of the OneScanner the version information field provides the ROM version number that can be used to identify whether a OneScanner could potentially exhibit the problem described in this article.

For more information search for the article titled, "OneScanner: Quadra Doesn't Recognize It At Startup".

These articles can help you locate the software mentioned here:

- "Where To Find Apple Software Updates"  
Lists online services for "free" Apple software updates.
- "Obtaining Apple Product Support in the USA"  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library.

#### Article Change History:

- 16 Sep 1994 - Review article, updated to include Power Macintosh and include information on finding software online.
- 18 Dec 1992 - Updated to include information on SCSI Probe and how to determine ROM revisions of SCSI devices.

Support Information Services

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Tech Info Library Article Number:8919



# Tech Info Library

## Macintosh 21 Color Display: Description (Discontinued 3/94)

Revised: 3/14/94  
Security: Everyone

Macintosh 21" Color Display: Description (Discontinued 3/94)

Article Created: 21 October 1991  
Article Reviewed/Updated: 14 March 1994

TOPIC -----

This article describes the Apple Macintosh 21-inch Color Display, which Apple discontinued on 14 March 1994, replacing it with the Apple Multiple Scan 20 Display.

DISCUSSION -----

The Apple Macintosh 21-inch Color Display lets you work with two full pages of text and graphics in color. The unit design allows large-screen color display for presentations, page layouts, engineering design, and video applications. The 21-inch screen provides more than three times the screen area of standard displays, and features high levels of brightness and contrast. The anti-glare screen minimizes reflective glare, and the tilt and swivel base allows for working-angle adjustments.

The built-in video on the Quadra 700 and 900 supports the display in 16 and 256 colors, respectively. It's equipped with an auto-degaussing circuit to insure consistent color purity and distortion-free images.

The display contains three Apple Desktop Bus (ADB) connectors on the display front to allow direct connection of a keyboard, mouse, or other ADB device.

This unit is compatible with newer operating systems, such as Macintosh system software version 7.0 and A/UX. The display is also well-suited for preparation of video and animation presentations to use with television monitors or videocassette recorders.

The Macintosh 21-inch Color Display supports as many colors as the video circuitry allows. For example, you can access 256 colors simultaneously from a palette of more than 16 million colors, using a Macintosh Display Card 8•24 or 8•24GC.



Article Change History:

14 March 1994 - Added Discontinued information.

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Tech Info Library Article Number:8920



# Tech Info Library

## Macintosh 21 Color Display: Specifications (Discontinued 3/94)

Revised: 3/14/94  
Security: Everyone

Macintosh 21" Color Display: Specifications (Discontinued 3/94)

=====

Article Created: 1 October 1991  
Article Reviewed/Updated: 14 March 1994

TOPIC -----

This article gives the technical specifications for the Macintosh 21-inch Color Display, which Apple discontinued on 14 March 1994, replacing it with the Apple Multiple Scan 20 Display.

DISCUSSION -----

### System Requirements

-----

- Macintosh personal computer equipped with an appropriate video card
- Video cable (supplied with the display)

### Optical Features

-----

- 20-inch diagonal viewable with in-line gun
- 90 degree deflection angle
- Black matrix-type dot screen
- Phosphor type P22 (aluminized)
- Flat, square faceplate with gray filter glass, 50% nominal light transmission
- Shadow mask

### Screen Resolution

-----

- 1152 horizontal pixels by 870 vertical lines; 79 dots per inch (dpi)
- .26 mm horizontal by .29 mm vertical dot pitch

### Input Signals

-----

- Red, green, and blue video signals; TTL separate sync

### User Controls

-----

- Back panel
  - Power switch (above power cord)
  - Manual degauss (above security lock)
- Front panel
  - Brightness, with detent (right)
  - Contrast (left of brightness control)

#### Scanning and Refresh Rates

-----

- Horizontal scan rate: 68.7 kilohertz
- Vertical refresh rate: 75 hertz

#### Rise and Fall Time

-----

- Five nanoseconds, maximum

#### Active Video Display Area

-----

- 14.6 inches horizontal by 11.0 inches vertical (371 mm horizontal by 280 mm vertical); remainder of display area is used for border.

#### Electrical Requirements

-----

- Voltage: 85 to 135 volts AC or 170 to 270 volts AC
- Frequency: 47 to 63 hertz
- Power: 165 watts maximum

#### Fuse Protection

-----

- Internal power line fuse protection; the display fuse should be replaced with a fuse of the same type by a qualified service technician.

#### Environmental Requirements

-----

- Operating temperature: 50 to 95 degrees F (10 to 35 degrees C)
- Operating humidity: 95% maximum, noncondensing
- Maximum altitude: 10,000 feet (3,048 m)

#### Size and Weight

-----

- Height: 18.5 inches (47.0 cm)
- Width: 19.6 inches (49.8 cm)
- Depth: 20.9 inches (53.0 cm)
- Weight: 79.6 lb. (36.2 kg)

#### Safety Agency Approvals

-----

- Emissions: FCC (class A), VDE (class A), FTZ, CISPR, Swedish MPR magnetic (VLF and ELF)
- Safety: UL, CSA, FDA/DHHS, Scandinavian EMKOs, PTB

#### Article Change History:

# ..TIL08921-Macintosh\_21\_Color\_Display-Specifications\_Discontinued\_3-94.pdf

14 March 1994 - Added discontinuation information.

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8921



# Tech Info Library

## Chinon America, Inc.

Revised: 7/7/93  
Security: Everyone

Chinon America, Inc.

=====

Article Created: 09/27/91  
Article Reviewed: 07/07/93  
Article Updated:

Chinon America, Inc.

-----

615 Hawaii Ave.  
Torrance, CA 90503

800-932-0374 (New Jersey Office)

310-533-0274

310-533-1727 Fax

Company Profile:  
Hardware, specializing in CD-ROM drives.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8923



# Tech Info Library

## **Toshiba America Information Systems, Inc.**

Revised: 7/20/93  
Security: Everyone

Toshiba America Information Systems, Inc.

=====

Article Created: 27 September 1991  
Article Reviewed/Updated: 20 July 1993

Toshiba America Information Systems, Inc.

-----

Disk Products Division  
9740 Irvine Blvd.  
Irvine, CA 92718

714-583-3000

Fax: 714-583-3499

Company Profile:  
Hardware, specializing in CD-ROM drives.  
Other Divisions: Computer Systems, Electronic Imaging, and Medical Equipment.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8924



# Tech Info Library

## StyleWriter: Printing from Apple IIfx Card

Revised: 6/10/92  
Security: Everyone

StyleWriter: Printing from Apple IIfx Card

=====  
Article Created: 24 September 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

### TOPIC -----

Does the Apple IIfx Card software version 2.0 support printing to the StyleWriter?

### DISCUSSION -----

The Apple IIfx Card version 2.0 allows printing via print drivers installed in the Macintosh LC computer System Folder. If the StyleWriter driver (or other driver) is in the Macintosh LC System Folder, the Apple IIfx Card can print to the StyleWriter (or other printer).

Follow these steps:

- 1) In the Apple IIfx Option Panel, place the Printer Card icon in the appropriate slot using the Slots icon in the scrolling icon area. By convention, this is slot 1.
- 2) In the scroll icon area, choose the Print Card icon. This displays the currently selected printer.
- 3) A note in the dialog area indicates that you can select alternate printers via the Chooser desk accessory. Select a printer in the standard Macintosh Chooser.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8925



# Tech Info Library

## Graphic Conversions: PICT to/from CGM

Revised: 11/4/92  
Security: Everyone

Graphic Conversions: PICT to/from CGM

=====

Article Created: 12 October 1989

### Article Change History

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11/03/92 - CORRECTED

- The vendor search string information

### TOPIC -----

Can you recommend software for converting MS-DOS PC graphics output to Macintosh applications (PICT format) and back?

### DISCUSSION -----

Typically, MS-DOS PC graphics standards are of competing standards and legally nonconforming variations. Some PC packages can do bitmap conversions through screencaptures (Hijak, Graphics-Link Plus) and write MacPaint format files, but these translations lose color information and are bitmapped versus object-oriented.

There is one standard, however, that some PC programs can support: Computer Graphics Metafile (CGM). CGM files are produced by many GKS-type applications (from mainframes to micros) and many PC graphic packages (Harvard Graphics, SAS, Freelance Plus, and so on). Genigraphic workstations also support CGM, as do a whole host of other boxes.

There are three approaches to converting a PICT file into a CGM file: 1) Use a translation application, such as CADMover 3.2. 2) Use a Chooser-selectable driver, such as GraphPorter. 3) Use a graphics application that can read a PICT file and write a CGM file.

CADMover 3.2 (from Kandu Software), FlexiCAD 2.0 (from Amiable Technologies, Inc.) and Canvas 3.0 (from Deneba Software) all move files in both directions.



GraphPorter (from GSC Associates) is a SuperGlue-like Chooser device that creates a CGM file from a PICT or PICT2 file when a user prints. As a utility, GraphPorter makes it possible for Macintosh users to share graphic output with a PC via CGM.

MetaPict (also from GSC Associates) converts CGM to PICT or PICT2 only (not the reverse direction). If a Macintosh user wants to import CGM files from a Genigraphics slide-making machine or Harvard Professional Graphics and manipulate the object-oriented graphics in Canvas or MacDraw, the user can add MetaPict to their graphic conversion tools. There is a large, installed base of Genigraphics objects and Harvard Graphic users who would benefit from these utilities.

Another utility for CGM to PICT only conversions, is PICTure This! (from FGM, Inc.). PICTure This! converts a wide range of graphic file formats to PICT2. The PICT files can be used as is, or edited by most Macintosh software packages. In addition, the program allows users to save the converted PICT image into the Clipboard so that it can be pasted into another application.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:8926



# Tech Info Library

## Amiable Technologies, Inc.

Revised: 7/22/93  
Security: Everyone

Amiable Technologies, Inc.

=====

Article Created: 27 September 1991  
Article Reviewed/Updated: 22 July 1993

Amiable Technologies, Inc.

-----

Scott Plaza Two  
Suite 625  
Philadelphia, PA 19113-1518

215-521-6300

215-521-0111 Fax

Company Profile:  
Specializing in graphics applications.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8927



# Tech Info Library

## 10Base-T Ethernet Network: Source of Wiring Specification

Revised: 10/2/91  
Security: Everyone

10Base-T Ethernet Network: Source of Wiring Specification

=====  
Article Created: 24 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I want to install a 10Base-T Ethernet network. What are the specifications (type of cable, number of conductors, wiring scheme, rj-45 information, and so on) that we need to know to wire a 10Base-T network with a backbone?

DISCUSSION -----

The only available information on this subject comes from the ISO 8802-3/IEEE 802.3(i) specification, which is available to IEEE members.

Search under "IEEE and Contact Information" in the Tech Info Library to find the address and phone number.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8928



# Tech Info Library

## IEEE: Contact Information

Revised: 7/12/93  
Security: Everyone

IEEE: Contact Information

=====

Article Created: 09/24/91  
Article Reviewed: 07/12/93  
Article Updated: 12/02/92

IEEE Services Dept. Headquarters  
-----

345 East 47th Street  
New York, NY 10017

212-705-7900 (Head Quarters)  
908-981-0060 (New Jersey Office)

Company Profile:  
Institute of Electrical and Electronics Engineers, Inc., specializing in  
publishing computer, electrical, and electronics standards as well as  
electronic publishing.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:8929



# Tech Info Library

## AG Group, Inc.

Revised: 4/4/97  
Security: Everyone

AG Group, Inc.

=====

Article Created: 09/27/91  
Article Last Reviewed: 07/01/93  
Article Last Updated: 04/04/97

The AG Group, Inc.

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2540 Camino Diablo  
Suite 200  
Walnut Creek, CA 94596

510-937-7900

510-937-2479 Fax

Company Profile:  
Software, specializing in network management software.

Article Change History: 07/01/93 Address changed

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:8932



# Tech Info Library

## AppleShare Server 3.0: Upgrade Information (Discontinued)

Revised: 5/22/95  
Security: Everyone

AppleShare Server 3.0: Upgrade Information (Discontinued)

=====

Article Created: 15 October 1991  
Article Reviewed/Updated: 22 May 1995

TOPIC -----

The following information serves to inform customers how to upgrade to AppleShare Server 3.0.

DISCUSSION -----

AppleShare Server 3.0 was introduced on October 15, 1991. As a method of upgrading the installed base as well as new customers to AppleShare Server 3.0, an upgrade program - via a coupon - has been established. New customers will be eligible to receive AppleShare Server 3.0 at no charge, the installed base will be offered a reduction in price to upgrade.

The disk file - AppleShare Coupon - is the upgrade coupon for new customers. The order form - AppleShare Order Form - is for the installed base. Although the AppleShare Server 3.0 product will not be available for fulfillment until December, the program begins on October 15, 1991; therefore, coupons may be submitted to the fulfillment house to begin processing on October 15. In addition, coupons (both the new customer coupon and the installed base order form) are available through PROMO.DIST. When requesting additional coupons through PROMO.DIST please note the number as follows:

- #900300 - coupon for new customers to receive the product at no charge.
- #900301 - order form for the installed base to purchase the product at a reduced price.

### Requirements

-----

Customers who purchase AppleShare File Server 2.0 between October 15, 1991 and December 31, 1991 will be eligible to receive AppleShare Server 3.0 at no charge.

- The customer is required to mail (to the address indicated on the coupon):
  - 1) The AppleShare coupon (obtained from an authorized Apple Reseller);
  - 2) An original, dated, itemized sales invoice as proof of purchase; and
  - 3) Their original AppleShare File Server 2.0 - Server Installer disk (for each upgrade requested)
- This offer is available for fulfillment through April 1, 1992.

Customers who purchased AppleShare File Server 2.0 prior to October 15, 1991 will be offered a reduction in price to upgrade to AppleShare Server 3.0.

- The customer is required to mail (to the address indicated on the coupon):
  - 1) The AppleShare order form (obtained from an authorized Apple Reseller).
  - 2) Their original AppleShare File Server 2.0 - Server Installer disk (for each upgrade requested), include AppleShare 2.0 Print Server - Server Installer disk if applicable.
  - 3) A certified check or money order for the amount as follows:  
AppleShare 2.0 File Server owners (only)\$299 AppleShare 2.0 File and Print Server owners \$199
- This offer is available for fulfillment through April 1, 1992.

Customers who own ONLY AppleShare 2.0 Print Server are required to purchase the AppleShare Server 3.0 product from an authorized Apple reseller.

#### Article Change History:

22 May 1995 - Marked article discontinued.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8934



# Tech Info Library

## 32-Bit Mode: Use SuperClock 3.9.1 for II, IIX, IICx, SE/30 3/93

Revised: 3/2/93  
Security: Everyone

32-Bit Mode: Use SuperClock 3.9.1 for II, IIX, IICx, SE/30 3/93

=====

Article Created: 8 October 1991

### Article Change History

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08/21/92 - RETITLED

- For clarity; edited.

03/02/93 - REVISED

- To add 32-Bit System Enabler information.

### TOPIC -----

The Macintosh II, IIX, IICx, and SE/30 crash on restart with SuperClock installed and set to 32-bit mode.

### DISCUSSION -----

This problem with SuperClock occurs on these Macintosh computers only when they are used in 32-bit mode, such as with A/UX, the 32-Bit System Enabler, or MODE32.

Upgrade to SuperClock 3.9.1 or later, the version that fixes the crash problem in 32-bit mode.

Copyright 1991, 1992, 1993, Apple Computer, Inc.

Tech Info Library Article Number:8935





# Tech Info Library

## AppleTalk Remote Access: Description

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Description

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes AppleTalk Remote Access software.

DISCUSSION -----

AppleTalk Remote Access lets a Macintosh computer communicate with another Macintosh computer or AppleTalk network over standard telephone lines. On the remote computer, you can use the file sharing feature of System 7 to access files. You can also print to an AppleTalk network printer connected to the remote computer. Your computer can answer calls as well as call another Macintosh.

All AppleTalk network services become available to you remotely. You can check electronic mail, view your calendar, or retrieve data from a database. It doesn't matter what type of AppleTalk network you use. You can call into LocalTalk, Ethernet, or Token Ring networks. Token Ring requires A/ROSE (TokenTalk, version 2.4).

AppleTalk Remote Access Features

-----

- Easy to set up and use
  - Integrated software combines calling and answering
  - No specialized networking knowledge required
  - Remote services accessed the same way as local services
- Multiple security levels

- User-specified options
- Network-wide control
- High performance
  - Optimized for modems
  - Industry-standard data compression and error detection built in
  - Increased efficiency with smart buffering technology
- No special hardware necessary
  - Works on any System 7 Macintosh
  - Broad range of modem support
  - Functions over standard telephone lines
- Modem Support and Scripts

AppleTalk Remote Access can work with any Apple 2400 bps or any Hayes-compatible 2400 bps or higher-speed modem with the appropriate script. Modem scripts for many popular modems are included with AppleTalk Remote Access:

2400 bps Modems

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Apple Data Modems  
Abaton InterFax 24/96  
Global Village TelePort  
Hayes SmartModem 2400  
Microcom Microport 1024  
Practical Peripherals 2400SA  
Prometheus 2400M  
Supra SupraModem 2400  
US Robotics Courier 2400e

9600 bps Modems

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DSI 9624LE/LE Plus  
Hayes Ultra 96  
Farallon Remote V.32  
Microcom MacModem V.32  
MultiTech MultiModem V.32  
Practical Peripherals 9600SA  
Prometheus ProModem Ultima  
Telebit T1600  
US Robotics Courier V.32bis

Programmers who understand connection control languages (CCLs) can write the necessary modem script. The AppleTalk Remote Access Modem Toolkit includes everything needed to write these scripts, and is available from APDA.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8936



# Tech Info Library

## System 7: PrintMonitor Problem when Quitting Foreground App

Revised: 9/22/92  
Security: Everyone

System 7: PrintMonitor Problem when Quitting Foreground App

=====

Article Created: 8 October 1991

### Article Change History

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09/22/92 - UPDATED

- To add information about System 7 Tune-Up.

### TOPIC -----

Why does PrintMonitor sometimes crash when I quit the application that produced the print job?

### DISCUSSION -----

This is a known problem in the 7.0 Process Manager, which fails to keep the driver open when it shuts down the foreground application. You can avoid this problem by not quitting out of the foreground application (the one from which you requested the print) while PrintMonitor is in the process of printing.

But this problem has been solved with the LaserWriter driver version 7.1.1 (or later), found on the System 7 Tune-Up disk. To avoid the problem in the future, upgrade to this version of the LaserWriter. If you suspect your copy of PrintMonitor has already been damaged, replace it as well.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:8937



# Tech Info Library

## AppleTalk Remote Access: Activity Log

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Activity Log

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the Activity Log?

DISCUSSION -----

This is the component of AppleTalk Remote Access that maintains a log of incoming and outgoing calls and connections. The data wraps after 1000 entries. For auditing and tracking, you can cut and paste the data into spreadsheets or databases.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8939



# Tech Info Library

## AppleTalk Remote Access: the Application

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: the Application

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the function of the Application component of AppleTalk Remote Access?

DISCUSSION -----

This is the main application that performs these functions:

- Sets up the connection documents
- Views the status and activity log
- Initiates or terminates a remote connection
- Enables call answering (answers calls whether or not the application is open.)

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8940



# Tech Info Library

## AppleTalk Remote Access: Connection Document

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Connection Document

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the Connection Document?

DISCUSSION -----

A blank connection document appears when you double-click the Remote Access application. AppleTalk Remote Access uses the document when initiating a connection. The connection document specifies the caller's name, password, and phone number of the server Macintosh.

You can save all the configuration information to use later. You can choose whether to save the password with the connection document.

You can also set the time interval between active-connection reminders. This is helpful if you're concerned about phone charges. The default is no reminder.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8941



# Tech Info Library

## AppleTalk Remote Access: Modem CCL Files

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Modem CCL Files

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Where do the modem CCL files go during AppleTalk Remote Access installation?

DISCUSSION -----

The installation process places the modem Connection Control Language (CCL) scripts in the Extensions folder. The scripts appear in the pop-up menu in the Remote Access Setup control panel.

Advanced users can look at the CCL scripts by changing the file type from "mlts" to "TEXT" and reading it with any application that reads text files. A HyperCard stack is available to assist in the development of CCL files. This Modem Workshop tool allows you to interactively edit, run, and monitor CCL scripts.

Installation also places the AppleTalk Remote Access and MNPLink Tool extensions in the Extensions folder. These extensions create and maintain a reliable connection.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8942



# Tech Info Library

## AppleTalk Remote Access: Network adev (Remote Only)

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Network adev (Remote Only)

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the AppleTalk Remote Access Remote Only adev?

DISCUSSION -----

The Remote Only adev (AppleTalk device) is installed in the Extensions folder and appears in the Network CDev. You can disconnect from the local network and see only the remote network. Here are two situations where you might need to do this:

- In the Event of a Network Number Conflict

When a resource on the remote network has the same number as a resource on the local network, you can access the remote resource using the Remote Only adev.

- When You Have a Printer Port, and No Other Network Connections

When you must use the printer port for something other than AppleTalk, you can use the Remote Only adev to free up the printer port. For example, a non-networked Macintosh with a serial printer connected to the printer port and a modem connected to the modem port.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8943





# Tech Info Library

## AppleTalk Remote Access: Security

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Security

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

AppleTalk Remote Access implements security in several ways, at the Macintosh level and at the network level.

DISCUSSION -----

### Macintosh Level Security

-----

You can implement security from the Macintosh in these ways:

- Assign each user a password in the User record in the Users and Groups file. When receiving a call, the password goes through a DES encryption and authentication procedure similar to AppleShare.
- Set AppleTalk Remote Access to call the user back at a predetermined number. If an unauthorized caller discovers a password, the call-back number will connect only the authorized phone number.
- Disable access to the network so the caller can't see beyond the server Macintosh. Turn off file sharing to deny access to the server Macintosh as well.
- Find the number of failed log-on attempts in the activity log.
- Disable the user's access after seven log-on attempts.

### Network Level Security

-----

The network administrator can set up a Security Zone using a HyperCard stack. The Remote Access Setup CDev detects this Security Zone, and

requires a password to answer incoming calls. Unauthorized AppleTalk Remote Access servers can grant access to a network only after clearance from the network administrator.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8944



# Tech Info Library

## AppleTalk Remote Access: Setup

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Setup

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is Remote Access Setup?

DISCUSSION -----

This is a control panel device (CDev) that is normally the first component used after installation. It is used to do the following:

- Select the modem type and modem port.
- Allow incoming calls.
- Set the duration of a connection.
- Enable access to the attached network.
- Control the modem speaker.

E

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8945



# Tech Info Library

## AppleTalk Remote Access: Status Window

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Status Window

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the Status Window?

DISCUSSION -----

This window shows the current status of AppleTalk Remote Access. It uses the following messages:

- "Idle..." when no connections are present or being attempted
- "Waiting to answer incoming call..." when ready to accept calls
- "Waiting for call back..." or "Dialing..." to show the stage of making connection or answering a call

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8946



# Tech Info Library

## AppleTalk Remote Access: Users and Groups File

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Users and Groups File

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the function of the Users and Groups File component of AppleTalk Remote Access?

DISCUSSION -----

AppleTalk Remote Access uses System 7 file sharing to control access. It uses the same user name and password entered in the file sharing Users and Groups file. You enter the call back phone number here. If installed on an AppleShare 3.0 file server, the file server's Users and Groups file controls access. You access the Users and Groups file via the administrator's program. The menu item doesn't work in this case.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8947



# Tech Info Library

## AppleShare 3.0: Installing and Upgrading Servers

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Installing and Upgrading Servers

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article tells you what you need to install or upgrade servers to AppleShare 3.0.

DISCUSSION -----

To upgrade to AppleShare 3.0, you must first upgrade the system software to version 7.0 or later.

The AppleShare 3.0 installation process converts an AppleShare 2.0.1 Users and Groups file for 3.0 use. If System 7 file sharing was activated, the Users and Groups file is active, and the file will be used for the AppleShare 3.0 file. If both files are present, a dialog box prompts the administrator to choose which file to use.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8948



# Tech Info Library

## AppleShare 3.0: Using 2.0.x Workstation Software

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Using 2.0.x Workstation Software

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article explains the limitations of using AppleShare 2.0.x workstation software with AppleShare 3.0 server software.

DISCUSSION -----

AppleShare 2.0.x clients and System 7 clients can access AppleShare 3.0 servers, but can't use the new features of AppleShare 3.0. If a user with an expired password logs on to an AppleShare 3.0 server, that user's old workstation software doesn't support the extended security, and he or she won't be able to log on. The new workstation software gives a message and the opportunity to enter a new password.

E

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8949



# Tech Info Library

## AppleShare 3.0: Access Information Dialog Box

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Access Information Dialog Box

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the functions of the Access Information dialog box.

DISCUSSION -----

The administrator can perform the following functions in the Access Information dialog box.

- Share folders and volumes.
- Lock a file: This is similar to locking a file in the Finder's Get Info window.
- Copy-protect a file: This prevents making Finder copies of a file, but certain utilities can still copy the file.
- Limit launches: This limits the number of times users can simultaneously launch an application.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8950





# Tech Info Library

## AppleShare 3.0: Maximum Number of Connected Users

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Maximum Number of Connected Users

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the maximum number of connected users allowed by AppleShare 3.0?

DISCUSSION -----

Version 3.0 of AppleShare increased the maximum number of connected users from 50 to 120. The default setting is 50. The practical upper limit for connected users is probably less than 120 for reasonable response time. Also, the Hierarchical File System (HFS) limits the number of open files to 346.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8951



# Tech Info Library

## AppleShare 3.0: User Setup Dialog Box

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: User Setup Dialog Box

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

A change in the User Setup dialog box gives the administrator more control over user passwords.

DISCUSSION -----

The administrator can force users to change passwords the next time they log on. This is useful when creating several users and giving simple default passwords, such as initials.

E

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8952



# Tech Info Library

## AppleShare 3.0.3: Description (11/95)

Revised: 11/4/95  
Security: Everyone

AppleShare 3.0.3: Description (11/95)

=====

Article Created: 15 October 1991  
Article Reviewed/Updated: 4 November 1995

TOPIC -----

This article describes the new features of AppleShare 3.0.3.

DISCUSSION -----

AppleShare 3.0.3 contains both file and printing services in one package. It requires System 7. Memory and available CPU cycles determine the limit for running other applications on the same computer. AppleShare 3.0.3 is 32-bit clean and virtual memory compatible. A Macintosh can become a network server that provides shared file storage for up to 120 concurrent users, and queued access to five network printers. AppleShare 3.0 supports the multitasking feature of System 7, so other servers and application programs can run at the same time as AppleShare on one Macintosh.

### AppleShare Print Server

-----

This application runs under MultiFinder, and manages access of up to five networked printing devices. You install it in the System Folder with the ImageWriter Emulator (IWEM).

### AppleShare File Server

-----

AppleShare 3.0 requires at least a Macintosh Plus computer, with a recommended minimum of 4MB of RAM. Apple tested the server on the Macintosh Portables for basic functionality only. Apple hasn't tested for stress on Macintosh Portables running as AppleShare servers.

### Features

- 
- Increased maximum number of connected users from 50 to 120.
  - Guest Access Default set to Off for new installation.

- Continuous Parallel Data Structure (PDS) maintenance. This allows mounting and unmounting removable media (like CD-ROMs) while the server is running.
- Shared volumes and folders have dynamic access privileges, according to where they are created or moved.
- A User can belong to as many as 42 groups (increased from 16).
- Maximum Remote User Activity meter to customize response time.
- The administrator can write and send Greeting, User, and Disconnect User messages.
- The User dialog box allows multiple super users and IAC events.
- The File Server Preferences dialog box allows the administrator to control the number of connections, password characteristics, and log-on attempts.
- The User Setup dialog box allows the administrator to force users to change their passwords.
- The Access Information dialog box gives the ability to lock and copy-protect files, and limit the number of simultaneous application launches.
- The Compact Volume Access Privileges menu speeds up file service startup.
- Administrator messaging
- Print spooling

AppleShare File Server allows Macintosh, Apple II, and MS-DOS computers to access the same documents. AppleShare also allows background printing on networked LaserWriters or ImageWriters.

#### Article Change History:

04 Nov 1995 - Reviewed For technical accuracy.

25 Mar 1994 - Added current version information.

24 Nov 1992 - Added more information about using removable media.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:8953



# Tech Info Library

## AppleTalk Remote Access: Requirements and Components

Revised: 10/15/91  
Security: Everyone

AppleTalk Remote Access: Requirements and Components

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the connection and client/server characteristics, requirements, and components of the AppleTalk Remote Access software.

DISCUSSION -----

### The Connection and Client/Server Characteristics

-----

AppleTalk Remote Access provides an asynchronous AppleTalk connection through a modem to another Macintosh and its AppleTalk network. The remote user can access all the AppleTalk services such as mail, calendars, file servers, and printers. The software is meant for personal use, and it is easy to set up and configure. It supports one connection at a time.

This software can act as client or server. AppleTalk Remote Access behaves as a node on its local network as well as the remote network, and has access to all services on both networks. As a client on the remote network, it doesn't allow the rest of the remote network to gain access to its local network. In other words, it doesn't create two-way access between networks.

### Requirements

-----

For optimum performance, Apple recommends using a V.32 capable 9600 bps or faster modem. A 2400 bps modem provides satisfactory access to on-line mail services or calendaring systems. Connection speeds slower than 2400 bps are likely to cause AppleTalk to time-out between packets. The software supports connection speeds of 2400, 9600, and 19200 bps. It requires System 7 or later, but runs on any CPU capable of running System 7. AppleTalk Remote Access supports built-in serial ports, not serial

cards.

#### Components

-----

- Remote Access Application is the main application that functions to set up, monitor, and control connection.
- Remote Access Setup is a control panel device (cdev) that selects and controls the modem, and connection to a network.
- Users & Groups File uses System 7 file sharing to control access.
- Connection Document provides the information used to initiate a connection.
- Status Window shows the current status of AppleTalk Remote Access.
- Activity Log maintains a log of incoming and outgoing calls and connections.
- Network adev (Remote Only) allows you to disconnect from the local network and see only the remote network.
- Connection Control Language (CCL) scripts.
- MNPLink Tool extensions create and maintain a reliable connection.
- Security at the Macintosh and network levels.

The AppleTalk Remote Access application must be open to see the connection document, status window, and activity log. The other components are independent of the application.

Copyright 1991 Apple Computer, Inc.

Tech Info Library Article Number:8954



# Tech Info Library

## AppleShare 3.0: Compact Volume Access Privileges Menu

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Compact Volume Access Privileges Menu

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using the Compact Volume Access Privileges menu, an administrator can perform Parallel Data Structure (PDS) compaction on a volume.

DISCUSSION -----

PDS compaction removes PDS entries derivable from their parent, and gives dynamic access privileges. File service starts up faster after compaction. This operation is safe to do on CD-ROMs because it's impossible to drag folders to another location.

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Tech Info Library Article Number:8955



# Tech Info Library

## AppleShare 3.0: Guest Access Default

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Guest Access Default

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the Guest access default when installing AppleShare 3.0?

DISCUSSION -----

The default for Guest access is Off when installing AppleShare 3.0 on a new system. Upgrading a server sets Guest access to whatever it was on the existing server.

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Tech Info Library Article Number:8956





# Tech Info Library

## AppleShare 3.0: Using Maximum Remote User Activity Meter (3/93)

Revised: 3/9/93  
Security: Everyone

AppleShare 3.0: Using Maximum Remote User Activity Meter (3/93)

Article Created: 15 October 1991

### Article Change History

03/02/93 - UPDATED

- To include more information on Maximum Remote User Activity.

### TOPIC -----

In AppleShare 3.0.x, the administrator can customize the response time using the Maximum Remote User Activity meter.

### DISCUSSION -----

AppleShare File Server activity affects the performance of other applications and services running on the server, and vice versa. The administrator can adjust total system performance using the Maximum Remote User Activity meter. Changes take effect immediately. The default setting is 100%.

Setting the slider to 100% allows the server to access 100% of the available CPU cycles. This doesn't lock out any other running application. Set to 50%, the server uses every other available cycle from the CPU. This is true whether an application uses the other 50% or not.

### Recommended Slider Setting

It appears that there are too many variables in making a recommendation on the setting when an AppleShare file server is running in conjunction with another network service such as a print server or mail server. The optimal slider setting in this situation must be determined through trial and error.

The AppleShare 3.0.x file server keeps track of CPU usage. That is,

AppleShare knows what percentage of the CPU that remote AFP requests are responsible for. Internally, AppleShare uses a complex scheduling algorithm for tracking and allotting CPU time.

The "Maximum Usage" slider controls what percentage of the CPU that remote AFP requests are allowed. So, what is actually happening when you change the value of the slider is a corresponding variable within the AppleShare scheduler is changed and is then used in scheduler time calculations to determine whether or not to process pending AFP requests.

Example: If the slider were set to 50% and it is determined (by the AppleShare scheduler) that processing another AFP request would result in AppleShare using more than 50% of the CPU and there are currently other processes competing for the CPU, then the scheduler would yield to system processes. Whereas, if the slider were set to 100%, then AFP requests are immediately processed regardless of whether there are other processes waiting for processor time.

As far as recommended settings, it totally depends on how the File/Print Server machine is being used. If it is a dedicated server, then the slider should be set at 100% for maximum server performance. If the machine is only a part time server and you wish to use the machine to run applications and so on, then the slider should be set at a lower value depending on what kind of local performance you desire.

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Tech Info Library Article Number:8957



# Tech Info Library

## AppleShare 3.0: Messages from the Administrator

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Messages from the Administrator

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

In AppleShare 3.0, the administrator can write messages up to 199 characters long, and send three message types.

DISCUSSION -----

The three message types are:

- Greeting Message

AppleShare displays this message at log-on, to inform users of server contents, backup policies, or other news.

- User Message

The administrator can send a custom message to a User or Group.

- Disconnect User

The administrator can send a message to a group of connected users explaining the reason for shut down, or announcing the time service will be restored. The administrator can disconnect a user or group of users without bringing the server down. Disconnection can happen immediately or after a designated time interval.

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Tech Info Library Article Number:8958



# Tech Info Library

## AppleShare 3.0: Parallel Data Structure Maintenance

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: Parallel Data Structure Maintenance

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Maintenance of the Parallel Data Structure (PDS) in AppleShare 3.0 is a continuous background task rather than a startup task.

DISCUSSION -----

This change has these benefits:

- Faster server startup time
- Improved integrity of the PDS (many other applications can run on the same system, increasing the chance of a server crash)
- Ability to support removable media: The administrator can mount or unmount volumes while the server is running.

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Tech Info Library Article Number:8959



# Tech Info Library

## AppleShare 3.0: File Server Preferences Dialog Box

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: File Server Preferences Dialog Box

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The administrator can ensure network security with the choices in the File Server Preferences dialog box.

DISCUSSION -----

Network Security Choices:

- Set the maximum number of connections. The maximum is 120 and the default is 50. Restart the server to see the new number take effect. AppleShare allocates 2K of memory at startup for each connection.
- Set the minimum number of characters in a password. Eight characters is the maximum and zero is the default.
- Set the number of days until a password expires. When the password expires, users get a prompt to enter a new word if they have the privilege to change passwords. For a temporary account, set the number of days until expiration for the duration of the account and deny the change-password privilege.
- Set the maximum number of failed log-on attempts. This disables the account when someone tries multiple random passwords to gain access. The administrator must reactivate the account.
- Require a password at startup time. This disables the "Save my name and password" option in the Chooser dialog that allows a choice of servers to mount at startup.

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Tech Info Library Article Number:8960



# Tech Info Library

## AppleShare 3.0: Sharing Volumes and Folders (6/95)

Revised: 6/9/95  
Security: Everyone

AppleShare 3.0: Sharing Volumes and Folders (6/95)

=====

Article Created: 15 October 1991  
Article Reviewed/Updated: 9 June 1995

TOPIC -----

This article discusses some of the new features of AppleShare 3.0 in terms of volume and folder sharing.

DISCUSSION -----

You can share an entire volume, or selected folders. You can mount a maximum of 50 volumes on the AppleShare server, and share a maximum of 50 entities (volumes or folders).

When a remote user creates a new folder, the folder inherits the access privileges of the surrounding folder or volume unless the owner explicitly changes access. Access privileges used to default to owner only.

When the administrator creates a folder in an area that isn't shared or exported, the folder takes on the access privileges of the surrounding folder when dragged to a shared area. When the administrator moves this folder from the shared area to a new folder, the moved folder takes on the privileges of the new enclosing folder. Folders have this property of dynamic access privileges until the administrator assigns explicit privileges to the folder.

You can interchange Users and Groups so that a User who is not in a Group can share an entity along with the Group, and more than one User can own the same folder. A User can belong to 42 groups (up from 16). You can create over 8000 Users or Groups, but the recommended maximum is 2000.

Here are definitions for explicit and inherit access privileges:

Explicit - Retain access privileges regardless of the enclosing folder.  
Inherit - Always change to reflect access privileges of enclosing folder.

The default on an AppleShare Server is explicit.

Article Change History:

09 Jun 1995 - Added definition of explicit and inherit.

Support Information Services

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Tech Info Library Article Number:8961





# Tech Info Library

## AppleShare 3.0: New Features in the User Dialog Box

Revised: 10/15/91  
Security: Everyone

AppleShare 3.0: New Features in the User Dialog Box

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article tells about the new features added to the User dialog box.

DISCUSSION -----

AppleShare 3.0 allows multiple super users. In the User dialog box, check the All Privileges Enabled box to give full access to all exported entities.

The User dialog box also has a Program Linking Enabled check box to allow IAC events. This dialog also controls AppleTalk Remote Access.

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Tech Info Library Article Number:8962



# Tech Info Library

## AppleShare Server 3.0: Product Highlights

Revised: 10/15/91  
Security: Everyone

AppleShare Server 3.0: Product Highlights

=====

Article Created: 15 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article highlights the most important features of AppleShare Server 3.0.

DISCUSSION -----

### Multiple Service Platform

-----

- System 7 multitasking environment, including support for program linking and publish and subscribe.
- Includes AppleShare file and print services.
- Open environment allows additional network services.

### Administrator Control

-----

- Set number of connected users
- Send server messages to any user
- Share entire hard disks or selected folders
- Change CD-ROMs without shutting down the server
- Adjust file server performance through system caching and control over file server task prioritization

### Security Enhancements

-----

- Minimum password length
- Password aging
- Password history to prevent immediate reuse
- Ability to disallow saved passwords
- Account disable after specified number of password failures
- Adjustable time limit for temporary accounts
- Guest access turned off by default
- Copy-protection setting for documents
- "Lock" setting for folders
- Adjustable number of concurrent application launches\*
- Inherited folder privileges
- Administrator log-off of any user

#### Print Spooling

- Spooling for up to five AppleTalk printers
- Centralized queue management
- Accepts simultaneous print requests
- Reduced user delay
- Print log for 1000 print jobs

#### Maximum Number of...

- |                          |        |
|--------------------------|--------|
| - Concurrent users       | 120    |
| - Open files             | 346    |
| - Shared volumes         | 50     |
| - Users                  | 8192** |
| - Groups                 | 8192** |
| - Users in group         | 8191   |
| - Groups per user        | 42     |
| - Locked ranges per user | 20     |

- Apple II network startups 40

#### AppleShare Access Privileges

-----

- Both the user and the administrator can control access to information
- Eight different access privileges

#### How Users View Shared Data

-----

- Full access privileges
- Drop folder, write capability only
- No access privileges

#### How Users Protect Their Data

-----

- Can't see enclosed folders
- Can't see enclosed files
- Can't write to folder
- Can't write to or see folders
- Can't write to or see files

\* Requires a multilaunch application and appropriate license agreement.

\*\* The sum of users and groups cannot exceed 8192. The recommended limit is 2000.

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Tech Info Library Article Number:8965



# Tech Info Library

## System 7: Use AppleShare 2.0.2 With System Software 6.0.7

Revised: 9/22/92  
Security: Everyone

System 7: Use AppleShare 2.0.2 With System Software 6.0.7

=====

Article Created: 8 October 1991

### Article Change History

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09/15/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I have a Macintosh IIsi with system software version 7.0 installed, and I have a Macintosh SE/30 with system software version 6.0.7 and AppleShare workstation version 7.0 installed.

When I try to access the Macintosh IIsi from the Macintosh SE/30, I get the message, "Disk needs minor repairs. Do you want to repair it?" If I click the "Yes" button, the message just reappears.

### DISCUSSION -----

To correct the problem, remove the System 7 AppleShare extension from the Macintosh SE/30 running system software version 6.0.7, and replace it with AppleShare 2.0.2 workstation software from your 6.0.7 System disk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8967



# Tech Info Library

## System Software 7.0.1: Questions and Answers

Revised: 9/25/92  
Security: Everyone

System Software 7.0.1: Questions and Answers

Article Created: 21 October 1991

### Article Change History

-----  
09/24/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

This article gives answers to some common questions about system software version 7.0.1.

### DISCUSSION -----

Q: Why did Apple release System Software 7.0.1?

A: Macintosh System Software 7.0.1 incorporates software support for new products introduced on 21 October 1991:

- Macintosh PowerBook 100, 140, and 170
- Macintosh Quadra 700 and 900
- Macintosh Classic II

Q: Why is 7.0.1 required when using these Apple products?

A: These Apple products contain hardware features that require support from the new system software.

Q: Does Apple recommend that everyone upgrade to 7.0.1?

A: No. System 7.0.1 contains only software changes from System 7.0 necessary to support the new products and is not a generally recommended upgrade.

Q: Is System 7.0.1 available in the System 7 upgrade kits?

A: No. Because System 7.0.1 is a hardware support release only, and there is no significant benefit for other Macintosh users, the Personal Upgrade Kit won't change. Customers wishing to upgrade to System 7 can

purchase an upgrade kit containing System 7.0.

However, System 7.0.1 is on the CD-ROM in the Group Upgrade kit to continue providing network administrators all versions of system software.

Q: Can I share a network between Macintosh computers running System 6, System 7.0, and System 7.0.1?

A: Yes. System 7.0.1 co-exists on networks with System 7.0 and System 6 (with updated System 7 printing software).

Q: What version of HyperCard do I need to run with System 7.0.1?

A: HyperCard version 2.1 is required for use with System 7.0.1.

Q: Does 7.0.1 address any problems with System 7.0?

A: No. Apple is very confident in the stability and compatibility of System 7.0.

Q: If I purchase a System 7 upgrade kit, am I entitled to a free copy of 7.0.1?

A: Customers wishing to get copies of System 7.0.1 can do so through electronic bulletin boards, AppleLink, or an authorized Apple dealer.

Q: How else can I get a copy of System 7.0.1?

A: System 7.0.1 is shipped in-the-box with the Macintosh PowerBook 100, 140, and 170; Macintosh Quadra 700 and 900; and the Macintosh Classic II.

For consistency, Apple also rolled over all newly manufactured systems to System 7.0.1 in the United States and Pacific.

Q: Can I get System 7.0.1 on 800K disks?

A: No. As 7.0.1 is specifically a hardware support release, 1.4MB disks only are required for the Macintosh PowerBook 100, 140, and 170; Macintosh Quadra 700 and 900; and the Macintosh Classic II.

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Tech Info Library Article Number:8969



# Tech Info Library

## System 7: 7.1 and Later Enabler Matrix (4/97)

Revised: 4/17/97  
Security: Everyone

System 7: 7.1 and Later Enabler Matrix (4/97)

Article Created: 21 October 1991  
Article Reviewed/Updated: 17 April 1997

TOPIC -----

This article lists all Macintosh cpus and which versions of System 7.1 and later they support. It also lists current versions of required enablers.

For information on System software previous to 7.1, search the Technical Information Library using search string "system software and 7.01."

DISCUSSION -----

Use the following chart to determine which version of system software you should be using on your Macintosh computer:

KEY:

! Not supported

OK Works with this version of system software

\* Works with this version of system software, but requires  
a Macintosh System Enabler (see below)

Begin\_Table

System 7 Compatibility

| Macintosh                         | 7.5.2 | 7.5.1 | 7.5 | 7.1.2P | 7.1.2 | 7.1.1 | 7 Pro | 7.1 |
|-----------------------------------|-------|-------|-----|--------|-------|-------|-------|-----|
| 128K, 512K, 512Ke,<br>and XL/Lisa | !     | !     | !   | !      | !     | !     | !     | !   |
| Plus                              | !     | OK    | OK  | !      | !     | !     | !     | OK  |
| SE                                | !     | OK    | OK  | !      | !     | !     | OK    | OK  |



|                      |   |    |    |   |   |   |    |    |
|----------------------|---|----|----|---|---|---|----|----|
| SE/30                | ! | OK | OK | ! | ! | ! | OK | OK |
| Classic              | ! | OK | OK | ! | ! | ! | OK | OK |
| Classic II           | ! | OK | OK | ! | ! | ! | OK | OK |
| Color Classic        | ! | OK | OK | ! | ! | ! | *  | *  |
| II                   | ! | OK | OK | ! | ! | ! | OK | OK |
| IIx                  | ! | OK | OK | ! | ! | ! | OK | OK |
| IIcx                 | ! | OK | OK | ! | ! | ! | OK | OK |
| IIci                 | ! | OK | OK | ! | ! | ! | OK | OK |
| IIfx                 | ! | OK | OK | ! | ! | ! | OK | OK |
| IIsi                 | ! | OK | OK | ! | ! | ! | OK | OK |
| IIvi, IIvx           | ! | OK | OK | ! | ! | ! | *  | *  |
| LC                   | ! | OK | OK | ! | ! | ! | OK | OK |
| LC II                | ! | OK | OK | ! | ! | ! | OK | OK |
| LC III               | ! | OK | OK | ! | ! | ! | *  | *  |
| LC 475               | ! | OK | OK | ! | ! | ! | *  | *  |
| LC 520               | ! | OK | OK | ! | ! | ! | *  | *  |
| LC 550               | ! | OK | OK | ! | ! | ! | *  | *  |
| LC 575               | ! | OK | OK | ! | ! | ! | *  | *  |
| LC 580               | ! | OK | OK | ! | ! | ! | !  | !  |
| LC 630               | ! | OK | OK | * | ! | ! | !  | !  |
| Macintosh TV         | ! | OK | OK | ! | ! | ! | *  | *  |
| Centris 610          | ! | OK | OK | ! | ! | ! | *  | *  |
| Centris 650          | ! | OK | OK | ! | ! | ! | *  | *  |
| Centris 660AV        | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 605           | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 610           | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 630           | ! | OK | OK | * | ! | ! | !  | !  |
| Quadra 650           | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 660AV         | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 700           | ! | OK | OK | ! | ! | ! | OK | OK |
| Quadra 800           | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 840AV         | ! | OK | OK | ! | ! | ! | *  | *  |
| Quadra 900,950       | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerMac 5200/75 LC  | ! | *  | !  | ! | ! | ! | !  | !  |
| PowerMac 5300/100 LC | ! | *  | !  | ! | ! | ! | !  | !  |
| PowerMac 6100/60     | ! | OK | OK | ! | * | ! | !  | !  |
| PowerMac 6100/66     | ! | *  | *  | ! | ! | ! | !  | !  |
| PowerMac 7100/66     | ! | OK | OK | ! | * | ! | !  | !  |
| PowerMac 7100/80     | ! | *  | *  | ! | ! | ! | !  | !  |
| PowerMac 7200/75     | * | !  | !  | ! | ! | ! | !  | !  |
| PowerMac 7200/90     | * | !  | !  | ! | ! | ! | !  | !  |
| PowerMac 7500/100    | * | !  | !  | ! | ! | ! | !  | !  |
| PowerMac 8100/80     | ! | OK | OK | ! | * | ! | !  | !  |
| PowerMac 8100/100    | ! | *  | *  | ! | ! | ! | !  | !  |
| PowerMac 8100/110    | ! | *  | *  | ! | ! | ! | !  | !  |
| PowerMac 8500/120    | * | !  | !  | ! | ! | ! | !  | !  |
| PowerMac 9500/120    | * | !  | !  | ! | ! | ! | !  | !  |
| PowerMac 9500/132    | * | !  | !  | ! | ! | ! | !  | !  |

|                     |   |    |    |   |   |   |    |    |
|---------------------|---|----|----|---|---|---|----|----|
| Portable            | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 100       | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 140       | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 145       | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 145B      | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 170       | ! | OK | OK | ! | ! | ! | OK | OK |
| PowerBook 160       | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook 165c      | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook 180       | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook 180c      | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook 190       | * | !  | !  | ! | ! | ! | !  | !  |
| PowerBook Duo 210   | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook Duo 230   | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook Duo 2300  | * | !  | !  | ! | ! | ! | !  | !  |
| PowerBook Duo 250   | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook Duo 270c  | ! | OK | OK | ! | ! | ! | *  | *  |
| PowerBook Duo 280   | ! | OK | OK | ! | ! | * | !  | !  |
| PowerBook Duo 280c  | ! | OK | OK | ! | ! | * | !  | !  |
| PowerBook 520, 520c | ! | OK | OK | ! | ! | * | !  | !  |
| PowerBook 540, 540c | ! | OK | OK | ! | ! | * | !  | !  |
| PowerBook 5300      | * | !  | !  | ! | ! | ! | !  | !  |

End\_Table

#### System Enablers

-----

System Enablers are required for the Macintosh models indicated below with System 7.1 or later. Macintosh computers which require System Enablers will not operate properly with System 7.0.1 or earlier.

This chart shows the appropriate System Enabler for the indicated Macintosh computer:

Begin\_Table

| Macintosh Model | Enabler Name | Use Enabler only with System vers. | Current Enabler Version | Note |
|-----------------|--------------|------------------------------------|-------------------------|------|
|-----------------|--------------|------------------------------------|-------------------------|------|

-----

The Macintosh Plus, SE, SE/30, Classic, Classic II, LC, LC II, LC 580, Mac II, IIX, IICx, IISi, IICI, IIFx, Portable, PB 100/140/145/145B/170, Quadra 700,900 and 950 do NOT need a System Enabler.

|               |                    |     |       |  |
|---------------|--------------------|-----|-------|--|
| Color Classic | System Enabler 401 | 7.1 | 1.0.5 |  |
| IIvi          | System Enabler 001 | 7.1 | 1.0.1 |  |
| IIvx          | System Enabler 001 | 7.1 | 1.0.1 |  |
| LC III        | System Enabler 003 | 7.1 | 1.1   |  |
| LC 475        | System Enabler 065 | 7.1 | 1.2   |  |
| LC 520        | System Enabler 403 | 7.1 | 1.0.2 |  |
| LC 550        | System Enabler 403 | 7.1 | 1.0.2 |  |
| LC 575        | System Enabler 065 | 7.1 | 1.1   |  |

|                      |                                     |        |        |   |
|----------------------|-------------------------------------|--------|--------|---|
| LC 630               | System Enabler 405                  | 7.1.2P | 7.1.2P |   |
| Macintosh TV         | System Enabler 404                  | 7.1    | 1.0    |   |
| Centris 610          | System Enabler 040                  | 7.1    | 1.1    |   |
| Centris 650          | System Enabler 040                  | 7.1    | 1.1    |   |
| Centris 660AV        | System Enabler 088                  | 7.1    | 1.2    |   |
| Quadra 605           | System Enabler 065                  | 7.1    | 1.2    |   |
| Quadra 610           | System Enabler 040                  | 7.1    | 1.1    |   |
| Quadra 630           | System Enabler 405                  | 7.1.2P | 7.1.2P |   |
| Quadra 650           | System Enabler 040                  | 7.1    | 1.1    |   |
| Quadra 660AV         | System Enabler 088                  | 7.1    | 1.2    |   |
| Quadra 800           | System Enabler 040                  | 7.1    | 1.1    |   |
| Quadra 840AV         | System Enabler 088                  | 7.1    | 1.2    |   |
| PowerMac 5200/75 LC  | System Enabler 406                  | 7.5.1  | 1.0    |   |
| PowerMac 5300/100 LC | System Enabler 406                  | 7.5.1  | 1.0    |   |
| PowerMac 6100/60     | PowerPC Enabler                     | 7.1.2  | 1.0.2  |   |
| PowerMac 6100/66     | PowerPC Enabler                     | 7.5    | 1.1.1  |   |
| PowerMac 7100/66     | PowerPC Enabler                     | 7.1.2  | 1.0.2  |   |
| PowerMac 7100/80     | PowerPC Enabler                     | 7.5    | 1.1.1  |   |
| PowerMac 7200/75     | System Enabler 701                  | 7.5.2  | 1.1    |   |
| PowerMac 7200/90     | System Enabler 701                  | 7.5.2  | 1.1    |   |
| PowerMac 7500/100    | System Enabler 701                  | 7.5.2  | 1.2    |   |
| PowerMac 8100/80     | PowerPC Enabler                     | 7.1.2  | 1.0.2  |   |
| PowerMac 8100/100    | PowerPC Enabler                     | 7.5    | 1.1.1  |   |
| PowerMac 8100/110    | PowerPC Enabler                     | 7.5    | 1.1.1  |   |
| PowerMac 8500/120    | System Enabler 701                  | 7.5.2  | 1.2    |   |
| PowerMac 9500/120    | System Enabler 701                  | 7.5.2  | 1.1    |   |
| PowerMac 9500/132    | System Enabler 701                  | 7.5.2  | 1.1    |   |
| PowerBook 150        | PowerBook 150 Enabler               | 7.1.1  | 1.1    |   |
| PowerBook 160        | System Enabler 131                  | 7.1    | 1.0.3  | A |
| PowerBook 165        | System Enabler 131                  | 7.1    | 1.0.3  | A |
| PowerBook 165c       | System Enabler 131                  | 7.1    | 1.0.3  | A |
| PowerBook 180        | System Enabler 131                  | 7.1    | 1.0.3  | A |
| PowerBook 180c       | System Enabler 131                  | 7.1    | 1.0.3  | A |
| PowerBook 190        | PowerBook 5300/2300/190<br>Enabler  | 7.5.2  | 1.2.1  |   |
| PowerBook Duo 210    | PowerBook Duo Enabler               | 7.1    | 2.0    | B |
| PowerBook Duo 230    | PowerBook Duo Enabler               | 7.1    | 2.0    | B |
| PowerBook Duo 2300   | PowerBook 5300/2300/190<br>Enabler  | 7.5.2  | 1.2.1  |   |
| PowerBook Duo 250    | PowerBook Duo Enabler               | 7.1    | 2.0    | B |
| PowerBook Duo 270c   | PowerBook Duo Enabler               | 7.1    | 2.0    |   |
| PowerBook Duo 280    | PowerBook Duo Enabler               | 7.1.1  | 2.0    |   |
| PowerBook Duo 280c   | PowerBook Duo Enabler               | 7.1.1  | 2.0    |   |
| PowerBook 500 Series | PowerBook 500 Series<br>Enabler 1.0 | 7.1.1  | 1.0.2  |   |
| PowerBook 5300       | PowerBook 5300/2300/190<br>Enabler  | 7.5.2  | 1.2.1  |   |

----- Performa Computers -----

The Performa 200, 400, 405, 410, 430, 580, 640 and 6110-series do NOT require an Enabler.

|                   |                    |        |        |
|-------------------|--------------------|--------|--------|
| Performa 450      | System Enabler 308 | 7.1P6  | 1.0    |
| Performa 460-467  | System Enabler 308 | 7.1P6  | 1.0    |
| Performa 475-476  | System Enabler 364 | 7.1P6  | 1.1    |
| Performa 550, 560 | System Enabler 332 | 7.1P6  | 1.1    |
| Performa 575-578  | System Enabler 364 | 7.1P6  | 1.1    |
| Performa 600      | System Enabler 304 | 7.1P6  | 1.0.1  |
| Performa 630-638  | System Enabler 405 | 7.1.2P | 7.1.2P |
| Performa 5300     | System Enabler 406 | 7.5.1  | 1.0    |
| Performa 6200     | System Enabler 406 | 7.5.1  | 1.0    |
| Performa 6300     | System Enabler 406 | 7.5.1  | 1.0    |

End\_Table

Note:

- A - System Enabler 131 replaces System Enabler 111 and System Enabler 121
- B - Express Modem users should also install the Duo Battery Patch (Extension).

Article Change History:

- 17 Jan 1996 - Added new PowerBook enablers.
- 09 Aug 1995 - Reformatted for readability.
- 08 Aug 1995 - Added new Power Macintosh computer enablers.
- 17 Apr 1997 - Corrected minor typos

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Tech Info Library Article Number:8970



# Tech Info Library

## PowerBook 170: Display Dimming is Normal

Revised: 5/17/94  
Security: Everyone

PowerBook 170: Display Dimming is Normal

=====

Article Created: 21 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

Sometimes I can see the display of my PowerBook 170 getting dimmer. Is this normal?

DISCUSSION -----

Yes. This is a normal condition of the active matrix as the voltage level of the battery decreases.

Here are three levels of brightness to expect:

- With the adapter plugged in, the display is at its brightest.
- Without the adapter plugged in, the brightness drops by about 30%.
- Without the adapter, the display dims automatically at the first dialog box to about half the brightness of the display when the adapter is plugged in.

Support Information Services

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Tech Info Library Article Number:8971



# Tech Info Library

## PowerBook 140 and 145: How They Differ From 170

Revised: 5/17/94  
Security: Everyone

PowerBook 140 and 145: How They Differ From 170

Article Created: 21 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

This article compares the PowerBook 140 and 145 to the PowerBook 170, and lists the feature sets that distinguish them.

DISCUSSION -----

Overview

The PowerBook 140, 145, and 170 computers are notebook-size Macintosh computers. These computers share the same architecture and specifications, with these exceptions: microprocessor speed, amount of on-board RAM, type of display, capacity of the internal hard disk drive, and presence of a coprocessor and an internal modem.

Common Features

The PowerBook 140, 145, and 170 computers are smaller and lighter than the Macintosh Portable and offer improved CPU performance by using a 68030 processor. They are designed to be extremely rugged and portable. Both systems are 11.25 by 9.3 by 2.25 inches and weigh under 7 pounds.

They share a common main logic board, but have different daughter boards for the processor, RAM, and ROM.

PowerBook 140 and 145

The PowerBook 140 and 145 have a 68030 microprocessor. In the PowerBook 140, it runs at 16 MHz; in the PowerBook 145, it runs at 25 MHz.

Both feature a backlit Film Supertwist Nematic (FSTN) display, and a built-in 40MB or 80MB hard disk. They do not include a socket for a 68882 floating-point unit (FPU). Expansion slots (connectors) are provided for RAM cards and

modem cards.

Here are the features specific to the Macintosh PowerBook 140 and 145:

- Microprocessor: 68030 running at 16 or 25 MHz
- Coprocessor: NO 68882 FPU
- Video display: flat-panel, transmissive mode, FSTN LCD (liquid crystal display), 640 x 400 pixels, with on-demand CCFL (cold cathode fluorescent lamp) backlighting
- Hard disk: one internal 40MB or 80MB, 2.5-inch SCSI hard disk
- RAM: 2MB or 4MB
- Modem: Optional

PowerBook 170

-----

The PowerBook 170 has a 68030 microprocessor running at 25 MHz, a 68882 FPU, backlit active matrix display, and built-in 40MB hard disk and 2400 baud modem (USA only). Expansion slots (connectors) are provided for RAM cards and modem cards.

Here are the features specific to the Macintosh PowerBook 170:

- Microprocessor: 68030 running at 25 MHz
- Coprocessor: 68882 FPU
- Video display: flat-panel, transreflective Active Matrix LCD (liquid crystal display), 640 x 400 pixels, with on-demand CCFL (cold cathode fluorescent lamp) backlighting
- Hard disk: one internal 80MB, 2.5-inch SCSI hard disk
- Modem: one internal 20-pin connector with 2400 baud modem card installed; send facsimile capability (USA only, international decision on a country-by-country basis)

Support Information Services

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Tech Info Library Article Number:8972



# Tech Info Library

## PowerBook Fax/Data Modem: Specifications (6/92)

Revised: 5/17/94  
Security: Everyone

PowerBook Fax/Data Modem: Specifications (6/92)

Article Created: 21 October 1991  
Article Reviewed/Updated: 26 June 1992

TOPIC -----

This article gives the hardware specifications for the Macintosh PowerBook Fax/Data Modem, provided in the "Macintosh PowerBook Fax/Data Modem Developers Guide", which is available from APDA.

DISCUSSION -----

Fax Compatibility

-----

- Group 3 only

Data Format

-----

The data format to use is determined by the software application.

- Protocol: serial, binary, asynchronous
- Parity: odd, even, mark, space, or no parity
- Character length:
  - 7 data bits, 1 parity bit (even, odd, mark, or space parity), and 1 stop bit
  - 7 data bits, no parity, 2 stop bits
  - 8 data bits, no parity, and 1 stop bit

Frequency Tolerance

-----

- Offset frequency: +/-7 Hz

Data Transmission Modes

-----

- Full duplex
- Asynchronous



Fax Transmission Modes

- Half duplex

Compatibility and Modulation

- Full duplex (data communication standards)

| Speed    | Standard      | Modulation |
|----------|---------------|------------|
| -----    | -----         | -----      |
| 300 bps  | Bell 103      | FSK        |
| 1200 bps | Bell 212A     | DPSK       |
| 1200 bps | CCITT V.22    | DPSK       |
| 2400 bps | CCITT V.22bis | QAM        |

- Half Duplex (fax communications standards)

| Speed         | Standard      |
|---------------|---------------|
| -----         | -----         |
| 2400-4800 bps | CCITT V.27ter |
| 7200-9600 bps | CCITT V.29    |

Transmit Carrier Frequencies

- V.22bis, V.22, Bell 212A      Transmit Carrier  
                                         Originate      1200 Hz  
                                         Answer      2400 Hz
- Bell 103      Mark      Space  
                                 Originate      1270      1070  
                                 Answer      2225      2025
- V.21      Mark      Space  
                                 Originate      980      1180  
                                 Answer & Fax      1650      1850
- V.29      Carrier      1700 Hz
- V.27      Carrier      1800 Hz

Guard Tone Frequencies and Transmit Levels (CCITT only)

- 1800 Hz +/-20 Hz      6 +/-dB below the transmit carrier level
- 550 Hz +/-20 Hz      3 +/-dB below the transmit carrier level

Answer Tone Frequency

- V.22bis, V.22, V.21, and fax      2100 Hz
- Bell 103, Bell 212A      2225 Hz

Received Signal Frequency Tolerance

- Offset frequency: +/-7 Hz

#### Calling Tone

-----

- Fax-specific calling tone: 1100 Hz (0.5s on, 3s off with 15% tolerance)

#### V.42bis and MNP Features

-----

- V.42bis and MNP protocols for error correction and data compression apply to V.22, Bell 212, and V.22bis

#### Error Control

-----

- MNP Classes 2 to 4
- CCITT V.42

#### Data Compression

-----

- MNP Class 5
- CCITT V.42bis

These protocols apply to V.22, V.22bis, and Bell 212 (if available in your country)

#### Features

-----

- Auto-dial and auto/manual answer
- Dual-tone multifrequency (DTMF)/pulse dialing
- Extended AT command set
- Low-power design to help preserve Macintosh PowerBook battery power

#### Operating Environment

-----

- Ambient temperature: 38 to 125 degrees F (5 to 65 degrees C)
- Relative humidity: up to 95% (non-condensing)
- Optimal humidity range: 0 to 75%

#### Power Requirements

-----

- +5V +/-5% supplied by Macintosh PowerBook
- -5V +/-5% supplied by Macintosh PowerBook

#### Power Consumption

-----

- Operational mode: 750 mW typical
- Macintosh PowerBook sleep state: 0 mW

#### Electrical Requirements

-----

- Line voltage: 110 to 220 volts
- Frequency: 50 to 60 Hz

#### Physical Characteristics

-----

- Board for internal installation with one mini-DIN connector and external RJ11 jack
- Modem size: 96x36 mm

Support Information Services

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Tech Info Library Article Number:8973



# Tech Info Library

## PowerBook: Apple Peripheral Products (7/92)

Revised: 5/17/94  
Security: Everyone

PowerBook: Apple Peripheral Products (7/92)

Article Created: 21 October 1991  
Article Last Reviewed: 31 July 1992

TOPIC -----

This article gives brief descriptions of peripheral products for the Macintosh PowerBook computers.

DISCUSSION -----

### Memory Expansion Kits

Macintosh PowerBook memory expansion kits increase system memory to work with advanced Macintosh applications, with or large spreadsheets, scanned images, and sound files. The 2MB and 4MB memory expansion kits expand any Macintosh PowerBook computer to a system with up to 6MB of RAM. Dealer installation is required.

### Fax/Data Modem

The Fax/Data Modem allows information exchange with other computers, and sends facsimile transmissions. Communicate with any standard modem operating at 2400, 1200, or 300 baud, and send facsimiles at 9600 baud. This low-power modem fits inside the PowerBook 100, 140, and 170, and can operate unattended for receiving files while you are away from the computer. Two versions are available: one for use in the U.S., Canada, and Japan, and one for use in Europe, Australia, and some South American countries. Dealer installation is required.

### HDI-20 External 1.4MB Floppy Disk Drive

The Macintosh HDI-20 External 1.4MB Floppy Disk Drive gives the PowerBook 100 access to high-capacity disk storage including 400K, 800K, and 1.4MB Macintosh- and DOS-formatted disks. It plugs directly into the computer's floppy disk drive port.

### Apple HDI-30 SCSI Disk Adapter and System Cable

-----  
The Apple HDI-30 SCSI Disk Adapter allows you to use a Macintosh PowerBook 100 computer as an external hard disk with another Macintosh system, for high-speed file transfer or system recovery.

The Apple HDI-30 SCSI system cable connects a PowerBook 100, 140, or 170 to any SCSI peripheral device, such as a CD-ROM drive, scanner, tape backup, or hard disk. You can connect up to five SCSI devices to the PowerBook at once, allowing a total of seven devices on the SCSI chain.

#### Rechargeable Batteries

-----

The Macintosh PowerBook 140/170 rechargeable battery is a nickel-cadmium battery that provides two to three hours of use for the PowerBook 140 and PowerBook 170 notebook computers before recharging. You can recharge it hundreds of times before it needs replacing.

The Macintosh PowerBook 100 rechargeable battery is a sealed lead-acid battery that provides two to four hours of use. It can be fully recharged hundreds of times before it needs replacing.

#### Battery Rechargers

-----

The Macintosh PowerBook 140/170 battery recharger recharges one or two nickel-cadmium batteries for the PowerBook 140 or PowerBook 170 computer to full power in just a few hours. An AC adapter (see below) is required.

The Macintosh PowerBook 100 battery recharger recharges the sealed lead- acid battery to full power in a few hours. It charges two batteries at once. An AC Adapter (see below) is required.

#### AC Adapter

-----

The Macintosh PowerBook AC Adapter recharges batteries without having to unplug and remove the computer's adapter. Additional adapters make it easy to use a PowerBook computer at different locations. You can use it in any country without transformers; it needs just a simple plug adapter.

#### Support Information Services

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Tech Info Library Article Number:8975



# Tech Info Library

## PowerBook 140 and 145: Description (7/93) (Discontinued)

Revised: 6/2/94  
Security: Everyone

PowerBook 140 and 145: Description (7/93) (Discontinued)

=====

Article Created: 21 October 1991  
Article Reviewed/Updated: 14 July 1993

TOPIC -----

This article describes the Macintosh PowerBook 140 and 145 notebook computers. The only difference between the 140 and the 145 is the clock speed of their 68030 microprocessors. Note that the PowerBook 145B is functionally equivalent to the 145; in most cases a reference to the PowerBook 145 also applies to the 145B.

Note: With the PowerBook 145 and System 7.0.1, when you choose About This Macintosh... from the Apple menu, you'll see a window labeled "PowerBook 140". System 7.1 corrects this.

DISCUSSION -----

The Macintosh PowerBook 140 and 145 fit easily inside a briefcase. They're ergonomically designed with an integrated trackball and palm rest to work with easily on your lap. You can adjust the standard-size keyboard and full page-width display.

The PowerBook 140 and 145 offer greater performance than the PowerBook 100. They have a built-in floppy disk drive that accommodates Macintosh, MS-DOS, OS/2, and ProDOS formats.

Built-in features:

- Networking capability that gives access to all the resources in an AppleTalk network.
- Six built-in ports to plug the PowerBook 140 or 145 directly into high-capacity hard disks, printers, and input devices.
- An optional modem sends electronic mail, accesses information on other

computers, connects to an AppleTalk network, and sends documents to facsimile machines.

- Built-in sound-input capability.
- Processor: 16 MHz 68030 microprocessor (PowerBook 140)  
25 MHz 68030 microprocessor (PowerBook 145)
- 2MB (on the 140) or 4MB RAM, expandable to 8MB
- Expansion: Six built-in ports for peripherals  
Internal slots for modem and RAM
- Display: Backlit Supertwist, 640 by 400 pixels
- System Software 7.1, with multitasking, file sharing, Balloon Help, and TrueType fonts
- Networking: Built-in AppleTalk networking  
File sharing without a dedicated server
- Compatibility: Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

#### Article Change History:

14 July 1993 - Updated to include PowerBook 145B.

Support Information Services

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Tech Info Library Article Number:8976



# Tech Info Library

## PowerBook 140: Specifications (Discontinued)

Revised: 3/22/95  
Security: Everyone

PowerBook 140: Specifications (Discontinued)

=====  
Article Created: 21 October 1991  
Article Reviewed/Updated: 22 March 1995

TOPIC -----

This article gives technical specifications for the Macintosh PowerBook 140 notebook computer.

DISCUSSION -----

### Microprocessor

-----

- 68030, running at 16 MHz

### Address and Data Bus

-----

32-bit Address Bus  
32-bit Data Bus

### Memory

-----

- Comes with 2MB or 4MB pseudostatic RAM on the logic board and one memory expansion slot.
- Expandable to 8MB of RAM by installing a RAM expansion card in the expansion slot.

### Disk Storage

-----

- One built-in 1.4MB drive that uses high-density floppy disks; it reads, writes, and formats Macintosh, MS-DOS, OS/2, and ProDOS disks.
- One internal 40MB or 80MB hard disk

### Display



-----

- 10 inch (254 mm) diagonal
- Backlit Supertwist liquid crystal display
- 640 by 400 pixels

#### Battery

-----

- NiCad, 2.5 ampere-hours, provides 2 to 3 hours of use before recharging is necessary
- Recharge time: 100% recharged after 5 hours; 80% recharged after 3 hours

#### Keyboard

-----

- Built-in keyboard with standard Macintosh layout
- Two-level tilt adjustment

#### Trackball

-----

- Dual-button trackball, 30 mm diameter,

#### Clock/Calendar

-----

- CMOS custom chip with long-life lithium battery

#### Interfaces

-----

- One Apple Desktop Bus (ADB) port for keyboard, mouse, and other devices using a low-speed, synchronous serial bus
- Two RS-422 serial ports for LocalTalk networking, printers, modems, and other devices
- One HDI-30 SCSI port for hard disks, scanners, CD-ROM drives, and other devices
- One sound output port for external audio amplifier
- One sound-in port

#### Modem

-----

- Optional internal 2400-baud modem with facsimile send at 9600 baud; includes facsimile send software
- Error correction and compression: MNP 4, 5 and V.42, V.42bis

#### Sound Generator

-----

- Apple Sound Chip provides 8-bit sound, capable of driving stereo

headphones or other stereo equipment through the sound port.

#### Sound Input

-----

- 8-bit sound, sampled at 11 or 22 kHz

#### Disability Access

-----

- CloseView, Easy Access, and visible beep included with system software. These built-in solutions and third-party options provide alternative input and output devices for people with disability.

#### ADB Power Requirements

-----

- Maximum current draw for all ADB devices is 200 milliamps (a maximum of three ADB devices is recommended)

#### Electrical Requirements

-----

- Line voltage: 100 to 240 volts
- Frequency: 50 to 60 Hz

#### Environmental Requirements

-----

- Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Storage Temperature: -40 to 65° C (-40 to 148° F)
- Relative humidity: 20% to 80% noncondensing
- Altitude: Operating: 3048 m (10,000 ft.) maximum  
Shipping (non-operating) 0 to 15,000 ft. (0 to 4,722 m)

#### Size and Weight

-----

- Height 2.25 inches (5.7 cm)
- Width 11.25 inches (28.6 cm)
- Depth 9.3 inches (23.6 cm)
- Weight 6.8 lb (3.03 kg)

#### Noise Level

-----

Noise free except for floppy or hard disk use.

#### Article Change History

-----

- 22 Mar 1995 - Updated operating and shipping altitude ratings.
- 02 Jun 1993 - Updated to correct voltage specification.
- 19 Feb 1993 - Updated to correct storage temperature range.

Support Information Services

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Tech Info Library Article Number:8977



# Tech Info Library

## PowerBook 170: Description (8/92) (Discontinued)

Revised: 6/2/94  
Security: Everyone

PowerBook 170: Description (8/92) (Discontinued)

Article Created: 21 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

This article describes the Macintosh PowerBook 170 notebook computer.

DISCUSSION -----

The Macintosh PowerBook 170 offers high performance and flexibility and is small enough to fit inside a briefcase. It includes a CPU, full-size screen and keyboard, trackball, battery, and disk storage.

It is comfortable to work with because of its integrated trackball and palm rest, and you can adjust the standard-size keyboard and full-page-width screen. It runs applications up to 50 percent faster than the PowerBook 140. It comes standard with 4MB of RAM and a built-in modem.

The PowerBook 170 provides the connections for built-in networking and six built-in ports for access to high-capacity hard disks, printers, and input devices.

The built-in modem sends electronic mail, accesses information on other computers, connects to an AppleTalk network, and sends documents to facsimile machines. It has built-in sound input to include sounds from different sources.

### Macintosh PowerBook 170 Features

- Processor: 25 MHz 68030 microprocessor  
25 MHz 68882 math coprocessor
- Memory: 4MB of RAM, expandable to 8MB
- Expansion: Six built-in ports for peripherals  
Internal slots for modem and RAM

- Display: Backlit active matrix, 640 by 400 pixels
- Modem: 2400-baud data, 9600-baud facsimile send

#### Features Built Into Every Macintosh

- Usability: Runs thousands of Macintosh applications
- System software: System 7.0.1, with multitasking, file sharing, Balloon Help, and TrueType fonts
- Networking: Built-in AppleTalk networking  
File sharing without a dedicated server
- Compatibility: Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

#### Support Information Services

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Tech Info Library Article Number:8978



# Tech Info Library

## PowerBook 100: How it Differs from Macintosh Portable (8/92)

Revised: 5/16/94  
Security: Everyone

PowerBook 100: How it Differs from Macintosh Portable (8/92)

=====

Article Created: 21 October 1991  
Article Reviewed/Updated: 30 April 1993

TOPIC -----

This article describes the Macintosh PowerBook 100 features and how they differ from those of the Macintosh Portable.

DISCUSSION -----

The Macintosh PowerBook 100 is the entry-level notebook Macintosh. It has many of the features of the Macintosh Portable, but in a lighter and smaller enclosure. The main differences are that the PowerBook 100 does not have a processor direct slot, ROM expansion slot, internal floppy drive, nor an external modem serial connection. The display is Supertwist instead of active matrix display.

The Macintosh PowerBook 100 has a new feature, SCSI disk mode. This mode allows another Macintosh to mount the internal hard disk drive. This mode requires a special SCSI disk mode adapter. The ROM contains the firmware for this mode. No other Macintosh has this feature.

The basic performance is the same as the Macintosh Portable. This is approximately twice the performance of a Macintosh Classic.

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Tech Info Library Article Number:8980



# Tech Info Library

## PowerBook 100: Description (8/92) (Discontinued)

Revised: 6/2/94  
Security: Everyone

PowerBook 100: Description (8/92) (Discontinued)

Article Created: 21 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

This article describes the Macintosh PowerBook 100 notebook computer.

DISCUSSION -----

The Macintosh PowerBook 100 is small enough to fit in a briefcase, yet gives you the use of applications on a Macintosh. The self-contained trackball and palm rest allow you to work anywhere. You can adjust the bright display and the standard-size keyboard to work in any environment.

Built-in networking allows access to an AppleTalk network. Five built-in ports give you plug-and-play connections to high-capacity hard disks, CD-ROM drives, printers, and input devices. With the external floppy disk drive, you can work with data files stored in Macintosh, MS-DOS, OS/2 and ProDOS formats. The optional modem allows you to send electronic mail, access information on other computers, and send documents to facsimile machines.

### Macintosh PowerBook 100 Features

- Processor: 16 MHz 68HC000 microprocessor
- Expansion: Five built-in ports for peripherals
  - Internal slots for modem and RAM
  - Optional SCSI disk adapter allows the computer to be used as an external hard disk.
- Usability: Runs thousands of Macintosh applications
  - Easy to set up, learn, and use
- System software: System 7.0.1, with multitasking, file sharing, Balloon Help, and TrueType fonts

- Networking: Built-in AppleTalk networking  
File sharing without a dedicated server
- Compatibility: Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

Support Information Services

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Tech Info Library Article Number:8981





# Tech Info Library

## PowerBook 100: Specifications (Discontinued)

Revised: 3/22/95  
Security: Everyone

PowerBook 100: Specifications (Discontinued)

=====  
Article Created: 21 October 1991  
Article Reviewed/Updated: 22 March 1995

TOPIC -----

This article gives technical specifications for the Macintosh PowerBook 100 notebook computer.

DISCUSSION -----

### Microprocessor

-----  
68HC000, running at 16 MHz  
Address Bus: 24-bit  
Registers (32-bit): 17  
Addressing Modes: 14

### Memory

- 
- Comes with 2MB pseudostatic RAM on the logic board, and one memory expansion slot.
  - Expandable to 8MB of RAM by installing a RAM expansion card in the expansion slot.

### Disk storage

- 
- One internal 20MB SCSI hard disk
  - External 1.4MB floppy disk drive; reads, writes, and formats Macintosh, MS-DOS, OS/2 and ProDOS disks

### Display

- 
- 9 inch (229 mm) diagonal

- Backlit Supertwist liquid crystal display
- 640 by 400 pixels

#### Battery

-----

- Sealed lead-acid, 2.3 ampere-hours, provides 2 to 4 hours of use before recharging is necessary
- Recharge time: 3 hours
- Three non-rechargeable disk-type Lithium backup batteries (type CR-2430)

#### Keyboard

-----

- Built-in keyboard with standard Macintosh layout
- Two-level tilt adjustment

#### Trackball

-----

- dual button trackball, 25 mm diameter

#### Clock/calendar

-----

- CMOS custom chip with long-life lithium battery

#### Interfaces

-----

- One Apple Desktop Bus (ADB) port for low-power keyboard, mouse, and other devices using a two-speed, synchronous serial bus
- One RS-422 serial port for LocalTalk networking, printers, modems, and other devices
- One HDI-30 SCSI port for hard disks, scanners, CD-ROM drives, and other devices
- One monophonic sound output port for external audio amplifier
- One HDI-20 floppy disk drive port for the external 1.4MB floppy disk drive

#### Modem

-----

- Optional internal 2400-baud data modem with facsimile at 9600 baud; includes facsimile send software
- Error correction and compression: MNP 4, 5 and V.42, V.42bis

#### Sound generator

-----

# ..TIL08982-PowerBook\_100-Specifications\_Discontinued\_(141\_Mac).pdf

- Apple Sound Chip provides 8-bit sound capable of driving headphones or other stereo equipment through the sound port.

## Disability Access

- CloseView, Easy Access, and visible beep included with system software. These built-in solutions and third-party options provide alternative input and output devices for people with disability.

## ADB Power Requirements

- Maximum current draw for all ADB devices is 200 milliamps (a maximum of three ADB devices is recommended)

## Electrical Requirements

- Line voltage: 100 to 240 volts
- Frequency: 50 to 60 Hz

## Environmental Requirements

- Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Storage Temperature: -40 to 65° C (-40 to 149° F)
- Relative humidity: 20% to 80% noncondensing
- Altitude: Operating: 3048 m (10,000 ft.) maximum  
Shipping (non-operating) 0 to 15,000 ft. (0 to 4,722 m)

## Size and Weight

- Height 1.8 inches (4.6 cm)
- Width 11 inches (28.0 cm)
- Depth 8.5 inches (22.0 cm)
- Weight 5.1 lb. (2.3 kg)

## Noise Level

Noise free except for floppy or hard disk use.

## Article Change History:

- 22 Mar 1995 - Updated altitude information.
- 26 Aug 1993 - Updated to correct storage temperature range.
- 02 Jun 1993 - Updated to correct voltage specification.

## Support Information Services

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Tech Info Library Article Number:8982



# Tech Info Library

## PowerBook 100: Support Issues (8/92)

Revised: 5/16/94  
Security: Everyone

PowerBook 100: Support Issues (8/92)

=====

Article Created: 21 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

This article discusses some of the support issues for the Macintosh PowerBook 100.

DISCUSSION -----

### Hard Disk Recovery

-----

The low end marketing bundle does not include an external floppy disk drive. File sharing or SCSI disk mode will transfer data to and from a desktop Macintosh.

If you rely only on file sharing for file transfer, you may not be able to recover the internal hard disk drive. For example, if the System Folder is corrupted or the hard disk needs repair, file sharing can't connect to the Macintosh PowerBook 100. You need a SCSI disk adapter cable or an external floppy disk drive to connect.

### Hard Disk Interleave Factor Mismatch

-----

If another Macintosh initializes the hard disk while the Macintosh PowerBook 100 is in its SCSI disk mode, it may set the interleave factor incorrectly for the PowerBook 100. The PowerBook 100 has an interleave factor of 1. If, for example, a Macintosh Classic initializes the hard disk drive over SCSI disk mode, the default is an interleave factor of 3. This causes some inefficiencies when accessing the hard disk drive.

To work around this, you can force the Hard Disk Setup Utility to initialize with an interleave factor of 2. Type Command-I when the application is open. This brings up a dialog box that allows you to change the interleave factor.

No Support of System Peripheral Cable for File Sharing

-----  
This is an old issue from the days of connecting a LaserWriter to a Macintosh in a non-networked environment. You can't use the peripheral cable (Mini DIN-8 to Mini DIN-8, M0197) for connecting AppleTalk devices. You can use a peripheral cable in a point-to-point connection instead of two AppleTalk drop boxes and the cabling. This is a lower-cost solution, but Apple has not tested this configuration and does not guarantee future compatibility of this method for connecting two AppleTalk devices.

Support Information Services

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Tech Info Library Article Number:8983



# Tech Info Library

## Macintosh Quadra 700: Description (Discontinued)

Revised: 6/2/94  
Security: Everyone

Macintosh Quadra 700: Description (Discontinued)

=====

Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

This article describes the Macintosh Quadra 700 computer.

DISCUSSION -----

The Quadra 700 is designed with a 25 MHz Motorola 68040 microprocessor, faster graphics architecture, and enhanced NuBus and SCSI subsystems. It runs applications up to twice as fast as the Macintosh IIfx.

Built-in features, such as built-in video and on-board Ethernet, provide direct access to networks and peripheral equipment. You can connect directly to high-speed Ethernet and LocalTalk networks. It is compatible with all Apple monitors. Using VRAM, the Quadra 700 supports up to 24 bits of color for photographic-quality images. Nine built-in ports allow access to printers, scanners, high-capacity disk drives, and other peripheral equipment.

The Quadra 700 supports up to 20MB of RAM to work with larger files and many open applications. You can add media integration, or data acquisition coprocessor cards, using the two NuBus expansion slots. There is one in-line 68040 Processor Direct Slot.

### Macintosh Quadra 700 Features

-----

- Power and speed: 25 MHz 68040 microprocessor runs applications up to twice as fast as the Macintosh IIfx.
- Memory: 4MB RAM, expandable to 20MB
- Expansion: Nine built-in ports for peripherals

Two expansion slots

- Display: Built-in support for all Apple monitors  
32 bits per pixel for true color
- Usability: Runs thousands of Macintosh applications  
Easy to set up, learn, and use
- System software: System 7, with multitasking, file sharing, Balloon Help,  
and TrueType fonts
- Networking: Built-in LocalTalk  
File sharing without a dedicated server
- Compatibility: Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

Copyright 1991-1994, Apple Computer, Inc.

Tech Info Library Article Number:8984



# Tech Info Library

## Macintosh Quadra 700: Specifications (Discontinued 3/93)

Revised: 9/24/93  
Security: Everyone

Macintosh Quadra 700: Specifications (Discontinued 3/93)

=====

Article Created: 21 October 1991

### Article Change History

-----

08/05/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

This article gives the technical specifications for the Macintosh Quadra 700 computer.

### DISCUSSION -----

#### Microprocessor

- 
- Motorola 68040, 32-bit architecture, 25 MHz clock speed
  - Integral Paged Memory Management Unit (PMMU), Floating Point Unit (FPU), and 8-kilobyte cache architecture

#### Memory

- 
- Comes with 4MB of RAM on the logic board and four memory expansion sockets.
  - Expandable to 20MB of RAM by installing 4MB SIMMs in the empty slots.

#### Disk Drives

- 
- Built-in Apple SuperDrive 1.4MB floppy disk drive
  - 80MB, 160MB, or 400MB internal Apple SCSI hard disk drive (optional)

#### Video Display



-----

- Supports all Apple monitors, including:
  - Macintosh 12-inch RGB Display
  - Macintosh 12-inch Monochrome Display
  - AppleColor High-Resolution RGB Monitor
  - Macintosh Portrait Display
  - Macintosh Two-Page Monochrome Monitor
  - Macintosh 21-inch Color Display
- Supports some non-Apple monitors, including VGA, NTSC, and PAL

#### Video RAM

-----

- 512K, upgradable to 2MB for display of more colors or shades of gray

#### Interfaces

-----

- Two Apple Desktop Bus (ADB) ports, supporting a keyboard, mouse, and other devices daisy-chained through a synchronous serial bus
- Two serial (RS-232/RS-422) ports, 230.4 kilobits per second maximum (up to 0.920 megabits per second if clocked externally)
- SCSI bus interface
- Video port to support RGB and monochrome monitors of various sizes and resolutions
- Two internal NuBus expansion slots
- One processor-direct slot provides access to the CPU bus for highest possible performance.
- Stereo sound output port capable of delivering sound to both channels of a stereo device
- Sound input port for monaural sound input
- AUI-15 Ethernet connector

#### Keyboard

-----

- Supports all Apple Desktop Bus keyboards.

#### Mouse

-----

- Apple Desktop Bus Mouse; mechanical tracking, optical shaft, or contact encoding

#### Sound Generator

-----

- Custom Sound Chip drives stereo miniature phone jack headphones or stereo equipment.

#### Clock/Calendar

- Custom chip with long-life lithium battery

#### Microphone

- Electret, omnidirectional; output voltage is 4 millivolts, peak-to-peak, at normal volume.

#### Disability Access

- CloseView, Easy Access, and visible beep included with system software. These built-in features and third-party options provide alternative input and output tools for people with disabilities.

#### Electrical Requirements

- Line voltage: 100 to 240 volts AC, RMS automatically configured
- Frequency: 50 to 60 Hz, single phase
- Power: 50 watts maximum, not including monitor power

#### ADB Power Requirements

- Maximum current draw for all ADB devices: 200 milliamps (a maximum of three ADB devices is recommended)
- Mouse draws 80 milliamps.
- Keyboard draws 25 to 80 milliamps, depending on the keyboard model used.

#### Operating Environment

- Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Storage temperature: -40 to 116.6 degrees F (-40 to 47 degrees C)
- Relative humidity: 20% to 80 % noncondensing
- Maximum altitude: 10,000 ft. (3,048 m)

#### Size and Weight

- Main unit
  - Width 11.9 inches (30.2 cm)
  - Height 5.5 inches (14.0 cm)
  - Depth 14.4 inches (36.5 cm)
  - Weight 13 lb. 10 oz. (6.2 kg)\*
- Mouse
  - Height 1.1 inches (2.8 cm)

- Width 2.1 inches (5.3 cm)
- Depth 3.8 inches (9.7 cm)
- Weight 6 oz. (.17 kg)

Noise Level

-----

< 40 db measured from the seated operator position.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8985



# Tech Info Library

## Macintosh Quadra 700: Support Issues

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra 700: Support Issues

=====

Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

This article discusses some of the Quadra 700 support issues.

DISCUSSION -----

Processor Cooling

-----

The Quadra 700 is designed with special cooling considerations for the 68040. For the processor to cool properly, the case must be closed whenever the Quadra 700 is running.

VRAM Bank Order

-----

The VRAM banks must be populated in order. If there is a VRAM upgrade, the SIMM slots should be populated from the back of the CPU to the front.

SIMM Slots

-----

The placement of the SIMM slots under the hard drive makes it unlikely that vendors will be able to develop 16MB SIMMs to work on this computer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8986



# Tech Info Library

## Macintosh Quadra 900: Description (Discontinued)

Revised: 6/2/94  
Security: Everyone

Macintosh Quadra 900: Description (Discontinued)

=====  
Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

This article describes the Macintosh Quadra 900 computer.

DISCUSSION -----

The Macintosh Quadra 900 runs applications up to twice as fast as the Macintosh IIfx, with these features:

- Increased performance of the 25 MHz Motorola 68040 microprocessor
- Faster graphics architecture
- Improved SCSI and NuBus capabilities

The Quadra 900 has many built-in features. Built-in networking allows you to plug the system directly to high-speed Ethernet and LocalTalk networks without buying additional cards. Built-in support for all Apple displays makes it easy to connect your display without adding video cards. With built-in support for up to 24 bits of color, you can work with photographic-quality images. Ten built-in ports give access to printers, scanners, high- capacity disk drives, and more.

The Quadra 900 supports up to 64MB of RAM, so you can work with larger files and many open applications. There are five expansion slots for adding NuBus cards. The Quadra 900 also supports up to four storage devices. For added security it has a physical key lock.

Macintosh Quadra 900 Features

- 
- Power and speed: 25 MHz 68040 microprocessor runs applications up to

twice as fast as the Macintosh IIfx.

- Memory: 4MB RAM, expandable to 64MB
- Expansion: Ten built-in ports for peripherals  
Up to four storage devices  
Five NuBus expansion slots
- Display: Built-in support for all Apple monitors  
Up to 32 bits per pixel for true color
- Usability: Runs thousands of Macintosh applications  
Easy to set up, learn, and use
- System software: System 7, with multitasking, file sharing, Balloon Help,  
and TrueType fonts
- Networking: Built-in LocalTalk  
File sharing without a dedicated server
- Compatibility: Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

Copyright 1991-1994, Apple Computer, Inc.

Tech Info Library Article Number:8987



# Tech Info Library

## Macintosh Quadra 900: Specifications (Discontinued 5/92)

Revised: 9/27/93  
Security: Everyone

Macintosh Quadra 900: Specifications (Discontinued 5/92)

=====

Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992

TOPIC -----

This article gives the technical specifications for the Macintosh Quadra 900 computer.

DISCUSSION -----

### Microprocessor

-----

- Motorola 68040, 32-bit architecture, 25 MHz clock speed
- Integral Paged Memory Management Unit (PMMU), Floating Point Unit (FPU), and 8-kilobyte cache architecture

### Memory

-----

- Comes with 4MB of RAM standard and 12 memory expansion slots for SIMMs (Single In-line Memory Modules).
- Expandable to 64MB of RAM by installing 4MB SIMMs in the empty slots.

### Disk Drives

-----

- Built-in Apple SuperDrive 1.4MB floppy disk drive
- 160MB or 400MB internal Apple SCSI hard disk drive (optional)
- Support for up to three additional devices, such as a CD-ROM drive or SCSI hard disk drive (several capacities available)

### Video Display

-----

- Supports all Apple monochrome and color monitors, including:

- Macintosh 12 Inch RGB Display
  - Macintosh 12 Inch Monochrome Display
  - AppleColor High-Resolution RGB Monitor
  - Macintosh Portrait Display
  - Macintosh Two-Page Monochrome Monitor
  - Macintosh 21 Inch Color Display
- Supports some other non-Apple monitors, including VGA, NTSC, and PAL.

#### Video RAM

- 
- 1MB, upgradable to 2MB for display of more colors or shades of gray

#### Interfaces

- 
- One Apple Desktop Bus (ADB) port, supporting a keyboard, mouse, and other devices daisy-chained through a synchronous serial bus
  - Two serial (RS-232/RS-422) ports, 230.4 kilobits per second maximum (up to 0.920 megabits per second if clocked externally)
  - SCSI bus interface
  - Video port to support RGB and monochrome monitors of various sizes and resolutions
  - Five internal NuBus expansion slots
  - One processor-direct slot provides access to the CPU for highest-possible performance.
  - Stereo sound output port capable of delivering sound to both channels of a stereo device
  - Sound input port for monaural sound input
  - Two audio line input ports (Stereo input is mixed to a monophonic signal.)
  - AUI-15 Ethernet connector

#### Keyboard

- 
- Supports all Apple Desktop Bus keyboards.

#### Mouse

- 
- Apple Desktop Bus Mouse; mechanical tracking, optical shaft, or contact encoding

#### Sound Generator

- 
- Custom Sound Chip drives stereo miniature phone jack headphones or stereo



equipment.

#### Clock/Calendar

-----

- Custom chip with long-life lithium battery

#### Microphone

-----

- Electret, omnidirectional; output voltage is 4 millivolts, peak to peak, at normal volume.

#### Disability Access

-----

- CloseView, Easy Access, and visible beep included with system software. These built-in features and third-party options provide alternative input and output tools for people with disabilities.

#### Electrical Requirements

-----

- Line voltage: 100 to 240 volts AC, RMS automatically configured
- Frequency: 59 to 60 Hz, single phase
- Power: 303 watts maximum, not including monitor power

#### ADB Power Requirements

-----

- Maximum current draw for all ADB devices: 500 milliamps (a maximum of three ADB devices is recommended)
- Mouse draws 80 milliamps.
- Keyboard draws 25 to 80 milliamps, depending on the keyboard model used.

#### Operating Environment

-----

- Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)
- Storage temperature: -40 to 116.6 degrees F (-40 to 47 degrees C)
- Relative humidity: 20% to 80% noncondensing
- Maximum altitude: 10,000 ft. (3,048m)

#### Size and Weight

-----

- Main unit
  - Height 18.6 inches (47.3 cm)
  - Width 8.9 inches (22.4 cm)
  - Depth 20.6 inches (52.3 cm)
  - Weight 36 lb. 12 oz. (16.7 kg)\*
- Mouse

- Height 1.1 inches (2.8 cm)
- Width 2.1 inches (5.3 cm)
- Depth 3.8 inches (9.7 cm)
- Weight 6 oz. (.17 kg)

\* Weight is greater with an internal hard disk.

#### Noise Level

-----

< 40 db (floor standing position) measured from the seated operator position.

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Tech Info Library Article Number:8988



# Tech Info Library

## Macintosh Quadra 900: Support Issues

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra 900: Support Issues

=====

Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

This article discusses some of the support issues for the Quadra 900.

DISCUSSION -----

Sound

-----

The existing sound input is 8-bit linear PCM with analog limiting to enhance the power of the signal being digitized. The sample rate may be set for 22 kHz or 11 kHz. Therefore, the results will not be significantly better than a low cost cassette recorder without noise reduction. This level of performance is adequate for voice annotation, but will not produce the best results with music.

Long Memory Checks

-----

When you install large amounts of DRAM, the memory check at startup is lengthy and you may think the machine isn't functioning. There is no message saying that the machine is running memory checks.

Processor Cooling

-----

The Quadra 900 is designed with special cooling considerations for the 68040. For the processor to cool properly, the case must be closed whenever the Quadra 900 is running.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8989



# Tech Info Library

## Macintosh Classic II: Support Issues

Revised: 7/6/92  
Security: Everyone

Macintosh Classic II: Support Issues

=====

Article Created: 21 October 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

This article discusses some of the support issues for the Macintosh Classic II.

DISCUSSION -----

No FPU from Apple

-----

Apple does not plan to produce an FPU card for the Macintosh Classic II.

No A/UX

-----

There are no plans for a version of A/UX that runs on the Macintosh Classic II.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8990



# Tech Info Library

## Macintosh Classic II & Macintosh Classic:Comparison (8/96)

Revised: 8/19/96  
Security: Everyone

Macintosh Classic II & Macintosh Classic:Comparison (8/96)

Article Created: 21 October 1991  
Article Reviewed/Updated: 19 August 1996

TOPIC -----

This article describes enhancements in the Macintosh Classic II, as compared to the Macintosh Classic.

DISCUSSION -----

Processor

The Macintosh Classic II uses a 68030, 16 MHz CPU, while the Macintosh Classic has a 68000, 8MHz CPU.

RAM

The Classic II comes with 2 MB of RAM and two standard 32-pin SIMM sockets to add RAM configurations of 2, 4, 6 or 10 megabytes using standard SIMM modules with 100ns or better access time. The Macintosh Classic can have a maximum of 4 MB of RAM.

ROM

The Macintosh Classic II ROM is a modified version of the Macintosh LC ROM that supports virtual memory and 512 pixels x 342 pixels x 1 bit video. It comes with a 512K ROM, expandable to 4 MB using the on-board FPU/ROM connector.

Analog Board

These are the changes made to the Macintosh Classic analog board for use in the Macintosh Classic II:

- The width adjust coil replaced by a potentiometer.

- A new low-radiation flyback transformer added.

#### Other Differences

-----  
The Macintosh Classic II comes with a microphone for sound input.

The Macintosh Classic II has a connector on the logic board that allows you to add a floating-point coprocessor, available from third parties.

The Macintosh Classic II has a monitor yoke with opposing windings (cancellation coils). It requires system software version 7.0.1, and comes in configurations of 2 MB RAM with a 40 MB hard disk, or 4 MB of RAM with an 80 MB hard disk.

#### Article Change History:

19 Aug 1996 - Removed note regarding upgrade that is no longer available.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:8991



# Tech Info Library

## Macintosh Classic II: Description (Discontinued)

Revised: 6/8/94  
Security: Everyone

Macintosh Classic II: Description (Discontinued)

Article Created: 21 October 1991  
Article Last Reviewed: 17 June 1992

TOPIC -----

This article describes the Macintosh Classic II computer.

DISCUSSION -----

The Macintosh Classic II offers many built-in capabilities. You can send electronic mail and share devices like printers using built-in networking with third-party products. You can plug peripherals (such as CD-ROM drives, scanners, and modems) into the built-in ports. The microphone allows you to add voice notes to documents and mail messages.

Applications run more than twice as fast on the Macintosh Classic II as they do on the original Macintosh Classic. You can work with several applications at the same time, and continue working while the computer does other tasks.

The Macintosh Classic II stores the video buffer in system RAM. Video data loads into a buffer in 64-bit chunks by burst mode read. The remaining RAM bandwidth is available to the CPU. The on-board video uses 9.4% or 12.5% of the RAM bandwidth, depending on whether video is active or not. Macintosh Classic II's video supports a frame rate of 60.15 Hz.

The Macintosh Classic II uses main memory for the sound buffer. It maintains a sound buffer in the on-board RAM, located above the video buffer. Like the Macintosh LC, it allows for playthrough which permits an external audio source to mix with computer-generated sound and play out through the speaker or headphone jack. The left and right channel of the stereo phono jack are tied together to produce 2-channel monophonic output.

Macintosh Classic II Features

- 
- Power and Speed
    - 16 MHz 68030 microprocessor

- Memory
  - 2MB or 4MB RAM, expandable to 10MB
  - Virtual memory
- Expansion
  - Seven built-in ports for peripherals such as printers, scanners, and microphone
  - Internal connector for optional math coprocessor
- System Software
  - System 7.0.1, with multitasking, file sharing, Balloon Help, and TrueType
- Networking
  - Built-in AppleTalk networking
  - File sharing without a dedicated server
- Compatibility
  - Macintosh, MS-DOS, OS/2, and ProDOS floppy disk formats

Support Information Services

Copyright 1991-1994, Apple Computer, Inc.

Tech Info Library Article Number:8992





# Tech Info Library

## Apple IIe Card: Compatible Monitors and Projection Pads

Revised: 6/10/92  
Security: Everyone

Apple IIe Card: Compatible Monitors and Projection Pads

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

What Apple monitors work with the Apple IIe Card?

Can I use an LCD projection pads with the IIe card?

DISCUSSION -----

Monitors

-----

The Apple IIe Card supports the following monitors:

- Macintosh 12-inch RGB Display
- Macintosh 12-inch Monochrome Display
- AppleColor 13-inch High Resolution Monitor
- Apple 13-inch Monochrome Monitor
- IBM VGA monitors (those that work with the Macintosh LC, with the correct cable)

In other words, Apple IIe Card supports all monitors that are supported by the Macintosh LC video, including the 13-inch color monitor.

Projection Pads

-----

As for LCD Projection Pads, we have only tried the nView ViewFrame II+2. It works with both the 13-inch and the 12-inch monitor. 13-inch projection pads should work, if you have a 13-inch monitor hooked up in-line with the projection pad cable.

Most pads provide a DB-15 female connector to plug into your monitor. The video that the Macintosh LC sends out is based on the monitor sense pins. If the

projection pad can support many different video types, it should work also with a 12-inch monitor connected.

If you have a pad, test it with both the 12-inch and 13-inch monitors. If it works with both monitors, it should work with the Apple IIe card. If the pad has problems with the 12-inch monitor, then it also will have problems with the IIe card.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:8995



# Tech Info Library

## Apple IIe: How to Limit Access to the Option Panel

Revised: 6/21/94  
Security: Everyone

Apple IIe: How to Limit Access to the Option Panel

=====

Article Created: 5 June 1991  
Article Reviewed/Updated: 21 Jun 1994

TOPIC -----

I need to limit access to the Apple IIe Option Panel in my school lab.

DISCUSSION -----

You can do so by buying an optional jumper for the Macintosh LC Logic Board. When the jumper is installed on the Macintosh LC logic board, users retain access to these Apple IIe Option Panel buttons:

- Quit IIe
- Eject Disk
- Restart IIe
- Return

However, users will not have access to any of the panels used to change Option Panel settings.

After shutting off the machine and all connected peripherals, put the jumper on the logic board near the battery. There are three sets of pins on the connector. Place the jumper on the pins closest to the battery (labeled CPE or W1 on the board).

This jumper also exists on the Macintosh LCII and Performa 405. However the designation is J17 not CPE.

Article Change History:  
21 Jun 1994 - Added information on the LCII and Performa 405.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:8998



# Tech Info Library

## AppleShare Print Server: -120 Error

Revised: 10/18/91  
Security: Everyone

AppleShare Print Server: -120 Error

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am having problems with an AppleShare Print Server IINTX. When any of the workstations try to print to the network LaserWriter, the print server instantly aborts the print job. After this, the printer must be reset to be re-captured.

A message comes up on the screen stating that the computer is trying to clear the print buffer. I also get a message stating that error number -120 has occurred. The print server is a Macintosh SE 2/40, and the workstations are Macintosh SE 20s. I have re-installed System software, print-server software, LaserWriter files, and Laser Prep files on both the file server and workstations. What else can I do?

DISCUSSION -----

The -120 error is a "directory not found" error that could be related to a hardware failure on the server. If you can print to the LaserWriter IINTX via the bypass feature of the AppleShare Print Server, then there is a problem at the server level. It is most important to determine that the workstations can print to the IINTX on bypass to verify the integrity of the hardware.

Here are two things to try on the server:

- 1) If you reinstalled the software over the old files, trash the old files first and then re-install.
- 2) Second, consider backing up the server in a file-by-file manner, re-initializing the drive, and restoring the files. The print server may be running into some bad sectors which inhibit its ability to spool the

files.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9000



# Tech Info Library

## HyperCard 2.0: Retooling the Limited Version

Revised: 10/18/91  
Security: Everyone

HyperCard 2.0: Retooling the Limited Version

=====

Article Created: 18 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I access the stack-editing features of the HyperCard that came with my Macintosh?

DISCUSSION -----

The version of HyperCard that ships with the new computers has been set to look like a limited-function version. However, with a couple of alterations, you can make this version run at its full potential. Try any of these three workarounds:

- Type "magic" in the message box the first time you use HyperCard 2.0. (This handler cuts the opaque button from the last card in the Home stack.)
- Go to the last card in the Home stack and cut the opaque button that hides the "set userlevel" buttons. Click the "5" button.
- Type "set userlevel to 5" in the message box, each time you use HyperCard 2.0.

Or, you can buy a copy of full-featured HyperCard 2.0, with manuals, from Claris.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9005



# Tech Info Library

## Macintosh Classic: Video Adjustment Screws

Revised: 6/22/92  
Security: Everyone

Macintosh Classic: Video Adjustment Screws

=====

Article Created: 18 April 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated:

TOPIC -----

On the back of the Classic, there is a cover over several adjustment screws. What do these adjust?

DISCUSSION -----

These adjustment screws are for video adjustments. You can adjust the horizontal and vertical size and shift, along with the brightness, cutoff, and focus.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9007



# Tech Info Library

## LaserWriter: Networking vs. Switch Box

Revised: 10/18/91  
Security: Everyone

LaserWriter: Networking vs. Switch Box

=====

Article Created: 19 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can a Macintosh II and a Macintosh Portable share the same LaserWriter IINT  
using a switch box? Or am I better off using AppleTalk?

DISCUSSION -----

Because all three products you mention have networking capabilities  
built-in, there is no reason not to connect them together with LocalTalk.  
You can use a switch box, but it would not be easy, and it would be largely  
a waste of time.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9008





# Tech Info Library

## Macintosh: Arabic/English Keyboard (8/95)

Revised: 8/3/95  
Security: Everyone

Macintosh: Arabic/English Keyboard (8/95)

Article Created: 12 April 1991  
Article Last Reviewed/Updated: 03 August 1995

TOPIC -----

I need a bilingual (Arabic/English) keyboard that is ISO and extended.

DISCUSSION -----

Apple's English-version extended keyboards work with other languages. To have an Arabic keyboard means that the Key Caps would be Arabic. Apple's international keyboards are not sold in the United States.

Article Change History:  
03 Aug 1995 - Corrected minor typo.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:9009



# Tech Info Library

## Macintosh: Power Supply Requires Grounding

Revised: 10/18/91  
Security: Everyone

Macintosh: Power Supply Requires Grounding

=====

Article Created: 12 April 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need Macintosh systems that work with 220VAC 50Hz with no ground.

DISCUSSION -----

All members of the Macintosh SE and Macintosh II families have universal power supplies. They are all set to work from 100-240VAC 50/60Hz.

For safety reasons, Apple cannot recommend using a system with no ground. The equipment might work, but would not be safe to use. If a short were to occur, you would be keeping a circuit breaker from stopping the short by not using a ground.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9010



# Tech Info Library

## Macintosh IIci: Using Non-Parity SIMMs

Revised: 7/10/92  
Security: Everyone

Macintosh IIci: Using Non-Parity SIMMs

=====

Article Created: 12 August 1991  
Article Last Reviewed: 10 July 1992  
Article Last Updated:

TOPIC -----

If I put any non-parity SIMMs in a Macintosh IIci with parity checking,  
will parity checking still work?

DISCUSSION -----

No. In order for parity checking to work, all SIMMs have to be parity  
checking also.

On the other hand, using parity SIMMs in a non-parity IIci shouldn't be a  
problem as long as all the SIMMs in a bank are the same speed.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9013



# Tech Info Library

## MacLAN Connect: How to Install It

Revised: 10/18/91  
Security: Everyone

MacLAN Connect: How to Install It

=====

Article Created: 17 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Some users need to fuse Macintosh networks to OS/2 nets with Token Ring as unifying backbone. Primarily, Macintosh users create documents that need to be stored on the OS/2 servers and accessed from OS/2 workstations. To a lesser extent, the OS/2 stations share documents with Macintosh users.

DISCUSSION -----

MacLAN Connect from Miramar Systems is a solution. MacLAN Connect enables any PC/XT/AT/386 or compatible to function as an AppleShare-compatible server. All hard disks, LAN volumes, or other storage devices are available to AppleShare-connected Macintosh workstations.

MacLAN Connect is AppleShare Phase 2 compliant. It supports EtherTalk, TokenTalk, Internet Routers, and so on. AppleTalk Filing Protocol (AFP) Version 1.1 specifications are fully supported.

Basically, MacLAN turns a DOS system into an AFP server (which appears to Macintosh systems as any other AppleShare server). In addition, if you log on to PC server volumes before running MacLAN, these volumes can be mounted as logical volumes on the MacLAN AFP servers. Therefore, PC LAN volumes and OS/2 volumes can mount on the Macintosh desktop as AFP volumes.

Although, the process of installation is complex, once installed, it works well. Here's an installation process that worked for one site:

Basic Network

-----  
Our basic network setup looks like this:

--Macs on PhoneNet-----

|                               |            |          |
|-------------------------------|------------|----------|
|                               |            |          |
| Mac IIx,                      | OS/2       | Model 50 |
| with Token Ring card,         | V1.2       | running  |
| running router                | LAN Server | MacLAN   |
|                               |            |          |
| -----MAU-----                 |            |          |
| (these are on 4Mb Token Ring) |            |          |

## Necessary Software

-----

On the Model 50, you must install the IBM token-ring drivers, Apple token-ring drivers, and the DOS LAN Requester software. DLR is a separate software package that comes with LAN Server. You must install it on a workstation before the station can log on to the server. You also need the PC LAN Support disk to determine the address settings on the IBM Token Ring card. In short, you need:

- DXMAID disk from IBM for IBM Token Ring drivers.
- MacLAN Connect, for the AFP server software and the Apple drivers.  
Note: In several places in the documentation, you are told to use AppleShare PC as the source of the Apple drivers. This works if you only want to mount the MacLAN CPU's hard disk as an AFP server. This will not work if you want to attach PC LAN or OS/2 volumes as logical volumes, because the ASPC drivers trash the LAN Requester process. In addition, ANET is installed in the AUTOEXEC file by the ASPC installation, and this causes problems. If you follow the documentation here, it won't work.

Instead, use the drivers supplied with the MacLAN package. They're based on the ASPC drivers. The TOKEN.COM file has been altered to permit the IBM code and Apple code to coexist better.

- IBM Support disk, to check addresses on Token Ring card.
- DOS LAN Requester installation disks (2 disk set)
- Because you want to see the PC server volume on your Macintosh desktop, you'll need to be a user on the PC server. Before beginning this installation, have the system administrator make you a user on the PC server volume. (Under OS/2, this need not mean an entire hard disk; you can designate individual directories as volumes. For our purposes, we designated one directory called COMMON as a shared volume on the OS/2 server.)

## Installation Process

-----

Here is the installation process:

- 1) Install the IBM Token Ring drivers with DXMAID. Check the Config.sys file. It should include:

```
Files=100
Buffers=50
DEVICE=DXMAOMOD.SYS 001
DEVICE=DXMCOMOD.SYS
DEVICE=DXMTOMOD.SYS
```

Adjust the files and buffers if your values don't match these. (Note: There is a complete CONFIG.SYS later in this article.)

- 2) Use the IBM Support Disk to find the ROM and Shared RAM address for the installed Token Ring card.

Typical addresses are:

```
ROM: DE000
Shared RAM: D8000
```

These addresses are very important -- you must edit your NET.CFG file later to adjust the MEM 1 and MEM 2 parameters to match these addresses. (If you've ever installed ASPC with Token Ring drivers, you get two screens asking you to set the "primary" and "secondary" memory addresses -- that's what these values are.)

- 3) Install the DOS LAN Requester software from the IBM disks included with OS/2 LAN Server.

During this process, a directory called DOSLAN is created, and it stores the LAN Requester files as they are unpacked. (Later these files are invoked by commands like "net start" to kick off the network link and "net logon user1" to log on to the server as user1.)

- 4) Create a directory on the DOS system called MACLAN.
- 5) Copy the file MACLAN.EXE from MacLAN Disk 1 to the directory and execute it. The file unpacks into the MacLAN executables, including MLCONFIG and MLSERVE.
- 6) From MacLAN Disk 2, execute the INSTALL.BAT file to install Apple drivers. This creates a DRIVERS directory that contains the appropriate code.

These files look like the usual ASPC code. After installation, check the AUTOEXEC file, and you'll see the familiar code for the ASPC driver installation. However, according to the MacLAN author, some of the files have been altered, so they can work with LAN Requester.

- 7) Use a convenient editor to edit the NET.CFG file in the DRIVERS directory. This file will look like this:

```
Link Support
  Buffers 11 640
  MemPool 16K
```

```
Protocol AppleTalk
DEFAULT TOKEN$ #1
AARP TOKEN$ #1 H(0002) L(6) B(C00040000000)

Link Driver TOKEN$
# IBM Token-Ring Network Adapter/A (MicroChannel)
INT #1 2
MEM #1 DE000 0200
MEM #2 D8000 0400
PORT #1 A20 8
PORT #2 2F0 8
PS/2 Slot?
Protocol AppleTalk AA080007809B
Protocol AARP AA00000080F3
```

8) Here are the important pieces:

- Change Buffers and Mempool to these figures.
- INT specifies the interrupt for the card. 2 is OK for Mod 50.
- Remember those ROM and RAM addresses from the IBM Support disk? Set MEM 1 to the ROM address for the Token Ring card. Set MEM 2 to the shared RAM address for the card.

9) Do a warm reboot with Ctrl-Alt-Del. You should see messages indicating that the IBM drivers are loading, followed by the Apple drivers loading.

10) Run DOS LAN Requester and log on to the PC server. This establishes a logical connection between the MacLAN DOS CPU and the remote server volume. In this case, you have designated a directory called COMMON on the OS/2 server as logical volume X. Once you establish the connection, you can log on to the X volume and directory as usual.

11) Run MLCONFIG. This is the MacLAN configuration program, similar to AppleShare Admin program. You set up Macintosh users and groups as usual. The key piece is that you specify the volumes (including the logical attached volumes) that you want to appear as AFP volumes to Macintosh users. To specify the local Mod50 hard drive as an AFP volume, you specify the C drive. In this case, to specify the OS/2 directory that is mounted as the logical X drive, we specified the X drive and the C drive.

This is a nice feature; each volume can be assigned a volume password, in addition to the generic server password. Many people need the additional layer of security.

12) Run MLSERVE. (Be sure to run this from the MacLAN directory, or it can't find the files that it needs.) This kicks off the AFP server process.

When the AFP server is mounted, Macintosh systems on the LAN can see the MacLAN server from the Chooser. After logging onto the server, in

our case the C drive and the logical X drive that we had mounted (which is actually a directory on the OS/2 server) appear in the Chooser volume list. After users log onto these volumes in the usual Macintosh way, the volumes mount on the desktop and you're all set.

You can set up an AUTOEXEC file that automates this, but you'll have to do it manually the first time to set up MLCONFIG files.

Recommendation: MacLAN Connect is a bit harder than the typical Macintosh application to set up and configure, but once it's up and running, it's a seamless solution to this problem. The only real problems are on the OS/2 administrator's side, where they have to administer privileges, and the like, on their server. OS/2 is very much like UNIX in one way: it's very powerful, with lots of features and matching complexity.

#### The CONFIG.SYS File

-----  
This is final version of our CONFIG.SYS file. We adjusted Buffers and Files to MacLAN's recommended values.

```
DEVICE=C:\DOS\DXMA0MOD.SYS
DEVICE=C:\DOS\DXMC0MOD.SYS
DEVICE=C:\DOS\DXMT0MOD.SYS
SHELL=C:\DOS\COMMAND.COM /E:2000 /P
BUFFERS=60
FILES=100
FCBS=16,8
LASTDRIVE=Z
BREAK=ON
```

#### The NET.CFG File

-----  
This is final version of NET.CFG file in DRIVERS directory created by MacLAN driver installation. Adjust the Buffers and MemPool settings, if necessary. The crucial changes to make are in Link Driver TOKEN\$. Change MEM#1 to match the ROM addresses of your Token Ring card and MEM #2 to match the shared RAM address of your card. You can find these by running the IBM Support disk for your system.

#### Link Support

```
Buffers 11 640
MemPool 16K
```

#### Protocol AppleTalk

```
DEFAULT TOKEN$ #1
AARP TOKEN$ #1 H(0002) L(6) B(C00040000000)
```

#### Link Driver TOKEN\$

```
# IBM Token-Ring Network Adapter/A (MicroChannel)
INT #1 2
MEM #1 DE000 0200
```



```
MEM #2 D8000 0400
PORT #1 A20 8
PORT #2 2F0 8
PS/2 Slot?
Protocol AppleTalk AA080007809B
Protocol AARP AA00000080F3
```

#### The AUTOEXEC.BAT File

-----

This is a copy of our final AUTOEXEC file. It loads Apple drivers, uses "net start" command, and "net logon test1" command to log on to OS/2 server volume as user test1 automatically and launch MacLAN AFP server with MLSERVE command.

```
echo off
C:\drivers\LSL
    if errorlevel 1 goto aspc_err
C:\drivers\TOKNRING /NAME=TOKEN$
    if errorlevel 1 goto aspc_err
C:\drivers\Atalk
    if errorlevel 1 goto aspc_err
C:\drivers\compat
    if errorlevel 1 goto aspc_err
C:\drivers\aarp
    if errorlevel 1 goto aspc_err
REM *** Memory usage for the above programs is approximately 66K bytes.
goto skip_aspc
:aspc_err
echo *** A fatal error has occurred while loading AppleShare PC. ***
pause *ASPC*
:skip_aspc
@echo on
PATH=C:\DOS;C:\DOSLAN;C:\DRIVERS;C:\MACLAN;C:\TOOLS;C:\;
SET PMDIR=C:\TOOLS REM**This is PathMinder directory--ignore
IF ERRORLEVEL 1 GOTO NODLR
NET START REM ** This kicks off network connection
IF ERRORLEVEL 1 GOTO NODLR
net logon test1 REM ** This logs onto specified server vol as test1
:NODLR
mlserve REM*** This kicks off the server
```

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Tech Info Library Article Number:9014



# Tech Info Library

## Macintosh 21 Color Display: Automatic Degaussing Feature 10/91

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Automatic Degaussing Feature 10/91

=====

Article Created: 1 October 1991

TOPIC -----

This article explains the circuitry in the Macintosh 21-inch Color Display that compensates for magnetic field image distortion.

DISCUSSION -----

The circuitry in the Macintosh 21-inch Color Display provides what is called automatic degaussing to ensure a good image on the screen. Color displays use magnetic fields to guide electron beams inside the CRT to the screen. An external magnetic field close to the CRT can disturb the internal magnetic field, misdirect the beams, and distort the screen image.

Circuitry in most monitors adjusts the internal magnetic field to counteract the external magnetic field, but only at startup. If the external magnetic field changes during operation, a distorted image remains until the power cycles off and on. The AppleColor High-Resolution RGB Monitor has a manual degauss control button that you can press rather than turning off the monitor.

The Macintosh 21-inch Color Display has startup, manual, and automatic degaussing features. It contains an auto-degaussing circuit, called a magnetometer, that measures magnetic fields. The magnetometer sends a signal that initiates a degauss when it senses a major change in the ambient magnetic field. The magnetometer operates constantly while power is on, and degaussing can occur even when no image is on the screen.

Tilting or swiveling the monitor may change the magnetic field enough to cause distortion, and trigger automatic degaussing. Occasional automatic degaussing is normal. If degaussing occurs when you haven't moved the monitor, a source of interference may be in the room. You may have to move the source of interference to reduce the frequency of automatic degaussing. Frequent auto-degaussing can be annoying because it causes the screen to continually blink.

Support Information Services

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Tech Info Library Article Number:9015



# Tech Info Library

## Macintosh 21 Color Display: Ergonomic Features

Revised: 3/11/93  
Security: Everyone

Macintosh 21" Color Display: Ergonomic Features

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article lists the ergonomic features of the Macintosh 21-inch Color Display.

DISCUSSION -----

Important ergonomic features include:

- The antiglare, antistatic panel reduces glare and dust build-up.
- The built-in tilt and swivel base allows you to change the viewing angle.
- A 75 hertz screen refresh rate eliminates screen flickering.
- The ADB ports are easy to access on the front of the base.
- The brightness and contrast controls are also easily accessed on the front of the monitor.
- The following features minimize the desk space needed for the monitor:
  - Curved and recessed base
  - Recessed video cable connector
  - Right-angled power cord
- The hard plastic spheres on the bottom of the base make it easier to lift and slide the monitor.

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Tech Info Library Article Number:9016



# Tech Info Library

## Macintosh 21 Color Display: Shadow Mask (10/91)

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Shadow Mask (10/91)

=====

Article Created: 1 October 1991

TOPIC -----

This article explains the function of the shadow mask used in the Macintosh 21-inch Color Display.

DISCUSSION -----

The Macintosh 21-inch Color Display uses a perforated shield called a shadow mask to separate the red, green, and blue electron beams that create the displayed images. Electron beams pass through a mask to strike the designated red, green, or blue dots of phosphor on the back of the screen. These beams cause the colored phosphor dots to glow. The combination of glowing dots produces the color images.

A metal mask or shield commonly used is a vertically-oriented aperture grill design. Traditional mask designs use perforations arranged in a pattern that interacts with the changing pattern of the electron beams as they scan across the shield. The interaction of these patterns frequently causes a screen interference called a moire pattern. The interference is more obvious with certain Macintosh desktop patterns.

The Macintosh 21-inch Color Display uses a pattern of tiny holes in the shadow mask that avoids the distracting effects of the most common moire patterns. This design is an asymmetric dot pitch of .026 mm horizontally and .029 mm vertically. Dot pitch is the distance between two adjacent RGB dot triads. To achieve a high resolution, dot pitch should be as small as possible. This pattern doesn't conflict with the pattern created by electron beams.

Support Information Services

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Tech Info Library Article Number:9017



# Tech Info Library

## Macintosh 21 Color Display: Video Card Support

Revised: 3/11/93  
Security: Everyone

Macintosh 21" Color Display: Video Card Support

=====

Article Created: 1 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What video cards support the Macintosh 21-inch Color Display?

DISCUSSION -----

The same video cards that support the Apple Two-Page Monochrome Monitor support the Macintosh 21-inch Color Display. Cards supporting the 21-inch Color Display include:

- Macintosh Display Card 4•8 at 4 bits per pixel
- Macintosh Display Card 8•24 at 8 bits per pixel
- Macintosh Display Card 8•24 GC at 8 bits per pixel

Here is a table of Macintosh computers and their requirements for use with the Macintosh 21-inch Color Display:

| Macintosh  | Requirements to Use 21-Inch Color Display |
|------------|-------------------------------------------|
| -----      | -----                                     |
| LC         | Third-party video card                    |
| IIIsi      | Video card (note 1)                       |
| IIci       | Video card (note 1)                       |
| IIIfx      | Video card (note 1)                       |
| Quadra 700 | 16 colors built in (notes 1,2)            |
| Quadra 900 | 256 colors built in (note 2)              |

Notes (1): Add a third-party video card for 16.7 million colors.  
(2): Add VRAM to the logic board for 32,000 colors.

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Tech Info Library Article Number:9018



# Tech Info Library

## Macintosh 21 Color Display: Adjustable Color Temp (10/91)

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Adjustable Color Temp (10/91)

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Article Created: 1 October 1991

TOPIC -----

This article explains the adjustable white point color temperature feature of the Macintosh 21-inch Color Display.

DISCUSSION -----

The white point color temperature is a measure, in degrees Kelvin, of how white a display's white is. Traditional displays use a 9300 degree K white, which has a bluish tint to it and a high contrast. A 6500 degree Kelvin white is similar to page white and is more useful for color matching.

This feature is important to graphics professionals, although other users will appreciate having the choice. With it, users can more closely match the color of an object designed on a computer with how it looks when printed by a commercial printer. The page-white gamma table provides 6500 degrees K white point, which matches the color of white paper. This improves WYSIWYG in graphic design, since the white backgrounds of the monitor and paper are the same.

The Macintosh 21-inch Color Display allows adjustment of the white point color temperature. To make an adjustment, follow these steps:

- 1) Select the monitor CDEV in the Control Panel. (In System 7, open the Monitors control panel.)
- 2) Hold down the Option key and click on the Option button.
- 3) The options dialog offers a choice of gamma tables. Choose:
  - the Mac Std Gamma option for 9300 degree K,
  - the Page-White Gamma option for 6500 degree K white, or
  - uncorrected gamma.

Support Information Services



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Tech Info Library Article Number:9019



# Tech Info Library

## Apple ISDN NB Card: Description (Discontinued)

Revised: 2/22/95  
Security: Everyone

Apple ISDN NB Card: Description (Discontinued)

=====

Article Created: 25 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the Apple ISDN NB Card, a discontinued product.

DISCUSSION -----

The Apple ISDN NB Card provides Macintosh II computers with basic rate connectivity to the Integrated Services Digital Network (ISDN). When used with the Apple ISDN software it provides access to a wide variety of services such as centralized document, image, and video database applications; integrated screen-based telephony and office automation applications; and high-speed file transfer.

The Apple ISDN NB Card is an intelligent NuBus card with a 68000 microprocessor, 512K of RAM, and a multitasking operating system. Because of its independent processor, the Apple ISDN NB Card executes communications protocols with minimal access to the Macintosh II CPU. The Apple ISDN NB card implements the CCITT ISDN basic rate interface (2B+D) and supports a standard analog DTMF (dual-tone multifrequency) telephone. Used with the Apple ISDN software, the Apple ISDN NB card is compatible with the AT&T 5ESS and Northern Telecom DMS-100 ISDN switches.

The Apple ISDN NB Card and software support simultaneous voice and data circuit-switched connections. The Apple ISDN NB Card provides direct access to 64/56 Kbps for synchronous connections and supports the CCITT V.110 and V.120 rate adaption protocols for asynchronous connections.

The Apple ISDN NB Card and software are supported by the Macintosh Communications Toolbox, a high-level applications programming interface (API). The Communications Toolbox supports the new Telephone Manager, Apple ISDN Telephone Tool, and Apple ISDN Serial Tool. The Telephone Manager and ISDN tools provide access to a core set of telephone and data

functions for developing and implementing integrated voice and data applications on the Macintosh.

Apple ISDN NB Card Features:

- Simultaneous circuit-switched voice and data connection capabilities
- Software-selectable ISDN switch type and configuration
  - AT&T 5ESS
  - Northern Telecom DMS-100
- ISDN basic rate S-interface (RJ-45)
- Voice call control from a standard analog telephone attached to the Apple ISDN NB Card (RJ-11)
- Works on any Macintosh II computer running System 7
- V.120 and V.110 rate adaption support
- Macintosh Communications Toolbox support
  - Telephone Manager
  - Apple ISDN Telephone Tool
  - Apple ISDN Serial Tool
- External power sources
  - Apple ISDN Power Supply
  - Power source 2 (PS2)

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Tech Info Library Article Number:9020



# Tech Info Library

## Apple ISDN NB Card: Specifications (Discontinued)

Revised: 8/22/94  
Security: Everyone

Apple ISDN NB Card: Specifications (Discontinued)

=====  
Article Created: 25 October 1991  
Article Reviewed/Updated: 22 August 1994

TOPIC -----

This article gives technical specifications for the Apple ISDN NB Card.

DISCUSSION -----

### Hardware

- 
- NuBus card based on the Macintosh Coprocessor Platform
  - 68000 processor with 512K of RAM
  - RJ-45 connector for basic rate (2B+D) four-wire S-interface according to CCITT 1.430 specification
  - RJ-11 connector for support of standard DTMF telephone
  - Connector for external power supply
  - Built-in support for PS2 circuit power at the ISDN S-reference point

### Software

- 
- Compatibility with the AT&T 5ESS and Northern Telecom DMS-100 ISDN switches
  - V.110 rate adaption data speeds supported: 600, 1200, 2400, 3600, 4800, 7200, 9600, 14400, and 19200 bps
  - V.120 rate adaption data speeds supported: determined by the remote computer's terminal adapter, which also must use the V.120 protocol

### System Requirements

- 
- A Macintosh II computer running System 7. (The Macintosh IIsi requires a NuBus adapter.)
  - Basic rate interface lines that support one of the following ISDN basic rate lines or equivalent:
    - AT&T 5ESS
    - Northern Telecom DMS-100
    - An emulator or PBX that is compatible with one of the above switches
  - A basic analog telephone with DTMF dialing.
  - A telephone cord to connect your telephone to the RJ-11 connector on the ISDN NB Card.
  - Network terminating resistor. (It is recommended that a terminating resistor be used if there is more than 33 feet of cable between the network termination point [NT1] and the Apple ISDN NB Card.)

Note: The Apple ISDN NB Card is NOT ISDN-1 compliant.

#### Article Change History

-----

22 Aug 1994 - This product is discontinued.  
28 Oct 1992 - Revised to clarify the availability of this card.

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Tech Info Library Article Number:9021



# Tech Info Library

## MacTCP: Description (6/95)

Revised: 6/16/95  
Security: Everyone

MacTCP: Description (6/95)

Article Created: 25 October 1991  
Article Reviewed/Updated: 15 June 1995

TOPIC -----

This article describes MacTCP software.

DISCUSSION -----

For information on the current version of MacTCP, see the Tech Info Library articles, "TCP/IP Connection for Macintosh 2.0.4" and "MacTCP 2.0.4 to 2.0.6 Patch: Read Me, Release Notes."

With MacTCP software, developers can create Apple Macintosh applications for network environments that use the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

TCP/IP is a set of standards widely used for networking heterogeneous systems. MacTCP implements the User Datagram Protocol (UDP), TCP, and IP protocols, and conforms to Internet RFCs and MIL-STDs. This conformity ensures interoperability with systems on the TCP/IP Internet.

MacTCP is co-resident with the AppleTalk protocols and runs over both Ethernet- and LocalTalk-compatible cable systems. You can install it on a Macintosh Plus or later model Macintosh computer. It is compatible with System Software version 6.0.5 (or later) or version 7.x.

### Features

- TCP/IP protocol driver implementation
- Compatible with Macintosh Plus or later model Macintosh computers
- Concurrent TCP/IP and AppleTalk operation
- Both C and assembly-language interfaces

- Address configuration using the Control Panel interface
- Apple-supported driver

#### Benefits

-----

- Provides a standard platform for developing TCP/IP applications and solutions.
- Supports multiple concurrent TCP/IP services.
- Lets third-party developers create applications that can run on a range of Macintosh computers.
- Preserves full access to AppleTalk services. For example, users can run MacTCP while printing to an Apple LaserWriter printer over LocalTalk cable.
- Provides developers with a familiar development environment.
- Simplifies installation and setup procedures for users and network administrators.

#### Article Change History:

- 15 Jun 1995 - Added information on new versions of MacTCP.
- 25 May 1995 - Corrected information about System 6.0.5.

#### Support Information Services

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Tech Info Library Article Number:9022



# Tech Info Library

## MacTCP 1.x: System Requirements and Product Details (11/94)

Revised: 11/30/94  
Security: Everyone

MacTCP 1.x: System Requirements and Product Details (11/94)

=====

Article Created: 25 October 1991  
Article Reviewed/Updated: 30 November 1994

TOPIC -----

This article gives the system requirements for using MacTCP, and details about what MacTCP offers.

DISCUSSION -----

### System Requirements

-----

- for LocalTalk-compatible systems
  - A Macintosh Plus or later model Macintosh computer
  - System software version 6.0.5 or later and at least 1MB of memory, or system software version 7.0 and at least 2MB of memory
  - Appropriate LocalTalk-compatible cable connectors
  - A router with AppleTalk and TCP/IP support, such as the Shiva Corporation FastPath 5 or the Cayman Systems GatorBox CS
- for Ethernet-compatible systems
  - A Macintosh Plus or later model Macintosh computer
  - System software version 6.0.5 or later and at least 1MB of memory, or system software version 7.0 and at least 2MB of memory
  - An appropriate Ethernet interface card such as the Apple Ethernet NB Card

### Product Details

-----



MacTCP consists of object code libraries and associated files for both C and assembly-language development. Libraries include TCP and UDP interfaces along with a name-to-address resolver. A programmer's reference guide and an administrator's guide are provided.

The MacTCP driver allows for the addition of other data link layers through the use of a link layer interface between the IP layer and the data link layer of MacTCP. Examples of these data link layers include Token Ring (IEEE 802.5), Serial Line Internet Protocol (SLIP) -- RFC 1055, and Point-to-Point Protocol (PPP) -- RFCs 1171 and 1172. The link layer interface is described in the reference document Building Alternate Link Access Protocol Modules for MacTCP, available to Apple Partners and Apple Associates through the Developer CD Series.

#### Protocols

-----

MacTCP implements the following protocols:

- IP (RFCs 791, 894; MIL-STD 1777)
- UDP (RFC 768)
- TCP (RFC 793, MIL-STD 1778)
- ARP (RFC 826)
- RARP (RFC 903)
- ICMP (RFC 792)
- BootP (RFCs 951, 1048)
- RIP (IDEA004)
- DNS (RFCs 1034, 1035)
- Internet Subnetting (RFC 950)
- Internet Assigned Numbers (RFC 1010)

MacTCP complies with Requirements for Internet Hosts-Communication Layers (RFC 1122)

Throughput is 3.0 megabits per second memory-to-memory (on a Macintosh II-family computer over Ethernet).

#### Article Change History:

30 Nov 1994 - Changed title to better reflect the article.

#### Support Information Services

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Tech Info Library Article Number:9023



# Tech Info Library

## MacX25: Description

Revised: 11/1/91  
Security: Everyone

MacX25: Description

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Article Created: 25 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes MacX25 software.

DISCUSSION -----

MacX25 software links Apple Macintosh personal computers to packet-switched data networks (PSDN) supporting CCITT Recommendation X.25.

MacX25 server software allows you to set up a Macintosh as a single entry point to the PSDN. Access to host computers and end-user services on the PSDN is distributed from the server to Macintosh computers over the AppleTalk network system.

MacPAD software, included with MacX25, works in conjunction with the server software and provides packet assembler/disassembler (PAD) connectivity to the PSDN. MacPad is implemented as a connection tool for the Macintosh Communications Toolbox, and it allows terminal applications using the toolbox to connect to host systems on the PSDN.

MacX25 features an administrator's application that facilitates configuration and administration of the server. An address service allows administrators to set addressing details on the Macintosh server, presenting MacPAD users with a menu that lists available hosts and end-user services by name. Users connect to services simply by selecting the appropriate name -- they aren't required to know PAD commands and address numbers.

The MacX25 Programming Library (available separately) works in conjunction with the MacX25 server to provide X.25 access to applications, enabling developers to create Macintosh solutions that give users access to packet-

switched networks.

## Features

-----

- X.25 network access
- Conformance to International Telegraph & Telephone Consultative Committee (CCITT) recommendations
- Support for System software versions 6.0.7 and 7.0
- Server-based access
- Packet assembler/disassembler facility (MacPAD)
- Transfer of 8-bit characters using MacPAD
- Easy-to-use Address Book with a graphics-based user interface
- Graphics-based Administrator application
- User passwords

## Benefits

-----

- Provides Macintosh computer users with reliable wide area network connectivity.
- Provides universal interoperability with other X.25-conformant systems.
- Makes it easy to migrate from version 6 to version 7.
- Makes it easy to add and administer users.
- Reduces costs by maximizing use of expensive resources such as leased lines.
- Supports asynchronous terminal access to packet-switched networks.
- Allows use of MacX25 on international sites with European languages.
- Allows users to select an available service by name without having to learn traditional PAD commands.
- Facilitates software installation and administration of user access.
- Prevents unauthorized users from accessing the server.

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Tech Info Library Article Number:9024



# Tech Info Library

## MacX25: System Requirements and Product Details

Revised: 11/1/91  
Security: Everyone

MacX25: System Requirements and Product Details

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Article Created: 25 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article gives the system requirements for using MacX25 as well as details about what MacX25 offers.

DISCUSSION -----

### System Requirements

#### - MacX25 Server

To set up a MacX25 server, you need:

- Any modular Macintosh computer with an internal hard disk and at least 2MB of memory for System software version 6.0.7 (4MB of memory for version 7.0)
- Macintosh System software version 6.0.7 (or later) or version 7.0
- An Apple Serial NB Card with the appropriate RS-232-C or V.35 cable
- The appropriate cable connectors

To use MacX25 on an Ethernet or a token ring network, you need the appropriate interface card for your Macintosh.

#### - MacPAD

To use MacPad, you need:

- A Macintosh Plus computer or later model with at least 1MB of memory

for System software version 6.0.7 (2MB of memory for version 7.0)

- A terminal-service application that uses the Macintosh Communications Toolbox
- The appropriate cable connectors

To use MacPAD on an Ethernet or a token ring network, you need the appropriate interface card for your Macintosh.

## Product Details

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### - General Features

MacX25 supports:

- CCITT 1980 Compatible Mode
- CCITT 1984 Compatible Mode
- Packet Assembler/Disassembler (X.3, X.28, and X.29)
- Operation as a DTE
- Operation as a DCE
- Virtual Circuits: 64 maximum
- A single link for each Apple Serial NB Card
- Multiple cards for each modular Macintosh
- Operation at up to 19.2 Kbps with RS-232-C
- Operation at up to 64 Kbps with V.35
- Multiple servers for each AppleTalk network system

MacX25 doesn't support:

- Permanent Virtual Circuits
- X.32 switched circuit operation

### - Network Certification

MacX25 is certified for connection to Telenet, GEIS (GEISCO), and Tymnet networks; and in Europe, for Austria (DATEX-P), France (Transpac), Germany (DATEX-P), Italy (ITAPAC), the Netherlands (Datanet-1), Norway (DATAPAK), Sweden (DATAPAK), and Hong Kong (DATAPAK).

In addition, MacX25 can be used to connect to the public PSDN in Australia (Austpac), Canada (Datapac), Denmark (DATAPAK), and Switzerland (Telepac).

### - MacX25 Programming Library

The MacX25 Programming Library allows developers to create software solutions that provide users with access to a packet-switched data network. It works in conjunction with the MacX25 server to provide X.25 services to application programs.

The library is a toolkit, or collection of C language routines, that offers a high-level program interface for applications. Routines are

included for initiating and terminating contact with the MacX25 server, establishing and closing down a virtual circuit, passing data across an established circuit, and more. Technical support is available to Apple Partners and Associates.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9025



# Tech Info Library

## PowerBook Fax/Data Modem and AppleFax

Revised: 11/1/91  
Security: Everyone

PowerBook Fax/Data Modem and AppleFax

=====  
Article Created: 22 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Will the new Macintosh PowerBook Fax/Data Modem support data communication and file transfer with the AppleFax Modem? If it does, at what baud rate?

DISCUSSION -----

The Macintosh PowerBook Fax/Data Modem will not communicate with the old AppleFax Modem in standard data communication mode. The Macintosh PowerBook Fax/Data Modem is capable of sending facsimiles to the AppleFax Modem.

Page 92 of the "AppleFax Modem User's Guide" states the following:

"If you want, you can use a communications application as long as you're communicating with another AppleFax Modem. A communications application lets you transmit Macintosh files, type messages back and forth, and use the modem commands described in Appendix B."

The manual goes on to say (on page 92) what communications parameters the AppleFax Modem requires to successfully use a 9600-baud modem.

This means that the AppleFax Modem will allow you to transmit Macintosh files (text files, MacPaint files, PICT files, and so on) to another Macintosh at 9600 baud as long as both modems are AppleFax modems. It isn't necessary for both AppleFax Modems to use the same communication software as long as they support the same transfer protocol.

The AppleFax Modem does support a subset of the Hayes "AT" command set. For more information on this, look in Appendix B, which starts on page 137.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9026





# Tech Info Library

## LaserWriter IIg: AppleTalk Phase 2 on EtherTalk Network

Revised: 11/1/91  
Security: Everyone

LaserWriter IIg: AppleTalk Phase 2 on EtherTalk Network

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Article Created: 24 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

When an Apple LaserWriter IIg is connected to an EtherTalk network, is it an AppleTalk Phase 2 or AppleTalk Phase 1 node? I suspect that it is an AppleTalk Phase 2 node. Does this mean that it won't work on an AppleTalk Phase 1 EtherTalk network? Can it be changed to AppleTalk Phase 1 somehow?

DISCUSSION -----

The Apple LaserWriter IIg, when connected to an EtherTalk network, is an AppleTalk Phase 2 device only. There is no way to make it an AppleTalk Phase 1 device on an EtherTalk network.

To get the Apple LaserWriter IIg to work on an AppleTalk Phase 1 EtherTalk network, you need to set up an AppleTalk Phase 1/AppleTalk Phase 2 transition router on the EtherTalk network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9027



# Tech Info Library

## Autodesk

Revised: 7/1/93  
Security: Everyone

Autodesk

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Article Created: 10/25/91  
Article Reviewed: 07/01/93  
Article Updated: 12/04/92

Autodesk  
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2320 Marinship Way  
Sausalito, CA 94965

415-332-2344

415-331-8093 Fax

Company Profile:  
Software, specializing in CAD (computer-aided design) software.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9030



# Tech Info Library

## Quadra 900: Support for 8-Bit Sound

Revised: 8/6/92  
Security: Everyone

Quadra 900: Support for 8-Bit Sound

=====  
Article Created: 21 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

Does the Quadra 900 support 16-bit sound?

DISCUSSION -----

No. The Macintosh Quadra 900 supports 8-bit sound.

Sound in overview:

- Quadra 900 and 700 microphone inputs are monophonic.
- Quadra 900 external sound input takes in stereo sound and turns it into a single audio signal before recording by combining the two channels.
- Both Quadra models play stereo samples through Batman (an updated version of the Apple Sound Chip) if you have stereo samples from a third party. Otherwise everything comes out monophonic.

Note one exception: If you have an internal CD-ROM, stereo tracks "Play through" to the headphone output in stereo. If you record from an internal CD, it will be monophonic.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9031



# Tech Info Library

## AppleShare 3.0: Setting Up a Temporary Account

Revised: 11/1/91  
Security: Everyone

AppleShare 3.0: Setting Up a Temporary Account

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Article Created: 21 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I set up a user (name and password) for temporary use?

DISCUSSION -----

- 1) In the Server Preferences dialog box, set the number of days until the password expires.
- 2) Change the user's privileges so that he or she can't change the password.

The only drawback is that it forces all server clients to change their passwords. The added security may be worth it.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9032



# Tech Info Library

## AppleShare Drop Box: Access for System 6 and 7 Clients

Revised: 11/1/91  
Security: Everyone

AppleShare Drop Box: Access for System 6 and 7 Clients

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Article Created: 21 October 1991

### Article Change History

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08/19/92 - REVIEWED

- For technical accuracy; edited.

### TOPIC -----

If a System 7 user creates a drop box on an AppleShare server, a 6.0 user can't see it. Is there a fix?

### DISCUSSION -----

A System 7 user would not be able to see this folder either. The drop folder was created in an area where the user doesn't have access privileges. You must create a drop folder within a folder that the user can access. The folder itself cannot be the share point. Since a user can't "See Folders" on a drop folder, it makes sense that they would be unable to mount that folder as a share point.

Create a folder named "Drop Folders" with all privileges except "Make changes." Within that folder make your drop folder. That should solve the problem.

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Tech Info Library Article Number:9033



# Tech Info Library

## System 7: Opening System File 6.0.X from System 7

Revised: 9/11/92  
Security: Everyone

System 7: Opening System File 6.0.X from System 7

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Article Created: 18 October 1991

### Article Change History

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09/11/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

From my Macintosh running System 7, I opened a version 6.0.X System file to get a list of fonts, DAs, and sounds installed in that System file. With that window open, if I choose Page Setup or Print Window from the File menu, garbage is displayed on the right side of the menu bar in the Balloon Help and Application areas.

### DISCUSSION -----

Although you can open a version 6.0.X System file under System 7 to get a list of fonts, DAs, or sounds installed, don't choose Print Window or Page Setup for that window. When you open the System file on the version 6.0.X disk, System 7 tries to use the System resources from the version 6.0.X file -- the most recently opened resource file -- which causes unpredictable results, including displaying garbage in the menu bar.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:9034



# Tech Info Library

## Macintosh 21 Color Display: Meets Swedish Standards for ELF

Revised: 3/11/93  
Security: Everyone

Macintosh 21" Color Display: Meets Swedish Standards for ELF

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Article Created: 4 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does the Macintosh 21-inch Color Display meet the Swedish standards for ELF  
and VLF emissions?

DISCUSSION -----

Yes. The Macintosh 21-inch Color Display meets the Swedish MPR suggested  
limits for ELF and VLF magnetic and electric field emissions.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9035



# Tech Info Library

## Macintosh 21 Color Display: Shipping with CD-ROM

Revised: 5/19/94  
Security: Everyone

Macintosh 21" Color Display: Shipping with CD-ROM

=====

Article Created: 4 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why is Apple shipping a CD-ROM in the box with the Macintosh 21-inch Color Display?

DISCUSSION -----

The CD-ROM is full of color images, color clip art, screen savers, and demo versions of the most popular color software applications. With this disc, you can experiment with the latest in full color software and immediately take advantage of the features of the new display.

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9036





# Tech Info Library

## Macintosh 21 Color Display: Pixel Count (10/91)

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Pixel Count (10/91)

=====

Article Created: 4 October 1991

TOPIC -----

How much bigger is the Macintosh 21-inch Color Display compared to the standard AppleColor High-Resolution RGB Monitor (the 13-inch RGB)?

DISCUSSION -----

The Macintosh 21-inch Color Display offers a pixel area of 1152 x 870, over three times as much usable viewing area as the 13-inch High-Resolution RGB or VGA monitors, which have 640 x 480 pixels. In addition, the 21-inch Color Display offers 27 percent more screen area than 1024 x 768 monitors, such as 19-inch color displays and XGA-type monitors.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9037



# Tech Info Library

## Macintosh 21 Color Display: Color Calibrator Support (10/91)

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Color Calibrator Support (10/91)

=====

Article Created: 4 October 1991

TOPIC -----

How much bigger is the Macintosh 21-inch Color Display compared to the standard AppleColor High-Resolution RGB Monitor (the 13-inch RGB)?

DISCUSSION -----

The Macintosh 21-inch Color Display offers a pixel area of 1152 x 870, over three times as much usable viewing area as the 13-inch High-Resolution RGB or VGA monitors, which have 640 x 480 pixels. In addition, the 21-inch Color Display offers 27 percent more screen area than 1024 x 768 monitors, such as 19-inch color displays and XGA-type monitors.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9038



# Tech Info Library

## LaserWriter IIif & IIg: PhotoGrade, FinePrint & Microfine Toner

Revised: 11/4/91  
Security: Everyone

LaserWriter IIif & IIg: PhotoGrade, FinePrint & Microfine Toner

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

- 1) Do the LaserWriter IIif and IIg use microfine toner?
- 2) Is FinePrint different from H-P's RET?
- 3) How does PhotoGrade compare to RET and microfine toner?

DISCUSSION -----

- 1) The LaserWriter IIif and IIg don't use microfine toner, because they get excellent results using the same size toner as before.
- 2) While they function differently, FinePrint and RET are both designed to improve the quality of text and lines without affecting performance.
- 3) PhotoGrade is completely different from RET or microfine toner. RET smooths text and lines. It doesn't improve images. Microfine toner doesn't improve the resolution of images; it just has smaller average toner particles. Since a single 300-dpi dot uses a number of particles, smaller toner has minimal impact on print quality.

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Tech Info Library Article Number:9039



# Tech Info Library

## Macintosh 21 Color Display: Not Designed for PCs, UNIX 8/92

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Not Designed for PCs, UNIX 8/92

Article Created: 7 October 1991  
Article Reviewed/Updated: 31 August 1992

TOPIC -----

Can the Macintosh 21-Inch Color Display work with PC compatibles or UNIX workstations?

DISCUSSION -----

No. This display is designed and optimized to work only with the Macintosh. Apple designed the Macintosh hardware and software to take advantage of large screen size, multiple monitors, and millions of colors.

Windows and UNIX workstation displays offer pixel areas of 1024 x 768. This provides fewer than a million pixels, which won't display two full pages. The Macintosh 21-inch Color Display provides over a million pixels and offers 27% more viewing area than these displays.

The Macintosh graphics architecture is based on software, while the others (VGA, XGA, UNIX) are based on hardware specifications. This means that the Macintosh takes advantage of many different screen resolutions, while XGA is limited to 640 x 480 or 1024 x 768. The Macintosh architecture supports 24-bit color and multiple monitor configurations. The flexibility of the Macintosh software architecture makes 24-bit color, graphics acceleration, and pivoting displays available on the Macintosh platform.

Article Change History  
08/31/92 Reviewed for technical accuracy.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9041



# Tech Info Library

## Macintosh 21 Color Display: Shadow Mask Picture Tube (10/91)

Revised: 5/25/94  
Security: Everyone

Macintosh 21" Color Display: Shadow Mask Picture Tube (10/91)

=====

Article Created: 7 October 1991

TOPIC -----

Does the Macintosh 21-inch Color Display use a Trinitron picture tube?

DISCUSSION -----

No, this display uses a shadow mask tube. Compared to the 19-inch Trinitron, the 21-inch color display has a larger screen area, exceptional overall and corner focus, brightness uniformity, and the absence of moire interference effects.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9042



# Tech Info Library

## LaserWriter IIf and IIg: PC Connection

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: PC Connection

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Given the lack of a Centronics interface, how can I connect a LaserWriter IIf or IIg to an MS-DOS PC?

DISCUSSION -----

For this class of product, Ethernet and SCSI interfaces are more important than Centronics. Centronics was omitted due to space constraints.

Here are two ways for PCs to connect to the printer:

- The LaserWriter IIf and IIg support fast serial communication (up to 57K baud) for direct connection.
- LocalTalk cards from third parties enable PCs to share a LaserWriter.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9043



# Tech Info Library

## LaserWriter IIif and IIg: Not a New Print Engine

Revised: 10/31/91  
Security: Everyone

LaserWriter IIif and IIg: Not a New Print Engine

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why is the printing engine in the LaserWriter IIif and IIg the same as in previous LaserWriters?

DISCUSSION -----

Using the same engine, Apple can offer important new functionality to new customers, and to the installed base through an inexpensive board upgrade.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9044



# Tech Info Library

## LaserWriter IIg and IIc: All Ports Active vs QMS ESP

Revised: 10/31/91  
Security: Everyone

LaserWriter IIg and IIc: All Ports Active vs QMS ESP

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is Apple's "all ports active" the same as QMS's ESP?

DISCUSSION -----

Both Apple's "all ports active" and ESP allow connecting the printer's different ports at the same time. ESP goes the extra step of guessing what language is spoken (PCL or PostScript) and switching to that mode. "All ports active" allows reliable job switching in software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9045





# Tech Info Library

## LaserWriter IIf and IIg: Camera-Ready Art

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: Camera-Ready Art

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can prints from a LaserWriter IIf or IIg be copied or taken to offset  
press?

DISCUSSION -----

As with a photograph or high-quality print, PhotoGrade and FinePrint can be copied or used as camera-ready art. The resulting quality depends on the quality of the copy devices and processes. We see some degradation of quality. The printers can be set so they offer inferior originals that are more reproducible.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9046



# Tech Info Library

## LaserWriter IIf and IIg: How They Differ

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: How They Differ

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the difference between the LaserWriter IIf and IIg?

DISCUSSION -----

Both are based on the same design, but there are four major differences:

- The IIg has 5MB of RAM, which is the minimum required for PhotoGrade printing. The IIf can support PhotoGrade with the addition of a 4MB RAM Upgrade kit.
- Ethernet is built into the IIg. It is not available on the IIf.
- The processor on the IIg runs at 25Mhz compared to 20Mhz for the IIf.
- The IIf is less expensive.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9047



# Tech Info Library

## LaserWriter IIf & IIg: How FinePrint and TrueType Enhance Output

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf & IIg: How FinePrint and TrueType Enhance Output

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

- 1) Does FinePrint enhance text only, or graphics too?
- 2) What is the difference between TrueType and FinePrint?
- 3) Do the LaserWriter IIf and IIg sense differences between text and images?

DISCUSSION -----

- 1) FinePrint smooths all black and white objects including:
  - Text
  - Line graphics
  - Line-art scan
- 2) TrueType (or any outline font technology) scales text to look good at the printer resolution. FinePrint takes that high-quality 300-dpi text, and improves the quality further by eliminating the 300-dpi jaggies.
- 3) The printer differentiates between text and images, so that FinePrint smoothing is not performed on images. Smoothing images actually degrades the quality so it is critical to differentiate between these data types.

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Tech Info Library Article Number:9048



# Tech Info Library

## LaserWriter IIf and IIg: Hard Disk Support

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: Hard Disk Support

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

- 1) Will my existing LaserWriter IINTX hard disk work with a LaserWriter IIf or IIg?
- 2) What hard disks are supported?

DISCUSSION -----

- 1) Yes. Existing hard disks work with the LaserWriter IIf and IIg, but need to be reformatted.
- 2) We tested the LaserWriter IIf and IIg only with Apple's hard disks, but we expect these LaserWriters will work with any standard Macintosh SCSI-compliant hard disk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9049



# Tech Info Library

## LaserWriter IIf and IIg: LaserWriter Utility Software

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: LaserWriter Utility Software

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What does the LaserWriter Utility do?

DISCUSSION -----

The LaserWriter Utility performs the most common LaserWriter tasks, such as naming a printer, turning on/off the start page, and downloading fonts.

To support the new LaserWriter IIf and IIg, it's also used to adjust PhotoGrade and FinePrint, and configure the ports.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9050



# Tech Info Library

## LaserWriter IIf and IIg: No PC Software Is Included

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: No PC Software Is Included

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Do the LaserWriter IIf and IIg include software for PC users?

DISCUSSION -----

No, but the manual does document PC setup.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9051



# Tech Info Library

## LaserWriter IIf and IIg: Support for PCL

Revised: 10/31/91  
Security: Everyone

LaserWriter IIf and IIg: Support for PCL

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why don't the LaserWriter IIf and IIg support PCL Level 5?

DISCUSSION -----

Apple offers PCL support so non-PostScript applications can print. Most new applications support PostScript as well as PCL. PCL support is therefore most important with existing applications that support PCL 4.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9052



# Tech Info Library

## LaserWriter IIif and IIg: Advantages of PostScript Level 2

Revised: 10/31/91  
Security: Everyone

LaserWriter IIif and IIg: Advantages of PostScript Level 2

=====

Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why do the LaserWriter IIif and IIg use PostScript Level 2?

DISCUSSION -----

Adobe PostScript Level 2 provides four things:

- Compatibility with existing applications and drivers
- New features such as compression and caching
- Modular architecture that allows PhotoGrade, FinePrint, and Ethernet
- Improved performance

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9053





# Tech Info Library

## LaserWriter IIIf and IIg: No Support for Kanji

Revised: 9/25/92  
Security: Everyone

LaserWriter IIIf and IIg: No Support for Kanji

=====

Article Created: 7 October 1991

### Article Change History:

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09/24/92 - REVIEWED  
• For technical accuracy.  
09/25/92 - UPDATED  
• To clarify PostScript Kanji support.

### TOPIC -----

Do the LaserWriter IIIf and IIg support Kanji?

### DISCUSSION -----

No. The LaserWriter IIIf and IIg support Level-2 Post Script fonts.  
Currently no Japanese Level-2 Post Script fonts exist.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:9054



# Tech Info Library

## SNA•ps Gateway and 3270: File Transfer and Printer Support

Revised: 11/1/91  
Security: Everyone

SNA•ps Gateway and 3270: File Transfer and Printer Support

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I just installed a TokenTalk card and the SNA•ps gateway and 3270 applications in a Macintosh IIsi. It's connecting to a mainframe through an OS/2 LanServer. We want to do file transfer and make use of printers on the system. Does SNA•ps support these needs?

DISCUSSION -----

SNA•ps 1.0 supports IND\$FILE transfer to TSO, CMS, and CICS. The manual documents this. There is no file transfer to the LANServer, only through the IBM host.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9055



# Tech Info Library

## LaserWriter IIf and IIg: No Automatic Emulation Switching

Revised: 6/17/92  
Security: Everyone

LaserWriter IIf and IIg: No Automatic Emulation Switching

=====

Article Created: 7 October 1991  
Article Last Reviewed: 17 June 1992  
Article Last Updated: 17 June 1992

TOPIC -----

Does the LaserWriter IIf have auto-sensing for print emulation? The QMS 410 automatically senses HP PCL emulation, and switches the printer into HP PCL emulation mode following a Postscript print job. Does the LaserWriter IIf do this as well?

DISCUSSION -----

The LaserWriter IIf and IIg do NOT automatically sense, and change, emulation modes. The QMS 410 provides auto-sensing for print emulation. In other words, when you send it a print job, it determines what kind of job it is and switched the printer into that mode. If you send it a PostScript job it switches into PostScript mode. If you send it an HP PCL job it switches into that mode.

The LaserWriter IIf and IIg do not do this. You set their ports up ahead of time and whatever they are set up for it what they will accept. The trick thing the LaserWriter IIf and IIg do is let you have more than one connection to the printer (2 for the LaserWriter IIf, 3 for the LaserWriter IIg). Each connection can be a different type of job. The only way to change emulations is via a PostScript program or switch setting.

There is a big difference between auto-sensing and arbitration.

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Tech Info Library Article Number:9056



# Tech Info Library

## LaserWriter IIf and IIg: HP PCL 4+ Emulation

Revised: 11/1/91  
Security: Everyone

LaserWriter IIf and IIg: HP PCL 4+ Emulation

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Article Created: 7 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does the LaserWriter IIf emulate HP PCL 4 or 5?

DISCUSSION -----

The LaserWriter IIf and IIg have HP PCL 4+ emulation, which is equivalent to the LaserJet IIP.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9057



# Tech Info Library

## Apple OneScanner: Image Quality and dpi Ratings

Revised: 11/8/91  
Security: Everyone

Apple OneScanner: Image Quality and dpi Ratings

=====

Article Created: 9 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How does the Apple OneScanner's 300 dpi compare to the 600 or 800 dpi claimed by other vendors?

DISCUSSION -----

When other vendors claim 600 dpi or higher, they are usually referring to a combination of hardware (the true resolution of the scanner itself) and software interpolation. The OneScanner's hardware resolution is 300 dpi, which is more than adequate for the majority of common scanning, even for high-end printers such as imagesetters.

As for software interpolation, the Ofoto software allows scaling up to 16,000 dpi, which is much higher than anything commonly used. What matters is the quality of the resulting image, processed by both hardware and software.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9058



# Tech Info Library

## Apple OneScanner: HyperScan 2.0 New Features

Revised: 5/18/92  
Security: Everyone

Apple OneScanner: HyperScan 2.0 New Features

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Article Created: 9 October 1991  
Article Last Reviewed: 15 May 1992  
Article Last Updated:

TOPIC -----

How is HyperScan 2.0 different from the original HyperScan?

DISCUSSION -----

Here are the new features of HyperScan 2.0:

- HyperScan 2.0 allows scanning for variable sized cards.
- HyperScan 2.0 uses floating palettes for controls, making it easier to use.
- The exposure controls have been improved significantly.
- A HyperScan Help stack provides extensive on-line documentation and assistance.
- HyperScan 2.0 requires HyperCard 2.0 or later.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9059



# Tech Info Library

## Apple OneScanner: Image Editing Software

Revised: 11/8/91  
Security: Everyone

Apple OneScanner: Image Editing Software

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Article Created: 9 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Why doesn't the Apple OneScanner ship with image editing software, such as Photoshop or ColorStudio, as do most other scanners?

DISCUSSION -----

Image editing software isn't necessary for mainstream scanning. Other vendors require a multitude of image editing tools to adjust a scanned image to match the original, whereas Ofoto software automatically produces an accurate scanned image.

Image editing programs actually complement the OneScanner. Customers can benefit from those programs, but they aren't necessary for the basic purpose of getting an excellent scanned image.

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Tech Info Library Article Number:9060



# Tech Info Library

## Apple OneScanner: Printer Calibrations

Revised: 11/8/91  
Security: Everyone

Apple OneScanner: Printer Calibrations

=====

Article Created: 9 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Which calibrations come with the Apple OneScanner? What do users with non-Apple printers do?

DISCUSSION -----

The default set of calibrations include all Apple printers as well as the HP DeskWriter and PaintWriter, the Linotronic 300, and the Varityper VT600. Users can easily add additional calibrations via a simple process that involves printing out a built-in chart and scanning it back in.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9061





# Tech Info Library

## Apple OneScanner: Ofoto and HyperScan Software

Revised: 5/18/92  
Security: Everyone

Apple OneScanner: Ofoto and HyperScan Software

=====

Article Created: 9 October 1991  
Article Last Reviewed: 15 May 1992  
Article Last Updated:

TOPIC -----

Why does the OneScanner include two scanning applications, Ofoto and HyperScan?

DISCUSSION -----

Ofoto is the main scanning application. Ofoto provides the key benefits of one-button scanning and high-quality images. This is the application that most people will use most of the time.

HyperScan is specifically for users who create HyperCard stacks. HyperScan 2.0 is a HyperCard stack that scans images for use in other HyperCard stacks. It provides 1-bit (black and white) images for on-screen use.

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Tech Info Library Article Number:9062



# Tech Info Library

## SNA•ps 3270: Description (Discontinued)

Revised: 7/12/94  
Security: Everyone

SNA•ps 3270: Description (Discontinued)

Article Created: 30 October 1991

TOPIC -----

This article describes SNA•ps 3270 (Systems Network Architecture protocols and services) software.

DISCUSSION -----

SNA•ps 3270 is a 3270 display terminal emulation program that lets Macintosh computers communicate with IBM mainframes. It provides Control Unit Terminal (CUT) and Distributed Function Terminal (DFT) emulation of IBM 3270 Information Display Systems.

This application software works with the Apple Coax/Twinax Card, Apple TokenTalk NB Card, or Apple Serial NB Card installed in any Macintosh II system and supports up to five direct or AppleTalk distributed 3270 sessions. In an AppleTalk network with a SNA•ps Gateway installed, SNA•ps 3270 users can access host services using any Macintosh, including the Macintosh Plus, Macintosh Classic, Macintosh SE and SE/30, Macintosh LC, Macintosh Portable, and any Macintosh II system. You can access multiple gateways for concurrent access to multiple hosts.

It supports file transfer for text, binary, and Macintosh document transfers using the IBM IND\$FILE host software in the MVS/TSO, VM/CMS, and CICS environments. You can use the Clipboard to copy and paste between the Macintosh and mainframe.

### Features

-----

- 3270 terminal emulation for models 2, 3, 4, and 5
- Extended attribute support
- File transfer compatible with the IBM IND\$FILE standard
- NetView network management
- On-line help
- Keyboard remapping

- Configurable on-screen keypads
- Keystroke record and playback
- Support for all Macintosh platforms: compact, portable, and modular
- SNA/DFT sessions distributed over AppleTalk

#### Benefits

- Enables Macintosh users to access 3270-based applications.
- Provides display support for base and extended attributes and status line symbols.
- Allows users to move files between Macintosh and IBM System/370 hosts running MVS/TSO, VM/CMS, or CICS.
- Reports error conditions based on standard NetView alerts.
- Provides convenient help in configuring and running SNA•ps 3270.
- Allows users to create any layout of 3270 control keys on the attached Macintosh keyboard.
- Eliminates the need for the user to memorize the keyboard map.
- Allows definition of a string of frequently used keystrokes for automated host access.
- Provides a single, Apple-labeled 3270 emulation product for all Macintosh personal computers.
- Allows SNA access for Macintosh systems connected to AppleTalk networks.
- Enables background file transfers while running other Macintosh applications.

#### Product Details

##### 3270 Terminal Emulation

SNA•ps supports the following terminal types:

- 3178/3278 models 1, 2, 3, 4, 5, and C3
- 3278/3279 models 2, 3, 4, 5/S2A, S2B, S3A, and S3B
- 3180 model 1
- 3191/3192 Display Station models A, B, C, D, E, F, and L

##### 3270 Display Terminal Functions

It supports base and extended attributes, extended color support, and OIA status line symbols.

##### AppleTalk Gateway

SNA•ps 3270 runs as a client to an SNA•ps Gateway on the user's computer or on another computer connected to the AppleTalk network or internetwork.

##### Special Features

SNA•ps 3270 includes on-line help, keyboard remapping of 3270 control keys, on-screen keypads for easy access to frequently used 3270 keys, and keystroke recording and play-back for automating operations such as file transfers and electronic mail retrieval.

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Tech Info Library Article Number:9063



# Tech Info Library

## SNA•ps 3270: System Requirements and Product Details

Revised: 11/8/91  
Security: Everyone

SNA•ps 3270: System Requirements and Product Details

=====

Article Created: 30 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article provides product details on the SNA•ps 3270 application software, and system requirements for using SNA•ps 3270.

DISCUSSION -----

System Requirements

-----

To use SNA•ps 3270 for CUT or 5-session DFT, you need:

- A Macintosh II system
- An Apple Coax/Twinax Card, Apple TokenTalk NB Card, or Apple Serial NB Card
- Macintosh system software version 6.0.5 or later

To use SNA•ps 3270 as a client to an SNA•ps Gateway, you need:

- SNA•ps 3270 or SNA•ps 3270 GC
- A Macintosh Plus or later Macintosh system as the client computer
- A Macintosh II system running the SNA•ps Gateway software on your AppleTalk network
- Macintosh system software version 6.0.5 or later

On the IBM host, you must have the following IBM file transfer software:

- 5665-311 (3270-PC File Transfer Program for MVS)
- 5664-281 (3270-PC File Transfer Program for VM/SP)
- 5798-DQH (CICS/VS 3270-PC File Transfer Program)

#### Product Details

-----

- 3270 Terminal Emulation

SNA•ps supports the following terminal types:

- 3178/3278 models 1, 2, 3, 4, 5, and C3
- 3278/3279 models 2, 3, 4, 5/S2A, S2B, S3A, and S3B
- 3180 model 1
- 3191/3192 Display Station models A, B, C, D, E, F, and L
- 3270 Display Terminal Functions

SNA•ps 3270 supports base and extended attributes, extended color support, and OIA status line symbols.

- MultiFinder Compatibility

SNA•ps 3270 stays active in the background under MultiFinder, enabling file transfers to continue while you work with other 3270 sessions or local Macintosh applications.

- AppleTalk Gateway

SNA•ps 3270 runs as a client to a SNA•ps Gateway on the user's computer or on another computer connected to the AppleTalk network or internetwork.

- Special Features

SNA•ps 3270 includes on-line help, keyboard remapping of 3270 control keys, on-screen keypads for easy access to frequently used 3270 keys, and keystroke recording and playback for automating operations such as file transfers and electronic mail retrieval.

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Tech Info Library Article Number:9064



# Tech Info Library

## PowerBook Wins Usability Study (7/92)

Revised: 5/17/94  
Security: Everyone

PowerBook Wins Usability Study (7/92)

Article Created: 31 October 1991  
Article Reviewed/Updated: 31 July 1992

TOPIC -----

Apple's new Macintosh PowerBook notebook computers scored highest in a usability study conducted by an independent industrial design firm. The PowerBook models 170 and 100 won over eight competitive notebooks from Compaq, Toshiba, NEC, Sharp, Zenith, IBM, AT&T, and Zeos. The study involved more than 450 tests of design, ergonomics, functionality, portability, and ease of use.

DISCUSSION -----

### A New Approach

Most notebook computer reviews deal with "speeds and feeds," an approach more for technologists than for end users. Apple hired GVO, an independent design company not involved in any of the systems tested, to put the leading notebook computers through a series of real world usability tests, to quantify their designed-in advantages. They performed tests across the whole spectrum of notebook use: from the time the user first opens the box, through extended use in the office and in the field (including use in airplanes and cars).

### The NCAT (Notebook Computer Aptitude Test)

GVO specialists evaluated the machines according to four key criteria:

- Function/Purpose: How well the product fulfills the user's purpose
- Physical Fit: How well the product meets the user's ergonomic needs
- Learning/Understanding: How easy the product is to learn and understand
- Satisfaction: How satisfying the product is to see and to use

The study applied these values to out-of-the-box experience, installation and set-up, mechanics, initial use, long-term use, and use while travelling. In all, they conducted more than 450 individual design and usability tests,

including true size and weight of all necessary components, set-up and tear-down effort for movement, desktop and laptop footprint, briefcase fit, ergonomics, balance, fit & finish, durability, image, power management, screen viewing angle and visibility, typing, GUI navigation, and usability in the office, on an airplane and in a car. They graded individual tests on a scale of 0 to 4 (4 being the best), and averaged the grades to compute a final score, giving all tests equal weight.

#### The Results

-----  
The Macintosh PowerBooks ranked the highest. The overall scores on a scale of 0 to 4 (4 being the best) were:

|                           |      |
|---------------------------|------|
| Macintosh PowerBook 170:  | 3.07 |
| Macintosh PowerBook 100:  | 2.93 |
| AT&T Safari:              | 2.65 |
| Zeos 386SX:               | 2.35 |
| NEC Ultralite 286F:       | 2.29 |
| Toshiba T-2000SX:         | 2.28 |
| Zenith MasterSport 386SX: | 2.22 |
| Compaq 386S/20:           | 2.15 |
| Sharp 6641:               | 2.02 |
| IBM PS/2 L-40:            | 2.00 |

The PowerBook 140 wasn't included in the test due to its similarity to the PowerBook 170.

The DOS-based systems were equipped with Windows 3.0 and a Logitech TrackMan Portable track ball, in order to compare graphical environments.

#### Some Quotes From The Findings

-----  
"The PowerBook 170 and 100 represent the best notebook value available in the market today.

"The PowerBooks are easily the most portable and flexible of the 10 notebooks tested."

"Through a clever integration of engineering, design, and ergonomics, Apple has created the first notebook computers that can actually be used comfortably in someone's lap."

"The combination of small size, low weight, elegant design, integrated trackball, palm rests, active matrix LCD, and software-controlled floppy drive makes the PowerBook 170 the most usable, versatile, and desirable system tested."

#### Putting The Tests In Perspective

-----  
The Ingram benchmark study showed that the PowerBooks deliver faster performance than competitive notebooks running Windows 3.0. The NCAT gives evidence that the PowerBooks are more usable than the competition. And the DRI studies show what that means to users -- they say they are more productive and satisfied than



people who use PC clones running DOS or Windows 3.0.

About GVO

-----

GVO is an independent industrial design firm, located in Palo Alto, California. It was not involved in the design of any of the machines tested. GVO has designed other notebook computers, and is experienced in human engineering, electronics packaging, product planning, and cognitive psychology.

NOTE: If the NCAT results are to be used in a public document, our contract with GVO requires Competitive Analysis to review it first. Please send your drafts to COMPETITION.

Support Information Services

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Tech Info Library Article Number:9065



# Tech Info Library

## Macintosh Quadra 700 and 900: Recording 44kHz Sound

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra 700 and 900: Recording 44kHz Sound

=====

Article Created: 30 October 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

Is it possible to record 16-bit and 44kHz CD quality on a Quadra 700 or 900?

DISCUSSION -----

The Quadra's sound input is 8-bit linear PCM with analog limiting to enhance the power of the signal being digitized. The sample rate may be 22kHz or 11kHz. Therefore, to achieve 44kHz input, you'll need to obtain third-party hardware and software tools, such as those from Digidesigns, Inc. Information on Digidesigns' offerings may be found in buyer's guides, including the electronic buyer's guides on AppleLink.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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Tech Info Library Article Number:9067



# Tech Info Library

## Macintosh System Software: File Versions Since Ver 6.0.2 (4/95)

Revised: 4/4/95  
Security: Everyone

Macintosh System Software: File Versions Since Ver 6.0.2 (4/95)

=====

Article Created: 9 October 1991  
Article Reviewed/Updated: 04 April 1995

TOPIC -----

I need the version numbers of the key files shipped with each release of Macintosh system software since version 6.0.2.

DISCUSSION -----

Here's what you need:

|                              |       |
|------------------------------|-------|
| System Software 6.0.2        |       |
| Finder                       | 6.1   |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.1 |
| System                       | 6.0.2 |

|                              |       |
|------------------------------|-------|
| System Software 6.0.3        |       |
| Finder                       | 6.1   |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.3 |
| System                       | 6.0.3 |

|                              |       |
|------------------------------|-------|
| System Software 6.0.4        |       |
| Finder                       | 6.1.4 |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.4 |
| System                       | 6.0.4 |

|                              |       |
|------------------------------|-------|
| System Software 6.0.5        |       |
| Finder                       | 6.1.5 |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.5 |
| System                       | 6.0.5 |

System Software 6.0.6

|                              |       |
|------------------------------|-------|
| Finder                       | 6.1.6 |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.6 |
| System                       | 6.0.6 |

|            |                              |       |
|------------|------------------------------|-------|
| AppleColor | LaserWriter/LaserWriter Prep | 6.0.1 |
|------------|------------------------------|-------|

System Software 6.0.7

|                              |       |
|------------------------------|-------|
| Finder                       | 6.1.7 |
| LaserWriter/LaserWriter Prep | 5.2   |
| MultiFinder                  | 6.0.7 |
| System                       | 6.0.7 |

|            |                              |       |
|------------|------------------------------|-------|
| AppleColor | LaserWriter/LaserWriter Prep | 6.0.1 |
|------------|------------------------------|-------|

System Software 6.0.8

|                              |       |
|------------------------------|-------|
| Finder                       | 6.1.8 |
| LaserWriter/LaserWriter Prep | 7.0   |
| MultiFinder                  | 6.0.8 |
| System                       | 6.0.8 |

System Software 7.0

|             |     |
|-------------|-----|
| Finder      | 7.0 |
| LaserWriter | 7.0 |
| System      | 7.0 |

System Software 7.0.1

|             |       |
|-------------|-------|
| Finder      | 7.0   |
| LaserWriter | 7.0   |
| System      | 7.0.1 |

System Software 7.1

|             |       |
|-------------|-------|
| Finder      | 7.1   |
| LaserWriter | 7.1.2 |
| System      | 7.1   |

System 7.1.2

|             |        |
|-------------|--------|
| Finder      | 7.1.4  |
| LaserWriter | 7.1.2* |
| System      | 7.1.2  |

System 7.5

|              |       |
|--------------|-------|
| Finder       | 7.1.4 |
| LaserWriter8 | 8.1.1 |
| System       | 7.5   |

\* LaserWriter driver version 8.1.1 also ships with the Power Macintosh in the Apple Extras folder.

Article Change History

-----  
04 Apr 1995 - Updated to add System 7.5 information.

# ..TIL09068-Macintosh\_System\_Software-File\_Versions\_Since\_Ver\_6-0-2\_4-95.pdf

01 Apr 1994 - Updated to add System 7.1.2 information.

11 Feb 1993 - Updated to add System 7.1 information.

Support Information Services

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Tech Info Library Article Number:9068



# Tech Info Library

## Apple IIGS: Network Slot Assignments

Revised: 1/14/92  
Security: Everyone

Apple IIGS: Network Slot Assignments

=====

Article Created: 9 October 1991  
Article Last Reviewed: 14 January 1992  
Article Last Updated: 14 January 1992

TOPIC -----

You can often trace Apple IIGS network printing difficulties to the setting of slot assignments in the Control Panel.

DISCUSSION -----

Setting Correct Network Slot Assignments

-----

Here are the steps to set the proper network slot assignments:

- 1) Find the Apple IIGS ROM versions in the initial splash screen when you start the computer. The bottom line of that screen contains information noting either 01 or 03 version ROMs.
- 2) Open either the Apple IIGS Control Panel (Open Apple-Control-Escape) or the Graphic Control Panel (under the Apple Menu in the GS/OS menu bar).
- 3) Here are the correct slot settings:
  - For Apple IIGS systems with version 01 ROMs, set Slot 1 to "Your Card" and Slot 7 to "Built-in AppleTalk."
  - For Apple IIGS systems with version 03 ROMs, set Slot 1 or Slot 2 to "AppleTalk" and Slot 7 to "AppleTalk."

ProDOS 8 Applications

-----

Some ProDOS 8 applications require printer slot definition. In such applications, you need to select the appropriate slot within the

application's printer selection routine. For ROM 01 the appropriate slot for network printing will be slot 7. For ROM 03 the appropriate slot for network printing will be slot 1.

Other ProDOS 8 applications insulate the user from the need to select a specific slot. For example AppleWorks 3.0N uses a printer called "ImageWriter (AppleTalk)." The user often still needs to select a printer from within the application. However, these applications indicate that a printer is a network printer.

#### GS/OS Applications

-----

Applications that are GS/OS based (those that display the Graphic Control Panel) use the Control Panel (or the AppleShare Admin startup information) to select their printer. You don't need to set printer slot assignments within the application. They are handled by the operating system from the Control Panel settings (or the AppleShare Admin startup information).

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Tech Info Library Article Number:9069



# Tech Info Library

## Macintosh LC: Print, Copy, or Save Apple IIfx Card Screen

Revised: 11/8/91  
Security: Everyone

Macintosh LC: Print, Copy, or Save Apple IIfx Card Screen

=====

Article Created: 9 October 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated: 3 June 1992

TOPIC -----

How can I dump the screen of the Macintosh LC to an ImageWriter connected to the Modem Port while using the Apple IIfx Card in Apple IIfx mode? Cmd-Shift-4 reportedly doesn't work as it does under the Macintosh operating system.

DISCUSSION -----

Screen Dump to Printer

-----

The following procedure works with version 2.0 of the Apple IIfx Card software:

- 1) After launching the Apple IIfx Startup application, open the Apple IIfx Option Panel with Open Apple-Control-Escape (or Command-Control-Escape, for Macintosh users).

From the File menu, three options associated with the Apple IIfx screen are available:

- Show Apple IIfx Screen
- Save Apple IIfx Screen...
- Print Apple IIfx Screen...

From the Edit menu there is one option that is associated with the Apple IIfx screen:

- Copy Apple IIfx Screen

- 2) In the Apple IIfx Option Panel, select the Slots icon in the left side scrolling window. Place the Printer Card icon in an appropriate slot



(generally Slot 1).

NOTE: The icon labeled Serial Card with a plain printer icon is not the correct icon. The correct icon is labeled Printer Card. This icon has more printer detail.

- 3) Select the Printer Card icon in the left side scrolling window of the Option Panel. Then select the Chooser from the Apple menu. Choose the ImageWriter icon and select the Modem icon for the printer port. Close the Chooser.
- 4) To confirm the desired display of the Apple IIe screen, select the Show Apple IIe Screen item from the File menu. A reduced view of the Apple IIe screen displays in a Macintosh window. If the Apple IIe screen is 40 columns wide, the reduced view is readable. If the screen is 80 columns wide, the view is abstracted.
- 5) To print the Apple IIe screen, select the File menu item "Print Apple IIe Screen..." This brings up the Macintosh ImageWriter dialog. Click OK to print the Apple IIe screen to the ImageWriter.

#### Save Screen to Disk or Clipboard

-----  
In a similar manner, you can save the Apple IIe screen to a MacPaint file by selecting "Save II Screen..." from the File menu. Or you can copy the Apple IIe screen to the Macintosh Clipboard by selecting "Copy Apple IIe Screen" from the Edit menu.

Pressing Command-Shift-3 also saves the current screen to disk as a PICT file. Once you've saved the file, you can open MacPaint or any other paint program to print the PICT file.

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Tech Info Library Article Number:9070



# Tech Info Library

## Macintosh Monitors: Screen Size and Page Rulers Compared (10/95)

Revised: 10/12/95  
Security: Everyone

Macintosh Monitors: Screen Size and Page Rulers Compared (10/95)

Article Created: 15 October 1991  
Article Reviewed/Updated: 11 October 1995

TOPIC -----

When I run my word processing program on different size Macintosh monitors, the program displays the same ruler width.

Why does the 12-inch RGB monitor display the same ruler width as the 9-inch monitor?

DISCUSSION -----

Page rulers on a Macintosh monitor is determined by the number of pixels available, not by the physical screen size. The Macintosh Classic (and other compact Macintosh 9-inch screens) and the 12-inch RGB monitor are 512 pixels wide, so they display the same ruler length.

Even though the ruler width of the two monitors is the same, the 9-inch monitor is 342 pixels tall, while the 12-inch RGB monitor is 384 pixels tall. The 13-inch RGB monitor and the 12-inch monochrome monitor are 640 pixels wide and 480 pixels tall.

This article was published in the "Information Alley":  
Volume II, Issue 12, Page 19

### Article Change History:

11 Oct 1995 - Revised entire article to better describe situation.  
05 Oct 1995 - Added Info Alley information; updated article.  
20 Mar 1995 - Minor typographical error.

Support Information Services

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Tech Info Library Article Number:9071



# Tech Info Library

## Ofoto 2: Improved Copy and Paste Function (6/93)

Revised: 6/2/93  
Security: Everyone

Ofoto 2: Improved Copy and Paste Function (6/93)

Article Created: 30 October 1991

### Article Change History

06/02/93 - REPLACED & RETITLED

- Article talks about improvements of Ofoto 2 over Ofoto 1.

### TOPIC -----

This article compares the RAM requirements for copy and paste in Ofoto versions 1 and 2.

### DISCUSSION -----

The cut, copy, and paste functions of Ofoto 1 versions weren't optimized for working with other applications. For example, if you scanned a 4 x 5 inch, 300dpi gray scale image, and selected and copied it while in Ofoto, it was difficult to exit Ofoto and enter another application to paste the image. You'd frequently see the error "Not enough memory to export this Clipboard" with Ofoto 1 versions. This operation required large amounts of RAM and disk space.

Ofoto 2 completely redesigned the cut, copy, and paste code. It's now possible to copy large, full color (as well as gray scale) images in Ofoto and move to another program to paste them in. It no longer requires large amounts of RAM and disk space.

On a related issue, the 2048K suggested partition size for Ofoto is a good beginning. However, a larger partition improves performance for all functions of Ofoto, not just for copy and paste.

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Tech Info Library Article Number:9072



# Tech Info Library

## LaserWriter IINT, IINTX, and Personal LaserWriter NT: Font IDs

Revised: 11/8/91  
Security: Everyone

LaserWriter IINT, IINTX, and Personal LaserWriter NT: Font IDs

=====

Article Created: 9 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I need the Adobe library numbers of the fonts in the ROMs of the LaserWriter IINT, IINTX, and Personal LaserWriter NT. I will buy additional fonts, but don't want to duplicate those already in the LaserWriter.

DISCUSSION -----

The Helvetica, Times, Symbol and Courier included with the LaserWriter printers mentioned don't have numbers; they are available only with ATM. ATM users are probably the only ones who would ever want a PostScript version of the font, since ATM uses the PostScript font to create the on-screen representation.

Here are the font library numbers for the others:

| Font Number | Font                   |
|-------------|------------------------|
| -----       | ----                   |
| 1           | Palatino               |
| 2           | ITC Bookman            |
| 3           | ITC Zapf Chancery      |
|             | ITC Zapf Dingbats      |
| 4           | ITC Avant Garde Gothic |
| 5           | New Century Schoolbook |

None of the font libraries has Helvetica Narrow.

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Tech Info Library Article Number:9075



# Tech Info Library

## LaserWriter IIf and IIg: Require 80ns RAM

Revised: 11/12/91  
Security: Everyone

LaserWriter IIf and IIg: Require 80ns RAM

=====

Article Created: 9 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I know that I can use standard IIci-style 80ns memory in the LaserWriter IIf and IIg. Can I safely use slower memory (for example, 100 or 120 ns)?

DISCUSSION -----

No. Both the LaserWriter IIf and IIg require IIci-style RAM, rated at 80ns or better and supporting Fast Page LaserWriter IIf and IIg: Require 80ns RAM

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Tech Info Library Article Number:9076



# Tech Info Library

## Apple Remote Access: Multiple Clients (11/94)

Revised: 11/11/94  
Security: Everyone

Apple Remote Access: Multiple Clients (11/94)

=====

Article Created: 29 October 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

Can AppleTalk Remote be run on a Macintosh II computer that accepts several inputs from various modems, maybe with some NuBus boards?

DISCUSSION -----

The 1.x version of AppleTalk Remote Access was not designed for this capability, and we don't know of any way of modifying it for this purpose.

The Apple Remote Access 2.0.1 Multi Port Server will allow multiple clients to log in however. Search the Tech Info Library on the Multi Port Server for additional information on that product.

Article Change History:  
11 Nov 1994 - Included info on new product.

Support Information Services

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Tech Info Library Article Number:9077



# Tech Info Library

## AppleTalk Remote Access: Setting Up Security Zones

Revised: 11/8/91  
Security: Everyone

AppleTalk Remote Access: Setting Up Security Zones

=====

Article Created: 1 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have these questions about setting up a security zone:

- 1) Can I change any part of the name? For instance, change the first 3 letters to conform with our naming convention.
- 2) If two or more security zones are introduced to the network, do I have to type multiple passwords? If I have one password, will it work for the entire network? Is it possible for two security zones to be on the network?
- 3) If I create a security zone with a password to set up the network properly, and the zone goes away, does the password continue to work? If a second zone is then introduced, will it continue to function or will I need a new password?

DISCUSSION -----

- 1) No part of the SecurityZone name can deviate from that produced by the Security Stack. There are three characters that could be used before the 32-character zone name limit is exceeded, but then the AppleTalk Remote Access stations won't recognize it as a security zone.
- 2) You can have up to 16 security zones on a network. Each must have a different password (implied due to zone naming rules), and a user setting up a server need only know one of them. The software will search the entire zone list for a security zone with a matching password. This allows the administrator to group authorized servers and enable or disable groups as needed.



- 3) Just to clarify, a security zone will affect any AppleTalk Remote Access station on the same AppleTalk network, be it a LAN or WAN. The entire zone list is searched, and if a security zone is present, a password will be required. This is checked both at the time the answering station is set up, and during each connection attempt.

If you set up the answering station while disconnected from the network, the software wouldn't see the zone, and wouldn't ask for the password. But once you reconnected, and a remote user dialed in, the software would see the security zone and disable remote access. The same would happen if the security zone were set up after a station was set up to answer calls.

Also, there is a potentially annoying problem with the Security Stack used to generate the DES encrypted zone name. The field used to display the password is a couple of pixels too narrow and truncates the last character of the encrypted password. If you create a zone with this errant zone name, none of the answering stations will recognize it as a security zone.

The way to fix this is to widen the field slightly so the final character is visible. Use the HyperCard field tool (in authoring mode) to stretch the field bounds as needed, or enter the following command from the message window. It will correct the Zone field width to show the entire zone name.

```
set width of cd fld "Zone" to 236
```

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Tech Info Library Article Number:9079



# Tech Info Library

## AppleTalk Remote Access: HayesConnect Requires Update (1/95)

Revised: 1/31/95  
Security: Everyone

AppleTalk Remote Access: HayesConnect Requires Update (1/95)

=====

Article Created: 30 October 1991  
Article Reviewed/Updated: 31 January 1995

TOPIC -----

I installed the AppleTalk Remote Access 1.0. There seems to be a conflict with my internal Hayes 2400M modem and the HayesConnect serial port redirector CDEV. When I try to connect with AppleTalk Remote Access, it informs me that another application is using the serial port. When I try to use AppleLink 6.1, and click OK to require the serial port, AppleLink quits and my Macintosh freezes. All goes well if I remove all AppleTalk Remote Access files.

### Configuration:

- Macintosh IICx with 8MB memory
- System software version 7.0
- HayesConnect CDEV 1.0D

DISCUSSION -----

A bug exists in the HayesConnect serial port redirector. It is recommended that you contact Hayes Microcomputer for an update.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

### Article Change History:

31 Jan 1995 - Changed access privileges of article.

Support Information Services

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Tech Info Library Article Number:9081



# Tech Info Library

## PowerBook: Battery DA Manual Correction (6/92)

Revised: 5/17/94  
Security: Everyone

PowerBook: Battery DA Manual Correction (6/92)

Article Created: 30 October 1991  
Article Reviewed/Updated: 1 June 1992

TOPIC -----

The Battery DA is programmed to "lose" the lightning bolt when the battery goes into trickle charge. This isn't an intuitive course for the Battery DA to follow. The user's manual on page 96 says that "when the power adapter is plugged in, the Battery DA will show a lightning bolt through the battery graphic." This is not happening.

DISCUSSION -----

The PowerBook user manuals are being updated to address errors that were discovered, including the one you've identified. Current product inventory will still have the original manuals.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9082



# Tech Info Library

## SUM: Don't Install on a Server

Revised: 11/8/91  
Security: Everyone

SUM: Don't Install on a Server

=====

Article Created: 31 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've received these two similar problem reports:

- 1) I have the SUM Shield INIT installed on my Macintosh. When I try to trash a file or folder while file sharing with another Macintosh, my system freezes.
- 2) I have the SUM Shield INIT installed on my server. Whenever I try to trash anything on the server from a Macintosh on the network, I get an error message saying that the item could not be found.

DISCUSSION -----

According to Symantec, the solution is to not install SUM on a server. This problem happens when both the client and the server have the SUM Shield INIT in their System Folders. The SUM software is not intended for use on a server.

On AppleLink, you can find contact information on Symantec by clicking the "Library Index" button in the lower-center of the Tech Info Library search window, then opening the "Third Party Company Directory" folder.

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Tech Info Library Article Number:9083



# Tech Info Library

## System 7: Floppy Disk Copy Anomaly

Revised: 1/4/96  
Security: Everyone

System 7: Floppy Disk Copy Anomaly

=====

Article Created: 31 October 1991  
Article Reviewed/Updated: 21 November 1995

TOPIC -----

I copied a floppy disk by dragging it onto another floppy disk and got some strange results.

The original disk had one folder with two files in it and another file on the same level as the folder. When I opened the duplicate disk after the copy was complete, it had the folder with the two files in it and three files on the same level as the folder: the original file plus a copy of each file in the folder.

DISCUSSION -----

Although we couldn't reproduce this consistently, we determined that this happens only when the original floppy disk is set to view in outline format. When the outline format is closed, the disk copy performs as usual.

This problem only occurred with the first release of System 7.

Article Change History:  
21 Nov 1995 - Reviewed for technical accuracy.  
09 Nov 1992 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:9084



# Tech Info Library

## System 7: How to Avoid PrintMonitor Corruption

Revised: 5/23/95  
Security: Everyone

System 7: How to Avoid PrintMonitor Corruption

Article Created: 31 October 1991

### Article Change History

09/21/92 - UPDATED

- To provide information about System 7 Tune-Up and LaserWriter driver version 7.1.1.

### TOPIC -----

This article lists several steps to follow to help you avoid PrintMonitor corruption.

### DISCUSSION -----

The primary reason for corruption of the System 7 PrintMonitor is the LaserWriter driver version 7.0. The best way to avoid problems with PrintMonitor in the future is to install System 7 Tune-Up, which contains version 7.1.1 of the LaserWriter driver (or a version of system software greater than 7.01).

If you have not obtained and installed System 7 Tune-Up yet, or you think your PrintMonitor may be corrupted despite Tune-Up, follow the steps below.

- 1) Remove any jobs that are printing or are waiting to be printed from the PrintMonitor Documents folder.
- 2) Reinstall the Printing software.
- 3) Launch PrintMonitor and from the File menu select Preferences.
- 4) Configure PrintMonitor to display its window when printing by clicking the Yes button for that item.

- 5) Click the PrintMonitor application, and from the File menu select Get Info.
- 6) Increase the amount of memory allocated to PrintMonitor by increasing the amount of RAM shown for the Current size item of the Memory box in the Get Info window. We suggest doubling the 80K default allocation if you have that amount of memory available. Remember, this new amount of RAM needs to be available for background printing to start.
- 7) Lock the Get Info window by clicking the Locked box and close the window.
- 8) Create a new folder in the root level of your hard disk called PrintMonitor Backup. Option-drag a copy of the newly configured PrintMonitor to the PrintMonitor Backup folder.
- 9) Ensure that Background Printing is selected in the Chooser and restart your Macintosh.

#### Notes

-----

- DO NOT quit the PrintMonitor application when a job is printing (with System 7 Tune-Up and LaserWriter 7.1.1 this is no long a problem).
- If you suspect your PrintMonitor application has become corrupted:
  - 1) Trash your original version of PrintMonitor. (Remember to unlock it via the Get Info window first.)
  - 2) Option-drag a copy of the uncorrupted PrintMonitor application from the PrintMonitor Backup folder to the Extensions folder.

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Tech Info Library Article Number:9085



# Tech Info Library

## Macintosh Quadra: Ethernet Buffer Size

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra: Ethernet Buffer Size

=====

Article Created: 5 November 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

How large are the Ethernet buffers on the Macintosh Quadra computer's built-in Ethernet?

DISCUSSION -----

The send and receive buffers for the Macintosh Quadra computer's built-in Ethernet are 8 packets each. The maximum packet size is 1500 bytes, so that is 8 x 1500, which equals 12,000 bytes each.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9086





# Tech Info Library

## PowerBook: Sleep Mode Power Draw (7/92)

Revised: 5/16/94  
Security: Everyone

PowerBook: Sleep Mode Power Draw (7/92)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 31 July 1992

### TOPIC -----

How long do the batteries last in the Macintosh PowerBook 100, 140, and 170 when in sleep mode?

### DISCUSSION -----

With a full charge, you can expect the batteries in the Macintosh PowerBook family to sleep-discharge down to the software shutdown level in approximately 7 days. The actual number of days may vary depending on the battery and the Macintosh PowerBook.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9087



# Tech Info Library

## LaserWriter II: New Toner Cartridge Characteristics

Revised: 11/22/91  
Security: Everyone

LaserWriter II: New Toner Cartridge Characteristics

=====

Article Created: 8 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've heard that Apple has been shipping a toner cartridge with new toner for the LaserWriter II for some time. How is this toner cartridge different from the former toner cartridge? Is there a new or updated Safety Data Sheet for this toner?

DISCUSSION -----

Several months before the introduction of the Apple LaserWriter IIg and LaserWriter IIx, Apple started shipping a new toner cartridge for the LaserWriter II family of printers. This new toner cartridge has an improved mechanism that provides more consistent feeding of toner to the paper. This is only noticeable when printing gray scale on the Apple LaserWriter IIg and LaserWriter IIx. There was also a change in the cartridge that helps prevent toner leaks.

Any toner cartridges that you find in stores today will be of the new variety. Externally, there is no way to tell the old cartridge from the new one.

There is no change to the Materials Safety Data Sheet.

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Tech Info Library Article Number:9088



# Tech Info Library

## Quadra Series, Centris Series: Displays, Video Pinouts (8/93)

Revised: 8/10/93  
Security: Everyone

Quadra Series, Centris Series: Displays, Video Pinouts (8/93)

Article Created: 7 November 1991  
Article Reviewed/Updated: 5 August 1993

TOPIC -----

This article details how to wire the video connector sense pins to access all the supported video modes of the Macintosh Quadra series and the Macintosh Centris series.

DISCUSSION -----

The Macintosh Centris and Quadra frame buffer determines what type of display is attached to the video connector by examining the state of 3 sense line pins. The following chart details how these three pins must be wired for each of the supported display types. For each supported display, the screen resolution (horiz. pixels X vertical pixels), bandwidth, and the vertical and horizontal scan rates are listed.

The Macintosh Quadra series and the Macintosh Centris series should support any display, whether from Apple or from another vendor, that meets one of the following specifications:

STANDARD SENSE CODES:

| Display            | Sense pins |       |       | Hor x Vert<br>(Pixels) | Band<br>Width<br>(MHz) | Vert<br>Refrsh<br>(Hz) | Horiz<br>Refrsh<br>(KHz) |
|--------------------|------------|-------|-------|------------------------|------------------------|------------------------|--------------------------|
|                    | 10         | 7     | 4     |                        |                        |                        |                          |
| -----              | -----      | ----- | ----- | -----                  | -----                  | -----                  | -----                    |
| Apple 21 Color     | 0          | 0     | 0     | 1152 x 870             | 100                    | 75                     | 68.7                     |
| Apple Portrait     | 0          | 0     | 1     | 640 x 870              | 57.2832                | 75                     | 68.9                     |
| 12" AppleColor RGB | 0          | 1     | 0     | 512 x 384              | 15.6672                | 60.15                  | 24.48                    |
| Apple 2-Page Mono. | 0          | 1     | 1     | 1152 x 870             | 100                    | 75                     | 68.7                     |

|      |   |   |   |                   |         |       |      |
|------|---|---|---|-------------------|---------|-------|------|
| NTSC | 1 | 0 | 0 | underscan-512x384 | 12.2727 | 59.94 | 15.7 |
|      | 1 | 0 | 0 | overscan- 640x480 | 12.2727 | 59.94 | 15.7 |

(To produce a color NTSC signal, a RGB-to-NTSC converter is required.)

|                               |   |   |   |           |       |      |      |
|-------------------------------|---|---|---|-----------|-------|------|------|
| 12" Apple High-Res Monochrome | 1 | 1 | 0 | 640 x 480 | 30.24 | 66.7 | 35.0 |
| 13" AppleColor High-Res RGB   | 1 | 1 | 0 | 640 x 480 | 30.24 | 66.7 | 35.0 |

|                                    |  |  |  |           |       |    |      |
|------------------------------------|--|--|--|-----------|-------|----|------|
| Apple 16" Color Disp. (See Note 4) |  |  |  | 832 x 624 | 57.63 | 75 | 49.7 |
|------------------------------------|--|--|--|-----------|-------|----|------|

|                                |   |   |   |           |         |    |      |
|--------------------------------|---|---|---|-----------|---------|----|------|
| Portrait Color, such as Radius | 1 | 0 | 1 | 640 x 870 | 57.2832 | 75 | 68.9 |
|--------------------------------|---|---|---|-----------|---------|----|------|

#### NOTES:

- 1) NOTE: Sense pins 4, 7, and 10 are referred to as MON.ID1, MON.ID2, and MON.ID3 in the Macintosh Quadra pinout table or SENSE0, SENSE1, and SENSE2 in pinout tables for the video connectors.

A sense pin value of 0 means that pin should be grounded to the C&VSYNC.GND signal; a value of 1 means do not connect the pin.

- 2) Extended sense codes will be examined if the following sense code is detected: 1 1 1.
- 3) The terms 'underscan' and 'overscan' are used to describe the active video resolution for NTSC and PAL modes. Underscan means that the active video area appears in a rectangle centered on the screen with a black surrounding area. This ensures that the entire active video area always is displayed on all monitors. Overscan utilizes the entire possible video area for NTSC or PAL. However, most monitors or televisions will cause some of this video to be lost beyond the edges of the display, so the entire image will not be seen.
- 4) The Apple 16" Color Display should have pins 4 and 10 tied together and pin 7 should be unconnected. If used with a Macintosh Display Card, the Apple 16" Color Display also requires the Macintosh Display Card 4•8, 8•24, or 8•24 GC with revised ROMs.

#### EXTENDED SENSE CODES:

NOTE for extended sense codes: Sense pin pair value of 0 means those pins should be tied together (as opposed to grounding 10, 7, or 4 to pin 11); value of 1, do not connect. DON'T wire any of these pins to ground.

| Display                                 | Sense pins<br>4-10 10-7 7-4 | Hor x Vert<br>Pixels | Bandwidth<br>(MHz) | Refresh<br>(Hz) | Scan<br>(KHz) |
|-----------------------------------------|-----------------------------|----------------------|--------------------|-----------------|---------------|
| -----                                   | -----                       | -----                | -----              | -----           | -----         |
| 16-inch Color,<br>such as<br>E-Machines | 0 1 1                       | 832 x 624            | 57.2832            | 75              | 49.7          |

PAL

---

PAL has two wiring options, using the extended sense pin configuration. To produce a color PAL signal, an RGB-to-PAL converter is required.

|              |   |   |   |                   |       |    |        |
|--------------|---|---|---|-------------------|-------|----|--------|
| PAL Option 1 | 0 | 0 | 0 | underscan-640x480 | 14.75 | 50 | 15.625 |
|              |   |   |   | overscan-768x576  | 14.75 | 50 | 15.625 |

|              |   |   |   |                   |       |    |        |
|--------------|---|---|---|-------------------|-------|----|--------|
| PAL Option 2 | 1 | 1 | 0 | underscan-640x480 | 14.75 | 50 | 15.625 |
|              |   |   |   | overscan-768x576  | 14.75 | 50 | 15.625 |

This sense code also requires a diode between sense pins 10 and 7, with anode towards pin 7, cathode towards pin 10.

#### NOTES:

- The Macintosh Quadra 700 and 900 support PAL Option 1 at up to 8 bpp.
- The Macintosh Centris 610, 650, and Quadra 800 support PAL Option 1 at up to 16 bpp.
- The Macintosh Quadra 950 supports PAL Option 1 up to millions of colors.

|     |   |   |   |           |        |       |       |
|-----|---|---|---|-----------|--------|-------|-------|
| VGA | 1 | 0 | 1 | 640 x 480 | 25.175 | 59.95 | 31.47 |
|-----|---|---|---|-----------|--------|-------|-------|

|           |   |   |   |           |    |    |       |
|-----------|---|---|---|-----------|----|----|-------|
| Super VGA | 1 | 0 | 1 | 800 x 600 | 36 | 56 | 35.16 |
|-----------|---|---|---|-----------|----|----|-------|

To enable Super VGA, after configuring and connecting the monitor for VGA, open the monitor's control panel and select Options. Choose Super VGA from the dialog and restart your system.

|           |   |   |   |            |    |    |       |
|-----------|---|---|---|------------|----|----|-------|
| 19" Color | 1 | 1 | 0 | 1024 x 768 | 80 | 75 | 60.24 |
|-----------|---|---|---|------------|----|----|-------|

No external monitor

|                |   |   |   |
|----------------|---|---|---|
| (video halted) | 1 | 1 | 1 |
|----------------|---|---|---|

#### MACINTOSH QUADRA AND CENTRIS VIDEO PINOUTS:

| Pin   | Signal      | Description                              |
|-------|-------------|------------------------------------------|
| ----- | -----       | -----                                    |
| 1     | RED.GND     | Red Video Ground                         |
| 2     | RED.VID     | Red Video                                |
| 3     | CYSNC~      | Composite Sync                           |
| 4     | MON.ID1     | Monitor ID, Bit 1 (also known as SENSE0) |
| 5     | GRN.VID     | Green Video                              |
| 6     | GRN.GND     | Green Video Ground                       |
| 7     | MON.ID2     | Monitor ID, Bit 2 (also known as SENSE1) |
| 8     | nc          | (no connection)                          |
| 9     | BLU.VID     | Blue Video                               |
| 10    | MON.ID3     | Monitor ID, Bit 3 (also known as SENSE2) |
| 11    | C&VSYNC.GND | CSYNC & VSYNC Ground                     |
| 12    | VSYNC~      | Vertical Sync                            |
| 13    | BLU.GND     | Blue Video Ground                        |
| 14    | HSYNC.GND   | HSYNC Ground                             |
| 15    | HSYNC~      | Horizontal Sync                          |

Shell CHASSIS.GND Chassis Ground

IF YOUR MONITOR IS A VGA TYPE, YOU CAN TRY THE FOLLOWING CABLE PINOUTS:

A cable wired as follows may allow many different brands of VGA monitors to work on a Macintosh Quadra. We advise you to test the monitor on a Macintosh Quadra prior to purchase to see if it meets your expectations.

| Macintosh Video | VGA Connector                                       |
|-----------------|-----------------------------------------------------|
| DB-15           |                                                     |
| -----           | -----                                               |
| 2 -----         | Red Video ----- 1                                   |
| 1 -----         | Red Ground ----- 6                                  |
| 9 -----         | Blue Video ----- 3                                  |
| 13 -----        | Blue Ground ----- 8                                 |
| 5 -----         | Green Video ----- 2                                 |
| 6 -----         | Green Ground ----- 7                                |
| 15 -----        | Hsync ----- 13                                      |
| 12 -----        | Vsync ----- 14                                      |
| 14 -----        | Sync Ground ----- 10                                |
| 10 ----- | \| |
| 7 ----- | \| Connect 7 and 10 so the sense pin ID will equal VGA |

There are a few issues to keep in mind with VGA monitors:

- VGA monitors will vary depending on the vendor. Check with the vendor about Macintosh Centris and Quadra compatibility before buying, or better yet, actually try the monitor with a Centris or Quadra to see if it works and if the quality is acceptable.
- Vendors have different image quality specifications. There may be significant differences between Apple monitors and the wide range of VGA monitors. Do a side-by-side comparison of the monitors you are considering before buying.
- Many third party cable vendors have off-the-shelf cables that should work.

MACINTOSH QUADRA TO NTSC VIDEO CABLE EXAMPLE:

Most NTSC devices use a RCA-type phono-connector and the following diagram uses that as a reference point. A cable wired as follows may allow many different brands of NTSC monitors to work on a Macintosh Centris or Quadra. We advise you to test the monitor on one of these machines prior to purchase to see if it meets your expectations.

Adjust the phono-connector side to whatever type of connector is used (RCA, BNC, etc.). "Tip" is the pin in the center of the connector (the signal); the sleeve is the flange around the outer edges of the connector (the chassis ground).

| Card Connector |                     | RCA-Type Phono-Connector |          |
|----------------|---------------------|--------------------------|----------|
| -----          |                     | -----                    |          |
| 4              | MON.ID1 (sense0) --\| |  |  |
| 7              | MON.ID2 (sense1) --\| |  |  |
| 11             | C&VSYNC.GND -----\| |  |  |
|                |                     |                          |          |
| 5              | GRN.VID ----->      | Tip                      | (signal) |
| Shell          | CHASSIS.GND ----->  | Sleeve                   | (ground) |

By grounding pin 4 and pin 7 to pin 11, the Macintosh Centris and Quadra CPUs are told that an interlaced (NTSC) monitor is attached. The actual black and white video signal is on pin 5 and connects to the center (Tip) of the phono-plug. The shell of the card connector connects to the sleeve of the phono-plug.

To acquire a color NTSC signal from a Quadra (or any Apple Macintosh display card), an RGB-to-NTSC converter is required, such as those available from RasterOps, Truevision, and Computer Friends. We do not have the cable requirements for any of these interface devices.

#### Article Change History:

5 August 1993 - Updated PAL specifications.

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Tech Info Library Article Number:9089



# Tech Info Library

## Macintosh Quadra: Excess VRAM Gives No Performance Gain

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra: Excess VRAM Gives No Performance Gain

=====

Article Created: 7 November 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

Does extra VRAM in the Macintosh Quadra improve speed? For example, if I install 2MB of VRAM in a Macintosh Quadra and use a 13-inch RGB set to 256 colors, I get 1.5MB more than what is needed to display 256 colors. Does this improve the video performance/speed compared to 0.5MB?

DISCUSSION -----

Having extra VRAM available on a Macintosh Quadra beyond what is required to support a particular pixel depth doesn't give any performance increase.

This is not true for the Macintosh Display Card 8•24 GC, where the additional and optional DRAM space is used for off-screen data structures.

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Tech Info Library Article Number:9090





# Tech Info Library

## Macintosh Quadra: VRAM and Pixel Depth

Revised: 3/23/93  
Security: Everyone

Macintosh Quadra: VRAM and Pixel Depth

Article Created: 8 November 1991

### Article Change History

-----  
03/23/93 - RETITLED  
• To match another similar article.

### TOPIC -----

I'm confused on the VRAM issue. If I can't run a 21-inch monitor in 24-bit using the full 2MB of VRAM, and I can run a 16-inch in 24-bit with only 1MB of VRAM, then what would I use the full 2MB of VRAM for? A 19-inch monitor maybe?

### DISCUSSION -----

The Macintosh Quadra 700 and 900 built-in video supports the Apple 21-inch color and monochrome monitors to 8-bit, 256 colors only. Adding VRAM beyond 1MB to the Macintosh Quadras when using these monitors is not beneficial; to achieve greater pixel depth on the 21-inch color monitor, you'll need a third-party video NuBus card.

A 19-inch monitor that matches the characteristics of other monitors the Macintosh Quadra supports may work; however, none of the other monitors are specifically 19-inch monitors.

The following chart should help explain the video expansion options available on the Macintosh Quadras today. Note that this information should supersede any information you have received thus far.

The following chart lists the Macintosh Quadra 700 and 900 internal video's maximum pixel depths supported, depending upon the VRAM configuration:

| Display size<br>-----                               | 512K VRAM<br>----- | 1MB VRAM<br>----- | 2MB VRAM<br>----- |
|-----------------------------------------------------|--------------------|-------------------|-------------------|
| 12-inch landscape<br>384 x 512, such as 12-inch RGB | 8 bpp              | 24 bpp            | 24 bpp            |
| 12-inch Monochrome<br>640 x 480                     | 8 bpp              | 8 bpp             | 8 bpp             |
| 13-inch RGB and VGA<br>480 x 640                    | 8 bpp              | 8 bpp             | 24 bpp            |
| Super VGA<br>800 x 600                              | 8 bpp              | 8 bpp             | 24 bpp            |
| 15-inch Portrait (b/w)<br>640 x 870                 | 4 bpp              | 8 bpp             | 8 bpp             |
| 16-inch Color<br>832 x 624                          | 8 bpp              | 8 bpp             | 24 bpp            |
| 2-Page Display (b/w)<br>870 x 1152                  | 4 bpp              | 8 bpp             | 8 bpp             |
| 21-inch Color<br>870 x 1152                         | 4 bpp              | 8 bpp             | 8 bpp             |
| PAL with convolution                                | n.a.               | 8 bpp             | 8 bpp             |
| PAL without convolution                             | 8 bpp              | 8 bpp             | 24 bpp*           |
| NTSC with convolution                               | n.a                | 8 bpp             | 8 bpp             |
| NTSC without convolution                            | 8 bpp              | 8 bpp             | 24 bpp            |

\* Note: there are two ways to wire a video cable for connecting a PAL monitor to a Macintosh Quadra; only by using the proper extended sense code are you able to achieve 24 bits per pixel. For details, search under "Quadra" and "video sense pinouts".

Note that 512K of VRAM is the minimum configuration for the Macintosh Quadra 700; it is 1MB of VRAM for the Macintosh Quadra 900.

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Tech Info Library Article Number:9091



# Tech Info Library

## A/UX: Commando Supports Only 7-bit Characters

Revised: 9/18/92  
Security: Everyone

A/UX: Commando Supports Only 7-bit Characters

=====

Article Created: 15 October 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

The CMDO facility in A/UX seems to be unable to handle national characters (that is, 8-bit characters) in the CMDO-scripts. Is this a known problem?

### DISCUSSION -----

The Commando facility supports only 7-bit characters under A/UX 2.0.1. We have also verified that it supports only 7-bit characters under A/UX 3.0.

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Tech Info Library Article Number:9093



# Tech Info Library

## System 7: MODE32 Technical Information (9/94)

Revised: 9/13/94  
Security: Everyone

System 7: MODE32 Technical Information (9/94)

Article Created: 30 September 1991  
Article Reviewed/Updated: 12 September 1994

TOPIC -----

Apple's announcement regarding the licensing of MODE32 from Connectix prompted a number of questions about how MODE32 works at a technical level. This document addresses these issues.

DISCUSSION -----

MODE32 is system-level software designed for Macintosh II class systems with ROMs that aren't 32-bit clean (Macintosh II, Macintosh IIX, Macintosh IICx, and Macintosh SE/30). This became an issue with the release of System 7, because these computers can't run in 32-bit mode. MODE32 allows these computers to run in 32-bit mode.

When installed, MODE32 directly modifies the System file. Virus utilities report this, and may interfere with installation. Turn virus utilities off for the installation.

Modifications to the System file involve:

- 1) Total replacement of the Memory Manager with a 32-bit clean Memory Manager. This is the biggest change made. Without a 32-bit clean Memory Manager, you can't use 32-bit addressing.
- 2) Minor patches to certain ROM routines that aren't 32-bit clean. This involves patching specific routines in some managers, not replacing the entire manager as is the case with the Memory Manager.

NOTE: The MODE32 Control Panel (not the Memory Control Panel) can remove most of the resources it installed in the System file. The only portion MODE32 can't remove is a "ptch" resource in the System file, modified to allow 32-bit addressing on older Macintosh computers. To return to a golden master version of System 7, you must reinstall it from Master disks. This should not be an

issue, as the updated "ptch" resource works in both 24-bit and 32-bit mode. We aren't aware of any problems when using this modified resource instead of the original.

When you turn your Macintosh on (or restart it), MODE32 executes at the earliest point possible in the startup process. Here is the sequence of events:

- 1) The Macintosh starts up in 24-bit mode.
- 2) Drivers load into 24-bit space from each of the installed NuBus cards and from any attached hard drive.
- 3) MODE32 executes.
- 4) MODE32 issues a close call to open drivers, switches in the 32-bit Memory Manager, and then reloads the drivers into 32-bit space. We call this process the "stutter start."
- 5) System start up proceeds normally from this point, and includes loading the other MODE32 patches to specific ROM routines.

NOTE: Some third-party NuBus cards don't have 32-bit clean drivers in their ROMs. Computers with these cards installed, and 32-bit addressing turned on, will fail to start up. The symptom you are most likely to see is repeated unsuccessful attempts to start up. Many manufacturers of cards that aren't 32-bit clean have ROM upgrades that resolve this issue. Disk drivers that are not 32-bit clean are also an issue. Contact the vendor of your drive software and obtain a vendor-certified 32-bit clean version.

#### Hardware Issues

-----  
The main benefit of 32-bit addressing is the ability to address more than 8MB of physical RAM. Even with 8MB of RAM you gain access to more virtual memory, assuming you have either a 68030-based Macintosh or a Macintosh II with a PMMU installed. A side benefit of 32-bit addressing when using virtual memory is that your address space is contiguous. This isn't true in 24-bit mode since ROM is mapped directly above the 8MB allocated for RAM. In 24-bit mode, any virtual memory allocated beyond 8MB is not contiguous with the first 8MB.

Macintosh II and Macintosh IIfx computers require special 4MB SIMMs to give you more than 8MB of RAM. You should specifically request these SIMMs, and the vendor you purchase RAM from should be aware of the difference.

NOTE: To take advantage of more than 8MB of physical RAM in a Macintosh II, you must have a PMMU installed. When a Macintosh II starts up, MODE32 uses the PMMU to give you access to the additional RAM. Also, a Macintosh II won't start up if you have 4MB SIMMs in bank A. You'll hear chimes, indicating a hardware failure. However, you can install the 4MB SIMMs in bank B with 1MB or 256K SIMMs in bank A. The Macintosh II then starts up, and MODE32 uses the PMMU to give you access to the additional RAM.

When you turn the power on (not restart from the Special menu), your Macintosh performs a RAM test. However, older systems only check up to 8MB of RAM, so

anything beyond this isn't tested. MODE32 resolves this by checking anything greater than 8MB at the "happy Macintosh" screen. With large amounts of RAM, this can take a long time, and your computer can appear to freeze at this point.

#### Software Compatibility

-----  
We have no reports of 32-bit clean software incompatibilities with MODE32. In a few instances, problems with programs surfaced after installing MODE32.

NOTE: There is a version of Adobe Type Manager (2.0.2 or later) that is 32-bit clean. Be sure to use this version. The symptoms of a Macintosh running older versions of ATM make it appear as if applications may not be 32-bit clean, when the problem is actually an old version of ATM.

#### Article Change History

-----  
12 Sep 1994 - Reviewed for technical accuracy, revised formatting.  
20 Jul 1992 - Reviewed for technical accuracy.  
27 Mar 1992 - Updated to change Mode 32 to MODE32.

#### Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9096



# Tech Info Library

## PowerBook: HDI-30 Throughput (7/92)

Revised: 5/16/94  
Security: Everyone

PowerBook: HDI-30 Throughput (7/92)

=====  
Article Created: 7 November 1991  
Article Reviewed/Updated: 31 July 1992

TOPIC -----

I would like to match external hard disks to the Macintosh PowerBook 140 and 170. Can you tell me the throughput of the SCSI port on these PowerBooks?

DISCUSSION -----

The SCSI circuitry used on the Macintosh PowerBooks (and consequentially, the throughput of the port) is the same as that used in all Macintosh computers. The new HDI-30 SCSI port connector has the same signals as the DB-25 connector, and the HDI-30 throughput is the same as other Macintosh computers.

Hard disks compatible with the Macintosh IIci, for example, work with the Macintosh PowerBooks.

Support Information Services

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9097



# Tech Info Library

## AppleTalk Remote Access on Token Ring

Revised: 11/14/91  
Security: Everyone

AppleTalk Remote Access on Token Ring

=====

Article Created: 5 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I use AppleTalk Remote Access with Token Ring?

DISCUSSION -----

Yes. The TokenTalk installer that ships with the Token Ring 4/16 NB Card will include AppleTalk version 57, which is required for AppleTalk Remote Access.

NOTE: The AppleTalk Remote Access READ ME file states that "Answering calls on a Token Ring network is not supported as of TokenTalk version 2.2..." The new TokenTalk driver for the Token Ring 4/16 NB card utilizes AppleTalk version 57, which is required for AppleTalk Remote Access. So, AppleTalk Remote Access is now fully functional on a Token Ring network.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9098





# Tech Info Library

## AppleTalk Remote Access: Answers Only One Call at a Time

Revised: 11/14/91  
Security: Everyone

AppleTalk Remote Access: Answers Only One Call at a Time

=====

Article Created: 5 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can several people call into AppleTalk Remote Access simultaneously?

DISCUSSION -----

Because AppleTalk Remote Access was designed as a personal networking service geared toward the individual, it can answer only one call at a time. In addition, Apple wanted the product to be both affordable and easy to set up. Allowing more than one line would increase its complexity and cost.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9100



# Tech Info Library

## Apple Remote Access: Use AppleEvents at 9600 bps (11/94)

Revised: 12/2/94  
Security: Everyone

Apple Remote Access: Use AppleEvents at 9600 bps (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Can I use AppleEvents over an Apple Remote Access (ARA) connection?

DISCUSSION -----

Yes. Any AppleTalk based service should work fine. However, there may be time-out problems at low modem speeds. In the case of AppleEvents, the NBP time-out value is not long enough to handle speeds lower than 9600 bps.

Article Change History:

28 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9101



# Tech Info Library

## Apple Remote Access: AppleTalk Phase I and Phase II (7/94)

Revised: 7/29/94  
Security: Everyone

Apple Remote Access: AppleTalk Phase I and Phase II (7/94)

Article Created: 5 November 1991  
Article Reviewed/Updated: 29 July 1994

TOPIC -----

Can Apple Remote Access (ARA) work on Phase I and II AppleTalk networks?

DISCUSSION -----

No version of Apple Remote Access was tested on a network using AppleTalk Phase I and is therefore not supported. Although ARA may work on some network configurations that are using both AppleTalk Phase I and Phase II you do so at your own risk. There are no practical reasons for continuing to use Phase I on AppleTalk networks, Apple strongly recommends using Phase II.

Article Change History:  
29 Jul 1994 - Updated discussion section of article.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9103



# Tech Info Library

## AppleTalk Remote Access: AppleTalk v57 and Multinode (11/94)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: AppleTalk v57 and Multinode (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Does AppleTalk Remote Access (ARA) 1.0 use a new version of AppleTalk?

DISCUSSION -----

Yes. A new version of AppleTalk (version 57) was created specifically for AppleTalk Remote Access. One of the key components in version 57 is a new technology called "multinode." Multinode allows an AppleTalk device (that is, a Macintosh) to acquire and defend multiple AppleTalk nodes.

Apple Remote Access version 2.0 installs AppleTalk version 58.1.3 on your Macintosh.

NOTE: Some older routers may have problems in dealing with the multinode technology. In these rare cases, NBP lookups may not get returned, making it look as if there are no services on the network you've called.

Article Change History:  
28 November 1994 - Updated and reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9104



# Tech Info Library

## AppleTalk Remote Access 1.0: Coexisting w/ Other Products 11/94

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access 1.0: Coexisting w/ Other Products 11/94

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Can I install and use these products on the same Macintosh with AppleTalk Remote Access (ARA) v1.0?

- AppleShare 2.0
- AppleShare Server 3.0
- AppleTalk Internet Router 2.0
- Apple SNA•ps Gateway

DISCUSSION -----

AppleShare 2.0

-----

AppleShare 2.0 doesn't work with System 7. Because AppleTalk Remote Access only runs on System 7, this combination won't work.

AppleShare Server 3.0

-----

AppleTalk Remote Access and AppleShare Server 3.0 work together on the same Macintosh. In this configuration, Remote Access users are administered via the AppleShare Server 3.0 Admin program.

AppleTalk Internet Router 2.0

-----

AppleTalk Remote Access and the AppleTalk Internet Router 2.0 cannot run concurrently on the same Macintosh.

Apple SNA•ps Gateway

-----

The SNA•ps Gateway product and AppleTalk Remote Access can reside and run on the same Macintosh.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9105



# Tech Info Library

## AppleTalk Remote Access 1.0: Memory Requirements (11/94)

Revised: 12/2/94  
Security: Everyone

AppleTalk Remote Access 1.0: Memory Requirements (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

How much memory does AppleTalk Remote Access (ARA) require in its minimum configuration? Can I run my favorite word processor and spreadsheet while maintaining a remote link to a network?

DISCUSSION -----

AppleTalk Remote Access 1.0 requires approximately 450K of RAM when calling into another Remote Access system; answering requires an additional 110K of RAM. Generally speaking, this would leave between 230-330K of memory free in a 2MB system for other activities.

You can quit the Remote Access application while maintaining the remote connection. This frees roughly 200K of memory.

AppleTalk Remote Access works well in a 2MB environment. But if you want to keep several applications open (using the multitasking feature of System 7) while maintaining a remote connection, you should consider increasing the RAM in your system.

Article Change History:  
28 November 1994 - Updated and reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9108



# Tech Info Library

## AppleTalk Remote Access: Writing Modem Scripts 11/94

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: Writing Modem Scripts 11/94

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Is there any documentation available to help write modem scripts for  
AppleTalk Remote Access (ARA)?

DISCUSSION -----

Those interested in writing their own scripts can order the "AppleTalk  
Remote Access Modem Toolkit" (part number R0129LL/A) from APDA, Apple's  
source for developers' tools. This kit provides all the tools and  
information necessary to build an AppleTalk Remote Access modem script.

Apple Remote Access MultiPort Server comes with the Modem WorkShop. It includes  
instructions for writing scripts and descriptions of all the CCL commands. It is  
intended for experienced programmers with a good understanding of  
telecommunications and modem operations.

Article Change History:  
28 Nov 1994 - Added information about MultiPort Server script authoring.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9109





# Tech Info Library

## AppleTalk Remote Access: Modem Speed Requirements (11/94)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: Modem Speed Requirements (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Can I use any speed modem with AppleTalk Remote Access (ARA) v 1.0 or Apple Remote Access 2.0?

DISCUSSION -----

Any modem with a data rate of 2400 bps or higher can work with either. Most importantly, you need the appropriate modem script for your modem. Apple recommends 9600 bps or higher for best performance. Contact your modem vendor for the latest modem script.

Article Change History:  
28 Nov 1994 - Updated and reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9110



# Tech Info Library

## AppleTalk Remote Access: Compatible Modems (11/94)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: Compatible Modems (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

What modems are compatible with AppleTalk Remote Access 1.0 (ARA) and Apple Remote Access 2.0?

DISCUSSION -----

ARA can work with any modem for which a special modem communications script has been written. AppleTalk Remote Access includes scripts for a variety of popular modems on the disks. Contact your modem vendor for updates to your modem script.

AppleTalk Remote Access includes scripts for the following modems:

### v.22/2400 bps Modems

-----  
All Apple 2400 bps modems  
Abaton InterFax 24/96  
Global Village TelePort  
Hayes SmartModem 2400  
Microcom Microport 1024  
Practical Peripherals 2400SA  
Prometheus 2400M  
Supra SupraModem 2400  
US Robotic Courier 2400e

### v.32/9600 & v.32bis bps Modems

-----  
DSI 9624 LE/LE Plus  
Hayes Ultra 96  
Farallon Remote V.32  
Microcom MacModem V.32  
MultiTech MultiModemV32  
Practical Peripherals 9600SA  
Prometheus ProModem Ultima  
Telebit T1600  
US Robotics Courier V.32 bis

Article Change History:  
28 November 1994 - Updated and reviewed.

Support Information Services

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Tech Info Library Article Number:9111



# Tech Info Library

## AppleTalk Remote Access: Using w/ Apple IIe Emulation (11/94)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: Using w/ Apple IIe Emulation (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

Can I use AppleTalk Remote Access (ARA) in Apple II emulation mode on a Macintosh LC with an Apple IIe Card?

DISCUSSION -----

Yes. You must establish the connection before going into emulation mode. Once established, you can access network services via the Apple II control panel.

Article Change History:  
28 November 1994 - Updated and reviewed

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9114



# Tech Info Library

## AppleTalk Remote Access: Securing the AppleTalk Network

Revised: 11/22/91  
Security: Everyone

AppleTalk Remote Access: Securing the AppleTalk Network

=====

Article Created: 5 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Are services and workstations on an AppleTalk network secure against unauthorized access from a dial-up link?

DISCUSSION -----

AppleTalk Remote Access has several sophisticated security options that allow both the individual user and the network administrator to restrict access to an individual computer or any network to which it is connected.

### User-Controllable Options

-----

- User name and password authentication. Callback verifies the user's identity by returning calls to a predetermined phone number.
- An Activity Log for recording calling and answering activities.
- Disabling of user account after seven incorrect password attempts.

### Network Administrator Options

-----

Answering authentication allows a network administrator to password-protect the network from unauthorized remote access. This is enabled by creating a unique security zone (SecurityZone\_) on the Internet. The administrator uses a special HyperCard stack to generate the SecurityZone and encrypted password.

This HyperCard stack and documentation is available on the two APDA AppleTalk Remote Access toolkits, on several on-line services, and on the Information Source CD-ROMs.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9115



# Tech Info Library

## Apple Remote Access and Personal File Sharing (6/95)

Revised: 6/9/95  
Security: Everyone

Apple Remote Access and Personal File Sharing (6/95)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 9 June 1995

TOPIC -----

Can I use Macintosh File Sharing at the same time as Apple Remote Access (ARA)?  
Are other network services available to me through the Remote Access product?

DISCUSSION -----

Yes. Macintosh Personal File Sharing and Apple Remote Access Personal Server or Client can coexist on the same system without any problems. With this combination, access to files on your home or office computer is available from anywhere.

You cannot however, use the ARA MultiPort Server software concurrently with Personal File Sharing. The ARA MultiPort Server software uses the same Users & Groups file format as the AppleShare File Server, so Personal File Sharing is disabled. Also Apple Remote Access MultiPort Server is not compatible with AppleShare 3.0.x. AppleShare 4.0.1 and later are the correct AppleShare versions to use.

In addition, if the answering Macintosh is connected to an AppleTalk network, all the network resources like E-mail, file services, group calendars, host gateways, and so on (assuming the presence of network software and gateways needed) will be available. The only caveat is that the calling Macintosh must have the appropriate client software installed in order to use these services.

### Article Change History:

09 Jun 1995 - Added more information to ARA MultiPort Server compatibility.  
23 Jan 1995 - Correction to show ARA MultiPort Server and AppleShare.  
22 Jun 1994 - Updated information for ARA 2.0.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:9119





# Tech Info Library

## AppleTalk Remote Access Doesn't Power On Remotely (8/93)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access Doesn't Power On Remotely (8/93)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 3 August 1993

TOPIC -----

If the Macintosh I wish to dial into is not powered on, can AppleTalk Remote Access (ARA) wake it up?

DISCUSSION -----

AppleTalk Remote Access does not have the ability to turn on power to a remote Macintosh.

There are third-party "wake up" products you can use in conjunction with AppleTalk Remote Access. After you wake up the Macintosh with one of these products, you can call back the remote Macintosh and connect in the normal fashion with AppleTalk Remote Access. Sophisticated Circuits offers such a remote "wake up" product called PowerKey Remote.

Article Change History:  
28 Nov 1994 - Reviewed and updated  
3 Aug 1993 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9120



# Tech Info Library

## AppleTalk Remote Access: Works in the Background (11/94)

Revised: 11/28/94  
Security: Everyone

AppleTalk Remote Access: Works in the Background (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

When you turn Remote Access (ARA) answering on, can you still use the system for other things?

DISCUSSION -----

Yes. AppleTalk Remote Access1.0 and Apple Remote Access 2.0 work completely in the background.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9121



# Tech Info Library

## PowerBook: Low Temperature Storage (4/95)

Revised: 4/3/95  
Security: Everyone

PowerBook: Low Temperature Storage (4/95)

Article Created: 1 November 1991  
Article Reviewed/Updated: 03 April 1995

TOPIC -----

What problems could be caused if the temperature falls below the minimums listed in the PowerBook specs?

DISCUSSION -----

The main concerns are:

- the liquid crystal display (LCD) material freezing

and

- moisture in the hard disk drive freezing.

The drive can be thawed out however, damage to the LCD would typically require replacement of the display.

Article Change History:  
03 Apr 1995 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:9122



# Tech Info Library

## PowerBook: Disable ARA Answer Calls to Send Fax (11/94)

Revised: 11/29/94  
Security: Everyone

PowerBook: Disable ARA "Answer Calls" to Send Fax (11/94)

=====

Article Created: 8 November 1991  
Article Reviewed/Updated: 28 November 1994

TOPIC -----

I'm having difficulty sending a Fax from my Macintosh PowerBook 170 with internal AppleFax Modem. Everything seems fine until just after the Fax Monitor Status says "Imaging Document." I get a status of "Waiting for modem" and it never dials. I tried sending the sample document included with the Fax software as well as sending a document from within MacWrite. This seems to be a problem only with the Macintosh PowerBook 170 and Fax.

DISCUSSION -----

You need to disable the Remote Access Setup (ARA) "Answer Calls" option. As long as the Remote Access Setup "Answer Calls" option is enabled, the Macintosh PowerBook AppleFax Modem software will remain in a "Waiting for modem" status when trying to send a Fax.

Article Change History:  
28 Nov 1994 - Updated.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9123



# Tech Info Library

## **Lifetime Memory Products Inc. (8/96)**

Revised: 8/9/96  
Security: Everyone

Lifetime Memory Products Inc. (8/96)

=====

Article Created: 5 December 1991  
Article Reviewed/Updated: 9 August 1996

Lifetime Memory Products, Inc.

-----

305 17th Street  
Huntington Beach, CA 92648

714-444-4700

714-960-0638 Fax

Company Profile:  
Hardware, specializing in Macintosh PowerBook Fax/Data modems.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9124



# Tech Info Library

## PowerBook: Third Party Memory Cards (9/96)

Revised: 9/23/96  
Security: Everyone

PowerBook: Third Party Memory Cards (9/96)

Article Created: 4 November 1991  
Article Reviewed/Updated: 23 September 1996

TOPIC -----

This article lists some of the companies that make memory expansion modules for Macintosh PowerBook computers. Contact the vendor for availability and additional information.

DISCUSSION -----

Here are some companies to contact:

- Lifetime Memory Products, Inc.
- Newer Technology
- Southland
- TechWorks

This article provides information about non-Apple products. Apple Computer, Inc. is not responsible for its content. Please contact the vendor(s) for additional information.

The Tech Info Library article titled "Locating Vendor Information" can help you search for a particular vendor's address and phone number.

### Article Change History

- 
- 23 Sep 1996 - Removed one vendor name.
  - 28 Apr 1995 - Added another vendor of memory.
  - 01 Dec 1994 - Reviewed for technical accuracy.

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Tech Info Library Article Number:9125



# Tech Info Library

## Data Access Language Server for A/UX: Description(Discontinued)

Revised: 10/17/96  
Security: Everyone

Data Access Language Server for A/UX: Description(Discontinued)

=====

Article Created: 11 November 1991  
Article Last Reviewed: 17 October 1996

TOPIC -----

This article describes the Data Access Language (DAL) Server for A/UX.

DISCUSSION -----

NOTE: The DAL technology was purchased by Independence Technologies, Inc. (ITI) in late 1993. Contact ITI for additional information on DAL.

The DAL Server for A/UX is a networking software product that provides DAL access to files and databases on an A/UX host system. The DAL Server runs on the A/UX host and works cooperatively with personal computer application programs that support DAL, such as spreadsheets, databases, and query tools on Macintosh computers.

A complete DAL connectivity setup for A/UX includes a client personal computer running an application program with embedded DAL support and an A/UX host Macintosh computer with the DAL Server. The DAL Server receives requests from the personal computer program, carries out the requests on the host Macintosh computer running A/UX, and sends the desired data back to the program for local processing.

The DAL Server for A/UX provides uniform support for DAL-based application programs, through a variety of network configurations and data management software. It works with existing databases, operating under standard A/UX and database security. You receive transparent access to the information in databases you are authorized to access.

### Features

-----

- Operation as a user process under standard A/UX user name/password security



- Uniform support for DAL clients
- Uniform concurrent support for A/UX databases
- Automated A/UX installation procedures
- Asynchronous operation
- Incremental compiler implementation
- Trace facility
- Interactive utility (IDAL) for testing DAL program statements
- Stored procedures
- Sample tables
- Wide range of commercial applications with DAL connectivity available today

#### Benefits

-----

- Maintains the security and integrity of A/UX and the database management system.
- Eliminates the need for new system administration procedures on the host Macintosh computer.
- Allows one server to support all Macintosh computers running DAL-compatible application programs.
- Insulates personal computer programs from the complexities of the database being used.
- Supports multivendor environments.
- Makes installation quick and easy.
- Allows the user to continue other work while the DAL Server performs a connectivity request.
- Returns program control to the Macintosh computer so that the user can perform other tasks while the DAL Server carries out the requested operation on the host.
- Reduces the client system processing load.
- Facilitates debugging and system tuning.
- Provides utilities to ensure proper connection, installation, and operation of host server.

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- Minimizes network traffic by storing commonly located procedures on the host, where they can be shared.
- Makes developing and testing applications easier.
- Provides spreadsheet, query tool, and mapping tool users with seamless host data integration without programming effort.

## Article Change History:

17 Oct 1996 - Added discontinued to title.

19 Sep 1994 - Added info about ITI.

29 Jun 1992 - Reviewed.

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Tech Info Library Article Number:9127



# Tech Info Library

## DAL for A/UX: Details and System Requirements (9/94)

Revised: 9/21/94  
Security: Everyone

DAL for A/UX: Details and System Requirements (9/94)

=====

Article Created: 11 November 1991  
AArticle Reviewed/Updated: 21 September 1994

TOPIC -----

This article gives the product details, language specifications, and system requirements for using Data Access Language (DAL) for A/UX.

DISCUSSION -----

NOTE: As of December 1993, Independence Technologies, Inc. (ITI) took ownership of the DAL technology. Contact ITI for current product information.

### Product Details

-----

- Database Support
  - Informix version 2.1 or later
  - Ingres version 6.1 or later
  - Oracle version 6.0
- Client Support
  - Uniform support for any application developed with the DAL Developer's Toolkit for the Macintosh using a supported network
- Network Support
  - Asynchronous direct and dial-up connections
  - Support for TCP/IP standard UNIX network protocol using Apple's MacTCP software program on the Macintosh computer.
- Asynchronous Communications
  - Transmission speed: 300 to 19,200 baud
  - Character length: 7 or 8 data bits; 1 or 2 stop bits
  - Parity: odd, even, or none
  - Handshake
    - XON/XOFF and none

- Modem and direct connections
- Log-on sequence specification
- Protocol
  - Error-correcting (16-bit CRC)
  - Data compression
  - Binary data transparency

#### Language Specifications

-----

DAL is a complete language for describing connectivity tasks. It consists of these statement groups:

- Host Connection Statements  
These establish and terminate a connection to a host system in the network. This provides concurrent access to multiple hosts running DAL Servers.
- Data Manipulation Statements  
These offer complete ANSI standard level 1, SQL-based data access to host databases.
- Program Structure Statements  
These support testing, looping, and procedure calls within a DAL program.
- Output Statements  
These generate output messages from the DAL program. The client application software processes these messages.

#### System Requirements

-----

To use the DAL Server for A/UX, you need the following hardware and software:

- Host environment: A/UX version 2.0 or later. We recommend the A/UX CD-ROM product or the A/UX floppy product. We don't recommend the A/UX external 80MB hard disk because it doesn't contain the software you need to repartition the disk for the DAL Server for A/UX.
- One of the supported database management systems
- Macintosh computer clients running DAL-compatible application programs.
- The appropriate networking hardware and software

#### Article Change History:

21 Sep 1994 - Reviewed. Added info on ITI.

#### Support Information Services

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Tech Info Library Article Number:9128



# Tech Info Library

## A/UX Version 3.0: Description

Revised: 6/20/94  
Security: Everyone

A/UX Version 3.0: Description

=====

Article Created: 11 November 1991  
Article Reviewed/Updated: 3 July 1992

TOPIC -----

This article describes version 3.0 of the A/UX operating system.

DISCUSSION -----

The Apple A/UX 3.0 operating system integrates the Macintosh System 7 interface with industry-standard UNIX.

You can simultaneously run Macintosh, UNIX, X Window System, MS-DOS, and Motif applications -- each appearing in a window on the Macintosh desktop. You can switch from one application to another and copy and paste among these different applications.

A/UX complies with all relevant UNIX standards, combining features from two different versions of UNIX: AT&T's System V and Berkeley Software Distribution (BSD) 4.3. A/UX then adds the familiar Macintosh desktop and a high level of Macintosh-UNIX integrations so that you can perform UNIX tasks in whatever way is most comfortable:

- Using the UNIX command line
- Using the Macintosh graphical interface
- Using the X Window System interface
- Using Macintosh-style front ends to standard UNIX commands

Features

-----

- Standards Compliance
  - AT&T UNIX System V, Release 2, Version 2
  - Compliant with the System V Interface Definition (SVID); passes the

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### System V Verification Suite (SVVS)

- BSD 4.3 extensions, including signals, job control, groups, sockets, TCP/IP and Berkeley File System
- Certified by the U.S. government as compliant with FIPS #151-1 (IEEE POSIX 1003.1 -- 1991 and ISO 9945-1 standards)
- UNIX Command-line Interpreters for UNIX Shell Windows
  - Bourne Shell
  - Korn Shell (1988)
  - C Shell
- Installation and System Administration
  - Autorecovery
  - Autoconfiguration
  - Scripts for system administration functions
  - One-button Easy Install option to install the entire A/UX system
  - Modular installation to select parts of the system
  - New version of Apple Hard Disk SC Setup
- Macintosh Ease of Use and UNIX Functionality
  - UNIX command-line builder (Commando)
  - UNIX terminal emulator or "shell" windows (CommandShell)
  - Macintosh-style text editing (TextEditor)
  - Printer and AppleShare file access via the Chooser
  - AppleTalk Network selection via control panels
  - X Window System (X11 for A/UX and MacX 1.1.7)
  - Macintosh-style startup and shutdown
  - Access to Macintosh file systems on hard drives, floppy disks, CD-ROM, and AppleShare file servers
- Applications Supported
  - Macintosh applications (those that adhere to the guidelines in the publication "Inside Macintosh and A/UX Toolbox: Macintosh ROM Interface")
  - UNIX applications
  - X Window System applications
  - Macintosh hybrid applications (make A/UX system calls)
  - UNIX hybrid applications (make Macintosh Toolbox calls)
  - MS-DOS applications (using SoftPC from Insignia Solutions, Inc.)
  - Motif applications (OSF/Motif for A/UX is available from Integrated Computer Solutions)
- Development Tools
  - Text editing and processing utilities (TextEditor, and the traditional UNIX tools: vi, ex, ed, ditroff, nroff, tbl, eqn, grap, and pic)
  - Assembler, C compiler, and ANSI standard Fortran compiler
  - Shared libraries
  - Language tools (lint, lex, yacc)
  - Debuggers (adb, dbx, sdb)
  - Linker (ld)
  - Source control (sccs, rcs, make, and other UNIX tools)
- International Support

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- Accepts 8-bit characters and alternative character sets, so that Macintosh and A/UX developers can create A/UX applications in many languages, including Danish, Dutch, Finnish, Flemish, French, German, Italian, Norwegian, Portuguese, Spanish, and Swedish
- Additional Hardware and Software Support
  - Serial printing lets you print documents on a serially connected LaserWriter or ImageWriter printer
  - SuperDrive allows you to store data on and retrieve data from 400K, 800K, or 1.44MB floppy disks
  - Slot Manager and Serial Manager enable use of Macintosh applications that access the Macintosh Toolbox Slot Manager and Serial Manager software
  - Sound input and output (Macintosh Sound Manager)
  - Macintosh Communications Toolbox lets an application "talk" to the Macintosh Toolbox without requiring the application to designate a communications protocol
  - 24-bit mode lets older Macintosh applications that are not 32-bit clean run in A/UX
- Networking and Communications
  - Macintosh built-in file sharing via LocalTalk or EtherTalk
  - TCP/IP networking including BSD 4.3 remote login and execution, resource sharing, file transfer, electronic mail, and domain name services
  - CSL/IP support allowing connection to a TCP/IP-based network over a serial connection
  - Automounter for dynamic mounting of remote data as needed
  - Transparent file sharing over Ethernet or serial lines using NFS Version 4.1
  - Network Information Service (NIS), providing a distributed look-up service
  - AppleTalk printing and file sharing client services via LocalTalk or Ethernet
  - AppleTalk protocol support including ADSP for UNIX and Macintosh applications
  - MacTCP 1.1, allowing use of Macintosh applications that access TCP/IP connectivity
  - X Window System server and client applications
- Highlights of hardware supported
  - Macintosh Quadra 700, Macintosh Quadra 900, Quadra 950 and all Macintosh II personal computers, and the Macintosh SE/30
  - Apple 20MB, 40MB, 80MB, 160MB, and 400MB hard disk drives and compatible third-party hard disk drives
  - Apple 400K, 800K, and 1.44MB floppy disk drives
  - Apple Ethernet NB Card, compatible third-party Ethernet cards, and on-board Ethernet
  - AppleCD SC drive, which provides CD-ROM support for both UNIX and Macintosh file systems, including support for many compatible third-party CD-ROM drives
  - LaserWriter IIx, LaserWriter IIg, LaserWriter IINT, LaserWriter IINTX, LaserWriter Plus, Personal LaserWriter NT, ImageWriter II,

# ..TIL09129-A-UX\_Version\_3-0-Description.pdf

ImageWriter LQ, and StyleWriter printers

- Apple Scanner and Apple OneScanner
- All Macintosh monitors and compatible third-party monitors, including support for multiple monitors
- All domestic Macintosh keyboards and European Macintosh keyboards

## System Requirements

- 
- One of the following personal computers:  
Macintosh SE/30, Macintosh II with a Paged Memory Management Unit (PMMU), Macintosh IIX, Macintosh IISI with a NuBus or 030 Direct Slot Adapter card, Macintosh IICX, Macintosh IICI, Macintosh II FX, Macintosh Quadra 700, Macintosh Quadra 900, and Macintosh Quadra 950
  - A minimum of 5MB RAM, 8MB recommended (MacX requires 8MB when running on A/UX)
  - An Apple hard drive or the equivalent (80MB minimum, 160MB recommended)
  - An Apple monitor, and video card if necessary (or an equivalent monitor compatible with A/UX 3.0)
  - Optional Apple Ethernet NB Card, on-board Ethernet, or an equivalent Ethernet card compatible with A/UX 3.0
  - An AppleCD SC drive or the equivalent (required to install A/UX 3.0 from the A/UX 3.0 CD-ROM)

## Support Information Services

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Tech Info Library Article Number:9129





# Tech Info Library

## Quadra 900 & 950: Internal Hard Drives Must Not Be Terminated

Revised: 11/29/94  
Security: Everyone

Quadra 900 & 950: Internal Hard Drives Must Not Be Terminated

=====

Article Created: 11 November 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

Internal hard drives on the Quadra 900 & 950 must NOT be terminated. All Apple and third-party internal SCSI drives have terminating resistors that must be removed before installing in the Quadra 900 & 950.

DISCUSSION -----

If an internal hard drive is terminated, it will likely damage the Quadra 900 & 950's logic board. This occurs because the Quadra 900 & 950's logic board has active SCSI termination. If a SCSI device is installed with terminating resistors, it will overload the SCSI chip on the logic board and probably cause it to fail. Adding more SCSI devices will increase the load on the SCSI chip and make the failure more likely.

This situation is noted in the Technical Procedures for the Quadra 900 & 950 on pages 1.6 and 2.11.

Article Change History:

29 Nov 1994 - Reviewed and updated.  
26 Jan 1993 - Updated to include the Quadra 950.

Support Information Services

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Tech Info Library Article Number:9130



# Tech Info Library

## DAL Server for MVS/VTAM: Features & Benefits

Revised: 9/2/92  
Security: Everyone

DAL Server for MVS/VTAM: Features & Benefits

=====

Article Created: 11 November 1991

### Article Change History

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07/09/92 - REVIEWED

- For technical accuracy

### TOPIC -----

This article describes the Data Access Language (DAL) Server for MVS/VTAM.

### DISCUSSION -----

The DAL Server for MVS/VTAM is a multi-user server product that provides DAL access to IBM Database 2 (DB2) and Teradata DBC/1012 databases on an MVS host system. The DAL Server works cooperatively with personal computer applications that support DAL (such as spreadsheets, databases, and query tools running on Macintosh computers) while running under MVS, either directly through native VTAM or under CICS.

A complete connectivity setup for MVS includes a client personal computer running an application with embedded DAL support and an MVS host with the DAL Server. The DAL Server receives requests from the personal computer application, carries them out on MVS against DB2 or DBC/1012, and sends the desired data back to the application for desktop processing.

The DAL Server for MVS/VTAM provides uniform support for DAL-based applications. It works with existing DB2 and DBC/1012 databases, operating under standard MVS, DB2, and Teradata security. As a result, you receive transparent access to the data that you have authorization to access.

### Features

-----

- Operates as an MVS Batch Job either directly accessed through native VTAM

or a CICS Passthru connectivity

- Uniform support for DAL clients
- Asynchronous operation
- Incremental compiler implementation
- Trace facility
- Additional product, an interactive utility (IDAL) for testing DAL program statements
- Stored procedures
- Sample tables
- Support for Macintosh computers connected by way of Apple's Coax/Twinax, TokenTalk NB and Serial NB cards, Avatar's MacMainFrame, DCA's MacIRMA, TriData's Netway 1000/2000 products, Apple's SNA•ps APPC and 3270 Gateways as well as asynchronous dial-in to a protocol converter (supporting VT100 terminal type).
- Support for Macintosh computers connected asynchronously to a host computer with a compatible protocol converter installed

#### Benefits

-----

- Maintains the security and integrity of MVS, DB2, and Teradata systems.
- Allows one server to support all personal computers running DAL-compatible Macintosh applications.
- Once the connection is made, returns program control to the Macintosh so that the user can perform other tasks while the DAL Server carries out the requested operation on the host.
- Improves performance for repetitive requests.
- Reduces the client system processing load.
- Facilitates debugging and system tuning.
- Minimizes network traffic by storing commonly executed procedures on the host, where they can be shared.
- Makes developing and testing applications easier.
- Allows you to run applications on Macintosh computers regardless of the hardware connection to the host.

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# Tech Info Library

## DAL Developer's Toolkit for the Macintosh Descpt (Discontinued)

Revised: 10/17/96  
Security: Everyone

DAL Developer's Toolkit for the Macintosh Descpt (Discontinued)

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Article Created: 11 November 1991  
Article Reviewed/Updated: 17 October 1996

TOPIC -----

This article describes the Data Access Language (DAL) Developer's Toolkit for the Macintosh.

DISCUSSION -----

The DAL Developer's Toolkit for the Macintosh is a set of software components that helps programmers build Macintosh personal computer application programs with embedded access to host data. The resulting Macintosh applications give consistent, transparent access to shared corporate data when linked to a host system running the DAL Server.

These Macintosh applications use DAL, a high-level, SQL-based connectivity language. DAL allows Macintosh applications to access and interact with host data on a variety of minicomputer and mainframe systems in a uniform way, regardless of the particular host, operating system, database management system, or network connection. You develop all application programs on the Macintosh without expertise in host programming or particular host system.

The DAL Developer's Toolkit for the Macintosh is designed for Macintosh programmers, independent software vendors, and MIS departments designing Macintosh software. In a single development effort, Macintosh software developers can build products that address the need for host data access in a wide range of environments.

### Features

-----

- Documentation and sample application with C and Pascal call libraries
- Interactive utility for testing DAL program statements
- HyperTalk XCMD and XFNC commands for DAL access

- Host data retrieval into HyperCard fields, cards, and global variables
- DAL documentation in the form of a HyperCard Help stack
- DAL sample HyperCard stack with easily incorporated cut-and-paste buttons and cards
- Licensing provisions for distribution of DAL client software with Macintosh applications
- Seamless interaction between Macintosh applications, DAL client software, and DAL Server
- Resulting applications work with any DAL Server-equipped host
- DAL connectivity language
- ANSI standard level 1, SQL-based data manipulation language
- Integrated language that includes host connection, data manipulation, program control, and output management statements
- Application insulated from differences between Macintosh and host representation of byte order, character set, and floating-point data
- Application programming interface that resides in the Macintosh computer
- Uniform error codes, status messages, and catalog access across supported databases and system types

#### Benefits

-----

- Reduces startup time and ensures maximum productivity.
- Makes testing and debugging easier.
- Allows a debugged DAL program to be run without modification from within a Macintosh application.
- Provides complete DAL session control, program execution, and result retrieval from within a HyperCard stack.
- Allows the developer to access host data with the easy-to-use HyperCard interface.
- Allows the developer to become proficient quickly.
- Reduces stack-development time.
- Permits commercial and in-house developers to make host connectivity an integral part of their Macintosh applications.

- Allows users to enjoy easy access to host connectivity without needing to understand the underlying technology.
- Allows developers to serve various markets with a single programming effort.
- Facilitates the host connection process.
- Insulates Macintosh applications from the complexities of the particular host system, network, and data source to be accessed.
- Allows an application to work with any host system that supports DAL.
- Facilitates development of Macintosh applications by allowing programmers to provide access to a wide range of host environments in a single programming effort.
- Provides support of SQL query and update features.
- Provides uniform access to a wide range of data sources.
- Uses syntax that is familiar to many developers and users.
- Allows the Macintosh user to proceed with other work while the host request is carried out (once the server connection is complete).
- Is easily integrated into the scripting languages of many applications.
- Provides superior performance for repetitive requests.
- Allows for greater utilization of host processing power.
- Simplifies programming for the Macintosh developer.
- Allows all development to be accomplished on the Macintosh computer. Developers can provide host connectivity without investing in host hardware or acquiring host programming expertise.
- Allows applications accessing a wide variety of host system configurations to be created with a single programming effort.

Article Change History:

17 Oct 1996 - Changed title by adding Discontinued.

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Tech Info Library Article Number:9132



# Tech Info Library

## DAL Developer's Toolkit for Macintosh: Details & Requirements

Revised: 11/21/91  
Security: Everyone

DAL Developer's Toolkit for Macintosh: Details & Requirements

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Article Created: 11 November 1991  
Article Last Reviewed: 9 July 1992  
Article Last Updated: 9 July 1992

TOPIC -----

This article gives the product details, language specifications, and system requirements for the Data Access Language (DAL) Developer's Toolkit for the Macintosh.

DISCUSSION -----

### Product Details

-----

- Supplied Software
  - DAL device driver and driver installer
  - C and Pascal call libraries
  - Interactive DAL tester
  - Sample applications, including source code
  - DAL HyperCard XCMDs, including source code and sample stack
  - DAL documentation in HyperCard Help stack
- Network Support
  - Asynchronous communication, by way of direct or dial-up links
  - Support for the AppleTalk network system based on the AppleTalk Data Stream Protocol (ADSP)
  - Support for TCP/IP using Apple's MacTCP networking software
  - Support for the 3270 data streams and APPC (LU6.2) networking protocols
  - Support for connections to IBM hosts using Avatar's MacMainFrame, DCA's MacIRMA, and TriData's Netway 1000/2000 products
  - Asynchronous communication to IBM hosts equipped with protocol converters

### Language Specifications

-----

DAL is a complete language for describing connectivity tasks. It consists of these statement groups:

- Host Connection Statements  
These establish and terminate a connection to a host system in the network, providing concurrent access to multiple hosts running DAL Servers.
- Data Manipulation Statements  
These offer complete ANSI standard level 1, SQL-based data access to host databases.
- Program Structure Statements  
These support testing, looping, and procedure calls within a DAL program.
- Output Statements  
These generate output messages from the DAL program. The client application processes these messages.
- Execute Statement  
This permits execution of DBMS-specific commands not directly supported by DAL.

#### System Requirements

-----

To use the DAL Developer's Toolkit for the Macintosh, you need the following hardware and software:

- A Macintosh personal computer
- Macintosh system software version 6.0.5 or later
- The appropriate hardware and software for a supported network
- Access to a host computer with a DAL Server, and a database management system and networking software supported by DAL.

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Tech Info Library Article Number:9133





# Tech Info Library

## DAL Server for MVS/VTAM: Details and System Requirements

Revised: 11/21/91  
Security: Everyone

DAL Server for MVS/VTAM: Details and System Requirements

=====

Article Created: 11 November 1991  
Article Last Reviewed: 9 July 1992  
Article Last Updated: 9 July 1992

TOPIC -----

This article gives the product details, language specifications, and system requirements for using the DAL Server for MVS/VTAM.

DISCUSSION -----

### Product Details

-----

- Database Support
  - Provides access to DB2 databases, version 1.3 or later
  - Provides access to Teradata DBC/1012 databases, version 4.1 or later
- Optional CICS Support

A CICS Passthru program runs as a standard CICS transaction program that provides optional CICS support.
- Client Support

Provides uniform support for any application developed with the DAL Developer's Toolkit for the Macintosh using a supported network.
- Network Support
  - Provides 3270 data-stream and APPC support. Allows SNA or non-SNA connection.
  - The client must have the supported 3270 hardware and software to emulate a 3278-type device or the supported hardware and software to do APPC communications:
    - MacDFT software and either the Apple Coax/Twinax Card, Apple Serial NB Card, or the Apple TokenTalk NB Card for the Macintosh II family of computers
    - Avatar's MacMainFrame, DCA's MacIRMA, and TriData's Netway 1000/2000

connectivity products

- Asynchronous support to hosts equipped with an appropriate protocol converter
  - APPC (LU6.2) support via Apple's SNA•ps Gateway
- 
- Resource Usage
    - 1MB of disk storage
    - 8MB of address space recommended
    - Test program verifies correct installation and usage

#### Language Specifications

-----

DAL is a complete language for describing connectivity tasks. DAL consists of these statement groups:

- Host Connection Statements  
These establish and terminate a connection to a host system in the network, providing concurrent access to multiple hosts running DAL Servers.
- Data Manipulation Statements  
These offer complete ANSI standard level 1, SQL-based data access to host databases and files.
- Program Structure Statements  
These support testing, looping, and procedure calls within a DAL program.
- Output Statements  
These generate output messages from the DAL program. The client application processes these messages.

#### System Requirements

-----

To use the DAL Server for MVS/VTAM, you need the following software and hardware:

- Host Environment
  - MVS/XA version 2.2 or later, or MVS/ESA version 1.0 or later running VTAM version 3.1 or later.
  - For the CICS Passthru Program, CICS 1.7 or later with LU6.2 support is required.
  - DB2 version 1.3 or later.
  - Teradata DBC/1012 version 4.1 or later.
- Macintosh computer clients running DAL-compatible applications
- Appropriate networking hardware and software

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Tech Info Library Article Number:9134



# Tech Info Library

## Data Access Language Server for VAX/VMS: Features & Benefits

Revised: 6/29/92  
Security: Everyone

Data Access Language Server for VAX/VMS: Features & Benefits

=====

Article Created: 11 November 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

This article describes the Data Access Language (DAL) Server for VAX/VMS.

DISCUSSION -----

The DAL Server for VAX/VMS is a networking software product that provides DAL access to files and databases on a VAX/VMS host system. The DAL Server runs on a VAX/VMS host and works cooperatively with personal computer applications that support DAL, such as spreadsheets, databases, and query tools on Macintosh computers.

A complete connectivity setup for VAX/VMS includes a client personal computer running an application with embedded DAL support, and a VAX/VMS host with the DAL Server. The DAL Server receives requests from the personal computer application, carries them out on the VAX, and sends the desired data back to the application for local processing.

The DAL Server for VAX/VMS provides uniform support for DAL-based applications, through a variety of network configurations and VAX/VMS data management software. It works with existing VAX/VMS databases, operating under standard VMS and database security. Your Macintosh computer receives transparent access to the VAX data you are authorized to access.

### Features

-----

- Server operates as a user process under standard VMS user name/password security
- Uniform support for DAL clients

- Uniform concurrent support for VAX databases
- Standard VAX/VMS installation procedures
- Asynchronous operation, after connection is established.
- Incremental compiler implementation
- Trace facility
- Interactive utility for testing DAL program statements
- Stored procedures
- Sample tables
- Wide range of commercial applications with DAL connectivity available

#### Benefits

-----

- Maintains the security and integrity of VAX/VMS and the database management system.
- Eliminates the need for new system administration procedures on the VAX.
- Allows one server to support all Macintosh computers running DAL-compatible applications.
- Insulates personal computer applications from the complexities of the database used.
- Supports multivendor environments.
- Makes installation quick and easy.
- Returns program control to the Macintosh so the user can perform other tasks while the DAL Server carries out the requested operation on the host.
- Reduces the client system processing load.
- Facilitates debugging and system tuning.
- IDAL ensures proper connection, installation, and operation of host server.
- Minimizes network traffic by storing commonly located procedures on the host, where they can be shared.
- Makes developing and testing applications easier.
- Provides spreadsheet, query tool, and mapping tool users with seamless host data integration with no programming effort.

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Tech Info Library Article Number:9135



# Tech Info Library

## DAL Server for VAX/VMS: Details and System Requirements

Revised: 6/29/92  
Security: Everyone

DAL Server for VAX/VMS: Details and System Requirements

=====

Article Created: 11 November 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated: 29 June 1992

TOPIC -----

This article gives the product details, language specifications, and system requirement for using Data Access Language (DAL) Server for VAX/VMS.

DISCUSSION -----

### Product Details

-----

- Database Support
  - Informix version 2.1 (or later)
  - Ingres version 6.1 (or later)
  - Oracle version 5.1.22 (or later)
  - Oracle version 6.0
  - Rdb/SQL version 3.1 (or later)
  - Sybase SQL Server version 3.0 (or later)
- Client Support
  - Uniform support for any application developed with DAL Developer's Toolkit for the Macintosh using a supported network
- Network Support
  - Asynchronous direct and dial-up connections
  - Support for the AppleTalk network system (requires AppleTalk for VMS version 2.0.6 or later for Phase I and version 2.1 for Phase II), which is supplied with DAL Server for VAX/VMS.
- Asynchronous Communications
  - Transmission speed: 300 to 19,200 baud
  - Character length: 7 or 8 data bits; 1 or 2 stop bits
  - Parity: odd, even, or none

- Handshake
  - XON/XOFF and none
  - Modem and direct connections
  - Log-on sequence specification
- Protocol
  - Error-correcting (16-bit CRC)
  - Data compression
  - Binary data transparency
- Resource Usage
  - 1MB of disk storage
  - Proper usage verified by test program
  - One sharable, reentrant 200K-300K process shared by all attached Macintosh applications

#### Language Specifications

-----

DAL is a complete language for describing connectivity tasks. DAL consists of these statement groups:

- Host Connection Statements

These establish and terminate a connection to a host system in the network, providing concurrent access to multiple hosts running DAL Servers.
- Data Manipulation Statements

These offer complete ANSI standard level 1, SQL-based data access to host databases.
- Program Structure Statements

These support testing, looping, and procedure calls within a DAL program.
- Output Statements

These generate output messages from the DAL program. The Client application processes these messages.

#### System Requirements

-----

To use the DAL Server for VAX/VMS, you need the following:

- Host environment: VAX/VMS version 5.1 (or later)
- Macintosh computer clients running DAL-compatible applications
- One or more of the supported database management systems
- The appropriate networking hardware and software

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Tech Info Library Article Number:9136



# Tech Info Library

## PowerBook: Which Models Support SCSI Disk Mode (9/96)

Revised: 9/17/96  
Security: Everyone

PowerBook: Which Models Support SCSI Disk Mode (9/96)

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Article Created: 29 October 1991  
Article Reviewed/Updated: 17 September 1996

TOPIC -----

Which PowerBook models allow mounting of the PowerBook computer's internal hard drive as a Small Computer Systems Interface (SCSI) device on the SCSI chain of a desktop Macintosh computer, also called SCSI Disk Mode?

DISCUSSION -----

PowerBook Models Using SCSI Disk Mode

-----

The SCSI Disk Mode feature exists on all PowerBook models except the PowerBook 140, 145, 145B, 150, and 170. Those PowerBook computers that DO support the feature have it coded into their read-only memory (ROM) on the logic board.

PowerBook Models Using HD Target Mode

-----

When you are using a PowerBook 190 or 5300 series computer, this disk mode function is no longer called SCSI Disk Mode. It is called HD Target Mode because these PowerBook models have an integrated drive electronics (IDE) hard drive, not a SCSI hard drive. Although the terminology is different, the function is the same.

Which SCSI Cable?

-----

You must use the appropriate SCSI cable for SCSI Disk Mode. The part number for the Apple HDI-30 Disk Adapter cable is M2539LL/A.

You can distinguish the Disk Adapter cable from a standard PowerBook SCSI cable by looking at the number of pins in the connector on the end of the cable that plugs into the PowerBook.

\* The Apple HDI-30 Disk Adapter (M2539LL/A) cable's connector has 30 pins. It is the thirtieth pin that puts the computer into SCSI Disk or HD Target Mode.



\* The Apple HDI-30 SCSI System (M2538LL/A) cable's connector has 29 pins. It is used to connect external SCSI devices, like CD-ROMs and hard drives, to your PowerBook computer.

#### What About PowerBook Duo Computers?

For the PowerBook 200 and 2300 Series (Duo) computers, you must use the Apple HDI-30 Disk Adapter cable in addition to the Duo MiniDock to enable the Duo to be used in SCSI Disk Mode.

**\*\*NOTE\*\*** The Duo Dock, Duo Dock II, and Duo Dock Plus do not support SCSI Disk Mode. When a PowerBook Duo computer is docked (except for the MiniDock) its SCSI capabilities are the same as any other desktop Macintosh computer, none of which support any kind of SCSI Disk or Target mode function.

This article was published in the Information Alley on 17 September 1996.

#### Article Change History

17 Sep 1996 - Reformatted and reworded for clarity.  
02 Jul 1996 - Added info about PowerBook 190 & 5300 series.  
13 Jun 1995 - Added PowerBook 200 series reference to Duo information.

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Tech Info Library Article Number:9137



# Tech Info Library

## PowerBook: International Travel & Overseas Purchase (11/94)

Revised: 11/30/94  
Security: Everyone

PowerBook: International Travel & Overseas Purchase (11/94)

=====  
Article Created: 4 November 1991  
Article Reviewed/Updated: 30 November 1994

TOPIC -----

What are the legal requirements for travelling with PowerBook computers internationally? What do you advise to avoid damaging the unit and/or voiding the warranty?

What government regulations do I need to be aware of for units purchased overseas (in particular Europe and the Far East), and brought into the U.S.?

DISCUSSION -----

There are export restrictions on PowerBook computers. You should contact the local U.S. Customs Department to find out what paperwork you'll need to export and import the equipment. If the value of the equipment is over \$2500, you also need to contact the local Department of Commerce and obtain a Shipper's Invoice.

You should not check the unit with luggage. If you must check it, use the original box. To avoid damage while travelling, a well padded and durable case should be used to transport the PowerBook. Be sure the battery is charged to demonstrate that the unit is functional.

Apple has a global warranty so that products purchased in or out of the United States can be repaired at any Apple authorized service provider. Be aware that parts availability may be limited and as a consequence, repair times may be extended while out of the country of original purchase. Be sure to have your proof of purchase with you when travelling overseas to validate warranty coverage.

Article Change History:

30 Nov 1994 - Reviewed for technical accuracy, updated warranty information.

Support Information Services

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Tech Info Library Article Number:9139



# Tech Info Library

## PowerBook & Macintosh Classic II: No Support for System 6

Revised: 11/30/94  
Security: Everyone

PowerBook & Macintosh Classic II: No Support for System 6

=====

Article Created: 4 November 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

Does system software version 6.0.7 work on the Macintosh Classic II and the Macintosh PowerBook? If not, why not?

DISCUSSION -----

The Macintosh PowerBook models and the Macintosh Classic II DON'T SUPPORT system software version 6.0.7 or version 6.0.8.

The software may work on the Macintosh PowerBook 100, but the backlit screen support, battery DA, and Low Power Dialogs won't work. The PowerBook 140 and 170 don't support System 6.0.x due to the newer ROM and other modifications in those systems.

The Macintosh Classic II has a different processor, and applications may have problems due to the different processor. You may not be able to install or start up with version 6.0.7 or 6.0.8 on the Macintosh Classic II.

Apple Computer won't answer questions based on problems associated with running system software versions 6.0.7 or 6.0.8 on any of these computers.

Article Change History:  
29 Nov 1994 reviewed and updated.

Support Information Services

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Tech Info Library Article Number:9140



# Tech Info Library

## Macintosh Quadra 700 and 900: Answers to Common Qs (11/94)

Revised: 12/2/94  
Security: Everyone

Macintosh Quadra 700 and 900: Answers to Common Qs (11/94)

Article Created: 24 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

This article answers common questions about the Quadra 700 and 900 computers.

DISCUSSION -----

- Q. Can the key position be sensed through software?  
A. There is no way to detect the key position through software.
- Q. Why didn't Apple use the IIcx RAM? Don't the latched writes speed up the CPU?  
A. Apple didn't use the IIcx RAM on the Quadras because it wasn't necessary. The writes are "latched" on the 68040 itself, so we didn't need to do it externally. In other words, if the 68040 needs to do a read and a write at the same time, it will do the read first (since it needs to read data to continue). It saves the write data until the read is done, and then it will write.
- Q. How can we get the physical Ethernet address of built-in Ethernet?  
A. The Ethernet address is not available via system call.
- Q. What is the speed of VRAM?  
A. The minimum speed of the VRAM is 100ns, but Apple's upgrade package will be 80ns to assure future compatibility.
- Q. Does Apple support 24-bit mode on the 21-inch Color Display? A. When we designed the frame buffer controller, the 256K VRAM SIMMs were the only SIMMs Apple was using (in the Display Card 8•24). The design goal was to use 4 banks of VRAM so that we could do "four-way-bank- interleaving." This is a method for getting the data out of the four banks in a staggered fashion, since no single bank could provide data fast enough to refresh most monitors at higher bit depths.

If we used larger densities of VRAM (that is, 512K), we still couldn't obtain 24-bit on the 21-inch display because the video driver chip (RAM-DAC aka AC/DC) could not support the clock speeds required to do 24-bits on a 21-inch monitor. This would require a much more expensive RAM-DAC. We would have to use 64-bit data paths in the frame buffer, which would have been prohibitively expensive for a main logic board solution.

Q. Does Apple's Display Card 8•24 support the 21-inch Color Display in 24-bit?

A. The Macintosh Display Card 8•24 doesn't support the 21-inch Color Display at 24-bit (2MB is not enough). The RasterOps 24-bit card provides a third-party solution.

Q. Is the 21-inch Color Display supported by the on-board video on the Macintosh IIfx, IIsi, or LC?

A. The 21-inch Color Display isn't supported by the on-board video on the Macintosh IIfx, IIsi or LC.

Q. Is the AppleCD SC drive supported internally by the Quadra?

A. The older AppleCD SC drive is not supported internally by the Quadra 900.

Q. What is a Pseudo Block transfer?

A. The term "Pseudo Block transfer" is really a 68040 term that indicates what type of system bus cycle we run when a Move16 instruction moves data to/from a NuBus board. Developers should use Move16 in their I/O drivers for higher throughput.

Q. Is the Symantec compiler compatible with the 68040 CPU?

A. Version 5.0 of the Symantec compiler is compatible with the 68040 CPU.

Q. Why isn't there 16-bit monitor support on the internal video as on the Macintosh LC?

A. We don't have 16-bit monitor support because the CLUT-DAC chip we use to generate the video control signals doesn't have a 16-bit mode. We couldn't use the CLUT-DAC chip from the LC because our video operates at higher frequencies (up to 100 MHz), which weren't supported by the LC CLUT-DAC.

#### Article Change History:

29 Nov 1994 - Article Reviewed and updated.

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Tech Info Library Article Number:9141



# Tech Info Library

## Macintosh Quadra: AppleTalk Phase II Only (10/91)

Revised: 11/29/94  
Security: Everyone

Macintosh Quadra: AppleTalk Phase II Only (10/91)

Article Created: 31 October 1991  
Article Reviewed/Updated: 29 November 1994

### TOPIC -----

I tested a Macintosh Quadra 900 on an AppleTalk Phase 1 network. When I selected the Phase 1 icon under the network icon, I got the message "an error has occurred using LocalTalk."

Is AppleTalk Phase 1 not supported on the Quadra on-board Ethernet?

### DISCUSSION -----

Ethernet on all Macintosh Quadra computers is Phase II only.

Article Change History:  
29 Nov 1994 - Article Reviewed and updated.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9142



# Tech Info Library

## A/UX 3.0: Multiple Macintosh Partitions (11/94)

Revised: 11/29/94  
Security: Everyone

A/UX 3.0: Multiple Macintosh Partitions (11/94)

Article Created: 29 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

Will A/UX 3.0 support multiple Macintosh partitions on the same hard drive with Apple HD SC Setup?

DISCUSSION -----

If a disk is set up with multiple Macintosh partitions, A/UX 3.0 will mount them all. However, A/UX doesn't include a tool to create them. Apple HD SC Setup will still be limited to creating only one Macintosh partition per disk. Third party utilities that support UFS and HFS file systems can create multiple Macintosh partitions.

Article Change History:  
29 November 1994 - Article Reviewed and updated. Made article public.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9144





# Tech Info Library

## PowerBook: Urethane-Based Paint Recommended for ID Label (11/94)

Revised: 11/29/94  
Security: Everyone

PowerBook: Urethane-Based Paint Recommended for ID Label (11/94)

=====

Article Created: 23 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

I want to paint my company name on my PowerBook for security and identification purposes. What type of paint does Apple recommend for the Macintosh PowerBook?

DISCUSSION -----

Apple recommends using a urethane-based paint. Be sure to use a primer coat on the polycarbonate plastics first because the finishing paint will not adhere directly to the polycarbonate.

Article Change History:  
29 Nov 1994 - Article Reviewed and updated.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9146



# Tech Info Library

## Ethernet NB Card: Cables, Connections, Termination (11/94)

Revised: 11/29/94  
Security: Everyone

Ethernet NB Card: Cables, Connections, Termination (11/94)

=====

Article Created: 17 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

We have the following questions about the Ethernet NB Card, regarding termination and compatibility:

- 1) Regarding the Ethernet NB Card and thin coax cable, is the termination supplied by the Apple Ethernet Thin Coax Transceiver, or the Apple Ethernet 5/13-meter cable, or both?
- 2) Would the new self-terminating thin coax cable work if connected to the older EtherTalk NB card (various revs) with a T connector? If so, would a terminator on the T be necessary?
- 3) Regarding question 2, what if we wish to connect the old card to a new card/CPU with built-in AAUI port? How can the two different cards/ports be connected using the new thin or thick coax cabling/transceivers? Would they need to use standard coax cable or can they use the Apple cable?

Example: We want to connect a Macintosh IIIfx with a Rev. M EtherTalk NB card to a Quadra 900, with built-in Ethernet. We now must connect the Rev. M card with a T connector to the AAUI thin coax transceiver on the Quadra 900. Are the cards compatible or is it the cabling?

- 4) Will the Synoptics concentrators support Apple Ethernet NB cards?
- 5) Will the current network configuration allow us to use the Apple LaserWriter IIg directly from the RJ-45 ports?

DISCUSSION -----

- 1) Both the Apple Ethernet Thin Coax Transceiver and the Apple Ethernet 5/13-meter cables have the ability to supply termination. In regard to

the Apple Ethernet Thin Coax Transceiver, there are two BNC connectors on the transceiver. If a cable isn't attached to one or both of these BNC connectors, termination is applied. When cables (any cables, Apple or non-Apple) are attached to both connectors, termination is not applied.

The Apple Ethernet 5-meter Thin Coax Cable and Apple Ethernet 13-meter Plenum Cable have terminators at each end of the cables. When nothing is attached at either end of the cable, termination is applied at the end of the cable where nothing is attached.

- 2) Yes, but the Apple Ethernet 5-meter Thin Coax Cable and Apple Ethernet 13-meter Plenum Cable are only self-terminating when an end is not connected to anything. If you are using an EtherTalk NB Card at the end of a network, the T connector will either need a terminator on the open end, or one of the self-terminating Apple cables attached with nothing connected at the other end of the cable.
- 3) There is no problem using non-Apple thin coax cable with the Apple Ethernet Thin Coax Transceiver, nor is there a problem using Apple Thin Coax Cable with the EtherTalk NB Card. The Apple Ethernet NB Card and AppleTalk NB Cards can be intermixed on a network with no problems.
- 4) Yes. The only caveat here is that the Synoptics concentrators must have a 10BaseT compatible card installed (Synoptics LatticeNet 3308 10Base-T Host Card, for example).
- 5) Yes, if the RJ-45 port is wired into a 10BaseT compatible host card (Synoptics LatticeNet 3308 10Base-T Host Card, for example).

#### Article Change History:

29 November 1994 - Article Reviewed and updated.

Support Information Services

Copyright 1992-94, Apple Computer, Inc.

Tech Info Library Article Number:9149



# Tech Info Library

## Macintosh Classic: US/Japan Systems Are 110V Only 10/91

Revised: 11/30/94  
Security: Everyone

Macintosh Classic: US/Japan Systems Are 110V Only 10/91

=====

Article Created: 30 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

I have a Macintosh Classic, and on the Power/Sweep-Board (805-0948-A) is a jumper that says 110/220 Volts. Is it simple to change to 220 Volts, 50 Hz for International use?

DISCUSSION -----

The power supply for the US/Japan Macintosh Classic is 110V only. It cannot be switched to 220V. The power supply for the International Macintosh Classic is 220V only. There are different components installed on each power supply.

Modifying the power supply by changing the JP1 jumper to work within a different voltage is definitely not recommended and will void the warranty.

Article Change History:  
29 Nov 1994 - Article Reviewed and updated.

Support Information Services

Copyright 1991-1994, Apple Computer, Inc.

Tech Info Library Article Number:9150



# Tech Info Library

## Apple Ethernet NB Card: 16-bit Bus Path and Tasks (10/91)

Revised: 11/29/94  
Security: Everyone

Apple Ethernet NB Card: 16-bit Bus Path and Tasks (10/91)

Article Created: 25 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

I'm a developer with two questions about the Apple Ethernet NB card.

- 1) How many data bits does the card work with internally: 8, 16 or 32?
- 2) What is the use of the 68000 processor when using EtherTalk or MacTCP?  
Does any of that code run on A/ROSE and does it make the data transfer faster?

DISCUSSION -----

- 1) The Apple Ethernet NB card has a 16-bit bus, and is comparable in performance to the older EtherTalk NB card.
- 2) Very few tasks are downloaded to the card (nothing on top of A/ROSE).  
So the on board 68010 mostly manages the DMA, off-loading little of the cycles and work required of the Macintosh's main logic board processor.

Incidentally, the SONIC chip used in the Ethernet NB card is 32-bit capable, and when used in Quadra systems is in 32-bit mode.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9151



# Tech Info Library

## A/UX: terminfo Decompile (11/94)

Revised: 11/29/94  
Security: Everyone

A/UX: terminfo Decompile (11/94)

Article Created: 18 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

Is there a terminal description decompiler available for terminfo?

I need to add a new terminal description for terminfo that is similar to what is already in the database. Is there a decompiler that will allow me to make small changes to an existing terminal type, without having to deduce the entire set of operating parameters?

DISCUSSION -----

Public domain software called "untic" can "decompile" a terminfo description file. The README file and untic.1 manual page provide more information.

You can find public domain software from the usual sources, such as user groups.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates  
Lists online services for "free" Apple software updates
- Obtaining Apple Product Support in the USA  
Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

Apple doesn't provide support for this software.

Article Change History:

29 Nov 1994 - Article Reviewed and updated.  
31 Aug 1992 - Reviewed For technical accuracy.

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Tech Info Library Article Number:9155



# Tech Info Library

## Macintosh HFS: Technical Documentation Available (10/91)

Revised: 11/29/94  
Security: Everyone

Macintosh HFS: Technical Documentation Available (10/91)

=====

Article Created: 18 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

I want to write a driver to allow the CD-ROM drive on my UNIX machine to read Macintosh HFS CDs. Is there any Apple documentation that describes HFS from the programmer's perspective?

DISCUSSION -----

The detailed information of Macintosh HFS (Hierarchical File System) is described in "Inside Macintosh, Volume IV," pages 89 - 212 (The File Manager).

The following Macintosh Technical Notes relating to HFS might be useful:

- TN 44 - HFS Compatibility
- TN 66 - Determine Which File System Is Active
- TN 68 - Searching All Directories on an HFS Volume
- TN 77 - HFS Ruminations

You can request the Macintosh Technical Notes from APDA.

Also, the "Technical Introduction to the Macintosh Family" documentation page 155 has information on the overview of HFS.

Article Change History:  
29 Nov 1994 - Article Reviewed and updated.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9156





# Tech Info Library

## A/UX: Disabling AppleTalk for Serial ImageWriter Connection

Revised: 9/30/92  
Security: Everyone

A/UX: Disabling AppleTalk for Serial ImageWriter Connection

=====

Article Created: 22 October 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

We want to use a serial ImageWriter under A/UX. We don't have any network printer, and want to connect it on the printer port. To enable this, we reconfigured our kernel (newconfig noappletalk) to remove the AppleTalk connection on the printer port and then restarted to make this change effective.

After restarting, we opened the Chooser DA, and noticed that AppleTalk was still active. We selected the ImageWriter icon, and got the choice between Printer and Modem ports in the right window. As we selected Printer, we got a dialog box saying that AppleTalk will be disconnected. We chose OK and got the usual window reminding us to change the page setup. However, when this dialog box closed, the selected port was still Modem and not Printer.

Fortunately, we can still use the Modem port, even without disabling AppleTalk. Is there a way to disable AppleTalk on the printer port?

### DISCUSSION -----

Yes, you can disable AppleTalk on either the Printer port or the Modem port by doing:

```
# appletalk -d
```

ONLY the Modem port can be used as the Chooser style of printing method

from the MultiFinder environment. The Printer port DOESN'T work in A/UX 2.0.1. This applies to both direct serial line and direct LocalTalk line connection.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9157



# Tech Info Library

## A/UX: Printing Large Files with lpr (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Printing Large Files with "lpr" (9/94)

=====

Article Created: 25 October 1991  
Article Reviewed/Updated: 9 September 1994

TOPIC -----

Is there a way to print files that are greater than 1MB using "lpr"? The manual entry says that "If you try to spool too large a file, it will be truncated."

After printing approximately 200 or so pages of a 400-page report, the file is truncated. This works out to about a 1MB limit on lpr. Do you have any suggestions on how we can run the whole file through the printer?

DISCUSSION -----

The default maximum file size printed via Berkeley "lpr" printer spooler under A/UX is 1000 blocks (1K/block) which is about 1MB.

However, this default limitation can be changed via the printcap entry called "mx" specified in the /etc/printcap database file. You may use the 0 value for the unlimited file size printing (for example, mx#0). Refer to the man pages for further details.

Article Change History:  
09 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9159



# Tech Info Library

## A/UX: Maximum Address Space per Process (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Maximum Address Space per Process (8/94)

=====

Article Created: 29 October 1991  
Article Reviewed/Updated: 30 Aug 1994

TOPIC -----

I'm running A/UX on a Macintosh IIx with 32MB of RAM. When running a test program, it appeared that one process can allocate a maximum of 28MB, although several processes together can allocate the maximum available virtual memory (32MB swap + 13MB internal memory available). Is there a way to increase the limit of 28MB?

DISCUSSION -----

We aren't sure how the "test program" came out with a maximum of 28MB address space allocated to one process. What kind of method did the tested program allocate for memory, via `sbrk()`, `malloc()`, `calloc()` or other system calls?

The maximum user address space for process is by default 40,000 pages, which is about 1GB. The kernel parameter for the maximum user address space is `MAXUMEM`, shown via "`kconfig -av.`" Although it can be up to 1GB, it still depends on how much swap space and physical memory is currently available. One way to increase to the address space limit for a process is to increase swap space (`swap -a`)!

Note that the `MINASMEM` (the minimum number of 10 pages reserved for the system to avoid deadlock) must be taken into consideration when calculating the current available swap disk space and resident memory.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:9160



# Tech Info Library

## A/UX: Printing Garbage When Starting A/UX (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Printing Garbage When Starting A/UX (9/94)

=====

Article Created: 29 October 1991  
Article Reviewed/Updated: 8 September 1994

TOPIC -----

I am running A/UX 3.0 on a Macintosh IIfx with 32MB of RAM. We have serially connected a line printer, using the "lp" system. The printer works, but when we start A/UX, the computer sends a lot of garbage to the printer. This continues until we turn off the printer. What causes this, and how can we avoid it?

DISCUSSION -----

Perhaps you had AppleTalk/LocalTalk printing configured before, and used either the modem (tty0) or print (tty1) port. Also, some unfinished print jobs left in the spooler might print out this way. Go to the /usr/spool/lp directory and check for anything left in the print queue.

Here are some other things you might want to check:

- Is the printer port (tty0 or tty1) getty disabled in the /etc/inittab file?
- Use the "ps -ef" command to display all processes that might introduce the problem.
- Is the 'lp' or 'lpd' daemon functioning properly?

Article Change History:  
08 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991-94 Apple Computer, Inc.

Tech Info Library Article Number:9161



# Tech Info Library

## A/UX: can't create lower memory segment Error (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: "can't create lower memory segment" Error (9/94)

=====

Article Created: 8 November 1991  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

After starting the A/UX system and the Login process, the Finder emulation starts, but the Command Shell doesn't. Meanwhile a message appears somewhere on the screen saying: "can't create lower memory segment". This is an intermittent error that appears three or four times a day.

DISCUSSION -----

The "can't create lower memory segment" error message might be displayed because the system has temporarily exhausted its available physical memory or swap space, or the number of shared memory segments attached to the calling process exceeds the system-imposed limit. This usually happens while trying to start up the Macintosh environment executed by the "startmac" process. Check your available memory and swap space to see if this is the case.

Article Change History:  
21 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9162



# Tech Info Library

## LaserDiscs: Three Companies that Press Custom Discs

Revised: 11/30/94  
Security: Everyone

LaserDiscs: Three Companies that Press Custom Discs

=====

Article Created: 29 October 1991  
Article Reviewed/Updated: 29 November 1994

TOPIC -----

Please provide me with the names of several companies that press LaserDiscs.

DISCUSSION -----

We have information on three such companies:

- Pioneer Communication
- 3M Optical Recording
- Disctronics

Each these companies makes sure that the source video material is in the proper format to achieve the desired results. They then master and press the LaserDiscs.

To locate a vendor's address and phone number, use the vendor name as a search string.

Support Information Service

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Tech Info Library Article Number:9163



# Tech Info Library

## Disc Manufacturing, Inc. (formerly Disctronics)

Revised: 7/7/93  
Security: Everyone

Disc Manufacturing, Inc. (formerly Disctronics)

=====

Article Created: 10/29/91  
Article Reviewed: 07/07/93  
Article Updated:

Disc Manufacturing, Inc.  
-----

1120 Cosby Way  
Anaheim, CA 92806

714-630-6700

714-630-1025 Fax

### Company Profile:

Disc Manufacturing, Inc. (formerly Disctronics), specializing in CD-ROMs, audio and CD-interactive.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9165





# Tech Info Library

## Macintosh: the Clipboard Uses Application's Memory Partition

Revised: 11/22/91  
Security: Everyone

Macintosh: the Clipboard Uses Application's Memory Partition

=====

Article Created: 25 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a 600K SoundEdit file open. When I try to copy and paste it, I get the message that there isn't enough memory.

What is the maximum amount of RAM that can be allocated to the Clipboard?

DISCUSSION -----

When data is copied to the Clipboard, the information is stored in the APPLICATION program's memory partition. (If you open "About this Macintosh," you can watch the amount of memory that is used up in the application's partition increase when it's trying to copy something.) The out of memory message tells you there isn't enough memory available in that application's partition to copy that information to the Clipboard.

SoundEdit defaults to about 1024K. Assuming that the partition size for SoundEdit is 1024K, if you have a 600K sound file open, plus the amount of memory required to launch the application, you would not have another 600K available to copy that sound into the Clipboard.

With SoundEdit set at 1024, we found there wasn't enough memory to copy a 437K sound file into the Clipboard. After quitting SoundEdit and increasing the partition size to 2024, we launched SoundEdit again, opened the same sound, and copied it to the Clipboard.

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Tech Info Library Article Number:9167



# Tech Info Library

## ImageWriter LQ Sheet Feeder: Paper Specifications (8/94)

Revised: 8/31/94  
Security: Everyone

ImageWriter LQ Sheet Feeder: Paper Specifications (8/94)

=====

Article Created: 17 October 1991  
Article Reviewed/Updated: 31 August 1994

TOPIC -----

How thick can the paper in the ImageWriter LQ Sheet Feeder be? I found the paper thickness spec for the printer -- is it the same for the feeder?

NOTE: This product has been discontinued and is no longer available.

DISCUSSION -----

The paper specifications for the ImageWriter LQ Sheet Feeder are the same as for the printer, except that the Sheet Feeder can't do multi-part forms.

Here are the paper thickness specifications from the ImageWriter LQ Owner's Guide:

- 0.05 to 0.55 mm
- 0.002 to 0.028 inch
- 16 to 24 lb. paper

Article Change History:  
31 Aug 1994 - Removed specsht keyword. Reviewed and updated.

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9168



# Tech Info Library

## DAL 1.3: Protocol Converter Manual Correction

Revised: 11/22/91  
Security: Everyone

DAL 1.3: Protocol Converter Manual Correction

=====

Article Created: 23 October 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I have discovered an error in the DAL 1.3 Macintosh Installation and User's Guide. The section on Protocol Converter connections, page 45, incorrectly specifies the "Escape" character as ^]. It should be ^[ (that is, Up arrow, LEFT bracket).

It is shown properly in the example for PFkey 3: ^[3.

DISCUSSION -----

Thanks for the information. This is helpful to people who use a Protocol Converter and key definitions that include Escape character sequences.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9169



# Tech Info Library

## **IOLink Controls Apple IIC Bus Components from a Macintosh**

Revised: 11/21/91  
Security: Everyone

IOLink Controls Apple IIC Bus Components from a Macintosh

=====

Article Created: 23 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

A new product, called IOLink, that controls Apple IIC bus components from a Macintosh computer is now available from Hamlin Technical. Apple IIC is a serial bus standard developed by Philips/Signetics that allows all circuits within a system to communicate bidirectionally with each other. Apple IIC compatible components are available from a number of manufacturers.

DISCUSSION -----

IOLink offers engineers and technicians a way to control all sorts of circuits on the workbench; for example, analog input and output, parallel I/O ports, high-current solenoid drivers, video and audio circuits. IOLink runs on any Macintosh and consists of a hardware interface and either a stand-alone application or HyperCard XCMD.

The IOLink products are a solution in almost any moderate speed I/O application for the Macintosh where plug-in cards or RS-422 controllers were used. Apple IIC bus developers can test and debug their products from either the IOLink application program or HyperCard.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:9170



# Tech Info Library

## Hamlin Technical Service (dba J. Hamlin)

Revised: 4/4/97  
Security: Everyone

Hamlin Technical Service (dba J. Hamlin)

=====

Article Created: 10/23/91  
Article Reviewed: 07/09/93  
Article Updated: 04/04/97

Hamlin Technical Service

-----

1825 42nd Ave.  
Capitola, CA 95010

408-462-1632

Company Profile:  
Specialized in Macintosh consulting (dba J. Hamlin)

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9171



# Tech Info Library

## Personal LaserWriter: Why No Page Counter

Revised: 11/21/91  
Security: Everyone

Personal LaserWriter: Why No Page Counter

=====

Article Created: 23 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is there any way to find out how many sides of paper a Personal LaserWriter SC has printed in its lifetime?

DISCUSSION -----

There is nothing built into the Personal LaserWriter engine that counts printed pages. A mechanical counter would add cost and be vulnerable to tampering. An electronic counter would require additional logic that may not otherwise be present.

About the only laser printers with a page counter are those with a built-in PostScript interpreter. Implementing one on a PostScript controller is relatively trivial, because the requisite logic is already in place. The count is usually used to determine mechanism wear.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9172



# Tech Info Library

## LaserWriter: Thinnest Possible Lines

Revised: 11/21/91  
Security: Everyone

LaserWriter: Thinnest Possible Lines

=====

Article Created: 1 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

What is the minimum line width that a Personal LaserWriter NT can print (in millimeters and points)? Is this the same for all LaserWriter printers?

DISCUSSION -----

The thinnest line a LaserWriter can print is limited by what's known as a device pixel. With all LaserWriter models to date, including the Personal LaserWriter (using the Canon P-110 engine), a device pixel is 1/300 of an inch, or .08mm. This translates to 24/100, or roughly one quarter of a point.

Many programs won't actually display a line this narrow, and instead use one point as their smallest printable unit. This PostScript code will generate an example page with a matrix of lines, each a single device pixel thick:

```
0 setlinewidth
72 72 612 {dup 0 moveto 792 lineto stroke} for
72 72 792 {dup 0 exch moveto 612 exch lineto stroke} for
showpage
```

Use a PostScript dump utility to download this program. This feature is available in version 7 of the LaserWriter Font Utility, or one of the old standbys like PSDump or Widgets.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9173



# Tech Info Library

## DAL and TCP/IP Support for VAX, IBM, and UNIX Hosts

Revised: 7/15/92  
Security: Everyone

DAL and TCP/IP Support for VAX, IBM, and UNIX Hosts

=====

Article Created: 17 October 1991  
Article Last Reviewed: 9 July 1992  
Article Last Updated: 9 July 1992

TOPIC -----

I'm using System 7 on a Macintosh II-class computer. I have some DAL questions:

- 1) Does DAL for VMS, or DAL for MVS, support TCP/IP from the workstation?  
In other words, can I log on to a VAX or IBM host from a Macintosh using Data Access Language and TCP/IP protocol?
- 2) Do any of the front-end DAL products (ClearAccess, Brio, GQL) support TCP/IP protocol for doing the DAL/SQL queries?
- 3) Any idea who might have a DAL for UNIX product?

DISCUSSION -----

- 1) Neither DAL for VMS nor DAL for MVS support TCP/IP connections. The only DAL servers that support TCP/IP connections are DAL Server for VM and DAL Server for A/UX.

With DAL 1.3, you can log on to a VAX using the following DAL connections:

- ADSP
- ADSP toll (with Comm Toolbox tool)
- Asynchronous
- Async CTB (with Comm Toolbox tool)

With DAL 1.3, you can log on to an IBM MVS host using the following connections:



- MacDFT Coax/Twinax card connection
- MacDFT TokenTalk NB Card connection - not in System 7
- MacDFT Serial NB Card connection - not in System 7
- MacIrma connection
- MacIrma HLLAPI connection
- MacMainFrame connection
- NetWay 1000/2000 connection
- Protocol Converter connection
- SNA•ps APPC connection - as of release 1.3.5 of FAL, SNA•ps 3270 connection.

2) If DAL Server and Client support the connections between the client workstation and the host, the applications will work without any changes.

3) APDA offers a product for DAL support for TCP/IP connections to VM and to develop for UNIX hosts. Pacer software licenced DAL to develop for UNIX hosts, and are now shipping some UNIX DAL servers. For more information, please contact Pacer directly.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:9174



# Tech Info Library

## PATHWORKS: Using With Wollongong's TCP/IP

Revised: 1/21/92  
Security: Everyone

PATHWORKS: Using With Wollongong's TCP/IP

=====

Article Created: 17 October 1991  
Article Last Reviewed:  
Article Last Updated:

### TOPIC -----

We would like to run PATHWORKS on our VAX systems. However, we are entirely based on TCP/IP and don't run DECnet at all. We are using TCP Connect II on Macintosh computers.

The other difficulty is that we don't use DEC's TCP/IP, but rather, Wollongong's TCP/IP.

Will this work?

### DISCUSSION -----

PATHWORKS for Macintosh is a Digital product. It is sold and supported by Digital. The official line from Digital is that they only support their version of TCP/IP.

You won't be able to get all the components to work if you don't allow DECnet protocols, since most of them rely on DECnet. The most common thing people use TCP/IP for is MacX and DECwindows; if you use another package, you need to make some adjustments for this to work. For instance, you will have to log on to the VAX via Telenet, and under VMS, create a display for DECwindows with the \$ SET DISPLAY command. You will have to know what parameter to specify for /TRANSPORT because the keyword TCPIP is reserved for the Digital TCP package. After you successfully create the display, you may use the \$ SPAWN or \$ RUN/DETACH command to execute the DECwindows client over the display.

The bottom line is that you will have to work with both Digital and Wollongong to get the correct syntax for different operations. If you are very interested in running PATHWORKS in this environment, we suggest you

discuss the situation with the Digital Account Rep for an official Digital solution.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9175



# Tech Info Library

## PATHWORKS: Printing Option-Key Characters (11/94)

Revised: 11/11/94  
Security: Everyone

PATHWORKS: Printing Option-Key Characters (11/94)

=====

Article Created: 23 October 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

When printing any letter or character produced by an option-key combination, like the • (Option-8) character, the result is garbage -- regardless of the font/software package used on the Macintosh. I think the eighth bit is being dropped from the datastream somewhere between the Macintosh and the printer.

Here is the configuration:

- DEC VAX running PATHWORKS 1.0 and GrayMatter Print Spooling Software
- Macintosh Workstations running System 7
- QMS PS-810 Laser Printers
- MMac/8 Serial-to-Ethernet Cable Routers connecting the QMS serially to the router, then Ethernet from the router to the VAX.

DISCUSSION -----

We printed a MacWrite document, with a number of Option-key-combination characters, to an Apple LaserWriter via the PATHWORKS 1.0 VAXshare Print Services with no problem.

We aren't really clear how GrayMatter Print Spooling Software fits into this picture, because PATHWORKS for Macintosh comes with the VAXshare Print Service. It would be helpful to know if you're printing from a Macintosh to the VAXshare Print Spooler or from the GrayMatter Print Spooler.

At any rate, the official statement from Digital for PATHWORKS 1.0 is that it only supports the following Digital and Apple printers:

- Digital: LPS20, LPS40, LPS40 Plus, LN03R
- Apple: LaserWriter, LaserWriter Plus, LaserWriter IINT and IINTX

Serially connected printers might have a problem with the default settings of

7-bit mode. To print the Option-key-combination characters, you'll need to set it to 8-bit mode.

To set the printer to 8-bit mode, print the following two files:

```
msap$set_params.ps  
msap$show_params.ps
```

in the PATHWORKS directory: msa\$root:[msa.msap\$utility]

The second file prints a confirmation sheet on the printer.

If the above suggestion doesn't work, we strongly suggest that you contact the Digital Customer Support Center. They might know of problems associated with third-party printers and PATHWORKS, and might already have a patch for it in their database.

#### Article Change History:

11 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9178



# Tech Info Library

## DECnet/CTERM & AppleTalk-LAT Gateway Don't Run on A/UX (8/93)

Revised: 8/3/93  
Security: Everyone

DECnet/CTERM & AppleTalk-LAT Gateway Don't Run on A/UX (8/93)

Article Created: 30 October 1991  
Article Reviewed/Updated: 3 August 1993

TOPIC -----

Are either of these compatible with A/UX 2.x or 3.x, now that adsp is available for A/UX?

- DECnet for Macintosh using CTERM Tool
- The upcoming (PATHWORKS 1.1) AppleTalk-LAT Gateway

DISCUSSION -----

Neither works with A/UX. The AppleTalk-LAT Gateway doesn't work on A/UX because it requires LAT, which does not work on A/UX.

Article Change History:  
3 August 1993 - Review for technical accuracy.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9181



# Tech Info Library

## AppleShare 3.0: Memory and Apple II Limits (11/94)

Revised: 11/11/94  
Security: Everyone

AppleShare 3.0: Memory and Apple II Limits (11/94)

=====

Article Created: 18 October 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

- 1) To run under System 7, AppleShare 3.0 needs 4MB RAM. Does this include having the Print Serving option running as well?
- 2) Is 5MB enough to run AFS 3.0, APS 3.0, AppleTalk Internet Router and support for Apple II users?
- 3) I saw something on a limitation of 20 some Apple II users -- is this a simultaneous log-on limit, or can I assign only 20 users the ability to log on from an Apple II?

DISCUSSION -----

- 1) The 4MB requirement for AppleShare 3.0 includes concurrent operation of both file and print services. This includes Apple II access.
- 2) On a 5MB Macintosh IIci system you would also be able to install the Apple Internet Router, although for performance considerations it would be better to have the Apple Internet Router reside on a dedicated Macintosh. High traffic involving one of the applications can severely impact the performance of the other.
- 3) Although it is possible to define up to 8,192 users/groups (including the ability to log on from an Apple II), we would recommend not more than 2,000 users/groups. As the number of users/groups grows beyond 2000 and approaches 8000, it can take significantly longer to start up because it takes longer for AppleShare 3.0 to read through so many names. It doesn't affect server running performance or the amount of RAM required. The limitations regarding the number of users, Macintosh and Apple II alike, that can sign on concurrently is defined in the AppleShare 3.0 File Server Preferences. AppleShare 3.0 can accommodate up to 120 connections at one time.

If you plan to have Apple IIGS systems start up over the network, experience has shown that the length of time it takes to have more than 20 Apple IIGS systems do so may exceed the customers expectations. This will not be a problem if the Apple II systems are starting locally and then logging on to the file server.

Article Change History:

11 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9185





# Tech Info Library

## AppleTalk Remote Access: Hayes SmartModem 9600, Custom CCL

Revised: 11/21/91  
Security: Everyone

AppleTalk Remote Access: Hayes SmartModem 9600, Custom CCL Tools

=====

Article Created: 22 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

AppleTalk Remote Access doesn't ship with a setup for the Hayes SmartModem 9600. (If you use the standard 9600 with the Ultra CCL, it connects only at 2400, not 9600.) Where can we get a tool to create CCLs for other types of modems for use with AppleTalk Remote Access?

DISCUSSION -----

SmartModem 9600

-----

The Hayes V-Series SmartModem 9600 (also known as the Express 96) uses Advanced Hayes Proprietary 9600 Communications. Due to the nonstandard and proprietary nature of the modems (they are not V.32 compatible), Apple decided not to include a CCL for them.

An Express 96 can only communicate at 9600 baud with another Express 96. As you discovered, use of the "Hayes Ultra 96" CCL limits communications to 2400 baud between Express 96 modems. A "CCL.Hayes V9600" CCL has been developed internally for use with the Express 96.

Tool for Custom CCLs

-----

The Modem Workshop HyperCard stack used to develop AppleTalk Remote Access CCLs is available for customers through APDA.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9186



# Tech Info Library

## Personal LaserWriter LS: Output Tray Capacity Increased

Revised: 11/21/91  
Security: Everyone

Personal LaserWriter LS: Output Tray Capacity Increased

=====

Article Created: 21 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The Apple Personal LaserWriter LS now has an additional multi-purpose tray assembly (output paper tray) available. What is the paper capacity?

DISCUSSION -----

This new tray accommodates 70 sheets, and is interchangeable with the current 50-sheet output tray.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9188



# Tech Info Library

## Shiva FastPath 5: No UNIX Host Required for IP Tunneling

Revised: 11/21/91  
Security: Everyone

Shiva FastPath 5: No UNIX Host Required for IP Tunneling

=====

Article Created: 29 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does the Shiva FastPath 5 require a UNIX host to do IP tunneling?

DISCUSSION -----

The Shiva FastPath 5 doesn't require a UNIX host to do IP tunneling. Any AppleShare host (including Macintosh, VAX, and so on) connected to the same network can provide the ATALKATAB file to the FastPath 5 (or FastPath 4 with the new 5.0 Prom).

This information was provided by Shiva.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9190



# Tech Info Library

## A/UX: Use Minimum Macintosh Install for Mac OS (9/94)

Revised: 9/14/94  
Security: Everyone

A/UX: Use "Minimum Macintosh" Install for Mac OS (9/94)

=====

Article Created: 10 September 1991  
Article Reviewed/Updated: 13 September 1994

TOPIC -----

I have the default 2MB Macintosh OS partition, and there isn't enough room to install all necessary A/UX startup files and the bin folder.

DISCUSSION -----

To have enough space in the Macintosh OS partition for the necessary A/UX files, you must do a "Minimum Macintosh" install when installing system software. There isn't enough room to install a standard System Folder and the necessary A/UX files.

Article Change History:  
13 Sep 1994 - Reviewed.  
31 Jun 1993 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9191



# Tech Info Library

## A/UX: How To Determine Version Number

Revised: 1/24/92  
Security: Everyone

A/UX: How To Determine Version Number

=====

Article Created: 10 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How can I determine the version of A/UX that I'm running?

DISCUSSION -----

The "/etc/RELEASE\_ID" file contains the version number.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9192



# Tech Info Library

## A/UX: Does Not Support TCP/IP Over LocalTalk

Revised: 9/24/92  
Security: Everyone

A/UX: Does Not Support TCP/IP Over LocalTalk

=====

Article Created: 10 September 1991

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

Does A/UX support TCP/IP over both EtherTalk and LocalTalk?

### DISCUSSION -----

A/UX supports TCP/IP only over EtherTalk. It does not support TCP/IP over LocalTalk.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9193



# Tech Info Library

## A/UX: How to Change Hostname

Revised: 11/9/92  
Security: Everyone

A/UX: How to Change Hostname

=====

Article Created: 10 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I change the Hostname of my system?

### DISCUSSION -----

Yes. Here's how to change your Hostname:

- 1) Modify the "/etc/HOSTNAME" file to reflect the new Hostname you want for your system.
- 2) Ensure that "/etc/hosts" has the new Hostname.
- 3) Restart the system to make this change become active.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9194



# Tech Info Library

## A/UX: How to Change the IP Address

Revised: 11/9/92  
Security: Everyone

A/UX: How to Change the IP Address

=====

Article Created: 10 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Can I change my IP address after building a kernel for networking?

### DISCUSSION -----

You can temporarily change the IP address using "ifconfig". If you want the change to be permanent, modify the "/etc/NETADDRS" file to reflect the new IP address, and restart the computer.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9195





# Tech Info Library

## A/UX 2.0: Recognizes DayStar Cache Card for Macintosh IICI

Revised: 11/9/92  
Security: Everyone

A/UX 2.0: Recognizes DayStar Cache Card for Macintosh IICI

=====

Article Created: 10 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does A/UX 2.0 recognize a DayStar cache card for the Macintosh IICI?

### DISCUSSION -----

Yes, A/UX recognizes the card without any special drivers installed.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9196



# Tech Info Library

## A/UX: tar Supports Symbolic Links with -i Option

Revised: 11/9/92  
Security: Everyone

A/UX: "tar" Supports Symbolic Links with -i Option

=====

Article Created: 10 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does "tar" support symbolic links?

### DISCUSSION -----

Yes, "tar" supports symbolic links if you use the -i option. You can also use "cpio" to copy symbolic links.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9198



# Tech Info Library

## A/UX: How to Print a PostScript File

Revised: 9/28/92  
Security: Everyone

A/UX: How to Print a PostScript File

=====

Article Created: 11 September 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I print a PostScript file to a printer from A/UX?

### DISCUSSION -----

Use the "enscript" command.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9199



# Tech Info Library

## A/UX: How to Select a Printer

Revised: 9/28/92  
Security: Everyone

A/UX: How to Select a Printer

=====

Article Created: 11 September 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

How do I select a printer under A/UX?

### DISCUSSION -----

From the CommandShell prompt, enter the "at\_cho\_prn" command. This program prompts you to select the zone (if any are present) that the printer is in, then it prompts you to select the correct printer in the zone you chose.

An alternative is to select the printer via the Chooser. Note that the "lpr" command will use the printer selected in the Chooser as the default printer destination.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9200



# Tech Info Library

## A/UX 2.0: Problem Printing to Serial ImageWriter

Revised: 8/18/93  
Security: Everyone

A/UX 2.0: Problem Printing to Serial ImageWriter

=====

Article Created: 11 September 1991  
Article Reviewed/Updated: 31 August 1992

TOPIC -----

I am running A/UX 2.0 and when I try to print from an application to a serially connected ImageWriter, my system hangs. I can print to the same ImageWriter using LPR.

DISCUSSION -----

This problem has been fixed in A/UX 2.0.1.

Article Change History:  
31 Aug 1992 - Reviewed for technical accuracy.

Copyright 1991-92, Apple Computer, Inc.

Tech Info Library Article Number:9201



# Tech Info Library

## A/UX: Macintosh Display Card 8•24 GC Support (8/93)

Revised: 8/3/93  
Security: Everyone

A/UX: Macintosh Display Card 8•24 GC Support (8/93)

=====

Article Created: 11 September 1991  
Article Reviewed/Updated: 3 August 1993

TOPIC -----

Does A/UX support the Macintosh Display Card 8•24 GC?

DISCUSSION -----

At this time, A/UX does not support the Macintosh Display Card 8•24 GC in accelerated mode. It does support the card in non-accelerated mode.

Article Change History:  
3 August 1993 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9202



# Tech Info Library

## A/UX: Does Not Recognize ADB Port as a tty Port

Revised: 11/11/92  
Security: Everyone

A/UX: Does Not Recognize ADB Port as a tty Port

=====

Article Created: 11 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

Does A/UX recognize the ADB (Apple Desktop Bus) port as a tty port?

### DISCUSSION -----

No, it doesn't.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9203



# Tech Info Library

## A/UX: Supports One Macintosh Volume per Hard Drive (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Supports One Macintosh Volume per Hard Drive (8/94)

=====

Article Created: 11 September 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

I have four Macintosh volumes on an external drive, but A/UX recognizes only the first volume.

DISCUSSION -----

A/UX supports only a single Macintosh volume on a hard drive. If you have multiple volumes installed, A/UX recognizes only the first volume.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991, 1994 Apple Computer, Inc.

Tech Info Library Article Number:9204





# Tech Info Library

## A/UX: How To Edit the /etc/passwd File (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: How To Edit the "/etc/passwd" File (6/93)

Article Created: 11 September 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

When I try to use the vi editor to edit the "/etc/passwd" file, I get a message that the file is in use.

DISCUSSION -----

If no one is currently editing the /etc/passwd file, delete the "/etc/ptmp" file. When this file exists, the "/etc/passwd" file cannot be edited because the "/etc/ptmp" file places a lock on the/etc/passwd" file.

If someone else is editing the /etc/passwd file, wait until they are done. Do not remove /etc/ptmp file in this case.

Article Change History:  
17 Jun 1993 - Revised add information at the end of the article.  
31 Aug 1992 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computers, Inc.

Tech Info Library Article Number:9205



# Tech Info Library

## LaserWriter II: Envelope Cassette Part Number

Revised: 8/31/95  
Security: Everyone

LaserWriter II: Envelope Cassette Part Number

=====

Article Created: 16 September 1991  
Article Reviewed/Updated: 30 August 1995

TOPIC -----

What is the part number for the LaserWriter IINTX optional envelope tray?

DISCUSSION -----

The part number is 699-8034 and is only available at an Apple-authorized service provider.

Article Change History:  
30 Aug 1995 - Corrected part number.

Support Information Services

Copyright 1991-95, Apple Computers, Inc.

Tech Info Library Article Number:9206



# Tech Info Library

## Macintosh: How Network and Node Numbers Are Determined

Revised: 1/27/92  
Security: Everyone

Macintosh: How Network and Node Numbers Are Determined

=====

Article Created: 16 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How does a Macintosh determine what network and node number to use?

DISCUSSION -----

The Macintosh requests a network number via a broadcast message to the network. Once it receives the network number, the Macintosh tries to set the node number to the same number it used successfully the last time it was started up. If that number is currently in use, a random number is generated until an available node number is found.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9210



# Tech Info Library

## MacX: Another Window Manager Already Running Error

Revised: 1/27/92  
Security: Everyone

MacX: "Another Window Manager Already Running" Error

=====

Article Created: 16 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

While trying to load an X client under MacX, I get a message saying that  
"another window manager is already running."

DISCUSSION -----

You are getting this message because displays 0 and 2 in MacX are  
controlled by the MacX built-in window manager.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9211



# Tech Info Library

## MacDFT: SNA•ps 3270 Terminal Emulation Software Upgrade Info

Revised: 2/3/92  
Security: Everyone

MacDFT: SNA•ps 3270 Terminal Emulation Software Upgrade Info

=====

Article Created: 16 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I am using MacDFT. How can I get the SNA•ps 3270 terminal emulation software upgrade?

DISCUSSION -----

Registered users of MacDFT will automatically be mailed an upgrade for the SNA•ps 3270 terminal emulation product. Non-registered users should send their original MacDFT disk to:

Apple Computer  
Promotional Support  
P.O. Box 4055  
Cupertino, CA 95015-4055

for the upgrade.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9212



# Tech Info Library

## A/UX: Can't Access Macintosh HFS Volume From Command Line

Revised: 11/9/92  
Security: Everyone

A/UX: Can't Access Macintosh HFS Volume From Command Line

=====

Article Created: 16 September 1991

### Article Change History

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08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Can I access a Macintosh HFS volume from the command line?

### DISCUSSION -----

No.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9213



# Tech Info Library

## DAL: Patch Available for VMS 5.4 Support

Revised: 6/30/92  
Security: Everyone

DAL: Patch Available for VMS 5.4 Support

=====

Article Created: 17 September 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 30 June 1992

TOPIC -----

I am using DAL to connect to a VAX. I recently upgraded to VMS 5.4 from version 5.3, and now I am unable to connect with DAL.

DISCUSSION -----

There is a DAL patch available that supports VMS 5.4. It can be used with VMS 5.3.

To request a copy of the patch:

- If you purchased PATHWORKS from DEC, contact DEC.
- If you have a DAL support contract with the Direct Response Center (DRC) or are under DRC support warranty, contact the DRC.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:9215



# Tech Info Library

## Macintosh: How Long It Takes to Fully Shut Down

Revised: 2/3/92  
Security: Everyone

Macintosh: How Long It Takes to Fully Shut Down

=====

Article Created: 17 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

After a Macintosh is shut down, or its power is disconnected, how long does the computer stay charged before it is completely shut off?

DISCUSSION -----

For the Macintosh Plus, it is 17 ms; for all other Macintosh models, it is 20 ms.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9218





# Tech Info Library

## MacTCP: Cannot Be Configured for Alternate Path Routing

Revised: 1/30/92  
Security: Everyone

MacTCP: Cannot Be Configured for Alternate Path Routing

=====

Article Created: 17 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I configure MacTCP for alternate path routing?

DISCUSSION -----

No, you can't.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9219



# Tech Info Library

## DAL: Supports Oracle 6.0.31 and Earlier

Revised: 1/28/92  
Security: Everyone

DAL: Supports Oracle 6.0.31 and Earlier

=====

Article Created: 17 September 1991  
Article Last Reviewed: 6 July 1992  
Article Last Updated: 6 July 1992

TOPIC -----

Does DAL support Oracle 6.0.33?

DISCUSSION -----

Yes, as of DAL release 1.3 it is supported. Oracle 6.033 no longer automatically defines the SYS\$ORACLE logical so you will have to define it yourself to be able to use DAL. You should define SYS\$ORACLE to be the value "ORA\_RDBMS".

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:9220



# Tech Info Library

## Personal LaserWriter: Driver Not Same as LaserWriter Driver

Revised: 1/30/92  
Security: Everyone

Personal LaserWriter: Driver Not Same as LaserWriter Driver

=====

Article Created: 17 September 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a Personal LaserWriter SC connected to my Macintosh. When I select the LaserWriter driver in the Chooser, I don't see the printer.

DISCUSSION -----

In the Chooser, select the Personal LaserWriter driver instead of the LaserWriter driver.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9221



# Tech Info Library

## MacTCP: Use Version 1.1 with System Software Version 7.0

Revised: 1/30/92  
Security: Everyone

MacTCP: Use Version 1.1 with System Software Version 7.0

=====

Article Created: 17 September 1991  
Article Last Reviewed: 10 October 1991  
Article Last Updated: 10 October 1991

TOPIC -----

What version of MacTCP should I use with system software version 7.0?

DISCUSSION -----

You can use MacTCP 1.1 with system software version 7.0 if you install the MacTCP Tool in the Extensions folder and MacTCP in the System Folder.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9222



# Tech Info Library

## A/UX: Supports System 7 Print Drivers

Revised: 9/16/92  
Security: Everyone

A/UX: Supports System 7 Print Drivers

=====

Article Created: 17 September 1991

### Article Change History

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06/25/92 - REVIEWED

- For technical accuracy

### TOPIC -----

Does A/UX support system software version 7.0 print drivers?

### DISCUSSION -----

Yes. If you have a Personal System Folder, put the drivers in the Personal System Folder, located in the user's home directory.

If you don't have a Personal System Folder, put the drivers in the generic System Folder in /mac/sys/System Folder.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9223



# Tech Info Library

## A/UX 2.0.1 Incremental Update: Doesn't Require System 6.0.7

Revised: 11/9/92  
Security: Everyone

A/UX 2.0.1 Incremental Update: Doesn't Require System 6.0.7

=====

Article Created: 17 September 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I received system software version 6.0.7 with the A/UX 2.0.1 Incremental Update. Must I install this version of the system software on my Macintosh?

### DISCUSSION -----

No. The A/UX 2.0.1 Incremental Update was released mainly to be compatible with the Macintosh IIsx, which requires system software version 6.0.7.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9224



# Tech Info Library

## Macintosh IIsi: How to Install A/UX 2.0.1 Incremental Update

Revised: 2/3/92  
Security: Everyone

Macintosh IIsi: How to Install A/UX 2.0.1 Incremental Update

=====

Article Created: 17 September 1991  
Article Last Reviewed: 3 July 1992  
Article Last Updated:

TOPIC -----

How do I install the A/UX 2.0.1 Incremental Update on my Macintosh IIsi?

DISCUSSION -----

First, install the A/UX 2.0.1 Incremental Update on a hard drive attached to a different Macintosh. Then move that hard drive to the Macintosh IIsi.

The A/UX 2.0.1 installation works on a Macintosh IIsi, but the Incremental Update does not.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9225



# Tech Info Library

## A/UX: How to Configure for EtherTalk Support (9/94)

Revised: 9/2/94  
Security: Everyone

A/UX: How to Configure for EtherTalk Support (9/94)

=====

Article Created: 4 November 1991  
Article Reviewed/Updated: 2 September 1994

TOPIC -----

How do I install the EtherTalk drivers under A/UX? Neither the EtherTalk Installer Disk nor the Network CDEV seems to work.

DISCUSSION -----

Network protocols, like TCP/IP and AppleTalk, must be configured into the A/UX kernel before they can be used. When A/UX is shipped, TCP/IP is not part of the kernel. AppleTalk is installed but configured only for the LocalTalk port, not over an Ethernet card.

To add networking capability through the Ethernet port, you must add a low-level driver to the kernel. The EtherTalk drivers on the EtherTalk Installer disk install an Ethernet driver for the Macintosh Toolbox to use. Because, under A/UX, the Macintosh Toolbox environment relies on the A/UX kernel to take care of networking, installing a Macintosh Toolbox level driver is not enough.

To use either TCP/IP or EtherTalk protocols, add the Ethernet driver using the newconfig command. See the directions in the "Network System Administration" manual for a full description of configuring the kernel for Ethernet. The short version follows.

Before beginning, you must have the following:

- An IP address
- A broadcast address
- A netmask and a hostname.

Check with your network administrator if you aren't sure what these should be in your installation. These instructions assume an Apple Ethernet card. If your



Ethernet card is from another vendor, you will need to get A/UX drivers for the card. The Macintosh OS drivers are not sufficient to establish Ethernet services (TCP/IP or AppleTalk) under A/UX. Follow the instructions from the vendor for how to install the A/UX drivers and configure the kernel.

- 1) Assuming you have an Apple card (or have properly configured your third-party card), from the Command Shell, type the line:

```
newconfig bnet
```

- 2) If you also need nfs services, type:

```
newconfig nfs
```

The system will reconfigure itself to include the new modules. It will prompt you to answer several questions, including IP address, broadcast address, and so on. When it asks if you want this system to be a Yellow Pages client, say no.

--WARNING-- If the system is configured to be a Yellow Pages client when there is no Yellow Pages server present on the network, or if the A/UX system can't talk to the YP server for any reason, the A/UX system will hang forever on the next boot. This is because it is trying to connect to a server that doesn't exist. It's much safer to say "no" to being a YP client now and turn on the YP daemon later, after the TCP/IP connections have been verified.

#### Article Change History:

2 Sept 1994 - Reviewed.

31 Aug 1992 - REVIEWED for technical accuracy.

#### Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9228



# Tech Info Library

## A/UX: How It Checks for 32-Bit Clean

Revised: 9/24/92  
Security: Everyone

A/UX: How It Checks for 32-Bit Clean

=====

Article Created: 4 November 1991

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

How does A/UX know if something isn't 32-bit clean?

### DISCUSSION -----

It checks a bit in the SIZE resource in the application. See man page for changesize for details on how to change the value of this bit.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9229



# Tech Info Library

## A/UX: Using Claris FileMaker

Revised: 9/24/92  
Security: Everyone

A/UX: Using Claris FileMaker

Article Created: 4 November 1991

### Article Change History

-----  
08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

FileMaker works great when I'm logged in as root, but if I log in as anyone else, it says it can't execute.

### DISCUSSION -----

Check the ownership and permissions of a directory called "Claris" in the global System Folder. Along with other Claris applications, FileMaker stores temporary files in a folder called "Claris" in the current System Folder.

If the folder doesn't exist, FileMaker creates it and starts putting temporary files there. However, new files and directories under A/UX are created with a default user mask. This mask sets the permissions on the file or directory to allow write permission only to the user who created the file or directory. As a result, the first account to use FileMaker would have a Claris folder created, but only that account could write to it. The solution is to change the permissions on the Claris folder to allow read and write access by everyone.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9230



# Tech Info Library

## A/UX: Why Root Has More Space Available than Regular Users

Revised: 8/17/93  
Security: Everyone

A/UX: Why Root Has More Space Available than Regular Users

=====

Article Created: 4 November 1991  
Article Reviewed/Updated: 31 August 1992

TOPIC -----

Why do root and regular users have different amounts of space available on their file systems?

DISCUSSION -----

A/UX follows the Berkeley file system. There's a default high-water mark of 10 percent of disk space that isn't available for use by non-privileged users, although you can adjust this with the tuneefs command. Root, however, can do anything, including filling the file system to capacity.

Article Change History:  
31 Aug 1992 - Reviewed for technical accuracy.

Copyright 1991-92, Apple Computer, Inc.

Tech Info Library Article Number:9231



# Tech Info Library

## LaserWriter IINTX and IIIf/IIg: Hard Drive Formats Are Different

Revised: 11/21/91  
Security: Everyone

LaserWriter IINTX and IIIf/IIg: Hard Drive Formats Are Different

=====

Article Created: 31 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a hard drive formatted for and connected to my LaserWriter IINTX.  
Can I connect this hard drive directly to either a LaserWriter IIIf or  
LaserWriter IIg without reformatting the drive?

DISCUSSION -----

The hard drive formats for the LaserWriter IINTX and Apple LaserWriter IIIf  
and IIg are different. If you want to connect a hard drive formatted for  
the LaserWriter IINTX to an Apple LaserWriter IIIf or IIg, you have to  
reformat the hard drive and reinstall the fonts with the LaserWriter Font  
Utility.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9233



# Tech Info Library

## Printing: Background Printing Is Normally Slower

Revised: 11/14/91  
Security: Everyone

Printing: Background Printing Is Normally Slower

=====

Article Created: 8 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Documents printed with non-TrueType screen fonts under background printing take several minutes per page on the Personal LaserWriter LS. Why?

DISCUSSION -----

This is normal. The advantage of background printing is that it lets you work on a task while a document is printing. Printing in the background means that printing must share the processor with some other process instead of taking all the processing speed. Therefore, it is slower. What you see is normal.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9236



# Tech Info Library

## A/UX: Double-Clicking /unix Results in Core Dump (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Double-Clicking /unix Results in Core Dump (6/93)

=====

Article Created: 8 August 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

When I log in to the Finder and then double-click /unix to start UNIX to launch A/UX, I get a core dump.

DISCUSSION -----

What you're doing brings the Command Shell application to the front with the "core dumped" error message when the execution of /unix fails. The correct way to get a command line under A/UX is to go to the Apple menu and select the Command Shell application.

Article Change History:  
17 Jun 1993 - Retitled for clarity.  
31 Aug 1992 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9238



# Tech Info Library

## A/UX: How to Protect the Macintosh Partition

Revised: 9/24/92  
Security: Everyone

A/UX: How to Protect the Macintosh Partition

=====

Article Created: 8 August 1991

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

How do I protect the Macintosh partition from being used or altered under A/UX?

### DISCUSSION -----

The regular UNIX file system protections won't work, because it's a Macintosh OS HFS file system. The only way to protect the Macintosh partition while A/UX is running is to have it not available in the first place. Build the A/UX disk without a Macintosh partition and launch A/UX from a floppy.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9239





# Tech Info Library

## A/UX: Syslog Doesn't Log su Attempts (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Syslog Doesn't Log su Attempts (8/94)

=====

Article Created: 8 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

It looks like syslog does not record attempts to su nor failed login attempts. Syslog does record some events, but it won't record them to a remote host.

DISCUSSION -----

Correct. Syslog belongs to Berkeley UNIX, and A/UX to System V. A/UX login, su, and other programs don't make the calls to syslog, so the messages can't be recorded. The manual page should be updated to reflect this fact. As it stands now, the syslogd man page says that login and su generate syslog messages; this is incorrect.

Logging messages to a remote system is broken, and an SPR has been filed.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9240



# Tech Info Library

## A/UX: How to Format a Floppy Disk from a Shell Script (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: How to Format a Floppy Disk from a Shell Script (8/94)

=====

Article Created: 9 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

How do I format a disk from within a shell script?

DISCUSSION -----

Use the diskformat command. See man page for options. Use /dev/floppy0 as the device.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9242



# Tech Info Library

## A/UX: How to Create a Bootable Partition with HD SC Setup

Revised: 7/13/92  
Security: Everyone

A/UX: How to Create a Bootable Partition with HD SC Setup

=====

Article Created: 12 August 1991  
Article Last Reviewed: 3 July 1992  
Article Last Updated:

TOPIC -----

A/UX 2.0 installation onto an Apple 160MB hard drive fails with a "no valid root partition" message. I used the "50% A/UX, 50% Macintosh OS" option within HD SC Setup.

DISCUSSION -----

The "50% A/UX, 50% Macintosh OS" option creates a disk with half the space in a Macintosh volume and the other half set up for a random A/UX file system. These partitions are not suitable for a bootable A/UX system.

To reserve 80MB for the Macintosh operating system with the remaining space for A/UX, follow these steps:

- 1) Bring up HD SC Setup, and select the standard A/UX Partition option.
- 2) Click the Custom button to do custom partitions.
- 3) Select the Macintosh Partition and delete it.
- 4) Click and drag the existing A/UX partitions closer to one another to concentrate all the gray space (representing unallocated space on the disk) at the bottom.
- 5) Create a new Macintosh partition; click in the gray space, select Macintosh Volume as the partition type, and make the size equal to the maximum available.
- 6) Click "Done" and quit HD SC Setup.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9243



# Tech Info Library

## A/UX: Using Claris MacWrite II (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: Using Claris MacWrite II (9/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 9 September 1994

TOPIC -----

Printing from MacWrite II under A/UX doesn't work. Nothing comes out of the printer. Printing from lpr works as does printing from other Macintosh Toolbox applications.

DISCUSSION -----

Like other Claris products, MacWrite II puts temporary files in a Claris folder located in the System Folder. This folder is created the first time a Claris product runs. If the user happens to be root at the time the application is run, the default user mask sets the privileges on the folder, so that only root has read and execute privileges on the folder.

Change the permissions on the folder to allow read, write, and execute privileges for everyone, and printing should work fine.

Article Change History:  
09 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9244



# Tech Info Library

## A/UX: No TCP/IP out Printer/LocalTalk Port

Revised: 9/24/92  
Security: Everyone

A/UX: No TCP/IP out Printer/LocalTalk Port

=====

Article Created: 12 August 1991

### Article Change History

-----

08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

How can I configure A/UX to do TCP/IP communication (for example, NCSA Telnet) out the printer port?

### DISCUSSION -----

Unlike the Macintosh operating system, A/UX only supports TCP/IP communication out the Ethernet port, not the LocalTalk port. The MacTCP that comes with A/UX is not the same MacTCP that runs under the Macintosh operating system, even though they look very similar. The Macintosh operating system version of MacTCP does not work under A/UX.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9245



# Tech Info Library

## A/UX: No Way to Track Unsuccessful Login Attempts (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: No Way to Track Unsuccessful Login Attempts (8/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Can A/UX track unsuccessful login attempts?

DISCUSSION -----

No, it can't.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9246



# Tech Info Library

## A/UX: No VT220 Terminal Emulation (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: No VT220 Terminal Emulation (8/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Does A/UX do VT220 emulation?

DISCUSSION -----

No, it doesn't.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9247





# Tech Info Library

## A/UX: Cannot Start from a CD Drive (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Cannot Start from a CD Drive (8/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

How can I configure my A/UX system so it will start from a CD-ROM drive?

DISCUSSION -----

That is not a supported configuration. There are files that need to be updated when you are running, and they can't be updated on a locked volume such as a CD-ROM. You can, however, use a minimal root partition and mount the rest of the files from the CD-ROM.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9248



# Tech Info Library

## A/UX: How to Keep Users from Starting from a Floppy

Revised: 11/6/92  
Security: Everyone

A/UX: How to Keep Users from Starting from a Floppy

=====

Article Created: 12 August 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

Is there a way to prevent students and other users from starting their A/UX systems from a floppy?

### DISCUSSION -----

There's no way to achieve that level of security, given the way the Macintosh OS works on a normal Macintosh. Beyond locking up the physical computer, there is no way to prevent people from turning their systems off and restarting from a floppy.

One potential workaround would be to unplug the floppy-drive cable from the logic board. This wouldn't stop someone who knew what to look for, but it would get in the way of the less knowledgeable.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9251



# Tech Info Library

## A/UX: How to Print to a Specific AppleTalk Printer (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: How to Print to a Specific AppleTalk Printer (8/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

How do I print to a named AppleTalk printer instead of taking the default printer from the Chooser?

DISCUSSION -----

See the directions in /usr/spool/lpd/AppleTalk/ofilter. Basically, the steps are:

- 1) Add a new directory with the name of the printer in /usr/spool/lpd
- 2) Create a new named pipe in the new directory
- 3) Copy or link the ifilter and ofilter scripts into the new directory
- 4) Add a new entry to /etc/printcap describing the printer

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9252



# Tech Info Library

## A/UX: What Terminal Type to Use on Remote System

Revised: 11/9/92  
Security: Everyone

A/UX: What Terminal Type to Use on Remote System

=====

Article Created: 12 August 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.

### TOPIC -----

What's a good terminal type to use when talking to a remote VAX UNIX box?

### DISCUSSION -----

VT100 is a generic, standard terminal type that almost everyone supports.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9254



# Tech Info Library

## A/UX: Ethernet ae0 transmitter frozen Errors (9/94)

Revised: 9/23/94  
Security: Everyone

A/UX: Ethernet "ae0 transmitter frozen" Errors (9/94)

=====

Article Created: 12 August 1991  
Article Reviewed/Updated: 23 September 1994

TOPIC -----

Ethernet networking won't come up under A/UX. There are many "ae0 transmitter frozen" errors.

DISCUSSION -----

Here are two things to check:

- Is the EtherTalk card set for thin or thick Ethernet? Make sure the jumper is configured appropriately for whichever network you are using.
- Is the network terminated? If there is no terminator at the end of the cable, A/UX produces an endless string of "ae0 transmitter frozen/resetting" errors.

Article Change History:  
23 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9256



# Tech Info Library

## System 7: RAM Appropriate for Various Macintosh Models

Revised: 6/25/92  
Security: Everyone

System 7: RAM Appropriate for Various Macintosh Models

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How much RAM will System 7 support on each model of the Macintosh?

DISCUSSION -----

| Macintosh Model | Memory |
|-----------------|--------|
| -----           |        |
| Macintosh II    | 8MB    |
| Macintosh IIX   | 8MB    |
| Macintosh IICx  | 8MB    |
| Macintosh IIsi  | 17MB   |
| Macintosh IICI  | 32MB   |
| Macintosh IIfx  | 32MB   |
| Macintosh SE/30 | 8MB    |

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9257



# Tech Info Library

## AppleShare PC: No Support for TOPS Card

Revised: 2/4/92  
Security: Everyone

AppleShare PC: No Support for TOPS Card

=====

Article Created: 12 August 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does AppleShare PC support the TOPS card?

DISCUSSION -----

No, it doesn't.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9258



# Tech Info Library

## AppleShare 3.0: Upgrading Client Software Highly Recommended

Revised: 2/4/92  
Security: Everyone

AppleShare 3.0: Upgrading Client Software Highly Recommended

=====

Article Created: 29 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I've recently installed AppleShare 3.0.

When I configured the server using Admin, I set up each user with NO password, and I also set the minimum length of each user's password to 4. Additionally, I checked the option that forces the users to change their passwords the next time they log on.

When I try to log on to the server from the IIX, I get a message that an unknown AppleShare error has occurred. It's not fatal -- I just can't log on. By adding a 4+ letter default password to each user, I can then log on.

Since I support an installed base of over 80 File servers and 6,000 Macintosh computers, I want to stress that whatever options we install with AppleShare 3.0, they must work with 2.01 client software. It's unlikely that most of the installed base will migrate to 3.0 client software.

Configuration:

- Server: Macintosh SE/30 4/80 with System 7.0 and AppleShare 3.0 (all product options) installed.
- Client: Macintosh IIX 5/40 with System 7.0 and AppleShare 2.01 client code.

DISCUSSION -----

The source of your problem is exactly what you are trying to avoid. Without the AppleShare 3.0 client software installed, the client software doesn't



understand the messages the server sends to it. For example, using an all AppleShare 3.0 setup, if you need to change your password, you will get the dialog that allows you to change your password. If you have old client software, then you will only get an unsuccessful log-on message. The ability to log on without getting help from an administrator is more than a minimal benefit.

If an administrator is going to take advantage of AppleShare 3.0's extended security features such as minimum password length, or change password at the next log on time, then we highly recommend that you install the client software. You can install it over the network, without restarting, and it won't cause any disruption in the users' operation.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9264



# Tech Info Library

## AppleTalk Remote Access: Managing SecurityZone

Revised: 12/13/91  
Security: Everyone

AppleTalk Remote Access: Managing SecurityZone

=====

Article Created: 29 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

On an AppleTalk InterNet, I can have different buildings (sites, countries, continents...) interconnected. How do I manage the SecurityZone feature so that local administrators can control their Remote Access connections?

DISCUSSION -----

We have assumed there is one person in charge of the entire internet. That person is then responsible for communicating password information to all the local administrators -- even between continents.

If there is more than one Security Zone on an internet, then the AppleTalk Remote Access server needs to have the right password for only one of the zones.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9266



# Tech Info Library

## A/UX: MacX Q & A (9/94)

Revised: 9/21/94  
Security: Everyone

A/UX: MacX Q & A (9/94)

=====

Article Created: 11 December 1991  
Article Reviewed/Updated: 21 September 1994

TOPIC -----

- 1) Is it possible to have a single copy of MacX that everyone can launch at the same time?
- 2) Can I run the motif window manager under MacX?
- 3) MacX seems to have problems with a very large hosts file. MacX appears to handle addresses near the top of the hosts file, but doesn't seem to find addresses near the bottom.
- 4) When trying to use MacX to talk to an X Windows system on a VAX, does the VAX have to be running PATHWORKS?

DISCUSSION -----

- 1) No. MacX, like most Toolbox applications, wasn't written to be a multi-user application.
- 2) Yes, but only in a rooted window.
- 3) MacTCP 1.1 has a host file limitation of 7K. (The MacTCP 1.1.1 and later fixes this limit.)
- 4) Yes.

Article Change History:  
21 Sep 1994 - Reviewed.  
31 Aug 1992 - Reviewed.

Support Information Services

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Tech Info Library Article Number:9269



# Tech Info Library

## A/UX: ASCII Codes Returned By Function Keys Under Command Shell

Revised: 8/12/93  
Security: Everyone

A/UX: ASCII Codes Returned By Function Keys Under Command Shell

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

How can I find out what ASCII codes are returned by the function keys under the command shell?

DISCUSSION -----

Follow these steps:

- 1) Open a vi window; type vi testfkey and press Enter
- 2) To begin entering data, press Escape i
- 3) In the window, press Control-v followed by the function key.
- 4) To quit vi and save the file, press Escape ZZ Enter
- 5) With the function key keystroke captured, run od on the document to find out the ASCII/hex codes. For example, to see the contents of the file in hex, type od -h testfkey and press Enter.

Other od flags include:

- a to display bytes under their ASCII names
- d, l, or i to display bytes in decimal
- h to display bytes in hex

Article Change History:

17 Jun 1993 - Revised to add more detail to steps.  
31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:9270



# Tech Info Library

## A/UX: AppleTalk Can Use Enet Port Instead of LocalTalk (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: AppleTalk Can Use Enet Port Instead of LocalTalk (8/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

How can I make AppleTalk use the Ethernet port instead of the LocalTalk port?

DISCUSSION -----

AppleTalk for A/UX is configured via the /etc/appletalkrc file. The interface entry defines if you use EtherTalk or LocalTalk. Follow these steps:

- 1) Use AppleTalk -d to bring the AppleTalk services down.
- 2) Change the appletalkrc file to reflect what you want.
- 3) Bring the services up with appletalk -u.
- 4) If you're in a Finder session, you must log out and log in again to see the changes.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9271



# Tech Info Library

## A/UX: Changing the Default Editor (9/94)

Revised: 9/1/94  
Security: Everyone

A/UX: Changing the Default Editor (9/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 1 September 1994

TOPIC -----

Under A/UX, is it possible to change the default editor from TeachText to something else?

DISCUSSION -----

If you wish to change the default editor, change the environment variable FINDER\_EDITOR. You'll need to change this in either the .login file for csh users -- or .profile for korn or bourne shell users.

As an example for C shell users add a new line to the bottom of the .login file as follows:

```
setenv FINDER_EDITOR <editorpathname>
setenv FINDER_EDITOR /mac/bin/TextEdit -for TextEditor
setenv FINDER_EDITOR /usr/bin/vi -for vi"
```

Article Change History:  
01 Sep 1994 - Added C shell example.  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991-94, Apple Computer, Inc.

Tech Info Library Article Number:9272





# Tech Info Library

## A/UX: Troubleshooting Launch Difficulties (8/94)

Revised: 8/19/94  
Security: Everyone

A/UX: Troubleshooting Launch Difficulties (8/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 19 August 1994

TOPIC -----

- 1) Every time I launch A/UX, I get a message saying "atstatus lw not found."
- 2) The first page of file "syschck.rpt" prints every time I launch A/UX.

DISCUSSION -----

- 1) You need to log in to A/UX and select the LaserWriter from the Chooser. From the CommandShell, execute the command "at\_cho\_prn" to select the LaserWriter.
- 2) The file "syschck.rpt" is sitting in the print queue and prints every time you launch A/UX. Delete the file to successfully launch A/UX.

Article Change History:  
19 Aug 1994 - Updated title and removed reference to A/UX 2.0.1

Support Information Services

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Tech Info Library Article Number:9274



# Tech Info Library

## A/UX: Log In Permissions (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Log In Permissions (6/93)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

I can launch a Finder session as root, but not as a normal user. When I try to log in as a normal user, I get the message that it couldn't create /tmp/mac32sm.208.

DISCUSSION -----

The /tmp directory was only writable by root. Change the permissions of the tmp directory to 777 to log in successfully. 777 causes the directory to have the permission of status to read, write, and execute by owner, group, and others.

Article Change History:  
17 Jun 1993 - Revised clarify points in article.  
31 Aug 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:9275



# Tech Info Library

## A/UX: Upgrading Printer Drivers (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Upgrading Printer Drivers (8/94)

=====  
Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Is it possible to upgrade the printer drivers under A/UX?

DISCUSSION -----

Yes. You need to replace the LaserWriter, Laser Prep, and Print Monitor files in the A/UX System Folder being used.

- If you don't have a personal system folder, then the path for the global system folder is /mac/sys/System Folder.
- If you have a personal system, then place the files in that folder.

Article Change History:  
30 Aug 1994 - Reviewed

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Tech Info Library Article Number:9277



# Tech Info Library

## A/UX: Security Q & A (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Security Q & A (8/94)

=====  
Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

- 1) The A/UX manual refers to a menu option to change the root password, but I can't find it.
- 2) Is there a possibility of getting a Startup shell that has password protection?
- 3) Which file is used to restrict access to the directories?

DISCUSSION -----

- 1) At the A/UX Login screen, pull down the Options menu and select Change Password.
- 2) Cancel the A/UX startup so you are in the Startup command shell. Pull down the Preferences menu and select General. Select Password checking. This prevents unauthorized users from canceling A/UX Startup and using the A/UX Startup command shell window.
- 3) The file is /usr/lib/uucp/Permissions.

Article Change History:  
30 Aug 1994 - Updated to describe Startup shell protection.

Support Information Services

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Tech Info Library Article Number:9278



# Tech Info Library

## A/UX: Maximum Speed Supported by slip (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: Maximum Speed Supported by slip (8/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

What is the maximum speed that SLIP will support?

DISCUSSION -----

The current maximum speed is 19.2K.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9280



# Tech Info Library

## A/UX: No Support for Tkn Rng, Serial NB Card, NEC CD-ROM (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: No Support for Tkn Rng, Serial NB Card, NEC CD-ROM (8/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

- 1) Does A/UX support Token Ring?
- 2) Will the Serial NB card work under A/UX?
- 3) Do NEC CD-ROM drives work with A/UX?

DISCUSSION -----

- 1) No.
- 2) No.
- 3) No.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

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Tech Info Library Article Number:9281



# Tech Info Library

## A/UX: Adding Swap Space without Repartitioning (6/93)

Revised: 8/12/93  
Security: Everyone

A/UX: Adding Swap Space without Repartitioning (6/93)

Article Created: 18 November 1991  
Article Reviewed/Updated: 17 June 1993

TOPIC -----

I keep getting a message about running out of swap space. Is there an alternative to repartitioning the disk and enlarging the size of the swap partition?

DISCUSSION -----

Yes. You need to add a new swap space on a different hard drive and use the command `swap -a` to have the system recognize the space. The command `swap -l` (lowercase "el") will give you the status of the current swap space.

Article Change History:  
17 Jun 1993 - Revised to clarify swap flag.  
31 Aug 1993 - Reviewed for technical accuracy.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9282



# Tech Info Library

## A/UX: Questions About Using tar (11/95)

Revised: 11/28/95  
Security: Everyone

A/UX: Questions About Using tar (11/95)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 28 November 1995

TOPIC -----

- 1) How can I use tar to create a backup of a directory and compress the output?
- 2) How can I read a tar floppy if I receive the message "This is not a Macintosh disk" when I insert the disk?

DISCUSSION -----

- 1) The easiest way to do this in one step is with the command:

```
tar -cvf - dir_name | compress > dir_name.tar.Z
```

The file dir\_name.tar.Z is now your compressed backup file.

- 2) Make the CommandShell the front-most application and insert the disk. Under A/UX 2.0 you will be prompted with a dialog asking if the disk is an A/UX or Macintosh floppy. (On A/UX 2.0.1 or later that dialog no longer appears.) Select A/UX and at the prompt type:

```
tar -tvf /dev/floppy0    To list the contents of the floppy
tar -xvf /dev/floppy0    To extract the contents of the floppy to the
                           current directory.
```

Article Change History:  
28 Nov 1995 - Updated format.  
31 Aug 1992 - Reviewed for technical accuracy.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.







# Tech Info Library

## A/UX 2.0: Toolbox Shows Only 16MB RAM in About the Finder

Revised: 9/30/92  
Security: Everyone

A/UX 2.0: Toolbox Shows Only 16MB RAM in About the Finder Window

=====

Article Created: 18 November 1991

### Article Change History

-----

08/31/92 - REVIEWED  
• For technical accuracy.  
08/31/92 - UPDATED  
• To include version number information.

### TOPIC -----

I have 20MB of physical RAM installed, but "About the Finder" shows only 16MB. (True in 2.0 and 2.0.1)

### DISCUSSION -----

The A/UX Toolbox environment has a 16MB limit when you look at the About the Finder window. A/UX itself is using the full 20MB.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:9284



# Tech Info Library

## Basis International

Revised: 7/6/93  
Security: Everyone

Basis International

=====

Article Created: 11/22/91  
Article Reviewed: 07/06/93  
Article Updated:

Basis International

-----

5901 Jefferson Street N.E.  
Albuquerque, NM 87109

505-345-5232

505-345-5082 Fax

Company Profile:

Software, specializing in BBX, a 4GL development tool used on several UNIX as well as DOS platforms.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9286



# Tech Info Library

## Computer Methods

Revised: 7/6/93  
Security: Everyone

Computer Methods

=====

Article Created: 11/22/91  
Article Reviewed: 07/06/93  
Article Updated: 12/02/92

Computer Methods

-----

525 Route 73 South  
Suite 300  
Marlton, NJ 08053

609-596-4360

609-596-4362 Fax

Company Profile:  
Hardware and software, specializing in network access support products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9287



# Tech Info Library

## Multi-Tech Systems, Inc.

Revised: 7/14/93  
Security: Everyone

Multi-Tech Systems, Inc.

=====

Article Created: 11/25/91  
Article Reviewed: 07/13/93  
Article Updated: 07/13/93

Multi-Tech Systems, Inc.

-----

2205 Woodale Drive  
Mounds View, MN 55112

800-328-9717 (Sales and Technical Support)

612-785-3500

612-785-9874 Fax

Company Profile:  
Hardware, specializing in modems, multi-faxers, and datacomm equipment.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9288



# Tech Info Library

## **Diamond Multimedia - formerly Supra Corporation (7/96)**

Revised: 7/29/96  
Security: Everyone

Diamond Multimedia - formerly Supra Corporation (7/96)

=====

Article Created: 25 November 1991  
Article Reviewed/Updated: 29 July 1996

Diamond Multimedia (was Supra Corporation, still supports Supra products)

-----

7101 Supra Drive SW  
Albany, OR 97321

541-967-2400 (Main Number)

541-967-2492 (Macintosh Products Technical Support)

800-72-SUPRA (727-8772) (Sales Only)  
800-774-4965 Technical Support (pre-recorded information)

541-967-2401 (FAX)

Supra BBS: 541-967-2444 (8 nodes - 24hr.)  
Internet: supratech@supra.com (Gen. Support)  
mactech@supra.com (Macintosh Support)  
sdms@supra.com (Supra DMS Support)

Company Profile:  
Hardware, specializing in modems.

Article Change History:  
29 Jul 1996 - Updated phone numbers and company name.  
05 Jun 1996 - Updated for technical accuracy.

Copyright 1991-96, Apple Computer, Inc.

Tech Info Library Article Number:9289



# Tech Info Library

## Apple II 3.5 Disk Controller Card: Specifications (2/97)

Revised: 2/12/97  
Security: Everyone

Apple II 3.5 Disk Controller Card: Specifications (2/97)

=====

Apple II 3.5 Disk Controller Card: Specifications (2/97)

Article Created: 11 December 1991  
Article Reviewed/Updated: 12 February 1997

TOPIC -----

This article gives technical specifications for the Apple II 3.5 Disk Controller Card. This card has been discontinued by Apple.

DISCUSSION -----

### Overview

-----  
The Apple II 3.5 Disk Controller Card allows you to use the 3.5-inch floppy disk drives, including the Apple SuperDrive and Apple 3.5 Drive, with an Apple IIGS or Apple IIe computer. The card also supports the operation of older model Apple II UniDisk 3.5 drives with the Apple IIe computer. This card replaces the UniDisk 3.5-inch Controller Card.

### Drives Supported

-----  
Apple SuperDrive

Apple 3.5 Drive

Apple UniDisk 3.5 Drive (Apple IIe only)

### Specifications

-----  
Microprocessor: 65C02

Disk controller: SWIM

Memory: 32K SRAM 32K ROM

Connector: DB-19

Power: Less than 4 watts

#### Environmental Requirements

---

Operating temperature: 50 to 104 degrees F (10 to 40 degrees C)

Storage temperature: 50 to 140 degrees F (10 to 60 degrees C)

Relative humidity: 20% to 80% noncondensing

#### Article Change History:

12 Feb 1997 - Reviewed for technical accuracy, revised formatting.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9292





# Tech Info Library

## System Software 7.0.1: Support for PowerBook

Revised: 5/17/94  
Security: Everyone

System Software 7.0.1: Support for PowerBook

Article Created: 21 October 1991

TOPIC -----

This article describes the features of system software version 7.0.1 that support the Macintosh PowerBook computers.

DISCUSSION -----

Caps Lock Extension

-----  
The Caps Lock key doesn't stay mechanically pressed down on the PowerBook computers. Caps Lock is an extension that adds an international caps lock symbol as a caps lock indicator to the menu bar. The symbol may not appear the instant the Caps Lock key is pressed, because the processor may have other tasks to handle before the Caps Lock extension is executed. Even though the menu-bar symbol may not change immediately, the keyboard does toggle immediately whenever you press the Caps Lock key.

Revised Low Power Dialogs

-----  
There are fewer low power dialogs. A lower voltage level prompts the dialogs to increase battery life and eliminate any memory effect on the NiCad battery. The last dialog box (10 second warning) comes up when the battery voltage is low enough to eliminate the memory effect. There are three dialog boxes that come up. The first dialog appears when about 15 minutes of life remains. The backlight dims to reduce power consumption. This is the time to save documents and plug in the power adapter. If operation continues, a second low-power message is displayed. At this point, you may have just enough time to save your documents. Finally, a 10 second dialog appears and the unit sleeps. If you plug in the power adapter within the next two days, all documents are saved.

New Portable Control Panel

-----  
The Portable Control Panel modification eliminates the brightness/contrast controls for the Macintosh PowerBooks. The Macintosh Portable gets this

information from the Brightness Control Panel. This panel still selects the time until hard disk drive and system sleep. It also allows selection of internal or external modems on the Macintosh PowerBooks 140, 145, and 170 and the original Macintosh Portable. The PowerBook 100 doesn't have this option because it has no external modem port.

When clicking the "Minutes Until Automatic Sleep" text while holding down the Option key, the system rest dialog box appears. This causes a dialog to appear that allows turning the rest feature on or off.

#### Battery Control Panel

-----

This controls a number of options and provides a visual indicator of the charging status of the battery. You click the flag to see a number of options, depending on which PowerBook model you have. A sleep button comes up on all the portables (the Macintosh Portable and all PowerBook models). Power-Saver buttons come up on the Macintosh PowerBook 170. Power-Saver changes the processor speed to 16MHz on the PowerBook 170 to increase battery life.

#### Article Change History

-----

09/24/92 - Corrected to show that there are three low-power messages, not two.  
08/03/92 - Updated for PowerBook 145.

#### Support Information Services

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Tech Info Library Article Number:9293



# Tech Info Library

## System Software 7.0.1: Support for Quadra 700, 900, 950

Revised: 9/25/92  
Security: Everyone

System Software 7.0.1: Support for Quadra 700, 900, 950

=====

Article Created: 21 October 1991

### Article Change History

-----

09/24/92 - UPDATED

- To include Quadra 950.

### TOPIC -----

This article describes the features of system software version 7.0.1 that specifically support the Quadra 700, 900 and, 950.

### DISCUSSION -----

#### Virtual Memory

-----

The MMU table format changed in the 68040 CPU. The 68040 copy-back cache mode requires microprocessor-specific modifications to virtual memory. The ROM supports page write protection that prevents modification of RAM pages to ensure data integrity of those pages. The RAM disk feature of the Memory control panel uses this feature.

#### Network Control Panel

-----

The Network control panel allows switching between physical networks such as built-in LocalTalk and Ethernet. The Quadra 700, 900, and 950 required modifications to the Network control panel to select the internal Ethernet connection.

#### Keylock Support

-----

The keylock switch support disables all ADB activity, including power on in the secure position. The software programs the clock/ADB chip which controls ADB functions.

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Tech Info Library Article Number:9294



# Tech Info Library

## System Software Version 7.0.1: New Features

Revised: 9/25/92  
Security: Everyone

System Software Version 7.0.1: New Features

=====

Article Created: 21 October 1991

### Article Change History

-----

09/24/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

This article lists the new features of Macintosh system software, version 7.0.1.

### DISCUSSION -----

System software version 7.0.1 supports the following new or revised features:

- Installer Script and CPU name support
- Memory control panel revisions
- Additional shutdown dialogs
- Revised Sound Manager
- Enhanced SANE routines
- Revised Brightness Control Panel
- Revised Network Control Panel to support on-board Ethernet
- Caps Lock indicator
- Revised low-power dialog messages

- Revised Portable control panel
- SCSI Disk Mode
- Battery DA modification

#### Memory Control Panel

-----

The Memory Control Panel now supports a RAM disk on the Macintosh Portable, the PowerBooks, and the Quadra 700, 900, and 950. The RAM disk can only be used if the system has at least 3MB of memory.

#### Revised Shutdown Warning

-----

A shutdown warning dialog appears on the PowerBook 140 and 170 and the Quadra 700 and 900 saying that you will lose all data in the RAM disk if you continue the shutdown. The dialog doesn't appear if there is no RAM disk, or if there are no files on the RAM disk.

NOTE: RAM disks on the Macintosh Portable and PowerBook 100 don't go away when the system is shut down. The warning is not needed on those computers.

#### Sound Manager Updates

-----

The Sound Manager now supports the sound chips in the computers listed here. These computers use different sound chips, and the Sound Manager responds differently for each system.

| Computer             | Sound Input | Sound Output |
|----------------------|-------------|--------------|
| -----                | -----       | -----        |
| PowerBook 100        | No          | Mono         |
| Macintosh Classic II | Yes         | Mono         |
| PowerBook 140        | Yes         | Stereo       |
| PowerBook 170        | Yes         | Stereo       |
| Quadra 700           | Yes         | Stereo       |
| Quadra 900           | Yes         | Stereo       |

#### Enhanced SANE Routines

-----

A significant System file change provides a new SANE package for the Macintosh IIsi (when FPU is installed), IIfx, IIci, PowerBook 140 and 170, and Quadra 700 and 900. The SANE changes the trap call to a JSR that points directly to the SANE code in the system heap, bypassing the trap dispatcher. This increases the performance up to two and one-half times for integer and 5 to 6 times for floating point.

#### Brightness/Contrast Control Panel

-----

The Brightness control panel modification supports the Macintosh Classic II. This driver is used with the Macintosh Classic, Macintosh Classic II, and the original and backlit Macintosh Portables.

This control panel doesn't work with the PowerBook computers. The PowerBook software reads from the slider controls and adjusts the screen brightness based on those values. The Power Manager handles the screen update and checks the sliders.

#### Backlight Driver

-----  
The Backlight driver supports the PowerBook computers and the Macintosh Classic II. This driver gets data from the Brightness control panel for the Macintosh Portable and the Macintosh Classic II, and from the slider or knobs on the PowerBook computers.

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Tech Info Library Article Number:9295



# Tech Info Library

## PowerBook: Sound Circuitry Power Conservation (8/93)

Revised: 5/16/94  
Security: Everyone

PowerBook: Sound Circuitry Power Conservation (8/93)

=====

Article Created: 29 October 1991  
Article Reviewed/Updated: 16 August 1993

TOPIC -----

My PowerBook 140 emits a click from the speaker from time to time. Is this common, or is my unit defective?

DISCUSSION -----

The system software detects if the sound chip is being used. If it hasn't been used for a while, power is disconnected from the sound circuitry in order to conserve power. During this shutdown process, a click may be heard from the speaker.

This power saving mode mostly affects the PowerBook 100, 140, 145, and 170. On more recent PowerBook models, it is possible to disable sound entirely by moving the volume to zero in the Sound control panel. Once the volume is set at zero on those models, even the startup sound will not chime. There will be no clicks from the speaker with the volume set to zero since the power to the sound circuitry is always off.

Article Change History:  
16 August 1993 - Revised article with information about recent models.

Support Information Services

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Tech Info Library Article Number:9296





# Tech Info Library

## PowerBook: Screen Power Consumption and Battery Life (7/92)

Revised: 5/16/94  
Security: Everyone

PowerBook: Screen Power Consumption and Battery Life (7/92)

Article Created: 29 October 1991  
Article Reviewed/Updated: 31 July 1992

TOPIC -----

Does the use of white pixels draw more power than the use of black pixels on the PowerBooks (supertwist and active matrix)?

We're comparing the PowerBook 100 to several PC-compatible notebooks, and found that the PowerBook 100 doesn't have quite the battery life of some PC-compatibles. We're wondering about the screen's power consumption. We have some information on the PC-compatibles that says using the screens in inverse mode (black text on a white background) uses more power than their normal mode (white text on a black background). Is it worth setting the desktop pattern to all black or not?

DISCUSSION -----

### Screen Power Consumption

The black screen and the white screen draw almost the same amount of power: the black slightly less than the white (approximately 300 mW versus 320 mW).

The real power draw is the backlight (approximately 2.5 watts). The backlight at maximum is the largest power consumer of the entire system. Because most customers really use the light at maximum, Apple quotes battery life with the light on full brightness. We can't speak for how other manufacturers quote their battery life. However, the black versus white background argument is not valid in discussing battery life.

### Battery Size Versus Weight

Not all batteries are exactly the same, but Apple uses a state-of-the-art NiCad battery. In this class of battery, capacity and weight are directly related. Competitors with higher system weight may have larger batteries, and therefore, longer battery life.

## Truth in Testing

-----

Apple tries to provide a real battery life description. We hear many reports of portable computers not meeting their reported battery life. Sometimes we suspect the testing procedure. Additionally, every manufacturer tests with a fully charged battery. NiCad charging is somewhat tricky; therefore, consumer reports of less than expected battery life need to be interpreted as a function of the NiCad charging sequence, battery history, and other factors. Apple uses an intelligent charging system to provide the best recharging possible.

Support Information Services

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Tech Info Library Article Number:9297



# Tech Info Library

## PowerBook 100: When It Won't Recognize Third-Party Drive (8/92)

Revised: 5/16/94  
Security: Everyone

PowerBook 100: When It Won't Recognize Third-Party Drive (8/92)

=====

Article Created: 30 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

My PowerBook 100 won't recognize non-Apple hard drives.

DISCUSSION -----

Are you using one terminator in the chain? This means either an external terminator or a built-in terminator to the third-party device.

The termination on the PowerBook 100 hard disk drive isn't strong enough to support the bus. So if the third-party device doesn't have an internal terminator, you need to provide an external terminator.

Support Information Services

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Tech Info Library Article Number:9298



# Tech Info Library

## PowerBook 100: Cure for Continual Restarts (8/92)

Revised: 5/16/94  
Security: Everyone

PowerBook 100: Cure for Continual Restarts (8/92)

=====

Article Created: 30 October 1991  
Article Reviewed/Updated: 3 August 1992

TOPIC -----

My PowerBook 100 continuously restarts while the battery switch is on.

DISCUSSION -----

Using the PowerBook 100's SCSI Disk mode, re-install the System software.

Support Information Services

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Tech Info Library Article Number:9299



# Tech Info Library

## PowerBook: How to Clean the Trackball (7/96)

Revised: 7/1/96  
Security: Everyone

PowerBook: How to Clean the Trackball (7/96)

Article Created: 13 November 1991  
Article Reviewed/Updated: 01 July 1996

TOPIC -----

My PowerBook's trackball doesn't work smoothly; it appears to "stick" or "jump" when rolled.

DISCUSSION -----

Most PowerBook trackball problems are due to contamination of the rollers. The trackball is just like the standard Apple mouse in that dust and debris can accumulate on the rollers and impede smooth movement of the trackball.

Symptoms of a Dirty Trackball  
=====

Symptoms that your trackball is dirty are:

- The trackball appears to "stick" or "jump" when rolled.
- The cursor will not track horizontally or vertically.
- It sometimes seems like the cursor is "hitting a wall".
- On-screen buttons fail to activate when you click on them.
- The movement of the cursor on the screen isn't smooth.
- The trackball is physically difficult to roll.

How to Clean the Trackball  
=====

- 1) Remove the trackball retaining ring by turning it counterclockwise until it pops out (about 1/4 turn). You don't need tools for this; you can just press against the two small ridges on the ring with your fingernails.
- 2) Lift the retaining ring and trackball out of its cavity.

- 3) Locate the small rubber rollers at the left and bottom sides of the trackball cavity. Depending on your model, they may look like small rings or wheels.
- 4) Use any reasonably clean, blunt object (such as your finger or a cotton swab) to wipe off the rollers. Do not use any liquid, including any amount of cleaning fluid or water, inside the computer.
- 5) Locate the three white or red bearings located at approximately clockwise 4:00, 7:00, and 11:00 in all PowerBooks except the PowerBook 100, which has three black posts instead of bearings. Using a fingertip, dry cotton swab, or other blunt object, clean them of any debris.
- 6) Replace the trackball and the retaining ring.

In addition, on a PowerBook 140 or 170, reseating the cables on the trackball and keyboard may solve the problem. This is very effective if the failure is related to the computer heating up. These cables are located inside the PowerBook, so your authorized service provider or Apple must do this.

This article is one of many available through the Apple Fax center. For a complete list of available fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature).

The Apple Fax center is available free of charge 24 hours a day, 7 days a week.

#### Article Change History:

- 01 Jul 1996 - Added Fax Doc Word
- 12 Oct 1994 - Added keyword; added note about PB 140 and 170.
- 28 Sep 1994 - Reviewed for technical accuracy.
- 30 Jun 1994 - Revised clock position of first roller from 3:00 to 4:00.
- 22 Jun 1994 - Combined with similar article, additional symptoms added.

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Tech Info Library Article Number:9300



# Tech Info Library

## 400MB, 3.5-Inch, Half-High, SCSI Hard Disk Drive: Connectors

Revised: 5/15/92  
Security: Everyone

400MB, 3.5-Inch, Half-High, SCSI Hard Disk Drive: Connectors

=====

Article Created: 23 October 1991  
Article Last Reviewed: 14 May 1992  
Article Last Updated: 14 May 1992

### TOPIC -----

This article describes the connectors used in the 400MB SCSI hard disk drive.

### DISCUSSION -----

#### Power Connector

-----

The power for the drive is provided through a 4-pin male polarized connector. Pin 1 is the rightmost pin when viewing the connector with drive top cover up.

#### SCSI Connector

-----

The SCSI connector is a 50-pin, shrouded (4-sided), male, keyed, right-angle connector. Pin 1 is the rightmost pin of the upper row when viewing the connector with drive top cover up (key slot up).

#### Termination

-----

Removable termination resistor packs with standard SCSI 220/330 termination resistors. The packs are removable without having to remove the board. The drive provides termination power to the TERMPWR line (pin 26) of the SCSI bus through a diode and provides a 1.5 amp current-limiting function.

#### Device Select Connector

-----

The device select connector is a 6-pin male connector located behind the power connector along the drive side. Nominal pin spacing is 0.100

inches.

#### LED Connector

-----  
The LED connector is a 2-pin, right-angle, un-shrouded, nonpolarized male header to connect with the LED cable assembly. Nominal pin spacing is 0.100 inches. It is located on the opposite end of the drive from the SCSI connector.

#### Connector J6

-----  
Connector J6 is an 8-pin male connector located on the side of the drive away from the SCSI connector. Pin 1 is the bottom pin farthest from the SCSI connector end.

- Pin 1 - Not Jumpered (Factory use only)
- Pin 2 - Not Jumpered (Motor start option)
- Pin 3 - Not Jumpered (Delayed Motor start option)
- Pin 4 - Not Jumpered (Write-protect option)
- Pin 5 - Jumper Installed (Parity checking and error reporting)
- Pin 6 - Not Jumpered (Reserved for later use)
- Pin 7 - Jumpered in a Macintosh Quadra 900/950  
(Termination Power is supplied to the SCSI bus.)
- Pin 8 - Jumpered in a Macintosh Quadra 700  
(Termination is supplied to the drive terminators.)

#### Note

-----  
Pins 7 and 8 jumpered at the same time is allowed.

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:9302





# Tech Info Library

## 400MB, 3.5-Inch, Half-High, SCSI Hard Disk Drive: Overview

Revised: 12/13/91  
Security: Everyone

400MB, 3.5-Inch, Half-High, SCSI Hard Disk Drive: Overview

=====

Article Created: 23 October 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the Apple 400MB SCSI hard drive.

DISCUSSION -----

The 400MB hard disk drive is intended for use in the Quadra 700 and 900 computers, as well as other Apple products. The drive possesses features that benefit many different applications.

The hard disk assembly consists of as few mechanical components as possible. It's designed for simplified assembly without requiring sensitive adjustments or calibration during the manufacturing process.

Powerful data error correction techniques ensure data integrity. When power is turned on, the drive releases the actuator arm assembly from the locked position, only if the read/write heads have achieved a stable flying condition. This feature ensures no direct physical contact between the heads and the data area on the disk surfaces. If power shuts off suddenly, the actuator arm automatically retracts to the landing zone before the heads make contact with the disk surfaces.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9303



# Tech Info Library

## 68040 CPU Architecture: NuBus Transfer Modes and Performance

Revised: 8/6/92  
Security: Everyone

68040 CPU Architecture: NuBus Transfer Modes and Performance

=====

Article Created: 12 November 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

Can you give information about the architecture of the 68040 CPU? It isn't clear which master/slave transfer modes are supported in the 68040 computer between the host and the NuBus. What would the NuBus Block Transfer Modes Resource Entries look like for the 68040 computer per the DTS Technical Note #288? What performance can we expect?

DISCUSSION -----

The Macintosh Quadra computers support all sizes of block transfers when the main logic board is accessed as a slave device. (The NuBus specification states that if a slave accepts any block transfer, it must accept all block transfers.) As a NuBus master, the Quadra doesn't initiate block transfers. NuBus masters don't have to support all sizes of block transfers.

The data rate a NuBus master will see when doing block transfers to the main logic board is 8 to 10 MB/sec, depending on main memory refresh cycles and synchronization delays. This is a maximum rate that can be achieved only if the NuBus master does nothing but block transfers (that is, it moves data continuously without doing any other operations). A more realistic maximum rate is 4 to 5 MB/sec.

When the main logic board is the bus master, the transfer rate depends greatly on the speed of the NuBus slave device. A zero wait state NuBus slave (none of which exist as far as we know) could give peak transfer rates approaching 20 MB/sec. Real NuBus slave devices will probably have transfer rates under 10 MB/sec (more like 2 to 4 MB/sec). The only way to really determine how fast a Quadra can transfer data to a NuBus slave is to run real code and time the bus transfers.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9305



# Tech Info Library

## Macintosh Quadra 900: Dual Channel SCSI

Revised: 8/6/92  
Security: Everyone

Macintosh Quadra 900: Dual Channel SCSI

=====  
Article Created: 12 November 1991  
Article Last Reviewed: 5 August 1992  
Article Last Updated:

TOPIC -----

What is the value of dual channel SCSI on the Macintosh Quadra 900?

DISCUSSION -----

The dual SCSI implementation on the Quadra 900 means several things:

- Because the SCSI chains are electrically separate, there won't be any interruption on the internal chain if something goes wrong on the external chain (like a disconnect while the computer is on, poor termination schemes, and so on).
- It gives third parties (and potentially Apple) the opportunity to implement disk arrays using the two chips. Micronet is advertising their Raven array without using two NuBus slots.
- You can assure speed of the drive internally using the internal cabling, and not limit the speed of a drive by the cable you use (frayed cables, bad cables, and so on).

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9306



# Tech Info Library

## PowerBook and PowerBook Duo: No Apple Support for A/UX

Revised: 3/11/94  
Security: Everyone

PowerBook and PowerBook Duo: No Apple Support for A/UX

=====

Article Created: 12 November 1991

TOPIC -----

Can any of the PowerBooks or PowerBook Duos run A/UX 3.0?

DISCUSSION -----

No, Apple does not support any version of A/UX on any of the PowerBook or PowerBook Duo computers.

MachTen from Tenon InterSystems is a 3rd party solution for running Unix on a Powerbook. Search on Tenon or MacTen for company information.

Article Change History:  
2 November 1992 - Updated for new models.

Support Information Services

Copyright 1991, 1992, Apple Computer, Inc.

Tech Info Library Article Number:9307



# Tech Info Library

## MacTCP: Releasing IP Addresses

Revised: 1/28/92  
Security: Everyone

MacTCP: Releasing IP Addresses

=====

Article Created: 5 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

A Macintosh with MacTCP installed refuses to give up a dynamically assigned IP number until the we restart the computer.

If a Macintosh uses an application that requires an IP number from the network (in this case a GatorBox and no MacTCP installed) and the application is no longer in use, the IP is released for use by someone else. This is what it's supposed to do.

When we add the MacTCP drivers and run an application that requires MacTCP and an IP number, the Macintosh doesn't release the IP number, even after quitting this program. My explanation is the MacTCP drivers are now loaded into the Macintosh and reside there, holding on to the IP number. Hence, until the machine is shut off or restarted, it doesn't release the number.

Is this normal, and should I look for a way to release the number without shutting off the Macintosh? Or is this a bug that will be fixed or maybe someone has come up with a fix?

I have been told that the node number and IP numbers are all reset at startup time. Is this correct?

DISCUSSION -----

You are correct; MacTCP doesn't release an acquired IP address until you restart the Macintosh.

In the first instance you mention, an application has its own TCP/IP driver; NCSA Telnet 2.3 (non-MacTCP) is a good example. When Telnet tries

to open a session, the built-in TCP/IP driver is opened and an IP address is obtained. When you quit the application, the driver is removed from memory and the IP address is released.

With MacTCP, when an application or DA opens the driver, an IP address is obtained. Since MacTCP is a system-wide resource not limited to a specific application, the driver is not removed from memory when the application is quit because other applications or DAs may be using the driver as well. This causes the IP address to remain in use until you restart the computer.

This behavior is not a bug, and will not be changed in a future release of MacTCP.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9309



# Tech Info Library

## LaserWriter IIg: LocalTalk and EtherTalk Zones

Revised: 12/13/91  
Security: Everyone

LaserWriter IIg: LocalTalk and EtherTalk Zones

=====

Article Created: 21 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a question about the LaserWriter IIg. I have the same printer name on both the LocalTalk zone and the Ethernet zone, and the printer is connected to both LocalTalk and Ethernet. Between these zones I have an AppleTalk Internet Router.

When I print from a Macintosh on Ethernet to the LaserWriter, I can actually reach the printer from both Ethernet and LocalTalk. Which printer port is used in that case? Does it choose the shortest way, or does it prefer LocalTalk?

DISCUSSION -----

If a LaserWriter IIg is connected to the same Internet via LocalTalk and EtherTalk, and the LocalTalk and EtherTalk connections are in the same zone, the LocalTalk connection is shut down.

If the LocalTalk and EtherTalk connections are in different zones, the printer will be advertised in both zones. If you select the LaserWriter IIg via the LocalTalk zone, all communications go through the LocalTalk port. If you select the LaserWriter IIg via the EtherTalk zone, all communications go through the EtherTalk port.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9311





# Tech Info Library

## LaserWriter II Fonts 1 Disk: Zapf Dingbats Incorrectly Named

Revised: 12/13/91  
Security: Everyone

LaserWriter II Fonts 1 Disk: Zapf Dingbats Incorrectly Named

=====

Article Created: 14 November 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated: 8 June 1992

### TOPIC -----

When printing to the Apple LaserWriter II<sup>f</sup> or Apple LaserWriter II<sup>g</sup> from a Macintosh using System 7 and the LaserWriter 7.0 driver, the system will not download the Zapf Dingbats PostScript font that comes on the "LaserWriter II Install 4.0" disks. These disks come with the Apple LaserWriter II<sup>g</sup> and Apple LaserWriter II<sup>f</sup>.

### DISCUSSION -----

The problem with the Zapf Dingbats font on the LaserWriter II Fonts 1 disk (one of the "LaserWriter II Install 4.0" disks) is that the Postscript file is named incorrectly to be temporarily downloaded by the LaserWriter driver. The filename as it appears on the disk is "Zapf Dingbats." For the font to be downloaded by the LaserWriter driver, the downloadable Postscript file needs to be called "ZapfDin". Note: The incorrect name doesn't interfere with the LaserWriter Utility's ability to download the font into the printer's memory.

Copyright 1991, 1992 Apple Computer, Inc.

Tech Info Library Article Number:9312



# Tech Info Library

## LaserWriter II: Unlimited Downloadable Fonts Slowdown

Revised: 12/13/91  
Security: Everyone

LaserWriter II: "Unlimited Downloadable Fonts" Slowdown

=====

Article Created: 19 November 1991  
Article Last Reviewed: 8 June 1992  
Article Last Updated:

TOPIC -----

I have an Excel 3.0 document that uses the Zapf Dingbats fonts. The document takes 30 seconds to print on my Personal LaserWriter NT. The same document takes 10 minutes to print on the LaserWriter IIf. I'm using System 7 with the Zapf Dingbats PostScript in the System Folder (it is named "ZapfDin"). Other documents in Word, FileMaker, and so on, print fine on the LaserWriter IIf.

DISCUSSION -----

We looked at the "Page Setup..." options for the document you sent. The "Unlimited Downloadable Fonts in a Document" option was turned on. With this option enabled, any font that the driver downloads is purged as soon as another font is used, even if this other font is in the printer's ROM. The document has Zapf Dingbats characters interspersed throughout. Zapf Dingbats is downloaded the first time the font is used. As soon as another font is used, Zapf Dingbats is purged from memory. When it's used again, the LaserWriter driver has to download the font again. Because of the layout of the document, the Zapf Dingbats PostScript is downloaded dozens of times.

If you disable the "Unlimited Downloadable Fonts in a Document" option, the document takes 30 seconds to print on the LaserWriter IIf.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9313



# Tech Info Library

## AppleTalk Internet Router: What Happens with More than 256 Zones

Revised: 1/28/92  
Security: Everyone

AppleTalk Internet Router: What Happens with More than 256 Zones

=====

Article Created: 21 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I know the AppleTalk Internet Router supports up to 256 zones on an Internet. What happens to the AppleTalk Internet Router when the Internet it is attached to exceeds 256 zones?

DISCUSSION -----

The AppleTalk Internet Router continues to run on an Internet with more than 256 zones. The AppleTalk Internet Router doesn't return an error message in this situation.

The router will enter only 256 zones into its Zone Information Table. If the router has defined 10 zones on its own, it accepts the first 246 zones in the ZIP Reply packets it receives from the router on the Internet that responds to its ZIP Query packet. It discards the remaining 10 zones. Nodes that use this AppleTalk Internet Router to access the rest of the Internet won't be able to do NBP lookups for devices in the 10 missing zones.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9314



# Tech Info Library

## Kanji 6.0.7 and 6.0.7.1: Use U.S. Backlit Portable INIT (7/94)

Revised: 7/13/94  
Security: Everyone

Kanji 6.0.7 and 6.0.7.1: Use U.S. Backlit Portable INIT (7/94)

=====

Article Created: 19 November 1991  
Article Reviewed/Updated: 13 July 1994

TOPIC -----

Is a localized version of the Portable CDEV available for Kanji 6.0.7 that supports backlit Portables? The Portable CDEV in the Kanji system 6.0.7 on Developer CD Vol. VIII is localized, but doesn't support backlit Portables, it is for contrast only. I moved the U.S. English Portable CDEV v1.3 over to Kanji 6.0.7, and it works, but I can't find one that is both localized AND supports backlighting.

DISCUSSION -----

You're right. The Backlit Portable INIT wasn't localized in Japanese (current versions of system software, 6.0.7 and 6.0.7.1). So to use KanjiTalk on the Backlit Portable, you'll need to use U.S. Portable INIT to control the screen brightness.

Article Change History:  
13 Jul 1994 - Reviewed for technical accuracy, revised formatting,  
clarified title.  
25 Sep 1992 - Reviewed for technical accuracy.

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Tech Info Library Article Number:9316



# Tech Info Library

## Ethernet NB Card: Works Under A/UX 2.0.1 for Native TCP/IP

Revised: 9/25/92  
Security: Everyone

Ethernet NB Card: Works Under A/UX 2.0.1 for Native TCP/IP

=====

Article Created: 19 November 1991

### Article Change History

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08/31/92 - REVIEWED  
o For technical accuracy.

### TOPIC -----

Does the new Apple Ethernet NB Card under A/UX 2.0.1 work for native TCP/IP communications?

### DISCUSSION -----

Yes, the new Apple Ethernet NB Card does work under A/UX 2.0.1 for any TCP/IP communication. Note that there is a special driver ("as") that you need to install with the EtherTalk startup disk that came with the Apple Ethernet NB Card package. Follow the instructions in the Apple Ethernet NB Card User's Guide to do the installation for A/UX.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9319



# Tech Info Library

## A/UX: BBX Works with A/UX 3.0 (9/94)

Revised: 9/9/94  
Security: Everyone

A/UX: BBX Works with A/UX 3.0 (9/94)

Article Created: 19 November 1991  
Article Reviewed/Updated: 9 September 1994

TOPIC -----

There is a problem with the A/UX pseudo-tty driver when running BBX (a 4GL development tool from BASIS International). Here is a detailed description of the problem:

When I open a pseudo-tty with the O\_NDELAY flag, some of the output doesn't show up on the screen until AFTER I type a character on the screen. The pty is opened unbuffered -- this is something internal to the system. The first half of a page of text prints out. I have to type something to print the rest of the page.

This doesn't happen on the console or serial ports -- only the ptys. I'm using read() and write(), not stdio, and it's unbuffered. Doing an ioctl(tcsetaw) on the fd of the pty fixes the problem, but shouldn't be necessary.

DISCUSSION -----

There is a new kernel patch for the problem between A/UX pseudo tty and BBX. We tested the BBX software with the new kernel, and it works well. This patch fixes the longstanding problem between A/UX and BBX. This fix is now included in A/UX 3.0.

Article Change History:  
09 Sep 1994 - Reviewed. Changed title.  
31 Aug 1992 - Reviewed.

Support Information Services

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# Tech Info Library

## Macintosh LC: Video Specifications

Revised: 7/24/92  
Security: Everyone

Macintosh LC: Video Specifications

=====

Article Created: 5 November 1991  
Article Last Reviewed: 23 July 1992  
Article Last Updated:

TOPIC -----

I'm looking for the video specifications for the Macintosh LC. What are the Macintosh LC video characteristics (such as Horizontal and Vertical frequencies), and are they interlaced? (I understand the Horizontal and Vertical frequencies vary with the monitor.)

DISCUSSION -----

The Macintosh LC has three modes of operation, based on the monitor connected: 12-inch RGB, 12-inch monochrome/13-inch RGB, and VGA. The timings for these Macintosh LC video modes are the same as for other Macintosh models supporting these same monitors.

| Monitor                               | Vertical<br>Refresh<br>Hz | Horizontal<br>Refresh<br>KHz | Dot<br>Clock<br>MHz |
|---------------------------------------|---------------------------|------------------------------|---------------------|
| -----                                 | -----                     | -----                        | -----               |
| 12-inch RGB                           | 60.15                     | 24.48                        | 15.7                |
| VGA                                   | 59.95                     | 31.47                        | 25.175              |
| 12-inch Monochrome<br>and 13-inch RGB | 66.7                      | 35                           | 30.2                |

None of the Macintosh LC video modes uses interlace scan. All modes use a progressive scan.

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Tech Info Library Article Number:9323





# Tech Info Library

## **AFE: Remove ProDOS or MS-DOS File System Before Translating 2/95**

Revised: 2/3/95  
Security: Everyone

AFE: Remove ProDOS or MS-DOS File System Before Translating 2/95

Article Created: 5 November 1991  
Article Reviewed/Updated: 3 February 1995

TOPIC -----

Is there a problem using Apple File Exchange with Works-Works Transporter v2.0 and the ProDOS File System INIT that comes with the Apple IIe Card used on the Macintosh LC?

I have a Macintosh LC and I want to convert AppleWorks files to Microsoft Works files. I can't do this when the ProDOS File System INIT is in the System Folder. When in AFE, I can go to the menu and highlight AppleWorks to Microsoft Works as the translation, but it won't accept it. It appears to accept it, but only translates in the default mode. If the ProDOS File System INIT is taken out of the System Folder, AFE with Works-Works Transporter works fine.

DISCUSSION -----

Apple File Exchange incorrectly assumes that the volumes it locates are Macintosh-readable. It isn't an issue with the Works-Works Transporter.

When AFE looks for the available volumes, it checks for the type of volume. When it finds a volume format not Macintosh-readable (that is, ProDOS or MS-DOS), then AFE displays an appropriate set of "to/from" menus for the volume format located.

The ProDOS File System INIT causes AFE to assume that the volume is Macintosh readable. Therefore, the volume doesn't appear to need translation from another operating system format. The same is true of similar INITs for MS-DOS volumes, such as AccessPC and DOSmounter.

The Macintosh foreign file system tools allow mounting the ProDOS and MS-DOS volumes on the Macintosh desktop. The INITs are the code segments that make this possible. When a volume is mountable on the Macintosh desktop, AFE considers it a Macintosh readable volume. This is an incorrect assumption for

AFE to make.

Until Apple File Exchange is revised to allow mounting other volume formats on the Macintosh desktop, the only method of using AFE translation (beyond the text-to-text mode) is to remove the ProDOS or MS-DOS file system INIT from the System Folder and restart the Macintosh. Then use AFE to perform the translation. To have the ProDOS or MS-DOS volume mountable on the desktop again, replace the file system INIT in the System Folder, and restart the Macintosh.

Article Change History:

03 Feb 1995 - Corrected AccessPC name.

Copyright 1991, Apple Computers, Inc.

Tech Info Library Article Number:9324



# Tech Info Library

## Ofoto: Doesn't Descreen a Rastered Photograph

Revised: 2/4/92  
Security: Everyone

Ofoto: Doesn't Descreen a Rastered Photograph

=====

Article Created: 19 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does Ofoto allow "descreening" a rastered (screened halftone) photograph from a printed document?

DISCUSSION -----

Ofoto doesn't support this feature. Only a few scanners have this feature.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9325



# Tech Info Library

## A/UX: How to Access the Serial Ports (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: How to Access the Serial Ports (8/94)

=====

Article Created: 8 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

How do you refer to the serial ports in A/UX? (For example, if a modem is attached to the Macintosh.)

DISCUSSION -----

You can access the serial ports through a number of different methods:

- A/UX supports the calls to the Macintosh serial driver (it will not arbitrate between applications trying to use the serial port at the same time).
- A/UX also supports the Communications Toolbox.
- Finally, A/UX supports standard UNIX calls to the serial port.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9327



# Tech Info Library

## A/UX 2.0: Standard Toolbox Calls from within A/UX

Revised: 9/4/92  
Security: Everyone

A/UX 2.0: Standard Toolbox Calls from within A/UX

=====

Article Created: 8 NOVEMBER 1991

Article Change History

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08/31/92 - REVIEWED

•For technical accuracy

TOPIC -----

Can you make calls to the standard toolbox from within A/UX? What books and other resources can help?

DISCUSSION -----

The most important of the A/UX programmer's manuals is probably the A/UX Toolbox Macintosh ROM Interface, which details the Macintosh Toolbox calls that are available under A/UX.

Using this information, you need to decide what type of application you want. It is possible to write your application under the Macintosh OS in any of the development systems available to you there, as long as you take into account which Toolbox calls are available to you under A/UX. This would give you the added benefit of having your application run under both A/UX and the Macintosh OS.

The A/UX Developers Tools from APDA gives you the benefit of programming under A/UX, and this package includes a number of very useful tools designed specifically for A/UX development. This package is centered around an A/UX-compatible version of the Macintosh Programmer's Workshop, so if you are familiar with that package, you will be right at home. Note that applications written in this environment will not be able to run under the native Macintosh OS.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9328



# Tech Info Library

## A/UX: Where to Find GCC Binary

Revised: 9/15/92  
Security: Everyone

A/UX: Where to Find GCC Binary

=====

Article Created: 8 November 1991

### Article Change History

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08/31/92 - REVIEWED

- For technical accuracy

### TOPIC -----

I need the executable code for A/UX 2.0.1 of the compiler GCC. This compiler is produced by Free Software Foundation, but they give the source code only. I can't compile it because cc, standard compiler of A/UX, is not ANSI. Please tell me if you have available the executable code of GCC, or send information of any other ANSI C compiler for A/UX 2.0.1.

### DISCUSSION -----

You have two options:

- You can order the A/UX Development Toolkit from APDA. This contains C89, which is an ANSI standard C compiler for A/UX. You could then use this to compile your source for GCC.
- You can obtain the A/UX GCC binary from any of the following Internet addresses: wuarchive.wustl.edu, afsg.Apple.com, aux.support.Apple.com.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9329



# Tech Info Library

## **Xinet, Inc. (12/95)**

Revised: 4/4/97  
Security: Everyone

Xinet, Inc. (12/95)

=====

Article Created: 19 November 1991  
Article Reviewed/Updated: 4 April 1997

Xinet, Inc. (spin-off Mt Xinu, Inc.)

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Berkeley, CA 94710

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Fax: 510-644-2680

Internet: Xinet@Xinet.com

WWW: <http://www.xinet.com>

Company Profile:  
Specializing in a LaserWriter spooler called K-Spool and an AppleShare  
fileserver for UNIX called K-A-Share.

Support Information Services

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9332



# Tech Info Library

## System 7 RAM Disk: Macintosh Computers Supported (2/95)

Revised: 2/15/95  
Security: Everyone

System 7 RAM Disk: Macintosh Computers Supported (2/95)

=====  
Article Created: 26 November 1991  
Article Reviewed/Updated: 15 February 1995

TOPIC -----

Which Macintosh computers support the RAM Disk feature of System 7.x?

DISCUSSION -----

Here's the list:

- Macintosh IIvx
- Macintosh Centris 610
- Macintosh Centris 650
- Macintosh Centris 660AV
- Macintosh Color Classic
- Macintosh LC III
- Macintosh LC 475
- Macintosh LC 520
- Macintosh LC 550
- Macintosh LC 575
- Macintosh LC 630
- Macintosh Performa 410
- Macintosh Performa 450
- Macintosh Performa 460
- Macintosh Performa 466
- Macintosh Performa 467
- Macintosh Performa 475
- Macintosh Performa 476
- Macintosh Performa 550
- Macintosh Performa 600
- Macintosh Performa 630, 635, 636, 637, 638
- Macintosh Portable
- Macintosh Quadra 605
- Macintosh Quadra 630
- Macintosh Quadra 660AV



- Macintosh Quadra 700
- Macintosh Quadra 800
- Macintosh Quadra 840AV
- Macintosh Quadra 900
- Macintosh Quadra 950
- All Power Macintosh models
- PowerBook 100
- PowerBook 140 and 145
- PowerBook 145B
- PowerBook 150
- PowerBook 170
- PowerBook 160
- PowerBook 165
- PowerBook 165c
- PowerBook 180
- PowerBook 180c
- PowerBook 520
- PowerBook 520c
- PowerBook 540
- PowerBook 540c
- PowerBook Duo 210
- PowerBook Duo 230
- PowerBook Duo 250
- PowerBook Duo 270c
- PowerBook Duo 280
- PowerBook Duo 280c

The RAM Disk feature was first built into the ROMs of the Quadra models, and subsequent models include this feature. Models without this code in ROM can't support the System 7.x RAM disk feature, and no software workaround is currently available.

Third-party software is available to provide this function for most Macintosh models. You can use shareware programs, like Ram Disk or AppDisk, available on most on-line services. Or you can purchase Maxima from Connectix. To locate a vendor's address and phone numbers, use the vendor name as a search string.

Note: The Assistant Toolbox extension in the PowerBook File Assistant saves the RAM disk contents between shutdowns.

#### Article Change History:

- 15 Feb 1995 - Reviewed for technical accuracy.
- 04 Nov 1994 - Removed reference to System 7.5 as the RAM Disk is part of System 7 in general.
- 26 Sep 1994 - Updated to System 7.5 and added new computers to list.

Support Information Services

Copyright 1991-95, Apple Computer, Inc.

Tech Info Library Article Number:9334



# Tech Info Library

## Pers LW LS: Serialport Arbitrator/PrintMonitor Conflict (11/94)

Revised: 11/21/94  
Security: Everyone

Pers LW LS: Serialport Arbitrator/PrintMonitor Conflict (11/94)

=====

Article Created: 11 November 1991  
Article Reviewed/Updated: 21 November 1994

TOPIC -----

I just installed Apple Remote Access. Now when I try to print to my Personal LaserWriter LS with background printing enabled, I get a message that there is "no LaserWriter available, please check the power and connections."

If I turn background printing off, it works fine. It also seems that everything runs fine if I remove the Serialport Arbitrator from the Extensions folder.

DISCUSSION -----

This is a known conflict between the Serialport Arbitrator and PrintMonitor with the Personal LaserWriter LS. It occurs with system software version 7.0 or 7.0.1, and with the Personal LaserWriter LS driver version 7.0 or 7.1.

The only current workaround is to either disable background printing, or remove the Serialport Arbitrator, as you have already discovered.

Article Change History:  
21 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:9336



# Tech Info Library

## Personal LaserWriter LS: Scaling Limits

Revised: 1/30/92  
Security: Everyone

Personal LaserWriter LS: Scaling Limits

=====

Article Created: 11 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'd like to print to the Personal LaserWriter LS at 85% reduction, but only 50% and 75% are available. Is there a way to get reduction in print size, via the page layout, other than 50% and 75%?

DISCUSSION -----

The current implementation of the Personal LaserWriter LS driver is limited to the 25% reduction increments, and there is no way to modify this.

A possible workaround is called DynoPage, by Portfolio Systems, Inc. In addition to reduction options, it allows double-sided printing and printing to any page size. It can be extended to user-specified page layouts.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:9337



# Tech Info Library

## Portfolio Software, Inc.

Revised: 2/22/94  
Security: Everyone

Portfolio Software, Inc.

=====

Article Created: 12 November 1991  
Article Reviewed/Updated: 22 February 1994

Portfolio Software, Inc.

-----  
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1 Millet St.  
Richmond, VT 05495

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(802) 434-4000 Sales  
(802) 434-6300 Tech Support (Monday through Friday, 1:00 pm to 5:00 pm EST.)  
(802) 434-7000 Tech Support Fax (24 hour automated Q & A)

### Company Profile:

Software, specializing in personal information management software for the complete line of Macintosh computers, including the PowerBook series, called Dynodex and Dynopage for the Macintosh and Windows, Smartsrap and Superglue

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Tech Info Library Article Number:9338



# Tech Info Library

## **Sophisticated Circuits, Inc.**

Revised: 4/4/97  
Security: Everyone

Sophisticated Circuits, Inc.

=====

Article Created: 19 November 1991  
Article Reviewed/Updated: 4 April 1997

Sophisticated Circuits, Inc.

-----

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Fax: 206-485-7172

Company Profile:  
Hardware and software, specializing in ADB peripherals and network access  
support products.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9340



# Tech Info Library

## Telebit Corporation

Revised: 7/20/93  
Security: Everyone

Telebit Corporation

=====

Article Created: 19 November 1991  
Article Reviewed/Updated: 20 July 1993

Telebit Corporation  
-----

1315 Chesapeake Terrace  
Sunnyvale, CA 94089-1100

408-734-4333

Fax: 408-734-3333

Company Profile:  
Hardware and software, specializing in modems. Pioneer of networking.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number:9341



# Tech Info Library

## AppleTalk-LAT Gateway: Accessing from A/UX (8/94)

Revised: 8/30/94  
Security: Everyone

AppleTalk-LAT Gateway: Accessing from A/UX (8/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

Can an A/UX desktop run a terminal emulator using the AppleTalk-LAT Tool of CommToolBox which only requires A/UX to support ADSP? The AppleTalk-LAT Gateway can run on a Macintosh operating system.

DISCUSSION -----

Yes, the AppleTalk-LAT Tool will work on an A/UX computer to access an AppleTalk-LAT Gateway running on a Macintosh operating system.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

Copyright 1991,1994 Apple Computer, Inc.

Tech Info Library Article Number:9342



# Tech Info Library

## DAL Server for MVS to Access IBM DB-2 Database (11/94)

Revised: 11/11/94  
Security: Everyone

DAL Server for MVS to Access IBM DB-2 Database (11/94)

=====

Article Created: 5 November 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

I have an IBM 3090 Mainframe running virtual memory and MVS. The database of choice is DB-2. Do you have a DB-2 DAL Server that runs on a 3090 running MVS and virtual memory?

DISCUSSION -----

You need Data Access Language Server for MVS/TSO or the server for MVS/V TAM. These products provide support for DAL-based applications using data residing in the IBM DB-2 or Teradata DBC/1012 databases. They work with existing DB-2 databases, operating under standard MVS and database security.

DAL Server for MVS/TSO v1.3 supports MVS/XA release 2.2 or greater, DB-2 release 1.3 or greater, and Teradata DBC/1012, v4.1 or later. It also supports access via Apple's MacDFT along with Apple's Coax/Twinax, TokenTalk NB, or Serial NB cards. You can use TriData's Netway 1000 or 2000, Avatar's MacMainFrame, and DCA's MacIrma hardware and software products in place of Apple's 3270 products listed above. It also supports a synchronous connection via protocol converters.

The DAL Servers for MVS/TSO and MVS/V TAM are available through APDA.

To locate a vendor's address and phone number, use the vendor's name as a search string in the Tech Info Library.

Article Change History:  
11 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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# Tech Info Library

## PATHWORKS 1.0 & PageMaker: Problem Printing through VAXshare

Revised: 2/4/92  
Security: Everyone

PATHWORKS 1.0 & PageMaker: Problem Printing through VAXshare

=====

Article Created: 7 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm using PATHWORKS 1.0. I have difficulty printing PageMaker documents, especially ones with complex graphics, when using VAX/VMS print queues to spool Apple LaserWriter printers. I suspect this has something to do with the Aldus Prep PostScript dictionary file not being passed to the printer by PATHWORKS. Is there a workaround?

DISCUSSION -----

VAXshare Print Services in PATHWORKS is a component developed by Digital. Digital Customer Support Center (CSC) in Atlanta confirmed that they are aware of this problem, and that they already escalated it to Digital engineering.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9345



# Tech Info Library

## DAL: Third-Party Servers

Revised: 6/30/92  
Security: Everyone

DAL: Third-Party Servers

=====

Article Created: 14 November 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated:

TOPIC -----

I want to put servers on Apollo and Ultrix-based VAX workstations so Macintosh computers can access the data there. I need a list of current DAL servers.

DISCUSSION -----

The following are available from APDA:

Data Access Language Developer's Toolkit  
Data Access Language Server for VAX/VMS (9 track format)  
Data Access Language Server for VAX/VMS(TK 50 Format)  
Data Access Language Server for VM/CMS  
Data Access Language Server for MVS/TSO  
Data Access Language Server for A/UX v1.3  
Data Access Language Server for MVS/VTAM v1.3

Since you're looking for a DAL server for Ultrix and Apollo UNIX, the answer is very likely to come from Pacer.

Here is the latest information from the DAL Product Manager:

- Pacer Software announced a DAL Server for HP/UX, and DAL Server for SunOS on Sun SparcStation. Transport methods are TCP and Asynchronous. Databases supported are Ingres, Oracle, Informix, and Sybase.

They also have plans for DAL Server for Ultrix, and DAL Server for RS/6000 platform in early 1992.

- Novell is shipping on a DAL Server for Netware.

- Tandem is currently shipping DAL Server Tandem.
- Data General is working on a Server Product. Please contact directly for expected shipping date.
- Blyth Software is shipping DAL Toolkit for MS/DOS. AttachMate Software is required.

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Tech Info Library Article Number:9350



# Tech Info Library

## DAL 1.3: Use With Different Oracle Process Names

Revised: 1/28/92  
Security: Everyone

DAL 1.3: Use With Different Oracle Process Names

=====

Article Created: 15 November 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I tried to install DAL 1.3 for ORACLE V6 on a VAX/VMS system for an evaluation period. In the installation manual it says that the ORACLE V6 processes should have the following names: ORA\_DEMO\_RMON, ORA\_DEMO\_SMON. I can't imagine a lot of sites using these names for the ORACLE processes of their production database. In the installation notes I couldn't find the necessary commands to type if you have other ORACLE process names, in order to get DAL to work. Can you give me some guidelines? The VMS process names in this particular case are: ORA\_CIT\_RMON, ORA\_CIT\_SMON.

DISCUSSION -----

When you install ORACLE 6.x, you are asked to name an SID for the instance. An SID is an instance's unique identifier. It's a one-to-size character that identifies the new instance. Oracle uses this SID in the names of the processes associated with that instance.

These names, however, don't change the way you start DAL to use ORACLE. The examples in the Installation Guide used the name DEMO, but you can use any SID you like.

On the VAX, you still use "idal" to try a connection to the ORACLE demonstration database.

The example you saw in the Installation Guide shows you how to check for ORACLE DBMS status. No matter what your SID name is, you still use the \$ SHOW SYS command. These four processes should be in the list output by SHOW SYS.

If this doesn't work, access these tables using ORACLE's SQLPlus to

see if it works. If it doesn't, check your ORACLE installation, startup procedure, and privileges of the account you are using.

By the way, DAL 1.2 and 1.3 have problems with Oracle 6.0.33 (6.0.32 and before are OK) because ORACLE stops defining the logical name SYS\$ORACLE, which we need for DAL to work. To get around this, you can define the logical name for them in the MSAD\$LOGICALS file. You should define SYS\$ORACLE to be the value "ORA\_RDBMS" and then things should work.

The symptom for this is subtle. You can open up the DBMS, but any attempt to open up a database causes the connection to go away. So it looks like it might be a networking or AppleTalk for VMS problem. It's actually the DAL server dying, because it assumes that value exists when it doesn't.

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Tech Info Library Article Number:9353



# Tech Info Library

## Serial Printer: Connecting to UNIX Host Via Ethernet

Revised: 2/4/92  
Security: Everyone

Serial Printer: Connecting to UNIX Host Via Ethernet

=====

Article Created: 11 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I would like to print to our LaserWriter IINT via Ethernet from an SCO UNIX 3.2 computer. Is there a driver available to do this? Can this work for an ImageWriter II as well?

DISCUSSION -----

You can connect a LaserWriter IINT to a UNIX host with very little difficulty. But since the LaserWriter IINT has no Ethernet port, it's going to be very difficult to connect it directly to an Ethernet network.

You can, however, connect the LaserWriter IINT to a UNIX host via a serial connection. Then use the UNIX print spooler to allow other UNIX hosts on an Ethernet to print to the serially connected printer. You could use Adobe Systems' Transcript software to allow PostScript printing from the UNIX host. Or you could put the printer into Diablo 630 emulation mode and use it just like any ASCII printer.

You can connect the ImageWriter the same way. Of course PostScript style output would not be available, so the Transcript software won't be necessary.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:9357



# Tech Info Library

## AppleTalk Remote Access: How to Copy It to an 800K System

Revised: 2/4/92  
Security: Everyone

AppleTalk Remote Access: How to Copy It to an 800K System

=====

Article Created: 26 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I have a PowerBook 140, with AppleTalk Remote Access. I want to use this copy of Remote Access (on 1.4MB diskette) in my Macintosh SE, which has 800K diskettes. How can I get a copy of Remote Access on 800K diskettes if I have a version on 1.4MB diskettes? Do I have to buy a copy?

DISCUSSION -----

The license accompanying AppleTalk Remote Access allows a single user to make up to three copies of the AppleTalk Remote Access software for use on Apple computers they own and/or operate. You don't need to purchase another copy for your Macintosh SE.

To get a copy of the software for your Macintosh SE, (800K, two disks) we recommend the following:

- Get a copy from your dealer.
  - Copy the software to your PowerBook 140 and then do a "Live Install" on your Macintosh SE, over the network. The procedure below assumes you have an AppleTalk network in place between the PowerBook 140 and Macintosh SE, either with LocalTalk cabling, PhoneNet cabling, or serial cable (not supported by Apple).
- 1) Insert the AppleTalk Remote Access 1.4MB floppy into the PowerBook.
  - 2) Drag the Floppy Disk icon on top of the Hard Disk icon. This creates a folder on the PowerBook 140 called "Installer" with all of the AppleTalk Remote Access software within.



- 3) Open the Installer folder.
- 4) Rename the application inside from "Installer" to "Install".
- 5) Drag the files "Install" and "Remote Access Script" out of the Installer folder, to the root level of the hard disk (not the desktop).
- 6) Turn on File Sharing on the PowerBook.
- 7) From the Macintosh SE, use the Chooser to connect to the Macintosh PowerBook server. Sign on as the PowerBook owner. This gives you access to the entire PowerBook hard drive (that is, the PowerBook hard drive icon will appear on the Macintosh SE desktop).
- 8) From the Macintosh SE, open the PowerBook hard drive icon.
- 9) From the Macintosh SE, you should be able to see the "Install" application. Double click on it.

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Tech Info Library Article Number:9358



# Tech Info Library

## DAL: Defining Oracle Image Identifier

Revised: 6/30/92  
Security: Everyone

DAL: Defining Oracle Image Identifier

=====

Article Created: 18 November 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated:

TOPIC -----

I have several instances of Oracle installed on my system. How does DAL know which one to look at?

DISCUSSION -----

The DAL Oracle database adapter, as supplied, is linked with the Oracle Image Identifier "S". If your installation selected a different image identifier, two assign statements must be supplied in either the system login file or the user's login file to point DAL to the correct Oracle images:

- Oracle 5.1.22

```
$assign/nolog device:[directory]ORACLEx.EXE ORACLES  
$assign/nolog device:[directory]ORACRTLx.EXE ORACRTLS
```

where "x" is the Oracle Image Identifier.

- Oracle 6.0

```
$assign/nolog device:[directory]ORACLEx.EXE ORACLES  
$assign/nolog device:[directory]ORACRTLx.EXE ORA_CRTLS
```

where "x" is the Oracle Image Identifier.

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Tech Info Library Article Number:9359



# Tech Info Library

## LaserWriter IIg: Configure for Twisted Pair Ethernet (5/95)

Revised: 5/4/95  
Security: Everyone

LaserWriter IIg: Configure for Twisted Pair Ethernet (5/95)

=====

Article Created: 25 November 1991  
Article Reviewed/Updated: 4 May 1995

TOPIC -----

My Apple LaserWriter IIg does not appear in the Chooser. When I send a print job to the printer, the green light on the transceiver flashes, but the job times out and isn't printed.

I swapped the suspect Apple LaserWriter IIg with a known good one and had the same problem.

DISCUSSION -----

Check the push button switch on the back of the LaserWriter IIg, make sure it is set to 0 (zero) for AppleTalk Ethernet networks.

Also it appears you are connecting an Apple Twisted Pair Transceiver to a Farallon PhoneNet EN transceiver via RJ-45 cabling. Although the boxes are physically compatible, they are not logically compatible. The Apple Twisted Pair Transceiver is 10BaseT-compliant, but the Farallon PhoneNET EN is not.

The Apple Twisted Pair Adapter (part number M0845) is not the correct part. You need to use an Apple Ethernet AUI Adapter and power supply (part number M0432).

Here is the configuration:

Macintosh IICx with 3Com EtherLink card -----> Farallon PhoneNET EN ----->  
Farallon StarController EN (via RJ-45 cable) -----> Farallon PhoneNET EN (via  
RJ-45 cable) -----> Apple Ethernet AUI Adapter (M0432) -----> Power Supply and  
Apple LaserWriter IIg.

Article Change History:  
04 May 1995 - Added the push-button switch information.

Support Information Services

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Tech Info Library Article Number:9366



# Tech Info Library

## A/UX: How to Back Up Installation Floppies

Revised: 11/10/92  
Security: Everyone

A/UX: How to Back Up Installation Floppies

=====

Article Created: 18 November 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

How can I use A/UX to make backup copies of my installation media? The floppies don't have Macintosh file systems on them, so regular Macintosh backup programs don't work.

### DISCUSSION -----

To clone an A/UX installation floppy, follow these steps:

1) Give the command:

```
dd if=/dev/floppy0 of=/tmp/floppy.image
```

This creates a file containing a copy of the floppy disk contents on the A/UX file system.

2) Insert the duplicate floppy and type:

```
dd if=/tmp/floppy.image of=/dev/floppy0
```

to move the copy of the A/UX file system to the new floppy.

As an alternative, you can make the backup copies under the Macintosh OS using a program like DiskCopy.

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# Tech Info Library

## DiskCopy: When It Doesn't Recognize Disks

Revised: 12/11/91  
Security: Everyone

DiskCopy: When It Doesn't Recognize Disks

=====

Article Created: 18 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I'm having problems using DiskCopy. It doesn't seem to recognize the floppy I'm trying to copy.

DISCUSSION -----

Launch DiskCopy first. Then insert the floppy disk to be copied.

E

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Tech Info Library Article Number:9369



# Tech Info Library

## A/UX: How to Recover your Root Password

Revised: 11/9/92  
Security: Everyone

A/UX: How to Recover your Root Password

=====

Article Created: 18 November 1991

### Article Change History

-----

08/31/92 - REVIEWED

- For technical accuracy.

### TOPIC -----

I forgot my root password. Is there a way to get into the system without reinstalling?

### DISCUSSION -----

Make a copy of /etc/passwd, and using ed from the A/UX Startup application, edit it to remove the password for root. Remember to set a new password for root once you're logged in.

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Tech Info Library Article Number:9370





# Tech Info Library

## A/UX: How to Avoid NFS Timeouts (8/94)

Revised: 8/30/94  
Security: Everyone

A/UX: How to Avoid NFS Timeouts (8/94)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 30 August 1994

TOPIC -----

I'm getting lots of NFS timeout errors. How do I avoid them?

DISCUSSION -----

Time a ping message to the server. Then modify /etc/fstab by setting the timeo option to about the average time it takes for the ping message to return.

Article Change History:  
30 Aug 1994 - Reviewed

Support Information Services

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Tech Info Library Article Number:9371



# Tech Info Library

## AWS 95 & A/UX: Not Booting - yp: server not responding (4/95)

Revised: 5/23/95  
Security: Everyone

AWS 95 & A/UX: Not Booting - "yp: server not responding" (4/95)

=====

Article Created: 18 November 1991  
Article Reviewed/Updated: 21 April 1995

TOPIC -----

I have configured my A/UX system for bnet. When the system asked me if I wanted to be a NIS client, I respond with yes. Now, it does not boot.

DISCUSSION -----

When an A/UX system is configured to be a Yellow Pages client, it tries to connect to a Yellow Pages server during the boot process. If it cannot find a server, it displays the message yp: server not responding and the system waits until one becomes available.

One way to disable Yellow Pages is from the startup shell, by typing:

```
mv /etc/ypbind /etc/ypbind.hold
```

Then continue to boot normally. Once you have booted, we suggest that you turn off Yellow Pages in /etc/inittab and move the file back to the original location. To turn off Yellow Pages, find the line that executes ypbind and set it to off.

Another way is to edit the file /etc/inittab, using the ed editor from the A/UX Startup application.

Here is the process:

- 1) Launch A/UX Startup and click Cancel as it begins to launch A/UX.
- 2) At the startup# prompt, type: ed /etc/inittab
- 3) Use standard ed editing commands to change the line:  
  
. nfs2:2:wait:/etc/ypbind

. to:

. nfs2:2:off:/etc/ypbind

NOTE: For help with the ed editor, read the manual, "A/UX Text Editing Tools."

This article was published in the "Information Alley":  
Volume I, Issue 25, Page 8

Article Change History:

21 Apr 1995 - Added keyword; made minor technical changes.

05 Apr 1995 - Made changes for technical accuracy.

17 Aug 1993 - Retitled to better describe article.

Support Information Services

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Tech Info Library Article Number:9372



# Tech Info Library

## DAL 1.2: Fix for AppleTalk Connections Dropping

Revised: 1/28/92  
Security: Everyone

DAL 1.2: Fix for AppleTalk Connections Dropping

=====

Article Created: 12 August 1991  
Article Last Reviewed: 29 June 1992  
Article Last Updated:

TOPIC -----

I am running DAL 1.2 on a VAX and my AppleTalk connections occasionally drop into a mutex state. When AppleTalk for VMS drops into this state, I can't make a connection to DAL.

DISCUSSION -----

This is a known problem with DAL and a patch is available on tape to fix the problem. To get a copy of the patch:

- Apple SEs should contact Tech Comm.
- Apple customers should contact the DRC.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9373



# Tech Info Library

## How to Set up a Claris Folder (8/94)

Revised: 10/14/96  
Security: Everyone

How to Set up a "Claris" Folder (8/94)

=====

Article Created: 7 October 1991  
Article Reviewed/Updated: 4 August 1994

DISCUSSION -----

What is the Claris Folder inside my System Folder?

TOPIC -----

A Description of the Claris Folder:

Nearly all Claris applications can use the Claris XTND System for import & export of other file types. (XTND is also Claris Translators.) The Claris dictionaries are also used by nearly all Claris applications and are available in four languages in addition to US English.

This quick reference guide shows you how to set up a Claris folder in your System Folder. This allows all of your Claris applications to share the same Claris Translator files, as well as Claris dictionary files, saving space on your hard disk.

The latest versions of MacDraw Pro (1.0 or 1.5) and Claris Resolve (1.1) WILL automatically create a Claris folder and install the files which they use. They will not, however, install all of the files you may need.

Before You Install

- 
- Make sure you have access to the most recent versions of the Claris software.

Installing files into the Claris folder:

- 
1. Open the System Folder.
  2. Create a folder called Claris —with exactly those characters. Claris Folder, Claris f, or even putting spaces around Claris will cause Claris applications to FAIL to locate the folder.

3. Copy the Claris Translators folder from the MacWrite II Reference disk into the Claris folder.
4. Copy the Claris XTND System file to the Claris folder. (This file enables the Claris Translator folder.)
5. Copy the Main Dictionary and User Dictionary to the Claris folder.
6. Copy the Claris Help System to the Claris folder.
7. Copy any applicable help files to the Claris folder.

Help files come with all Claris products except MacPaint 2.0.

(Please remember that you need both the "Claris Help System" file - current version is 3.0v4, as well as any of the above help files.)

Claris Translators also work with ON Location 2.0.1 and Instant Update 1.0.1

Installing foreign language dictionaries:

-----  
Foreign Language Dictionaries are currently available for Claris applications in: British, French, Spanish, and German.

To install a foreign language dictionary:

1. Drag the appropriate dictionary and hyphenation files into the Claris folder. (Each foreign language dictionary has a separate hyphenation file.)
2. In your Claris application, choose Install Dictionaries... (From the Spelling menu in MacWrite II, from the Check Spelling hierarchical menu under the Edit menu in FileMaker Pro, Claris CAD and MacDraw Pro.)
3. Select the appropriate dictionary in the dialog box which appears. You're ready to begin spell checking!

Stationery/Options Documents:

-----  
A. Changing Default Settings:

In MacDraw Pro 1.0 & 1.5, MacWrite II 1.1, Claris CAD 2.0, and MacProject II 2.5; you can change any of the default settings such as: fonts, fonts sizes, headers, footers, custom styles (MacWrite II) rulers, pen sizes, artwork (MacDraw Pro 1.0 & 1.5, Claris CAD) and save them as a Stationery document. From now on, each time you open the specified application or create a new document, all of the customized settings will be the default settings. The following procedure explains how this is done.

1. Select New from the File menu.
2. Change any of the default settings to those you routinely use. (i.e., customize the menus, change the pattern palette, etc.)
3. Add any graphics, such as a letterhead or logo, that routinely appear in your documents.
4. Choose Save As from the File menu.
5. Type in the filename "<application name> II Options" and click Stationery. (<Application name> equals one of the following: MacWrite II Options, MacDraw Pro Options, Claris CAD Options, etc.)

6. Select either the System Folder, or the Claris folder within the System Folder, or the folder that contains the given Claris application as the folder in which you want to save this file.
7. Click Save.
8. Choose quit from the File menu.

B. Temporarily Disabling Your Custom Default Options:

1. Hold down the option key while starting the given application and it will not look for your startup file in the System Folder.
- OR ...
2. When choosing New from the File menu in your application, hold down the option key. This will bring up a blank document.

Specific Application Notes:

-----  
MACWRITE II 1.1: Using MacLink Plus Bridge  
-----

MacWrite II users can order an additional set of file translators containing many more PC and mainframe application file formats from DataViz, Inc., 35 Corporate Dr., Trumbull, CT 06611; 203-268-0030. \$169 retail

In order to use the additional translator files, follow the installation procedure below:

1. Copy the MacLink Plus Bridge file from the MacWrite II Program disk into either the Claris folder, or the Claris Translators folder.
2. If present, the DataViz MacLink Plus/Translators file should be in the Claris folder. PLEASE NOTE: IF THE MACLINK PLUS/TRANSLATORS FILE IS IN THE CLARIS TRANSLATORS FOLDER, IT WILL NOT BE READ.

To see the full range of XTND filters in MacWrite II

-----  
If the Open... and Save As... dialog boxes in MacWrite II do not display all the XTND filters in the pop up menu, try doing an "Insert File" (command-shift-i). Typically, this option will show all the XTND filters available when the pop-up is clicked.

FileMaker Pro/MacDraw Pro: Additional Claris Translator files  
-----

In order to ensure that these new versions can read and write needed file formats, make sure the Claris Translators files from the FileMaker Pro/MacDraw Pro disks are copied into your Claris folder, as well as the Help documents, if you wish to use help inside these applications.

Current Claris Translator Files:

-----  
(Excludes MacLink Plus/Bridge files purchased from DataViz, as well as native formats, such Stationery, Text, Tab Text, Comma Separated Text, etc.)

(Also excludes ClarisWorks translators, which are a single 100k file, version 1.0v3; and Claris Resolve translators, which reside inside the application.)

- Current version of Claris XTND file is 1.3

Acta 3.0 (1.0)

AppleWorks (1.0)

AppleWorks GS (1.0)

Claris XTND Bridge (1.0)

EPSF (1.0v3) (Encapsulated Postscript File)

MacDraw II 1.1 (1.0v4)

MacLink Plus/Bridge (2.0)

MacPaint (1.0v2)

MacPaint 2.0 (1.0v2)

MacWrite (1.0)

MacWrite 5.0 (1.0v3)

MacWrite II (1.0)

Microsoft Word 3.0 (1.0)

Microsoft Word 4.0 (1.0v2)

Microsoft Word PC (1.0v2)

Microsoft Works 1.1 (1.0v2)

Microsoft Works DB (1.0v2)

PICT (1.0)

Plain Text (1.0)

RTF (1.0v2) (Rich Text Format)

TIFF (1.0v2) (Tagged Image File Format)

WordPerfect (1.0)

WordPerfect PC 4.2 (1.0v2)

WordPerfect PC 5.0 (1.0v4)

WriteNow (1.0v2)

WriteNow NeXT (1.0)

If You don't want to use the Claris folder:

-----  
There are several other options for you if you don't want to create a Claris folder in your System Folder. Although the Claris folder approach is recommended, here are some alternatives:

- The Claris Translators folder in the root(top) level of the System Folder.
- The Claris Translators folder in the same folder as MacWrite II 1.1.
- Claris Application (Stationery) Option Files: Select either the System Folder, or the folder that contains the given Claris application, as the folder in which you want to save this file.
- Main Dictionary and User Dictionary files: the folder that contains the given Claris application as the folder in which you want to save this file.
- Help System and Help Document files: the folder that contains the given Claris application as the folder in which you want to save this file.

Support Information Services

Article Change History



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04 Aug 1994 - Reviewed for technical accuracy and updated format.

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Tech Info Library Article Number:9374



# Tech Info Library

## DAL 1.2: Current Release Runs under TSO

Revised: 7/15/92  
Security: Everyone

DAL 1.2: Current Release Runs under TSO

=====

Article Created: 22 February 1991  
Article Last Reviewed: 30 June 1992  
Article Last Updated: 20 June 1992

TOPIC -----

Does a DAL Server on an IBM mainframe run in its own address space or does it run under TSO?

DISCUSSION -----

Data Access Language Server for MVS/TSO runs under TSO and uses a TSO session for each user. Data Access Language Server for MVS/VTAM (available from APDA) runs in its own address space or a Batch job or Started Task, and allows access through CICS and VTAM directly with no TSO overhead.

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Tech Info Library Article Number:9375



# Tech Info Library

## Apple IIe Card: Control Panel vs. Option Panel

Revised: 6/10/92  
Security: Everyone

Apple IIe Card: Control Panel vs. Option Panel

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

How do the Macintosh Control Panel and the Apple IIe Option panel relate to each other?

DISCUSSION -----

They are separate. Printers, keyboard, mouse, and other Macintosh settings have no effect on the IIe side. The only setting that affects the IIe Option Panel is the Monitors setting in the Macintosh. If the Macintosh is set to black and white, the Apple IIe Card only displays black and white data.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9376



# Tech Info Library

## Apple IIe Card: Red Text May Be BASIC's FLASH Command

Revised: 6/10/92  
Security: Everyone

Apple IIe Card: Red Text May Be BASIC's FLASH Command

=====

Article Created: 6 June 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

With the Apple IIe Card, why does some text appear in red?

DISCUSSION -----

This is how the Apple IIe card handles BASIC's FLASH command. If you set Apple IIe Option panel to black and white, the text in question appears as inverse text.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9377



# Tech Info Library

## Datapoint Corporation

Revised: 7/15/93  
Security: Everyone

Datapoint Corporation

=====

Article Created: 6 November 1991  
Article Reviewed/Updated: 15 July 1993

Datapoint Corporation

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Custom Systems Group  
8400 Datapoint Drive  
San Antonio, TX 78229-8500

210-593-7000

800-733-1500 x7193

Fax: 210-593-7558

### Company Profile:

Hardware and software, specializing in minicomputers and terminals, plus terminal emulation software for Macintosh among other products.

Copyright 1991-93, Apple Computer, Inc.

Tech Info Library Article Number: 9379



# Tech Info Library

## Generation Systems, Inc. (Division of Mirror Technologies, Inc.)

Revised: 4/4/97  
Security: Everyone

Generation Systems, Inc. (Division of Mirror Technologies, Inc.)

=====

Article Created: 11/06/91  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Generation Systems, Inc.  
-----

Division of Mirror Technologies, Inc.  
305 Second St.  
St. Paul, MN 55112

800-325-5811 (Sales)  
800-323-9285 (Tech. Support)

612-633-5222

612-633-1083 Fax

Company Profile:  
Hardware, specializing in Macintosh peripherals, i.e. monitors and video  
cards, harddrives, and Laser printers.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9380



# Tech Info Library

## Relay Technology (formerly Microcom)

Revised: 4/4/97  
Security: Everyone

Relay Technology (formerly Microcom)

=====

Article Created: 6 November 1991  
Article Reviewed/Updated: 04/04/97

Relay Technology  
-----

55 Federal Road  
Danbury, CT 06810

203-798-3800

203-798-3917 Fax

Company Profile:  
Formerly Microcom, Software, specializing network communications

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9381



# Tech Info Library

## Shana Corporation

Revised: 4/4/97  
Security: Everyone

Shana Corporation

=====

Article Created: 6 November 1991  
Article Reviewed/Updated: 4 April 1997

Shana Corp.

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9650-20th Avenue  
Suite 105  
Edmonton, Alberta T6N 1G1  
Canada

403-463-3330

Fax: 403-463-3343

Company Profile:

Software, specializing in forms design and management software for the  
Macintosh.

Copyright 1991-97, Apple Computer, Inc.

Tech Info Library Article Number:9382





# Tech Info Library

## Apple IIe Card: Sound Level Control

Revised: 6/10/92  
Security: Everyone

Apple IIe Card: Sound Level Control

=====

Article Created: 6 November 1991  
Article Last Reviewed: 3 June 1992  
Article Last Updated:

TOPIC -----

How do I control the Apple IIe Card sound level?

DISCUSSION -----

You can control sound either from the Macintosh side or from the Apple IIe Card software:

- From the Macintosh Control panel, you can slide the speaker volume control from seven (loudest) to zero (silence), thus altering the volume of the beep.
- From the Apple IIe Card Option panel, you can change the type of "beep" the computer makes, but you cannot change the volume level.

Neither the Macintosh nor the Apple IIe Card can control the sound(s) that an application makes. For example, computer and card panel settings will not affect a music program or a game's sound effects.

Copyright 1991, Apple Computer, Inc.

Tech Info Library Article Number:9383



# Tech Info Library

## Disk Copy 4.2: How to Install and Use (2/97)

Revised: 2/12/97  
Security: Everyone

Disk Copy 4.2: How to Install and Use (2/97)

Article Created: 7 October 1991  
Article Last Reviewed: 12 February 1997

TOPIC -----

Disk Copy 4.2 is a utility program that transfers image files onto 3.5-inch floppy disks, whether 800K or High Density. (A High Density, also called FDHD, disk holds 1.44MB.)

DISCUSSION -----

Increasing Memory Allocation (for High Density images)  
-----

If you are reading High Density images, follow these steps to increase the memory allocation for Apple Disk Copy to 1600K:

Step 1:  
Select the Apple Disk Copy 4.2 icon.

Step 2:  
From the File menu, choose Get Info (or press Command-i).

Step 3:  
In the Current Size box, type 1600.

Step 4:  
Close the Get Info window.

Step 5:  
Launch Apple Disk Copy 4.2 and proceed with Step 3 in the following section, "Apple Disk Copy 4.2: Installation and Use".

Apple Disk Copy 4.2: Installation and Use  
-----

To install and use Apple Disk Copy 4.2, follow these steps:

Step 1:

Copy the Disk Copy 4.2 folder to your hard drive.

Step 2:

Open the Disk Copy 4.2 folder and double-click the Disk Copy icon.

Step 3:

The title screen appears; click the mouse to continue.

Step 4:

The main screen appears; click the Load Image File... button. (You can also select Load Disk Image from the File menu or press Command-L.)

Step 5:

Choose the image file you want to copy to floppy disk.

Step 6:

Click the Open button. A message appears: "Reading the master disk image into memory..." After the image is loaded into memory, the Make A Copy button is highlighted.

Step 7:

Click the Make a Copy button and a prompt appears: "Please insert a disk to COPY ONTO..."

Step 8:

Insert a floppy disk (formatted or unformatted) into the main floppy drive. This message appears: "Now copying and verifying a disk..."

If there is already data on the disk, a beep sounds and a dialog box appears. If it is okay to write over the disk, click the Duplicate button. Otherwise, click the Eject button. If you eject the disk, the main screen reappears. Click the Make A Copy button again and insert a different disk.

When the image file has been transferred to the floppy disk, the disk automatically ejects.

Step 9:

For each image file you want to put on floppy disk, repeat steps 4-8. When you are finished, click the Quit button. (You can also select Quit from the File menu or press Command-Q.)

Hints and Help

-----  
To launch Apple Disk Copy 4.2 and load the image file into memory at the same time, double-click the image file icon.

If you want to learn more, read the "Disk Image Directions" document in the Apple Disk Copy 4.2 folder.

Other Disk Copy Features

-----  
--Making copies directly from a floppy disk. To copy the contents of a master

disk onto one or more other disks, take the following steps:

- 1) Choose Single Copy or Multiple Copies from the File menu.
- 2) Insert a master floppy disk to copy from into the floppy disk drive.
- 3) Click Read Master Floppy to read the contents of the master disk.
- 4) When the image file is loaded, click Make A Copy to start copying. (If you are making multiple copies, this button is labeled Make Some Copies.)
- 5) Insert a blank disk in the floppy disk drive to receive the newly created disk contents. When the wristwatch pointer changes back to the arrow pointer, disk creation is complete. If you are making multiple copies, insert each blank disk in turn.

--Creating an image file for later use

You can store an image file on your hard disk and use it to create duplicate floppy disks. Follow these steps to put an image file of a floppy disk on your hard disk:

- 1) Insert the floppy disk that you want to duplicate into the floppy disk drive.
- 2) Click Read Master Floppy.
- 3) After the contents of the floppy disk have been read, choose Save Disk Image from the File menu.
- 4) In the window provided, give the image file a name, and click Save.

Article Change History:

- 12 Feb 1997 - Retitled to add version number, added content from a similiar article.
- 10 Feb 1995 - Added keyword; modified title; made several technical updates.
- 27 Oct 1994 - Changed title and updated format.

Support Information Services

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Tech Info Library Article Number:9384



# Tech Info Library

## Before Installing System 7.1 (10/94)

Revised: 10/27/94  
Security: Everyone

Before Installing System 7.1 (10/94)

Article Created: 8 November 1991  
Article Reviewed/Updated: 27 October 1994

TOPIC -----

This quick reference shows you what to do before installing System 7.1 software. It includes:

- Backing up your hard disk
- Running Compatibility Checker
- Updating hard disk drivers
- Where to get more information

DISCUSSION -----

### Backing Up Your Hard Disk

Back up your entire hard drive. If you can't do this, at least make a backup copy of your System Folder. To do this:

- 1) Click the System Folder once to select it.
- 2) From the File menu, choose Duplicate or press Command-D.
- 3) Save the duplicate System Folder to another hard disk, to floppies, or to tape backup as an added measure of security.

### Running Compatibility Checker

Compatibility Checker 2.0 is a stand-alone application. To run it, simply do the following:

- 1) Copy the Compatibility Checker 2.0 application to your hard disk.

- 2) Double-click the Compatibility Checker icon to launch the application.
- 3) The Welcome window appears. Click the continue button at the bottom right side of the window.
- 4) A dialog box appears with a listing of currently available disks marked by selected check boxes. Click the OK button if you want Compatibility Checker to scan all of your hard disks, otherwise click the check boxes to deselect any hard disk(s) you do not want to scan. Compatibility Checker scans your hard disk. Progress is marked by a modal dialog box, similar to the Copy dialog box in the Finder
- 5) If Compatibility Checker finds potentially incompatible items, a screen appears.
- 6) Click one of the two buttons at the bottom of the screen. If you click the Move button, the items will be moved to a folder on top level of the hard disk named "May Not Work With System 7.1." In either case, the Compatibility Report window will appear.
- 7) Use the Sections menu, as shown below, to navigate around the report. (It's best to print the report and use it as a guide to update your software if necessary.)
- 8) When you're finished with Compatibility Checker, click the Quit button. A dialog box appears, asking if you want to save the report.
- 9) After you've chosen whether or not to save the report, the a dialog box appears, notifying you that any items Compatibility Checker moved out of your System Folder are still active until you restart your Macintosh.
- 10) Review the report, following the instructions detailed in it. Remember, individual vendors are the best sources of information, please contact them directly if you have any questions.

#### Checking Hard Disks With Disk First Aid

-----

Disk First Aid can detect and repair any problems that your Apple supplied hard disk(s) might have before installing system 7.1. Specifically, Disk First Aid 7.1 can detect and repair any occurrence of the "disappearing folders and files bug" which System 7 Tune-Up prevents, but cannot repair. Previously, the only course open to users was to re-initialize their hard disk.

- 1) Disable any virus or security software.
- 2) Start up with the Disk Tools disk. To do this, turn on your Macintosh. If your Macintosh is already on, select Restart from the Special menu.
- 3) Put the Disk Tools disk in the main floppy drive right after you hear the chime. The Disk Tools disk icon appears in the upper right corner of the desktop.

If disk icon does not appear, select Restart from the Special menu.  
The disk will eject, simply pop it back into the drive immediately.

- 4) Double-click the Disk Tools icon. A dialog box appears.
- 5) Double-click the Disk First Aid icon. A dialog box appears.
- 6) Click the Drive button in dialog box to select your (first) hard disk.  
Click the Open button. A Disk First Aid window appears.
- 7) Click the Start button. If no problems are found, the message: "This disk is OK" appears. Skip to step #9.
- 8) If damage was found, click the repair button. When repairs are completed, go to step #10. If repairs are unsuccessful, you'll need to back up the disk, then re-initialize the disk with HD SC Setup.
- 9) Repeat for any additional hard disks. Choose Open from the File menu and repeat steps #5 through #7.
- 10) Choose Quit from the File to return to the Finder.

#### Updating Hard Disk Drivers

-----

Drivers are small programs that tell your hard disk how to interact with your Macintosh. You must update these drivers on your Apple hard disk(s) before installing System 7.0. To update your drivers, follow these steps:

- 1) Disable any virus or security software.
- 2) Start up with the Disk Tools disk. To do this, turn on your Macintosh.  
If your Macintosh is already on, select Restart from the Special menu.
- 3) Put the Disk Tools disk in the main floppy drive as soon as you hear the chime. The Disk Tools disk icon appears in the upper-right corner of the desktop -- if it doesn't, select Restart from the Special menu.  
When the disk ejects, pop it back into the drive immediately.
- 4) Double-click the Disk Tools icon.
- 5) Double-click the Apple HD SC Setup icon.
- 6) Click the Update button. A message appears.
- 7) Click the Quit button.

You are now ready to install System 7.0 software. Refer to the "Quick Reference: How to Install System 7.0" for instructions.

#### Where to Get More Information

-----

- The Macintosh Bible Guide to System 7 by Charles Rubin

- Macintosh Reference (System 6.0.x) by Apple Computer, Inc. (030-4015-A)
- Macintosh Reference (System 7) by Apple Computer, Inc. (030-3934-A)
- MacWorld Guide to System 7 by Lon Poole

Article Change History:

27 Oct 1994 - Change title and updated format.

23 Aug 1994 - Reviewed for accuracy.

10 Feb 1993 - Added System 7.1 information.

Support Information Services

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Tech Info Library Article Number:9385





# Tech Info Library

## How to Connect to File Servers (2/95)

Revised: 2/23/95  
Security: Everyone

How to Connect to File Servers (2/95)

Article Created: 8 October 1991  
Article Reviewed/Updated: 23 February 1995

TOPIC -----

This article gives basic instructions on how to work with file servers or "shared disks" as they are also called. Its topics include:

- Connecting to file server (shared disk)
- Logging on as a guest
- Logging on as a registered user
- Setting your password
- System 7.0 hints and help
- Where to get more information

DISCUSSION -----

Connecting to a File Server (Shared Disk)

Follow these steps to connect to a file server:

Step 1

From the Apple menu, select Chooser. The Chooser window appears.

Step 2

Click the AppleShare icon in the upper-left part of the Chooser window.

Step 3

Scroll the list of AppleTalk Zones to find the one you want.

Step 4

Click the name of the AppleTalk Zone to select it. A list of shared disks (also called file servers) in that zone appears in the right-hand window.

Step 5

To select a shared disk, click its name.

Step 6

Click the OK button (or you can double-click the shared disk name, which does the same as steps 5 and 6).

Step 7

Click the Guest or Registered User radio button. Read the instructions that follow for the radio button you've chosen.

Logging on as a Guest

-----  
If Guests are allowed to log on, the word Guest appears in regular type. If Guests are not allowed, the word Guest appears dimmed (grayed out). Follow these steps to log on as a guest:

Step 1

If you want to log on as a Guest, and Guests are allowed, click the Guest radio button.

Step 2

Click the OK button to see the volume list.

Step 3

If the name of the volume is not already selected, click it.

Step 4

Click the OK button and the shared disk (server) icon appears on your desktop.

When you're finished with the shared disk, drag its icon into the Trash.

Logging on as a Registered User

-----  
Follow these steps to log on as a registered user:

Step 1

If you are a Registered User, click the Registered User radio button.

Step 2

Type your name and password.

Step 3

Click the OK button to see the volume list.

Step 4

If the name of the volume is not already selected, click it.

Step 5

Click the OK button, and the shared disk (server) icon appears on your desktop.

When you're finished working with the shared disk, drag its icon to the Trash.

Setting Your Password

-----  
If you are a Registered User, you need to set up your Password initially and occasionally change it. Here's how:

Step 1

Follow steps 1-6 of Connecting to a Shared Disk.

Step 2

Click the Set Password button.

Step 3

Click the OK button, and a dialog box appears.

Step 4

Type your old password.

Step 5

Press the Tab key.

Step 6

Type your new password.

Step 7

Click the OK button (or press Return).

Step 8

Click the OK button (or press Return).

Step 9

Type your new password again.

Step 10

Click the OK button (or press Return). Your password is changed.

System 7.0 Hints and Help

- 
- To move between sections of the Chooser, press the Tab key.
  - To move to an item quickly within any section of the Chooser, type one or more characters that begin the name of the desired item.

Where to Get More Information

- 
- Macintosh Networking Reference by Apple Computer, Inc. (030-3936-A)

- Macintosh Reference (System 6.0.x) by Apple Computer, Inc. (030-4015-A)
- Macintosh Reference (System 7) by Apple Computer, Inc. (030-3934-A)

This article is one of many available through the Apple Fax center. For a complete list of available Fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature). The Apple Fax center is available free of charge 24 hours a day, 7 days a week.

Article Change History:

23 Feb 1995 - Reviewed and changed format.  
27 Oct 1994 - Changed title and updated format.

Support Information Services

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Tech Info Library Article Number:9386



# Tech Info Library

## How to Connect to Network Printers (7/96)

Revised: 7/1/96  
Security: Everyone

How to Connect to Network Printers (7/96)

=====

Article Created: 8 October 1991  
Article Reviewed/Updated: 01 July 1996

TOPIC -----

This article covers these topics:

- Basic preparations for networking and background printing
- Connecting to network printers
- Selecting background printing
- System 7.x hints and help
- Where to get more information

DISCUSSION -----

Before You Connect

-----

To connect to network printers, you need the following items installed in the System Folder:

- LaserWriter or LaserWriter 8 (With LaserWriter 8 Print Driver you also need the PPD files from the installer disk.)
- LaserWriter Prep (under System 6.0.x only)

To use background printing, PrintMonitor also must be installed in the System Folder (under System 7.x, in the Extensions folder within the System Folder). If you need to install any of these items, use your set of system disks to do so. Under System 7.x, use the copy of the Installer on the Printing disk.

Connecting to Network Printers

-----

Follow these steps to connect to network printers:

- 1) From the Apple menu, select Chooser. The Chooser window appears. AppleTalk must be set to Active in the lower-right part of the Chooser window.
- 2) In the upper-left part of the Chooser window, click the icon of the type of printer you want (this must be a network printer, for example LaserWriter).
- 3) Scroll the list of AppleTalk Zones to find the one you want.
- 4) Click the name of the AppleTalk Zone to select it. A list of printers and print spoolers in that zone appears in the right-hand window.
- 5) Click on the name of a printer or print spooler to select it. If you use LaserWriter 8, you must click the "Setup..." button and setup the printer. You may either use Auto Setup, or chose More Choices to select a specific PPD.
- 6) From the File menu, select Close, or click on the close box in the upper-left corner of the Chooser window.

#### Selecting Background Printing

-----

With PrintMonitor, you can print on a LaserWriter while continuing to work with other programs (this is called background printing). Follow these steps to select background printing:

- 1) From the Apple menu, select Chooser. The Chooser window appears.
- 2) Click the LaserWriter icon in the upper-left part of the Chooser window.
- 3) Click the On radio button in the Background Printing section (below the list of LaserWriters).
- 4) From the File menu, select Close, or click on the close box in the upper-left corner of the Chooser window.

#### System 7.x Hints and Help

-----

- To move between sections of the Chooser, press the Tab key.
- To move to an item quickly within any section of the Chooser, type one or more characters that begin the name of the desired item.

#### Where to Get More Information

-----

- Macintosh Networking Reference by Apple Computer, Inc. (030-3936-A)
- Macintosh Reference (System 6.0.x) by Apple Computer, Inc. (030-4015-A)

- Macintosh Reference (System 7) by Apple Computer, Inc. (030-3934-A)

This article is one of many available through the Apple Fax center. For a complete list of available fax documents, search the Tech Info Library for Apple Fax Document Index or call the Apple Fax line at 1-800-505-0171 and select document number 20000 (Apple Fax - Document Index - Product Support Literature).

The Apple Fax center is available free of charge 24 hours a day, 7 days a week.

#### Article Change History:

01 Jul 1996 - Added Fax Doc Word

28 Sep 1994 - Reviewed for technical accuracy.

12 Jul 1994 - Reviewed for technical accuracy.

#### Support Information Services

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Tech Info Library Article Number:9388



# Tech Info Library

## Creating Font/DA Backups Under System 6 and System 7 (10/94)

Revised: 6/5/96  
Security: Everyone

Creating Font/DA Backups Under System 6 and System 7 (10/94)

Article Created: 6 December 1993  
Article Reviewed/Updated: 17 October 1994

TOPIC -----

In the event that the Macintosh System file gets corrupted, you could lose some or all of your fonts under versions of System 7 earlier than 7.1, or some or all of your fonts and DAs under System 6.0.x. So it's a good idea to create font/DA backup files. The following instructions show you how to do this.

DISCUSSION -----

CREATE EMPTY SUITCASE FILES WITH VERSIONS OF SYSTEM 7

-----  
If your Macintosh has a version of System 7 installed, follow these steps to create an empty suitcase:

- 1) Click an existing font suitcase file to select it.
- 2) Choose Duplicate from the File menu, or press Command-D.
- 3) Double-click the duplicate file to open it.
- 4) Drag the contents to the Trash.
- 5) Choose Empty Trash from the Special menu.
- 6) Duplicate this empty suitcase as many times as you need.

CREATE FONT BACKUPS WITH SYSTEM 7.0

-----  
This section explains two ways to create font backups under System 7.0 or 7.0.1.

Copy to Another Folder

-----



- 1) Choose New Folder from the File menu.
- 2) Type a name for the folder (Font backup folder, for example).
- 3) Double-click the System Folder to open it.
- 4) If you want to back up your entire System file (fonts and sounds), hold down the Option key, then click and drag the System file to the folder you created. Your System file is copied (not moved) to that folder.
- 5) If you want to back up only some of the fonts, double-click the System file to open it. A window appears, displaying individual fonts installed in the System.
- 6) Select the fonts you want to copy by using either the selection rectangle or Shift-clicking.
- 7) Hold down the Option key and drag the font files to the folder you created. The fonts are copied (not moved) to that folder.

#### Copy to a Suitcase

-----

- 1) Double-click the System Folder to open it.
- 2) Double-click the System file. A window appears, displaying individual fonts installed in the System.
- 3) Select the fonts you want to copy to the backup file, by either the selection rectangle or Shift-clicking.
- 4) Hold down the Option key and drag the fonts to one of the empty suitcases you created. Your fonts are copied (not moved) to the suitcase file.

#### CREATE DA BACKUPS UNDER SYSTEM 7

-----

#### Copy to a Folder

-----

- 1) Choose New Folder from the File menu (or press Command-N).
- 2) Type a name for the folder (DA backup folder, for example).
- 3) Double-click the System Folder to open it.
- 4) To back up your entire Apple Menu Items folder, hold down the Option key, then click and drag the Apple Menu Items folder to the folder you created. Your Apple Menu Items folder is copied (not moved) to that folder.
- 5) To back up only some of the DAs, double-click the Apple Menu Items folder to open it. A window appears, displaying individual DAs installed

- 6) Select the DAs you want to copy by either the selection rectangle or Shift-clicking.
- 7) Hold down the Option key and drag the DA files to the folder you created. The DAs are copied (not moved) to that folder.

#### CREATE FONT/DA BACKUPS WITH SYSTEM 6.0.X

-----

- 1) If you don't already have Font/DA Mover 4.1 on your hard drive, copy the application to your hard drive before proceeding.

NOTE: If you have older versions of Font/DA Mover on your hard drive, drag them to the Trash. Using an older version can damage your System file!

- 2) Double-click the Font/DA Mover application. The Font/DA Mover screen appears. The left-hand scroll box shows the fonts currently installed in your System file. The title below the scroll box shows the location of the fonts.
- 3) Click the right-hand Open... button. A standard file selection dialog box appears.
- 4) Click the New button. A dialog box appears so you can name the new file.
- 5) Type the name of the new file. Click the Create button. You are taken back to the Font/DA Mover screen.
- 6) Select the fonts you want to back up by dragging over the list (or you can hold down the Shift key and click each font). The selected fonts are displayed in reverse type (white letters on a black background). Arrows appear on the Copy button to show the installation direction.
- 7) Click the Copy button.  
To create a backup file of desk accessories during the same session, click the Desk Accessory radio button. The left-hand scroll box then shows the DAs currently installed in your System file. Follow steps 3-7, substituting DA(s) wherever you see font(s).
- 8) When you're finished, click the Quit button to go back to the Desktop (Finder).

#### 6.0.x Hints and Help

-----

Hold down the Option key before launching Font/DA Mover 4.1 to display DAs first rather than fonts.

Article Change History:

17 Oct 1994 - Reviewed for consistency and corrected format.

29 Aug 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:9389



# Tech Info Library

## Quick Reference: Font/DA Mover for System 6.0.x

Revised: 7/17/92  
Security: Everyone

Quick Reference: Font/DA Mover for System 6.0.x

Article Created: 17 October 1991  
Article Last Reviewed: 1 June 1992  
Article Last Updated:

TOPIC -----

Font/DA Mover is a utility that installs fonts and desk accessories (DAs) in your System file. Once installed, you can use these fonts and desk accessories with any application. This quick reference covers:

- Installing Font/DA Mover
- Using Font/DA Mover
- Hints and help
- Where to get more information

Important: Make sure you use Font/DA Mover 4.1. If you have older versions of Font/DA Mover on your hard drive, drag them to the Trash. Using an older version can damage your System file.

Note: You don't need Font/DA Mover at all if your Macintosh is running System 7.0 or later.

DISCUSSION -----

Installing Font/DA Mover

-----  
To install Font/DA Mover, copy the Font/DA Mover 4.1 application to your hard drive. You may want to keep it in the folder where you keep your other utility programs. (You don't need to keep it in your System Folder.)

Using Font/DA Mover

-----  
The steps below show you how to install fonts. The same steps apply to installing DAs. Follow these steps:

1) Double-click the Font/DA Mover application.

Once Font/DA Mover is launched, you'll see two boxes. The left one shows the fonts currently installed in your System file.

2) Click the Open... button on the right side to go to the fonts you want to install. A standard file selection dialog box appears.

3) Find the font file with the fonts you want to install, select it, and click the Open button (or press Return). You'll be taken back to the Font/DA Mover dialog box. Its window shows the contents of the font file selected for installation.

4) Select the fonts you want to install by dragging over the list on the right (or you can Shift click each font size). When you've selected the fonts, their names appear in white letters on a black background. The Copy button highlights automatically. Arrows on the button show the direction in which you're installing.

5) Click the Copy button to install the fonts. If you're in MultiFinder, you'll get a message saying that the fonts and DAs installed.

6) Click the OK button.

7) When you're finished, click the Quit button to return to the desktop (Finder). If you're in MultiFinder, restart your Macintosh.

To install desk accessories during the same session, click the Desk Accessory radio button. The left scroll box then shows the DAs currently installed in your System file. Follow steps 3-6, substituting the word "DA(s)" wherever you see "font(s)" in the instructions.

#### Hints and Help

-----

To display DAs first, rather than Fonts, hold down the Option key while launching Font/DA Mover.

#### Where to Get More Information

-----

If you want to explore more, read The Macintosh Bible, Third Edition, pages 483-486.

The information in this article is brought to you by ATC Services.

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Tech Info Library Article Number:9391



# Tech Info Library

## AppleShare Print Server: Error -120 Is directory not found

Revised: 12/11/91  
Security: Everyone

AppleShare Print Server: Error -120 Is "directory not found"

=====

Article Created: 29 March 1991  
Article Last Reviewed:  
Article Last Updated: 7 November 1991

### TOPIC -----

I am having problems with an AppleShare Print Server IINTX. When any of the workstations try to print to the network LaserWriter, the print server instantly aborts the print job. After this, the printer must be reset to be re-captured.

A message comes up on the screen stating that the computer is trying to clear the print buffer. I also get a message stating that error number -120 has occurred.

### DISCUSSION -----

The -120 error is a "directory not found" error that could relate to a hardware failure on the server. If you can print to the LaserWriter IINTX via the bypass feature of the AppleShare Print Server, then there is a problem at the server level. It is most important to determine that the workstations can print to the LaserWriter IINTX on bypass to verify the integrity of the hardware.

Here are two things to try on the server:

- 1) If you reinstalled the software over the old files, trash the old files first, then re-install.
- 2) Consider backing up the server in a file-by-file manner, re-initializing the drive, and restoring the files. The print server may be running into some bad sectors which inhibit its ability to spool the files.





# Tech Info Library

## System 7: Application Cannot be Found Error/Fix (11/94)

Revised: 11/11/94  
Security: Everyone

System 7: Application Cannot be Found Error/Fix (11/94)

=====

Article Created: 2 October 1991  
Article Reviewed/Updated: 11 November 1994

TOPIC -----

I have been using System 6 on my Macintosh and putting my applications on the Desktop (as opposed to within any folder). After installing System 7, I rebuilt the Desktop and "lost" these applications. However, they appeared again in their correct place, when I opened the hard disk icon.

The problem is that when I try to open a document created by any one of these applications, I get an error message that says, "The application cannot be found."

DISCUSSION -----

The fix is to move the application to the hard disk window. Then, if you want, move it back to the Desktop. This seems to "force" the Finder to update the Desktop correctly.

Article Change History:  
11 Nov 1994 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:9394





# Tech Info Library

## LaserWriter IIf & IIg: PhotoGrade, RAM, and Image Size (3/95)

Revised: 3/21/95  
Security: Everyone

LaserWriter IIf & IIg: PhotoGrade, RAM, and Image Size (3/95)

Article Created: 26 November 1991  
Article Reviewed/Updated: 21 March 1995

TOPIC -----

When we print to the LaserWriter IIg, there is a half-inch margin around the outside of each page. We've been printing closer to the edge of the page with the LaserWriter IINT and IINTX. How can we adjust this on the LaserWriter IIg?

DISCUSSION -----

These margin differences are caused by the memory requirements of PhotoGrade. The LaserWriter IIg defaults to using PhotoGrade enhancement unless told otherwise. Because a letter-size image -- with PhotoGrade enabled -- needs a frame buffer four times larger than an unenhanced image, the LaserWriter reduces the image size as required. It reduces a letter-size buffer, which would use 3935376 bytes, to a lettersmall buffer that uses 3511296 bytes. This can lead to the cropping of images when printing with non-Apple drivers (as on a Sun workstation), since the printer will crop any part of the image that falls within the larger margins.

As shipped, the LaserWriter IIg has only enough memory for an a4small frame buffer with PhotoGrade enhancement. Without PhotoGrade enabled, it can easily handle a full legal-sized image, but must be explicitly instructed to do so. You can do this in a couple of ways:

- Disable Photograde

If the PostScript operator for the required page size is included in the print job, the LaserWriter will disable PhotoGrade to maintain compatibility.

- Modify the Default Parameter

You can modify the persistent parameter that forces the PhotoGrade default. This is probably not a good idea unless you find it easier than modifying the printing code. It is inconvenient, and modifies the persistent memory. You can modify the persistent memory a limited number of times before it wears out.

To request a specific page size and override PhotoGrade, include a reference to the required page size in the beginning of the print job. The different page size operators are listed below, along with their memory requirements with and without PhotoGrade enhancement.

| Page Size   | PhotoGrade |         |
|-------------|------------|---------|
|             | Off        | On      |
| -----       | -----      | -----   |
| b5          | 741888     | 2967552 |
| lettersmall | 877824     | 3511296 |
| a4small     | 924420     | 3697680 |
| letter      | 983844     | 3935376 |
| a4          | 1015872    | 4063488 |
| legal       | 1257344    | 5029376 |

If you print a job with no requested page size, the LaserWriter IIf and IIg use the default size of lettersmall. If the job specifies a size, the LaserWriter will try to honor it as closely as possible within its memory limitations. The following table depicts the page size substitution order.

#### Frame Buffer Substitution Order

-----  
lettergray -> lettersmallgray -> letter -> lettersmall  
legalgray -> legal -> lettersmall  
a4gray -> a4smallgray -> a4 -> a4small  
b5gray -> b5

With the Apple LaserWriter IIf as shipped with 2MB, a request for a letter-size frame buffer results in a lettersmall buffer, the default. Requesting an a4 page results in an a4small buffer. The next table shows the maximum page size available for each memory configuration.

| MB | Largest Page Size            |
|----|------------------------------|
| -- | -----                        |
| 2  | a4small, PhotoGrade disabled |
| 4  | legal, PhotoGrade disabled   |
| 5  | a4small, PhotoGrade enabled  |
| 8  | legal, PhotoGrade enabled    |

In summary, prepending the letter operator to the documents would be adequate. Or you can disable PhotoGrade one time, and leave it alone until you need it again later. Note that the non-volatile RAM used in both the LaserWriter IIf and IIg has a limit to the number of times it can be modified: approximately 50000 writes. While this is a large number, you could rapidly exceed it if the modification were sent with each page or job. Once this part wears out, the factory defaults will be used each time the LaserWriter is powered on.

The following three code segments show, respectively:

- The letter operator at the start of a job
- Code to disable PhotoGrade
- Code to enable PhotoGrade

Caution:

-----

If you choose to use the PostScript code provided in this article, you assume all risks involved in making these changes. PostScript code, if not entered correctly, can place the LaserWriter into a condition requiring service.

- code segment 1

```
%=====
% Begin PostScript Code
%
%some sample PostScript with the letter operator prepended
letter
/Helvetica findfont 12 scalefont setfont
72 720 moveto
(This is a test) show
%
% end PostScript Code
%=====
```

- code segment 2

```
%=====
% Begin PostScript Code
%
%Disable PhotoGrade.ps      D.W.  11/91
%This code disables PhotoGrade enhancement after a couple of checks:
% Verifies that it's running on a LaserWriter IIg or IIIf.
% Checks if PhotoGrade is already disabled - prevents NVRAM fatigue.
% (The memory device is limited to approximately 50000 writes.)
statusdict /product get dup
(LaserWriter IIIf) ne exch (LaserWriter IIg) ne and
{ (Not a IIIf or IIg and may not support PhotoGrade.  Canceling.) =
  stop
} if
currentpagedevice /PreRenderingEnhance get not
{ (PhotoGrade is already disabled on this LaserWriter) = }
{ serverdict begin 0 exitserver }
ifelse
vmstatus pop pop 0 eq
{ (Disabling PhotoGrade.) =
  <</PreRenderingEnhance false>> setpagedevice
} if
%
% end PostScript Code
%=====
```

- code segment 3

```
%=====
% Begin PostScript Code
%
```

```
%Enable PhotoGrade.ps          D.W.  11/91
%This code enables PhotoGrade enhancement after a couple of checks:
%  Verifies that it's running on a LaserWriter IIg or IIf.
%  Checks if PhotoGrade is already enabled - prevents NVRAM fatigue.
%  (The memory device is limited to approximately 50000 writes.)
%  Also, let the user know if there isn't enough RAM for PhotoGrade.
```

```
statusdict /product get dup
(LaserWriter IIf) ne exch (LaserWriter IIg) ne and
{ (Not a IIf or IIg and may not support PhotoGrade.  Canceling.) =
  stop
} if
currentpagedevice /PreRenderingEnhance get
{ (PhotoGrade is already enabled on this LaserWriter.) = }
{ serverdict begin 0 exitserver }
ifelse
vmstatus pop pop 0 eq
{ statusdict /ramsize get exec 5242880 lt
  { (Enabling PhotoGrade, but it won't be used - 5MB required.) = }
  { (Enabling PhotoGrade.) = }
  ifelse
    <</PreRenderingEnhance true>> setpagedevice
} if
%
% end PostScript Code
%=====
```

#### Article Change History:

21 Mar 1995 - Added information on using non-Apple LaserWriter drivers.  
22 Feb 1995 - Added PostScript caution and reformatted.

Support Information Services

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Tech Info Library Article Number:9397



# Tech Info Library

## LaserWriter IIf and IIg: Changing Passwords

Revised: 12/13/91  
Security: Everyone

LaserWriter IIf and IIg: Changing Passwords

=====

Article Created: 26 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How do I change passwords on the LaserWriter IIf and IIg?

DISCUSSION -----

Because the LaserWriter IIf and IIg use implementations of Level 2 PostScript, setting their passwords is a bit different from previous models. This is primarily because Level 2 uses two different passwords -- one to secure system parameters, and another to secure use of the startjob operator. You will probably want to change both. This will achieve similar functionality to the Level 1 setpassword operator. Here is sample code to change both passwords:

```
<</Password (0) /StartJobPassword (2)>> setsystemparams  
<</Password (0) /SystemParamsPassword (2)>> setsystemparams
```

In both cases, the string following the /Password name must equal the current SystemParamsPassword. This password is required in order to change either the StartJobPassword or the SystemParamsPassword. Once these two have been redefined, the level of security is identical to that available through the setpassword operator in a Level 1 implementation. The two passwords need not be equal, and can be strings of up to 32 non-null characters. You can use an integer instead (as with Level 1), but internally it will be converted to a string containing the ASCII representations of each digit. Here is a version of the above code that changes both passwords, each to a different integer.

```
<<                                %Push a mark on the stack.  
/Password 0                       %Push key/value pairs for current password,  
/StartJobPassword 2              %the new StartJobPassword, and the new
```

```
/SystemParamsPassword 4  %SystemParamsPassword on the stack.  
>>                        %Create dictionary of the kv pairs up to mark.  
setsystemparams          %Use the dictionary to set system params.
```

Once this is sent, the value 4 or string (4) will be required as a password to change settings.

Level 2 introduces many new concepts to the PostScript world, and a complete discussion of how these work is best left to manuals on the subject. The current reference is available from Addison Wesley as the PostScript Language Reference Manual, 2nd Edition, by Adobe Systems Incorporated.

On AppleLink, you can find contact information for the various vendors by clicking the Library Index button to view the folder structure in the Tech Info Library. An alphabetic listing of vendors is in the Third Party Company Directory folder.

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Tech Info Library Article Number:9398



# Tech Info Library

## Macintosh Quadra 700, 900 & 950: SCSI Termination Issues 1/93

Revised: 1/26/93  
Security: Everyone

Macintosh Quadra 700, 900 & 950: SCSI Termination Issues 1/93

=====

Article Created: 16 December 1991

### Article Change History

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01/26/93 - UPDATED

- To include Quadra 950.

08/21/92 - UPDATED

- Clarified how to get internal SCSI terminator for Quadra 700

### TOPIC -----

This article addresses SCSI termination issues with the Macintosh Quadra 700, 900 and 950 computers.

### DISCUSSION -----

What is SCSI?

SCSI (Small Computer System Interface) is a standard by which one connects a device to the CPU. This device can be an external hard drive, CD ROM, Printer, Scanner, etc. The SCSI bus needs to be terminated at both ends to eliminate signal reflections.

How is the Quadra 700 Terminated?

With an internal hard disk drive, there are termination resistors on the drive itself. This would terminate the internal end of the bus.

If the internal hard drive is removed, a internal SCSI terminator must be installed (Apple Part Number 630-0408). This part was originally designed for the Macintosh Classic computer and a service provider can locate this part listing in the Macintosh Classic section of the Service Source CD, Technical Procedures or Macintosh Service Guide book. Apple US Service Administration can help a service provider order this part by overriding the standard

minimum order.

Floppy only system: Apple will install a plug-in terminator (Apple Part Number 630-0408) into the internal SCSI connector on the motherboard; thereby terminating one end of the bus as an internal drive would do. As external devices are added the last device should have an external terminator installed (Gray Terminator, Apple Part Number 658-8032). This way the bus is terminated at both ends.

How is the Quadra 900 and Quadra 950 Terminated?

The Quadra 900/950 has two SCSI buses, Internal and External.

The Internal Bus is terminated on both ends (one termination on the logic board and the other at the other end of the internal SCSI cable). THIS MEANS THAT ANY INTERNAL DEVICE SHOULD NOT HAVE TERMINATION RESISTORS. THEREFORE, MAKE SURE THE TERMINATION RESISTORS HAVE BEEN REMOVED BEFORE INSTALLING A DEVICE INSIDE THE QUADRA 900/950!

Note: All prior Macintoshs required the internal hard disk drives to have termination resistors on them. Hence, most hard disk drives' vendors ship their internal disk drives with termination resistors installed. With the Quadra 900/950, the terminators need to be removed since the internal bus is already terminated at both ends.

External SCSI is terminated on the logic board. As external devices are added the last device should have an external terminator installed (Gray Terminator- Apple Part Number 658-8032).

Though the Quadra 900/950 has two independent SCSI buses, system software views the two as a single logical bus. Like with other Macs, the CPU ID is 7. This allows for a total of 7 SCSI devices (IDs 0-6) to be added internally and externally. Users must be careful not to use the same ID on more than one device (internal or external).

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Tech Info Library Article Number:9399





# Tech Info Library

## VideoSync: Avoiding Flicker when Video Taping a Macintosh (3/95)

Revised: 3/28/95  
Security: Everyone

VideoSync: Avoiding Flicker when Video Taping a Macintosh (3/95)

Article Created: 22 December 1991  
Article Reviewed/Updated: 28 March 1995

TOPIC -----

This article describes VideoSync, a product which eliminates flicker when video taping the image on a Macintosh monitor.

DISCUSSION -----

VideoSync is a utility designed to allow the video recording of Macintosh monitor images with consumer or professional video camera equipment. VideoSync supports the Macintosh Display Card 4•8, 8•24, 8•24 GC, Apple High Resolution Video Card, and the Macintosh II Video Cards when connected to an AppleColor High Resolution RGB or monochrome monitor or Macintosh 12-inch RGB Display.

The utility is an extension to the Monitors control panel that adjusts the timing of the Apple display card so that the monitor image appears stable when viewed by an external NTSC camera. VideoSync does not create RS-170A timing for directly recording Macintosh screens to VCR. VideoSync can be licensed as a stand-alone utility for video integration applications, or serve as a platform on which to add other video timing alternatives.

The VideoSync utility is not compatible with Power Macintosh and Quadra AV computers. See the Tech Info Library article titled "VideoSync: Not Supported on Power Macintosh" for additional information on compatibility with the Power Macintosh and Quadra AV computers.

VideoSync is available through online services Apple publishes software updates on.

These articles can help you locate software updates mentioned here:

- Where To Find Apple Software Updates
- Lists online services for "free" Apple software updates

- Obtaining Apple Product Support in the USA

Lists 800 numbers and online services for software updates, Apple support information, and a subset of the Apple Tech. Info. Library

Article Change History:

28 Mar 1995 - Changed filming to video taping in title.

03 Mar 1995 - Added where to locate VideoSync.

Support Information Services

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Tech Info Library Article Number:9400



# Tech Info Library

## Macintosh 16-Inch Color Display: Features and Benefits

Revised: 1/28/92  
Security: Everyone

Macintosh 16-Inch Color Display: Features and Benefits

=====

Article Created: 13 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes the features and benefits of the Macintosh 16-inch Color Display.

DISCUSSION -----

The Macintosh 16-inch Color Display works with modular Macintosh systems such as the Macintosh Quadra 700 and 900 personal computers. You can organize your work more effectively using the Macintosh 16-inch Color Display, because its 16-inch diagonal screen gives you 70 percent more work area than standard monitors. Not only can you see multiple windows of text and color graphics at the same time, you can also access disk volumes and the Trash while a full page-width document is open.

The Macintosh 16-inch Color Display uses a Sony Trinitron picture tube with a high-contrast screen. This combination ensures sharp focus, high brightness, and uniform image clarity across the entire screen. A tilt-and-swivel base adjusts easily to a comfortable viewing angle, and an anti-glare, anti-static screen reduces glare and eliminates dust build-up.

The display's brightness, contrast, and power controls are located on the front panel, and several built-in ports allow easy connection to Apple Desktop Bus devices (such as keyboard or mouse), microphone, and headphones.

### Display Quality

-----

- 16-inch screen, 832 horizontal by 624 vertical pixels (at 70 dots per inch) for 70% more work area than standard monitors

- Trinitron color picture tube for high brightness, sharp focus, and uniform color
- Complements high-performance systems such as the Macintosh Quadra 700 and Quadra 900

#### Ergonomic Features

- Tilt-and-swivel base for adjustment to comfortable viewing angle
- Anti-glare, anti-static screen
- 75 hertz refresh rate and degaussing capability eliminate flicker and distortion
- Meets Swedish MPR recommendations for low-frequency magnetic emissions

#### Ease of Use

- Plug-and-play simplicity with most modular Macintosh computers
- Easy access to brightness, contrast, and power controls
- Built-in ports for ADB devices (such as keyboard or mouse), microphone, headphones, or external speakers

#### Power Controls

Built-in ports for ADB devices (such as keyboard or mouse), microphone, headphones, or external speakers

#### System Requirements

- a modular Macintosh computer with on-board video support, such as a Macintosh Quadra personal computer, or
- any NuBus-capable modular Macintosh such as the Macintosh IIsi or IIci.

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Tech Info Library Article Number:9402



# Tech Info Library

## Macintosh 16-Inch Color Display: Technical Specs. (Discontinued)

Revised: 6/20/94  
Security: Everyone

Macintosh 16-Inch Color Display: Technical Specs. (Discontinued)

=====

Article Created: 13 January 1992

TOPIC -----

This article provides the technical specifications for the Macintosh 16-inch Color Display.

DISCUSSION -----

### Picture Tube

-----

- 17-inch diagonal (16-inch viewable) Trinitron CRT
- .26-mm pitch aperture grill
- High-contrast glass with anti-glare, anti-static coating

### Resolution

-----

- 832 horizontal by 624 vertical pixels
- 70 dots per inch

### Active Display Area

-----

- Adjusted at the factory to produce an active video area described by an ideal rectangle of 11.8 x 8.86 inches (300 x 225 mm)

### Input Signals

-----

- Red, green, and blue video signals; separate sync, negative-going TTL

### Scan Rates

-----

- 50 kilohertz horizontal
- 75 hertz vertical

### Controls

-----

- Brightness
- Contrast
- Power on/off (automatic degauss at power up, manual degauss by turning power off, then on)

#### Size and Weight

- Height: 17.25 inches
- Width: 16 inches
- Depth: 17 inches
- Weight: 50 lb.

#### Operating Environment

- Temperature: 50 to 95 degrees F (10 to 40 degrees C)
- Humidity: 95% maximum, noncondensing

#### Input Electrical Requirements

- Voltage: 90 to 270 Vrms
- Frequency: 47 to 63 hertz
- Power: 130 watts maximum

#### System Requirements

- A modular Macintosh computer with on-board video support, such as a Macintosh Quadra personal computer, or any NuBus-capable modular Macintosh such as the Macintosh IIsi or IIci.

#### Article Change History

09/15/92 - Corrected the height information and added width and depth information.

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Tech Info Library Article Number:9403



# Tech Info Library

## Macintosh: Troubleshooting System Bombs (1 of 3)

Revised: 2/4/92  
Security: Everyone

Macintosh: Troubleshooting System Bombs (1 of 3)

Article Created: 15 January 1992  
Article Last Reviewed: 22 July 1992  
Article Last Updated:

TOPIC -----

Most system bomb error messages are due to software problems. This article provides troubleshooting tips for four major types of software.

DISCUSSION -----

THE FOUR MAJOR TYPES OF SOFTWARE  
-----

System Software  
-----

System software includes all the files in the System Folder that make up the Operating System.

- The files named System and Finder are the main components of the operating system and are loaded into RAM when you turn on or reset the computer.
- INITs (Extensions) are startup programs and initialization resources stored in the System Folder (with System 7, they are inside the Extensions folder). They are memory resident files that are loaded into RAM when you turn on or reset the computer. Examples: QuickMail and Easy Access.
- cdevs are control panel devices. These files appear as scrollable icons in the Control Panel desk accessory window under System 6, or as separate, launchable programs in a Control Panels folder under System 7. They are loaded into RAM when you turn on or reset the computer. You may change options from within each Control Panel. Examples: Pyro, After Dark, Adobe Type Manager, and Sound Master.

- RDEVs are remote devices or Chooser files. These files appear in the Chooser under the Apple menu. Examples: ImageWriter, LaserWriter, DeskWriter, CD-ROM, and AppleShare. Under System 7, they belong in the Extensions folder.
- Preferences files keep default or current settings for programs. Examples: Word Settings, MsWorksPref, PM4 Defaults, and Excel Settings.
- Some files are combinations of the above. Examples: Pyro (INIT/CDEV) and StyleWriter (INIT/RDEV).

NOTE: To simplify the description of INITs, cdevs and RDEVs, this document will use the collective term INIT to describe any file that contains INIT code to be executed at startup time.

#### Application Programs

-----

Examples of application programs: Microsoft Word, Microsoft Excel, Microsoft Works, FileMaker Pro, MacPaint, MacWrite, and Aldus PageMaker.

#### Program Files

-----

Program files are the files that contain data or instructions a program may need during its use. Examples: printer definition files, import/export filter files, and data files.

#### Data Files

-----

Your files are the documents created when you choose "Save" in a program. Examples: word processing, spreadsheet, communication, database, drawing, and page layout files you created.

#### TROUBLESHOOTING SYSTEM BOMBS

-----

Here are some troubleshooting tips for the various types of software.

#### System File & System Folder Procedures

-----

- Put a Disk Tools or System Startup diskette in the floppy drive and turn on your computer. This prevents the INITs in the System Folder from running, and eliminates them as a possible cause of the problem. This is a quick way to determine if a major problem which occurs near startup time is related to your System Folder. If the problem is resolved, then continue on with the next step. If the computer still bombs right away and you know your System Disk is good, then you may have a hardware problem.



- Move all INITs and non-Apple files\* (Preferences files, screen fonts, and so on) to a separate folder outside the System Folder and restart. If you're no longer getting system bombs, replace the INITs one at a time, and restart your computer following each replacement until you get the error again. The last one put in is likely the cause of the crashes. It may be corrupted or incompatible with the System or other INITs and/or programs. If you still get a system bomb after removing all INITs and non-Apple files from the System Folder, try the next step.

\* Non-Apple files are any files that AREN'T found on the original Apple Macintosh System Disks that come with your computer.

- Start up from your Disk Tools or System Startup disk. Open the System Folder and drag your current System and Finder files to the trash. (For System 6, consult your user's manual on the use of the Font/DA Mover program to copy your fonts and desk accessories out of the System file first.) Reinstall a new copy of the system using the Installer on your System Tools or Install 1 disk. If this doesn't work, try the next step.
- The Preference files may be corrupted. You can drag some to the trash and the programs will recreate the files the next time you run those programs (settings saved in these files will be lost). You will have to copy some Preference files using the program installation procedure. Consult your program manual or call the manufacturer of the program to find out what is necessary. If the system doesn't work once the new Preference files have been created, try the next step.
- Start up from your Disk Tools or System Startup disk. Drag the entire System Folder to the trash (be sure you have all INITs, preference files, fonts, desk accessories, and any other non-Apple files on floppy disks or in another folder on the hard drive before this procedure. For System 6, consult the manual on the use of the Font/DA Mover program to copy your fonts and desk accessories out of the System file.) Restart from the installation disk (Install 1 under System 7) and run the Installer to place a new copy of the System Folder on your drive. Check the system before re-installing your INITs, preference files, fonts, desk accessories and any other non-Apple files. If it works, re-install them one at a time until the System Folder is back to its original state. If this does not work, continue.

#### Programs, Program Files, Data Files

-----  
Programs or files may be the cause of problems. Here are some suggestions.

- You may (if possible) run the program from a floppy disk instead of the hard drive to determine if it is the cause of the problem. This is likely if you get the bomb in one program and no others. If this is not possible then try dragging the program's folder to the trash (saving any files you may have created first). Also throw away any preference files or folders associated with the program in the System Folder. Re-install the program from the original diskettes. If this

does not work, try the next step.

- A file that you have created may cause a bomb each time it is loaded or while you are using or editing it. Sometimes you can make a new file and copy the contents of the old file to it to solve the problem. In most cases you will need to restore the file from your backup if you have one or re-create the file if you don't.

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Tech Info Library Article Number:9405



# Tech Info Library

## Macintosh: Troubleshooting System Bombs (2 of 3)

Revised: 7/23/92  
Security: Everyone

Macintosh: Troubleshooting System Bombs (2 of 3)

=====

Article Created: 15 January 1992  
Article Last Reviewed: 22 July 1992  
Article Last Updated:

TOPIC -----

This article lists some of the common causes of system bombs.

DISCUSSION -----

### Incompatible Software

-----

Many pieces of software (System, INITs, Applications) are loaded into memory and run at the same time. System bombs occur if the versions of the software aren't compatible. You may call the application's manufacturer to find out if the software is compatible with your system and the other software you are running. You can find versions of programs, INITs, and the System file by selecting the file's icon at the Finder and choosing Get Info from the File menu.

### Corrupt Software

-----

Sometimes a piece of software may become corrupted. Events that can corrupt files include:

- Not choosing Shut Down before turning off your Macintosh.
- SCSI data line problems can corrupt software or even the format of your hard disk.

### Viruses

-----

A virus is seldom destructive, but can do any of the following:

- Display messages.
- Corrupt software.

- Change software or hardware settings.
- Cause system bombs.

The Tech Info Library contains several articles about viruses and their symptoms.

#### Hardware Problems

-----  
In a few cases, certain hardware problems may cause system bombs. Using peripherals or expansion cards that aren't fully compatible with the computer can cause bombs. Bad or insufficient memory may also cause bombs.

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Tech Info Library Article Number:9406



# Tech Info Library

## Macintosh: Troubleshooting System Bombs (3 of 3)

Revised: 2/4/92  
Security: Everyone

Macintosh: Troubleshooting System Bombs (3 of 3)

Article Created: 15 January 1992  
Article Last Reviewed: 22 July 1992  
Article Last Updated:

TOPIC -----

Here are some troubleshooting tips regarding the major causes of system bombs.

DISCUSSION -----

### Incompatibility in Software

Verify that your application is the most current version available and fully compatible with your Macintosh model. Check with the software manufacturers for information on the latest revisions, what version of the system should be used with what version of the application, and incompatibilities.

All INITs, programs, and System files must be compatible with each other. You need to know the EXACT version of applications and INITs. For example, Microsoft uses version numbers in the following sequences: 2.0; 2.00a; 2.00b; 2.00c; 2.00d. These represent Microsoft Works versions. Microsoft Works 2.00a is a problem in the System 6.0.7 environment. Microsoft Works 2.00b is compatible with System 6.0.7. It isn't enough to state that Microsoft Works 2.0 is a problem. The version numbers need to be EXACT.

### Corrupt Files

Any type of software may become corrupted. It can be very difficult to find out which piece of software may be causing your problem. Following the steps outlined in the "Troubleshooting System Bombs" section may be the only way to discover the corrupted software.

### Viruses

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The best way to combat viruses is with one of the many virus detection and correction programs available today. Viruses haven't caused problems on computers with the latest copy of a virus protection program installed. You'll need to start your computer from a floppy disk containing a virus detection program to fully check and "vaccinate" your hard disk. The System file and other software may not be diagnosed or fixed if they are running when the hard drive is checked. Once the hard drive has been checked and cleared of any offending viruses, an INIT file that scans each floppy disk as it is inserted will keep your system virus free. See the discussion of "Co-processor not installed!" errors for some information on the WDEF virus.

#### Hardware

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If hardware is the problem, you should take your system to an authorized Apple dealer for a thorough diagnostic check. If problems continue after you've explored all software situations, look at hardware -- particularly memory or memory management.

It could be RAM or the logic board. RAM problems can show up after warm-up. For example, a marginal SIMM's speed may be fine when cool but slow down after warming up. All SIMMs do this to a certain extent, but you may have a SIMM that crosses the Macintosh computer's tolerance threshold when warm. The only fix for this is to replace the offending SIMM or SIMMs. A similar problem could be happening within the memory manager's circuitry on the logic board; the only possible fix is a complete logic board replacement.

You may also have a SCSI problem, particularly if you have external SCSI devices attached. This problem occurs most often when you have external SCSI devices attached, but not turned on. You must turn on all SCSI devices before starting the Macintosh, and you must leave them on until you turn the Macintosh off. If you don't take these precautions, you can introduce garbage onto the SCSI data line.

Improper termination of the SCSI chain also causes this problem. If your SCSI chain is the source of your problem, be aware that the garbage on the SCSI chain may have corrupted the hard drive's format. You'll need to reformat your hard drive with either all the external SCSI devices removed or all of them turned on.

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Tech Info Library Article Number:9407



# Tech Info Library

## QuickTime: Description

Revised: 1/22/92  
Security: Everyone

QuickTime: Description

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Article Created: 9 December 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

QuickTime is a new system software architecture for the integration of dynamic media for Macintosh computers. QuickTime allows developers to integrate dynamic media -- such as sound, video, and animation -- in a consistent, seamless fashion across all applications. This article describes the software architecture in more detail.

DISCUSSION -----

QuickTime offers a standard platform for all Macintosh development, enabling developers to extend the capabilities of current applications as well as create entirely new categories of applications. These new categories include videoconferencing, store-and-forward video mail, low-cost video editing, and dynamic CD-ROM magazines.

The QuickTime architecture consists of four major components:

- System software
- File formats
- Apple Compressors
- Human Interface Standards

These components form a software architecture that is extensible, open, and offers cross-platform standards for dynamic data exchange.

System Software

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QuickTime is the first software extension to System 7. To install it, drag the QuickTime extension into the System Folder. QuickTime enables developers to incorporate dynamic data in a consistent and seamless fashion

across applications. The system software component of QuickTime incorporates three new pieces:

- Movie Toolbox  
Apple uses the term "movie" to denote dynamic data such as sound, video, and animation. The Movie Toolbox is a set of system software services that make it easy for developers to incorporate support for movies in their applications.
- Image Compression Manager  
The Image Compression Manager (ICM) shields applications from the intricacies of individual compression and decompression schemes. The ICM allows software and hardware developers to take advantage of numerous compression schemes -- such as DVI, Group 3 fax and MPEG -- in their applications, without having to make modifications.
- Component Manager  
The Component Manager allows external system resources -- for example, digitizer cards, VCRs, and system software extensions -- to register their capabilities with the Macintosh system software so any application can access these capabilities. In the past, application developers who wanted to take advantage of features from a hardware product, such as a digitizer card, would have to write custom software for that card and update their software each time the hardware was updated. With QuickTime, the hardware is transparent to the software application, and developers can concentrate on the capabilities they would like to offer.

## File Formats

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File formats are standard descriptions for a piece of data such as text and graphics. These standard descriptions are supported by most applications, thus allowing users to "cut and paste" or "Publish and Subscribe" data between applications and documents.

- Movie  
With QuickTime, Apple is introducing a new file format, known as "Movie." Movie refers to all dynamic data, such as a presentation slide show or a dynamic graph of lab data. The Movie file format is a container for this time-based data. Apple is publishing the full specifications for the Movie file format, thus providing developers of cross-platform applications with a standard way of exchanging dynamic data from one computing environment to the next.
- PICT Extensions  
In addition to introducing the Movie file format, Apple is also extending the PICT file format. With QuickTime, the PICT file format will now support image compression, enabling users to open any compressed still image from within any existing application. The PICT file format will also offer preview support, allowing applications to save a small "thumbnail" of a picture along with the image itself. These thumbnails will allow users to quickly browse through still image libraries in the same way they currently browse through files in a folder.



## Apple Compressors

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The first release of QuickTime provides a basic set of software compression/decompression schemes that meet a range of compression needs for still images, animations, and video.

### - Photo Compressor

Apple is the first personal computer company to implement the Joint Photographic Experts Group (JPEG) compression scheme as a standard part of system software. JPEG is a high-quality still image compression scheme that offers compression ratios ranging from 10:1 to 25:1 with no visible picture degradation.

### - Animation Compressor

The Animation Compressor is based on run-length encoding principles to compress computer-generated sequences from 1 to 32 bits in depth. This compression scheme displays animations -- such as a presentation slide show or a dynamic bar chart -- at acceptable speeds on all Macintosh computers. In addition, the Animation Compressor allows complex animations -- such as 32-bit scientific visualization data -- to be previewed on any Macintosh, thus saving users the time and expense of having to lay the animation to videotape one frame at a time.

### - Video Compressor

Apple developed the Video Compressor to allow digitized video sequences to play back from a hard disk or CD-ROM in real-time with no additional hardware on any Macintosh with a 68020 or higher Motorola processor.

The Video Compressor offers compression ratios ranging from 5:1 to 25:1. The video playback size is typically less than 1/4 of the computer screen size.

## Human Interface Standards

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Apple is also providing human interface guidelines for dynamic media. These guidelines will ensure ease-of-use and consistency across applications when dealing with dynamic media.

### - Standard Movie Controller

Apple designed a standard movie controller as part of QuickTime, providing users with a consistent way to control movies. The movie controller will allow users to:

- Turn sound on and off
- Play or stop a movie
- Interactively move to different segments in the movie
- Step-forward and step-reverse through the movie (provides an indication of where the user is in the movie at all times)

### - Standard File Dialog Box

Apple has extended the standard file dialog box to offer developers a preview option. Application developers can now incorporate a dialog box

## ..TIL09411-QuickTime-Description.pdf

that includes a preview window for still images and movies into their products.

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Tech Info Library Article Number:9411



# Tech Info Library

## Radius Multimedia Products: Support for Apple QuickTime

Revised: 2/28/92  
Security: Everyone

Radius Multimedia Products: Support for Apple QuickTime

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Article Created: 10 December 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Radius, Inc. is upgrading RadiusTV and ImpressIt to take advantage of the new features in QuickTime. QuickTime provides a standard architecture and interface for multimedia hardware and software applications on the Macintosh. QuickTime compatibility allows integration of Radius multimedia products with QuickTime-compatible hardware and software products from other vendors, increasing the range of multimedia options available.

DISCUSSION -----

Radius has rewritten the software for RadiusTV and ImpressIt to take advantage of QuickTime features, including:

- A time-management control system for synchronizing data
- Interface guidelines for hardware products
- Drivers for multimedia peripherals such as CD-ROM drives
- Built-in video editing

By supporting QuickTime, RadiusTV will be compatible with all other QuickTime compatible multimedia software applications. Previously, software applications required a special driver for compatibility with RadiusTV. Now, an application software developer can write a single QuickTime-compatible driver for a program to obtain compatibility with all QuickTime compatible multimedia hardware products like RadiusTV.

ImpressIt, Radius' still-image compression software, has been designed to integrate seamlessly with QuickTime. Users may elect to have ImpressIt automatically compress images when saved to a hard disk, rendering the entire compression process transparent.

## RadiusTV

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RadiusTV is a multimedia hardware and software platform that blends an array of audio and visual sources on the computer. RadiusTV features a video processing engine and an external audio-video input processor and television tuner -- to bring television functionality into the Macintosh environment.

RadiusTV is capable of displaying and digitizing live 16-bit video images in real-time (30 frames/sec) in a resizable window of up to 640 x 480 pixels. RadiusTV also digitizes sound in real time and provides access to information included in the television signal's vertical retrace interval (such as closed captions and calibration settings), making complete Macintosh control and processing possible. RadiusTV also includes Theatrics, a software package that allows image processing on captured images.

## ImpressIt

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ImpressIt is a Macintosh software compression product for color and grayscale still images. The fastest software solution available today, ImpressIt can compress images by up to 100 times. ImpressIt is based on the JPEG (Joint Photographic Experts Group) standard. A 24-bit 750K color image can be compressed to 25K in under 3 seconds when run on a Macintosh IIIfx.

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Tech Info Library Article Number:9413



# Tech Info Library

## QuickTime: Description of Its Components

Revised: 1/22/92  
Security: Everyone

QuickTime: Description of Its Components

=====

Article Created: 13 December 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

This article describes QuickTime's three major components:

- the Movie Toolbox
- the Component Manager (and its components)
- the Image Compression Manager

The article concludes with a description of graceful degradation as it applies to QuickTime.

DISCUSSION -----

The Movie Toolbox

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The Movie Toolbox includes the routines you need to play, edit, create, and otherwise manipulate time-based data in QuickTime files. If a file contains compressed image data, the Movie Toolbox automatically interacts with the Image Compression Manager to decompress the movie in the optimum way in real time. The Movie Toolbox includes routines with names such as CreateMovieFile, CutMovieSelection, IsMovieDone, and AddUserData.

The Component Manager

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The Component Manager manages multiple components -- software packages that are somewhat like device drivers. Like drivers, components can be the software interface to external hardware. Unlike drivers, however, components (for example, a software-only image compressor) can do work by themselves. Components are also different from drivers in that components provide a high-level, device-independent way to get the job done. (In contrast, to use a driver you have to know its exact name and characteristics.)

At startup, the Component Manager searches for all files of type 'thng' and registers them. Once they are registered, your program can ask the Component Manager which components are available and can then use whichever one you choose.

The most specific way the Component Manager can search for a component is by type (a four-character ID that characterizes a component as being able to respond to a specific set of calls). For example, 'imdc' components provide a standard set of image-decompression services. Note, however, that the 'imdc' component can be either a software-only decompression routine or the interface to a hardware-decompression NuBus card. A program using QuickTime can call FindNextComponent repeatedly to find out what kinds of decompression are available and can then decide whether to go with the fastest decompression available or perhaps a slower one that gives a better image.

The Component Manager also allows a component to describe itself in greater detail. The component's description (and a program's query) can also include a four-character subtype, a four-character manufacturer ID, and a 32-bit field of flags selected by a 32-bit mask field. By using full component descriptions and the Component Manager, your program can find the best component for the job without opening it or knowing its exact characteristics. If the component allows multiple simultaneous access, the Component Manager will allow multiple callers to use multiple instances of the component at the same time.

QuickTime 1.0 will include six component types:

- image compression ('imco')
- image decompression ('imdc')
- standard movie player ('play')
- component ('thng')
- video digitizer ('vdig')
- clock ('clock')

#### The Image Compression Manager

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This set of routines is your program's gateway to image-compression/decompression services. The Image Compression Manager does so many things that it is almost impossible to list them all. The paragraphs that follow describe the most important ones.

- The Image Compression Manager provides a standard high-level interface for the compression and decompression of images. These services are implemented as QuickTime components, so the Image Compression Manager uses the Component Manager to get its work done. These two managers work together to give your program easy, device-independent access to the best compression and decompression services available on the Macintosh running your program.
- The Image Compression Manager ensures that your efforts today will automatically work with new compression/decompression solutions in the future. The Component Manager can hide whether a component is software

or hardware. This means that your QuickTime-aware program coded today can automatically take advantage of future compression/decompression solutions without changes in its code.

- The Image Compression Manager enhances the PICT definition in a way that benefits existing and new applications. As mentioned at the beginning of this article, when QuickTime is present, any program -- QuickTime-aware or not -- can read PICTs that contain QuickTime-compressed pixmaps. (Apple engineers have extended the PICT definition by defining a new opcode value for compressed pixmaps. If a Macintosh is not running QuickTime, it simply skips the compressed image data.) Use this new capability to add more color and gray-scale pictures to your programs.
- When an application wants something done that the available compressor and decompressor components can't do, the Image Compression Manager helps the work get done. Sometimes none of the components can act on a request, because the image is at the wrong bit depth, is of the wrong type (indexed versus direct color), is too big to be done in one piece, or is being displayed across two different monitors. In such cases, the Image Compression Manager automatically steps in to convert the image to the proper type, hand it to the appropriate component, and then convert (if necessary) and return the result.

#### Compressor and Decompressor Components

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QuickTime 1.0 will ship with compressor and decompressor components for three data types: still-image, video, and animation.

Use these components for still and moving pixmap images only; they aren't meant to be used on audio, text, or any other data type. Some compressors can be either "lossless" (the decompressed data is identical to the original) or "lossy" (the decompressed version has lost some of the original information). Many lossy compressed images can be much smaller than a lossless version could ever be and still decompress to an image that shows little or no difference from the original. (This is especially true for video and animation movies, where each image is seen for only a fraction of a second.)

Apple will supply three compressors (and their accompanying decompressors) with QuickTime 1.0: the Photo, Animation, and Video Compressors. Because these compressors are a part of QuickTime, they are a part of Macintosh system software, and this means they are available to any color-capable Macintosh.

Although these software-only compressors are very useful just as they are, they don't constitute Apple's full video-compression/decompression architecture.

#### QuickTime 1.0 Compressors

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The following paragraphs describe each of the compressors that come with QuickTime 1.0. Please keep in mind that the "average" compression ratios

quoted below vary widely with the content of the image and the nature (lossy or lossless) of the compression.

## - Photo Compressor

The Photo Compressor is a software implementation of the baseline JPEG (Joint Photographic Experts Group) still-image standard. It will work with images (as many as 24 bits of color per pixel) and can, depending on the image content, achieve 5:1 to 10:1 compression ratios with little or no visible change to the decompressed image. (Higher compression ratios are also possible, often with very good results.)

## - Animation Compressor

The Animation Compressor is best at compressing and decompressing computer-generated animations—graphics sequences in which much of the image is "pure" and doesn't change between successive frames. (Animation is usually created by programs such as Electronic Arts' Studio/1, MacroMind's Director, and Paracomp's FilmMaker). The Animation Compressor has the very important quality of being able to decompress and play a movie (along with its synchronized sound) in real time from hard disk or CD-ROM.

Apple's Animation Compressor is based on run-length encoding (RLE) compression, which is very effective on images that contain "runs" of identical pixels. The "noise" of a digitized video image (where pixels change value slightly from frame to frame) usually defeats the advantages of RLE compression.

The Animation Compressor can work in either a lossless or a lossy mode. In addition, it can store movie frames by their differences -- that is, store only those pixels that have changed between successive frames. This method, called frame differencing or temporal compression, can achieve very high levels of compression. Compression ratios are often in the range 10:1 to 50:1.

## - Video Compressor

The Video Compressor works well on digitized video or scanned imagery. Like the Animation Compressor, it can decompress and play a movie and its sound in real time. (Without the ability to play movies directly from a disk, QuickTime would be able to show only very short movies that could be stored in and played from memory.) This compressor can also use frame differencing; when it does, it can produce compression ratios in the range 5:1 to 25:1.

For still-image compression and decompression, trade-offs occur among five factors: compression time, decompression time, image quality, processing power of the computer used, and compression ratio. Along with the above trade-offs, movie compression and decompression add two more: the frame rate (the number of frames displayed per second) and the presence or absence of audio. Although video quality can vary with circumstances, the quality of the audio itself is usually assured: QuickTime gives audio higher priority than video.

Graceful Degradation



-----

One very important property of QuickTime is its "graceful degradation." That is, when given a larger task than it can handle, QuickTime approximates or drops less important attributes and retains the most important ones for as long as it can. For example, if QuickTime can't do 32-bit colors, it uses the 8-bit colors it has and approximates more colors by dithering. Or, if QuickTime can't show a movie at its internal frame rate, it drops frames to keep up but always keeps the audio running smoothly.

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Tech Info Library Article Number:9414



# Tech Info Library

## QuickTime: How Movies Work

Revised: 1/22/92  
Security: Everyone

QuickTime: How Movies Work

=====  
Article Created: 13 December 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

The most important thing about QuickTime is that it allows users to create, play, and edit sets of time-based data. If you want to capture new video footage, you will need extra equipment -- a digitizer card, video camera or controllable VCR, and associated components. But you will be able to play and edit movies and other time-based data without extra hardware.

This article describes the movie feature of QuickTime, and provides some human-interface suggestions.

DISCUSSION -----

Movies, Tracks, and Media  
-----

A movie file contains a resource of type 'moov' (pronounce it "moo-vee"), which describes the movie in terms of its tracks, its media, and its references to the raw data the movie is to play.

Assume the movie contains all the knowledge needed to run the movie (the tracks and the media), but not the actual contents of the movie (the data). The data can easily run into multiple megabytes, whereas the movie itself is short enough to fit on the 2 Clipboard. By factoring out the large amount of data needed to play a movie, Apple engineers have made the movie file small enough to be moved, edited, cut, copied, or pasted easily.

You can think of a QuickTime movie as a container for tracks. The movie starts at time 0 and plays until it is finished. Depending on how they are defined, one or more tracks (each containing one kind of data: video, animation, or sound, for example) are active and playing at any instant.

To keep the concept of a QuickTime media general enough to be useful with vastly different data types, a media contains not the data but a one-to-one, linear mapping between itself and the data. (Yes, we do call it "a media," largely because QuickTime documentation, routine names, and variables exclusively use the word media instead of medium.) The data, for now, is always in a file somewhere on the network. Someday the data may be outside the Macintosh and its network -- for example, on a videotape in a VCR the Macintosh controls.

Each track has exactly one media associated with it, and vice versa. The track, through the media and code called the media handler, points to whatever data should be playing at any given time. This means that a track can omit part of the media, play segments out of sequence, play the same segment multiple times, or even play sequences that overlap within the media. This means that a movie-editing program can rearrange or delete movie footage simply by adding or changing a handful of pointers within a track. (If such a program had to cut and paste the actual footage, the program would be prohibitively slow and the delay would be proportional to the amount of footage moved.)

Movies, tracks, and media all have time scales; and they can all be the same, or they can be different. If the time scale of a track is 10, then ten such units make one second of playing time, and the track can start at any 1/10-second interval. Fortunately, QuickTime takes care of synchronizing all these time scales with the others.

#### Human Interface Suggestions

-----  
For QuickTime to be successful, movies must have certain basic behavior that users can learn (or, better, already know) and then forget. A program should be able to select a movie, cut or copy it to the Clipboard, and paste it from the Clipboard into a document.

A program should also implement an easy, common-sense way of playing and stopping movies and controlling the sound output (a sound-mute control is mandatory, but a volume control is even better). Apple created a new Macintosh human-interface element, the standard movie controller.

The standard movie controller can give basic movie control to users in the same way every other QuickTime program will. With a few Movie Toolbox routines, the standard movie controller gives users basic control of the movie's playback.

Here are some enhancements to movie behavior to implement:

- A poster is a single image that best represents the movie. It might be used when the movie is visible in its document but isn't playing or when the document containing the movie is printed. The poster can come from one of the movie's video tracks (that is, the frame at time  $t$  from track  $x$ ), or it can be an arbitrary image in its own track. (Apple recommends that you store a poster as a PICT with an uncompressed pixmap so that the user can see it in the Preview dialog box even if the proper

decompressor isn't present.)

- A preview is a short subsequence of the movie that also represents the movie in an appropriate context; it might play, for example, when a user is previewing a long movie file.
- Another useful option for movies is that of alternate tracks. With them, you can specify alternative representations of the same data, with the understanding that only one is active at a time. A simple example is an instructional movie that has vocal instructions in Spanish, English, and French, only one of which the user chooses when playing the movie. Another example is a movie that contains two alternative video tracks, one (of lower quality) meant to be played by a software-only decompressor and the other (of higher quality) requiring hardware decompression. The program playing the movie could then automatically show the movie at the best quality level available to the program and its hardware.

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Tech Info Library Article Number:9415



# Tech Info Library

## QuickTime: Image Compression Details

Revised: 1/22/92  
Security: Everyone

QuickTime: Image Compression Details

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Article Created: 16 December 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Apple supports all compression schemes through QuickTime's Component Manager and Image Compression Manager services.

Here is a brief overview of compression characteristics and the initial Apple-supplied compressors.

DISCUSSION -----

Characteristics

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There are four main characteristics of image compression algorithms:

- Compression ratio
- Image quality
- Compression/ decompression speed
- Spatial/temporal compression

Compression Ratio

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The compression ratio is equal to the size of the original image divided by the size of the compressed image. This ratio gives an indication of how much compression is achieved for a particular image. Most algorithms have a typical range of compression ratios that they can achieve over a variety of images. Because of this, it is usually more useful to look at an average compression ratio for a particular method.

The compression ratio typically affects the picture quality. Generally, the higher the compression ratio, the poorer the quality of the resulting image. The tradeoff between compression ratio and picture quality is an

important one to consider when compressing images.

Furthermore, some compression schemes produce compression ratios that are highly dependent on the image content. For example, a highly detailed image of a crowd at a football game may produce a very small compression ratio, whereas an image of a pure blue sky may produce a very high compression ratio.

#### Image Quality

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Compression schemes can be lossy or lossless. Lossless schemes preserve the original data. Lossy schemes don't preserve all the original data; you can't recover lost picture information after compression. Lossy schemes attempt to remove picture information the viewer won't notice. As more and more picture information is removed, the picture quality decreases.

#### Compression/Decompression Speed

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Compression and decompression time is defined as the amount of time required to encode and decode a picture, respectively.

Compression/decompression speed depends on:

- The complexity of the compression algorithm
- The efficiency of the implementation of the algorithm
- The speed of the processor hardware

Generally, the faster that both operations can be performed, the better. Fast compression time speeds up the material creation. Fast decompression time speeds up display and user interaction with images.

#### Spatial and Temporal Compression

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Spatial compression removes information from within a single still image. Temporal compression removes information between frames.

#### Apple-Supplied Compressors

-----

Apple supplies a basic set of three image compression algorithms for the first release of QuickTime:

- The Photo Compressor
- The Animation Compressor
- The Video Compressor

It's important to note that these compressors represent only a portion of Apple's overall compression strategy, which includes both hardware and software-based schemes. Software-based video compression provides users with a starting point that meets the minimum requirements of many applications while allowing room for additional schemes.

The following paragraphs discuss each of these compressors in greater detail.

## Photo Compressor

-----

The Photo Compressor implements the Joint Photographic Experts Group (JPEG) algorithm for image compression. JPEG is an international standard for compressing still images. The technique is based on the use of the Discrete Cosine Transform (DCT). The version of JPEG supplied with QuickTime complies with the ISO baseline standard.

The general character of DCT-based compression schemes is that they perform best on images that vary smoothly, or that don't have a large percentage of their areas devoted to edges or other sharp detail. Most natural images fall into this category. For such 24 bits per pixel images, the Photo Compressor will produce a reconstructed image which is visually indistinguishable from the original at a compression ratio of 10:1. In practice, you will find that compression ratios are highly dependent on image content, but generally range from 5:1 to 100:1, with excellent picture quality resulting from compression ratios between 10:1 and 20:1. Compression time is equal (or very nearly equal) to decompression time.

On a Macintosh IICx, it takes approximately 10 seconds to decompress images at 640 x 480 pixel resolution. The compression speed scales with CPU performance, so on a Macintosh IIfx, the same operation would require approximately 4 seconds. Photo quality is generally very good to exceptional and is often sufficient for use in demanding desktop publishing applications. Very high resolution images obtained through the use of 24-bit color scanners would best be compressed using the Photo Compressor.

## Animation Compressor

-----

Apple developed the Animation Compressor algorithm, based on run-length encoding techniques. This algorithm is best suited to animation and computer generated content. In addition, the Animation Compressor can compress sequences of screen-recorded images, such as those created by Farallon's ScreenRecorder product.

Like any QuickTime compressor, the Animation Compressor can compress input video images from all bit depths (1, 2, 4, 8, 16 and 24-bit color depths), and can decompress to all bit depths.

The Animation Compressor compression method can be considered an extension of the PICT image format to the temporal domain. A PICT image is stored in run-length encoded format and is lossless. Animation Compressor is also stored in run-length encoded format. However, Animation Compressor can work a lossy or lossless mode, and can support both spatial and temporal compression. Both modes maintain picture content precisely, storing an animation as a series of run-length encoded images. The lossy mode loses some quality, storing the difference between certain frames rather than the frames themselves, but is fast enough for real-time playback.

The Animation Compressor can play back images at up to 30 frames per second at full-screen resolutions, but its performance and achieved compression ratios are highly dependent on the type of images in a scene.

## Video Compressor

-----  
Apple developed the Video Compressor image compression to permit fast decompression while maintaining good picture quality. This rapid decompression also displays 24-bit still images very quickly.

The Video Compressor should generally be used for digitized video content rather than for synthetically generated images. This compressor supports both spatial and temporal compression. If you use only spatial compression, then you will obtain compression ratios from 5:1 to 8:1 with reasonably good quality. If you use both spatial and temporal compression, the compression ratio range extends from between 5:1 to 25:1.

On a Macintosh IICx, it takes half a second to decompress an image at full-screen resolution, and about three seconds to compress the same image. The compression speed scales with CPU performance, so on a Macintosh IIfx compressing a full-screen image requires one second, and decompress time is 1/5 second.

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Tech Info Library Article Number:9417





# Tech Info Library

## Electronic Arts

Revised: 4/4/97  
Security: Everyone

Electronic Arts

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Article Created: 12/16/91  
Article Reviewed: 07/08/93  
Article Updated: 04/04/97

Electronic Arts  
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Company Profile:  
Software, specializing in application software for the Macintosh including the  
Studio/1 animation program.

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Tech Info Library Article Number:9418



# Tech Info Library

## SNA•ps 1.1: Host Prnting to 3287 Devices & Apple Printers (1/95)

Revised: 2/1/95  
Security: Everyone

SNA•ps 1.1: Host Prnting to 3287 Devices & Apple Printers (1/95)

Article Created: 13 November 1991  
Article Reviewed/Updated: 31 January 1995

TOPIC -----

Will the 1.1 version of SNA•ps include support for host printing on LAN based printers?

DISCUSSION -----

The SNA•ps version 1.1 release will support host based printing to 3287 type devices using Apple's network printers. It will support LU type 1 and LU type 3 devices. SNA•ps 1.1 is REQUIRED for the Apple 4/16 Token Ring card AND all Quadra computers!

Article Change History:  
31 Jan 1995 - Reviewed for technical accuracy.

Support Information Services

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Tech Info Library Article Number:9420



# Tech Info Library

## Apple Token Ring 4/16 NB Card: Compared to TokenTalk Card

Revised: 2/4/92  
Security: Everyone

Apple Token Ring 4/16 NB Card: Compared to TokenTalk Card

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Article Created: 13 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

- 1) What are the differences between the Token Ring card and the earlier TokenTalk card?
- 2) Is an upgrade available?
- 3) Why did Apple change the name from TokenTalk Card to Token Ring Card?
- 4) What kind of speed increases can I expect at 16Mbps?

DISCUSSION -----

- 1) There are three main differences between Apple's previous Token Ring card and this one:
  - Transmission speed  
The old card supported only 4 Mbps transmission, and the new card supports both 4 and 16 Mbps.
  - On-board memory capacity  
The old card came with 512K RAM on the card, but there was no expansion capability. The new card comes with 512K standard, expandable to 1 or 2.5MB.
  - Token Ring technology  
The old card used the Texas Instruments TMS380 Token Ring chip set. The new card uses the industry-standard IBM Token-Ring chip set.

- 2) There's no upgrade program at this time.

- 3) Both of the cards are based on IEEE 802.5 standards for Token Ring, and will therefore work in all standard Token Ring environments. You can use multiple protocol stacks with the cards, including SNA and AppleTalk. In fact, because both cards are based on the Macintosh Coprocessor Platform architecture, you can run multiple network protocols simultaneously. Still, some customers found the name TokenTalk confusing, thinking that the card only supported AppleTalk protocols. We have changed the name to reflect the broad range of applications possible with the card, and to complement its standards-based design.
- 4) That depends on your network configuration. We find that in low-traffic situations, the increase in throughput is not astronomical. Generally, this is because the bottleneck is not how much information can be transferred over the wire, but how much can be processed in and out of the Macintosh. As the total amount of traffic on the ring increases, the capacity of the network becomes more important and 16Mbps token ring begins to perform better than 4Mbps Token Ring.

Operation at 16 Mbps also provides a feature called "Early Token Release," whereby more than one frame may exist on the ring at once. This provides an additional improvement in throughput, especially on large rings carrying a significant number of small frames.

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Tech Info Library Article Number:9421



# Tech Info Library

## Apple Token Ring 4/16 NB Card: Hardware Q & A

Revised: 2/4/92  
Security: Everyone

Apple Token Ring 4/16 NB Card: Hardware Q & A

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Article Created: 13 November 1991  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

- 1) How do I set the transmission speed on the card?
- 2) Why would I want more memory on the card?
- 3) Can I buy my own memory chips and install them myself?
- 4) Why would I care about IBM technology?
- 5) Does the card require special cabling?

DISCUSSION -----

- 1) The speed setting is software selectable. In fact, the card ships with a Token Ring Control Panel Device (CDEV) that allows you to set the speed setting, the locally-administered address, and timer settings for Response, Acknowledge, and Inactivity. All of these settings can be password protected so users can't change them inadvertently. The settings are saved in a .PREFS file.
- 2) You might need more memory depending on what applications you want to run on the card.

With the standard configuration of 512K, you can run either TokenTalk 2.4 (for connection to AppleTalk services such as AppleShare file servers or LaserWriter printers) or the SNA•ps 1.1 gateway. In this configuration, SNA•ps can support 8 or fewer 3270 sessions or 4-6 APPC sessions, depending on SNA frame size.

With 1MB of memory on the card, you can support both TokenTalk 2.4 and

SNA•ps 1.1. The number of SNA•ps sessions you can support will vary depending on several factors, including the frame size you are using and the number of 3270 vs APPC sessions. As a rule of thumb, 32 3270 sessions or 16 APPC sessions with TokenTalk 2.4 should fit with 1MB of RAM.

With 2.5MB of memory on the card, you will be able to support TokenTalk 2.4 and SNA•ps 1.1 with up to 64 sessions.

- 3) Yes. The memory is socketed, and specifications for the memory chips are included in the manual.
- 4) Because the card is built with IBM technology, it's 100% compatible with IBM Token Ring cards. You can mix and match Macintosh and PS/2 computers on a Token Ring without worrying about compatibility. In addition, Token Ring products from other vendors are generally tested for compatibility with IBM Token Ring cards, so the same level of interoperability is afforded Apple's card.
- 5) No. The card has a standard DB-9 connector for attaching to IBM Type 1 cabling. In addition, media filters are available from third parties so that the card can be used to connect to IBM Type 3 (unshielded twisted pair) cabling. Because the ring interface is made by IBM, the card will operate within the same cabling guidelines as IBM's own products.

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Tech Info Library Article Number:9422



# Tech Info Library

## Apple Token Ring 4/16 NB Card: Software Q & A

Revised: 6/29/93  
Security: Everyone

Apple Token Ring 4/16 NB Card: Software Q & A

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Article Created: 13 November 1991

Article Change History

06/28/93 - REVISED  
• To include MacTCP Token Ring Extension.

TOPIC -----

- 1) Can I use AppleTalk Remote Access with Token Ring now?
- 2) Does the card still ship with SMB File Transfer software?
- 3) The new card uses the IBM Token Ring chip set, whereas the TokenTalk NB Card used the Texas Instruments TMS380. Does that mean that I can't run the same software on both cards?
- 4) What version of SNA•ps runs on the card?
- 5) Do I need to keep the installer for both the old and the new card?  
Or will the new TokenTalk installer install a driver for the older card too?
- 6) Can I run MacTCP over Token Ring now?

DISCUSSION -----

- 1) Yes. The TokenTalk installer that ships with the Token Ring 4/16 NB Card will include AppleTalk version 57, which is required for AppleTalk Remote Access.
- 2) No. The SMB software that Apple was shipping prior to June 1991 was incompatible with the latest version of IBM's LAN Server and with System 7.0. Additionally, the Apple/IBM Enterprise Networking Initiative specifies the availability of native AppleTalk AFP support on IBM LAN

server products in the future.

- 3) No. Although the two cards use different hardware, the interface to the LLC task on the cards is the same, so software can be written to run on both cards. For example, you can run the same version of Apple's TokenTalk software, which provides Token-Ring users with access to AppleTalk services, on both the TokenTalk NB Card and the Token Ring 4/16 NB Card. The common TokenTalk software version is 2.4.
- 4) SNA•ps 1.0 doesn't work on the Token Ring NB Card. You need SNA•ps v1.1. If you are using both TokenTalk 2.4 and SNA•ps v 1.1, you will need at least 1MB of memory on the card. You should order the Apple Macintosh Coprocessor Platform Memory expansion kit (P/N M0145LL/A), or compatible third-party memory, if you are running SNA•ps 1.1.
- 5) The new software will install drivers for both cards. In fact, the AppleTalk Network Software Installer disk that ships with the card will also install drivers for Apple's Ethernet LC and Ethernet NB cards, as well as the latest version of AppleTalk. This will make it easier for network administrators to manage software for AppleTalk networks because it's all in one place.
- 6) Yes. Use the MacTCP Token Ring Extension.

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Tech Info Library Article Number:9423





# Tech Info Library

## SNA•ps 1.1: Allows Font and Orientation Selection

Revised: 2/4/92  
Security: Everyone

SNA•ps 1.1: Allows Font and Orientation Selection

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Article Created: 6 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does SNA•ps 1.1 printing let me specify the orientation and font for host jobs?

DISCUSSION -----

The user manual for SNA•ps 3287 tells you how to print data that is wider than the page to a LaserWriter. Use the Landscape option in the printing dialogue at 76 percent to allow printing 132 columns by 66 rows. This is the normal 3287 printer paper size.

The "Use custom formatting" option in the Session menu lets you to choose font, size, lines/inch, and other parameters to get the output format as close as possible to your ideal.

Print preview, in the Session menu, lets you preview your output in a separate window.

The font that ships with SNA•ps 3287, called Noiro, is designed to mimic the look of IBM fonts; the custom formatting and preview options should enable you to diverge from the IBM look.

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Tech Info Library Article Number:9424



# Tech Info Library

## AppleTalk Remote Access: Data Compression

Revised: 2/4/92  
Security: Everyone

AppleTalk Remote Access: Data Compression

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

How is compression handled with AppleTalk Remote Access, and is there a way to control it?

DISCUSSION -----

AppleTalk Remote Access does all data compression on the Macintosh. The CCL scripts specifically turn off all data compression in the modem. AppleTalk Remote Access uses the V.42bis scheme, and the user can't control it.

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Tech Info Library Article Number:9425



# Tech Info Library

## AppleShare 3.0: Doesn't Run Under A/UX 3.0

Revised: 1/17/92  
Security: Everyone

AppleShare 3.0: Doesn't Run Under A/UX 3.0

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Can I run A/UX 3.0 and AppleShare 3.0 on the same computer at the same time?

DISCUSSION -----

No, AppleShare 3.0 won't run under A/UX 3.0.

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Tech Info Library Article Number:9426



# Tech Info Library

## A/UX 3.0: Limits File Sharing to 10 Users

Revised: 7/13/92  
Security: Everyone

A/UX 3.0: Limits File Sharing to 10 Users

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Article Created: 2 January 1992  
Article Last Reviewed: 3 July 1992  
Article Last Updated:

TOPIC -----

Does A/UX 3.0 limit the number of File Sharing users to 10?

DISCUSSION -----

A/UX 3.0 limits File Sharing to 10 users, just as the Macintosh operating system does.

Copyright 1992, Apple Computer, Inc.

Tech Info Library Article Number:9427



# Tech Info Library

## AppleShare 3.0: Upgrading a Users & Groups File

Revised: 2/4/92  
Security: Everyone

AppleShare 3.0: Upgrading a Users & Groups File

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Using AppleShare 3.0 on a Quadra 900, I want to convert the Users & Groups file from a 2.0 server. Putting the old file in the new server's folder isn't sufficient. How can I get AppleShare 3.0 to recognize the old file?

DISCUSSION -----

We suggest you follow this procedure:

- 1) Move the Users & Groups file from the Preferences folder to the root level.
- 2) Put the old AppleShare 2.0 file inside the System Folder, but outside the Preferences folder.
- 3) Run the Admin program.
- 4) Enter a new password when the program prompts you for a new Administrator password.

That should convert the old file to the new format.

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Tech Info Library Article Number:9428



# Tech Info Library

## AppleShare 3.0: Doesn't Terminate Idle Connections Automatically

Revised: 2/4/92  
Security: Everyone

AppleShare 3.0: Doesn't Terminate Idle Connections Automatically

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Does AppleShare 3.0 terminate connections after a certain idle period?

DISCUSSION -----

AppleShare 3.0 doesn't disconnect idle users on its own. However, the API allows developers to write a module that disconnects idle users.

Copyright 1992, Apple Computer, Inc.

Tech Info Library Article Number:9429



# Tech Info Library

## AppleShare 3.0: Can't Log On to the Same Server Multiple Times

Revised: 2/4/92  
Security: Everyone

AppleShare 3.0: Can't Log On to the Same Server Multiple Times

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

I would like to log on to a single AppleShare server, signing on with user name and password to a user's private data volume, but have them log on as "Guest" to a general application volume. The employees here move around to different Macintosh computers frequently, and would like to have a consistent method of accessing information. They have to get to their own "home folders" where ever they are over the internet, but would like to always access an application's volume from the closest local server. Having Guest access available on this computer considerably reduces administration overhead. However, if a user connects to the local server as Guest for an application volume, and their personal "home folder" is on that same server, they can't log on with a different user ID.

Is there any way around this?

DISCUSSION -----

It isn't possible to mount different volumes of a single server with a different user ID and password using AppleShare 3.0. This is a difficult approach using AppleShare 3.0, since it's possible for a physical volume to have multiple mounting points for users, and folders can be share points.

We suggest that users mount their "home folder" first. Then if they need access to a Guest folder on the same server they can easily add it to the existing mounted volume without logging off.

Another possibility is to make each "home folder" user owned. The other folders should have Guest access. When a person logs on as a registered user, they'll also have access to Guest folders.

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Tech Info Library Article Number:9430





# Tech Info Library

## AppleShare 3.0: No Utility to Import/Export User Lists

Revised: 2/4/92  
Security: Everyone

AppleShare 3.0: No Utility to Import/Export User Lists

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Article Created: 2 January 1992  
Article Last Reviewed:  
Article Last Updated:

TOPIC -----

Is it possible to import/export lists of user names and passwords?

DISCUSSION -----

No.

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Tech Info Library Article Number:9431



# Tech Info Library

## ADSP: Now Integrated with AppleTalk (3/94)

Revised: 3/28/94  
Security: Everyone

ADSP: Now Integrated with AppleTalk (3/94)

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Article Created: 2 January 1992  
Article Reviewed/Updated: 28 March 1994

TOPIC -----

I've looked at AppleShare 3.0, and don't find any ADSP file with it.  
I need the latest version of AppleTalk.

DISCUSSION -----

Ever since AppleTalk v. 56 (part of System 7), the ADSP stack is integrated with the rest of the AppleTalk stack. To get the latest available version of AppleTalk, install the latest version of the Network Software Installer (NSI). Search on Network Software Installer to find the latest information.

Article Change History:  
28 Mar 1994 - Removed reference to ARA as update mechanism to AT version.  
Referred to NSI instead.

Support Information Services

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Tech Info Library Article Number:9432